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# ALL INDIA COORDINATED RESEARCH NETWORK ON UNDERUTILIZED CROPS



## ANNUAL REPORT 2012



**NATIONAL BUREAU OF PLANT GENETIC RESOURCES  
PUSA CAMPUS, NEW DELHI 110 012**

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# **ALL INDIA COORDINATED RESEARCH NETWORK ON UNDERUTILIZED CROPS**

## **ANNUAL REPORT 2012**

*Compiled by*

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**Cover page photographs:** Cultivation of Grain amaranth (Uttarakhand) in background with harvested tumba fruits in Western Rajasthan (insets)

# CONTENTS

	<b>Pages</b>
<b>I PREAMBLE</b>	<b>1-3</b>
<b>II PLANT BREEDING</b>	<b>4-96</b>
2.1 Hills	4-30
2.2 Plains	31-96
<b>III GERMPLASM EVALUATION</b>	<b>97-336</b>
3.1 Hills	97-196
3.2 Plains	197-336
<b>IV AGRONOMY</b>	<b>337-357</b>
<b>V QUALITY ANALYSIS</b>	<b>358-380</b>
<b>VI VALUE ADDITION</b>	<b>381-391</b>
<b>VII CENTRE REPORT</b>	<b>392-396</b>
7.1 Hills	392-393
7.2 Plains	394-396
<b>VIII SUMMARY</b>	<b>397-411</b>
<b>IX ANNEXURES (I – XVI)</b>	<b>i-xix</b>

# PREAMBLE

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# **I. PREAMBLE**

Underutilized crops or crops for the future constitute those plant species that occur as life support species in extreme environmental conditions or threatened habitats, having appropriate genetic make up to survive under such adverse situations and also possess promising nutritional or industrial utility for a variety of purposes for the present as well as future needs of human kind. Their cultivation is restricted to specialized geographical pockets in different agro-ecological regions mainly by the poor farming communities, who have little access to modern agro-inputs and well organized marketing and communication infrastructure. Having superior nutritional quality, these crops provide household food and nutritional security to the millions of impoverished people living in remote corners of the country often in inhospitable terrains, where public food distribution system is not yet strong.

The dependence of human kind on plant resources is inevitable. Since the dawn of agriculture, domestication and necessity based gathering of plant species have helped in the evolution of specially useful plant species. Living in close contact with the nature, human beings have learnt to use plants for food, fodder, fibre, medicine and other economic purposes. Over the years, these biological resources have been generously exploited for the advantage of mankind. So far, out of the estimated global wealth of 80,000 edible plant species, only about 150 have been widely used and of these only about 30 species provide 90 per cent of the food for the world's population. This has resulted in narrowing down of our food basket and restricted the options for future unforeseen times that may arise from the unpredictable global climatic changes and other natural catastrophes. Therefore, the underutilized plant species of economic importance are the key to sustainable agriculture in most of the developing countries facing acute resource crunch as well as rapid depletion of natural resources due to ever-increasing population, rapid industrialization and urbanization. The population experts have predicted that the world population will grow by an unprecedented 90 million people per year, which is equivalent to Mexico's entire population in 1995. Unfortunately, changing land use patterns, rapidly increasing pressure on land both for agriculture and forestry, massive development projects as well as expanding demand for

industrial and urban sectors have posed serious threat to the existing agrobiodiversity, including the underutilized plant species that hold immense potential for the future.

These plant species do not require high input technology and can be raised with comparatively lower management cost on marginal, submarginal, degraded and various categories of wastelands on a sustainable basis. There are about 158 million hectares of wastelands of different kinds in India such as sand dunes, ravines, saline, alkali and acidic soils, marshy and marginal lands, which are unfit for supporting cultivation of high input demanding elite crops. Such lands can easily be put to use for growing low-input requiring underutilized crops to diversify present day agriculture in order to support ever-increasing population and to cater to the fast changing human needs.

The Consultative Group on International Agricultural Research (CGIAR) sponsored Workshop on the Role of Underutilized Crops in Enlarging the Basis of Food Security held at MSSRF, Chennai during 1999 which also underlined the need to widen the species composition in the food basket and conserve important food and other plants for posterity.

Recognizing the need for organized research effort on less common, under exploited crops, the All India Coordinated Research Project on Under Utilized and Under Exploited Plants was initiated during 1982 by ICAR. The Project was later redesignated as AICRP on Underutilized Crops and recently rechristened as AICRN on Underutilized Crops. At present, the network is conducting research on 14 crops of food, fodder and industrial value through 13 main, 6 cooperating and 3 voluntary centres located in diverse agro-climatic zones of the country. So far, 34 varieties in different crops have been released/identified in this project, besides identifying desirable genetic donors and accumulating indigenous and exotic germplasm collections. Planned multi-locational evaluation of the germplasm and breeding lines is a continuous process for developing high yielding superior genotypes and their improved production technologies suitable for various agro-ecological situations representing high mountains to the desert plains. Quality analysis of selected germplasm and breeding lines are also undertaken to facilitate crop improvement programme.

The present report embodies results of research work undertaken on germplasm evaluation, breeding and agronomic aspects, quality evaluation and other studies in various underutilized crops at different centres. The compiled report is an outcome of the concerted efforts made by the scientists of AICRN, cooperating and voluntary centres. I express my sincere thanks to Drs. J.C. Rana, B.S. Phogat and M. Khabiruddin, Technical Programme Leaders for Plant Breeding, Agronomy and Quality Analysis, respectively for compilation of the reports. I am extremely thankful to Dr. H.L. Raiger, Sr. Scientist of the Coordinating Unit for helping in preparation of the report.

I would like to acknowledge with reverence and gratitude the encouragement and guidance received on all aspects of management and functioning of the project from Dr. S. Ayyappan, Secretary, DARE and Director General, ICAR; Prof. S.K. Datta, DDG (Crop Science), ICAR; Dr. R.P. Dua, ADG (FFC), ICAR and Dr. K.C. Bansal, Director, NBPGR.

I wish to record my appreciation to Ms. Amita and Mr. Ranvir Singh for neatly typing the report.

**D.C. Bhandari**  
**Network Coordinator**



# **PLANT BREEDING**

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## **II. PLANT BREEDING**

Based on the regional economic importance, area covered by the crop, specific adaptive advantage and future potential, the work on underutilized crops have been prioritized for hill as well as for the plain areas of the country. These include food and fodder crops, energy and industrial plants and crop species suitable for problematic areas. Among the economically important indigenous as well as introduced plant species, the promising lines are included in the coordinated testing programme. Apart from Initial Varietal Trial (IVT) and Advanced Varietal Trials (AVT-I & II) in important crops like grain amaranth, buckwheat, rice bean and faba bean, the Observational Rows and Germplasm Evaluation were carried out in different crops. The results of the experiments conducted during *Rabi* 2011-2012 in the plains and during *Kharif* 2012 in the hills as well as plains are enumerated below:

### **2.1 HILLS**

The crops included in the hill areas are the pseudocereals (grain amaranth and buckwheat); grain legumes (rice bean and faba bean). These crops are grown during kharif season in hills of North-Western and North-Eastern Himalayas. Replicated data were received from the centres. Statistical analysis was carried out to estimate mean, CD (at 5% level) and CV (%). For overall comparison, mean over locations has been calculated. For the varieties qualifying for consideration of identification on the basis of three years performance, the weighted means in respect of grain yield and maturity have been given in the Annexures.

#### **2.1.1 GRAIN AMARANTH (*Amaranthus* spp.)**

Grain amaranth is an important crop in mid and high altitude regions of North-Western Himalaya. It is a dual purpose crop grown for its green foliage and grain. Its seeds being rich in protein and essential amino acids (lysine), are used for various confectionary items and other nutritious food products.

An IVT and AVT on grain amaranth were conducted during kharif, 2012. Although many species of grain amaranth are economically important, but three

species, namely, *A. hypochondriacus*, *A. caudatus* and *A. edulis*, being the important grain yielding types, are included in the testing programmes.

#### **2.1.1.1 Initial Varietal Trial and Advanced Varietal Trial (IVT, AVT-I & AVT-II)**

In this trial, seven entries in IVT, two entries in AVT-I and three entries in AVT-II along with three checks were tested at four locations. The data were received from all centres. The performance of the entries as compared to the checks has been given in Table 1. Based on the overall mean performance in respect of grain yield over four locations, in IVT, AVT-I & AVT-II, no entry showed yield superiority over the check variety, Durga (18.68 q/ha).

No significant differences were observed among the entries for seed yield at all the locations (Table 2). Seed yield level was high at Shimla (33.91 q/ha) and, moderate at Ranichauri (13.30 q/ha) and very low at Almora (7.35 q/ha). Based on the average performance over locations, check variety, Durga was the highest yielder (18.68 q/ha) followed by entry IC042328 (17.99 q/ha).

Average plant height of the entries (Table 3) was the highest at Shimla (254.67 cm) followed by at Sangla (168.09 cm). It was the lowest at Almora (133.84 cm) centre. The plant height at Shimla ranged from 213.77 cm to 305.57 cm and at Sangla from 162.20 cm to 178.47 cm. Based on average performance over four locations the entry IC038136 had highest plant height (190.80 cm).

Flowering time showed considerable variation among locations as well as the entries. The mean flowering time was shortest (53.59 days) at Ranichauri while it was longest (92.15 days) at Sangla (Table 4). The variation in flowering time among the entries was wider at Shimla (57.33– 83.33 days). The check Durga showed consistency for early flowering over the locations and ranked first (63.33 days) based on the overall performance.

The average maturity period of the entries over the locations was 131.54 days (Table 5). The entry, Almora-VL-102 was the earliest in maturity (115.67 days). The average maturity period was the minimum at Almora (108.73 days) while, it was the longest at Sangla (152.94 days).

The length of inflorescence (Table 6) of the entries was the highest at Almora (64.71 cm) followed by at Shimla (63.41 cm). Inflorescence length was lowest (56.49cm) at Sangla. Based on the average over four locations, the entry, IC042268 had the longest inflorescence (69.34 cm).

Number of fingers per inflorescence (Table 7) was the highest at Almora (69.36) followed by at Ranichauri centre (30.10). Based on the average over the locations the entry IC042268 had the highest number of fingers (66.73).

Test weight (Table 8) expressed in terms of weight of 10 ml seed recorded at four centres showed that it was the highest at Ranichauri (11.52 g) and very low at Shimla (7.89g). The variation among the entries was relatively low. Based on the average over four locations the check, Durga (9.12g) showed the highest test weight.

### **2.1.2 BUCKWHEAT (*Fagopyrum* spp.)**

Buckwheat is a multi-utility pseudocereal crop grown extensively in the higher hills and is a catch crop in the foot hills. In addition to its foliage and grain, it produces a glucoside called *rutin* that has important medicinal value against cardio-vascular ailments.

#### **2.1.2.1 Initial Varietal Trial and Advanced Varietal Trial (IVT, AVT-I & II)**

A combined trial of Initial Varietal Trial (5 entries) and Advanced Varietal Trial-I & II (6 entries) with four checks was conducted at four locations viz. Shimla, Ranichauri, Almora and Sangla , data were received from locations only. The summary performance of various entries in respect of grain yield and other important traits as compared to the checks has been given in Table 9. Entry Sangla B-214 was found superior in yield to the best check variety, Himpriya.

Data on grain yield have been presented in Table 10. Significant differences were observed among the entries with respect to grain yield at two locations. Seed yields at Ranichauri (7.72 q/ha) was comparatively very low. Highest seed yield was recorded at Almora (15.74 q/ha).

Average plant height (Table 11) was recorded to be the highest at Sangla (148.47 cm) followed by at Almora (112.24 cm). The check, PRB-1 was the tallest (139.01 cm) entry.

Flowering time varied from 40.67 to 57.33 days at Shimla, 30.33 to 54.00 days at Ranichauri and 37.00 to 57.00 days at Sangla centre (Table 12). Mean flowering time was the earliest at Almora (38.40 days) followed by at Ranichauri (43.60 days).

Maturity period (Table 13) also showed similar trend as that of flowering time. Average maturity period was the earliest at Almora (75.60 days) followed by at Sangla (98.17 days). On the basis of average over four locations the check variety VL-7 was earliest in maturity (74.13 days).

The average test weight was recorded to be higher at Ranichauri (3.12 g) than at other centres (Table 14). On the basis of average over three locations IC017371 possessed the highest (2.55 g) test weight.

### **2.1.3 RICE BEAN (*Vigna umbellata*)**

Rice bean is an important grain legume crop of low and mid Himalayan regions having multifarious utility. It is mainly suitable for mid hill regions where traditional pulses like black gram and green gram cannot be grown successfully. A trial comprising Initial Varietal Trial and AVT-I & II entries was conducted during the year 2012.

#### **2.1.3.1 Initial Varietal Trial and Advanced Varietal Trial (IVT & AVT-I & II)**

The IVT and AVT-I & II comprising 12 entries and three checks was conducted at six locations. Results have been received from five centres. The summary performance of the entries has been presented in Table 15.

Significant variations were observed among the entries with respect to seed yield at four locations (Table 16). Yield level at Bhowali centre was the highest with an average yield of 32.72 q/ha while it was the lowest at Almora (10.76 q/ha) centre. The crop at Ranichauri was destroyed due to poor seed setting and high rainfall. The yield levels at Shillong (14.91 q/ha) centre was moderate. On the basis of average over five locations the entry IC395028 (20.79 q/ha) was the highest yielder followed by LRB-479 (20.06 q/ha).

Plant height (Table 17) was maximum at Shimla with an average height of 273.27 cm, while it was the lowest at Palampur (100.98 cm) centre. On the

basis of average over five locations LRB-460 showed the highest plant height (168.83).

Flowering time was minimum at Shillong (48.36 days) and maximum at Bhowali (89.31 days) showing more than 41 days difference between the two centres (Table 18). On the basis of average over five locations PRR 2011-1 (65.47 days) and PRR 2012-2 (68.87 days) were recorded to be earliest in flowering.

Maturity period was shortest at Shillong (98.27 days) and it was longest (150.60 days) at Shimla (Table 19). There was a difference of about 52 days in maturity between Shillong and Shimla centres. Based on the average over five locations, entry, PRR-2012-2 was earliest in maturity (118.67 days).

The mean 100-seed weight was the highest at Palampur (8.62g) centre and lowest at Shimla (7.28 g) centre (Table 20). On the basis of average over five locations, IC563940 had the highest seed weight (11.29 g) followed by IC395028 (8.67 g).

#### **2.1.4 FABA BEAN (*Vicia faba*)**

Faba bean is grown in the hills mainly for its protein rich green pods which are used as vegetable. An Initial Varietal Trial (IVT) and Advanced Varietal Trial (AVT-I & II) were proposed to be conducted at Palampur and Ranichauri and results have been received from Palampur centre only.

##### **2.1.4.1 Initial Varietal Trial (IVT) and Advanced Varietal Trial (AVT-I)**

The Initial Varietal Trial (IVT) and Advanced Varietal Trial (AVT-I & II) comprising nine entries along with one check was conducted at one location. The summary of performance of the entries has been presented in Table 21.

Significant differences were observed among the entries for seed yield at Palampur centre. The seed yield was the highest in the entry HB-645 (33.33 q/ha). HB-185 showed the highest plant height (81.50 cm). The entries HB-645 was the shortest in terms of plant height (67.75 cm). The entry HB- 649 (64.50 days) was recorded to be earliest in flowering. The entry HB- 175 was earliest in maturity (163.50 days). The entry HB-175 had the highest seed weight (29.60 g) followed by the entry HB-645 (27.90 g) (Table 22).

**Table 1. Performance of grain amaranth entries in Initial and Advanced Varietal Trials (IVT & AVT) during Kharif 2012 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 10ml seed (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check			
				Mean	Location	Rank	Annapurna	Durga	PRA-2	PRA 3
<b>IVT</b>										
1	IC042008	133.00	9.06	16.54	4	4	6.85	-11.44	114.20	5.74
2	IC042268	132.17	9.07	14.00	4	14	-9.55	-25.03	81.32	-10.49
3	IC042271	133.67	9.07	15.57	4	8	0.57	-16.64	101.61	-0.47
4	PRA-2012-1	134.75	8.88	15.73	4	6	1.60	-15.79	103.68	0.55
5	PRA-2012-2	133.83	8.89	15.02	4	11	-2.95	-19.56	94.56	-3.95
6	Almora-VL-101	116.44	7.82	14.63	3	12	-5.46	-21.65	89.51	-6.44
7	Almora-VL-102	115.67	8.01	13.97	3	15	-9.72	-25.18	80.97	-10.66
<b>AVT-I</b>										
8	IC038136	131.67	8.87	15.43	4	10	-0.36	-17.41	99.75	-1.39
9	PRA-2011-2	129.33	8.76	14.38	4	13	-7.14	-23.03	86.16	-8.10
<b>AVT-II</b>										
10	IC042328	132.42	8.97	17.99	4	2	16.21	-3.68	132.96	15.01
11	PRA-2010-1	134.33	8.87	17.56	4	3	13.44	-5.98	127.41	12.27
12	PRA-2010-2	135.17	8.99	16.46	4	5	6.33	-11.87	113.16	5.23
13	Annapurna (C)	131.83	8.80	15.48	4	9	-	-17.12	100.46	-1.03
14	Durga (C)	119.08	9.12	18.68	4	1	20.65	-	141.87	19.41
15	PRA-2 (C)	155.33	8.43	7.72	1	16	-50.12	-58.65	-	-50.63
16	PRA 3 (C)	135.92	8.84	15.64	4	7	1.04	-16.25	102.56	-
<b>Mean</b>		<b>131.54</b>	<b>8.78</b>	<b>15.30</b>						

**Table 2. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	IC042008	3.43	12.92	11.67	38.15	16.54	4	4	0/4
2	IC042268	5.02	12.61	3.44	34.93	14.00	14	4	0/4
3	IC042271	7.11	12.06	7.50	35.61	15.57	8	4	0/4
4	PRA-2012-1	8.96	14.33	3.19	36.43	15.73	6	4	0/4
5	PRA-2012-2	8.05	13.72	4.86	33.46	15.02	11	4	0/4
6	Almora-VL-101	8.58	-	8.53	26.80	14.63	12	3	0/3
7	Almora-VL-102	11.20	-	9.17	21.56	13.97	15	3	0/3
<b>AVT-I</b>									
8	IC038136	8.19	11.83	6.69	34.98	15.43	10	4	0/4
9	PRA-2011-2	4.82	12.64	7.08	32.96	14.38	13	4	0/4
<b>AVT-II</b>									
10	IC042328	3.79	12.33	16.17	39.67	17.99	2	4	0/4
11	PRA-2010-1	7.59	15.28	12.08	35.29	17.56	3	4	0/4
12	PRA-2010-2	9.93	15.56	4.61	35.74	16.46	5	4	0/4
13	Annapurna (C)	5.36	12.31	8.33	<b>35.93</b>	15.48	9	4	
14	Durga (C)	<b>11.74</b>	13.06	<b>15.89</b>	34.02	18.68	1	4	
15	PRA-2 (C)	-	-	7.72	-	7.72	16	1	
16	PRA 3 (C)	6.53	<b>14.31</b>	8.61	33.12	15.64	7	4	
	<b>Mean</b>	<b>7.35</b>	<b>13.30</b>	<b>8.47</b>	<b>33.91</b>	<b>15.30</b>			
	<b>CD (0.05)</b>	<b>1.60</b>	<b>2.87</b>	<b>4.98</b>	<b>5.53</b>				
	<b>CV (%) Error</b>	<b>1.56</b>	<b>3.19</b>	<b>3.24</b>	<b>4.57</b>				



**Table 3. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC042008	123.00	<b>154.33</b>	175.00	<b>305.57</b>	189.48	2
2	IC042268	<b>154.33</b>	148.40	171.60	<b>272.20</b>	186.63	3
3	IC042271	<b>131.67</b>	135.33	178.33	232.77	169.53	13
4	PRA-2012-1	<b>129.67</b>	<b>159.67</b>	168.40	263.37	180.28	5
5	PRA-2012-2	<b>148.67</b>	147.53	141.20	<b>269.07</b>	176.62	7
6	Almora-VL-101	119.00	-	170.33	213.77	167.70	14
7	Almora-VL-102	127.33	-	162.20	224.20	171.24	11
<b>AVT-I</b>							
8	IC038136	<b>133.67</b>	<b>173.40</b>	169.47	<b>286.67</b>	190.80	1
9	PRA-2011-2	<b>139.00</b>	142.93	176.13	243.10	175.29	9
<b>AVT-II</b>							
10	IC042328	<b>129.33</b>	139.07	155.80	235.03	164.81	16
11	PRA-2010-1	<b>151.67</b>	<b>151.67</b>	138.80	251.23	173.34	10
12	PRA-2010-2	<b>162.33</b>	144.63	178.47	257.90	185.83	4
13	Annapurna (C)	117.33	121.73	174.93	247.43	165.36	15
14	Durga (C)	<b>127.33</b>	124.93	173.20	255.57	170.26	12
15	PRA-2 (C)	-	-	177.27	-	177.27	6
16	PRA 3 (C)	113.33	<b>147.40</b>	<b>178.27</b>	<b>262.20</b>	175.30	8
	<b>Mean</b>	<b>133.84</b>	<b>145.46</b>	<b>168.09</b>	<b>254.67</b>	<b>176.23</b>	
	<b>CD (0.05)</b>	<b>1.60</b>	<b>2.87</b>	<b>4.98</b>	<b>5.53</b>		
	<b>CV (%) Error</b>	<b>1.56</b>	<b>3.19</b>	<b>3.24</b>	<b>4.57</b>		

**Table 4. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC042008	63.00	47.67	89.00	76.67	69.08	4
2	IC042268	61.33	50.67	96.00	71.67	69.92	6
3	IC042271	63.33	52.33	90.67	75.33	70.42	8
4	PRA-2012-1	61.67	58.00	95.00	74.00	72.17	12
5	PRA-2012-2	63.00	52.67	90.33	72.67	69.67	5
6	Almora-VL-101	<b>55.00</b>	-	92.67	63.00	70.22	7
7	Almora-VL-102	<b>55.67</b>	-	90.00	57.33	67.67	2
<b>AVT-I</b>							
8	IC038136	63.33	47.67	94.33	66.33	67.92	3
9	PRA-2011-2	63.33	44.00	91.00	83.33	70.42	8
<b>AVT-II</b>							
10	IC042328	64.00	62.33	91.67	73.00	72.75	13
11	PRA-2010-1	63.00	59.33	92.67	79.33	73.58	14
12	PRA-2010-2	62.00	55.67	93.00	73.00	70.92	11
13	Annapurna (C)	60.00	57.67	90.67	75.00	70.83	10
14	Durga (C)	<b>57.33</b>	<b>46.00</b>	<b>89.67</b>	<b>60.33</b>	63.33	1
15	PRA-2 (C)	-	-	95.00	-	95.00	16
16	PRA 3 (C)	63.33	62.67	92.67	83.67	75.58	15
	<b>Mean</b>	<b>61.29</b>	<b>53.59</b>	<b>92.15</b>	<b>72.31</b>	<b>71.84</b>	
	<b>CD (0.05)</b>	<b>1.60</b>	<b>2.87</b>	<b>4.98</b>	<b>5.53</b>		
	<b>CV (%) Error</b>	<b>1.56</b>	<b>3.19</b>	<b>3.24</b>	<b>4.57</b>		

**Table 5. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	IC042008	116.33	122.67	152.00	141.00	133.00	9	4	0/4
2	IC042268	116.33	126.67	154.00	131.67	132.17	7	4	0/4
3	IC042271	115.00	127.33	152.00	140.33	133.67	10	4	0/4
4	PRA-2012-1	110.33	131.33	153.33	144.00	134.75	13	4	0/4
5	PRA-2012-2	113.33	126.33	154.67	141.00	133.83	11	4	0/4
6	Almora-VL-101	95.67	-	147.67	<b>106.00</b>	116.44	2	3	1/3
7	Almora-VL-102	<b>93.67</b>	-	147.67	<b>105.67</b>	115.67	1	3	2/3
<b>AVT-I</b>									
8	IC038136	109.67	122.67	152.67	141.67	131.67	5	4	0/4
9	PRA-2011-2	109.00	119.00	154.67	134.67	129.33	4	4	0/4
<b>AVT-II</b>									
10	IC042328	109.00	134.33	154.67	131.67	132.42	8	4	0/4
11	PRA-2010-1	111.00	131.33	155.33	139.67	134.33	12	4	0/4
12	PRA-2010-2	112.67	129.67	156.00	142.33	135.17	14	4	0/4
13	Annapurna (C)	106.33	131.33	153.67	136.00	131.83	6	4	
14	Durga (C)	<b>95.33</b>	<b>120.67</b>	<b>148.00</b>	<b>112.33</b>	119.08	3	4	
15	PRA-2 (C)	-	-	155.33	-	155.33	16	1	
16	PRA 3 (C)	117.33	132.67	155.33	138.33	135.92	15	4	
	<b>Mean</b>	<b>108.73</b>	<b>127.38</b>	<b>152.94</b>	<b>132.42</b>	<b>131.54</b>			
	<b>CD (0.05)</b>	<b>1.60</b>	<b>2.87</b>	<b>4.98</b>	<b>5.53</b>				
	<b>CV (%) Error</b>	<b>1.56</b>	<b>3.19</b>	<b>3.24</b>	<b>4.57</b>				

**Table 6. Inflorescence length (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC042008	<b>64.67</b>	56.93	54.20	65.80	60.40	11
2	IC042268	<b>74.67</b>	70.93	59.03	72.73	69.34	1
3	IC042271	<b>70.33</b>	63.80	57.37	64.60	64.03	4
4	PRA-2012-1	<b>63.33</b>	<b>72.07</b>	59.00	61.67	64.02	5
5	PRA-2012-2	<b>70.00</b>	60.53	64.53	54.67	62.43	7
6	Almora-VL-101	55.33	-	63.37	57.80	58.83	13
7	Almora-VL-102	56.67	-	64.67	61.73	61.02	9
<b>AVT-I</b>							
8	IC038136	<b>65.00</b>	61.87	60.10	53.07	60.01	12
9	PRA-2011-2	<b>66.67</b>	60.00	42.80	64.73	58.55	14
<b>AVT-II</b>							
10	IC042328	<b>66.00</b>	57.13	36.93	62.40	55.62	16
11	PRA-2010-1	<b>73.67</b>	66.00	58.00	51.47	62.28	8
12	PRA-2010-2	<b>71.00</b>	60.83	55.97	67.53	63.83	6
13	Annapurna (C)	54.00	61.73	57.83	68.40	60.49	10
14	Durga (C)	56.33	47.20	53.40	66.67	55.90	15
15	PRA-2 (C)	-	-	-	68.13	68.13	2
16	PRA 3 (C)	<b>63.00</b>	<b>68.07</b>	<b>60.10</b>	<b>73.13</b>	66.08	3
<b>Mean</b>		<b>64.71</b>	<b>62.08</b>	<b>56.49</b>	<b>63.41</b>	<b>61.94</b>	
<b>CD (0.05)</b>		<b>1.60</b>	<b>2.87</b>	<b>4.98</b>	<b>5.53</b>		
<b>CV (%) Error</b>		<b>1.56</b>	<b>3.19</b>	<b>3.24</b>	<b>4.57</b>		

**Table 7. No. of fingers per inflorescence in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Mean	Rank
<b>IVT</b>					
1	IC042008	<b>92.00</b>	28.27	60.13	4
2	IC042268	<b>101.00</b>	<b>32.47</b>	66.73	1
3	IC042271	<b>86.00</b>	31.73	58.87	5
4	PRA-2012-1	65.33	28.87	47.10	9
5	PRA-2012-2	66.00	27.00	46.50	10
6	Almora-VL-101	60.33	-	60.33	3
7	Almora-VL-102	60.33	-	60.33	2
<b>AVT-I</b>					
8	IC038136	55.67	<b>42.33</b>	49.00	8
9	PRA-2011-2	<b>81.67</b>	<b>33.00</b>	57.33	6
<b>AVT-II</b>					
10	IC042328	58.67	30.33	44.50	12
11	PRA-2010-1	<b>73.33</b>	<b>33.47</b>	53.40	7
12	PRA-2010-2	60.00	<b>32.67</b>	46.33	11
13	Annapurna (C)	58.33	<b>26.40</b>	42.37	14
14	Durga (C)	<b>65.00</b>	22.80	43.90	13
15	PRA-2 (C)	-	-	-	-
16	PRA 3 (C)	56.67	22.00	39.33	15
	<b>Mean</b>	<b>69.36</b>	<b>30.10</b>	<b>51.74</b>	
	<b>CD (0.05)</b>	<b>1.60</b>	<b>5.53</b>		
	<b>CV (%) Error</b>	<b>1.56</b>	<b>4.57</b>		

**Table 8. Seed weight (g/10ml) in Initial and Advanced Varietal Trials (IVT & AVT) on grain amaranth: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC042008	8.00	11.56	8.44	8.23	9.06	4
2	IC042268	8.00	11.51	8.27	8.51	9.07	2
3	IC042271	8.00	11.53	8.45	8.31	9.07	3
4	PRA-2012-1	8.00	11.55	8.26	7.69	8.88	8
5	PRA-2012-2	8.00	11.47	8.25	7.83	8.89	7
6	Almora-VL-101	7.33	-	8.38	7.76	7.82	16
7	Almora-VL-102	8.00	-	8.26	7.76	8.01	15
<b>AVT-I</b>							
8	IC038136	8.00	11.55	8.43	7.51	8.87	9
9	PRA-2011-2	7.33	11.48	8.41	7.80	8.76	13
<b>AVT-II</b>							
10	IC042328	8.00	11.52	8.52	7.84	8.97	6
11	PRA-2010-1	8.00	11.54	8.35	7.58	8.87	10
12	PRA-2010-2	8.00	11.46	8.44	8.06	8.99	5
13	Annapurna (C)	<b>8.00</b>	<b>11.54</b>	8.23	7.43	8.80	12
14	Durga (C)	<b>8.00</b>	11.49	<b>8.61</b>	<b>8.40</b>	9.12	1
15	PRA-2 (C)	-	-	8.43	-	8.43	14
16	PRA 3 (C)	<b>8.00</b>	11.51	8.26	7.60	8.84	11
<b>Mean</b>		<b>7.91</b>	<b>11.52</b>	<b>8.37</b>	<b>7.89</b>	<b>8.78</b>	
<b>CD (0.05)</b>		<b>1.60</b>	<b>2.87</b>	<b>4.98</b>	<b>5.53</b>		
<b>CV (%) Error</b>		<b>1.56</b>	<b>3.19</b>	<b>3.24</b>	<b>4.57</b>		

**Table 9. Performance of buckwheat entries in Initial and Advanced Varietal Trials ( IVT & AVT) during Kharif 2012 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 100 seed (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check			
				Mean	Location	Rank	Himpriya	PRB-1	Shimla-B-1	VL-7
<b>IVT</b>										
1	IC017371	95.17	2.55	8.91	4	14	-31.77	-9.06	2.20	-0.75
2	IC042426	101.79	2.46	11.66	4	7	-10.69	19.03	33.78	29.91
3	IC274425	102.08	2.43	9.85	4	11	-24.56	0.55	13.01	9.74
4	Sangla-B-129	98.17	2.37	9.95	4	10	-23.78	1.59	14.17	10.87
5	Sangla-B-214	97.33	2.32	13.41	4	1	2.71	36.90	53.86	49.41
<b>AVT-I</b>										
6	IC202268	98.50	2.37	11.46	4	9	-12.21	17.02	31.52	27.71
7	Sangla-B-5	95.83	2.38	11.91	4	6	-8.81	21.54	36.60	32.65
<b>AVT-II</b>										
8	IC109314	95.63	2.40	11.48	4	8	-12.09	17.18	31.70	27.89
9	IC109728	97.42	2.09	13.27	4	2	1.63	35.46	52.24	47.83
10	IC109729	98.79	2.44	12.02	4	5	-7.98	22.65	37.85	33.86
11	Sangla-B-118	99.00	2.36	12.14	4	4	-7.05	23.90	39.25	35.22
12	Himpriya (C)	106.21	2.25	13.06	4	3	-	33.29	49.80	45.47
13	PRB-1 (C)	100.42	2.43	9.80	4	12	-24.97	-	12.39	9.14
14	Shimla-B-1 (C)	83.50	2.30	8.72	4	15	-33.25	-11.02	-	-2.89
15	VL-7 (C)	74.13	2.53	8.98	4	13	-31.26	-8.37	2.98	-
<b>Mean</b>		<b>96.26</b>	<b>2.38</b>	<b>11.11</b>						

**Table 10. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	IC017371	17.85	7.19	1.22	9.38	8.91	14	4	0/4
2	IC042426	17.24	7.55	9.79	12.06	11.66	7	4	0/4
3	IC274425	10.74	8.07	11.04	9.55	9.85	11	4	0/4
4	Sangla-B-129	10.13	8.54	11.88	9.26	9.95	10	4	0/4
5	Sangla-B-214	16.26	7.45	<b>20.00</b>	9.94	13.41	1	4	1/4
<b>AVT-I</b>									
6	IC202268	16.76	7.45	10.83	10.82	11.46	9	4	0/4
7	Sangla-B-5	17.35	7.03	13.89	9.36	11.91	6	4	0/4
<b>AVT-II</b>									
8	IC109314	12.43	8.18	<b>15.76</b>	9.55	11.48	8	4	1/4
9	IC109728	21.63	7.66	11.46	12.34	13.27	2	4	0/4
10	IC109729	17.50	7.81	13.06	9.70	12.02	5	4	0/4
11	Sangla-B-118	10.19	<b>10.16</b>	<b>18.68</b>	9.53	12.14	4	4	2/4
12	Himpriya (C)	19.59	6.93	<b>13.40</b>	<b>12.31</b>	13.06	3	4	
13	PRB-1 (C)	17.15	6.98	2.85	12.21	9.80	12	4	
14	Shimla-B-1 (C)	10.43	7.19	6.04	11.21	8.72	15	4	
15	VL-7 (C)	<b>20.91</b>	<b>7.55</b>	1.11	6.34	8.98	13	4	
	<b>Mean</b>	<b>15.74</b>	<b>7.72</b>	<b>10.73</b>	<b>10.24</b>	<b>11.11</b>			
	<b>CD(0.05)</b>	<b>2.35</b>	<b>2.55</b>	<b>1.85</b>	<b>0.59</b>				
	<b>CV(%) Error</b>	<b>8.92</b>	<b>19.73</b>	<b>8.00</b>	<b>3.44</b>				



**Table 11. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC017371	130.00	100.53	123.15	134.20	121.97	6
2	IC042426	107.67	116.53	183.60	93.90	125.43	5
3	IC274425	90.67	93.67	160.90	91.03	109.07	13
4	Sangla-B-129	98.00	88.77	161.40	101.22	112.35	11
5	Sangla-B-214	102.33	94.07	169.10	95.50	115.25	9
<b>AVT-I</b>							
6	IC202268	118.00	106.20	182.00	100.25	126.61	4
7	Sangla-B-5	110.00	107.33	126.20	122.17	116.43	8
<b>AVT-II</b>							
8	IC109314	108.00	108.07	128.20	98.78	110.76	12
9	IC109728	115.67	96.00	194.90	108.38	128.74	3
10	IC109729	104.67	91.00	161.40	97.50	113.64	10
11	Sangla-B-118	97.00	90.53	147.90	94.12	107.39	14
12	Himpriya (C)	107.33	99.00	<b>173.60</b>	95.15	118.77	7
13	PRB-1 (C)	<b>150.00</b>	<b>146.80</b>	113.00	146.23	139.01	1
14	Shimla-B-1 (C)	136.67	112.53	126.60	<b>153.05</b>	132.21	2
15	VL-7 (C)	107.67	97.47	75.10	123.18	100.85	15
<b>Mean</b>		<b>112.24</b>	<b>103.23</b>	<b>148.47</b>	<b>110.31</b>	<b>118.56</b>	
<b>CD(0.05)</b>		<b>19.98</b>	<b>14.98</b>	<b>22.07</b>	<b>2.72</b>		
<b>CV(%) Error</b>		<b>10.64</b>	<b>8.67</b>	<b>6.91</b>	<b>1.47</b>		

**Table 12. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat:Kharif 2012(Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC017371	25.00	36.33	47.00	47.00	38.83	2
2	IC042426	41.67	49.00	55.00	54.67	50.08	13
3	IC274425	41.00	49.00	57.00	57.33	51.08	14
4	Sangla-B-129	43.67	46.67	50.00	53.67	48.50	11
5	Sangla-B-214	42.33	41.00	51.50	54.33	47.29	10
<b>AVT-I</b>							
6	IC202268	43.00	46.00	54.50	51.00	48.63	12
7	Sangla-B-5	42.00	42.33	50.00	53.67	47.00	8
<b>AVT-II</b>							
8	IC109314	41.33	41.00	48.00	49.67	45.00	4
9	IC109728	40.67	43.00	54.00	51.33	47.25	9
10	IC109729	42.67	45.67	49.00	49.00	46.58	7
11	Sangla-B-118	42.00	43.67	48.00	52.00	46.42	6
12	Himpriya (C)	40.67	54.00	57.00	53.00	51.17	15
13	PRB-1 (C)	31.00	46.00	57.00	49.00	45.75	5
14	Shimla-B-1 (C)	39.00	40.00	<b>37.00</b>	<b>40.67</b>	39.17	3
15	VL-7 (C)	<b>20.00</b>	<b>30.33</b>	<b>37.00</b>	43.67	32.75	1
<b>Mean</b>		<b>38.40</b>	<b>43.60</b>	<b>50.13</b>	<b>50.67</b>	<b>45.70</b>	
<b>CD(0.05)</b>		<b>0.92</b>	<b>6.59</b>	<b>3.55</b>	<b>4.05</b>		
<b>CV(%) Error</b>		<b>1.44</b>	<b>9.02</b>	<b>3.29</b>	<b>4.78</b>		

**Table 13. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	IC017371	63.00	96.00	102.00	119.67	95.17	3	4	0/4
2	IC042426	73.67	109.67	107.50	116.33	101.79	13	4	0/4
3	IC274425	80.00	105.00	109.00	114.33	102.08	14	4	0/4
4	Sangla-B-129	83.33	101.33	91.00	117.00	98.17	8	4	0/4
5	Sangla-B-214	82.00	98.67	93.00	115.67	97.33	6	4	0/4
<b>AVT-I</b>									
6	IC202268	81.33	102.67	93.00	117.00	98.50	9	4	0/4
7	Sangla-B-5	78.67	98.67	91.00	115.00	95.83	5	4	0/4
<b>AVT-II</b>									
8	IC109314	77.67	98.67	94.50	111.67	95.63	4	4	0/4
9	IC109728	76.67	100.00	98.00	115.00	97.42	7	4	0/4
10	IC109729	81.33	104.67	93.50	115.67	98.79	10	4	0/4
11	Sangla-B-118	81.33	102.67	93.00	119.00	99.00	11	4	0/4
12	Himpriya (C)	81.67	109.67	127.50	106.00	106.21	15	4	
13	PRB-1 (C)	71.00	103.67	105.00	122.00	100.42	12	4	
14	Shimla-B-1 (C)	71.33	98.00	<b>79.00</b>	85.67	83.50	2	4	
15	VL-7 (C)	<b>51.00</b>	<b>75.00</b>	95.50	<b>75.00</b>	74.13	1	4	
	<b>Mean</b>	<b>75.60</b>	<b>100.29</b>	<b>98.17</b>	<b>111.00</b>	<b>96.26</b>			
	<b>CD(0.05)</b>	<b>1.24</b>	<b>6.32</b>	<b>4.94</b>	<b>3.79</b>				
	<b>CV(%) Error</b>	<b>0.98</b>	<b>3.76</b>	<b>2.34</b>	<b>2.04</b>				

**Table 14. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC017371	2.28	3.10	2.20	2.61	2.55	1
2	IC042426	1.95	3.08	<b>2.65</b>	2.17	2.46	3
3	IC274425	2.02	3.06	<b>2.50</b>	2.13	2.43	6
4	Sangla-B-129	1.99	3.11	2.20	2.19	2.37	9
5	Sangla-B-214	1.99	3.10	2.00	2.19	2.32	12
<b>AVT-I</b>							
6	IC202268	1.93	3.10	2.35	2.09	2.37	10
7	Sangla-B-5	2.03	3.08	2.20	2.22	2.38	8
<b>AVT-II</b>							
8	IC109314	1.97	3.11	2.35	2.17	2.40	7
9	IC109728	1.62	3.15	1.90	1.69	2.09	15
10	IC109729	2.04	3.17	2.40	2.13	2.44	4
11	Sangla-B-118	1.93	3.11	2.30	2.11	2.36	11
12	Himpriya (C)	1.86	3.08	1.85	2.21	2.25	14
13	PRB-1 (C)	2.11	<b>3.27</b>	2.05	2.28	2.43	5
14	Shimla-B-1 (C)	1.77	3.17	<b>2.10</b>	2.17	2.30	13
15	VL-7 (C)	<b>2.89</b>	3.11	1.40	<b>2.72</b>	2.53	2
	<b>Mean</b>	<b>2.03</b>	<b>3.12</b>	<b>2.16</b>	<b>2.21</b>	<b>2.38</b>	
	<b>CD(0.05)</b>	<b>0.13</b>	-	<b>0.34</b>	<b>0.08</b>		
	<b>CV(%) Error</b>	<b>3.72</b>		<b>7.40</b>	<b>2.04</b>		

**Table 15. Performance of rice bean entries in Initial and Advanced Varietal Trials ( IVT & AVT) during Kharif 2012 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 100 seed (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check		
				Mean	Location	Rank	PRR-1	PRR-2	RBL-6
<b>IVT</b>									
1	IC395028	129.13	8.67	20.79	5	1	17.51	26.62	11.51
2	LRB-472	122.73	7.34	17.74	5	7	0.25	8.02	-4.88
3	LRB-479	124.00	7.90	20.06	5	2	13.39	22.18	7.60
4	PRR-2012-1	120.00	7.12	14.67	5	14	-17.10	-10.68	-21.34
5	PRR-2012-2	118.67	7.21	11.91	5	15	-32.70	-27.48	-36.14
6	RBHP-38	123.60	6.91	18.63	5	5	5.28	13.43	-0.10
<b>AVT-I</b>									
7	PRR-2011-1	122.60	7.32	16.52	5	11	-6.62	0.61	-11.40
8	RBHP-35	121.47	7.43	17.53	5	10	-0.92	6.75	-5.99
<b>AVT-II</b>									
9	IC141070	124.33	7.91	15.54	5	13	-12.15	-5.34	-16.64
10	IC563940	125.20	11.29	18.56	5	6	4.87	12.99	-0.49
11	LRB-460	125.53	7.35	17.68	5	9	-0.06	7.68	-5.17
12	RBHP-43	122.00	7.72	19.99	5	3	12.97	21.72	7.19
13	PRR-1 (C)	123.93	7.52	17.69	5	8	-	7.75	-5.11
14	PRR-2 (C)	123.80	7.33	16.42	5	12	-7.19	-	-11.93
15	RBL-6 (C)	127.73	7.07	18.65	5	4	5.39	13.55	-
<b>Mean</b>		<b>123.65</b>	<b>7.74</b>	<b>17.49</b>					

**Table 16. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Shillong	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>										
1	IC395028	5.49	<b>55.83</b>	8.52	19.42	14.71	20.79	1	5	1/5
2	LRB-472	8.53	31.92	6.48	22.50	19.26	17.74	7	5	0/5
3	LRB-479	10.39	35.83	11.20	17.99	<b>24.91</b>	20.06	2	5	1/5
4	PRR-2012-1	13.48	20.83	11.20	13.96	13.86	14.67	14	5	0/5
5	PRR-2012-2	8.37	18.75	9.91	8.68	13.83	11.91	15	5	0/5
6	RBHP-38	11.81	29.17	15.46	14.10	<b>22.60</b>	18.63	5	5	1/5
<b>AVT-I</b>										
7	PRR-2011-1	10.74	30.50	13.70	12.29	15.37	16.52	11	5	0/5
8	RBHP-35	12.59	37.08	13.33	10.56	14.09	17.53	10	5	0/5
<b>AVT-II</b>										
9	IC141070	12.27	25.83	9.44	16.32	13.86	15.54	13	5	0/5
10	IC563940	10.62	32.08	10.18	18.33	<b>21.56</b>	18.56	6	5	1/5
11	LRB-460	13.91	32.92	12.59	10.35	18.65	17.68	9	5	0/5
12	RBHP-43	<b>14.19</b>	36.25	<b>15.56</b>	16.88	17.07	19.99	3	5	2/5
13	PRR-1 (C)	<b>11.79</b>	32.92	12.78	14.86	16.12	17.69	8	5	
14	PRR-2 (C)	8.19	33.33	12.04	12.08	16.46	16.42	12	5	
15	RBL-6 (C)	8.96	<b>37.50</b>	<b>14.17</b>	<b>15.28</b>	<b>17.33</b>	18.65	4	5	
	<b>Mean</b>	<b>10.76</b>	<b>32.72</b>	<b>11.77</b>	<b>14.91</b>	<b>17.31</b>	<b>17.49</b>			
	<b>CD(0.05)</b>	<b>2.35</b>	<b>15.09</b>	<b>1.35</b>	<b>8.42</b>	<b>2.07</b>				
	<b>CV(%) Error</b>	<b>13.05</b>	<b>27.56</b>	<b>6.87</b>	<b>33.75</b>	<b>7.16</b>				

**Table 17. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Shillong	Shimla	Mean	Rank
<b>IVT</b>								
1	IC395028	152.00	111.21	96.40	92.20	266.73	143.71	10
2	LRB-472	143.33	138.88	99.73	114.20	269.92	153.21	7
3	LRB-479	153.33	128.76	99.00	107.27	<b>299.87</b>	157.65	4
4	PRR-2012-1	136.33	94.99	102.33	94.87	286.17	142.94	11
5	PRR-2012-2	135.33	88.44	102.13	90.07	286.82	140.56	14
6	RBHP-38	147.67	<b>183.53</b>	105.20	110.33	267.12	162.77	2
<b>AVT-I</b>								
7	PRR-2011-1	145.67	129.31	94.80	98.53	276.57	148.97	8
8	RBHP-35	134.67	146.66	100.73	98.00	293.88	154.79	6
<b>AVT-II</b>								
9	IC141070	147.33	139.99	<b>103.73</b>	74.73	255.82	144.32	9
10	IC563940	150.00	131.75	98.27	112.60	<b>299.37</b>	158.40	3
11	LRB-460	148.00	<b>181.22</b>	<b>109.53</b>	105.40	<b>300.02</b>	168.83	1
12	RBHP-43	158.00	121.64	98.40	84.47	240.78	140.66	13
13	PRR-1 (C)	126.67	106.89	101.07	109.73	259.08	140.69	12
14	PRR-2 (C)	138.00	117.22	100.53	<b>113.87</b>	210.40	136.00	15
15	RBL-6 (C)	<b>158.33</b>	<b>118.85</b>	<b>102.87</b>	111.56	<b>286.55</b>	155.63	5
	<b>Mean</b>	<b>144.98</b>	<b>129.29</b>	<b>100.98</b>	<b>101.19</b>	<b>273.27</b>	<b>149.94</b>	
	<b>CD(0.05)</b>	<b>26.16</b>	<b>41.11</b>	<b>2.59</b>	<b>20.90</b>	<b>7.35</b>		
	<b>CV(%) Error</b>	<b>10.78</b>	<b>19.00</b>	<b>1.53</b>	<b>12.34</b>	<b>1.61</b>		

**Table 18. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2012(Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Shillong	Shimla	Mean	Rank
<b>IVT</b>								
1	IC395028	70.00	99.00	79.33	45.33	91.33	77.00	15
2	LRB-472	66.67	90.33	78.33	47.67	87.00	74.00	8
3	LRB-479	71.67	91.33	79.33	49.00	91.67	76.60	14
4	PRR-2012-1	57.00	85.33	77.67	47.00	78.67	69.13	3
5	PRR-2012-2	<b>53.33</b>	82.33	78.33	55.00	75.33	68.87	2
6	RBHP-38	64.67	89.67	77.00	48.00	67.67	69.40	4
<b>AVT-I</b>								
7	PRR-2011-1	58.00	86.00	77.00	45.00	<b>61.33</b>	65.47	1
8	RBHP-35	66.00	89.33	78.33	51.67	90.00	75.07	11
<b>AVT-II</b>								
9	IC141070	65.67	91.00	79.00	46.33	90.00	74.40	9
10	IC563940	71.33	91.67	82.00	47.67	90.00	76.53	13
11	LRB-460	71.00	89.67	78.33	47.67	87.00	74.73	10
12	RBHP-43	67.33	89.00	78.33	48.00	80.67	72.67	7
13	PRR-1 (C)	64.67	88.33	78.67	<b>46.33</b>	<b>82.33</b>	72.07	6
14	PRR-2 (C)	<b>59.00</b>	85.33	<b>75.00</b>	48.33	84.00	70.33	5
15	RBL-6 (C)	67.67	91.33	78.33	52.33	87.00	75.33	12
	<b>Mean</b>	<b>64.93</b>	<b>89.31</b>	<b>78.33</b>	<b>48.36</b>	<b>82.93</b>	<b>72.77</b>	
	<b>CD(0.05)</b>	<b>2.10</b>	<b>4.00</b>	<b>1.58</b>	<b>4.04</b>	<b>15.71</b>		
	<b>CV(%) Error</b>	<b>1.94</b>	<b>2.68</b>	<b>1.20</b>	<b>5.00</b>	<b>11.32</b>		



**Table 19. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2012 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Shillong	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>										
1	IC395028	119.00	143.33	134.33	92.33	156.67	129.13	15	5	0/5
2	LRB-472	105.33	133.00	<b>131.33</b>	91.00	153.00	122.73	6	5	1/5
3	LRB-479	104.67	132.33	136.00	100.33	146.67	124.00	10	5	0/5
4	PRR-2012-1	96.67	128.33	<b>131.00</b>	100.33	143.67	120.00	2	5	1/5
5	PRR-2012-2	92.00	127.67	134.33	98.00	<b>141.33</b>	118.67	1	5	0/5
6	RBHP-38	102.00	136.67	132.33	94.67	152.33	123.60	7	5	0/5
<b>AVT-I</b>										
7	PRR-2011-1	99.00	137.00	132.33	99.33	145.33	122.60	5	5	0/5
8	RBHP-35	105.33	123.00	<b>130.33</b>	92.67	156.00	121.47	3	5	1/5
<b>AVT-II</b>										
9	IC141070	108.67	133.33	134.33	98.67	146.67	124.33	11	5	0/5
10	IC563940	113.33	133.00	<b>130.67</b>	93.00	156.00	125.20	12	5	1/5
11	LRB-460	108.67	133.67	132.33	100.33	152.67	125.53	13	5	0/5
12	RBHP-43	105.33	115.67	133.00	99.33	156.67	122.00	4	5	2/5
13	PRR-1 (C)	101.67	138.33	<b>133.00</b>	<b>97.00</b>	149.67	123.93	9	5	
14	PRR-2 (C)	<b>96.00</b>	137.00	136.33	104.00	<b>145.67</b>	123.80	8	5	
15	RBL-6 (C)	98.33	<b>132.00</b>	138.67	113.00	156.67	127.73	14	5	
	<b>Mean</b>	<b>103.73</b>	<b>132.29</b>	<b>133.36</b>	<b>98.27</b>	<b>150.60</b>	<b>123.65</b>			
	<b>CD(0.05)</b>	<b>6.48</b>	<b>19.41</b>	<b>1.48</b>	<b>12.45</b>	<b>4.27</b>				
	<b>CV(%) Error</b>	<b>3.73</b>	<b>8.77</b>	<b>0.66</b>	<b>7.57</b>	<b>1.69</b>				

**Table 20. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2012 (Hills)**

S. No.	Genotypes	Bhowali	Palampur	Shillong	Shimla	Mean	Rank
<b>IVT</b>							
1	IC395028	<b>7.78</b>	8.77	8.47	<b>9.68</b>	8.67	2
2	LRB-472	6.61	8.54	7.43	6.77	7.34	9
3	LRB-479	6.94	<b>9.93</b>	7.33	7.38	7.90	4
4	PRR-2012-1	6.47	7.93	7.00	7.07	7.12	13
5	PRR-2012-2	6.54	7.81	7.80	6.69	7.21	12
6	RBHP-38	7.23	8.68	6.97	4.76	6.91	15
<b>AVT-I</b>							
7	PRR-2011-1	7.37	8.59	6.87	6.44	7.32	11
8	RBHP-35	6.97	8.57	7.13	7.04	7.43	7
<b>AVT-II</b>							
9	IC141070	6.91	8.73	8.90	7.08	7.91	3
10	IC563940	<b>13.87</b>	<b>9.87</b>	8.57	<b>12.87</b>	11.29	1
11	LRB-460	7.15	7.95	7.80	6.49	7.35	8
12	RBHP-43	7.60	8.90	7.07	7.31	7.72	5
13	PRR-1 (C)	<b>7.08</b>	8.07	<b>8.57</b>	6.38	7.52	6
14	PRR-2 (C)	6.68	<b>8.66</b>	7.17	<b>6.81</b>	7.33	10
15	RBL-6 (C)	6.44	8.34	7.00	6.49	7.07	14
	<b>Mean</b>	<b>7.44</b>	<b>8.62</b>	<b>7.60</b>	<b>7.28</b>	<b>7.74</b>	
	<b>CD(0.05)</b>	<b>0.69</b>	<b>0.66</b>	<b>2.41</b>	<b>1.83</b>		
	<b>CV(%) Error</b>	<b>5.54</b>	<b>4.57</b>	<b>18.96</b>	<b>15.01</b>		

**Table 21. Performance of Fababean entries in Initial and Advanced Varietal Trials ( IVT & AVT) at Palmapur during Rabi 2011-12 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 100 seed (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check	
				Mean	Location	Rank	Vikrant	
<b>IVT</b>								
1	HB-175	163.50	29.60	26.39	1	4	29.27	
2	HB-176	171.50	25.35	26.25	1	5	28.58	
3	HB-182	166.50	26.75	24.58	1	8	20.40	
4	HB-185	165.50	25.95	26.11	1	6	27.90	
5	HB-188	165.50	27.55	30.69	1	2	50.33	
<b>AVT-I</b>								
6	HB-603	169.50	25.50	26.81	1	3	31.30	
7	HB-645	169.50	27.90	33.33	1	1	63.26	
8	HB-649	165.50	24.95	25.56	1	7	25.18	
9	ISV-10-2	167.50	25.70	23.06	1	9	12.93	
10	Vikrant (C)	172.50	26.55	20.42	1	10	-	
<b>Mean</b>		<b>167.70</b>	<b>26.58</b>	<b>26.32</b>				

**Table 22. Different charcters in Initial and Advanced Varietal Trials (IVT & AVT) on Fababean at Palmpur: Rabi 2011-12 (Hills)**

S. No.	Genotypes	Grain yield (q/ha)	Rank	Location	Frequency	Plant height (cm)	Rank	Days to flowering	Rank	Days to maturity	Rank	Location	Frequency	Pod yield (q/ha)	Rank	100 seed weight (g)	Rank
<b>IVT</b>																	
1	HB-175	26.39	4	1	0/1	75.25	6	65.50	7	<b>163.50</b>	1	1	1/1	95.83	2	29.60	1
2	HB-176	26.25	5	1	0/1	75.00	7	67.00	9	171.50	9	1	0/1	84.72	9	25.35	9
3	HB-182	24.58	8	1	0/1	79.75	2	64.75	4	166.50	5	1	0/1	89.59	6	26.75	4
4	HB-185	26.11	6	1	0/1	81.50	1	65.25	6	165.50	3	1	0/1	95.14	3	25.95	6
5	HB-188	30.69	2	1	0/1	79.25	4	64.75	3	165.50	4	1	0/1	82.64	10	27.55	3
<b>AVT-I</b>																	
6	HB-603	26.81	3	1	0/1	77.00	5	67.75	10	169.50	8	1	0/1	86.81	8	25.50	8
7	HB-645	33.33	1	1	0/1	67.75	10	66.25	8	169.50	7	1	0/1	93.06	4	27.90	2
8	HB-649	25.56	7	1	0/1	74.50	8	64.50	1	165.50	2	1	0/1	98.61	1	24.95	10
9	ISV-10-2	23.06	9	1	0/1	79.50	3	65.00	5	167.50	6	1	0/1	89.58	7	25.70	7
10	Vikrant (C)	20.42	10	1		73.50	9	64.75	2	172.50	10	1		93.06	4	26.55	5
<b>Mean</b>		<b>26.32</b>				<b>76.30</b>		<b>65.55</b>		<b>167.70</b>				<b>90.90</b>		<b>26.58</b>	
<b>CD(0.05)</b>		<b>5.56</b>				<b>2.82</b>		<b>1.56</b>		<b>2.69</b>				<b>6.08</b>		<b>3.00</b>	
<b>CV(%) Error</b>		<b>9.14</b>				<b>2.68</b>		<b>1.71</b>		<b>0.73</b>				<b>3.01</b>		<b>5.07</b>	

## 2.2 PLAINS

The Varietal Trials and Germplasm Evaluation Programmes were constituted in grain amaranth, rice bean, faba bean, kalingada, and Jatropha. Most of the experiments were conducted during the Kharif 2012 season. However, in grain amaranth and faba bean, experiments were conducted during *rabi* 2011-2012 season, at most of the centres except for Bangalore and Mettupalayam where grain amaranth trials were conducted during *kharif*, 2012.

### 2.2.1 GRAIN AMARANTH (*Amaranthus* spp.)

In grain amaranth the Initial Varietal Trial and the Advanced Varietal Trials were conducted during *Rabi* 2011-12 at seven locations and in *Kharif* 2012 at two locations.

The summary of performance of the entries is given in Table 23a. Based on the overall performance in *Rabi* 2011-12 and *Kharif* 2012, following entries were found superior for different traits.

S. No.	Traits	IVT		AVT-I	
		Top Entry	Best check	Top Entry	Best check
1.	Grain yield (q/ha)	BGA-36 (12.01 q/ha)	BGA-2 (10.62 q/ha)	BGA-19 (11.51 q/ha)	BGA-2 (10.28 q/ha)
2.	Plant height (cm)	-	GA-2 (158.56cm)	-	Suvarna (152.63 cm)
3.	Days to flowering	RGA-3 (52.75 days)	GA-2 (59.27 days)	-	BGA-2 (57.85 days)
4.	Days to maturity	RGA-3 (105.44 days)	BGA-2 (108.96 days)	-	BGA-2 (108.58 days)
5.	Inflorescence length (cm)	-	GA-2 (63.61 cm)	-	GA-2 (63.97 cm)
6.	Seed weight (g/10 ml)	-	GA-2 (8.37 g/10ml)	-	BGA-2 (8.00 g/10ml)

#### 2.2.1.1 Initial Varietal Trial (IVT) : Rabi 2011-12

The trial comprising 18 entries including three checks was conducted at nine locations. Results have been received from seven centres. The summary of performance of the entries *vis-a-vis* the checks has been presented in Table 23b.

Significant differences were observed among the entries for grain yield at four centres (Table 24). Grain yield levels were high at S.K. Nagar (16.94 q/ha) followed by at Bhubaneswar (13.25 q/ha) and Mandor (12.14 q/ha) centres. The overall average performance showed that among IVT entries, BGA-36 (13.18 q/ha) was the highest yielder against the best check BGA-2 (9.87 q/ha).

Plant height (Table 25) was the highest at Bhubaneswar (127.07 cm) and the lowest at Ranchi (67.29 cm). On the basis of average performance over the locations, entry RMA-47 (116.24 cm) had the highest plant height, whereas RGA-3 had the lowest (66.47 cm).

Flowering time was earliest at Bhubaneswar (48.31 days) followed by at Mandor (54.35 days) and S.K. Nagar (57.98 days); while it was late at Delhi (90.16 days) and Ranchi (85.04 days) centres (Table 26). On the basis of average over locations KBGA-1 flowered earliest in 62.95 days.

Maturity period (Table 27) was earliest at Bhubaneswar (90.02 days) followed by at S.K. Nagar (116.43 days). The check variety GA-2 (129.93 days) was the earliest maturing line.

Inflorescence length (Table 28) of the entries was the highest at S.K. Nagar (55.65 cm). Based on the average over the locations the check variety GA-2 (63.61 cm) had the longest inflorescence.

Test weight (Table 29) as measured by the weight of 10 ml seed showed maximum mean value at Bhubaneswar (8.46 g) and minimum at Mandor (6.24 g). Based on the average over the locations the check variety BGA-2 had the highest seed weight (7.81 g).

### **2.2.1.2 Advanced Varietal Trial (AVT-I) – Rabi 2011-12**

The summary of performance of both Rabi (2011-12) and Kharif (2012) has been presented in Table 30a. In this trial, seven AVT-I entries along with three checks were tested at nine locations. The results have been received from seven centres. The performance of the entries as compared to the checks has been given in Table 30b. Based on the overall mean performance in respect of

grain yield over seven locations, BGA-19 entry showed grain yield (12.27 q/ha) superiority over the best check variety, GA-2 (9.53 q/ha).

Significant differences were observed among the entries for grain yield at Bhubaneswar, Ranchi and S.K. Nagar (Table 31). Grain yield level was high at S.K. Nagar (22.70 q/ha) and Bhubaneswar (12.73 q/ha) and moderate at Mandor (12.18 q/ha). Based on the average performance over locations the entry BGA-19 was the highest yielder (12.27 q/ha) followed by BGA-27 (12.00 q/ha).

Average plant height of the entries (Table 32) was the highest at S.K. Nagar (150.63 cm) followed by Bhubaneswar (136.58 cm). It was the lowest at Ranchi (70.87 cm) centre. Based on average performance over seven locations the check, GA-2 had the highest plant height (135.64 cm).

Flowering time showed considerable variation among the locations as well as among the entries within a location. The mean flowering time was the earliest (49.50 days) at Bhubaneswar and Mandor (52.17 days) while it was the longest at Delhi (90.80 days) centre (Table 33). The check variety, GA-2 showed consistence for early flowering over the locations and ranked first (63.87 days) based on the overall performance.

The average maturity period of the entries over all the locations was 133.64 days (Table 34). The entry, RGAS-08-10 was earliest in maturity (131.73 days). The average maturity period was the minimum at Bhubaneswar (91.53 days), while it was the longest at Delhi (170.93 days).

The length of inflorescence (Table 35) of the entries was the highest at S.K. Nagar (73.26 cm) followed by at Mandor (57.63 cm). Based on the average over five locations, the check variety, GA-2 had the longest inflorescence (63.97 cm).

Test weight (Table 36) expressed in terms of weight of 10 ml seed recorded at five centres showed that it was the highest at S.K. Nagar (8.40 g) and low to moderate at Mandor (6.63 g). The variation among the entries was relatively low. Based on the average over five locations, the BGA-18 (7.92 g) showed the highest test weight.

### **2.2.1.3 Initial Varietal Trial (IVT) : Kharif - 2012**

In this trial 21 entries, including three checks, were tested at two locations and data were received from both the locations (Bangalore and Mettupalayam). The performance of the entries as compared to the checks has been summarized in Table 23c.

Significant differences were observed among the entries for grain yield at both the centres Bangalore (10.99 q/ha) and Mettupalayam (8.22 q/ha) (Table 24). The check variety Suvarna (12.46 q/ha) was the highest yielding entry based on both locations.

Average plant height of the entries differed significantly at both the locations (Table 25). Based on two locations check GA-2 had the highest plant height (186.88 cm).

Flowering time showed no variation between two locations (Table 26). The entry IC035637 (47.50 days) showed early flowering consistently at both the locations.

Maturity period also showed same trend as that of flowering time. The average maturity period of the entries over two locations was 86.55 days (Table 27). The entry IC035637 was the earliest in maturity (81.17 days). The average maturity period was higher at Bangalore (89.26 days) as compared to that observed at Mettupalayam (83.53 days).

Test weight (Table 29) expressed in terms of weight of 10 ml seed recorded at two centres showed that it was higher at Bangalore (8.84 g) and low at Mettupalayam (7.38 g) centre. Based on both the locations no entry had high test weight as compared to the check variety GA-2 (9.02 g).

### **2.2.1.4 Advanced Varietal Trial (AVT-I) : Kharif - 2012**

The trial comprising 8 entries including three checks was proposed to be conducted at two locations and data have been received from both the centres. The summary of performance of the entries has been presented in Table 30c.



Significant differences were observed among the entries for grain yield at both the centres (Table 31). Seed yield levels were low at Mettupalayam (9.19 q/ha) and high at Bangalore (12.69 q/ha). The check variety, Suvarna (12.06 q/ha) was the highest yielder.

Plant height was the highest at Mettupalayam (203.46 cm) and lowest at Bangalore (126.25 cm) centre (Table 32). On the basis of average over the locations RMA-38 (170.35 cm) had the highest plant height whereas BGA-2 had the lowest (150.60 cm).

Flowering time was the earliest at Bangalore (51.33 days) and delayed at Mettupalayam (55.83 days) centre (Table 33). On the basis of average over the locations the check variety, GA-2 (51.83 days) was earliest in flowering.

Maturity period was the earliest at Mettupalayam (86.71 days) and delayed at Bangalore (89.29 days) centre (Table 34). The check variety, BGA-2 (81.17 days) was the earliest maturing line based on two locations.

Test weight (Table 36) as measured by the weight of 10 ml seed was highest at Bangalore (8.60 g) and Mettupalayam (7.44 g). Based on two locations the check variety Suvarna had the highest seed weight (8.37 g).

## **2.2.2 RICE BEAN (*Vigna umbellata*)**

Initial Varietal Trial was conducted at nine locations in the Kharif season.

### **2.2.2.1 Initial Varietal Trial (Kharif 2012)**

The Initial Varietal Trial comprising 7 entries along with four checks was conducted at nine locations in the plains. Results have been received from all the locations while the result of Delhi, Faizabad and Mettupalayam had not been included in overall mean due to low yield. Summary of performance of these entries has been indicated in Table 37.

The average seed yield ranged from 3.91q/ha at Delhi to 22.93 q/ha at Ambikapur (Table 38). Significant differences were observed among the entries

for seed yield. On the basis of average performance over ten locations the check variety RBL-1 (15.01 q/ha) was the highest yielder.

Plant height showed extreme variation ranging from 38.72 cm at Bangalore to 131.22 cm at Ranchi centre (Table 39). Based on the average performance over the locations the check variety RBL-1 had been the maximum plant height (97.18 cm).

Flowering time was the earliest at Bangalore (46.47days) which was closely followed by at Bhubaneswar (48.80 days), while it was the longest at Delhi (78.33 days) centre (Table 40). Based on the average over locations LRB-537 (54.04 days) had the earliest flowering.

Maturity period showed wide variation among the locations but not among the entries. The earliest maturity was observed at Mettupalayam (82.57 days), while it was late at Hisar (163.87 days) centre (Table 41). On the basis of average over the locations LRB-537 (107.22 days) was the earliest in maturity.

Weight of 100 seeds ranged from 4.86 to 8.03 g at various centres showing lowest weight at Bhubaneswar (4.86 g) centre (Table 42). Based on the average over locations LRB-543 (6.60 g) had the boldest seed.

#### **2.2.2.2 Advanced Varietal Trial-I & II (Kharif 2012)**

The Advanced Varietal Trial (AVT-I & II) comprising 8 entries along with four checks was conducted at nine locations in the plains. Results have been received from all the locations but the data of Delhi, Faizabad and Mettupalayam were not included in overall mean due to low yield. Summary of performance of these entries has been indicated in Table 43.

The average seed yield ranged from 3.87 q/ha at Faizabad to 19.57 q/ha at Ambikapur (Table 44). Significant differences were observed among the entries for seed yield. On the basis of average performance over ten locations the entry LRB-482 (14.19 q/ha) was the highest yielder.

Plant height showed extreme variation ranging from 33.73 cm at Bangalore to 135.26 cm at Ranchi centre (Table 45). Based on the average

performance over the locations the entry LRB-526 had the maximum plant height (98.00 cm).

Flowering time was the earliest at Bhubaneswar (43.36 days) which was closely followed by at Bangalore (48.53 days), while it was the longest at Delhi (79.47 days) and Faizabad (79.53 days) centres (Table 46). Based on the average over locations LRB-526 (57.79 days) had the earliest flowering.

Maturity period showed wide variation among the locations but not among the entries. The earliest maturity was observed at Mettupalayam (82.97 days), while it was late at Hisar (162.03 days) centre (Table 47). On the basis of average over the locations LRB-535(108.42 days) was the earliest in maturity.

Weight of 100 seeds ranged from 4.55 to 7.91 g at various centres showing lowest weight at Delhi (4.55 g) centre (Table 48). Based on the average over locations the check variety (6.36 g) had the boldest seed.

### **2.2.3 FABA BEAN (*Vicia faba*)**

One Initial Varietal Trial and one Advanced Varietal Trial (I & II) were conducted at six locations.

#### **2.2.3.1 Initial Varietal Trial (IVT)**

The Initial Varietal Trial comprising nine entries including one check was conducted at six locations. Results have been received from five centres. The summary of performance of the entries has been presented in Table 49.

Significant differences were observed among the entries for seed yield at all the locations but difference from the best check was significant at three centres (Table 50). The average over the locations showed that seed yield was the highest in the entry, HB-185 (23.99 q/ha) followed by HB-182 (23.72 q/ha).

Plant height was the highest at Hisar (94.71 cm) followed by at Faizabad (77.81 cm) centre (Table 51). Moderate plant height was observed at Ludhiana (55.51 cm) centre. Based on the average over the locations the entry, HB-188 (81.41 cm) showed the highest plant height.

Flowering time ranged from 57.19 days at Faizabad to 78.33 days at Delhi centre (Table 52). Based on the average over the locations HB-182 (64.42 days) was the earliest flowering line.

Maturity period varied among the locations with mean maturity period ranging from 127.30 days at Faizabad to 166.15 days at Ludhiana centre (Table 53). On the basis of overall mean, HB-185 (144.47 days) had the earliest maturity.

Mean seed weight was the highest at Ranchi (31.51 g) and the lowest at Delhi (23.08 g) centre (Table 54). Based on the average over locations the entry, HB-188 (28.52 g) had the boldest seed.

### **2.2.3.2 Advanced Varietal Trial (AVT-I & II)**

In this trial, thirteen AVT-I & II entries along with one check were tested at six locations. The results were received from five centres. The performance of the entries as compared to the checks has been given in Table 55. Based on the overall mean performance in respect of grain yield over five locations, HB-82 (25.59 q/ha) entry showed grain yield superiority over the best check variety, Vikrant (22.93 q/ha).

Significant differences over the check variety were observed among the entries for seed yield at five locations (Table 56). Seed yield level was high at Hisar (40.99 q/ha) and moderate at Faizabad (27.59 q/ha) while, it was lowest at Ludhiana (9.95 q/ha). Based on the average performance over locations the entry HB-82 was the highest yielder (25.59 q/ha) followed closely by HB-645 (25.25 q/ha).

Average plant height of the entries (Table 57) was the highest at Hisar (100.27 cm) followed by at Faizabad (97.29 cm). It was the lowest at Ludhiana (59.78 cm) centre. Based on average performance over five locations NDF-9 had the highest plant height (87.47 cm).

Flowering time showed considerable variation among the locations. The mean flowering time was the shortest (54.45 days) at Ranchi, while it was the longest (77.88 days) at Delhi (Table 58). The entry HB-51 showed consistency

for early flowering over the locations and ranked first (62.78 days) based on the overall performance.

The average maturity period of the entries over all the locations was 151.00 days (Table 59). The entry, HB (M)-1 was the earliest in maturity (146.88 days) followed closely by HB-51 (148.60 days). The average maturity period was the minimum at Faizabad (137.62 days) while, it was the longest at Ludhiana (167.02 days).

Test weight (Table 60) recorded at five centres showed that it was the highest at Ranchi (31.45 g) and lowest at Delhi (23.10 g). The variation among the entries was significant at two locations. Based on the average over five locations, the entry HB-645 (27.89 g) and DFB-9-1 (27.88 g) showed the highest test weight.

## **2.2.4 WINGED BEAN (*Psophocarpus tetragonolobus*)**

### **2.2.4.1 Initial and Advanced Varietal Trials (IVT & AVT-I)**

The IVT and AVT-I comprising of five entries and one check was conducted at four locations. The results have been received from three locations. The summary of performance of the entries has been given in Table 61.

Significant variation was observed for seed yield at three locations. Seed yield (Table 62) was the highest at Ambikapur (16.09 q/ha) followed by Rahuri (9.24 q/ha). The entry Ambika WB-11-3 yielded the highest (12.15 q/ha).

Average flowering time at three centres ranged between 68.20 and 82.00 days (Table 63). Based on three locations data the check variety, AKWB-1 flowered the earliest (73.11 days) whereas, the entry, EC114273-C took the longest time for flowering (79.96 days).

Maturity period of the entries was recorded at three centres (Table 64). The average maturity period was the lowest at Ranchi (148.87 days) and highest at Rahuri (195.58 days). Based on all locations data the check variety, AKWB-1 matured the earliest (160.33 days) whereas, the entry, RWB-2 had the longest maturity period (176.33 days).

The mean 100-seed weight was the highest at Rahuri (52.98 g) and the lowest at Akola (30.74 g) centre (Table 65). On the basis of average over three locations Ambika WB-11-2 had the largest seed (43.31 g).

Pod length (Table 66) of the entries was the lowest at Akola (11.91 cm) and highest at Ranchi (16.14 cm). Based on the average performance over the three locations, entry RWB-2 had the highest (13.74 cm) whereas, the entry EC114273-C had the smallest pod length (11.38 cm).

### **2.2.5 KALINGADA (*Citrullus lanatus*)**

Kalingada is primarily a vegetable crop grown for its unripe fruits which are used as vegetable. However, its seed yields useful oil. In Kalingada, Initial and Advanced Varietal Trials were proposed to be conducted during Kharif 2012 at three locations. Data have been received from all the locations.

#### **2.2.5.1 Initial Varietal Trial (IVT) and Advanced Varietal Trial (AVI-I & II)**

The Initial Varietal Trial (IVT) and Advanced Varietal Trial (AVT-I & II) consisting of 11 entries including check was planned to be conducted at three locations. Results have been received from all the centres. The summary of performance of the entries has been given in Table 68.

Seed yield levels were highest at Jaisalmer (4.00 q/ha) and very low at Mandor (0.35 q/ha) and S.K. Nagar (0.24 q/ha). Based on three locations data the entry, MGPK-1 was the highest yielder (1.97s q/ha). Fruit yield was the highest at Jaisalmer (118.43 q/ha) and lowest at S.K. Nagar (19.43 q/ha) centre. Based on the average SKNK-0903 (65.38 q/ha) was the highest fruit yielder (Table 68).

Number of fruits per plant showed high variation at S.K. Nagar (0.59–2.67) and Mandor (3.33 – 7.77) centres. Highest number of fruits was observed at Jaisalmer (5.93) and less at S.K. Nagar (1.82) centre. Based on average over locations average fruit number was the highest in entry SKNK-1102 (5.22). The average maturity period of the entries over all the locations was 78.18 days. The entry, SKNK-1102 was the earliest in maturity (76.17 days) followed closely by SKNK-1103 (76.67 days). No variation in average maturity period among the locations (Table 69).

Fruit diameter showed considerable variation at two centres. The fruit diameter was recorded highest at S.K. Nagar (31.47cm) and lowest at Mandor (7.87 cm). The entry SKNK-1001 had the largest fruit diameter (21.07 cm). Test weight recorded at three centres showed that it was the highest at Jaisalmer (6.97 g) and low at S.K. Nagar (4.30 g). Based on the average over three locations, the entry SKNK-1102 (6.20 g) showed the highest test weight (Table 70).

### **2.2.6 KANKODA (*Momordica dioica*)**

Kankoda is an important vegetable crop grown throughout the country. It's green immature fruits are preferred for their delicacy. In Kankoda one Initial Varietal Trial was proposed to be conducted.

#### **2.2.6.1 Initial Varietal Trial (IVT)**

The Initial Varietal Trial on seven Kankoda entries was planned to be conducted at four locations. The results have been received from only Ambikapur centre. The performance of the entries has been presented in Table 71.

The entry Ambika-12-1 (28.42 q/ha) was the highest yielder and Days taken to first picking (51.00 days) was earliest.

### **2.2.7 TUMBA (*Citrullus colocynthis*)**

Tumba is an important crop of the desert region having wide medicinal value. Its seed is used for extracting oil which is used for industrial purposes. In tumba an Initial Varietal Trial was formulated.

#### **2.2.7.1 Initial Varietal Trial (IVT)**

In this trial 10 entries including a check was conducted at three locations but result has been received only from Mandor centre. The summary of performance of the entries has been given in Table 72.

The entry MGPT-21 had highest value for seed yield (1.76 q/ha), fruit yield (58.78 q/ha) and single fruit weight (254.25 g). Number of fruits per plant was observed in genotype MGPT-9 (7.25) and the maximum fruit diameter (7.70 cm) and bolded seed (2.73 g) were found in genotype RMT-516 (Table 73).

**Table 23 a. Overall performance of grain amaranth entries in Initial Varietal Trial (IVT): Rabi (2011-12) & Kharif (2012) - plains**

S. No	Genotypes	Mean maturity duration (days)	Overall mean seed weight (g/10ml)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check		
				Mean	Location	Rank	BGA-2	GA-2	Suvarna
1	BGA-36	109.48	8.25	12.01	8	1	13.06	53.08	19.40
2	BGA-38	109.31	8.11	10.61	9	5	-0.09	35.27	5.51
3	BGA-43	109.20	7.87	10.90	9	3	2.65	38.99	8.41
4	IC035606	111.63	7.96	9.21	9	12	-13.31	17.38	-8.44
5	IC035628	113.85	7.92	9.49	9	10	-10.61	21.03	-5.59
6	IC035637	107.49	7.66	9.05	9	13	-14.83	15.31	-10.05
7	KBGA-1	110.31	8.09	11.47	9	2	8.01	46.24	14.07
8	KBGA-2	111.78	7.74	10.30	8	7	-3.05	31.26	2.38
9	MGA-10	108.40	7.79	10.29	9	8	-3.15	31.13	2.28
10	MGA-12	110.97	7.91	10.50	9	6	-1.14	33.86	4.41
11	RGA-3	105.44	7.98	7.40	8	18	-30.35	-5.70	-26.44
12	RMA-46	108.39	7.95	8.97	8	14	-15.50	14.41	-10.76
13	RMA-47	108.19	7.98	8.85	8	15	-16.70	12.79	-12.03
14	RMA-48	116.42	7.74	7.71	7	17	-27.37	-1.66	-23.29
15	RMA-49	115.93	7.60	9.47	7	11	-10.86	20.69	-5.86
16	SKNA-902	152.67	-	1.66	2	21	-84.35	-78.81	-83.47
17	SKNA-903	142.50	-	1.88	2	20	-82.30	-76.04	-81.31
18	SKNA-904	139.67	-	2.02	2	19	-80.99	-74.26	-79.92
19	BGA-2 (C)	108.96	7.86	10.62	9	4	-	35.40	5.61
20	GA-2 (C)	108.97	8.37	7.84	7	16	-26.14	-	-22.00
21	Suvarna (C)	109.70	7.93	10.06	9	9	-5.31	28.20	-
<b>Mean</b>		<b>115.20</b>	<b>7.93</b>	<b>8.59</b>					



**Table 23 b. Performance of grain amaranth entries in Initial Varietal Trial (IVT) during Rabi (2011-12) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Overall mean seed weight (g/10ml)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check		
				Mean	Location	Rank	BGA-2	GA-2	Suvarna
1	BGA-36	129.96	7.90	13.18	7	1	33.50	54.70	72.22
2	BGA-38	128.95	8.00	11.31	7	3	14.54	32.73	47.76
3	BGA-43	134.24	7.96	11.53	7	2	16.76	35.30	50.63
4	IC035606	133.43	7.97	10.05	7	9	1.76	17.91	31.27
5	IC035628	136.38	7.73	10.37	7	7	5.03	21.71	35.49
6	IC035637	133.81	7.64	10.42	7	6	5.56	22.33	36.18
7	KBGA-1	132.62	7.69	10.69	7	5	8.29	25.48	39.69
8	KBGA-2	135.72	7.71	9.09	7	13	-7.92	6.70	18.78
9	MGA-10	134.62	7.75	9.55	7	11	-3.32	12.03	24.72
10	MGA-12	134.95	7.80	11.00	7	4	11.39	29.08	43.70
11	RGA-3	125.56	7.93	7.34	7	17	-25.62	-13.81	-4.05
12	RMA-46	134.11	7.51	9.30	7	12	-5.83	9.12	21.48
13	RMA-47	134.56	7.78	8.09	7	15	-18.03	-5.02	5.74
14	RMA-48	136.01	7.21	7.01	7	18	-28.99	-17.72	-8.40
15	RMA-49	145.87	7.18	10.27	7	8	3.98	20.49	34.14
16	SKNA-902	152.67	-	1.66	7	21	-83.17	-80.50	-78.29
17	SKNA-903	142.50	-	1.88	6	20	-80.97	-77.94	-75.45
18	SKNA-904	139.67	-	2.02	6	19	-79.56	-76.31	-73.63
19	BGA-2 (C)	134.09	7.81	9.87	6	10	-	15.88	29.00
20	GA-2 (C)	129.93	7.72	8.52	7	14	-13.70	-	11.33
21	Suvarna (C)	136.23	7.44	7.65	7	16	-22.48	-10.17	-
<b>Mean</b>		<b>135.52</b>	<b>7.71</b>	<b>8.61</b>					

**Table 23 c. Performance of grain amaranth entries in Initial Varietal Trial (IVT) during Kharif (2012) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Overall mean seed weight (g/10ml)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check		
				Mean	Location	Rank	BGA-2	GA-2	Suvarna
1	BGA-36	89.00	8.60	10.83	2	6	-4.69	51.16	-13.04
2	BGA-38	89.67	8.22	9.91	2	9	-12.80	38.30	-20.44
3	BGA-43	84.17	7.77	10.28	2	7	-9.60	43.37	-17.53
4	IC035606	89.83	7.95	8.37	2	15	-26.39	16.74	-32.84
5	IC035628	91.33	8.12	8.62	2	13	-24.19	20.23	-30.84
6	IC035637	81.17	7.68	7.67	2	16	-32.55	6.98	-38.46
7	KBGA-1	88.00	8.48	12.25	2	2	7.77	70.93	-1.67
8	KBGA-2	87.83	7.77	11.50	2	3	1.17	60.47	-7.69
9	MGA-10	82.17	7.82	11.03	2	5	-3.01	53.84	-11.51
10	MGA-12	87.00	8.02	10.00	2	8	-12.02	39.53	-19.73
11	RGA-3	85.33	8.03	7.45	2	17	-34.46	3.95	-40.20
12	RMA-46	82.67	8.38	8.65	2	12	-23.90	20.70	-30.57
13	RMA-47	81.83	8.17	9.60	2	10	-15.54	33.95	-22.94
14	RMA-48	96.83	8.27	8.42	2	14	-25.95	17.44	-32.44
15	RMA-49	86.00	8.02	8.67	2	11	-23.75	20.93	-30.43
16	SKNA-902	-	-	-	2	-	-	-	-
17	SKNA-903	-	-	-	2	-	-	-	-
18	SKNA-904	-	-	-	2	-	-	-	-
19	BGA-2 (C)	83.83	7.90	11.37	2	4	-	58.60	-8.76
20	GA-2 (C)	88.00	9.02	7.17	2	18	-36.95	-	-42.47
21	Suvarna (C)	83.17	8.42	12.46	2	1	9.60	73.84	-
<b>Mean</b>		<b>86.55</b>	<b>8.15</b>	<b>9.68</b>					

**Table 24. Grain yield (q/ha) in Initial Varietal Trial (IVT) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank	Location	Frequency
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
1	BGA-36	<b>17.11</b>	<b>8.40</b>	3.88	13.19	9.51	12.73	<b>27.45</b>	13.18	10.83	-	10.83	12.01	1	8	3/8
2	BGA-38	<b>17.61</b>	3.96	3.14	14.35	7.56	12.00	20.56	11.31	11.32	8.50	9.91	10.61	5	9	1/9
3	BGA-43	<b>18.83</b>	3.80	3.05	14.58	7.32	13.17	19.95	11.53	11.80	8.75	10.28	10.90	3	9	1/9
4	IC035606	10.92	2.55	3.93	12.50	8.57	11.53	20.32	10.05	9.60	7.13	8.37	9.21	12	9	0/9
5	IC035628	11.00	2.68	3.95	14.12	10.19	10.93	19.72	10.37	10.20	7.03	8.62	9.49	10	9	0/9
6	IC035637	10.33	3.76	3.84	11.84	7.05	13.60	22.55	10.42	9.17	6.17	7.67	9.05	13	9	0/9
7	KBGA-1	12.04	4.29	4.04	15.28	9.24	11.63	18.33	10.69	14.50	10.00	12.25	11.47	2	9	0/9
8	KBGA-2	11.50	3.08	3.13	10.88	-	13.00	12.96	9.09	12.80	10.20	11.50	10.30	7	8	0/8
9	MGA-10	11.86	2.24	4.17	13.43	8.37	13.10	13.66	9.55	12.80	9.25	11.03	10.29	8	9	0/9
10	MGA-12	12.56	2.28	4.11	15.74	<b>10.87</b>	10.70	20.74	11.00	10.50	9.50	10.00	10.50	6	9	1/9
11	RGA-3	11.39	1.53	4.20	5.79	-	8.43	12.73	7.34	8.50	6.40	7.45	7.40	18	8	0/8
12	RMA-46	11.72	1.56	2.99	15.05	-	8.97	15.51	9.30	9.60	7.70	8.65	8.97	14	8	0/8
13	RMA-47	13.17	1.59	3.03	5.32	-	12.17	13.29	8.09	10.80	8.40	9.60	8.85	15	8	0/8
14	RMA-48	-	1.66	3.06	7.87	7.01	-	15.46	7.01	9.53	7.30	8.42	7.71	17	7	0/7
15	RMA-49	-	0.63	3.10	16.90	-	13.17	17.55	10.27	10.27	7.07	8.67	9.47	11	7	0/7
16	SKNA-902	-	1.04	2.29	-	-	-	-	1.66	-	-	-	1.66	21	2	0/2
17	SKNA-903	-	0.94	2.82	-	-	-	-	1.88	-	-	-	1.88	20	2	0/2
18	SKNA-904	-	0.99	3.05	-	-	-	-	2.02	-	-	-	2.02	19	2	0/2
19	BGA-2 (C)	<b>15.00</b>	<b>4.05</b>	<b>4.33</b>	9.03	6.87	<b>11.60</b>	<b>18.24</b>	9.87	12.60	10.13	11.37	10.62	4	9	
20	GA-2 (C)	13.39	0.77	3.89	<b>13.08</b>	-	-	11.48	8.52	9.80	4.53	7.17	7.84	16	7	
21	Suvarna (C)	13.53	3.68	3.43	9.49	<b>8.88</b>	10.17	4.40	7.65	<b>13.25</b>	<b>11.67</b>	12.46	10.06	9	9	
	<b>Mean</b>	<b>13.25</b>	<b>2.64</b>	<b>3.50</b>	<b>12.14</b>	<b>8.45</b>	<b>11.68</b>	<b>16.94</b>	<b>8.61</b>	<b>10.99</b>	<b>8.22</b>	<b>9.68</b>	<b>8.59</b>			
	<b>CD (0.05)</b>	<b>1.57</b>	<b>1.35</b>	<b>0.82</b>	<b>3.72</b>	<b>1.83</b>	<b>2.98</b>	<b>6.08</b>		<b>1.80</b>	<b>0.67</b>					
	<b>CV (%) Error</b>	<b>7.11</b>	<b>32.16</b>	<b>14.60</b>	<b>19.14</b>	<b>12.82</b>	<b>5.24</b>	<b>22.06</b>		<b>10.23</b>	<b>5.06</b>					

**Table 25. Plant height (cm) in Initial Varietal Trial (IVT) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	BGA-36	128.73	96.40	109.00	102.80	101.90	53.20	102.33	99.20	115.00	-	115.00	107.10	17
2	BGA-38	131.80	87.27	107.67	108.20	104.60	51.00	103.67	99.17	120.00	212.50	166.25	132.71	9
3	BGA-43	131.13	92.33	104.00	88.87	88.50	60.87	124.67	98.62	115.00	206.67	160.83	129.73	12
4	IC035606	122.80	76.27	105.50	121.33	90.90	44.67	104.67	95.16	105.00	<b>245.53</b>	175.27	135.21	7
5	IC035628	119.87	93.33	109.33	138.67	95.20	76.13	128.67	108.74	102.00	203.83	152.92	130.83	10
6	IC035637	117.47	84.95	113.33	148.07	69.50	74.07	108.33	102.25	198.00	166.00	182.00	142.12	3
7	KBGA-1	122.67	107.93	115.33	101.33	128.30	58.73	107.00	105.90	120.00	213.53	166.77	136.33	6
8	KBGA-2	117.53	106.67	99.33	99.40	-	65.73	102.33	98.50	138.00	213.53	175.77	137.13	5
9	MGA-10	134.60	104.13	106.50	137.83	90.30	75.93	101.00	107.19	120.00	181.27	150.63	128.91	13
10	MGA-12	117.80	114.60	114.17	118.73	101.50	69.87	98.33	105.00	115.00	210.13	162.57	133.78	8
11	RGA-3	73.53	57.27	97.67	69.87	-	27.80	72.67	66.47	95.00	160.67	127.83	97.15	18
12	RMA-46	127.33	81.47	101.00	143.07	-	71.93	102.33	104.52	102.00	190.62	146.31	125.42	15
13	RMA-47	145.53	98.53	111.67	135.33	-	94.73	111.67	116.24	98.00	175.00	136.50	126.37	14
14	RMA-48	-	98.17	103.33	82.60	118.40	-	117.00	103.90	98.00	215.83	156.92	130.41	11
15	RMA-49	-	100.67	107.33	168.87	-	86.47	115.33	115.73	110.00	154.70	132.35	124.04	16
16	SKNA-902	-	73.50	102.00	-	-	-	-	87.75	-	-	-	87.75	19
17	SKNA-903	-	49.00	108.67	-	-	-	-	78.83	-	-	-	78.83	20
18	SKNA-904	-	42.33	114.00	-	-	-	-	78.17	-	-	-	78.17	21
19	BGA-2 (C)	132.40	103.67	111.33	138.43	101.30	81.53	101.00	109.95	136.00	205.60	170.80	140.38	4
20	GA-2 (C)	<b>155.93</b>	96.00	<b>117.67</b>	137.57	-	-	<b>144.00</b>	130.23	130.00	<b>243.77</b>	186.88	158.56	1
21	Suvarna (C)	153.93	<b>106.73</b>	109.33	<b>154.60</b>	<b>118.50</b>	<b>82.53</b>	108.00	119.09	<b>145.00</b>	203.37	174.18	146.64	2
	<b>Mean</b>	<b>127.07</b>	<b>89.11</b>	<b>108.01</b>	<b>121.98</b>	<b>100.74</b>	<b>67.20</b>	<b>108.50</b>	<b>101.46</b>	<b>120.11</b>	<b>200.15</b>	<b>157.77</b>	<b>124.17</b>	
	<b>CD (0.05)</b>	<b>8.03</b>	<b>16.08</b>	<b>4.41</b>	<b>18.65</b>	-	<b>15.76</b>	<b>12.33</b>		<b>10.78</b>	<b>34.12</b>			
	<b>CV (%) Error</b>	<b>3.79</b>	<b>11.32</b>	<b>2.55</b>	<b>9.56</b>	-	<b>11.54</b>	<b>7.06</b>		<b>5.61</b>	<b>10.65</b>			

**Table 26. Days to flowering in Initial Varietal Trial (IVT) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	BGA-36	<b>45.33</b>	<b>84.00</b>	<b>55.67</b>	<b>50.00</b>	79.00	<b>80.33</b>	53.00	63.90	46.00	-	46.00	54.95	2
2	BGA-38	49.00	<b>84.67</b>	<b>56.33</b>	<b>46.33</b>	78.70	<b>78.00</b>	51.00	63.43	48.00	58.00	53.00	58.22	7
3	BGA-43	49.33	<b>85.33</b>	<b>60.67</b>	<b>48.33</b>	85.30	<b>76.00</b>	53.00	65.42	45.00	53.33	49.17	57.30	5
4	IC035606	45.33	<b>72.33</b>	<b>53.67</b>	<b>46.00</b>	84.30	<b>69.00</b>	<b>46.00</b>	59.52	47.00	57.33	52.17	55.84	4
5	IC035628	49.33	87.00	<b>57.00</b>	63.00	88.70	95.00	61.00	71.58	46.00	58.00	52.00	61.79	14
6	IC035637	48.67	99.67	<b>60.33</b>	62.67	81.00	94.00	62.67	72.71	44.00	56.67	50.33	61.52	12
7	KBGA-1	47.67	<b>77.67</b>	<b>61.00</b>	<b>44.67</b>	87.00	<b>75.00</b>	<b>47.67</b>	62.95	<b>43.00</b>	52.00	47.50	55.23	3
8	KBGA-2	48.33	87.00	71.00	<b>46.67</b>	-	<b>77.33</b>	64.67	65.83	44.00	54.33	49.17	57.50	6
9	MGA-10	<b>48.00</b>	94.00	<b>60.00</b>	64.67	82.70	94.00	66.00	72.77	48.00	52.67	50.33	61.55	13
10	MGA-12	<b>45.33</b>	97.33	<b>56.33</b>	54.00	86.30	86.00	59.67	69.28	44.00	52.67	48.33	58.81	9
11	RGA-3	<b>36.67</b>	<b>76.00</b>	75.00	<b>44.67</b>	-	<b>69.67</b>	<b>46.00</b>	58.00	<b>43.00</b>	52.00	47.50	52.75	1
12	RMA-46	50.33	<b>85.67</b>	<b>60.67</b>	53.33	-	89.67	60.33	66.67	48.00	52.00	50.00	58.33	8
13	RMA-47	51.00	96.33	65.67	58.33	-	89.67	63.33	70.72	45.00	53.00	49.00	59.86	11
14	RMA-48	-	96.67	66.00	53.00	86.30	-	<b>53.00</b>	70.99	58.00	56.67	57.33	64.16	17
15	RMA-49	-	112.00	<b>62.00</b>	63.33	-	104.00	65.00	81.27	<b>42.00</b>	57.33	49.67	65.47	18
16	SKNA-902	-	<b>81.00</b>	55.33	-	-	-	-	68.17	-	-	-	68.17	19
17	SKNA-903	-	105.00	55.67	-	-	-	-	80.33	-	-	-	80.33	21
18	SKNA-904	-	<b>81.00</b>	58.33	-	-	-	-	69.67	-	-	-	69.67	20
19	BGA-2 (C)	<b>51.00</b>	<b>94.67</b>	<b>64.33</b>	62.00	88.00	<b>88.67</b>	64.33	73.29	52.00	<b>52.00</b>	52.00	62.64	15
20	GA-2 (C)	53.33	100.67	67.00	<b>56.33</b>	-	-	<b>60.33</b>	67.53	<b>45.00</b>	57.00	51.00	59.27	10
21	Suvarna (C)	54.33	95.33	68.33	61.00	<b>87.00</b>	94.33	66.67	75.29	48.33	<b>52.00</b>	50.17	62.73	16
	<b>Mean</b>	<b>48.31</b>	<b>90.16</b>	<b>61.44</b>	<b>54.35</b>	<b>84.53</b>	<b>85.04</b>	<b>57.98</b>	<b>69.02</b>	<b>46.46</b>	<b>54.53</b>	<b>50.26</b>	<b>61.24</b>	
	<b>CD (0.05)</b>	<b>2.65</b>	<b>8.25</b>	<b>1.94</b>	<b>4.00</b>	-	<b>4.76</b>	<b>2.45</b>		<b>1.61</b>	<b>0.75</b>			
	<b>CV (%) Error</b>	<b>3.29</b>	<b>5.67</b>	<b>1.97</b>	<b>4.60</b>	-	<b>3.10</b>	<b>2.65</b>		<b>2.17</b>	<b>0.86</b>			

**Table 27. Days to maturity in Initial Varietal Trial (IVT) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank	Location	Frequency
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
1	BGA-36	87.67	168.00	120.67	138.33	120.70	<b>160.00</b>	114.33	129.96	89.00	-	89.00	109.48	10	8	1/8
2	BGA-38	91.33	164.67	122.00	136.00	120.00	<b>153.67</b>	115.00	128.95	91.67	87.67	89.67	109.31	9	9	1/9
3	BGA-43	92.00	171.33	128.33	142.33	134.00	<b>153.33</b>	118.33	134.24	88.00	80.33	84.17	109.20	8	9	1/9
4	IC035606	87.67	170.00	137.67	135.00	134.70	<b>155.00</b>	114.00	133.43	89.33	90.33	89.83	111.63	14	9	1/9
5	IC035628	91.00	169.33	138.33	143.00	131.30	162.33	119.33	136.38	89.00	93.67	91.33	113.85	16	9	0/9
6	IC035637	91.00	172.67	135.33	137.67	125.70	<b>159.33</b>	115.00	133.81	87.00	75.33	81.17	107.49	2	9	1/9
7	KBGA-1	88.00	168.67	135.67	137.00	126.00	<b>160.00</b>	113.00	132.62	86.00	90.00	88.00	110.31	12	9	1/9
8	KBGA-2	90.00	167.33	134.67	137.67	-	167.67	117.00	135.72	<b>84.33</b>	91.33	87.83	111.78	15	8	1/8
9	MGA-10	90.67	170.00	137.33	143.67	129.70	<b>155.00</b>	116.00	134.62	91.00	73.33	82.17	108.40	5	9	1/9
10	MGA-12	<b>87.33</b>	173.00	136.67	138.67	131.30	<b>157.00</b>	120.67	134.95	87.00	87.00	87.00	110.97	13	9	2/9
11	RGA-3	<b>77.33</b>	167.33	127.33	<b>132.67</b>	-	<b>137.33</b>	<b>111.33</b>	125.56	86.00	84.67	85.33	105.44	1	8	4/8
12	RMA-46	91.33	169.00	131.00	139.33	-	<b>153.33</b>	120.67	134.11	91.00	74.33	82.67	108.39	4	8	1/8
13	RMA-47	92.67	170.67	126.67	143.00	-	<b>155.67</b>	118.67	134.56	88.00	75.67	81.83	108.19	3	8	1/8
14	RMA-48	-	171.33	127.33	135.67	134.70	-	<b>111.00</b>	136.01	103.00	90.67	96.83	116.42	18	7	1/7
15	RMA-49	-	173.00	127.00	140.67	-	171.67	117.00	145.87	<b>85.00</b>	87.00	86.00	115.93	17	7	1/7
16	SKNA-902	-	173.00	132.33	-	-	-	-	152.67	-	-	-	152.67	21	2	0/2
17	SKNA-903	-	<b>156.00</b>	129.00	-	-	-	-	142.50	-	-	-	142.50	20	2	1/2
18	SKNA-904	-	<b>152.33</b>	127.00	-	-	-	-	139.67	-	-	-	139.67	19	2	1/2
19	BGA-2 (C)	<b>91.67</b>	172.00	<b>119.33</b>	144.00	131.30	<b>165.33</b>	<b>115.00</b>	134.09	92.00	75.67	83.83	108.96	6	9	
20	GA-2 (C)	93.67	<b>170.33</b>	126.33	<b>139.00</b>	-	-	120.33	129.93	<b>88.00</b>	88.00	88.00	108.97	7	7	
21	Suvarna (C)	97.00	175.33	123.33	143.67	<b>128.30</b>	167.00	119.00	136.23	91.33	<b>75.00</b>	83.17	109.70	11	9	
	<b>Mean</b>	<b>90.02</b>	<b>168.83</b>	<b>129.68</b>	<b>139.30</b>	<b>128.98</b>	<b>158.35</b>	<b>116.43</b>	<b>135.52</b>	<b>89.26</b>	<b>83.53</b>	<b>86.55</b>	<b>115.20</b>			
	<b>CD (0.05)</b>	<b>4.06</b>	<b>5.47</b>	<b>2.43</b>	<b>4.92</b>	-	<b>4.04</b>	<b>3.03</b>		<b>2.70</b>	<b>1.04</b>					
	<b>CV (%) Error</b>	<b>2.71</b>	<b>2.02</b>	<b>1.17</b>	<b>2.21</b>	-	<b>1.93</b>	<b>1.63</b>		<b>1.89</b>	<b>0.78</b>					

**Table 28. Inflorescence length (cm) in Initial Varietal Trial (IVT) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	S.K. Nagar	Mean	Rank
1	BGA-36	49.40	48.16	46.67	51.20	41.80	65.00	50.37	10
2	BGA-38	47.60	51.02	49.83	55.33	40.10	67.33	51.87	8
3	BGA-43	46.20	53.89	48.50	48.27	41.60	61.33	49.96	12
4	IC035606	47.87	53.89	50.67	63.67	40.00	57.00	52.18	7
5	IC035628	38.60	58.37	47.33	50.73	38.70	58.00	48.62	16
6	IC035637	38.07	52.32	51.67	63.93	37.80	56.67	50.08	11
7	KBGA-1	48.87	64.00	56.33	60.07	36.30	55.00	53.43	4
8	KBGA-2	54.53	58.97	56.67	56.93	-	44.33	54.29	3
9	MGA-10	41.33	60.24	45.33	37.57	42.30	47.67	45.74	17
10	MGA-12	49.13	62.78	46.33	66.40	38.90	57.00	53.42	5
11	RGA-3	51.40	42.29	55.00	55.80	-	44.00	49.70	13
12	RMA-46	38.87	44.13	53.67	39.87	-	43.67	44.04	20
13	RMA-47	43.93	53.97	49.00	49.67	-	49.00	49.11	14
14	RMA-48	-	53.97	60.33	51.40	37.30	59.00	52.40	6
15	RMA-49	-	52.39	50.00	66.33	-	57.67	56.60	2
16	SKNA-902	-	41.95	48.33	-	-	-	45.14	19
17	SKNA-903	-	31.60	49.67	-	-	-	40.64	21
18	SKNA-904	-	30.70	60.00	-	-	-	45.35	18
19	BGA-2 (C)	50.93	<b>58.74</b>	58.00	36.93	39.10	50.33	49.01	15
20	GA-2 (C)	<b>58.20</b>	53.81	57.33	<b>69.70</b>	-	<b>79.00</b>	63.61	1
21	Suvarna (C)	42.60	57.28	<b>60.00</b>	45.43	<b>49.20</b>	49.67	50.70	9
	<b>Mean</b>	<b>46.72</b>	<b>51.64</b>	<b>52.41</b>	<b>53.85</b>	<b>40.26</b>	<b>55.65</b>	<b>50.30</b>	
	<b>CD (0.05)</b>	<b>4.78</b>	<b>9.49</b>	<b>4.32</b>	<b>16.82</b>	-	<b>6.13</b>		
	<b>CV (%) Error</b>	<b>6.14</b>	<b>11.38</b>	<b>5.15</b>	<b>19.52</b>	-	<b>6.83</b>		

**Table 29. Seed weight (g/10ml) in Initial Varietal Trial (IVT) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12						Kharif 2012			Overall mean	Rank
		Bhubaneswar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	BGA-36	8.29	6.15	7.35	<b>9.23</b>	<b>8.49</b>	7.90	8.60	-	8.60	8.25	2
2	BGA-38	8.34	6.20	7.94	9.03	<b>8.51</b>	8.00	9.20	7.23	8.22	8.11	3
3	BGA-43	8.78	6.75	7.15	9.02	8.12	7.96	8.10	7.43	7.77	7.87	12
4	IC035606	8.70	5.86	7.35	<b>9.06</b>	<b>8.87</b>	7.97	8.50	7.40	7.95	7.96	7
5	IC035628	8.24	6.35	7.80	7.65	<b>8.60</b>	7.73	9.10	7.13	8.12	7.92	10
6	IC035637	7.91	6.52	7.16	8.09	<b>8.51</b>	7.64	8.50	6.87	7.68	7.66	17
7	KBGA-1	8.32	6.61	6.85	8.03	<b>8.62</b>	7.69	9.50	7.47	8.48	8.09	4
8	KBGA-2	8.93	5.92	-	7.39	<b>8.61</b>	7.71	8.20	7.33	7.77	7.74	16
9	MGA-10	8.40	6.07	8.10	7.95	8.25	7.75	8.50	7.13	7.82	7.79	14
10	MGA-12	7.97	6.38	7.85	8.34	<b>8.46</b>	7.80	8.60	7.43	8.02	7.91	11
11	RGA-3	8.67	6.17	-	8.43	<b>8.45</b>	7.93	8.60	7.47	8.03	7.98	5
12	RMA-46	8.41	5.83	-	7.64	8.17	7.51	9.20	7.57	8.38	7.95	8
13	RMA-47	8.65	6.03	-	8.15	8.30	7.78	8.90	7.43	8.17	7.98	6
14	RMA-48	-	6.75	6.25	-	<b>8.64</b>	7.21	9.20	7.33	8.27	7.74	15
15	RMA-49	-	6.63	-	6.64	8.27	7.18	8.60	7.43	8.02	7.60	18
16	SKNA-902	-	-	-	-	-	-	-	-	-	-	-
17	SKNA-903	-	-	-	-	-	-	-	-	-	-	-
18	SKNA-904	-	-	-	-	-	-	-	-	-	-	-
19	BGA-2 (C)	8.57	5.95	<b>8.35</b>	<b>8.01</b>	8.18	<b>7.81</b>	8.20	7.60	7.90	7.86	13
20	GA-2 (C)	8.53	<b>6.41</b>	-	-	<b>8.22</b>	7.72	<b>10.50</b>	7.53	9.02	8.37	1
21	Suvarna (C)	<b>8.64</b>	5.79	7.75	6.81	<b>8.22</b>	7.44	9.10	<b>7.73</b>	8.42	7.93	9
	<b>Mean</b>	<b>8.46</b>	<b>6.24</b>	<b>7.49</b>	<b>8.09</b>	<b>8.42</b>	<b>7.71</b>	<b>8.84</b>	<b>7.38</b>	<b>8.15</b>	<b>7.93</b>	
	<b>CD (0.05)</b>	<b>0.38</b>	<b>0.38</b>	-	<b>1.04</b>	<b>0.12</b>		<b>0.66</b>	<b>0.10</b>			
	<b>CV (%) Error</b>	<b>2.71</b>	<b>3.77</b>	-	<b>2.20</b>	<b>0.89</b>		<b>4.69</b>	<b>0.83</b>			



**Table 30 a. Overall performance of grain amaranth entries in Advanced Varietal Trial (AVT-I): Rabi (2011-12) & Kharif (2012) - plains**

S. No.	Genotypes	Mean maturity duration (days)	Overall mean seed weight (g/10ml)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check		
				Mean	Location	Rank	BGA-2	GA-2	Suvarna
1	BGA-18	110.33	7.84	11.18	9	2	8.81	16.00	8.88
2	BGA-19	110.62	7.99	11.51	9	1	11.99	19.39	12.06
3	BGA-27	109.62	7.73	11.09	9	4	7.86	14.98	7.93
4	RGAS-08-10	131.73	7.56	7.95	5	10	-22.68	-17.57	-22.63
5	RGAS-08-17	129.56	7.87	11.12	6	3	8.15	15.29	8.22
6	RMA-37	115.28	7.75	10.56	8	5	2.75	9.53	2.81
7	RMA-38	114.31	7.90	9.94	8	8	-3.33	3.06	-3.27
8	BGA-2 (C)	108.58	8.00	10.28	9	6	-	6.60	0.06
9	GA-2 (C)	109.70	7.95	9.64	7	9	-6.20	-	-6.14
10	Suvarna (C)	111.13	7.92	10.27	9	7	-0.06	6.54	-
<b>Mean</b>		<b>115.09</b>	<b>7.85</b>	<b>10.35</b>					

**Table 30 b. Performance of grain amaranth entries in Advanced Varietal Trial (AVT-I) during Rabi (2011-12) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Overall mean seed weight (g/10ml)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check			
				Mean	Location	Rank	BGA-2	GA-2	Suvarna	
1	BGA-18	133.33	7.92	11.39	7	3	23.76	19.52	34.28	
2	BGA-19	132.91	7.91	12.27	7	1	33.30	28.73	44.63	
3	BGA-27	131.90	7.92	12.00	7	2	30.32	25.85	41.40	
4	RGAS-08-10	131.73	7.56	7.95	7	10	-13.67	-16.63	-6.33	
5	RGAS-08-17	129.56	7.87	11.12	7	4	20.75	16.61	31.02	
6	RMA-37	137.56	7.65	10.17	7	5	10.48	6.69	19.87	
7	RMA-38	134.94	7.78	8.37	7	9	-9.06	-12.18	-1.33	
8	BGA-2 (C)	136.00	7.66	9.21	7	7	-	-3.43	8.50	
9	GA-2 (C)	131.73	7.69	9.53	7	6	3.55	-	12.35	
10	Suvarna (C)	136.76	7.47	8.48	7	8	-7.83	-10.99	-	
<b>Mean</b>		<b>133.64</b>	<b>7.74</b>	<b>10.05</b>						

**Table 30 c. Performance of grain amaranth entries in Advanced Varietal Trial (AVT-I) during Kharif (2012) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Overall mean seed weight (g/10ml)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check		
				Mean	Location	Rank	BGA-2	GA-2	Suvarna
1	BGA-18	87.33	7.77	10.98	2	4	-3.30	12.56	-8.98
2	BGA-19	88.33	8.08	10.75	2	6	-5.29	10.26	-10.85
3	BGA-27	87.33	7.54	10.18	2	7	-10.35	4.36	-15.62
4	RMA-37	93.00	7.84	10.95	2	5	-3.52	12.31	-9.19
5	RMA-38	93.67	8.02	11.50	2	2	1.32	17.95	-4.63
6	BGA-2 (C)	81.17	8.33	11.35	2	3	-	16.41	-5.87
7	GA-2 (C)	87.67	8.22	9.75	2	8	-14.10	-	-19.14
8	Suvarna (C)	85.50	8.37	12.06	2	1	6.24	23.68	-
<b>Mean</b>		<b>88.00</b>	<b>8.02</b>	<b>10.94</b>					

**Table 31. Grain yield (q/ha) in Advanced Varietal Trial (AVT-I) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank	Location	Frequency
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
1	BGA-18	<b>16.36</b>	3.40	5.02	12.65	9.33	<b>11.86</b>	21.11	11.39	13.20	8.75	10.98	11.18	2	9	2/9
2	BGA-19	<b>16.44</b>	3.29	3.92	13.58	10.35	<b>12.98</b>	25.32	12.27	12.90	8.60	10.75	11.51	1	9	2/9
3	BGA-27	<b>16.60</b>	3.74	3.71	11.88	7.72	<b>12.96</b>	27.36	12.00	11.80	8.55	10.18	11.09	4	9	2/9
4	RGAS-08-10	11.95	1.26	3.60	12.65	10.27	-	-	7.95	-	-	-	7.95	10	5	0/5
5	RGAS-08-17	11.87	0.41	4.36	9.88	9.66	-	<b>30.51</b>	11.12	-	-	-	11.12	3	6	1/6
6	RMA-37	11.83	0.76	3.76	13.27	-	3.34	<b>28.06</b>	10.17	12.40	9.50	10.95	10.56	5	8	1/8
7	RMA-38	10.96	0.60	4.36	14.04	-	3.13	17.13	8.37	13.25	9.75	11.50	9.94	8	8	0/8
8	BGA-2 (C)	<b>11.91</b>	<b>4.05</b>	4.07	9.72	6.54	7.12	<b>21.02</b>	9.21	13.10	9.60	11.35	10.28	6	9	
9	GA-2 (C)	9.25	0.77	<b>5.32</b>	<b>12.50</b>	-	-	19.81	9.53	10.90	8.60	9.75	9.64	9	7	
10	Suvarna (C)	10.16	3.68	4.19	11.65	<b>8.45</b>	<b>7.28</b>	13.98	8.48	<b>13.95</b>	<b>10.17</b>	12.06	10.27	7	9	
	<b>Mean</b>	<b>12.73</b>	<b>2.20</b>	<b>4.23</b>	<b>12.18</b>	<b>8.90</b>	<b>8.38</b>	<b>22.70</b>	<b>10.05</b>	<b>12.69</b>	<b>9.19</b>	<b>10.94</b>	<b>10.35</b>			
	<b>CD (0.05)</b>	<b>1.40</b>	<b>1.37</b>	<b>1.14</b>	<b>5.98</b>	<b>2.36</b>	<b>2.16</b>	<b>6.55</b>		<b>2.19</b>	<b>0.54</b>					
	<b>CV (%) Error</b>	<b>6.41</b>	<b>39.61</b>	<b>15.73</b>	<b>12.73</b>	<b>21.09</b>	<b>14.46</b>	<b>16.61</b>		<b>9.85</b>	<b>3.36</b>					

**Table 32. Plant height (cm) in Advanced Varietal Trial (AVT-I) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	BGA-18	120.87	84.60	99.33	104.73	96.30	53.67	149.33	101.26	125.00	209.77	167.38	134.32	7
2	BGA-19	126.47	87.87	98.00	123.00	102.50	62.73	117.00	102.51	126.00	220.97	173.48	138.00	5
3	BGA-27	115.67	94.87	108.33	116.47	95.20	70.47	125.00	103.71	123.00	211.17	167.08	135.40	6
4	RGAS-08-10	149.40	67.60	103.00	123.77	96.90	-	-	108.13	-	-	-	108.13	9
5	RGAS-08-17	134.43	60.00	103.00	110.63	74.50	-	135.33	102.98	-	-	-	102.98	10
6	RMA-37	143.07	78.73	112.67	133.33	-	<b>92.13</b>	185.67	124.27	127.00	184.63	155.82	140.04	4
7	RMA-38	136.80	69.70	106.67	135.97	-	70.67	169.33	114.86	127.00	213.70	170.35	142.60	3
8	BGA-2 (C)	139.53	103.67	101.67	130.13	103.90	72.93	146.33	114.02	115.00	186.20	150.60	132.31	8
9	GA-2 (C)	147.60	96.00	<b>114.50</b>	136.77	-	-	<b>183.33</b>	135.64	132.00	<b>207.23</b>	169.62	152.63	1
10	Suvarna (C)	<b>152.00</b>	<b>106.73</b>	111.67	<b>150.13</b>	<b>118.40</b>	<b>73.47</b>	144.33	122.39	<b>135.00</b>	194.00	164.50	143.45	2
	<b>Mean</b>	<b>136.58</b>	<b>84.98</b>	<b>105.88</b>	<b>126.49</b>	<b>98.24</b>	<b>70.87</b>	<b>150.63</b>	<b>112.98</b>	<b>126.25</b>	<b>203.46</b>	<b>164.85</b>	<b>132.99</b>	
	<b>CD (0.05)</b>	<b>8.40</b>	<b>14.39</b>	<b>7.74</b>	<b>19.28</b>	-	<b>16.36</b>	<b>6.12</b>		<b>8.80</b>	<b>23.82</b>			
	<b>CV (%) Error</b>	<b>3.59</b>	<b>10.49</b>	<b>4.26</b>	<b>14.64</b>	-	<b>12.97</b>	<b>2.39</b>		<b>3.97</b>	<b>6.67</b>			

**Table 33. Days to flowering in Advanced Varietal Trial (AVT-I) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	BGA-18	50.00	78.00	64.00	48.33	85.00	<b>77.00</b>	<b>48.00</b>	64.33	48.00	58.00	53.00	58.67	2
2	BGA-19	51.67	94.00	65.00	48.67	86.70	<b>80.33</b>	<b>49.00</b>	67.91	50.00	56.00	53.00	60.45	4
3	BGA-27	49.33	87.00	65.00	46.67	86.30	<b>80.67</b>	<b>48.33</b>	66.19	48.00	59.00	53.50	59.84	3
4	RGAS-08-10	46.33	86.00	78.00	46.00	89.70	-	-	69.21	-	-	-	69.21	10
5	RGAS-08-17	47.33	87.00	76.67	50.67	83.70	-	50.00	65.89	-	-	-	65.89	9
6	RMA-37	48.33	94.00	65.33	54.67	-	<b>88.33</b>	57.00	67.94	57.33	55.67	56.50	62.22	6
7	RMA-38	49.67	91.33	68.67	52.33	-	<b>88.33</b>	57.00	67.89	58.67	56.67	57.67	62.78	7
8	BGA-2 (C)	<b>49.33</b>	<b>94.67</b>	<b>60.67</b>	59.67	89.00	97.67	64.67	73.67	49.00	52.33	50.67	62.17	5
9	GA-2 (C)	50.67	100.67	63.33	<b>52.33</b>	-	-	<b>52.33</b>	63.87	<b>47.00</b>	56.67	51.83	57.85	1
10	Suvarna (C)	52.33	95.33	70.33	62.33	<b>87.70</b>	<b>96.33</b>	66.67	75.86	52.67	<b>52.33</b>	52.50	64.18	8
	<b>Mean</b>	<b>49.50</b>	<b>90.80</b>	<b>67.70</b>	<b>52.17</b>	<b>86.87</b>	<b>86.95</b>	<b>54.78</b>	<b>68.28</b>	<b>51.33</b>	<b>55.83</b>	<b>53.58</b>	<b>62.33</b>	
	<b>CD (0.05)</b>	<b>2.90</b>	<b>8.42</b>	<b>2.64</b>	<b>12.38</b>	-	<b>4.40</b>	<b>2.84</b>		<b>5.03</b>	<b>0.78</b>			
	<b>CV (%) Error</b>	<b>3.42</b>	<b>5.52</b>	<b>2.28</b>	<b>9.73</b>	-	<b>2.84</b>	<b>3.05</b>		<b>5.58</b>	<b>0.79</b>			

**Table 34. Days to maturity in Advanced Varietal Trial (AVT-I) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12								Kharif 2012			Overall mean	Rank	Location	Frequency
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
1	BGA-18	92.67	169.00	136.67	136.33	127.00	<b>153.00</b>	118.67	133.33	86.00	88.67	87.33	110.33	4	9	1/9
2	BGA-19	94.00	168.67	133.67	134.33	129.70	<b>151.33</b>	118.67	132.91	88.00	88.67	88.33	110.62	5	9	1/9
3	BGA-27	91.67	167.33	131.00	135.33	131.30	<b>151.00</b>	<b>115.67</b>	131.90	86.00	88.67	87.33	109.62	2	9	2/9
4	RGAS-08-10	89.00	171.00	133.00	136.67	129.00	-	-	131.73	-	-	-	131.73	10	5	0/5
5	RGAS-08-17	89.33	172.00	131.00	136.33	128.00	-	120.67	129.56	-	-	-	129.56	9	6	0/6
6	RMA-37	90.67	175.67	138.33	139.67	-	159.67	121.33	137.56	95.33	90.67	93.00	115.28	8	8	0/8
7	RMA-38	91.67	168.00	135.67	137.67	-	<b>156.67</b>	120.00	134.94	96.67	90.67	93.67	114.31	7	8	1/8
8	BGA-2 (C)	<b>91.00</b>	172.00	<b>135.33</b>	144.33	130.00	<b>160.67</b>	<b>118.67</b>	136.00	87.00	<b>75.33</b>	81.17	108.58	1	9	
9	GA-2 (C)	<b>91.00</b>	<b>170.33</b>	<b>135.33</b>	<b>140.67</b>	-	-	121.33	131.73	<b>84.67</b>	90.67	87.67	109.70	3	7	
10	Suvarna (C)	94.33	175.33	136.67	143.67	<b>126.30</b>	162.00	119.00	136.76	90.67	80.33	85.50	111.13	6	9	
	<b>Mean</b>	<b>91.53</b>	<b>170.93</b>	<b>134.67</b>	<b>138.50</b>	<b>128.76</b>	<b>156.33</b>	<b>119.33</b>	<b>133.64</b>	<b>89.29</b>	<b>86.71</b>	<b>88.00</b>	<b>115.09</b>			
	<b>CD (0.05)</b>	<b>3.43</b>	<b>8.08</b>	<b>4.93</b>	<b>20.18</b>	-	<b>3.71</b>	<b>2.26</b>		<b>5.31</b>	<b>5.77</b>					
	<b>CV (%) Error</b>	<b>2.18</b>	<b>2.83</b>	<b>2.13</b>	<b>2.47</b>	-	<b>1.33</b>	<b>1.11</b>		<b>3.39</b>	<b>3.79</b>					

**Table 35. Inflorescence length (cm) in Advanced Varietal Trial (AVT-I) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12							Mean	Rank
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	S.K. Nagar			
1	BGA-18	54.60	49.62	59.00	54.93	40.60	72.00	55.13	6	
2	BGA-19	58.53	46.52	51.17	63.67	46.30	68.33	55.75	5	
3	BGA-27	47.93	49.35	47.83	61.93	40.10	69.67	52.80	7	
4	RGAS-08-10	58.07	49.05	54.33	56.30	46.10	-	52.77	8	
5	RGAS-08-17	56.47	40.28	55.17	63.53	45.00	79.00	56.57	4	
6	RMA-37	45.60	49.81	<b>56.67</b>	59.63	-	87.00	59.74	3	
7	RMA-38	53.27	40.04	51.00	68.43	-	89.67	60.48	2	
8	BGA-2 (C)	46.40	<b>58.74</b>	49.33	37.20	39.10	58.33	48.18	9	
9	GA-2 (C)	<b>59.67</b>	53.81	<b>52.33</b>	<b>69.70</b>	-	<b>84.33</b>	63.97	1	
10	Suvarna (C)	42.87	57.28	47.83	40.93	<b>47.90</b>	51.00	47.97	10	
	<b>Mean</b>	<b>52.34</b>	<b>49.45</b>	<b>52.47</b>	<b>57.63</b>	<b>43.59</b>	<b>73.26</b>	<b>55.34</b>		
	<b>CD (0.05)</b>	<b>5.24</b>	<b>8.42</b>	<b>3.74</b>	<b>13.02</b>	-	<b>5.51</b>			
	<b>CV (%) Error</b>	<b>5.84</b>	<b>10.17</b>	<b>4.16</b>	<b>17.54</b>	-	<b>4.39</b>			



**Table 36. Seed weight (g/10ml) in Advanced Varietal Trial (AVT-I) on grain amaranth : (Plains)**

S. No.	Genotypes	Rabi 2011-12						Kharif 2012			Overall mean	Rank
		Bhubaneswar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	BGA-18	8.37	6.80	7.90	<b>8.12</b>	8.42	7.92	8.10	7.43	7.77	7.84	7
2	BGA-19	8.33	6.48	7.35	<b>8.97</b>	8.41	7.91	8.95	7.20	8.08	7.99	2
3	BGA-27	8.30	6.54	7.46	<b>9.01</b>	8.29	7.92	8.15	6.93	7.54	7.73	9
4	RGAS-08-10	8.14	6.39	8.15	-	-	7.56	-	-	-	7.56	10
5	RGAS-08-17	8.05	7.07	7.95	-	8.41	7.87	-	-	-	7.87	-
6	RMA-37	7.93	6.57	-	7.62	8.48	7.65	8.45	7.23	7.84	7.75	-
7	RMA-38	8.31	6.65	-	<b>7.90</b>	8.27	7.78	8.50	7.53	8.02	7.90	-
8	BGA-2 (C)	<b>8.12</b>	6.35	<b>8.35</b>	<b>6.99</b>	<b>8.50</b>	7.66	<b>9.10</b>	7.57	8.33	8.00	1
9	GA-2 (C)	7.91	<b>6.74</b>	-	-	8.42	7.69	8.70	7.73	8.22	7.95	3
10	Suvarna (C)	7.90	6.71	7.75	6.63	8.37	7.47	8.88	<b>7.87</b>	8.37	7.92	4
	<b>Mean</b>	<b>8.14</b>	<b>6.63</b>	<b>7.84</b>	<b>7.89</b>	<b>8.40</b>	<b>7.74</b>	<b>8.60</b>	<b>7.44</b>	<b>8.02</b>	<b>7.85</b>	
	<b>CD (0.05)</b>	<b>0.27</b>	<b>4.41</b>	-	<b>0.73</b>	<b>0.13</b>		<b>0.50</b>	<b>0.11</b>			
	<b>CV (%) Error</b>	<b>1.90</b>	<b>3.95</b>	-	<b>5.17</b>	<b>0.87</b>		<b>3.34</b>	<b>0.87</b>			

**Table 37. Performance of rice bean entries in Initial Varietal Trial (IVT) during Kharif 2012 (Plains)**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check			
				Mean	Location	Rank	RBL-1	RBL-6	RBL-35	RBL-50
1	BRB-104	110.67	6.26	13.27	6	6	-11.59	5.19	17.56	1.15
2	BRB-105	113.11	6.46	12.96	6	8	-13.61	2.79	14.88	-1.16
3	BRB-106	112.52	6.31	13.33	6	4	-11.15	5.72	18.15	1.66
4	BRB-113	112.48	6.16	12.92	6	9	-13.88	2.47	14.52	-1.47
5	LRB-537	107.22	6.44	13.31	6	5	-11.27	5.57	17.98	1.51
6	LRB-543	107.70	6.60	13.34	6	3	-11.13	5.74	18.17	1.67
7	RBHP-38	117.67	6.38	20.29	2	1	35.23	60.90	79.82	54.72
8	RBL-1 (C)	110.96	6.29	15.01	6	2	-	18.98	32.97	14.41
9	RBL-6 (C)	110.25	6.33	12.61	5	10	-15.95	-	11.76	-3.84
10	RBL-35 (C)	110.50	6.37	11.29	5	11	-24.79	-10.52	-	-13.96
11	RBL-50 (C)	112.00	6.03	13.12	5	7	-12.59	4.00	16.22	-
<b>Mean</b>		<b>111.37</b>	<b>6.33</b>	<b>13.77</b>						

**Table 38. Seed yield (q/ha) in Initial Varietal Trial (IVT) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhbaneswar	Delhi *	Faizabad *	Hisar	Ludhiana	Mettupalayam*	Ranchi	Mean	Rank	Location	Frequency
1	BRB-104	21.74	11.43	<b>8.19</b>	5.11	4.59	10.39	17.01	6.30	10.83	13.27	6	6	1/6
2	BRB-105	21.18	11.50	<b>8.42</b>	3.77	4.26	10.28	15.49	6.70	10.91	12.96	8	6	1/6
3	BRB-106	23.26	13.40	<b>8.19</b>	3.01	4.86	10.22	12.85	5.10	12.08	13.33	4	6	1/6
4	BRB-113	19.79	12.60	<b>7.68</b>	3.86	3.48	8.76	19.10	5.77	9.61	12.92	9	6	1/6
5	LRB-537	19.93	12.60	<b>7.08</b>	4.08	4.33	<b>13.51</b>	19.24	5.83	7.53	13.31	5	6	2/6
6	LRB-543	19.17	11.80	4.44	6.21	4.29	<b>13.27</b>	22.92	5.92	8.42	13.34	3	6	1/6
7	RBHP-38	28.47	-	-	-	-	-	-	-	12.11	20.29	1	2	0/2
8	RBL-1 (C)	<b>29.86</b>	12.10	6.25	2.43	3.50	9.38	20.00	5.73	12.45	15.01	2	6	
9	RBL-6 (C)	-	12.80	6.43	<b>4.51</b>	4.17	9.73	21.88	<b>7.40</b>	12.22	12.61	10	5	
10	RBL-35 (C)	-	12.90	<b>6.57</b>	1.84	3.83	9.66	14.24	4.87	13.06	11.29	11	5	
11	RBL-50 (C)	-	<b>13.10</b>	5.55	4.25	<b>4.48</b>	<b>10.01</b>	<b>22.92</b>	3.63	<b>14.00</b>	13.12	7	5	
	<b>Mean</b>	<b>22.93</b>	<b>12.42</b>	<b>6.88</b>	<b>3.91</b>	<b>4.18</b>	<b>10.52</b>	<b>18.56</b>	<b>5.73</b>	<b>11.20</b>	<b>13.77</b>			
	<b>CD (0.05)</b>	<b>3.94</b>	<b>1.25</b>	<b>0.39</b>	<b>1.96</b>	<b>0.83</b>	<b>1.33</b>	<b>3.53</b>	<b>0.67</b>	<b>0.90</b>				
	<b>CV (%) Error</b>	<b>9.78</b>	<b>5.85</b>	<b>3.34</b>	<b>29.21</b>	<b>11.61</b>	<b>7.36</b>	<b>11.10</b>	<b>6.88</b>	<b>4.72</b>				

\* Data of Delhi, Faizabad and Mettupalayam centre were not included in overallmean

**Table 39. Plant height (cm) in Initial Varietal Trial (IVT) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Bangalore	Bhbaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
1	BRB-104	46.67	<b>75.20</b>	78.31	101.67	112.17	108.30	<b>75.33</b>	127.93	90.70	8
2	BRB-105	42.87	67.87	96.57	98.33	115.67	127.50	60.67	133.60	92.88	5
3	BRB-106	38.27	72.47	83.80	96.00	116.00	120.30	69.33	134.27	91.30	7
4	BRB-113	42.00	64.33	105.93	115.67	111.83	117.50	<b>73.33</b>	142.73	96.67	4
5	LRB-537	34.40	66.07	81.00	110.00	138.30	114.63	58.00	121.87	90.53	9
6	LRB-543	37.47	70.93	76.33	111.67	135.70	100.00	56.00	118.47	88.32	11
7	RBHP-38	-	-	-	-	-	-	-	141.67	141.67	1
8	RBL-1 (C)	<b>42.73</b>	56.80	94.60	118.67	<b>141.50</b>	<b>125.50</b>	<b>72.00</b>	125.63	97.18	2
9	RBL-6 (C)	32.00	57.67	84.89	117.67	135.60	105.00	52.00	125.80	88.83	10
10	RBL-35 (C)	34.87	<b>66.13</b>	74.67	<b>123.67</b>	137.50	110.60	70.00	123.27	92.59	6
11	RBL-50 (C)	35.93	64.33	85.13	120.00	135.77	125.00	60.00	<b>148.20</b>	96.80	3
	<b>Mean</b>	<b>38.72</b>	<b>66.18</b>	<b>86.12</b>	<b>111.33</b>	<b>128.00</b>	<b>115.43</b>	<b>64.67</b>	<b>131.22</b>	<b>97.04</b>	
	<b>CD (0.05)</b>	<b>5.92</b>	<b>8.34</b>	<b>32.88</b>	<b>5.34</b>	<b>8.97</b>	<b>5.58</b>	<b>0.97</b>	<b>15.50</b>		
	<b>CV (%) Error</b>	<b>8.92</b>	<b>7.35</b>	<b>22.26</b>	<b>2.80</b>	<b>4.09</b>	<b>2.82</b>	<b>0.88</b>	<b>6.92</b>		

**Table 40. Days to 50% flowering in Initial Varietal Trial (IVT) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Bangalore	Bhbaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
1	BRB-104	48.00	47.33	77.67	67.67	63.33	59.67	51.00	61.67	59.54	4
2	BRB-105	51.00	49.33	86.00	71.00	66.00	61.67	55.00	71.00	63.88	9
3	BRB-106	47.33	49.33	88.00	70.00	64.67	63.33	53.33	75.67	63.96	11
4	BRB-113	49.67	51.67	87.00	72.33	62.00	64.00	53.00	72.00	63.96	10
5	LRB-537	45.00	46.33	64.67	69.33	<b>55.00</b>	<b>55.33</b>	49.67	47.00	54.04	1
6	LRB-543	42.00	47.33	69.33	67.67	<b>53.67</b>	<b>56.00</b>	49.00	<b>50.33</b>	54.42	2
7	RBHP-38	-	-	-	-	-	-	-	59.67	59.67	6
8	RBL-1 (C)	48.00	48.33	76.00	72.67	63.00	61.67	50.33	56.67	59.58	5
9	RBL-6 (C)	44.00	49.67	81.67	<b>71.67</b>	<b>62.33</b>	62.33	50.33	62.33	60.54	7
10	RBL-35 (C)	<b>43.00</b>	<b>47.33</b>	80.00	73.00	65.33	<b>58.67</b>	<b>49.00</b>	<b>56.00</b>	59.04	3
11	RBL-50 (C)	46.67	51.33	<b>73.00</b>	75.33	69.67	60.67	49.33	60.00	60.75	8
	<b>Mean</b>	<b>46.47</b>	<b>48.80</b>	<b>78.33</b>	<b>71.07</b>	<b>62.50</b>	<b>60.33</b>	<b>51.00</b>	<b>61.12</b>	<b>59.94</b>	
	<b>CD (0.05)</b>	<b>2.42</b>	<b>2.29</b>	<b>9.14</b>	<b>4.08</b>	<b>4.08</b>	<b>0.93</b>	<b>0.80</b>	<b>3.78</b>		
	<b>CV (%) Error</b>	<b>3.04</b>	<b>2.74</b>	<b>6.80</b>	<b>3.35</b>	<b>3.81</b>	<b>0.90</b>	<b>0.92</b>	<b>3.62</b>		

**Table 41. Days to maturity in Initial Varietal Trial (IVT) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhbaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank	Location	Frequency
1	BRB-104	117.00	85.00	95.00	117.00	117.67	164.67	99.33	82.67	117.67	110.67	5	9	0/9
2	BRB-105	119.00	88.67	96.00	119.00	121.00	167.33	100.67	83.00	123.33	113.11	10	9	0/9
3	BRB-106	118.00	84.33	97.33	126.00	114.67	164.00	106.33	82.33	119.67	112.52	9	9	0/9
4	BRB-113	119.00	86.67	96.00	118.00	115.67	162.67	108.00	82.67	123.67	112.48	8	9	0/9
5	LRB-537	113.00	82.00	93.33	109.00	117.67	162.00	<b>95.67</b>	82.00	110.33	107.22	1	9	1/9
6	LRB-543	110.00	79.00	95.67	111.33	116.00	162.67	<b>97.33</b>	82.33	115.00	107.70	2	9	1/9
7	RBHP-38	119.00	-	-	-	-	-	-	-	116.33	117.67	11	2	0/2
8	RBL-1 (C)	115.00	85.00	96.00	121.67	118.67	<b>159.00</b>	99.67	<b>82.33</b>	121.33	110.96	6	9	
9	RBL-6 (C)	-	81.00	97.33	122.00	<b>117.67</b>	164.33	102.67	83.00	<b>114.00</b>	110.25	3	8	
10	RBL-35 (C)	-	<b>80.67</b>	<b>95.67</b>	123.00	123.67	163.67	<b>99.33</b>	82.67	115.33	110.50	4	8	
11	RBL-50 (C)	-	84.00	97.33	<b>119.00</b>	120.00	168.33	105.67	82.67	119.00	112.00	7	8	
	<b>Mean</b>	<b>116.25</b>	<b>83.63</b>	<b>95.97</b>	<b>118.60</b>	<b>118.27</b>	<b>163.87</b>	<b>101.47</b>	<b>82.57</b>	<b>117.79</b>	<b>111.37</b>			
	<b>CD (0.05)</b>	-	<b>2.29</b>	<b>3.60</b>	<b>18.75</b>	<b>2.75</b>	<b>4.82</b>	<b>1.05</b>	<b>0.87</b>	<b>4.67</b>				
	<b>CV (%) Error</b>	-	<b>1.60</b>	<b>2.18</b>	<b>9.22</b>	<b>1.36</b>	<b>1.72</b>	<b>0.60</b>	<b>0.61</b>	<b>2.32</b>				

**Table 42. 100 seed weight (g) in Initial Varietal Trial (IVT) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Bangalore	Bhbaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
1	BRB-104	8.27	4.64	4.67	6.00	6.90	5.80	7.30	6.48	6.26	9
2	BRB-105	7.83	4.73	5.92	6.07	6.83	6.20	7.33	6.79	6.46	2
3	BRB-106	8.17	4.54	5.27	6.30	6.80	5.93	7.43	6.07	6.31	7
4	BRB-113	7.50	4.50	4.83	6.43	6.77	5.60	7.47	6.21	6.16	10
5	LRB-537	8.50	4.67	4.24	5.73	<b>7.30</b>	6.50	7.43	<b>7.15</b>	6.44	3
6	LRB-543	8.37	5.61	5.13	5.77	<b>7.37</b>	6.00	7.37	<b>7.23</b>	6.60	1
7	RBHP-38	-	-	-	-	-	-	-	6.38	6.38	4
8	RBL-1 (C)	7.83	5.08	4.33	<b>6.13</b>	<b>6.80</b>	5.90	7.63	6.58	6.29	8
9	RBL-6 (C)	<b>8.33</b>	4.95	5.00	5.33	6.67	<b>6.20</b>	<b>7.80</b>	6.37	6.33	6
10	RBL-35 (C)	8.17	<b>5.46</b>	<b>5.37</b>	5.53	6.73	5.70	7.40	<b>6.60</b>	6.37	5
11	RBL-50 (C)	7.33	4.46	4.14	5.67	6.77	6.00	7.53	6.30	6.03	11
	<b>Mean</b>	<b>8.03</b>	<b>4.86</b>	<b>4.89</b>	<b>5.90</b>	<b>6.89</b>	<b>5.98</b>	<b>7.47</b>	<b>6.56</b>	<b>6.33</b>	
	<b>CD (0.05)</b>	<b>1.34</b>	<b>0.32</b>	<b>1.38</b>	<b>0.42</b>	<b>0.22</b>	<b>0.30</b>	<b>0.22</b>	<b>0.45</b>		
	<b>CV (%) Error</b>	<b>9.72</b>	<b>3.87</b>	<b>16.50</b>	<b>4.13</b>	<b>1.90</b>	<b>2.96</b>	<b>1.74</b>	<b>4.03</b>		

**Table 43. Performance of rice bean entries in Advanced Varietal Trial (AVT-I & II) during Kharif 2012 (Plains)**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check			
				Mean	Location	Rank	RBL-1	RBL-6	RBL-35	RBL-50
<b>AVT-I</b>										
1	BRB-102	112.22	6.20	11.60	6	6	-4.02	-2.65	3.20	-2.06
2	BRBM-111	112.81	6.35	11.59	6	7	-4.05	-2.68	3.16	-2.09
3	LRB-526	108.48	6.15	11.51	6	8	-4.73	-3.37	2.43	-2.79
4	LRB-535	108.42	6.36	10.00	5	12	-17.27	-16.08	-11.04	-15.58
5	RRB-13	113.89	6.18	11.31	6	9	-6.40	-5.06	0.64	-4.49
<b>AVT-II</b>										
6	LRB-482	111.59	6.23	14.19	6	1	17.47	19.16	26.31	19.87
7	LRB-524	109.48	6.16	11.75	6	5	-2.80	-1.40	4.51	-0.81
8	RRB-11	112.22	6.35	11.10	6	11	-8.15	-6.83	-1.24	-6.28
9	RBL-1 (C)	112.35	6.36	12.08	6	2	-	1.44	7.52	2.04
10	RBL-6 (C)	112.00	6.35	11.91	6	3	-1.41	-	6.00	0.60
11	RBL-35 (C)	111.85	6.32	11.24	6	10	-7.00	-5.66	-	-5.09
12	RBL-50 (C)	113.35	6.03	11.84	6	4	-2.00	-0.60	5.37	-
<b>Mean</b>		<b>111.56</b>	<b>6.25</b>	<b>11.68</b>						



**Table 44. Seed yield (q/ha) in Advanced Varietal Trial (AVT-I & II) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Delhi*	Faizabad *	Hisar	Ludhiana	Mettupalayam *	Ranchi	Mean	Rank	Location	Frequency
<b>AVT-I</b>														
1	BRB-102	17.59	13.20	<b>9.07</b>	2.89	3.51	7.72	12.27	5.80	9.74	11.60	6	6	1/6
2	BRBM-111	19.91	12.25	<b>10.08</b>	2.95	3.26	7.41	10.65	4.50	9.27	11.59	7	6	1/6
3	LRB-526	18.06	14.10	5.92	5.33	4.28	<b>10.31</b>	12.50	4.90	8.19	11.51	8	6	1/6
4	LRB-535	-	11.60	5.74	3.53	3.26	<b>10.08</b>	14.07	5.30	8.50	10.00	12	5	1/5
5	RRB-13	19.91	13.20	7.22	7.75	4.29	6.33	12.27	6.70	8.94	11.31	9	6	0/6
<b>AVT-II</b>														
6	LRB-482	24.54	15.20	7.17	3.60	3.50	<b>10.31</b>	<b>18.29</b>	4.60	9.67	14.19	1	6	2/6
7	LRB-524	17.13	13.80	6.94	6.04	3.67	<b>10.00</b>	15.05	5.13	7.56	11.75	5	6	1/6
8	RRB-11	19.44	12.90	6.36	3.35	3.25	6.79	9.58	6.50	11.52	11.10	11	6	0/6
9	RBL-1 (C)	<b>22.22</b>	<b>13.80</b>	5.59	2.59	4.17	7.35	12.99	6.27	10.56	12.08	2	6	
10	RBL-6 (C)	18.06	13.10	<b>7.99</b>	3.69	4.28	7.22	<b>15.09</b>	<b>7.50</b>	10.02	11.91	3	6	
11	RBL-35 (C)	18.70	13.20	6.35	<b>4.31</b>	<b>4.47</b>	7.36	10.65	5.27	11.17	11.24	10	6	
12	RBL-50 (C)	19.68	13.40	6.24	4.25	<b>4.47</b>	<b>7.48</b>	12.96	4.00	<b>11.30</b>	11.84	4	6	
	<b>Mean</b>	<b>19.57</b>	<b>13.31</b>	<b>7.06</b>	<b>4.19</b>	<b>3.87</b>	<b>8.20</b>	<b>13.03</b>	<b>5.54</b>	<b>9.70</b>	<b>11.68</b>			
	<b>CD (0.05)</b>	<b>3.33</b>	<b>2.02</b>	<b>0.74</b>	<b>1.91</b>	<b>1.10</b>	<b>0.77</b>	<b>2.41</b>	<b>0.51</b>	<b>7.93</b>				
	<b>CV (%) Error</b>	<b>9.97</b>	<b>8.99</b>	<b>6.17</b>	<b>38.16</b>	<b>16.90</b>	<b>5.38</b>	<b>10.95</b>	<b>5.34</b>	<b>48.35</b>				

\* Data of Delhi, Faizabad and Mettupalayam were not included in overall mean

**Table 45. Plant height (cm) in Advanced Varietal Trial (AVT-I & II) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
<b>AVT-I</b>											
1	BRB-102	34.33	67.57	83.13	120.50	94.50	115.00	62.67	141.47	89.90	11
2	BRBM-111	40.80	60.20	104.31	123.37	106.03	102.50	63.00	138.67	92.36	6
3	LRB-526	30.80	64.73	91.33	129.33	130.63	127.50	<b>77.33</b>	132.33	98.00	1
4	LRB-535	38.47	60.60	53.30	126.00	<b>136.77</b>	112.70	52.67	125.73	88.28	12
5	RRB-13	27.67	59.80	84.07	126.43	116.17	117.30	59.33	130.87	90.20	10
<b>AVT-II</b>											
6	LRB-482	35.20	66.53	77.62	120.53	<b>159.03</b>	125.20	50.00	145.67	97.47	2
7	LRB-524	32.40	66.47	81.47	120.00	129.57	135.50	63.33	132.67	95.18	4
8	RRB-11	30.93	63.47	98.67	121.10	113.83	105.50	65.00	136.33	91.85	9
9	RBL-1 (C)	<b>35.33</b>	68.22	<b>94.60</b>	124.97	110.78	102.50	<b>70.00</b>	140.33	93.34	5
10	RBL-6 (C)	33.20	74.13	84.89	126.60	120.03	120.00	49.00	130.00	92.23	7
11	RBL-35 (C)	32.27	78.47	74.67	120.67	<b>126.35</b>	<b>130.00</b>	66.67	<b>141.00</b>	96.26	3
12	RBL-50 (C)	33.40	<b>78.87</b>	85.13	<b>126.87</b>	117.18	112.50	54.33	128.00	92.04	8
	<b>Mean</b>	<b>33.73</b>	<b>67.42</b>	<b>84.43</b>	<b>123.86</b>	<b>121.74</b>	<b>117.18</b>	<b>61.11</b>	<b>135.26</b>	<b>93.09</b>	
	<b>CD (0.05)</b>	<b>8.01</b>	<b>10.34</b>	<b>35.31</b>	<b>3.06</b>	<b>7.32</b>	<b>6.55</b>	<b>2.43</b>	<b>7.93</b>		
	<b>CV (%) Error</b>	<b>14.05</b>	<b>9.08</b>	<b>34.99</b>	<b>1.46</b>	<b>3.39</b>	<b>3.31</b>	<b>2.32</b>	<b>3.47</b>		

**Table 46. Days to 50% flowering in Advanced Varietal Trial (AVT-I & II) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
<b>AVT-I</b>											
1	BRB-102	50.67	<b>39.00</b>	80.33	83.00	66.67	63.67	50.67	<b>62.00</b>	62.00	8
2	BRBM-111	49.00	<b>41.33</b>	89.00	81.67	68.33	64.67	54.67	67.67	64.54	12
3	LRB-526	46.67	<b>41.00</b>	77.33	80.00	<b>56.33</b>	59.00	49.67	<b>52.33</b>	57.79	1
4	LRB-535	48.00	42.00	78.33	80.67	57.00	<b>58.33</b>	50.00	<b>52.67</b>	58.38	3
5	RRB-13	50.00	<b>40.67</b>	86.00	78.00	68.67	62.00	53.67	73.33	64.04	11
<b>AVT-II</b>											
6	LRB-482	51.00	<b>41.67</b>	74.67	82.00	62.67	60.33	51.67	<b>56.33</b>	60.04	4
7	LRB-524	48.00	44.67	73.33	77.00	<b>56.00</b>	60.00	48.00	<b>58.67</b>	58.21	2
8	RRB-11	51.00	<b>40.67</b>	84.00	77.33	69.00	63.00	51.33	74.67	63.88	10
9	RBL-1 (C)	47.33	46.83	76.00	<b>77.33</b>	65.33	61.00	49.00	70.00	61.60	5
10	RBL-6 (C)	<b>44.33</b>	48.00	81.67	<b>77.33</b>	<b>61.50</b>	<b>60.33</b>	<b>48.33</b>	72.67	61.77	6
11	RBL-35 (C)	48.33	<b>44.67</b>	80.00	81.00	64.67	<b>60.33</b>	49.00	<b>67.00</b>	61.88	7
12	RBL-50 (C)	48.00	49.83	<b>73.00</b>	79.00	70.33	60.67	49.00	70.67	62.56	9
	<b>Mean</b>	<b>48.53</b>	<b>43.36</b>	<b>79.47</b>	<b>79.53</b>	<b>63.88</b>	<b>61.11</b>	<b>50.42</b>	<b>64.83</b>	<b>61.39</b>	
	<b>CD (0.05)</b>	<b>2.77</b>	<b>2.90</b>	<b>12.83</b>	<b>3.34</b>	<b>4.76</b>	<b>1.75</b>	<b>0.68</b>	<b>3.80</b>		
	<b>CV (%) Error</b>	<b>3.38</b>	<b>3.95</b>	<b>13.51</b>	<b>2.49</b>	<b>4.39</b>	<b>1.70</b>	<b>0.79</b>	<b>3.47</b>		

**Table 47. Days to maturity in Advanced Varietal Trial (AVT-I & II) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank	Location	Frequency
<b>AVT-I</b>														
1	BRB-102	115.00	88.67	<b>88.00</b>	119.00	130.33	168.00	102.00	84.00	115.00	112.22	7	9	1/9
2	BRBM-111	118.00	87.00	90.33	127.67	126.33	160.00	103.00	83.67	119.33	112.81	10	9	0/9
3	LRB-526	110.00	84.67	89.00	116.67	126.67	<b>156.33</b>	99.00	82.33	111.67	108.48	2	9	1/9
4	LRB-535	-	86.00	97.00	122.00	125.33	<b>154.67</b>	101.33	84.00	<b>97.00</b>	108.42	1	8	2/8
5	RRB-13	119.00	88.00	96.67	124.00	128.00	167.33	99.67	82.33	120.00	113.89	12	9	0/9
<b>AVT-II</b>														
6	LRB-482	117.00	89.00	93.00	118.67	130.33	158.33	98.33	84.00	115.67	111.59	4	9	0/9
7	LRB-524	111.00	86.00	90.33	117.00	129.67	158.33	97.33	83.00	112.67	109.48	3	9	0/9
8	RRB-11	120.00	89.00	88.67	114.67	126.33	167.33	100.67	83.00	120.33	112.22	7	9	0/9
9	RBL-1 (C)	117.00	85.33	96.33	121.67	130.67	<b>161.17</b>	98.33	<b>82.00</b>	118.67	112.35	9	9	
10	RBL-6 (C)	<b>112.00</b>	<b>82.33</b>	95.50	122.00	<b>127.33</b>	163.17	100.00	<b>82.00</b>	123.67	112.00	6	9	
11	RBL-35 (C)	113.00	86.33	<b>92.33</b>	123.00	130.67	164.67	<b>96.33</b>	83.00	<b>117.33</b>	111.85	5	9	
12	RBL-50 (C)	116.00	86.00	97.50	<b>119.00</b>	133.33	165.00	99.33	82.33	121.67	113.35	11	9	
	<b>Mean</b>	<b>115.27</b>	<b>86.53</b>	<b>92.89</b>	<b>120.44</b>	<b>128.75</b>	<b>162.03</b>	<b>99.61</b>	<b>82.97</b>	<b>116.08</b>	<b>111.56</b>			
	<b>CD (0.05)</b>		<b>2.77</b>	<b>3.34</b>	<b>13.13</b>	<b>2.70</b>	<b>4.77</b>	<b>1.06</b>	<b>0.57</b>	<b>7.93</b>				
	<b>CV (%) Error</b>		<b>1.89</b>	<b>2.13</b>	<b>9.12</b>	<b>1.24</b>	<b>1.72</b>	<b>0.63</b>	<b>0.40</b>	<b>4.04</b>				

**Table 48. 100 seed weight (g) in Advanced Varietal Trial (AVT-I & II) on rice bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
<b>AVT-I</b>											
1	BRB-102	7.67	5.86	4.90	5.03	6.83	5.60	7.30	6.41	6.20	8
2	BRBM-111	7.50	6.34	4.68	5.48	6.70	<b>6.57</b>	7.30	6.21	6.35	5
3	LRB-526	7.50	5.16	4.32	5.20	<b>7.27</b>	6.50	7.30	5.93	6.15	11
4	LRB-535	8.50	5.81	4.75	5.17	<b>7.33</b>	5.97	7.40	5.98	6.36	2
5	RRB-13	8.67	5.69	3.80	5.42	6.70	5.77	7.17	6.25	6.18	9
<b>AVT-II</b>											
6	LRB-482	7.33	6.29	4.22	5.45	<b>7.17</b>	6.20	7.03	6.18	6.23	7
7	LRB-524	8.00	6.12	3.97	4.88	<b>7.40</b>	6.00	7.20	5.67	6.16	10
8	RRB-11	8.63	6.50	5.10	5.05	6.73	5.87	7.10	5.80	6.35	4
9	RBL-1 (C)	<b>8.67</b>	6.19	4.33	5.42	<b>6.80</b>	5.97	7.47	6.09	6.36	1
10	RBL-6 (C)	7.50	5.96	5.00	5.00	6.70	<b>6.37</b>	<b>7.83</b>	<b>6.44</b>	6.35	3
11	RBL-35 (C)	7.33	<b>6.23</b>	<b>5.37</b>	5.25	6.67	6.03	7.53	6.17	6.32	6
12	RBL-50 (C)	7.67	4.74	4.14	<b>5.48</b>	6.75	5.87	7.47	6.11	6.03	12
	<b>Mean</b>	<b>7.91</b>	<b>5.91</b>	<b>4.55</b>	<b>5.24</b>	<b>6.92</b>	<b>6.06</b>	<b>7.34</b>	<b>6.10</b>	<b>6.25</b>	
	<b>CD (0.05)</b>	<b>0.87</b>	<b>0.34</b>	<b>1.23</b>	<b>1.10</b>	<b>0.17</b>	<b>0.19</b>	<b>0.15</b>	<b>7.93</b>		
	<b>CV (%) Error</b>	<b>6.51</b>	<b>3.40</b>	<b>22.63</b>	<b>12.48</b>	<b>1.40</b>	<b>1.82</b>	<b>1.21</b>	<b>76.86</b>		

**Table 49. Performance of Fababean entries in Initial Varietal Trial (IVT) during Rabi (2011-12) - Plain**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check
				Mean	Location	Rank	Vikrant
1	HB-175	147.08	26.93	22.32	5	7	-1.78
2	HB-176	146.65	26.11	22.70	5	6	-0.13
3	HB-182	146.93	27.58	23.72	5	2	4.39
4	HB-185	144.47	26.01	23.99	5	1	5.56
5	HB-188	149.45	28.52	23.14	5	3	1.82
6	NDF-11	150.78	26.09	22.80	5	4	0.32
7	RFB-3	148.25	26.85	21.13	5	8	-7.03
8	RFB-4	147.78	25.66	20.79	5	9	-8.50
9	Vikrant (C)	148.07	28.17	22.73	5	5	-
<b>Mean</b>		<b>147.72</b>	<b>26.88</b>	<b>22.59</b>			

**Table 50. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
1	HB-175	10.60	26.83	40.42	12.35	21.41	22.32	7	5	0/5
2	HB-176	12.21	30.58	<b>39.17</b>	13.58	17.93	22.70	6	5	1/5
3	HB-182	16.92	26.75	<b>38.29</b>	<b>15.43</b>	21.23	23.72	2	5	2/5
4	HB-185	13.76	29.79	<b>43.61</b>	11.57	21.21	23.99	1	5	1/5
5	HB-188	16.11	29.00	<b>43.70</b>	8.56	18.32	23.14	3	5	1/5
6	NDF-11	15.67	<b>36.17</b>	30.79	10.80	20.57	22.80	4	5	1/5
7	RFB-3	14.11	28.97	32.36	10.03	20.18	21.13	8	5	0/5
8	RFB-4	14.98	26.50	31.02	8.49	22.98	20.79	9	5	0/5
9	Vikrant (C)	16.41	29.50	33.19	12.96	21.56	22.73	5	5	
	<b>Mean</b>	<b>14.53</b>	<b>29.34</b>	<b>36.95</b>	<b>11.53</b>	<b>20.60</b>	<b>22.59</b>			
	<b>CD (0.05)</b>	<b>6.49</b>	<b>6.33</b>	<b>2.78</b>	<b>1.27</b>	<b>2.51</b>				
	<b>CV (%) Error</b>	<b>27.92</b>	<b>12.45</b>	<b>4.44</b>	<b>6.36</b>	<b>8.36</b>				

**Table 51. Plant height (cm) in Initial Varietal Trial (IVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
1	HB-175	79.93	76.00	103.87	<b>67.50</b>	75.80	80.62	2
2	HB-176	67.00	80.67	<b>107.33</b>	54.67	74.85	76.90	6
3	HB-182	77.40	82.00	<b>104.83</b>	<b>61.77</b>	73.78	79.96	3
4	HB-185	76.07	75.67	93.60	57.77	<b>84.65</b>	77.55	4
5	HB-188	81.53	78.83	<b>108.93</b>	57.87	79.88	81.41	1
6	NDF-11	76.13	76.17	94.73	<b>58.17</b>	79.70	76.98	5
7	RFB-3	72.73	75.00	77.00	51.83	73.08	69.93	8
8	RFB-4	73.80	78.00	65.37	40.27	76.38	66.76	9
9	Vikrant (C)	74.67	78.00	96.77	49.77	75.33	74.91	7
	<b>Mean</b>	<b>75.47</b>	<b>77.81</b>	<b>94.71</b>	<b>55.51</b>	<b>77.05</b>	<b>76.11</b>	
	<b>CD (0.05)</b>	<b>10.35</b>	<b>5.21</b>	<b>7.45</b>	<b>8.18</b>	<b>5.65</b>		
	<b>CV (%) Error</b>	<b>8.57</b>	<b>3.87</b>	<b>4.62</b>	<b>8.51</b>	<b>5.04</b>		



**Table 52. Days to 50% flowering in Initial Varietal Trial (IVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
1	HB-175	78.67	55.00	<b>59.67</b>	70.67	68.00	66.40	6
2	HB-176	78.00	61.00	<b>57.67</b>	74.33	68.50	67.90	9
3	HB-182	76.67	55.00	64.33	70.33	63.50	65.97	3
4	HB-185	77.33	58.00	<b>55.67</b>	69.33	61.75	64.42	1
5	HB-188	79.00	54.33	<b>62.33</b>	72.67	61.75	66.02	4
6	NDF-11	80.33	59.67	67.00	72.00	54.75	66.75	7
7	RFB-3	77.33	56.67	66.00	73.67	58.25	66.38	5
8	RFB-4	80.67	59.67	65.67	73.00	59.75	67.75	8
<b>9</b>	<b>Vikrant (C)</b>	<b>77.00</b>	<b>55.33</b>	<b>68.00</b>	<b>71.33</b>	<b>55.25</b>	65.38	2
	<b>Mean</b>	<b>78.33</b>	<b>57.19</b>	<b>62.93</b>	<b>71.93</b>	<b>61.28</b>	<b>66.33</b>	
	<b>CD (0.05)</b>	<b>2.63</b>	<b>2.40</b>	<b>4.48</b>	<b>2.73</b>	<b>5.45</b>		
	<b>CV (%) Error</b>	<b>2.10</b>	<b>2.43</b>	<b>4.13</b>	<b>2.19</b>	<b>6.10</b>		

**Table 53. Days to maturity in Initial Varietal Trial (IVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
1	HB-175	147.33	127.00	<b>153.00</b>	169.33	138.75	147.08	4	5	1/5
2	HB-176	145.33	127.00	<b>157.33</b>	165.33	138.25	146.65	2	5	1/5
3	HB-182	145.00	125.00	161.67	165.00	138.00	146.93	3	5	0/5
4	HB-185	144.67	127.67	149.33	164.67	136.00	144.47	1	5	0/5
5	HB-188	147.00	127.67	165.67	167.67	139.25	149.45	8	5	0/5
6	NDF-11	147.00	130.00	172.67	166.00	138.25	150.78	9	5	0/5
7	RFB-3	145.67	126.00	168.00	167.33	<b>134.25</b>	148.25	7	5	1/5
8	RFB-4	147.67	128.33	164.33	165.33	<b>133.25</b>	147.78	5	5	1/5
<b>9</b>	<b>Vikrant (C)</b>	<b>145.67</b>	<b>127.00</b>	<b>166.00</b>	<b>164.67</b>	<b>137.00</b>	148.07	6	5	
	<b>Mean</b>	<b>146.15</b>	<b>127.30</b>	<b>162.00</b>	<b>166.15</b>	<b>137.00</b>	<b>147.72</b>			
	<b>CD (0.05)</b>	<b>2.86</b>	<b>3.06</b>	<b>4.81</b>	<b>3.36</b>	<b>2.00</b>				
	<b>CV (%) Error</b>	<b>1.22</b>	<b>1.39</b>	<b>1.73</b>	<b>1.17</b>	<b>1.00</b>				

**Table 54. 100 seed weight (g) in Initial Varietal Trial (IVT) on Fababean : Rabi (2011-12) - Plain**

<b>S. No.</b>	<b>Genotypes</b>	<b>Delhi</b>	<b>Faizabad</b>	<b>Hisar</b>	<b>Ludhiana</b>	<b>Ranchi</b>	<b>Mean</b>	<b>Rank</b>
1	HB-175	23.15	26.50	26.40	27.33	31.28	26.93	4
2	HB-176	22.24	25.00	26.30	26.80	30.22	26.11	6
3	HB-182	24.11	26.17	27.57	28.30	31.78	27.58	3
4	HB-185	19.19	26.00	26.90	26.23	31.73	26.01	8
5	HB-188	24.56	26.17	<b>28.83</b>	29.83	33.22	28.52	1
6	NDF-11	22.15	<b>28.00</b>	25.47	24.00	30.86	26.09	7
7	RFB-3	25.35	26.50	24.33	27.23	30.85	26.85	5
8	RFB-4	21.35	26.33	24.40	25.33	30.91	25.66	9
<b>9</b>	<b>Vikrant (C)</b>	<b>25.61</b>	<b>26.17</b>	<b>26.57</b>	<b>29.80</b>	<b>32.72</b>	28.17	2
	<b>Mean</b>	<b>23.08</b>	<b>26.31</b>	<b>26.31</b>	<b>27.21</b>	<b>31.51</b>	<b>26.88</b>	
	<b>CD (0.05)</b>	<b>6.05</b>	<b>1.34</b>	<b>1.13</b>	<b>1.12</b>	<b>2.73</b>		
	<b>CV (%) Error</b>	<b>16.38</b>	<b>2.94</b>	<b>2.49</b>	<b>2.37</b>	<b>5.95</b>		

**Table 55. Performance of Fababean entries in Advanced Varietal Trial (AVT) during Rabi (2011-12) - Plain**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check
				Mean	Location	Rank	Vikrant
<b>AVT-I</b>							
1	DFB-9-1	151.20	27.88	23.73	5	4	3.47
2	HB(M)-1	151.25	26.57	20.24	5	13	-11.76
3	HB-51	151.23	26.61	23.48	5	5	2.39
4	HB-82	151.98	26.57	23.94	5	2	4.41
5	HB-119	149.88	26.67	23.45	5	7	2.27
6	HB-122	152.15	26.05	22.61	5	10	-1.42
7	HB-174	151.25	26.57	20.24	5	13	-11.76
8	NDF-9	151.23	26.61	23.48	5	5	2.39
<b>AVT-II</b>							
9	HB-064	151.98	26.57	23.94	5	2	4.41
10	HB-070	149.88	26.67	23.45	5	7	2.27
11	HB-617	152.15	26.05	22.61	5	10	-1.42
12	HB-645	155.05	27.89	25.25	5	1	10.10
13	IC366272	152.60	26.19	21.12	5	12	-7.91
14	Vikrant (C)	152.47	27.48	22.93	5	9	-
<b>Mean</b>		<b>151.74</b>	<b>26.74</b>	<b>22.89</b>			

**Table 56. Seed yield (q/ha) in Advanced Varietal Trial (AVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
<b>AVT-I</b>										
1	DFB-9-1	17.77	32.07	34.24	9.84	<b>24.74</b>	23.73	5	5	1/5
2	HB(M)-1	16.21	27.57	<b>43.92</b>	<b>11.57</b>	19.01	23.66	6	5	2/5
3	HB-51	13.73	24.53	<b>41.01</b>	9.26	22.61	22.23	12	5	1/5
4	HB-82	15.64	28.87	<b>43.75</b>	<b>17.36</b>	22.34	25.59	1	5	2/5
5	HB-119	15.70	21.33	<b>44.90</b>	<b>12.73</b>	20.16	22.96	9	5	2/5
6	HB-122	14.31	28.47	<b>41.49</b>	<b>11.57</b>	23.20	23.81	4	5	2/5
7	HB-174	12.69	22.57	<b>41.32</b>	5.56	19.06	20.24	14	5	1/5
8	NDF-9	16.19	34.17	34.81	8.10	24.13	23.48	7	5	0/5
<b>AVT-II</b>										
9	HB-064	17.28	27.80	<b>43.33</b>	10.42	20.89	23.94	3	5	1/5
10	HB-070	16.08	21.73	<b>44.44</b>	7.87	<b>27.14</b>	23.45	8	5	2/5
11	HB-617	13.79	23.33	<b>44.97</b>	8.56	22.38	22.61	11	5	1/5
12	HB-645	17.82	32.33	<b>45.14</b>	9.84	21.12	25.25	2	5	1/5
13	IC366272	15.90	33.20	33.78	6.25	16.46	21.12	13	5	0/5
14	Vikrant (C)	16.41	28.27	36.72	10.36	22.91	22.93	10	5	
	<b>Mean</b>	<b>15.68</b>	<b>27.59</b>	<b>40.99</b>	<b>9.95</b>	<b>21.87</b>	<b>23.21</b>			
	<b>CD (0.05)</b>	<b>4.58</b>	<b>7.22</b>	<b>2.30</b>	<b>0.37</b>	<b>1.15</b>				
	<b>CV (%) Error</b>	<b>18.25</b>	<b>15.56</b>	<b>3.34</b>	<b>7.27</b>	<b>3.80</b>				

**Table 57. Plant height (cm) in Advanced Varietal Trial (AVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
<b>AVT-I</b>								
1	DFB-9-1	81.20	90.50	85.77	53.63	79.33	78.09	13
2	HB(M)-1	75.40	<b>107.00</b>	<b>109.37</b>	51.87	82.10	85.15	6
3	HB-51	74.33	<b>107.00</b>	79.60	<b>72.27</b>	84.93	83.63	8
4	HB-82	83.93	<b>107.43</b>	96.27	<b>67.87</b>	81.45	87.39	2
5	HB-119	75.00	<b>98.40</b>	<b>111.40</b>	59.43	82.13	85.27	5
6	HB-122	70.60	96.67	<b>117.23</b>	62.50	74.60	84.32	7
7	HB-174	70.13	85.67	<b>108.03</b>	57.93	75.73	79.50	11
8	NDF-9	83.87	<b>106.73</b>	105.30	59.87	81.60	87.47	1
<b>AVT-II</b>								
9	HB-064	82.60	<b>107.63</b>	<b>108.27</b>	51.30	82.93	86.55	3
10	HB-070	80.67	87.33	103.07	58.70	82.33	82.42	9
11	HB-617	70.87	86.33	93.93	55.47	76.73	76.67	14
12	HB-645	85.60	<b>99.17</b>	104.10	59.73	82.65	86.25	4
13	IC366272	80.47	87.00	83.70	<b>66.57</b>	77.63	79.07	12
14	Vikrant (C)	74.67	95.20	97.73	59.77	83.85	82.24	10
	<b>Mean</b>	<b>77.81</b>	<b>97.29</b>	<b>100.27</b>	<b>59.78</b>	<b>80.57</b>	<b>83.14</b>	
	<b>CD (0.05)</b>	<b>11.90</b>	<b>2.49</b>	<b>7.78</b>	<b>2.77</b>	<b>8.02</b>		
	<b>CV (%) Error</b>	<b>9.56</b>	<b>1.52</b>	<b>4.61</b>	<b>9.13</b>	<b>7.18</b>		

**Table 58. Days to 50% flowering in Advanced Varietal Trial (AVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
<b>AVT-I</b>								
1	DFB-9-1	75.33	60.00	66.67	<b>69.33</b>	<b>47.50</b>	63.77	3
2	HB(M)-1	80.00	<b>56.33</b>	<b>51.67</b>	71.67	65.50	65.03	7
3	HB-51	78.00	58.00	<b>52.67</b>	<b>71.00</b>	54.25	62.78	1
4	HB-82	75.67	60.33	<b>62.67</b>	<b>69.67</b>	51.00	63.87	5
5	HB-119	77.00	<b>55.67</b>	68.00	71.67	55.00	65.47	10
6	HB-122	78.33	<b>56.00</b>	<b>64.00</b>	<b>69.00</b>	48.50	63.17	2
7	HB-174	77.33	<b>55.33</b>	66.67	76.33	60.75	67.28	12
8	NDF-9	77.67	<b>56.00</b>	65.67	75.67	57.75	66.55	11
<b>AVT-II</b>								
9	HB-064	80.00	<b>55.33</b>	<b>60.67</b>	<b>70.33</b>	53.00	63.87	4
10	HB-070	77.33	61.67	66.33	<b>70.67</b>	50.75	65.35	9
11	HB-617	79.67	57.33	<b>63.00</b>	78.00	59.75	67.55	13
12	HB-645	77.33	<b>55.67</b>	65.67	74.67	50.00	64.67	6
13	IC366272	79.67	60.33	73.33	73.33	57.25	68.78	14
14	Vikrant (C)	77.00	57.67	68.33	72.33	51.25	65.32	8
	<b>Mean</b>	<b>77.88</b>	<b>57.55</b>	<b>63.95</b>	<b>72.40</b>	<b>54.45</b>	<b>65.25</b>	
	<b>CD (0.05)</b>	<b>2.52</b>	<b>1.13</b>	<b>3.63</b>	<b>0.68</b>	<b>3.50</b>		
	<b>CV (%) Error</b>	<b>2.02</b>	<b>1.17</b>	<b>3.38</b>	<b>1.86</b>	<b>4.64</b>		

**Table 59. Days to maturity in Advanced Varietal Trial (AVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
<b>AVT-I</b>										
1	DFB-9-1	146.33	137.33	171.00	167.33	<b>134.00</b>	151.20	6	5	1/5
2	HB(M)-1	147.67	<b>135.33</b>	<b>151.67</b>	<b>166.00</b>	<b>133.75</b>	146.88	1	5	4/5
3	HB-51	147.67	139.00	<b>150.67</b>	167.67	138.00	148.60	2	5	1/5
4	HB-82	144.67	139.67	<b>163.33</b>	166.67	137.25	150.32	5	5	1/5
5	HB-119	144.67	<b>134.67</b>	170.67	167.67	139.75	151.48	9	5	1/5
6	HB-122	145.67	<b>130.67</b>	<b>167.00</b>	<b>165.00</b>	136.25	148.92	3	5	3/5
7	HB-174	144.00	137.33	170.00	<b>164.67</b>	140.25	151.25	8	5	1/5
8	NDF-9	147.00	<b>134.33</b>	170.67	169.67	<b>134.50</b>	151.23	7	5	2/5
<b>AVT-II</b>										
9	HB-064	146.33	141.33	<b>164.33</b>	<b>165.67</b>	142.25	151.98	10	5	2/5
10	HB-070	146.33	137.33	<b>162.00</b>	<b>166.00</b>	137.75	149.88	4	5	2/5
11	HB-617	146.33	141.33	169.00	<b>165.33</b>	138.75	152.15	11	5	1/5
12	HB-645	148.00	143.33	170.67	171.00	142.25	155.05	14	5	0/5
13	IC366272	149.00	<b>135.33</b>	173.67	169.00	136.00	152.60	13	5	1/5
14	Vikrant (C)	145.67	139.67	171.33	166.67	139.00	152.47	12	5	
	<b>Mean</b>	<b>146.38</b>	<b>137.62</b>	<b>166.14</b>	<b>167.02</b>	<b>137.84</b>	<b>151.00</b>			
	<b>CD (0.05)</b>	<b>2.59</b>	<b>3.27</b>	<b>3.58</b>	<b>0.64</b>	<b>3.72</b>				
	<b>CV (%) Error</b>	<b>1.11</b>	<b>1.41</b>	<b>1.28</b>	<b>0.76</b>	<b>1.95</b>				



**Table 60. 100 seed weight (g) in Advanced Varietal Trial (AVT) on Fababean : Rabi (2011-12) - Plain**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
<b>AVT-I</b>								
1	DFB-9-1	27.38	25.67	<b>26.40</b>	27.20	32.74	27.88	2
2	HB(M)-1	22.96	25.00	<b>28.13</b>	26.00	32.95	27.01	6
3	HB-51	19.01	24.83	<b>25.77</b>	28.10	31.94	25.93	14
4	HB-82	23.02	<b>26.67</b>	<b>27.77</b>	27.10	30.82	27.07	5
5	HB-119	21.51	25.17	<b>26.57</b>	28.37	30.83	26.49	11
6	HB-122	20.11	26.17	<b>28.17</b>	30.33	30.66	27.09	4
7	HB-174	24.40	25.83	25.23	26.43	30.97	26.57	9
8	NDF-9	22.90	<b>26.67</b>	24.40	27.40	31.66	26.61	8
<b>AVT-II</b>								
9	HB-064	22.50	25.33	25.27	27.00	32.75	26.57	10
10	HB-070	22.61	25.83	25.20	<b>29.30</b>	30.43	26.67	7
11	HB-617	24.86	25.67	25.43	24.43	29.84	26.05	13
12	HB-645	25.22	26.33	<b>27.73</b>	28.53	31.61	27.89	1
13	IC366272	21.35	26.50	24.23	27.83	31.04	26.19	12
14	Vikrant (C)	25.61	25.50	25.30	28.87	32.10	27.48	3
	<b>Mean</b>	<b>23.10</b>	<b>25.80</b>	<b>26.11</b>	<b>27.64</b>	<b>31.45</b>	<b>26.82</b>	
	<b>CD (0.05)</b>	<b>3.86</b>	<b>1.09</b>	<b>0.45</b>	<b>0.10</b>	<b>2.19</b>		
	<b>CV (%) Error</b>	<b>10.43</b>	<b>2.51</b>	<b>1.03</b>	<b>0.71</b>	<b>5.02</b>		

**Table 61. Performance of winged bean entries in Initial & Advanced Varietal Trial (IVT & AVT) during Kharif 2012 (Plains)**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check
				Mean	Location	Rank	AKWB-1
<b>IVT</b>							
1	RWB-2	176.33	40.77	7.63	2	6	-36.66
<b>AVT-I</b>							
2	Ambika WB-11-1	167.08	38.85	11.55	3	4	-4.09
3	Ambika WB-11-2	167.08	43.31	11.63	3	3	-3.45
4	Ambika WB-11-3	167.77	41.83	12.15	3	1	0.92
5	EC114273-C	171.25	32.43	9.85	2	5	-18.17
6	AKWB-1 (C)	160.33	38.95	12.04	3	2	-
<b>Mean</b>		<b>168.31</b>	<b>39.36</b>	<b>10.81</b>			

**Table 62. Seed yield (q/ha) in Initial & Advanced Varietal Trial (IVT & AVT) on winged bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Ambikapur	Ranchi	Rahuri	Mean	Rank	Location	Frequency
<b>IVT</b>								
1	RWB-2	-	7.83	7.42	7.63	6	2	0/2
<b>AVT-I</b>								
2	Ambika WB-11-1	18.19	7.95	8.51	11.55	4	3	0/3
3	Ambika WB-11-2	15.60	8.67	10.61	11.63	3	3	0/3
4	Ambika WB-11-3	17.40	7.85	11.21	<b>12.15</b>	1	3	1/3
5	EC114273-C	11.42	-	8.29	9.85	5	2	0/2
6	AKWB-1 (C)	17.84	8.90	9.39	12.04	2	3	
	<b>Mean</b>	<b>16.09</b>	<b>8.24</b>	<b>9.24</b>	<b>10.81</b>			
	<b>CD (0.05)</b>	<b>0.79</b>	<b>0.65</b>	<b>0.45</b>				
	<b>CV (%) Error</b>	<b>3.20</b>	<b>4.17</b>	<b>14.77</b>				

**Table 63. Days to 50% flowering in Initial & Advanced Varietal Trial (IVT & AVT) on winged bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Akola	Rahuri	Ranchi	Mean	Rank
<b>IVT</b>						
1	RWB-2	-	80.75	68.67	74.71	3
<b>AVT-I</b>						
2	Ambika WB-11-1	82.67	78.75	69.00	76.81	4
3	Ambika WB-11-2	79.33	75.25	67.33	73.97	2
4	Ambika WB-11-3	81.00	80.25	73.00	78.08	5
5	EC114273-C	87.67	72.25	-	79.96	6
<b>6</b>	<b>AKWB-1 (C)</b>	<b>79.33</b>	<b>77.00</b>	<b>63.00</b>	73.11	1
	<b>Mean</b>	<b>82.00</b>	<b>77.38</b>	<b>68.20</b>	<b>76.11</b>	
	<b>CD (0.05)</b>	<b>4.17</b>	-	<b>3.94</b>		
	<b>CV (%) Error</b>	<b>2.69</b>	-	<b>3.06</b>		

**Table 64. Days to maturity in Initial & Advanced Varietal Trial (IVT & AVT) on winged bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Akola	Ambikapur	Rahuri	Ranchi	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	RWB-2	-	-	204.00	148.67	176.33	6	2	1/2
<b>AVT-I</b>									
2	Ambika WB-11-1	150.33	167.00	203.00	148.00	167.08	2	4	2/4
3	Ambika WB-11-2	149.00	169.00	197.00	153.33	167.08	2	4	2/4
4	Ambika WB-11-3	150.00	168.00	198.75	154.33	167.77	4	4	0/4
5	EC114273-C	155.00	171.00	187.75	-	171.25	5	3	1/3
<b>6</b>	<b>AKWB-1 (C)</b>	<b>151.33</b>	<b>167.00</b>	<b>183.00</b>	<b>140.00</b>	160.33	1	4	
	<b>Mean</b>	<b>151.13</b>	<b>168.40</b>	<b>195.58</b>	<b>148.87</b>	<b>168.31</b>			
	<b>CD (0.05)</b>	<b>4.97</b>	-	-	<b>4.38</b>				
	<b>CV (%) Error</b>	<b>1.74</b>	-	-	<b>1.56</b>				

**Table 65. 100-seed weight (g) in Initial & Advanced Varietal Trial (IVT & AVT) on winged bean : Kharif 2012 (Plains)**

S. No.	Genotypes	Akola	Ambikapur	Rahuri	Ranchi	Mean	Rank
<b>IVT</b>							
1	RWB-2	-	-	45.53	36.01	40.77	3
<b>AVT-I</b>							
2	Ambika WB-11-1	28.62	35.60	61.43	29.75	38.85	5
3	Ambika WB-11-2	<b>35.15</b>	43.35	63.43	31.33	43.31	1
4	Ambika WB-11-3	<b>34.93</b>	38.50	61.55	32.33	41.83	2
5	EC114273-C	26.81	35.00	35.48	-	32.43	6
<b>6</b>	<b>AKWB-1 (C)</b>	<b>28.20</b>	<b>38.10</b>	<b>50.45</b>	<b>39.05</b>	38.95	4
	<b>Mean</b>	<b>30.74</b>	<b>38.11</b>	<b>52.98</b>	<b>33.69</b>	<b>39.36</b>	
	<b>CD (0.05)</b>	<b>0.99</b>	-	-	<b>6.09</b>		
	<b>CV (%) Error</b>	<b>1.70</b>	-	-	<b>9.58</b>		

**Table 66. Pod length (cm) in Initial & Advanced Varietal Trial (IVT & AVT) on winged bean : Kharif 2012 (Plains)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Akola</b>	<b>Rahuri</b>	<b>Ranchi</b>	<b>Mean</b>	<b>Rank</b>
<b>IVT</b>						
1	RWB-2	-	9.78	17.70	13.74	1
<b>AVT-I</b>						
2	Ambika WB-11-1	10.84	10.38	14.87	12.03	4
3	Ambika WB-11-2	11.65	12.25	17.07	13.66	2
4	Ambika WB-11-3	11.00	9.33	15.20	11.84	5
5	EC114273-C	12.31	10.45	-	11.38	6
<b>6</b>	<b>AKWB-1 (C)</b>	<b>10.16</b>	<b>12.43</b>	<b>15.87</b>	12.82	3
	<b>Mean</b>	<b>11.19</b>	<b>10.77</b>	<b>16.14</b>	<b>12.58</b>	
	<b>CD (0.05)</b>	<b>1.79</b>	-	<b>2.66</b>		
	<b>CV (%) Error</b>	<b>8.50</b>	-	<b>8.75</b>		

**Table 67. Performance of kalingada entries in Initial & Advanced Varietal Trial (IVT & AVT) during Kharif 2012 (Plains)**

S. No.	Genotypes	Mean Number of fruits per plant	Mean seed yield over locations (q/ha)			Per cent increase/decrease over check
			Mean	Location	Rank	GK-1
<b>IVT</b>						
1	MGPK-10-1	3.28	0.85	3	11	-36.41
2	MGPK-10-2	3.79	1.92	3	2	43.55
3	SKNK-1101	3.69	1.46	3	6	9.14
4	SKNK-1102	5.22	1.75	3	3	31.41
5	SKNK-1103	4.11	1.45	3	8	8.50
<b>AVT-I</b>						
6	MK-45-3	2.91	1.41	3	9	5.81
7	SKNK-1001	4.14	1.45	3	7	8.87
8	SKNK-1004	3.70	1.74	3	4	30.51
<b>AVT-II</b>						
9	MGPK-1	4.43	1.97	3	1	47.25
10	SKNK-0903	4.49	1.50	3	5	12.47
11	GK-1 (C)	3.54	1.33	3	10	-
<b>Mean</b>		<b>3.94</b>	<b>1.53</b>			



**Table 68. Different characters of kalingada entries in Initial & Advanced Varietal Trial (IVT & AVT) at various locations during Kharif 2012 (Plains)**

S. No.	Genotypes	Seed yield (q/ha)							Fruit yield (q/ha)							
		Jaisalmer	Mandor	S.K. Nagar	Mean	Rank	Location	Frequency	Jaisalmer	Mandor	S.K. Nagar	Mean	Rank	Location	Frequency	
<b>IVT</b>																
1	MGPK-10-1	2.30	0.10	0.15	0.85	11	3	0/3	103.20	16.85	10.00	43.35	10	3	0/3	
2	MGPK-10-2	<b>5.20</b>	0.29	0.26	1.92	2	3	1/3	113.10	32.74	<b>22.00</b>	55.95	6	3	1/3	
3	SKNK-1101	4.10	0.13	0.14	1.46	6	3	0/3	137.60	15.89	<b>21.11</b>	58.20	5	3	1/3	
4	SKNK-1102	4.50	<b>0.57</b>	0.19	1.75	3	3	1/3	132.90	<b>43.33</b>	14.33	63.52	3	3	1/3	
5	SKNK-1103	3.70	0.33	<b>0.31</b>	1.45	8	3	1/3	114.90	24.07	<b>25.56</b>	54.84	7	3	1/3	
<b>AVT-I</b>																
6	MK-45-3	3.90	0.27	0.06	1.41	9	3	0/3	77.60	30.52	5.78	37.97	11	3	0/3	
7	SKNK-1001	3.30	<b>0.70</b>	<b>0.36</b>	1.45	7	3	2/3	97.40	<b>48.22</b>	<b>29.78</b>	58.47	4	3	2/3	
8	SKNK-1004	4.70	0.30	0.22	1.74	4	3	0/3	119.30	20.74	<b>20.96</b>	53.67	9	3	1/3	
<b>AVT-II</b>																
9	MGPK-1	<b>5.10</b>	0.41	<b>0.38</b>	1.97	1	3	2/3	137.20	32.63	<b>26.07</b>	65.30	2	3	1/3	
10	SKNK-0903	3.70	0.41	<b>0.40</b>	1.50	5	3	1/3	140.70	30.19	<b>25.26</b>	65.38	1	3	1/3	
11	GK-1 (C)	3.50	0.33	0.17	1.33	10	3		128.80	22.44	12.91	54.72	8	3		
	<b>Mean</b>	<b>4.00</b>	<b>0.35</b>	<b>0.24</b>	<b>1.53</b>				<b>118.43</b>	<b>28.88</b>	<b>19.43</b>	<b>55.58</b>				
	<b>CD (0.05)</b>	<b>1.47</b>	<b>0.16</b>	<b>0.09</b>					<b>33.32</b>	<b>11.26</b>	<b>6.71</b>					
	<b>CV (%) Error</b>	<b>21.51</b>	<b>26.65</b>	<b>22.43</b>					<b>16.52</b>	<b>22.85</b>	<b>20.25</b>					

**Table 69. Different characters of kalingada entries in Initial & Advanced Varietal Trial (IVT & AVT) at various locations during Kharif 2012 (Plains)**

S. No.	Genotypes	Days to maturity						Number of fruits per plant				
		Mandor	S.K. Nagar	Mean	Rank	Location	Frequency	Jaisalmer	Mandor	S.K. Nagar	Mean	Rank
<b>IVT</b>												
1	MGPK-10-1	79.33	78.33	78.83	8	2	0/2	5.90	2.93	1.00	3.28	10
2	MGPK-10-2	79.33	76.33	77.83	4	2	0/2	5.00	3.70	<b>2.67</b>	3.79	6
3	SKNK-1101	78.67	76.67	77.67	3	2	0/2	5.50	3.83	1.74	3.69	8
4	SKNK-1102	<b>75.33</b>	77.00	76.17	1	2	0/2	6.10	<b>7.77</b>	<b>1.81</b>	5.22	1
5	SKNK-1103	<b>78.00</b>	75.33	76.67	2	2	0/2	5.80	3.43	3.10	4.11	5
<b>AVT-I</b>												
6	MK-45-3	79.33	78.00	78.67	7	2	0/2	4.70	3.43	0.59	2.91	11
7	SKNK-1001	78.67	78.00	78.33	6	2	0/2	5.40	<b>5.23</b>	<b>1.78</b>	4.14	4
8	SKNK-1004	79.67	78.67	79.17	10	2	0/2	6.00	3.33	<b>1.75</b>	3.70	7
<b>AVT-II</b>												
9	MGPK-1	80.00	78.00	79.00	9	2	0/2	7.10	4.17	<b>2.04</b>	4.43	3
10	SKNK-0903	<b>79.00</b>	77.00	78.00	5	2	0/2	7.60	3.50	<b>2.38</b>	4.49	2
11	GK-1 (C)	82.00	77.33	79.67	11	2		6.10	3.33	1.19	3.54	9
	<b>Mean</b>	<b>79.03</b>	<b>77.33</b>	<b>78.18</b>				<b>5.93</b>	<b>4.06</b>	<b>1.82</b>	<b>3.94</b>	
	<b>CD (0.05)</b>	<b>2.92</b>	<b>2.50</b>					-	<b>0.97</b>	<b>0.56</b>		
	<b>CV (%) Error</b>	<b>2.16</b>	<b>1.89</b>					-	<b>14.04</b>	<b>17.97</b>		

**Table 70. Different characters of kalingada entries in Initial & Advanced Varietal Trial (IVT & AVT) at various locations during Kharif 2012 (Plains)**

S. No.	Genotypes	Fruit diameter (cm)				100-seed weight (g)				
		Mandor	S.K. Nagar	Mean	Rank	Jaisalmer	Mandor	S.K. Nagar	Mean	Rank
<b>IVT</b>										
1	MGPK-10-1	8.40	30.27	19.33	9	5.74	2.99	<b>4.53</b>	4.42	11
2	MGPK-10-2	7.60	31.43	19.52	7	6.67	4.07	<b>4.61</b>	5.12	7
3	SKNK-1101	7.17	31.90	19.53	6	6.94	4.63	<b>4.35</b>	5.31	5
4	SKNK-1102	8.90	30.10	19.50	8	7.61	4.30	<b>6.68</b>	6.20	1
5	SKNK-1103	8.10	32.00	20.05	2	7.57	4.69	<b>4.63</b>	5.63	2
<b>AVT-I</b>										
6	MK-45-3	7.47	30.67	19.07	10	6.91	4.22	2.35	4.49	10
7	SKNK-1001	8.13	<b>34.00</b>	21.07	1	7.36	4.45	<b>4.42</b>	5.41	4
8	SKNK-1004	6.80	30.50	18.65	11	6.87	4.67	3.62	5.05	9
<b>AVT-II</b>										
9	MGPK-1	7.30	<b>32.67</b>	19.98	3	7.28	4.55	<b>4.84</b>	5.56	3
10	SKNK-0903	8.20	31.63	19.92	4	6.71	4.90	3.58	5.06	8
11	GK-1 (C)	8.47	31.00	19.73	5	6.97	5.05	3.65	5.23	6
<b>Mean</b>		<b>7.87</b>	<b>31.47</b>	<b>19.67</b>		<b>6.97</b>	<b>4.41</b>	<b>4.30</b>	<b>5.22</b>	
<b>CD (0.05)</b>		<b>1.19</b>	<b>1.30</b>			-	<b>1.32</b>	<b>0.22</b>		
<b>CV (%) Error</b>		<b>8.87</b>	<b>2.43</b>			-	<b>17.56</b>	<b>3.04</b>		

**Table 71. Performance of kankoda entries in Initial Varietal Trial (IVT) during Kharif 2012 (Plains) - Ambikapur**

S. No.	Genotypes	Mean Days to first picking	Mean seed yield over locations (q/ha)			Percent increase/decrease over check
			Mean	Location	Rank	Indira kankoda
1	Ambika-12-1(Raigarh)	51.00	21.75	1	3	14.98
2	Ambika-12-2(Dharamjaigarh)	60.00	23.00	1	2	21.59
3	Ambika-12-3(Wadarafnagar)	61.00	28.42	1	1	50.22
4	NMD-2	51.00	19.56	1	4	3.39
5	NMD-3	70.00	12.08	1	7	-36.12
6	NMD-4	54.00	16.50	1	6	-12.78
<b>7</b>	<b>Indira kankoda (C)</b>	<b>61.00</b>	<b>18.92</b>	1	5	-
	<b>Mean</b>	<b>58.29</b>	<b>20.03</b>			
	<b>CD(0.05)</b>	-	<b>5.28</b>			
	<b>CV(%) Error</b>	-	<b>14.80</b>			

**Table 72. Performance of tumba entries in Initial Varietal Trial (IVT) during Kharif 2012 (Plains) - Mandor**

S. No.	Genotypes	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over check
			Mean	Location	Rank	RMT-59
1	MGPT-4	2.70	1.20	1	2	56.16
2	MGPT-7	2.50	0.82	1	6	6.88
3	MGPT-9	2.62	0.69	1	8	-10.14
4	MGPT-12	2.67	0.93	1	4	21.74
5	MGPT-14	2.73	0.83	1	5	8.70
6	MGPT-21	2.39	1.76	1	1	129.71
7	MGPT-22	2.48	0.61	1	9	-21.01
8	RMT-408	2.34	0.20	1	10	-73.55
9	RMT-516	2.73	0.94	1	3	22.10
10	RMT-59 (C)	2.58	0.77	1	7	-
<b>Mean</b>		<b>2.57</b>	<b>0.87</b>			

**Table 73. Different characters of tumba entries in Initial Varietal Trial (IVT) during 2012 at Mandor (Plains)**

S. No.	Genotypes	Seed yield (q/ha)	Rank	Fruit yield (q/ha)	Rank	No. of fruits per plant	Rank	Single fruit weight (g)	Rank	Fruit diameter (cm)	Rank	100-seed weight (g)	Rank
1	MGPT-4	<b>1.20</b>	2	34.97	4	5.55	4	206.50	5	7.00	5	2.70	3
2	MGPT-7	0.82	6	<b>35.61</b>	3	5.18	6	211.75	4	6.58	8	2.50	7
3	MGPT-9	0.69	8	21.83	9	<b>7.25</b>	1	106.00	10	5.23	10	2.62	5
4	MGPT-12	0.93	4	30.36	5	4.93	8	185.25	7	6.85	6	2.67	4
5	MGPT-14	0.83	5	24.97	6	5.33	5	199.50	6	7.15	4	2.73	2
6	MGPT-21	<b>1.76</b>	1	<b>58.78</b>	1	<b>7.00</b>	2	<b>254.25</b>	1	7.48	2	2.39	9
7	MGPT-22	0.61	9	23.06	8	3.80	9	211.75	3	7.30	3	2.48	8
8	RMT-408	0.20	10	5.42	10	1.80	10	160.75	9	6.38	9	2.34	10
9	RMT-516	0.94	3	<b>41.42</b>	2	6.18	3	<b>246.75</b>	2	<b>7.70</b>	1	2.73	1
10	RMT-59 (C)	0.77	7	23.11	7	4.95	7	172.00	8	6.63	7	2.58	6
	<b>Mean</b>	<b>0.87</b>		<b>29.95</b>		<b>5.20</b>		<b>195.45</b>		<b>6.83</b>		<b>2.57</b>	
	<b>CD (0.05)</b>	<b>0.35</b>		<b>12.67</b>		<b>2.02</b>		<b>56.28</b>		<b>1.04</b>		<b>0.26</b>	
	<b>CV (%) Error</b>	<b>27.59</b>		<b>29.18</b>		<b>26.82</b>		<b>19.86</b>		<b>10.48</b>		<b>7.01</b>	

# **GERMPLASM EVALUATION**

## III. GERmplasm EVALUATION

### 3.1 HILLS

Multilocational germplasm screening nurseries were planned to be conducted on grain amaranth, buckwheat, chenopods, faba bean, adzuki bean, *Coix* and *Perilla*. The germplasm accessions were evaluated in augmented design with standard check cultivars.

#### 3.1.1 GRAIN AMARANTH (*Amaranthus* spp.)

Germplasm screening nursery consisting of 50 accessions supplied by NBPGR, Shimla was planned to be evaluated at four locations viz. Ranichauri, Sangla, Almora and Shimla. The results were received from all locations. The checks used were PRA 2, PRA 3, Annapurna and Durga. The list of promising lines for all the characters has been presented in Table 74 and the range and means in Table 75.

At GBPUA&T, Ranichauri a set of 50 genotypes alongwith four checks were evaluated for 8 characters. The longest inflorescence (60.00 cm) was recorded in the genotype IC038164 followed by IC038158 (51.60 cm). The genotypes IC038164 was found earlier in flowering (55.00 days) and maturity (111.00 days) as compare to check variety. The maximum plant height was observed in the entry IC038500 (102.60 cm) followed by IC038164 (87.00 cm). The genotype IC038129 was observed as the highest yielder with 16.67q/ha grain yield.

A set of 50 genotypes and four checks were screened at NBPGR, Shimla for 10 quantitative and 12 qualitative characters (Table 76). The genotype IC038193 ( 64.00 days) was earlier to the check variety Durga (68.00 days) for days to 50% flowering while IC038373 was earliest in maturity (125.00 days). Maximum plant height (334.60 cm) was recorded in the IC038498. The longest inflorescence was recorded in the genotype, IC038378 (90.50 cm) followed by IC038394 (90.00 cm). The genotypes IC038129 (104.07g) and IC038192 (102.56g) were found superior to the best check variety in respect of grain yield per plant.



A set of 50 accessions and four checks were evaluated for 11 quantitative and 10 qualitative characters (Table 76) at Sangla. The entry IC038496 (32.00 g/plant) was observed to be the highest grain yielder. The maximum plant height (227.80 cm) was observed in the genotype, IC038423 followed by IC038460 (218.40 cm). The longest inflorescence (83.40 cm) was recorded in the genotype IC038430 followed by IC038451 (82.60 cm). The entry IC038488 was the earliest in flowering (70.00 days) and no genotypes was earliest in maturity as compared to check variety Durga (138.80 days).

A set of 50 genotypes and four checks were screened at Almora for 11 quantitative characters. The genotype IC038301 and IC038378 (56.00 days) were found superior to the check variety for days to 50% flowering. Maximum plant height (172.00 cm) was recorded in the genotype, IC038488. The genotype IC038373 (48.00 g) was found superior to the check variety in respect of seed yield per plant.

The performance of entries based on adjusted value and average over the locations has been summarized in the following paragraphs:

Significant differences were observed among the accessions for seed yield per plant at all centres. Seed yield per plant (g) was low at Almora (13.44 g) and very high at Shimla (56.96 g). Based on average the genotype IC038373 (75.50 g) was the highest seed yielder followed by genotype IC038129 (47.24 g).

Plant height was the highest at Shimla (278.90 cm) and lowest at Ranichauri (46.10 cm) on the basis of average over the four locations, the entry IC038456 had the highest plant height (209.25 cm).

Flowering time showed considerable variation among the locations and high variation among the accessions within a location. The mean flowering time was the lowest (65.22 days) at Almora while it was the longest (85.48 days) at Shimla. The entry IC038301 showed consistency for early flowering over the locations and ranked first (65.50 days) based on the overall performance.

Maturity period was the earliest at Almora (111.48 days) followed by at Ranichauri (127.28 days). The entry, IC038373 (120.75 days) was earliest maturing line based on average over four locations.

The length of inflorescence of the accessions was the highest at Shimla (70.52 cm) followed by at Sangla (64.93 cm). Inflorescence length was the lowest (23.07 cm) at Ranichauri. Based on the average over four locations, the entry IC038376 had the longest inflorescence (74.00cm).

Test weight expressed in terms of weight of 10ml seed in g recorded at four centres showed that it was the highest at Ranichauri (11.50 g/10ml) and low at Sangla (8.86 g/10ml). Based on the average over four locations, the entry IC038500 (10.53 g/10ml) showed the highest test weight.

The length of petiole of the accessions was the highest at Shimla (15.79 cm) followed by at Sangla (11.57 cm). Based on the average over three locations, the accession IC038373 had the longest petiole length (16.42 cm).

### **3.1.2 BUCKWHEAT (*Fagopyrum* spp.)**

A set of 25 accessions was planned to be screened at four locations viz. Shimla, Ranichauri, Sangla and Almora along with four checks Himpriya, VL 7, PRB 1 and Shimla B-1. The results were received from all locations. The list of promising accessions for all the characters have been presented in Table 77 and mean and range in Table 78.

A set of 25 genotypes and four checks Himpriya, VL-7, PRB 1 and Shimla B-1 were evaluated at Sangla for yield and its related characters. No entry was found superior to the check variety for days to flowering and maturity. The genotype IC204088 (4.90 g) was recorded higher seed yielder per plant followed by genotype IC204086 (4.50 g). Maximum plant height (119.40 cm) was observed in genotype IC108497 and highest number of branches (8.60) was recorded in IC108497. The same set of 25 accessions was also characterized for 10 qualitative traits (Table 79).

At NBPGR, Shimla a set of 25 accessions was evaluated for fourteen quantitative characters along with four checks Himpriya, PRB 1, Shimla B-1 and VL-7. The entry, IC521296 was superior to the check variety in flowering (41.00 days) and IC363973 in maturity (91.00 days). The same set of 25 accessions was also characterized for 10 qualitative traits (Table 79).

A set of 25 genotypes and four checks Himpriya, VL-7, PRB 1 and Shimla B-1 were evaluated at Ranichauri for yield and its related characters. The entry

IC324313 was superior to the check variety in flowering (27.00 days) while IC340361 (75.33 days) in maturity. Maximum plant height (81.43 cm) was recorded in the genotype IC107631 while maximum seed yield (17.04 q/ha) was observed in the check variety, Shimla –B-1.

At Almora a set of 25 accessions was evaluated for thirteen quantitative characters along with four checks Himpriya, PRB 1, Shimla B-1 and VL-7. No entry was superior to the check variety in flowering and maturity. The maximum plant height (173.00 cm) was found in genotype IC204089 while IC202279 showed highest seed yield per plant (7.60 g).

The performance of the accessions as compared to the checks over locations viz. Almora, Ranichauri, Shimla and Sangla has been summarized below.

Significant difference was observed among the entries for seed yield per plant at three locations. Mean seed yield per plant was high at Almora (4.35 g) but very low at Sangla (1.60 g). Based on the average over locations, the entry IC521299 (6.99 g) was superior to the check variety.

Average plant height of the entries was the highest at Shimla (143.94 cm) followed by at Almora (128.43 cm). Based on average over four locations, entry IC018870-1 was taller than the check variety (123.89 cm).

Flowering time varied from centre to centre but mean flowering time was the earliest at Almora (33.05 days) followed by at Ranichauri (36.04 days). On the basis of average over four locations no accession was found superior to the best check.

Maturity period also showed similar trend to that of the flowering time. Average maturity period was the earliest at Almora (69.68 days) followed by at Ranichauri (94.82 days). On the basis of average over the locations, no entry was found superior to the best check variety.

### **3.1.3 CHENOPODS (*Chenopodium* spp.)**

Twenty five genotypes were planned for screening at three locations viz. Shimla, Sangla, Ranichauri along with three local checks. Data were received from only two centres because crop failed at Ranichauri centre due to heavy

rainfall. The list of promising lines for all the characters have been presented in Table 80 and mean and range in Table 81.

Twenty five genotypes along with three local checks were evaluated for seven quantitative and eleven qualitative characters at Sangla. No entry was significantly superior to the check varieties in flowering and maturity. The entry NIC-22508 (255.20 cm) was recorded for maximum plant height and maximum seed yield per plant was observed in genotype IC258382 (31.00 g).

Twenty five genotypes along with three local checks were evaluated for eight quantitative and ten qualitative characters at Shimla. No entry was superior to the check varieties in flowering but NIC-22512 (115.00 days) was earliest genotype in maturity. The entry IC109737 (366.40 cm) was recorded for maximum plant height and maximum seed yield per plant was observed in genotype IC109737 (36.67g).

The performance of the accessions as compared to the checks over locations viz. Shimla and Sangla has been summarized below.

Significant difference was observed among the entries for seed yield per plant at two locations. Mean seed yield per plant was high at Shimla (17.56 g) but very low at Sangla (6.01 g). Based on the average over locations, the entry IC258382 (29.91 g) was superior to the check variety.

Average plant height of the entries was the highest at Shimla (300.43 cm) followed by at Sangla (180.15 cm). Based on average over two locations, entry NIC-22508 was taller than the check variety (306.80 cm).

Mean flowering time was the earliest at Sangla (85.77 days) followed by at Shimla (91.93 days). On the basis of average over two locations no accession was found superior to the best check.

Maturity period also showed similar trend to that of the flowering time. Average maturity period was the earliest at Sangla (142.55 days) followed by at Shimla (147.36 days). On the basis of average over the locations, no entry was found superior to the best check variety.

### **3.1.4 RICE BEAN (*Vigna umbellata*)**

A set of twenty five genotypes along with four standard checks viz. PRR 1, PRR 2, RBL 1 and RBL 6 were planned for evaluation at six locations viz. Almora, Shimla, Ranichauri, Palampur, Bhowali and Shillong. The results have been received from all centres. The list of promising lines for all characters have been presented in Table 83 and mean and range in Table 84.

A total of 25 genotypes were evaluated for eight yield related characters at Ranichauri. No genotype was found superior to the check variety in flowering and maturity. Pod length was longest in the entry IC369282 (11.20 cm). Maximum plant height (107.00 cm) was found in the genotype IC394201. Maximum seed yield was recorded in IC369282 (13.89 q/ha) followed by in IC524522 (13.33 q/ha).

A total of 25 genotypes were screened for nine quantitative and nine qualitative (Table 85) characters at Palampur and it was found that IC137189 and IC538983 were early flowering (76.00 days) as compared to check PRR-2 (79.00 days). Early maturity was observed (126 days) in genotype IC419602. Highest seed yield (q/ha) was recorded in the genotypes IC369282 (7.78 q/ha) followed by IC005240 (6.67 q/ha).

A set of 25 genotypes was screened for qualitative (Table 85) and quantitative characters at Shimla. No entries were superior to check variety in flowering and maturity. Longest pod (15.20 cm) was recorded in the genotype IC421926. Maximum 100 seed weight (9.70 g) was recorded for the genotype IC411730 followed by IC524085 (9.42 g). The highest no. of branches per plant (6.00) was observed in the genotype IC369282, IC524070 and IC528870. No entry was superior to check variety in seed yield per plant (g).

A set of 25 genotypes and four checks were screened for eight quantitative and qualitative characters (Table 85) at Almora. The check PRR-2 was observed to be early in flowering (61.02 days) and maturity (96.60 days). The genotypes IC421875 (11.60 g) and IC419489 (10.40 g) were recorded to have high seed yield per plant. Longest pod was observed in the genotype IC419489 (10.30 cm) followed by IC524084 (10.10 cm). Maximum 100 seed weight was observed in the genotype IC524068 (9.61 g) followed by IC419489

(9.09 g). The maximum plant height (162.00 cm) was found in the genotype IC524084 followed by IC524085 (160.00 cm).

A set of 25 genotypes and four checks were evaluated for nine yield contributing characters and five qualitative characters (Table 85) at Bhowali. No genotype was superior to check in flowering and maturity. Longest pod was observed in the genotype IC538878 (12.57 cm). Maximum 100 seed weight was recorded (10.49 g) in the genotype IC419489 followed by IC524549 (10.35 g). Highest seed yield (q/ha) was observed in the check variety LRB-460 (14.17 q/ha).

A set of 25 genotypes was screened for eleven quantitative characters at NBPGR, Shillong. Early flowering was observed in the genotypes IC421926 (46.00 days) while early maturity in the genotype, IC524068 (110.40 days). Longest pod (12.46 cm) was recorded in the genotype IC538878 followed by IC137189 (12.18 cm). Maximum 100 seed weight (12.10 g) was recorded with the genotype IC524074 followed by IC419489 (11.40 g). The highest no. of branches per plant (6.40) was observed in the genotype IC538878. The highest seed yielder was recorded in IC524074 (230.20 g/plant) followed by IC524522 (207.30 g/plant).

Summary performance of accessions based on average over the locations has been given below:

Seed yield per plant was highest at Shillong (128.98 g) and very low at Almora (4.34 g). On the basis of average over four locations, the entry IC524074 (68.17 g) was superior to check variety RBL-1 (38.37 g).

The mean flowering time was the earliest at Shillong (56.24 days) and delayed at Shimla (94.79 days). Based on the average over six locations, no entry was superior to check variety in flowering.

Maturity period showed wide variation among the locations. The earliest maturity was observed at Shillong (113.24 days) while it was late at Shimla (165.93 days). On the basis of six locations, no entry was superior to the best check in maturity.

Plant height showed extreme variation ranging from 73.08 cm to 269.02 cm. Plant height was the highest at Shimla (269.02 cm) followed by

Almora (132.02 cm) centre. The lowest plant height was observed at Ranichauri (73.08 cm). Based on the average over six locations, the entry IC524074 (146.20 cm) was the tallest.

100 seed weight (g) recorded at six centres showed that it was the highest at Shillong (8.92 g) and lowest at Almora (6.96 g). Based on the average over six locations entry IC419489 (8.78 g) showed the highest test weight.

Pod length (cm) showed considerable variation among the locations and ranged from 5.64 cm to 12.94 cm. On the basis of average over six locations, entry IC421926 (16.42 cm) showed the longest pod length.

No. of branches per plant recorded at five centres showed that it was the highest at Shillong (4.85) and lowest at Bhowali (2.79). Based on the average over locations, entry IC538870 (3.97) had the highest number of branches.

### **3.1.5 ADZUKI BEAN (*Vigna angularis*)**

A set of 25 accessions supplied by NBPGR, Shimla was planned to be evaluated along with two local checks at three locations viz. NBPGR, Shimla; UUHF, Ranichauri and CSK HPKV, Palampur. Data have been received from all the locations. The list of promising accessions for all the characters has been presented in Table 86 and the mean and range in Table 87.

At Ranichauri twenty five accessions including exotics were evaluated along with check HPU 51 and Totru Local. The crop was destroyed before flowering stage. The maximum plant height (46.40 cm) was found in the genotype EC340270 followed by EC340272 (45.40 cm).

A total of 25 genotypes were evaluated along with checks HPU 51 and Totru Local at NBPGR, Shimla for twelve qualitative (Table 88) and ten quantitative characters. The tallest plant (108.10 cm) was found in the genotype EC340256. Early flowering (59.00 days) was recorded in the genotype, EC340280 whereas early maturity (101.00 days) was recorded in the check HPU-51. Maximum number of pods per plant (42.00) was found in the EC340256. The entry EC340263 was observed as the highest seed yielder (36.50 g/plant).

At Palampur twenty five accessions were evaluated along with checks HPU 51 and Totru Local for seven yield related characters and eleven qualitative characters (Table 86). The entry EC340251 (57.00 days) was superior to best check variety in flowering while EC340263 was early maturing (110.33 days). The EC340253 was found to be the highest seed yielder (39.99 q/ha) followed by genotype EC340279 (34.39 q/ha). The maximum plant height (84.87 cm) was found in the genotype EC340252 followed by EC340253 (84.07 cm).

The performance of the entries based on two centres (Shimla and Palampur) has been summarized as under:

Flowering time varied from, 57.00 to 63.33 days at Palampur and from 59.00 to 71.00 days at Shimla. Mean flowering time was the earliest at Palampur (58.91 days) followed by at Shimla (64.96 days). On the basis of average over two locations, no entry was the earliest in flowering from best check.

Average maturity period was the earliest at Shimla (110.67 days) and longest at Palampur (114.14 days). The genotype EC340276 (118.17 days) was superior to the check variety based on average over two locations.

Average plant height was recorded to be the highest at Palampur (77.67 cm) followed by at Shimla (62.35 cm) and Ranichauri (36.17 cm). Based on average over three locations, the EC340256 was the tallest (71.28 cm) entry.

### **3.1.6 FABIA BEAN (*Vicia faba*)**

Germplasm screening nursery consisting of 50 accessions supplied by NBPGR, Shimla was planned to be evaluated at two locations viz. Ranichauri and Palampur. The results were received from Palampur centre (Rabi 2011-12). The list of promising genotypes has been presented in Table 89 and the mean and range in Table 90.

At Palampur, a set of 53 germplasm lines including three checks were evaluated in Rabi 2011-12 for ten quantitative characters and fourteen qualitative character (Table 90). The genotype HB-48 (41.00 days) was early in flowering while EC329691 (150.00 days) was earliest in maturity. Maximum plant height (109.00 cm) was observed in the genotype IC243808. The entry IC263634 (32.16 g) was most superior for 100 seed weight while highest seed yield per plant (6.40 g) was found in genotype EC276939.



### **3.1.7 JOB'S TEAR (*Coix lacryma-jobi*)**

Germplasm lines comprising 25 accessions were planned to be evaluated at two locations viz. Shillong and Ranichauri. The results have been received from both the locations. The list of promising genotypes has been presented in Table 92 and the mean and range in Table 93.

Ten yield related characters were recorded at NBPGR, Shillong. The highest seed yield per plant was found to be 19.83 g in the genotype IC417053. Highest no. of tillers per hill was found in the genotype IC524631 (3.20). The highest plant height was found in the genotype IC089390 (374.33 cm) followed by IC416884 (370.00cm).

Four yield related characters were recorded at UUHF, Ranichauri. The highest dry forage yield (65.43 q/ha), fresh forage yield (14.11 q/ha) and No. of tillers per plant (6.93) were found in the genotype IC203983. The highest plant height was found in the entry IC416868 (105.80 cm).

### **3.1.8 PERILLA (*Perilla frutescens*)**

Germplasm lines comprising 25 accessions were planned to be evaluated at two locations viz. Shillong and Ranichauri. The results have been received from both the locations. The list of promising genotypes has been presented in Table 94 and the mean and range in Table 95.

Twelve yield related characters were recorded at NBPGR, Shillong. The highest seed yield per plant was found to be 27.39 g in the genotype IC526660. Highest no. of primary branches was found in the genotype IC211608 (30.13). The highest plant height was found in the genotype IC003955 (176.00 cm) followed by IC419475 (157.00 cm).

Six yield related characters were recorded at UUHF, Ranichauri. The highest seed yield was found to be 6.42 q/ha in the genotype IC003942. Highest no. of primary branches was found in the genotype IC204185 (5.40). The highest plant height was found in the genotype IC374593 (51.13 cm) followed by IC526660 (49.33 cm).

The performance of the entries based on two centres has been summarized as under:

Mean flowering time was varied at both the centres at Ranichauri (135.68 days) and Shillong (112.14 days). On the basis of average over two locations, no entry was earliest in flowering.

Average maturity period also showed same trend as of flowering at Shillong (176.12 days) and Ranichauri (163.41 days). The genotype IC526701 (161.83 days) was superior to the check variety based on average over two locations.

Average plant height was recorded to be the highest at Shillong (138.09 cm) followed by at Ranichauri (38.91 cm). Based on average over two locations, no entry was taller to check variety.

Average seed yield was recorded to be the highest at Shillong (6.07 q/ha) and very low at Ranichauri (2.85 q/ha). Based on average over two locations, the check variety Jaintia was the highest seed yielder (9.35 q/ha).

**Table 74. Promising lines in grain amaranth germplasm for various characters at various locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Almora (Accessions 50)</b>				
1.	Days to 50% flowering	56.00-79.00	IC038301, IC038378, IC038375, IC038376, IC038129, IC038371, IC038384, IC038451, IC038480, IC038496 (<62.00 days)	IC35407 (Durga) (61.80 days)
2.	Days to maturity	92.00-135.00	IC038378, IC038301, IC038373 (<95.00 days)	IC35407 (Durga) (95.60 days)
3.	Plant height (cm)	59.00-172.00	IC038488, IC038373, IC038408 (> 159.80 cm)	IC35407 (Durga) (155.00 cm)
4.	Inflorescence length (cm)	31.00-85.00	IC038308, IC038129, IC038488, IC038480, IC038158, IC038373, IC038561, IC038378, IC038430, IC038496 (>64.80 cm)	Annapurna (64.20 cm)
5.	Leaf length (cm)	6.20-20.36	-	IC35407 (Durga) (20.36 cm)
6.	Leaf width (cm)	3.30-10.70	IC038193, IC038373 (> 10.09 cm)	IC35407 (Durga) (10.02 cm)
7.	Petiole length (cm)	3.10-16.50	IC038373 (=16.50 cm)	IC35407 (Durga) (15.72 cm)
8.	Seed yield (q/ha)	0.10-39.30	-	IC35407 (Durga) (39.30 q/ha)
9.	1000 seed weight (g)	0.62-0.98	IC038308, IC038488, IC038496, IC038373, IC038256 (>0.88 g)	PRA-3 (0.85 g)
10.	Seed yield per plant (g)	0.50-48.00	IC038373, IC038488 (>44.39 g)	IC35407 (Durga) (40.40 g)
<b>Ranichauri (Accessions 50)</b>				
1.	Days to 50% flowering	55.00-79.00	IC038164, IC038289, IC038158, IC038193, IC038271, IC038281, IC038308, IC038316, IC038129, IC038192, IC038201, IC038285, IC038196, IC038169, IC038310, IC038371, IC038373, IC038378 (<66.00 days)	IC35407 (Durga) (65.60 days)
2.	Days to maturity	111.00-141.00	IC038164, IC038158, IC038289, IC038193, IC038271, IC038281, IC038308, IC038316, IC038285, IC038129, IC038192, IC038201, IC038196, IC038310, IC038371, IC038373, IC038378 (<125.00 days)	IC35407 (Durga) (124.00 days)

S. No.	Characters	Range	Promising lines	Value of best check
3.	Plant height (cm)	19.50-102.60	IC038500' IC038164 (<86.50 cm)	IC35407 (Durga) (73.65 cm)
4.	Inflorescence length (cm)	7.20-60.00	IC038164, IC038158, IC038500, IC038271 (>43.00 cm)	IC35407 (Durga) (39.50 cm)
5.	Finger length (cm)	1.00-16.25	IC038129, IC038158, IC038164, IC038500, IC038192, IC038518, IC038375, IC038316, IC038371, IC038308, IC038193, IC038271, IC038373 (> 6.55 cm)	PRA-3 6.40
6.	No. of finger per inflorescence	1.80-22.40	IC038500, IC038497, IC038169 (> 18.95)	IC35407 (Durga) (15.83)
7.	Seed yield (q/ha)	9.33-16.67	IC038129, IC038371, IC038378, IC038192, IC038271, IC038384, IC038492 (>17.95 q/ha)	PRA-2 (15.89 q/ha)
8.	Seed volume weight (g/10 ml)	11.48-11.56	IC038129, IC038201, IC038164, IC038193, IC038310, IC038408, IC038285, IC038373, IC038375, IC038158, IC038301, IC038316, IC038423, IC038518, IC038555, IC038256, IC038460, IC038500, IC038520 (>=11.22 g/ 10 ml)	Annapurna & PRA-3 (11.52 g/10 ml)
<b>Sangla (Accession 50)</b>				
1.	Days to 50% flowering	70.00-91.00	IC038488, IC038496, IC038196, IC038256, IC038378 (> 73.00 days)	IC35407 (Durga) (73.60 days)
2.	Days to maturity	138.80-150.00	-	IC35407 (Durga) (138.80 days)
3.	Plant height (cm)	118.66-227.80	IC038423, PL, IC038460, IC038430, IC038456, IC038375, IC038497, IC038520, IC038271, IC038518, IC038498, IC038340, IC038451, IC038525, IC038408, IC038394, IC038380, IC038492, IC038496, IC038555, IC038310 (> 185.35 cm)	PRA-2 (185.30 cm)
4.	No. of branches per plant	7.20-21.60	IC038310, IC038497, PL, IC038340, IC038522, IC038379, IC038378, IC038316, IC038380, IC038164, IC038394, IC038518, IC038281, IC038520, IC038201, IC038386, IC038256, IC038384, IC038525, IC038500, IC038376 (>14.35)	IC35407 (Durga) (14.32)
5.	Leaf length (cm)	12.50-23.70	IC038497, IC038456, IC038561, IC038518, IC038375, IC038423, IC038496, IC038487, IC038522, IC038480, IC038500, IC038556, IC038488, IC038451, IC038340 (>17.95 cm)	PRA-3 (17.76 cm)
6.	Leaf width (cm)	6.10-13.40	IC038164, IC038408, IC038487, IC038555, IC038497, IC038386, IC038394, IC038488, IC038384, IC038456 (<11.49 cm)	IC35407 (Durga) (11.24 cm)

S. No.	Characters	Range	Promising lines	Value of best check
7.	Petiole length (cm)	6.90-16.20	IC038525, IC038497, IC038487, IC038158 (>15.19 cm)	IC35407 (Durga) (15.12 cm)
8.	Lateral spikelet length (cm)	10.20-29.40	IC038423, IC038520, IC038487, IC038518, IC038492, IC038496, IC038522, IC038561, IC038373 (>19.95 cm)	PRA-3 (19.68 cm)
9.	Inflorescence length (cm)	22.20-83.40	IC038430, IC038451, IC038423, IC038522, IC038460, IC038375, IC038376, IC038525, IC038379, IC038378, IC038496, IC038456, IC038394 (>74.78 cm)	Annapurna (74.64 cm)
10.	Seed yield per plant (g)	4.40-32.00	IC038496, IC038525, IC038196, IC038451, IC038375, IC038379, IC038423, IC038492, IC038340, IC038555, IC038256, IC038384, IC038371, IC038456, IC038271, IC038378, IC038522, IC038373, IC038430, IC038129 (>18.74 g)	PRA-3 (18.60 g)
11.	Seed volume weight (g/10 ml)	7.50-9.53	IC038500, IC038555, IC038556, IC038379, IC038289, IC038460, IC038378, IC038408, IC038301, IC038430, IC038394, IC038384, IC038520, IC038375, IC038456, IC038129, IC038256, IC038525, IC038193, IC038451, IC038561, IC038316, IC038376 (>8.68 g/ 10 ml)	IC35407 (Durga) (8.69 g/10 ml)
<b>Shimla (Accession 50)</b>				
1.	Days to 50% flowering	64.00-99.00	IC038193, IC038158, IC038164, IC038301, IC038525 (<67.00 days)	IC35407(Durga) 68.00 (days)
2.	Days to maturity	125.00-160.00	IC038373, IC038340, IC038193, IC038525 (<130.00 days)	IC35407(Durga) 130.00 (days)
3.	Plant height (cm)	228.45-334.60	IC038498, IC038408, IC038480, IC038378, IC038423, IC038380, IC038285, IC038289, IC038375, IC038384, IC038129, IC038456, IC038379, IC038430, IC038271, IC038386, IC038497 (> 292.70 cm)	PRA-3 (292.50 cm)
4.	Inflorescence length (cm)	51.40-90.50	IC038378, IC038394, IC038498, IC038371, IC038500, IC038423, IC038430, IC038271, IC038379, IC038376 (>81.15 cm)	PRA-3 (80.05 cm)
5.	Leaf length (cm)	18.20-30.00	IC038378, IC038525, IC038379, IC038498, IC038492, IC038373, IC038556, IC038164 (>27.15 cm)	IC35407(Durga) (26.48 cm)
6.	Petiole length (cm)	10.15-23.05	IC038498, IC038561, IC038373, IC038164, IC038301, IC038525, IC038487, IC038193, IC038158, IC038379 (>17.95 cm)	IC35407(Durga) 17.88 (cm)
7.	Stem thickness (mm)	2.07-3.11	IC038497, IC038192, IC038520, IC038375, IC038480, IC038271, IC038498, IC038384, IC038394, IC038158, IC038555, IC038201, IC038340, IC038378, IC038460, IC038487, IC038496, IC038518, IC038285, IC038373, IC038408, IC038500, IC038301, IC038561,	PRA-3 (2.62 mm)

S. No.	Characters	Range	Promising lines	Value of best check
			IC038310, IC038386, IC038492, IC038281, IC038371, IC038556, IC038376 ( $\geq 2.62$ mm)	
8.	Lateral spikelet length (cm)	3.00-16.50	IC038316, IC038281, IC038430, IC038500, IC038310, IC038520 ( $> 12.95$ cm)	PRA-2 (12.65 cm)
9.	1000 seed weight (g)	0.50-0.90	-	IC35407(Durga) (0.90 g)
10.	Seed yield per plant (g)	20.08-104.07	IC038129, IC038192, IC038378, IC038376, IC038256, IC038201, IC038408, IC038271, IC038430, IC038308, IC038316, IC038498, IC038374, IC038386, IC038380 ( $>70.13$ g)	PRA-2 (66.87 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	65.50-87.00	IC038301, IC038158, IC038193, IC038164 ( $<68.00$ days)	IC35407 (Durga) (67.25 days)
2.	Days to maturity	120.75-144.00	IC038373, IC038193 ( $<122.00$ days)	IC35407 (Durga) (122.10 days)
3.	Plant height (cm)	129.54-209.25	IC038456, IC038380, IC038379, IC038376, IC038374, IC038480, IC038408, IC038498, IC038430, IC038423, IC038460, IC038375 ( $> 163.55$ cm)	Annapurna (161.27 cm)
4.	Inflorescence length (cm)	37.83-74.00	IC038376, IC038379, IC038480, IC038500, IC038374, IC038430, IC038456, IC038378, IC038380, IC038451 ( $>59.30$ cm)	Annapurna (59.28 cm)
5.	Leaf length (cm)	13.57-21.26	-	IC35407 (Durga) (21.26 cm)
6.	Leaf width (cm)	5.05-11.35	IC038164 ( $=11.35$ )	IC35407 (Durga) (10.63 cm)
7.	Lateral spikelet length (cm)	7.70-20.75	IC038423, IC038520, IC038430, IC038316, IC038522, IC038561 (15.82 cm)	PRA-2 (15.61 cm)
8.	Petiole length (cm)	7.92-16.42	IC038373 ( $=16.42$ cm)	IC35407 (Durga) 16.24 cm)
9.	Seed volume weight (g/10 ml)	7.50-10.53	IC038500, IC038555, IC038556, IC038460, IC038408, IC038289, IC038301, IC038378, IC038430, IC038394, IC038375, IC038520, IC038384, IC038129, IC038193, IC038256, IC038451, IC038310, IC038525, IC038561, IC038316 ( $>10.10$ g/10 ml)	IC35407 (Durga) Annapurna (10.10 g/10 ml)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
10.	Seed yield per plant (g)	15.66-75.50	IC038373, IC038129, IC038378, IC038192, IC038256, IC038376, IC038408, IC038430, IC038271, IC038201, IC038374, IC038488, IC038308, IC038340, IC038525, IC038380, IC038316 (>30.46 g)	PRA-2 (29.83 g)
11.	Seed yield (q/ha)	1.40-26.57	-	IC35407 (Durga) (26.57 q/ha)
12.	1000 seed weight (g)	0.58-0.89	IC038308, IC038488 (> 0.87g)	IC35407 (Durga) (0.86g)

**Table 75. Multilocation evaluation of germplasm lines in grain amaranth at different locations- Hills (2012)**

S.No.	Accession No.	Days to 50% flowering					Days to maturity				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
1	IC038129	61.00	60.00	87.00	79.00	<b>71.75</b>	114.00	119.00	147.00	154.00	<b>133.50</b>
2	IC038158	63.00	58.00	77.00	65.00	<b>65.75</b>	117.00	114.00	144.00	149.00	<b>131.00</b>
3	IC038164	71.00	55.00	77.00	66.00	<b>67.25</b>	114.00	111.00	147.00	147.00	<b>129.75</b>
4	IC038169	71.00	64.00	78.00	80.00	<b>73.25</b>	114.00	125.00	150.00	143.00	<b>133.00</b>
5	IC038192	74.00	60.00	81.00	82.00	<b>74.25</b>	117.00	119.00	147.00	153.00	<b>134.00</b>
6	IC038193	67.00	58.00	77.00	64.00	<b>66.50</b>	98.00	117.00	142.00	128.00	<b>121.25</b>
7	IC038196	69.00	63.00	72.00	74.00	<b>69.50</b>	120.00	121.00	142.00	157.00	<b>135.00</b>
8	IC038201	69.00	60.00	81.00	75.00	<b>71.25</b>	117.00	119.00	150.00	156.00	<b>135.50</b>
9	IC038256	71.00	66.00	72.00	80.00	<b>72.25</b>	120.00	126.00	144.00	156.00	<b>136.50</b>
10	IC038271	62.00	58.00	79.00	82.00	<b>70.25</b>	109.00	117.00	144.00	157.00	<b>131.75</b>
11	IC038281	63.00	58.00	81.00	76.00	<b>69.50</b>	109.00	117.00	147.00	154.00	<b>131.75</b>
12	IC038285	71.00	60.00	83.00	78.00	<b>73.00</b>	113.00	118.00	147.00	158.00	<b>134.00</b>
13	IC038289	62.00	56.00	81.00	79.00	<b>69.50</b>	97.00	115.00	147.00	157.00	<b>129.00</b>
14	IC038301	56.00	66.00	74.00	66.00	<b>65.50</b>	94.00	125.00	142.00	157.00	<b>129.50</b>
15	IC038308	63.00	58.00	74.00	90.00	<b>71.25</b>	111.00	117.00	140.00	157.00	<b>131.25</b>
16	IC038310	64.00	65.00	89.00	93.00	<b>77.75</b>	115.00	124.00	142.00	159.00	<b>135.00</b>
17	IC038316	62.00	58.00	87.00	88.00	<b>73.75</b>	107.00	117.00	147.00	156.00	<b>131.75</b>
18	IC038340	75.00	70.00	81.00	81.00	<b>76.75</b>	110.00	129.00	144.00	127.00	<b>127.50</b>
19	IC038371	61.00	65.00	81.00	88.00	<b>73.75</b>	122.00	124.00	144.00	156.00	<b>136.50</b>
20	IC038373	62.00	65.00	74.00	72.00	<b>68.25</b>	94.00	124.00	140.00	125.00	<b>120.75</b>
21	IC038374	63.00	-	80.00	86.00	<b>76.33</b>	114.00	-	140.00	156.00	<b>136.67</b>
22	IC038375	59.00	70.00	81.00	84.00	<b>73.50</b>	96.00	129.00	147.00	157.00	<b>132.25</b>
23	IC038376	60.00	-	81.00	90.00	<b>77.00</b>	96.00	-	147.00	157.00	<b>133.33</b>
24	IC038378	56.00	65.00	72.00	92.00	<b>71.25</b>	92.00	124.00	140.00	155.00	<b>127.75</b>
25	IC038379	63.00	-	77.00	99.00	<b>79.67</b>	120.00	-	140.00	155.00	<b>138.33</b>
26	IC038380	62.00	-	79.00	98.00	<b>79.67</b>	115.00	-	142.00	154.00	<b>137.00</b>



S.No.	Accession No.	Plant height (cm)					Inflorescence length (cm)					Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
1	IC038129	128.00	45.40	169.00	298.40	<b>160.20</b>	75.00	18.60	61.80	80.00	<b>58.85</b>	13.90	17.10	22.20	<b>17.73</b>
2	IC038158	135.00	73.20	160.80	228.45	<b>149.36</b>	66.00	51.60	37.20	56.80	<b>52.90</b>	17.10	16.80	25.40	<b>19.77</b>
3	IC038164	118.00	87.00	152.60	251.85	<b>152.36</b>	61.00	60.00	31.80	57.15	<b>52.49</b>	16.70	14.80	27.20	<b>19.57</b>
4	IC038169	101.00	56.00	161.00	271.65	<b>147.41</b>	40.00	20.00	22.20	69.10	<b>37.83</b>	19.60	16.60	21.20	<b>19.13</b>
5	IC038192	91.00	59.40	184.00	286.45	<b>155.21</b>	59.00	30.80	48.20	76.05	<b>53.51</b>	10.80	16.70	25.30	<b>17.60</b>
6	IC038193	60.00	56.20	155.20	246.75	<b>129.54</b>	62.00	29.40	47.40	62.75	<b>50.39</b>	20.30	14.90	25.60	<b>20.27</b>
7	IC038196	67.00	41.20	180.20	247.60	<b>134.00</b>	37.00	26.20	52.60	66.00	<b>45.45</b>	8.90	15.80	22.10	<b>15.60</b>
8	IC038201	85.00	48.20	160.40	271.90	<b>141.38</b>	49.00	24.20	60.00	71.00	<b>51.05</b>	12.90	15.90	21.20	<b>16.67</b>
9	IC038256	103.00	37.00	181.60	276.05	<b>149.41</b>	53.00	19.60	71.40	79.50	<b>55.88</b>	12.40	15.10	22.00	<b>16.50</b>
10	IC038271	66.00	57.20	192.60	296.15	<b>152.99</b>	45.00	43.20	53.00	81.50	<b>55.68</b>	7.90	14.60	18.20	<b>13.57</b>
11	IC038281	85.00	38.20	144.00	291.50	<b>139.68</b>	59.00	16.40	62.20	70.65	<b>52.06</b>	11.20	16.10	18.80	<b>15.37</b>
12	IC038285	80.00	37.00	118.66	301.40	<b>134.27</b>	48.00	22.20	43.00	69.95	<b>45.79</b>	10.30	13.70	22.00	<b>15.33</b>
13	IC038289	108.00	30.80	154.40	299.70	<b>148.23</b>	64.00	19.00	69.40	59.10	<b>52.88</b>	10.80	13.80	18.70	<b>14.43</b>
14	IC038301	131.00	56.00	150.00	234.75	<b>142.94</b>	57.00	30.00	60.60	60.55	<b>52.04</b>	17.70	12.90	26.20	<b>18.93</b>
15	IC038308	135.00	53.60	174.20	245.40	<b>152.05</b>	85.00	31.00	52.40	68.50	<b>59.23</b>	19.10	17.40	24.15	<b>20.22</b>
16	IC038310	93.00	36.60	185.40	255.85	<b>142.71</b>	50.00	31.40	57.40	59.25	<b>49.51</b>	14.10	15.10	18.30	<b>15.83</b>
17	IC038316	114.00	44.40	154.40	281.30	<b>148.53</b>	61.00	12.00	50.60	62.50	<b>46.53</b>	14.90	14.40	19.45	<b>16.25</b>
18	IC038340	119.00	38.25	190.20	271.55	<b>154.75</b>	57.00	24.80	69.80	78.25	<b>57.46</b>	17.20	18.00	24.40	<b>19.87</b>
19	IC038371	89.00	45.80	148.66	277.10	<b>140.14</b>	52.00	21.25	51.00	87.10	<b>52.84</b>	12.10	17.33	21.25	<b>16.89</b>
20	IC038373	163.00	64.80	165.00	236.75	<b>157.39</b>	66.00	26.80	71.40	59.45	<b>55.91</b>	20.00	14.50	27.40	<b>20.63</b>
21	IC038374	130.00	-	176.60	258.45	<b>188.35</b>	63.00	-	52.00	76.50	<b>63.83</b>	15.70	12.50	19.05	<b>15.75</b>
22	IC038375	106.00	52.00	197.20	299.10	<b>163.58</b>	59.00	29.00	79.00	60.25	<b>56.81</b>	14.70	19.80	23.45	<b>19.32</b>
23	IC038376	113.00	-	180.40	278.50	<b>190.63</b>	62.00	-	78.80	81.20	<b>74.00</b>	13.10	16.80	21.50	<b>17.13</b>
24	IC038378	89.00	26.00	176.60	313.25	<b>151.21</b>	65.00	8.00	77.00	90.50	<b>60.13</b>	8.30	16.70	30.00	<b>18.33</b>
25	IC038379	98.00	-	184.40	298.15	<b>193.52</b>	45.00	-	77.40	81.25	<b>67.88</b>	9.10	14.80	28.20	<b>17.37</b>
26	IC038380	96.00	-	187.00	306.20	<b>196.40</b>	47.00	-	66.00	66.70	<b>59.90</b>	10.60	15.90	23.40	<b>16.63</b>

S.No.	Accession No.	Leaf width (cm)			Lateral spikelet length (cm)			Petiole length (cm)				Seed yield/plant (g)			
		Almora	Sangla	Mean	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
1	IC038129	7.00	9.70	<b>8.35</b>	18.60	6.25	<b>12.43</b>	8.30	11.80	14.50	<b>11.53</b>	18.89	18.75	104.07	<b>47.24</b>
2	IC038158	7.50	10.90	<b>9.20</b>	15.60	3.50	<b>9.55</b>	9.30	15.20	18.20	<b>14.23</b>	20.25	13.64	50.17	<b>28.02</b>
3	IC038164	9.30	13.40	<b>11.35</b>	14.00	6.70	<b>10.35</b>	10.00	11.80	20.30	<b>14.03</b>	39.20	11.36	32.68	<b>27.75</b>
4	IC038169	7.10	10.40	<b>8.75</b>	10.80	4.60	<b>7.70</b>	6.20	10.10	11.50	<b>9.27</b>	1.00	7.00	38.97	<b>15.66</b>
5	IC038192	5.10	9.60	<b>7.35</b>	14.60	9.00	<b>11.80</b>	5.80	9.30	15.80	<b>10.30</b>	8.28	13.89	102.56	<b>41.58</b>
6	IC038193	10.70	9.60	<b>10.15</b>	14.20	9.10	<b>11.65</b>	14.90	14.30	18.30	<b>15.83</b>	22.77	10.53	33.67	<b>22.32</b>
7	IC038196	4.30	9.00	<b>6.65</b>	16.00	7.50	<b>11.75</b>	4.70	12.80	14.30	<b>10.60</b>	2.00	28.57	40.04	<b>23.54</b>
8	IC038201	6.60	8.50	<b>7.55</b>	17.40	11.50	<b>14.45</b>	8.60	9.90	15.15	<b>11.22</b>	9.00	10.00	85.00	<b>34.67</b>
9	IC038256	6.00	7.90	<b>6.95</b>	14.00	12.10	<b>13.05</b>	6.80	10.50	15.10	<b>10.80</b>	4.80	23.44	90.10	<b>39.45</b>
10	IC038271	4.20	8.50	<b>6.35</b>	15.40	12.00	<b>13.70</b>	3.60	9.90	17.60	<b>10.37</b>	1.67	21.88	80.63	<b>34.73</b>
11	IC038281	5.40	9.80	<b>7.60</b>	11.80	15.50	<b>13.65</b>	6.40	12.90	13.40	<b>10.90</b>	1.33	9.17	52.13	<b>20.88</b>
12	IC038285	5.00	8.90	<b>6.95</b>	14.60	6.70	<b>10.65</b>	4.70	8.10	17.45	<b>10.08</b>	0.50	8.40	49.16	<b>19.35</b>
13	IC038289	5.30	8.60	<b>6.95</b>	12.80	7.50	<b>10.15</b>	5.90	8.30	13.80	<b>9.33</b>	5.78	13.64	60.10	<b>26.51</b>
14	IC038301	9.00	8.40	<b>8.70</b>	17.60	10.60	<b>14.10</b>	13.50	11.10	20.15	<b>14.92</b>	24.80	16.67	20.08	<b>20.52</b>
15	IC038308	8.50	10.00	<b>9.25</b>	12.80	6.00	<b>9.40</b>	11.10	11.70	17.25	<b>13.35</b>	11.30	14.29	76.76	<b>34.12</b>
16	IC038310	6.60	10.00	<b>8.30</b>	12.80	13.70	<b>13.25</b>	8.00	11.80	13.70	<b>11.17</b>	14.00	9.00	55.92	<b>26.31</b>
17	IC038316	8.00	9.00	<b>8.50</b>	17.40	16.50	<b>16.95</b>	8.20	12.30	14.85	<b>11.78</b>	12.00	4.40	75.05	<b>30.48</b>
18	IC038340	7.20	9.90	<b>8.55</b>	11.00	8.00	<b>9.50</b>	9.70	11.90	16.15	<b>12.58</b>	14.00	24.00	63.41	<b>33.80</b>
19	IC038371	6.20	9.80	<b>8.00</b>	17.33	11.25	<b>14.29</b>	8.20	10.50	12.05	<b>10.25</b>	3.00	22.50	42.74	<b>22.75</b>
20	IC038373	10.10	9.00	<b>9.55</b>	20.00	10.70	<b>15.35</b>	16.50	11.50	21.25	<b>16.42</b>	148.00	20.80	57.71	<b>75.50</b>
21	IC038374	7.40	8.90	<b>8.15</b>	10.20	8.50	<b>9.35</b>	6.90	11.30	10.15	<b>9.45</b>	17.00	15.00	71.72	<b>34.57</b>
22	IC038375	6.60	7.50	<b>7.05</b>	14.60	9.20	<b>11.90</b>	8.70	9.20	16.15	<b>11.35</b>	12.80	25.00	45.07	<b>27.62</b>
23	IC038376	5.60	7.10	<b>6.35</b>	19.00	6.70	<b>12.85</b>	7.00	9.60	16.30	<b>10.97</b>	8.50	15.00	94.29	<b>39.26</b>
24	IC038378	4.00	7.70	<b>5.85</b>	16.80	9.50	<b>13.15</b>	5.00	12.10	16.80	<b>11.30</b>	7.80	21.00	98.60	<b>42.47</b>
25	IC038379	4.00	6.10	<b>5.05</b>	18.20	7.10	<b>12.65</b>	5.10	9.80	18.00	<b>10.97</b>	2.00	25.00	56.17	<b>27.72</b>
26	IC038380	5.80	9.90	<b>7.85</b>	16.00	6.20	<b>11.10</b>	4.90	7.60	11.25	<b>7.92</b>	5.43	17.00	70.14	<b>30.86</b>

S.No.	Accession No.	Seed yield (q/ha)			1000 seed weight (g)			10ml seed weight (g)			Almora	Ranichauri		Sangla	Shimla
		Almora	Ranichauri	Mean	Almora	Shimla	Mean	Ranichauri	Sangla	Mean	No. of plants harvested	Finger length (cm)	No. of finger per inflorescence	Number of branches per plant	Stem thickness (mm)
1	IC038129	17.00	16.67	<b>16.83</b>	0.77	0.70	<b>0.74</b>	11.56	8.80	<b>10.18</b>	9.00	16.25	11.40	13.40	2.52
2	IC038158	16.20	15.00	<b>15.60</b>	0.67	0.70	<b>0.69</b>	11.53	8.42	<b>9.98</b>	8.00	14.40	8.80	12.40	2.85
3	IC038164	19.60	13.33	<b>16.47</b>	0.69	0.65	<b>0.67</b>	11.55	8.64	<b>10.10</b>	5.00	11.80	12.40	16.80	2.19
4	IC038169	0.10	12.67	<b>6.38</b>	0.70	0.60	<b>0.65</b>	11.48	7.90	<b>9.69</b>	1.00	4.00	19.00	10.40	2.25
5	IC038192	5.80	16.00	<b>10.90</b>	0.68	0.60	<b>0.64</b>	11.50	8.46	<b>9.98</b>	7.00	8.80	13.40	14.00	2.95
6	IC038193	29.60	9.33	<b>19.47</b>	0.81	0.65	<b>0.73</b>	11.55	8.75	<b>10.15</b>	13.00	6.80	11.20	11.20	2.32
7	IC038196	0.40	15.33	<b>7.87</b>	0.78	0.80	<b>0.79</b>	11.51	8.52	<b>10.02</b>	2.00	6.20	13.40	14.20	2.47
8	IC038201	1.80	13.33	<b>7.57</b>	0.75	0.70	<b>0.73</b>	11.56	8.34	<b>9.95</b>	2.00	5.00	11.20	15.40	2.81
9	IC038256	2.40	15.33	<b>8.87</b>	0.89	0.65	<b>0.77</b>	11.52	8.76	<b>10.14</b>	5.00	5.00	8.80	15.20	2.27
10	IC038271	1.00	16.00	<b>8.50</b>	0.68	0.80	<b>0.74</b>	11.49	8.58	<b>10.04</b>	6.00	6.80	11.80	14.20	2.91
11	IC038281	0.40	14.67	<b>7.53</b>	0.69	0.60	<b>0.65</b>	11.49	8.29	<b>9.89</b>	3.00	5.80	4.40	16.00	2.65
12	IC038285	0.10	12.67	<b>6.38</b>	0.66	0.50	<b>0.58</b>	11.54	7.91	<b>9.73</b>	2.00	5.20	10.20	10.33	2.77
13	IC038289	5.20	15.33	<b>10.27</b>	0.78	0.50	<b>0.64</b>	11.49	8.95	<b>10.22</b>	9.00	2.20	6.60	14.00	2.19
14	IC038301	24.80	15.00	<b>19.90</b>	0.74	0.60	<b>0.67</b>	11.53	8.90	<b>10.22</b>	10.00	5.20	12.20	12.60	2.72
15	IC038308	3.40	10.00	<b>6.70</b>	0.98	0.80	<b>0.89</b>	11.50	8.31	<b>9.91</b>	3.00	7.40	13.00	13.20	2.55
16	IC038310	5.60	14.67	<b>10.13</b>	0.66	0.60	<b>0.63</b>	11.55	8.69	<b>10.12</b>	4.00	2.60	8.40	21.60	2.71
17	IC038316	10.80	15.00	<b>12.90</b>	0.76	0.60	<b>0.68</b>	11.53	8.70	<b>10.12</b>	9.00	7.80	11.80	17.20	2.32
18	IC038340	9.80	14.67	<b>12.23</b>	0.81	0.75	<b>0.78</b>	11.49	8.69	<b>10.09</b>	7.00	5.00	10.00	19.40	2.81
19	IC038371	1.80	16.67	<b>9.23</b>	0.74	0.65	<b>0.70</b>	11.50	8.53	<b>10.02</b>	6.00	7.80	7.20	11.66	2.65
20	IC038373	29.60	14.00	<b>21.80</b>	0.90	0.70	<b>0.80</b>	11.54	8.52	<b>10.03</b>	2.00	6.60	11.00	10.80	2.77
21	IC038374	10.20	-	<b>10.20</b>	0.71	0.80	<b>0.76</b>	-	7.50	<b>7.50</b>	6.00	-	-	7.20	2.17
22	IC038375	6.40	10.00	<b>8.20</b>	0.69	0.60	<b>0.65</b>	11.54	8.84	<b>10.19</b>	5.00	8.00	8.00	12.20	2.92
23	IC038376	6.80	-	<b>6.80</b>	0.66	0.80	<b>0.73</b>	-	8.70	<b>8.70</b>	8.00	-	-	14.40	2.62
24	IC038378	3.90	16.67	<b>10.28</b>	0.65	0.70	<b>0.68</b>	11.51	8.92	<b>10.22</b>	5.00	2.00	3.00	18.00	2.81
25	IC038379	1.40	-	<b>1.40</b>	0.73	0.60	<b>0.67</b>	-	9.01	<b>9.01</b>	7.00	-	-	18.20	2.17
26	IC038380	3.80	-	<b>3.80</b>	0.72	0.70	<b>0.71</b>	-	8.63	<b>8.63</b>	7.00	-	-	17.00	2.19

S.No.	Accession No.	Days to 50% flowering					Days to maturity				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
27	IC038384	61.00	70.00	74.00	90.00	<b>73.75</b>	97.00	129.00	142.00	155.00	<b>130.75</b>
28	IC038386	65.00	76.00	89.00	90.00	<b>80.00</b>	111.00	135.00	147.00	155.00	<b>137.00</b>
29	IC038394	64.00	76.00	83.00	92.00	<b>78.75</b>	115.00	135.00	144.00	156.00	<b>137.50</b>
30	IC038408	67.00	75.00	89.00	97.00	<b>82.00</b>	114.00	134.00	147.00	160.00	<b>138.75</b>
31	IC038423	65.00	76.00	87.00	93.00	<b>80.25</b>	109.00	135.00	150.00	156.00	<b>137.50</b>
32	IC038430	62.00	76.00	83.00	90.00	<b>77.75</b>	107.00	134.00	147.00	155.00	<b>135.75</b>
33	IC038451	61.00	70.00	87.00	87.00	<b>76.25</b>	97.00	129.00	147.00	157.00	<b>132.50</b>
34	IC038456	79.00	-	91.00	91.00	<b>87.00</b>	113.00	-	147.00	154.00	<b>138.00</b>
35	IC038460	64.00	76.00	81.00	87.00	<b>77.00</b>	115.00	135.00	142.00	155.00	<b>136.75</b>
36	IC038480	61.00	-	83.00	93.00	<b>79.00</b>	97.00	-	150.00	153.00	<b>133.33</b>
37	IC038487	64.00	76.00	87.00	87.00	<b>78.50</b>	113.00	135.00	144.00	156.00	<b>137.00</b>
38	IC038488	62.00	70.00	70.00	89.00	<b>72.75</b>	109.00	129.00	150.00	157.00	<b>136.25</b>
39	IC038492	65.00	76.00	79.00	88.00	<b>77.00</b>	119.00	134.00	150.00	157.00	<b>140.00</b>
40	IC038496	61.00	70.00	71.00	86.00	<b>72.00</b>	97.00	130.00	142.00	156.00	<b>131.25</b>
41	IC038497	79.00	76.00	79.00	97.00	<b>82.75</b>	135.00	136.00	150.00	155.00	<b>144.00</b>
42	IC038498	64.00	79.00	81.00	89.00	<b>78.25</b>	114.00	139.00	140.00	151.00	<b>136.00</b>
43	IC038500	64.00	75.00	79.00	88.00	<b>76.50</b>	126.00	134.00	142.00	157.00	<b>139.75</b>
44	IC038518	64.00	70.00	74.00	94.00	<b>75.50</b>	123.00	130.00	142.00	152.00	<b>136.75</b>
45	IC038520	63.00	75.00	77.00	98.00	<b>78.25</b>	117.00	135.00	142.00	155.00	<b>137.25</b>
46	IC038522	69.00	79.00	74.00	93.00	<b>78.75</b>	109.00	141.00	140.00	152.00	<b>135.50</b>
47	IC038525	71.00	75.00	74.00	66.00	<b>71.50</b>	122.00	135.00	140.00	129.00	<b>131.50</b>
48	IC038555	77.00	79.00	74.00	94.00	<b>81.00</b>	118.00	141.00	150.00	156.00	<b>141.25</b>
49	IC038556	62.00	75.00	74.00	90.00	<b>75.25</b>	120.00	135.00	144.00	151.00	<b>137.50</b>
50	IC038561	63.00	70.00	77.00	91.00	<b>75.25</b>	120.00	129.00	147.00	152.00	<b>137.00</b>
<b>Mean for check variety</b>											
	<b>Annapurna (C)</b>	<b>64.80</b>	<b>69.00</b>	<b>82.60</b>	<b>91.00</b>	<b>76.85</b>	<b>117.40</b>	<b>128.40</b>	<b>143.80</b>	<b>153.00</b>	<b>135.65</b>
	<b>IC35407 (Durga) (C)</b>	<b>61.80</b>	<b>65.60</b>	<b>73.60</b>	<b>68.00</b>	<b>67.25</b>	<b>95.60</b>	<b>124.00</b>	<b>138.80</b>	<b>130.00</b>	<b>122.10</b>
	<b>PRA-2 (C)</b>	<b>67.60</b>	<b>68.60</b>	<b>84.80</b>	<b>94.50</b>	<b>78.88</b>	<b>119.20</b>	<b>128.00</b>	<b>147.00</b>	<b>155.50</b>	<b>137.43</b>
	<b>PRA-3 (C)</b>	<b>70.60</b>	<b>70.00</b>	<b>81.00</b>	<b>95.50</b>	<b>79.28</b>	<b>125.80</b>	<b>129.00</b>	<b>146.00</b>	<b>155.50</b>	<b>139.08</b>

S.No.	Accession No.	Plant height (cm)					Inflorescence length (cm)					Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
27	IC038384	71.00	19.50	166.00	298.50	<b>138.75</b>	51.00	8.00	73.40	78.05	<b>52.61</b>	8.20	15.80	21.10	<b>15.03</b>
28	IC038386	105.00	42.50	175.20	294.35	<b>154.26</b>	55.00	22.00	67.80	67.00	<b>52.95</b>	11.20	15.20	24.00	<b>16.80</b>
29	IC038394	94.00	22.00	187.60	291.55	<b>148.79</b>	53.00	10.00	74.80	90.00	<b>56.95</b>	14.40	17.40	25.50	<b>19.10</b>
30	IC038408	160.00	28.33	188.60	331.10	<b>177.01</b>	59.00	8.00	65.80	59.70	<b>48.13</b>	12.30	16.50	22.45	<b>17.08</b>
31	IC038423	99.00	31.50	227.80	310.70	<b>167.25</b>	54.00	8.50	81.20	86.15	<b>57.46</b>	13.00	19.60	24.85	<b>19.15</b>
32	IC038430	129.00	37.67	208.00	297.85	<b>168.13</b>	65.00	12.00	83.40	86.10	<b>61.63</b>	14.90	17.70	23.65	<b>18.75</b>
33	IC038451	102.00	48.00	190.00	263.15	<b>150.79</b>	59.00	19.00	82.60	76.70	<b>59.33</b>	12.90	18.10	18.75	<b>16.58</b>
34	IC038456	128.00	-	201.40	298.35	<b>209.25</b>	50.00	-	75.00	56.10	<b>60.37</b>	13.30	22.40	22.30	<b>19.33</b>
35	IC038460	119.00	30.50	218.40	289.10	<b>164.25</b>	54.00	12.50	79.80	72.80	<b>54.78</b>	12.60	16.90	25.60	<b>18.37</b>
36	IC038480	92.00	-	135.20	324.70	<b>183.97</b>	67.00	-	55.00	75.00	<b>65.67</b>	11.80	18.70	19.40	<b>16.63</b>
37	IC038487	90.00	48.00	176.00	266.25	<b>145.06</b>	42.00	23.00	63.20	67.35	<b>48.89</b>	12.70	18.90	23.80	<b>18.47</b>
38	IC038488	172.00	32.40	163.00	275.30	<b>160.68</b>	73.00	10.40	70.40	61.00	<b>53.70</b>	18.40	18.30	22.10	<b>19.60</b>
39	IC038492	96.00	41.75	186.80	292.00	<b>154.14</b>	55.00	23.25	70.40	69.00	<b>54.41</b>	9.80	16.60	27.60	<b>18.00</b>
40	IC038496	125.00	36.00	186.80	269.85	<b>154.41</b>	65.00	12.50	76.40	69.00	<b>55.73</b>	12.90	19.40	25.00	<b>19.10</b>
41	IC038497	78.00	50.00	196.40	292.75	<b>154.29</b>	35.00	25.20	64.20	61.70	<b>46.53</b>	11.10	23.70	24.60	<b>19.80</b>
42	IC038498	96.00	52.20	190.40	334.60	<b>168.30</b>	44.00	29.80	73.80	87.65	<b>58.81</b>	12.30	17.70	28.00	<b>19.33</b>
43	IC038500	110.00	102.60	179.40	237.15	<b>157.29</b>	52.00	47.20	69.40	86.75	<b>63.84</b>	14.20	18.50	25.20	<b>19.30</b>
44	IC038518	60.00	71.20	191.40	275.25	<b>149.46</b>	39.00	38.60	73.20	80.00	<b>57.70</b>	6.20	21.00	24.25	<b>17.15</b>
45	IC038520	59.00	39.80	193.20	286.25	<b>144.56</b>	31.00	21.20	71.80	71.50	<b>48.88</b>	7.20	16.10	20.60	<b>14.63</b>
46	IC038522	77.00	27.75	176.00	271.60	<b>138.09</b>	46.00	9.75	80.20	61.25	<b>49.30</b>	8.20	18.90	21.35	<b>16.15</b>
47	IC038525	114.00	57.00	190.00	251.15	<b>153.04</b>	45.00	26.20	77.60	57.10	<b>51.48</b>	17.10	15.90	28.40	<b>20.47</b>
48	IC038555	79.00	27.50	186.20	256.10	<b>137.20</b>	44.00	11.00	62.80	51.40	<b>42.30</b>	8.20	16.50	23.00	<b>15.90</b>
49	IC038556	84.00	22.00	176.40	263.15	<b>136.39</b>	50.00	7.20	68.20	59.25	<b>46.16</b>	11.10	18.50	27.40	<b>19.00</b>
50	IC038561	142.00	22.20	179.80	265.15	<b>152.29</b>	66.00	9.60	69.80	67.25	<b>53.16</b>	13.90	21.30	23.10	<b>19.43</b>
<b>Mean for check variety</b>															
	<b>Annapurna (C)</b>	<b>129.60</b>	<b>51.37</b>	<b>183.08</b>	<b>281.03</b>	<b>161.27</b>	<b>64.20</b>	<b>24.70</b>	<b>74.64</b>	<b>73.58</b>	<b>59.28</b>	<b>14.40</b>	<b>16.89</b>	<b>23.40</b>	<b>18.23</b>
	<b>IC35407 (Durga) (C)</b>	<b>155.00</b>	<b>73.65</b>	<b>160.24</b>	<b>247.20</b>	<b>159.02</b>	<b>62.00</b>	<b>39.50</b>	<b>56.36</b>	<b>55.10</b>	<b>53.24</b>	<b>20.36</b>	<b>16.95</b>	<b>26.48</b>	<b>21.26</b>
	<b>PRA-2 (C)</b>	<b>118.60</b>	<b>47.70</b>	<b>185.30</b>	<b>279.70</b>	<b>157.83</b>	<b>61.00</b>	<b>22.93</b>	<b>72.38</b>	<b>70.05</b>	<b>56.59</b>	<b>14.56</b>	<b>16.56</b>	<b>20.93</b>	<b>17.35</b>
	<b>PRA-3 (C)</b>	<b>77.00</b>	<b>65.26</b>	<b>181.48</b>	<b>292.50</b>	<b>154.06</b>	<b>40.00</b>	<b>29.94</b>	<b>68.88</b>	<b>80.05</b>	<b>54.72</b>	<b>9.52</b>	<b>17.76</b>	<b>23.65</b>	<b>16.98</b>

S.No.	Accession No.	Leaf width (cm)			Lateral spikelet length (cm)			Petiole length (cm)				Seed yield/plant (g)			
		Almora	Sangla	Mean	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
27	IC038384	4.30	11.50	<b>7.90</b>	14.80	7.65	<b>11.23</b>	4.30	6.90	17.20	<b>9.47</b>	11.50	23.00	51.47	<b>28.66</b>
28	IC038386	5.40	11.80	<b>8.60</b>	13.80	7.85	<b>10.83</b>	5.30	7.20	16.15	<b>9.55</b>	6.00	11.00	71.44	<b>29.48</b>
29	IC038394	6.50	11.70	<b>9.10</b>	16.60	6.10	<b>11.35</b>	7.10	8.60	16.85	<b>10.85</b>	7.78	8.00	39.94	<b>18.57</b>
30	IC038408	6.10	12.30	<b>9.20</b>	13.40	3.50	<b>8.45</b>	7.40	8.60	15.75	<b>10.58</b>	23.43	8.40	81.45	<b>37.76</b>
31	IC038423	7.20	11.00	<b>9.10</b>	29.40	12.10	<b>20.75</b>	5.20	13.20	17.65	<b>12.02</b>	5.40	25.00	55.08	<b>28.49</b>
32	IC038430	7.70	10.90	<b>9.30</b>	19.20	15.50	<b>17.35</b>	8.00	14.10	15.05	<b>12.38</b>	16.50	19.00	76.92	<b>37.47</b>
33	IC038451	5.80	9.10	<b>7.45</b>	19.20	10.45	<b>14.83</b>	6.90	14.00	14.00	<b>11.63</b>	6.33	28.57	38.74	<b>24.55</b>
34	IC038456	6.10	11.50	<b>8.80</b>	17.00	6.50	<b>11.75</b>	6.30	14.10	15.15	<b>11.85</b>	18.00	22.00	48.18	<b>29.39</b>
35	IC038460	6.00	9.00	<b>7.50</b>	16.00	4.50	<b>10.25</b>	5.80	7.90	14.45	<b>9.38</b>	15.71	15.00	48.54	<b>26.42</b>
36	IC038480	6.00	10.90	<b>8.45</b>	12.60	11.00	<b>11.80</b>	5.20	11.40	11.60	<b>9.40</b>	6.00	9.00	50.05	<b>21.68</b>
37	IC038487	8.00	12.10	<b>10.05</b>	26.20	4.90	<b>15.55</b>	7.70	15.30	18.40	<b>13.80</b>	5.00	12.00	53.43	<b>23.48</b>
38	IC038488	8.00	11.60	<b>9.80</b>	15.60	3.00	<b>9.30</b>	9.40	14.00	13.00	<b>12.13</b>	44.40	10.00	48.46	<b>34.29</b>
39	IC038492	5.40	9.40	<b>7.40</b>	22.60	8.20	<b>15.40</b>	5.10	10.20	14.80	<b>10.03</b>	6.00	25.00	32.96	<b>21.32</b>
40	IC038496	4.90	10.90	<b>7.90</b>	22.60	6.75	<b>14.68</b>	6.40	12.20	12.85	<b>10.48</b>	4.86	32.00	44.46	<b>27.11</b>
41	IC038497	5.50	11.90	<b>8.70</b>	16.60	6.50	<b>11.55</b>	4.70	15.70	16.40	<b>12.27</b>	1.50	13.00	32.89	<b>15.80</b>
42	IC038498	5.60	10.60	<b>8.10</b>	17.00	9.75	<b>13.38</b>	5.80	12.00	23.05	<b>13.62</b>	2.40	8.00	72.98	<b>27.79</b>
43	IC038500	6.20	10.00	<b>8.10</b>	10.80	14.00	<b>12.40</b>	8.10	11.70	16.35	<b>12.05</b>	4.00	14.40	39.38	<b>19.26</b>
44	IC038518	3.30	9.20	<b>6.25</b>	22.80	8.25	<b>15.53</b>	3.60	11.70	13.75	<b>9.68</b>	0.50	13.00	40.11	<b>17.87</b>
45	IC038520	3.80	9.10	<b>6.45</b>	27.40	13.00	<b>20.20</b>	3.10	9.80	13.25	<b>8.72</b>	2.00	15.00	41.82	<b>19.61</b>
46	IC038522	3.80	9.00	<b>6.40</b>	21.00	11.50	<b>16.25</b>	3.90	14.30	11.65	<b>9.95</b>	4.00	21.00	54.00	<b>26.33</b>
47	IC038525	8.50	9.00	<b>8.75</b>	18.40	9.75	<b>14.08</b>	8.60	16.20	19.63	<b>14.81</b>	19.43	29.00	50.14	<b>32.86</b>
48	IC038555	4.10	12.00	<b>8.05</b>	15.20	10.50	<b>12.85</b>	4.70	10.80	15.05	<b>10.18</b>	2.00	23.60	48.04	<b>24.55</b>
49	IC038556	5.40	10.20	<b>7.80</b>	14.10	4.65	<b>9.38</b>	4.90	14.60	17.85	<b>12.45</b>	5.50	8.00	62.12	<b>25.21</b>
50	IC038561	5.40	11.10	<b>8.25</b>	20.60	11.05	<b>15.83</b>	7.30	14.00	21.50	<b>14.27</b>	7.80	7.00	58.35	<b>24.38</b>
<b>Mean for check variety</b>															
	<b>Annapurna (C)</b>	<b>7.58</b>	<b>8.70</b>	<b>8.14</b>	<b>16.86</b>	<b>7.88</b>	<b>12.37</b>	<b>8.94</b>	<b>12.64</b>	<b>15.03</b>	<b>12.20</b>	<b>18.36</b>	<b>17.58</b>	<b>40.90</b>	<b>25.61</b>
	<b>IC35407 (Durga) (C)</b>	<b>10.02</b>	<b>11.24</b>	<b>10.63</b>	<b>17.58</b>	<b>9.30</b>	<b>13.44</b>	<b>15.72</b>	<b>15.12</b>	<b>17.88</b>	<b>16.24</b>	<b>40.40</b>	<b>11.80</b>	<b>31.30</b>	<b>27.83</b>
	<b>PRA-2 (C)</b>	<b>7.12</b>	<b>9.36</b>	<b>8.24</b>	<b>18.56</b>	<b>12.65</b>	<b>15.61</b>	<b>7.78</b>	<b>12.40</b>	<b>11.33</b>	<b>10.50</b>	<b>11.69</b>	<b>10.94</b>	<b>66.87</b>	<b>29.83</b>
	<b>PRA-3 (C)</b>	<b>4.72</b>	<b>9.02</b>	<b>6.87</b>	<b>19.68</b>	<b>8.55</b>	<b>14.12</b>	<b>3.94</b>	<b>10.94</b>	<b>17.83</b>	<b>10.90</b>	<b>13.09</b>	<b>18.60</b>	<b>48.72</b>	<b>26.80</b>

S.No.	Accession No.	Seed yield (q/ha)			1000 seed weight (g)			10ml seed weight (g)			Almora	Ranichauri		Sangla	Shimla
		Almora	Ranichauri	Mean	Almora	Shimla	Mean	Ranichauri	Sangla	Mean	No. of plants harvested	Finger length (cm)	No. of finger per inflorescence	Number of branches per plant	Stem thickness (mm)
27	IC038384	9.20	16.00	<b>12.60</b>	0.78	0.60	<b>0.69</b>	11.50	8.87	<b>10.19</b>	8.00	1.50	3.50	15.00	2.90
28	IC038386	1.20	14.67	<b>7.93</b>	0.85	0.60	<b>0.73</b>	11.49	8.62	<b>10.06</b>	2.00	3.00	12.00	15.40	2.71
29	IC038394	7.00	14.00	<b>10.50</b>	0.67	0.70	<b>0.69</b>	11.51	8.88	<b>10.20</b>	9.00	1.50	5.50	16.60	2.87
30	IC038408	16.40	10.67	<b>13.53</b>	0.84	0.80	<b>0.82</b>	11.55	8.91	<b>10.23</b>	7.00	2.50	5.33	12.80	2.77
31	IC038423	5.40	14.00	<b>9.70</b>	0.64	0.80	<b>0.72</b>	11.53	8.64	<b>10.09</b>	10.00	2.00	4.50	13.20	2.19
32	IC038430	13.20	14.67	<b>13.93</b>	0.77	0.60	<b>0.69</b>	11.50	8.90	<b>10.20</b>	8.00	2.50	6.33	14.20	2.15
33	IC038451	3.80	10.67	<b>7.23</b>	0.78	0.65	<b>0.72</b>	11.50	8.75	<b>10.13</b>	6.00	2.50	10.50	14.00	2.22
34	IC038456	16.20	-	<b>16.20</b>	0.82	0.80	<b>0.81</b>	-	8.83	<b>8.83</b>	9.00	-	-	14.10	2.57
35	IC038460	11.00	12.67	<b>11.83</b>	0.65	0.70	<b>0.68</b>	11.52	8.95	<b>10.24</b>	7.00	1.00	7.50	7.90	2.81
36	IC038480	2.40	-	<b>2.40</b>	0.84	0.55	<b>0.70</b>	-	8.66	<b>8.66</b>	4.00	-	-	10.90	2.92
37	IC038487	4.00	14.67	<b>9.33</b>	0.72	0.50	<b>0.61</b>	11.50	8.64	<b>10.07</b>	8.00	3.00	10.00	12.10	2.81
38	IC038488	22.20	-	<b>22.20</b>	0.96	0.80	<b>0.88</b>	-	8.64	<b>8.64</b>	5.00	5.00	4.50	11.80	2.61
39	IC038492	1.80	16.00	<b>8.90</b>	0.76	0.75	<b>0.76</b>	11.51	8.60	<b>10.06</b>	3.00	5.00	8.00	11.20	2.67
40	IC038496	3.40	11.33	<b>7.37</b>	0.91	0.70	<b>0.81</b>	11.49	8.35	<b>9.92</b>	7.00	2.00	10.00	13.40	2.81
41	IC038497	0.60	14.00	<b>7.30</b>	0.65	0.70	<b>0.68</b>	11.51	8.64	<b>10.08</b>	4.00	4.60	20.60	20.60	3.11
42	IC038498	1.20	14.67	<b>7.93</b>	0.75	0.60	<b>0.68</b>	11.48	8.60	<b>10.04</b>	5.00	4.80	12.60	13.00	2.91
43	IC038500	0.80	13.33	<b>7.07</b>	0.65	0.60	<b>0.63</b>	11.52	9.53	<b>10.53</b>	2.00	9.40	22.40	14.80	2.75
44	IC038518	0.20	15.00	<b>7.60</b>	0.65	0.55	<b>0.60</b>	11.53	8.58	<b>10.06</b>	4.00	8.20	15.40	16.60	2.81
45	IC038520	1.00	12.67	<b>6.83</b>	0.62	0.70	<b>0.66</b>	11.52	8.86	<b>10.19</b>	5.00	6.20	9.00	16.00	2.95
46	IC038522	0.80	13.33	<b>7.07</b>	0.64	0.70	<b>0.67</b>	11.51	8.61	<b>10.06</b>	2.00	1.50	3.00	18.60	2.07
47	IC038525	13.60	15.00	<b>14.30</b>	0.72	0.70	<b>0.71</b>	11.48	8.76	<b>10.12</b>	7.00	3.80	9.20	15.00	2.10
48	IC038555	0.80	11.33	<b>6.07</b>	0.64	0.60	<b>0.62</b>	11.53	9.11	<b>10.32</b>	4.00	2.00	1.80	12.00	2.85
49	IC038556	4.40	15.33	<b>9.87</b>	0.81	0.70	<b>0.76</b>	11.50	9.06	<b>10.28</b>	8.00	5.00	6.60	11.20	2.65
50	IC038561	7.80	12.00	<b>9.90</b>	0.76	0.75	<b>0.76</b>	11.49	8.74	<b>10.12</b>	10.00	1.60	8.40	13.20	2.72
<b>Mean for check variety</b>															
	<b>Annapurna (C)</b>	<b>14.25</b>	<b>14.11</b>	<b>14.18</b>	<b>0.66</b>	<b>0.80</b>	<b>0.73</b>	<b>11.52</b>	<b>8.67</b>	<b>10.10</b>	<b>7.80</b>	<b>4.90</b>	<b>15.77</b>	<b>12.74</b>	<b>2.27</b>
	<b>IC35407 (Durga) (C)</b>	<b>39.30</b>	<b>13.83</b>	<b>26.57</b>	<b>0.81</b>	<b>0.90</b>	<b>0.86</b>	<b>11.51</b>	<b>8.69</b>	<b>10.10</b>	<b>9.60</b>	<b>6.25</b>	<b>15.83</b>	<b>14.32</b>	<b>2.52</b>
	<b>PRA-2 (C)</b>	<b>9.04</b>	<b>15.89</b>	<b>12.46</b>	<b>0.75</b>	<b>0.88</b>	<b>0.81</b>	<b>11.50</b>	<b>8.64</b>	<b>10.07</b>	<b>7.80</b>	<b>4.77</b>	<b>14.97</b>	<b>12.72</b>	<b>2.46</b>
	<b>PRA-3 (C)</b>	<b>5.55</b>	<b>14.13</b>	<b>9.84</b>	<b>0.85</b>	<b>0.60</b>	<b>0.73</b>	<b>11.52</b>	<b>8.58</b>	<b>10.05</b>	<b>4.20</b>	<b>6.40</b>	<b>15.59</b>	<b>12.78</b>	<b>2.62</b>

S.No.	Accession No.	Days to 50% flowering					Days to maturity				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
	<b>Minimum</b>	<b>56.00</b>	<b>55.00</b>	<b>70.00</b>	<b>64.00</b>	<b>65.50</b>	<b>92.00</b>	<b>111.00</b>	<b>138.80</b>	<b>125.00</b>	<b>120.75</b>
	<b>Maximum</b>	<b>79.00</b>	<b>79.00</b>	<b>91.00</b>	<b>99.00</b>	<b>87.00</b>	<b>135.00</b>	<b>141.00</b>	<b>150.00</b>	<b>160.00</b>	<b>144.00</b>
	<b>Mean</b>	<b>65.22</b>	<b>68.15</b>	<b>79.54</b>	<b>85.48</b>	<b>74.92</b>	<b>111.48</b>	<b>127.28</b>	<b>144.71</b>	<b>152.33</b>	<b>134.20</b>
	<b>CD(0.05)</b>	<b>10.87</b>	<b>10.33</b>	<b>9.19</b>	-	-	<b>8.35</b>	<b>11.13</b>	<b>6.58</b>	-	-
	<b>CV(%) Error</b>	<b>6.15</b>	<b>5.67</b>	<b>4.28</b>	-	-	<b>2.73</b>	<b>3.27</b>	<b>1.71</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>7.95</b>	<b>10.52</b>	<b>6.63</b>	<b>11.08</b>	-	<b>8.82</b>	<b>6.07</b>	<b>2.34</b>	<b>5.52</b>	-



S.No.	Accession No.	Plant height (cm)					Inflorescence length (cm)					Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
	<b>Minimum</b>	<b>59.00</b>	<b>19.50</b>	<b>118.66</b>	<b>228.45</b>	<b>129.54</b>	<b>31.00</b>	<b>7.20</b>	<b>22.20</b>	<b>51.40</b>	<b>37.83</b>	<b>6.20</b>	<b>12.50</b>	<b>18.20</b>	<b>13.57</b>
	<b>Maximum</b>	<b>172.00</b>	<b>102.60</b>	<b>227.80</b>	<b>334.60</b>	<b>209.25</b>	<b>85.00</b>	<b>60.00</b>	<b>83.40</b>	<b>90.50</b>	<b>74.00</b>	<b>20.36</b>	<b>23.70</b>	<b>30.00</b>	<b>21.26</b>
	<b>Mean</b>	<b>104.89</b>	<b>46.10</b>	<b>177.12</b>	<b>278.90</b>	<b>155.85</b>	<b>54.97</b>	<b>23.07</b>	<b>64.93</b>	<b>70.52</b>	<b>54.54</b>	<b>13.08</b>	<b>16.96</b>	<b>23.39</b>	<b>17.81</b>
	<b>CD(0.05)</b>	<b>43.81</b>	<b>57.51</b>	<b>42.28</b>	-	-	<b>18.47</b>	<b>25.41</b>	<b>31.37</b>	-	-	<b>5.49</b>	<b>5.52</b>	-	-
	<b>CV(%) Error</b>	<b>13.67</b>	<b>36.21</b>	<b>8.92</b>	-	-	<b>12.18</b>	<b>32.51</b>	<b>17.26</b>	-	-	<b>13.98</b>	<b>12.13</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>25.64</b>	<b>37.42</b>	<b>11.10</b>	<b>8.81</b>	-	<b>19.47</b>	<b>51.78</b>	<b>20.42</b>	<b>14.71</b>	-	<b>27.25</b>	<b>13.07</b>	<b>12.44</b>	-

S.No.	Accession No.	Leaf width (cm)			Lateral spikelet length (cm)			Petiole length (cm)				Seed yield/plant (g)			
		Almora	Sangla	Mean	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
	<b>Minimum</b>	3.30	6.10	5.05	10.20	3.00	7.70	3.10	6.90	10.15	7.92	0.50	4.40	20.08	15.66
	<b>Maximum</b>	10.70	13.40	11.35	29.40	16.50	20.75	16.50	16.20	23.05	16.42	148.00	32.00	104.07	75.50
	<b>Mean</b>	6.31	9.86	8.08	16.84	8.91	12.87	7.21	11.57	15.79	11.52	13.44	16.27	56.96	28.89
	<b>CD(0.05)</b>	2.46	4.36	-	12.52	-	-	4.88	4.44	-	-	9.54	15.99	-	-
	<b>CV(%) Error</b>	12.50	17.05	-	25.80	-	-	20.08	13.02	-	-	17.10	40.66	-	-
	<b>CV(%) Phenotypic</b>	27.23	14.73	-	23.94	35.66	-	40.71	20.11	17.76	-	157.27	42.20	34.44	-

S.No.	Accession No.	Seed yield (q/ha)			1000 seed weight (g)			10ml seed weight (g)			Almora	Ranichauri	Sangla	Shimla	
		Almora	Ranichauri	Mean	Almora	Shimla	Mean	Ranichauri	Sangla	Mean	No. of plants harvested	Finger length (cm)	No. of finger per inflorescence	Number of branches per plant	Stem thickness (mm)
	<b>Minimum</b>	<b>0.10</b>	<b>9.33</b>	<b>1.40</b>	<b>0.62</b>	<b>0.50</b>	<b>0.58</b>	<b>11.48</b>	<b>7.50</b>	<b>7.50</b>	<b>1.00</b>	<b>1.00</b>	<b>1.80</b>	<b>7.20</b>	<b>2.07</b>
	<b>Maximum</b>	<b>39.30</b>	<b>16.67</b>	<b>26.57</b>	<b>0.98</b>	<b>0.90</b>	<b>0.89</b>	<b>11.56</b>	<b>9.53</b>	<b>10.53</b>	<b>13.00</b>	<b>16.25</b>	<b>22.40</b>	<b>21.60</b>	<b>3.11</b>
	<b>Mean</b>	<b>8.05</b>	<b>13.96</b>	<b>10.68</b>	<b>0.75</b>	<b>0.68</b>	<b>0.71</b>	<b>11.51</b>	<b>8.66</b>	<b>9.90</b>	<b>6.01</b>	<b>5.24</b>	<b>10.13</b>	<b>14.02</b>	<b>2.60</b>
	<b>CD(0.05)</b>	<b>15.20</b>	<b>5.14</b>	<b>-</b>	<b>0.21</b>	<b>-</b>	<b>-</b>	<b>0.07</b>	<b>0.50</b>	<b>-</b>	<b>4.38</b>	<b>6.14</b>	<b>13.17</b>	<b>5.56</b>	<b>-</b>
	<b>CV(%) Error</b>	<b>33.43</b>	<b>13.27</b>	<b>-</b>	<b>10.15</b>	<b>-</b>	<b>-</b>	<b>0.21</b>	<b>2.15</b>	<b>-</b>	<b>22.32</b>	<b>41.23</b>	<b>31.73</b>	<b>15.85</b>	<b>-</b>
	<b>CV(%) Phenotypic</b>	<b>108.32</b>	<b>13.32</b>	<b>-</b>	<b>11.66</b>	<b>14.04</b>	<b>-</b>	<b>0.19</b>	<b>3.56</b>	<b>-</b>	<b>45.02</b>	<b>61.76</b>	<b>44.97</b>	<b>20.34</b>	<b>10.76</b>

**Table 76. Characterization of germplasm lines in grain amaranth at Sangla and Shimla - Hills (2012)**

S.No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Seed colour		Inflorescence colour		Inflorescence compactness		Inflorescence shape		Inflorescence spininess		Stem colour		Stem surface		Seed transparency	Seed shattering
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Shimla	Shimla
1	IC038129	3	3	1	1	5	5	2	1	6	9	5	5	4	4	4	4	2	5	2	2	2	3
2	IC038158	3	3	1	1	5	5	2	1	4	4	7	5	2	4	2	2	2	2	2	2	2	7
3	IC038164	2	3	1	1	5	5	2	1	8	6	5	5	2	4	2	2	6	5	2	2	2	7
4	IC038169	3	3	1	3	3	5	4	4	4	11	3	5	3	3	2	2	2	2	2	2	2	7
5	IC038192	3	3	1	1	5	5	2	1	8	9	3	5	4	4	4	4	2	4	2	2	2	3
6	IC038193	3	3	1	1	3	5	2	1	7	6	5	5	2	4	2	2	6	4	2	2	2	7
7	IC038196	2	3	1	1	5	5	2	1	11	11	5	5	4	4	4	4	2	2	2	2	2	3
8	IC038201	2	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
9	IC038256	3	3	1	1	5	5	2	1	4	11	7	5	4	4	3	4	2	2	2	2	2	3
10	IC038271	3	3	1	1	3	5	2	1	6	9	7	5	4	4	3	4	2	5	2	2	2	3
11	IC038281	2	3	1	1	5	5	2	1	6	9	7	5	4	4	3	4	2	4	2	2	2	3
12	IC038285	2	3	1	1	10	5	2	1	6	9	5	5	4	4	3	4	2	5	2	2	2	3
13	IC038289	3	3	1	1	10	5	2	1	6	9	7	5	4	4	4	4	6	5	2	2	2	3
14	IC038301	3	3	1	1	5	5	2	1	7	6	3	5	2	4	2	2	2	4	2	2	2	7
15	IC038308	3	3	1	1	5	5	2	1	11	11	5	5	4	4	4	4	2	2	2	2	2	3
16	IC038310	3	3	1	1	5	5	2	1	7	11	7	5	4	4	3	4	2	2	2	2	2	3
17	IC038316	3	3	1	1	5	5	2	1	6	9	7	5	4	4	4	4	2	2	2	2	2	3
18	IC038340	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
19	IC038371	3	3	1	1	5	5	2	1	6	9	7	5	4	4	2	4	2	2	2	2	2	3
20	IC038373	3	3	1	1	5	5	2	1	7	6	7	5	2	4	2	2	2	2	2	2	2	7
21	IC038374	3	3	1	1	5	5	2	1	4	11	5	5	4	4	4	4	2	2	2	2	2	3
22	IC038375	3	3	1	1	5	5	2	1	7	11	7	5	4	4	4	4	2	2	2	2	2	3
23	IC038376	2	3	1	1	5	5	2	1	11	11	7	5	4	4	3	4	2	2	2	2	2	3
24	IC038378	3	3	1	1	5	5	2	1	7	9	5	5	4	4	4	4	2	5	2	2	2	3
25	IC038379	3	3	1	1	5	5	2	1	7	9	7	5	4	4	4	4	2	5	2	2	2	3
26	IC038380	3	3	1	1	8	5	2	1	6	9	3	5	4	4	2	4	6	5	2	2	2	3

S.No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Seed colour		Inflorescence colour		Inflorescence compactness		Inflorescence shape		Inflorescence spininess		Stem colour		Stem surface		Seed transparency	Seed shattering
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Shimla	Shimla
27	IC038384	3	3	1	1	5	5	2	1	4	11	7	5	4	4	4	4	2	2	2	2	2	3
28	IC038386	3	3	1	1	5	5	2	1	11	11	3	5	4	4	4	4	2	2	2	2	2	3
29	IC038394	3	3	1	1	5	5	2	1	11	11	7	5	4	4	2	4	2	2	2	2	2	3
30	IC038408	3	3	1	1	5	5	2	1	7	11	5	5	4	4	4	4	2	2	2	2	2	3
31	IC038423	3	3	1	1	5	5	2	1	11	11	5	5	4	4	2	4	2	2	2	2	2	3
32	IC038430	3	3	1	1	5	5	2	1	11	9	7	5	4	4	4	4	2	4	2	2	2	3
33	IC038451	3	3	1	1	5	5	2	1	11	11	5	5	4	4	2	4	2	2	2	2	2	3
34	IC038456	3	3	1	1	5	5	2	1	11	11	7	5	4	4	3	4	2	2	2	2	2	3
35	IC038460	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
36	IC038480	2	3	1	1	5	5	2	1	7	9	7	5	4	4	4	4	2	5	2	2	2	3
37	IC038487	3	3	1	1	5	5	2	1	11	6	7	5	4	4	2	4	2	2	2	2	2	3
38	IC038488	3	3	1	1	5	5	2	1	6	11	7	5	4	4	3	4	2	2	2	2	2	3
39	IC038492	3	3	1	1	5	5	2	1	6	11	7	5	4	4	2	4	2	2	2	2	2	3
40	IC038496	3	3	1	1	5	5	2	1	6	9	7	5	4	4	4	4	2	5	2	2	2	3
41	IC038497	3	3	1	1	5	5	2	1	11	11	7	5	4	4	3	4	2	2	2	2	2	3
42	IC038498	3	3	1	1	5	5	2	1	11	11	7	5	4	4	2	4	2	2	2	2	2	3
43	IC038500	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
44	IC038518	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
45	IC038520	3	3	1	1	5	5	2	1	7	9	5	5	4	4	4	4	2	5	2	2	2	3
46	IC038522	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
47	IC038525	3	3	1	1	5	5	2	1	7	6	5	5	2	4	2	2	2	-	2	2	2	7
48	IC038555	3	3	1	1	5	5	2	1	6	9	3	5	4	4	4	4	2	5	2	2	2	3
49	IC038556	3	3	1	1	5	5	2	1	11	11	5	5	4	4	3	4	2	2	2	2	2	3
50	IC038561	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3
<b>Mean for check variety</b>																							
	<b>Annapurna (C)</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>11</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>
	<b>IC35407 (Durga) (C)</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>6</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>7</b>
	<b>PRA-2 (C)</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>11</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>
	<b>PRA-3 (C)</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>11</b>	<b>11</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>3</b>

S.No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Seed colour		Inflorescence colour		Inflorescence compactness		Inflorescence shape		Inflorescence spininess		Stem colour		Stem surface		Seed transparency	Seed shattering
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Shimla	Shimla
	Minimum	2	3	1	1	3	5	2	1	4	4	3	5	2	3	2	2	2	2	2	2	2	3
	Maximum	3	3	1	3	10	5	4	4	11	11	7	5	4	4	4	4	6	5	2	2	2	7
	Mode	3	3	1	1	5	5	2	1	11	11	7	5	4	4	4	4	2	2	2	2	2	3

**Qualitative characters :** *Early plant vigour:* 1-Poor, 2-Good, 3-Very good; *Plant growth habit:* 1-Erect, 2-Spreading, 3-Drooping, 99-Others; *Leaf colour:* 1-Yellow, 2-Yellowish orange, 3-Yellowish green, 4-Orange, 5-Green, 6-Greenish orange, 7-Pink, 8-Pinkish green, 9-Reddish yellow, 10-Reddish green, 11-Red, 12-Dark red, 99-Others; *Seed colour:* 1-White, 2-Creamish, 3-Pale yellow, 4-Pink, 5-Red, 6-Brown, 7-Black, 8-Golden, 99-Others; *Inflorescence colour:* 1-Light yellow, 2-Yellow, 3-Yellowish orange, 4-Yellowish green, 5-Orange, 6-Pink, 7-Pinkish green, 8-Purple, 9-Red, 10-Reddish green, 11-Green, 99-Others; *Inflorescence compactness:* 3-Lax, 5-Intermediate, 7-Dense, 99-Others; *Inflorescence shape:* 1-Globose, 2-Semi drooping, 3-Completely drooping, 4-Straight, 99-Others; *Inflorescence spininess:* 1-Smooth, 2-Glabrous, 3-Prickly, 4-Spiny, 99-Others; *Stem colour:* 1-Yellow, 2-Yellowish green, 3-Orange, 4-Pink, 5-Red, 6-Reddish green, 7-Reddish orange, 99-Others; *Stem surface:* 1-Smooth, 2-Ridged, 99-Others; *Seed shattering:* 3-Low (%), 5-Intermediate (10-50%), 7-High (50%), 99-Others; *Popping ability of seed:* 3-Poor, 5-Medium, 7-Good, 99-Others

**Table 77. Promising lines in buckwheat germplasm for various characters at various locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Almora (Accessions 25)</b>				
1.	Days to 50% flowering	20.40-47.00	-	VL-7 (20.40 days)
2.	Days to maturity	51.60-82.00	-	VL-7 (51.60 days)
3.	Plant height (cm)	80.00-173.00	IC204089, EC125935, EC125937, IC204085 (>157.00 cm)	Shimla-B-1 (150.80 cm)
4.	No. of leaves per plant	37.00-181.00	IC018870-1 (=181.00)	PRB-1 (149.00)
5.	No. of primary branches	3.00-7.00	EC218742, EC272442, EC323730, IC202293 (>6.00)	PRB-1 (6.40)
6.	Number of inflorescence per plant	31.00-147.00	IC015393, IC202279, EC125935, IC202226, IC018870-1, IC204089, EC386667, IC107631, EC272442, EC125397, EC058322, EC125937 (>76.95)	PRB-1 (75.80)
7.	Leaf length (cm)	2.90-8.10	EC218742, EC272442, EC323730, IC204085 (> 6.58 cm)	VL-7 (6.60 cm)
8.	Leaf width (cm)	2.20-5.40	EC218742, IC018870-1, IC204085 (>5.29 cm)	VL-7 (5.12 cm)
9.	Number of internodes	7.00-23.00	EC125397, EC125935, EC125937, IC204089, EC018864, IC107631, IC202226, IC204088 (21.00)	PRB-1 (22.00)
10.	Petiole length (cm)	1.30-7.60	EC218742, EC386667, IC204085, EC216631, EC125935, IC018870-1, EC323730, EC125397, EC272442, IC107631, IC204079, EC018864 (>2.20 cm)	VL-7 (2.20 cm)
11.	Length of cyme (cm)	1.40-3.20	EC218742, EC216631 (>2.59 cm)	VL-7 (2.58 cm)
12.	Seed yield per plant (g)	0.80-7.60	IC202279, IC204085, EC018864, IC204079, IC107631, IC018870-1, IC108497, IC202288, IC202293, IC015393, IC202264, IC204088, IC204089 (>4.39)	PRB-1 (4.20 g)
13.	1000 seed weight (g)	15.96-34.43	-	VL-7 (34.43 g)

S. No.	Characters	Range	Promising lines	Value of best check
<b>Ranichauri (Accessions 50)</b>				
1.	Days to 50% flowering	27.00-55.00	IC324313, IC340361, IC422849, IC363948, IC421601, IC323731, IC340325, IC340307, IC363973, IC018869, IC521299, IC274423, IC313468, IC018864, EC218742, IC274040, IC319581, IC324244, EC323730, IC188669, IC412837, IC211622, IC125357, IC319588, EC125937, EC272442 (< 33.00 days)	VL-7 (33.00 days)
2.	Days to maturity	75.33-113.33	IC340361, IC340325, IC421601, IC363948, IC422849, IC324313, EC218742, IC018864, IC018869, IC363973, IC412837, IC323731, IC340307, IC521299, IC521296, IC274040, EC272442, IC274423, IC319581, IC324244, IC125357, IC211622, IC319588, IC188669, IC521297 (< 92.00 days)	VL-7 (91.67 days)
3.	Plant height (cm)	30.21-81.43	IC107631, IC018870-1 (>78.85 cm)	Shimla-B1 (69.00 cm)
4.	No. of leaves per plant	3.33-7.40	IC324244, IC324313, IC521297, IC421601, IC340361, IC521299 (> 41.58 )	VL-7 (41.47)
5.	No. of primary branches	1.47-4.90	IC018870-1 IC107631 (> 4.78)	Shimla-B1 (4.47)
6.	No. of secondary branches	3.33-7.40	IC363948, IC107631 (>7.30)	Shimla-B1 (7.20)
7.	Seed yield (q/ha)	6.85-17.04	-	Shimla-B1 (17.04 q/ha)
<b>Sangla (Accessions 25)</b>				
1.	Days to 50% flowering	38.80-68.00	-	Shimla-B-1 (38.80 days)
2.	Days to maturity (Obs.)	86.60-122.40	-	Shimla-B-1 (86.60 days)
3.	Days to maturity (Adj.)	94.10-120.35	-	Shimla-B-1 (86.60 days)
4.	Plant height (cm)	37.20-119.40	IC108497, IC204086, IC204088, IC202226 (> 11.78 cm)	Himpriya (108.16 cm)
5.	Leaf length (cm)	2.50-9.60	IC204088, EC018864, IC108497 (>7.60 cm)	Himpriya (7.50 cm)
6.	Leaf width (cm)	1.60-7.70	IC204088, IC108497 (>7.35 cm)	Himpriya (6.61 cm)



S. No.	Characters	Range	Promising lines	Value of best check
7.	Petiole length (cm)	1.20-5.70	IC108497, IC015393, IC202226, IC202264, IC204086, IC204088, IC018870-1 (> 3.40 cm)	Himpriya (3.32 cm)
8.	No. of primary branches	2.60-8.60	IC108497, EC323730, IC202264, IC107631, IC202226, IC202279, IC204079, EC125935, EC125937, EC272442, IC202293, IC018870-1 (>6.78)	PRB-1 (6.52)
9.	No. of inflorescence per plant	2.20-28.00	IC108497, IC107631, IC202226, IC204086, EC125935, IC018870-1, EC125397, IC202279, IC204088, EC125937, EC216631, IC015393 (15.75)	Shimla-B-1 (15.58)
10.	No. of seed per inflorescence	3.40-18.24	-	Shimla-B-1 (18.24)
11.	Seed yield per plant (g)	0.20-4.90	IC204088, IC204086 (> 4.45 g)	Shimla-B-1 (4.46 g)
12.	1000 seed weight (g)	11.20-26.00	IC108497, IC202286, IC202288, IC204088, EC218742, IC018870-1, IC202264, IC202293, EC058322, IC202279, EC323730, IC204086, EC386667, EC125937, IC107631, IC204079, EC018864, IC202226 (>18.95 g)	PRB-1 (19.00 g)
<b>Shimla (Accessions 50)</b>				
1.	Days to 50% flowering	41.00-59.00	IC521296 (<42.00 days)	Shimla-B-1 (42.00 days)
2.	Days to maturity	91.00-123.00	IC363973, IC521297, IC421601, IC521299 (<=92.00 days)	Shimla-B-1 (92.00 days)
3.	Plant height (cm)	77.50-190.70	IC340307, IC340325, EC386667, IC521299, IC421601, IC125357, IC363948, EC323730, IC412849, IC018870-1, IC324244, IC204085, EC125935, IC521296, IC324313 (>162.18 cm)	Shimla-B-1 (162.15 cm)
4.	Leaf length (cm)	7.20-13.60	EC125397, IC324244, IC340307, IC125357, IC274040, EC272442, IC211622, EC125937, IC108497, EC058322, IC202264, IC412837, EC386667, IC421601, IC202226, IC324313, IC521297, EC125935, IC188669, IC018864, IC319595, EC216631, IC340361, IC363973, IC204089, IC412849, IC363948, IC319588 (>=10.20 cm)	Himpriya & PRB-1 (10.20 cm)
5.	Leaf width (cm)	7.00-13.30	IC202264 (=13.30 cm)	Himpriya (13.00 cm)
6.	Petiole length (cm)	2.30-11.00	EC272442, EC125937 (>10.78 cm)	PRB-1 (10.70 cm)

S. No.	Characters	Range	Promising lines	Value of best check
7.	No. of leaves per plant	10.00 19.50	IC204085, IC204088, EC018864, EC218742, IC202293, IC204079, EC216631, EC323730, IC202279, IC340325, EC125397, IC202288, IC204086, IC421601 ( $\geq 17.00$ )	Shimla-B-1 (17.00)
8.	No. of primary branches	2.00 5.50	IC204079, IC018870-1 ( $\geq 5.00$ )	Himpriya (5.00)
9.	Length of cyme (cm)	2.70 10.70	EC125397, IC018870-1, IC202226, EC272442, IC107631, EC386667, EC018864, EC125937, EC216631, IC018864, IC274423, IC324244, IC521296 ( $> 7.15$ )	Shimla-B-1 (6.55 cm)
10.	No. of inflorescence per plant	9.50 40.50	IC107631, IC211622, IC521299, IC340325, EC272442, IC018864, EC018864, IC324244, EC323730, EC386667 ( $> 30.45$ )	Shimla-B-1 (29.00)
11.	No. of internodes	9.50 18.50	IC204085, IC204088, EC018864, EC218742, IC202293, IC204079, EC216631, EC323730, IC202279, IC340325, EC125397, IC202288, IC204086, IC421601 ( $\geq 16.00$ )	Shimla-B-1 (16.00)
12.	No. of seeds per inflorescence	1.20 6.99	EC272442, IC412837, IC521297, EC216631, EC323730, EC386667, IC107631, IC202226, IC204085, IC324244, IC324313, IC363973, IC521296, IC521299 ( $> 6.00$ )	Shimla-B-1 (7.00)
13.	Seed yield per plant (g)	1.20 6.99	IC521299, IC340325, IC107631, EC272442, IC324244, IC521297, IC204085, IC363973, IC211622, EC386667, EC323730, IC412849, EC018864, IC018864 ( $> 4.25$ g)	Shimla-B-1 (4.28 g)
14.	1000 seed weight (g)	17.60 32.00	IC363973, IC340325, IC125357, IC188669, IC363948, IC324244, IC412849, IC319595, IC211622, IC324313, IC274423, IC521297, IC204085, IC319588, IC421601, IC274040, IC340361, IC202286, IC018864, IC412837, IC521299, IC018869 ( $> 26.00$ g)	VL-7 (25.90 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	34.13- 54.92	-	VL-7 (34.13 days)
2.	Days to maturity	84.67- 105.92	-	VL-7 (84.67 days)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
3.	Plant height (cm)	76.66-123.89	IC018870-1, IC204089, IC107631 (>120.00 cm)	Shimla-B1 (120.04 cm)
4.	Leaf length (cm)	5.10-13.60	IC324244, IC340307, IC188669, IC274423, IC274040, IC412837, IC421601, IC324313, IC521297, IC211622, IC018869, IC323731, IC340361, IC363973, IC412849, IC363948, IC319595, IC313468, IC521299, IC018864, IC125357, IC340325, IC319588, IC521296, EC272442, EC386667, EC125397, EC323730, IC202226, IC204089, EC125935, EC218742, EC018864, IC018870-1, IC108497, IC204088, EC216631, EC058322, IC319581, EC125937, IC202264 (>6.98 cm)	Himpriya (6.97 cm)
5.	Leaf width (cm)	5.10-12.00	IC340307, IC188669, IC274423, IC324244, IC324313, IC412849, IC421601, IC018869, IC340325, IC323731, IC521296, IC313468, IC363973, IC211622, IC274040, IC521297, IC340361, IC018864, IC125357, IC412837, IC319595, IC363948, IC521299, IC108497, IC319588 (>7.28 cm)	Himpriya (7.30 cm)
6.	Petiole length (cm)	2.10-10.60	IC018869, IC340325, IC188669, IC319581, IC018864, IC323731, IC313468, IC274040, IC521299, IC521296, IC319588, IC340361, IC363948, IC108497, IC018870-1, IC202264, IC324313, EC218742, EC272442, IC319595, IC421601, IC274423, EC018864 (>5.15 cm)	PRB-1 (5.10 cm)
7.	No. of primary branches	1.93-5.48	IC202293, IC018870-1, EC323730, IC107631 (>5.30)	Shimla-B1 (5.16)
8.	No. of leaves per plant	17.70-77.60	IC018870-1 (=7.60)	PRB-1 (67.59)
9.	No. of inflorescence per plant	14.55-59.10	IC015393, IC107631, EC125935, IC202279, IC018870-1, IC202226, IC204089, EC386667, EC272442, EC125397, EC018864 (>40.15)	Shimla-B1 (39.33)
10.	No. of seeds per inflorescence	4.00-12.62	-	Shimla-B1 (12.62)
11.	No. of internodes	9.40-20.25	IC204088, EC018864, EC125397, IC204085, IC107631 (>18.70)	PRB-1 (18.75)
12.	Length of cyme (cm)	2.17-7.20	IC018869, IC313468, IC324244, IC521296, EC125397, IC188669, IC363973, IC340307, IC421601, IC323731, IC018870-1, IC125357, EC272442, IC107631, IC202226, IC274423, IC521297, EC386667,	Shimla-B1 (4.15 cm)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
			IC319595, EC216631, IC018864, EC018864, IC319581, EC125937, EC218742, IC274040, IC340361, IC340325, EC125935, IC324313 (>4.18 cm)	
13.	1000 seed weight (g)	17.50-32.00	IC363973, IC340325, IC188669, IC211622, IC363948, IC324244, IC412849, IC323731, IC274040, IC324313, IC313468, IC521297, IC319595, IC421601, IC274423, IC340361, IC018869, IC412837, IC521299, IC125357, IC319581, IC521296, IC319588, IC018864, IC018870-1, IC202286, IC202288, EC058322, EC218742, IC340307, EC386667 (23.95 g)	VL-7 (23.84 g)
14.	Seed yield per plant (g)	1.81-6.99	IC521299, IC340325, IC324244, IC521297, IC363973, IC274040, IC412849, IC107631, IC204085, IC018869, IC125357, IC204088, IC188669, IC521296, EC018864 (>3.95 g)	Shimla-B1 (3.94 g)

**Table 78. Multilocation evaluation of germplasm lines in buckwheat at different locations- Hills (2012)**

S.No.	Accession No.	Days to 50% flowering					Days to maturity					Plant height (cm)				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
1	EC018864	35.00	40.00	58.00	51.00	<b>46.00</b>	72.00	100.33	114.00	117.00	<b>100.83</b>	142.00	35.23	85.20	156.90	<b>104.83</b>
2	EC058322	25.00	40.67	54.00	51.00	<b>42.67</b>	59.00	100.33	114.00	119.00	<b>98.08</b>	130.00	46.07	85.60	161.50	<b>105.79</b>
3	EC125397	24.00	41.67	54.00	50.00	<b>42.42</b>	61.00	101.33	114.00	108.00	<b>96.08</b>	143.00	36.95	84.80	158.95	<b>105.93</b>
4	EC125935	34.00	43.33	58.00	51.00	<b>46.58</b>	69.00	103.67	109.00	108.00	<b>97.42</b>	165.00	39.68	93.20	162.60	<b>115.12</b>
5	EC125937	24.00	32.67	50.00	50.00	<b>39.17</b>	64.00	93.67	114.00	106.00	<b>94.42</b>	160.00	46.89	97.00	120.10	<b>106.00</b>
6	EC216631	24.00	36.00	48.00	49.00	<b>39.25</b>	59.00	94.67	109.00	100.00	<b>90.67</b>	144.00	46.67	94.40	154.70	<b>109.94</b>
7	EC218742	25.00	31.00	48.00	49.00	<b>38.25</b>	61.00	87.00	114.00	97.00	<b>89.75</b>	149.00	44.33	105.40	149.05	<b>111.95</b>
8	EC272442	33.00	32.67	52.00	51.00	<b>42.17</b>	66.00	90.67	117.00	98.00	<b>92.92</b>	137.00	34.77	100.80	150.75	<b>105.83</b>
9	EC323730	24.00	31.33	48.00	52.00	<b>38.83</b>	62.00	92.00	111.00	98.00	<b>90.75</b>	136.00	35.73	85.20	171.00	<b>106.98</b>
10	EC386667	24.00	36.33	50.00	49.00	<b>39.83</b>	59.00	95.67	111.00	118.00	<b>95.92</b>	148.00	47.40	99.40	179.10	<b>118.48</b>
11	IC015393	38.00	49.00	58.00	49.00	<b>48.50</b>	69.00	109.67	97.00	105.00	<b>95.17</b>	116.00	43.60	106.20	91.65	<b>89.36</b>
12	IC018870-1	25.00	36.00	54.00	51.00	<b>41.50</b>	59.00	96.67	104.00	106.00	<b>91.42</b>	145.00	78.87	107.00	164.70	<b>123.89</b>
13	IC107631	25.00	55.00	54.00	53.00	<b>46.75</b>	59.00	113.33	104.00	106.00	<b>95.58</b>	147.00	81.43	97.80	154.15	<b>120.10</b>
14	IC108497	46.00	39.00	64.00	51.00	<b>50.00</b>	80.00	101.00	107.00	103.00	<b>97.75</b>	95.00	61.33	119.40	103.25	<b>94.75</b>
15	IC202226	25.00	39.33	50.00	53.00	<b>41.83</b>	73.00	99.00	109.00	105.00	<b>96.50</b>	137.00	56.13	111.80	150.10	<b>113.76</b>
16	IC202264	39.00	44.67	68.00	51.00	<b>50.67</b>	77.00	104.00	119.00	109.00	<b>102.25</b>	80.00	52.13	102.60	77.50	<b>78.06</b>
17	IC202279	41.00	39.67	55.00	59.00	<b>48.67</b>	76.00	100.33	104.00	102.00	<b>95.58</b>	112.00	43.80	104.60	114.50	<b>93.73</b>
18	IC202286	47.00	42.33	58.00	57.00	<b>51.08</b>	82.00	101.33	104.00	104.00	<b>97.83</b>	87.00	41.43	88.40	91.60	<b>77.11</b>
19	IC202288	42.00	42.00	62.00	59.00	<b>51.25</b>	76.00	102.00	104.00	106.00	<b>97.00</b>	93.00	43.27	91.80	102.75	<b>82.70</b>
20	IC202293	40.00	37.67	50.00	55.00	<b>45.67</b>	79.00	97.33	104.00	102.00	<b>95.58</b>	103.00	50.73	90.00	102.10	<b>86.46</b>
21	IC204079	45.00	43.00	58.00	57.00	<b>50.75</b>	79.00	101.33	117.00	106.00	<b>100.83</b>	122.00	34.03	91.40	92.75	<b>85.05</b>
22	IC204085	24.00	46.33	50.00	48.00	<b>42.08</b>	77.00	102.67	121.00	123.00	<b>105.92</b>	158.00	38.81	37.20	163.50	<b>99.38</b>
23	IC204086	45.00	38.33	52.00	55.00	<b>47.58</b>	79.00	97.33	107.00	122.00	<b>101.33</b>	95.00	37.07	116.40	87.50	<b>83.99</b>
24	IC204088	43.00	41.33	52.00	54.00	<b>47.58</b>	82.00	100.67	107.00	117.00	<b>101.67</b>	127.00	55.13	115.80	99.50	<b>99.36</b>
25	IC204089	24.00	38.67	48.00	49.00	<b>39.92</b>	61.00	97.33	114.00	118.00	<b>97.58</b>	173.00	46.30	113.60	161.85	<b>123.69</b>
26	IC018864	-	30.67	-	47.00	<b>38.83</b>	-	87.33	-	106.00	<b>96.67</b>	-	39.93	-	128.50	<b>84.22</b>
27	IC018869	-	29.67	-	43.00	<b>36.33</b>	-	87.67	-	105.00	<b>96.33</b>	-	36.48	-	142.50	<b>89.49</b>
28	IC125357	-	32.33	-	47.00	<b>39.67</b>	-	91.33	-	106.00	<b>98.67</b>	-	39.23	-	146.20	<b>92.72</b>
29	IC188669	-	31.33	-	46.00	<b>38.67</b>	-	91.67	-	105.00	<b>98.33</b>	-	38.73	-	172.10	<b>105.42</b>

S.No.	Accession No.	Number of primary branches per plant					Number of inflorescence per plant				Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
1	EC018864	6.00	3.53	6.20	4.50	<b>5.06</b>	75.00	14.00	31.50	<b>40.17</b>	5.70	7.90	9.20	<b>7.60</b>
2	EC058322	6.00	2.53	6.00	3.00	<b>4.38</b>	78.00	13.60	18.50	<b>36.70</b>	4.90	5.30	11.60	<b>7.27</b>
3	EC125397	6.00	3.60	6.20	4.00	<b>4.95</b>	82.00	19.80	28.70	<b>43.50</b>	5.90	5.00	13.60	<b>8.17</b>
4	EC125935	6.00	2.68	7.20	3.50	<b>4.85</b>	101.00	21.60	22.00	<b>48.20</b>	6.20	6.00	11.00	<b>7.73</b>
5	EC125937	6.00	3.47	7.00	2.50	<b>4.74</b>	77.00	17.00	14.65	<b>36.22</b>	4.40	5.30	11.70	<b>7.13</b>
6	EC216631	5.00	2.33	4.80	2.50	<b>3.66</b>	61.00	16.60	24.00	<b>33.87</b>	6.00	5.30	10.60	<b>7.30</b>
7	EC218742	7.00	2.73	6.00	3.00	<b>4.68</b>	72.00	14.00	24.00	<b>36.67</b>	8.10	6.60	8.40	<b>7.70</b>
8	EC272442	7.00	2.00	7.00	4.00	<b>5.00</b>	84.00	14.80	32.00	<b>43.60</b>	7.20	6.50	12.10	<b>8.60</b>
9	EC323730	7.00	2.33	8.20	4.00	<b>5.38</b>	57.00	9.20	30.65	<b>32.28</b>	7.10	6.80	10.10	<b>8.00</b>
10	EC386667	6.00	2.00	5.80	4.00	<b>4.45</b>	91.00	9.40	30.50	<b>43.63</b>	6.10	7.10	11.50	<b>8.23</b>
11	IC015393	4.00	4.07	6.00	3.00	<b>4.27</b>	147.00	15.80	14.50	<b>59.10</b>	3.50	7.12	7.50	<b>6.04</b>
12	IC018870-1	5.00	4.90	6.80	5.00	<b>5.43</b>	93.00	20.00	28.00	<b>47.00</b>	6.40	7.00	9.30	<b>7.57</b>
13	IC107631	5.00	4.80	7.60	4.00	<b>5.35</b>	89.00	27.00	40.50	<b>52.17</b>	4.70	5.94	9.10	<b>6.58</b>
14	IC108497	5.00	2.80	8.60	3.50	<b>4.98</b>	73.00	28.00	12.50	<b>37.83</b>	3.20	7.70	11.70	<b>7.53</b>
15	IC202226	5.00	3.40	7.60	3.00	<b>4.75</b>	100.00	23.40	15.50	<b>46.30</b>	5.20	7.20	11.20	<b>7.87</b>
16	IC202264	5.00	3.27	7.80	3.50	<b>4.89</b>	71.00	12.00	9.50	<b>30.83</b>	3.10	6.30	11.60	<b>7.00</b>
17	IC202279	5.00	3.27	7.40	3.00	<b>4.67</b>	112.00	19.00	11.50	<b>47.50</b>	2.90	5.90	8.20	<b>5.67</b>
18	IC202286	5.00	2.67	6.20	3.00	<b>4.22</b>	61.00	10.80	12.50	<b>28.10</b>	2.90	4.40	9.20	<b>5.50</b>
19	IC202288	6.00	2.93	6.40	3.00	<b>4.58</b>	73.00	11.80	14.10	<b>32.97</b>	3.80	4.20	7.30	<b>5.10</b>
20	IC202293	7.00	4.40	7.00	3.50	<b>5.48</b>	59.00	13.40	20.00	<b>30.80</b>	3.60	4.20	7.50	<b>5.10</b>
21	IC204079	5.00	2.07	7.40	5.50	<b>4.99</b>	47.00	11.80	20.00	<b>26.27</b>	4.60	6.00	9.40	<b>6.67</b>
22	IC204085	6.00	2.87	2.60	4.50	<b>3.99</b>	43.00	2.20	28.50	<b>24.57</b>	6.60	2.50	9.30	<b>6.13</b>
23	IC204086	5.00	1.67	6.40	4.50	<b>4.39</b>	31.00	23.00	28.50	<b>27.50</b>	3.70	6.90	9.70	<b>6.77</b>
24	IC204088	6.00	3.73	6.00	4.50	<b>5.06</b>	67.00	18.00	19.50	<b>34.83</b>	4.40	9.60	8.10	<b>7.37</b>
25	IC204089	6.00	3.20	7.40	4.00	<b>5.15</b>	92.00	14.00	27.50	<b>44.50</b>	4.90	7.90	10.50	<b>7.77</b>
26	IC018864	-	2.07	-	2.00	<b>2.03</b>	-	-	16.80	<b>16.80</b>	-	-	9.70	<b>9.70</b>
27	IC018869	-	2.00	-	2.50	<b>2.25</b>	-	-	32.00	<b>32.00</b>	-	-	10.70	<b>10.70</b>
28	IC125357	-	2.20	-	3.00	<b>2.60</b>	-	-	22.50	<b>22.50</b>	-	-	9.70	<b>9.70</b>
29	IC188669	-	1.47	-	4.00	<b>2.73</b>	-	-	22.55	<b>22.55</b>	-	-	12.70	<b>12.70</b>

S.No.	Accession No.	Leaf width (cm)				Number of leaves per plant				Number of seed per inflorescence			Petiole length (cm)			
		Almora	Sangla	Shimla	Mean	Almora	Ranichauri	Shimla	Mean	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
1	EC018864	4.70	5.50	8.60	<b>6.27</b>	117.00	24.00	18.00	<b>53.00</b>	6.00	6.00	<b>6.00</b>	2.30	3.00	10.20	<b>5.17</b>
2	EC058322	3.50	3.80	9.40	<b>5.57</b>	130.00	30.00	16.00	<b>58.67</b>	7.20	6.00	<b>6.60</b>	1.80	1.90	2.60	<b>2.10</b>
3	EC125397	4.90	3.50	12.70	<b>7.03</b>	91.00	23.13	17.00	<b>43.71</b>	8.00	6.00	<b>7.00</b>	3.20	3.30	8.60	<b>5.03</b>
4	EC125935	4.30	3.90	9.30	<b>5.83</b>	143.00	29.80	13.00	<b>61.93</b>	11.00	6.00	<b>8.50</b>	4.20	1.40	5.10	<b>3.57</b>
5	EC125937	4.10	4.90	10.10	<b>6.37</b>	119.00	34.07	12.50	<b>55.19</b>	8.00	6.00	<b>7.00</b>	2.00	1.40	10.80	<b>4.73</b>
6	EC216631	4.30	3.30	10.90	<b>6.17</b>	56.00	23.87	17.50	<b>32.46</b>	3.40	7.00	<b>5.20</b>	5.10	1.30	5.50	<b>3.97</b>
7	EC218742	5.40	4.90	9.00	<b>6.43</b>	72.00	25.60	18.00	<b>38.53</b>	6.00	5.00	<b>5.50</b>	7.60	2.90	5.70	<b>5.40</b>
8	EC272442	4.90	4.60	10.20	<b>6.57</b>	75.00	24.07	16.50	<b>38.52</b>	6.00	9.00	<b>7.50</b>	3.10	2.00	11.00	<b>5.37</b>
9	EC323730	5.10	4.70	10.80	<b>6.87</b>	72.00	33.27	17.50	<b>40.92</b>	7.00	7.00	<b>7.00</b>	3.40	2.00	7.70	<b>4.37</b>
10	EC386667	4.40	5.60	8.40	<b>6.13</b>	72.00	23.07	16.00	<b>37.02</b>	3.60	7.00	<b>5.30</b>	6.60	2.20	2.50	<b>3.77</b>
11	IC015393	3.30	5.60	9.10	<b>6.00</b>	103.00	31.93	10.00	<b>48.31</b>	15.60	6.00	<b>10.80</b>	1.40	4.80	7.10	<b>4.43</b>
12	IC018870-1	5.30	6.10	9.70	<b>7.03</b>	181.00	36.80	15.00	<b>77.60</b>	9.20	5.00	<b>7.10</b>	3.50	3.44	9.90	<b>5.61</b>
13	IC107631	4.50	4.44	9.60	<b>6.18</b>	133.00	35.00	16.50	<b>61.50</b>	6.00	7.00	<b>6.50</b>	2.50	2.90	6.10	<b>3.83</b>
14	IC108497	2.80	7.40	11.80	<b>7.33</b>	82.00	35.07	11.50	<b>42.86</b>	14.20	5.00	<b>9.60</b>	1.70	5.70	10.40	<b>5.93</b>
15	IC202226	4.30	6.10	9.60	<b>6.67</b>	128.00	32.93	16.00	<b>58.98</b>	9.00	7.00	<b>8.00</b>	1.50	4.30	8.10	<b>4.63</b>
16	IC202264	2.20	6.00	13.30	<b>7.17</b>	102.00	37.27	16.00	<b>51.76</b>	7.60	5.00	<b>6.30</b>	1.80	4.20	10.60	<b>5.53</b>
17	IC202279	2.80	5.00	9.50	<b>5.77</b>	127.00	29.40	17.50	<b>57.97</b>	10.00	6.00	<b>8.00</b>	1.40	3.20	6.80	<b>3.80</b>
18	IC202286	2.90	3.50	11.30	<b>5.90</b>	79.00	24.00	13.00	<b>38.67</b>	9.60	5.00	<b>7.30</b>	1.30	2.10	10.50	<b>4.63</b>
19	IC202288	3.70	4.20	9.20	<b>5.70</b>	90.00	25.00	17.00	<b>44.00</b>	9.40	5.00	<b>7.20</b>	1.90	2.20	6.60	<b>3.57</b>
20	IC202293	2.90	3.76	8.70	<b>5.12</b>	77.00	28.87	18.00	<b>41.29</b>	8.20	5.00	<b>6.60</b>	1.70	1.94	6.20	<b>3.28</b>
21	IC204079	4.30	4.40	9.20	<b>5.97</b>	76.00	27.27	18.00	<b>40.42</b>	6.80	6.00	<b>6.40</b>	2.40	2.10	8.20	<b>4.23</b>
22	IC204085	5.30	1.60	8.40	<b>5.10</b>	92.00	29.80	19.50	<b>47.10</b>	4.80	7.00	<b>5.90</b>	5.20	1.20	3.10	<b>3.17</b>
23	IC204086	3.40	6.20	11.20	<b>6.93</b>	38.00	24.33	17.00	<b>26.44</b>	13.40	5.00	<b>9.20</b>	2.10	3.60	8.20	<b>4.63</b>
24	IC204088	4.10	7.70	8.50	<b>6.77</b>	105.00	33.73	19.00	<b>52.58</b>	10.80	5.00	<b>7.90</b>	1.50	3.60	5.90	<b>3.67</b>
25	IC204089	3.80	5.10	10.40	<b>6.43</b>	111.00	21.80	14.00	<b>48.93</b>	5.80	6.00	<b>5.90</b>	2.00	3.10	9.10	<b>4.73</b>
26	IC018864	-	-	9.30	<b>9.30</b>	-	30.53	14.50	<b>22.52</b>	-	5.00	<b>5.00</b>	-	-	8.00	<b>8.00</b>
27	IC018869	-	-	10.50	<b>10.50</b>	-	34.93	15.00	<b>24.97</b>	-	5.00	<b>5.00</b>	-	-	10.60	<b>10.60</b>
28	IC125357	-	-	9.30	<b>9.30</b>	-	24.07	12.00	<b>18.03</b>	-	5.00	<b>5.00</b>	-	-	3.20	<b>3.20</b>
29	IC188669	-	-	11.80	<b>11.80</b>	-	25.27	14.00	<b>19.63</b>	-	6.00	<b>6.00</b>	-	-	9.20	<b>9.20</b>

S.No.	Accession No.	Length of cyme (cm)			No. of internodes			1000 seed weight (g)				Seed yield per plant (g)				Ranichauri	
		Almora	Shimla	Mean	Almora	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Seed yield (q/ha)	No. of secondary branches
1	EC018864	1.90	7.70	<b>4.80</b>	22.00	17.00	<b>19.50</b>	21.30	19.00	25.10	<b>21.80</b>	6.80	0.46	4.71	<b>3.99</b>	16.48	5.73
2	EC058322	1.70	3.20	<b>2.45</b>	21.00	15.00	<b>18.00</b>	23.00	24.00	25.40	<b>24.13</b>	4.00	0.56	2.86	<b>2.47</b>	10.37	5.87
3	EC125397	2.20	10.70	<b>6.45</b>	23.00	16.00	<b>19.50</b>	22.50	18.00	24.00	<b>21.50</b>	4.00	0.68	4.13	<b>2.94</b>	16.67	5.60
4	EC125935	2.10	6.40	<b>4.25</b>	23.00	12.00	<b>17.50</b>	22.30	18.00	23.30	<b>21.20</b>	4.00	0.44	3.02	<b>2.49</b>	10.74	6.13
5	EC125937	2.10	7.20	<b>4.65</b>	23.00	11.50	<b>17.25</b>	22.90	21.00	24.60	<b>22.83</b>	4.00	1.10	2.15	<b>2.42</b>	12.78	6.87
6	EC216631	2.60	7.20	<b>4.90</b>	7.00	16.50	<b>11.75</b>	26.80	14.00	24.30	<b>21.70</b>	4.00	0.62	4.10	<b>2.91</b>	11.85	6.33
7	EC218742	3.20	6.00	<b>4.60</b>	19.00	17.00	<b>18.00</b>	25.30	25.00	22.00	<b>24.10</b>	3.20	0.78	2.65	<b>2.21</b>	12.59	5.93
8	EC272442	2.00	9.10	<b>5.55</b>	16.00	15.50	<b>15.75</b>	25.80	15.00	22.00	<b>20.93</b>	3.60	1.88	6.33	<b>3.94</b>	9.81	6.40
9	EC323730	2.30	5.90	<b>4.10</b>	18.00	16.50	<b>17.25</b>	23.40	23.00	25.00	<b>23.80</b>	0.80	0.88	5.33	<b>2.34</b>	11.30	6.07
10	EC386667	2.30	8.10	<b>5.20</b>	17.00	15.00	<b>16.00</b>	24.50	22.00	25.40	<b>23.97</b>	1.20	0.64	5.39	<b>2.41</b>	10.37	5.87
11	IC015393	1.80	4.90	<b>3.35</b>	18.00	9.50	<b>13.75</b>	16.90	18.00	17.60	<b>17.50</b>	4.80	2.14	1.54	<b>2.83</b>	12.41	7.18
12	IC018870-1	2.20	9.30	<b>5.75</b>	17.00	14.00	<b>15.50</b>	24.60	25.00	24.80	<b>24.80</b>	5.60	2.40	3.62	<b>3.87</b>	12.22	5.37
13	IC107631	1.80	9.10	<b>5.45</b>	22.00	15.50	<b>18.75</b>	22.70	21.00	22.70	<b>22.13</b>	6.40	1.50	6.38	<b>4.76</b>	16.85	7.33
14	IC108497	1.80	4.40	<b>3.10</b>	15.00	10.50	<b>12.75</b>	19.30	26.00	20.90	<b>22.07</b>	5.60	0.90	1.30	<b>2.60</b>	10.19	6.33
15	IC202226	1.40	9.20	<b>5.30</b>	22.00	15.00	<b>18.50</b>	23.40	19.00	22.40	<b>21.60</b>	2.40	1.50	2.40	<b>2.10</b>	13.15	5.63
16	IC202264	1.50	3.10	<b>2.30</b>	13.00	15.00	<b>14.00</b>	21.60	25.00	24.40	<b>23.67</b>	4.40	1.30	1.20	<b>2.30</b>	16.11	5.40
17	IC202279	1.40	3.10	<b>2.25</b>	19.00	16.50	<b>17.75</b>	20.00	24.00	23.60	<b>22.53</b>	7.60	1.84	1.63	<b>3.69</b>	12.96	4.90
18	IC202286	1.50	3.40	<b>2.45</b>	12.00	12.00	<b>12.00</b>	21.30	26.00	26.80	<b>24.70</b>	2.80	2.84	2.01	<b>2.55</b>	9.81	4.87
19	IC202288	1.80	2.70	<b>2.25</b>	17.00	16.00	<b>16.50</b>	21.10	26.00	25.80	<b>24.30</b>	5.60	3.66	1.78	<b>3.68</b>	10.00	4.60
20	IC202293	1.70	5.00	<b>3.35</b>	19.00	17.00	<b>18.00</b>	21.30	25.00	23.30	<b>23.20</b>	5.60	1.48	2.33	<b>3.14</b>	16.85	6.07
21	IC204079	2.00	3.20	<b>2.60</b>	17.00	17.00	<b>17.00</b>	18.10	20.00	21.40	<b>19.83</b>	6.80	1.72	2.56	<b>3.69</b>	9.26	3.33
22	IC204085	1.90	6.20	<b>4.05</b>	20.00	18.50	<b>19.25</b>	26.60	15.00	27.80	<b>23.13</b>	7.60	0.20	5.54	<b>4.45</b>	15.37	6.53
23	IC204086	1.60	3.20	<b>2.40</b>	16.00	16.00	<b>16.00</b>	19.70	23.00	24.40	<b>22.37</b>	2.00	4.50	3.51	<b>3.34</b>	6.85	4.33
24	IC204088	1.50	3.20	<b>2.35</b>	22.00	18.50	<b>20.25</b>	21.10	26.00	24.20	<b>23.77</b>	4.40	4.90	3.36	<b>4.22</b>	12.41	6.43
25	IC204089	1.60	5.00	<b>3.30</b>	23.00	13.00	<b>18.00</b>	24.20	20.00	24.40	<b>22.87</b>	4.40	0.36	3.73	<b>2.83</b>	13.70	4.83
26	IC018864	-	4.90	<b>4.90</b>	-	13.50	<b>13.50</b>	-	-	25.10	<b>25.10</b>	-	-	2.12	<b>2.12</b>	11.48	6.60
27	IC018869	-	7.20	<b>7.20</b>	-	10.00	<b>10.00</b>	-	-	26.70	<b>26.70</b>	-	-	4.31	<b>4.31</b>	11.30	6.47
28	IC125357	-	5.70	<b>5.70</b>	-	11.00	<b>11.00</b>	-	-	26.10	<b>26.10</b>	-	-	4.25	<b>4.25</b>	12.41	6.53
29	IC188669	-	6.20	<b>6.20</b>	-	13.00	<b>13.00</b>	-	-	30.80	<b>30.80</b>	-	-	4.17	<b>4.17</b>	7.78	5.38



S.No.	Accession No.	Days to 50% flowering					Days to maturity					Plant height (cm)				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
30	IC211622	-	32.00	-	48.00	<b>40.00</b>	-	91.33	-	106.00	<b>98.67</b>	-	30.21	-	139.80	<b>85.01</b>
31	IC274040	-	31.00	-	45.00	<b>38.00</b>	-	90.33	-	104.00	<b>97.17</b>	-	33.12	-	149.00	<b>91.06</b>
32	IC274423	-	30.33	-	45.00	<b>37.67</b>	-	90.67	-	106.00	<b>98.33</b>	-	39.42	-	123.10	<b>81.26</b>
33	IC313468	-	30.33	-	49.00	<b>39.67</b>	-	92.33	-	100.00	<b>96.17</b>	-	46.20	-	148.65	<b>97.43</b>
34	IC319581	-	31.00	-	45.00	<b>38.00</b>	-	90.67	-	104.00	<b>97.33</b>	-	45.97	-	139.20	<b>92.58</b>
35	IC319588	-	32.33	-	47.00	<b>39.67</b>	-	91.33	-	101.00	<b>96.17</b>	-	34.57	-	143.05	<b>88.81</b>
36	IC319595	-	36.00	-	49.00	<b>42.50</b>	-	95.33	-	98.00	<b>96.67</b>	-	40.13	-	128.20	<b>84.17</b>
37	IC323731	-	29.00	-	49.00	<b>39.00</b>	-	89.00	-	105.00	<b>97.00</b>	-	41.67	-	159.20	<b>100.43</b>
38	IC324244	-	31.00	-	47.00	<b>39.00</b>	-	91.00	-	101.00	<b>96.00</b>	-	36.32	-	164.35	<b>100.33</b>
39	IC324313	-	27.00	-	45.00	<b>36.00</b>	-	86.67	-	99.00	<b>92.83</b>	-	38.15	-	162.20	<b>100.18</b>
40	IC340307	-	29.33	-	48.00	<b>38.67</b>	-	89.67	-	99.00	<b>94.33</b>	-	40.62	-	190.70	<b>115.66</b>
41	IC340325	-	29.00	-	45.00	<b>37.00</b>	-	77.67	-	98.00	<b>87.83</b>	-	45.00	-	181.15	<b>113.08</b>
42	IC340361	-	27.00	-	44.00	<b>35.50</b>	-	75.33	-	99.00	<b>87.17</b>	-	44.10	-	159.60	<b>101.85</b>
43	IC363948	-	28.33	-	43.00	<b>35.67</b>	-	84.33	-	95.00	<b>89.67</b>	-	42.72	-	172.00	<b>107.36</b>
44	IC363973	-	29.33	-	45.00	<b>37.17</b>	-	88.00	-	91.00	<b>89.50</b>	-	53.27	-	139.50	<b>96.38</b>
45	IC412837	-	31.33	-	43.00	<b>37.17</b>	-	88.33	-	95.00	<b>91.67</b>	-	43.00	-	158.45	<b>100.73</b>
46	IC412849	-	28.67	-	45.00	<b>36.83</b>	-	81.33	-	94.00	<b>87.67</b>	-	37.90	-	165.90	<b>101.90</b>
47	IC421601	-	27.67	-	46.00	<b>36.83</b>	-	86.33	-	92.00	<b>89.17</b>	-	30.22	-	174.25	<b>102.23</b>
48	IC521296	-	33.33	-	41.00	<b>37.17</b>	-	90.00	-	100.00	<b>95.00</b>	-	51.52	-	162.60	<b>107.06</b>
49	IC521297	-	34.00	-	43.00	<b>38.50</b>	-	91.67	-	91.00	<b>91.33</b>	-	33.73	-	144.85	<b>89.29</b>
50	IC521299	-	29.67	-	44.00	<b>36.83</b>	-	89.67	-	92.00	<b>90.83</b>	-	39.25	-	175.50	<b>107.38</b>
<b>Mean for check variety</b>																
	<b>Himpriya(C)</b>	<b>41.00</b>	<b>54.67</b>	<b>66.00</b>	<b>58.00</b>	<b>54.92</b>	<b>79.40</b>	<b>113.33</b>	<b>122.40</b>	<b>108.50</b>	<b>105.91</b>	<b>92.20</b>	<b>43.67</b>	<b>108.16</b>	<b>140.50</b>	<b>96.13</b>
	<b>PRB-1 (C)</b>	<b>37.20</b>	<b>52.67</b>	<b>60.00</b>	<b>50.00</b>	<b>49.97</b>	<b>77.60</b>	<b>113.33</b>	<b>119.00</b>	<b>102.50</b>	<b>103.11</b>	<b>149.80</b>	<b>67.60</b>	<b>87.76</b>	<b>153.48</b>	<b>114.66</b>
	<b>Shimla-B1 (C)</b>	<b>38.80</b>	<b>46.33</b>	<b>38.80</b>	<b>42.00</b>	<b>41.48</b>	<b>72.20</b>	<b>109.67</b>	<b>86.60</b>	<b>92.00</b>	<b>90.12</b>	<b>150.80</b>	<b>69.00</b>	<b>98.20</b>	<b>162.15</b>	<b>120.04</b>
	<b>VL-7 (C)</b>	<b>20.40</b>	<b>33.00</b>	<b>39.60</b>	<b>43.50</b>	<b>34.13</b>	<b>51.60</b>	<b>91.67</b>	<b>102.40</b>	<b>93.00</b>	<b>84.67</b>	<b>87.60</b>	<b>37.87</b>	<b>57.14</b>	<b>124.05</b>	<b>76.66</b>
	<b>Minimum</b>	<b>20.40</b>	<b>27.00</b>	<b>38.80</b>	<b>41.00</b>	<b>34.13</b>	<b>51.60</b>	<b>75.33</b>	<b>86.60</b>	<b>91.00</b>	<b>84.67</b>	<b>80.00</b>	<b>30.21</b>	<b>37.20</b>	<b>77.50</b>	<b>76.66</b>
	<b>Maximum</b>	<b>47.00</b>	<b>55.00</b>	<b>68.00</b>	<b>59.00</b>	<b>54.92</b>	<b>82.00</b>	<b>113.33</b>	<b>122.40</b>	<b>123.00</b>	<b>105.92</b>	<b>173.00</b>	<b>81.43</b>	<b>119.40</b>	<b>190.70</b>	<b>123.89</b>
	<b>Mean</b>	<b>33.05</b>	<b>36.04</b>	<b>53.70</b>	<b>48.82</b>	<b>41.66</b>	<b>69.68</b>	<b>94.82</b>	<b>109.63</b>	<b>103.54</b>	<b>95.43</b>	<b>128.43</b>	<b>44.40</b>	<b>95.73</b>	<b>143.94</b>	<b>99.74</b>
	<b>CD(0.05)</b>	<b>2.11</b>	<b>2.11</b>	<b>9.01</b>	-	-	<b>6.90</b>	<b>1.86</b>	<b>6.82</b>	-	-	<b>10.83</b>	<b>12.77</b>	<b>30.07</b>	-	-
	<b>CV(%) Error</b>	<b>2.30</b>	<b>3.66</b>	<b>6.60</b>	-	-	<b>3.68</b>	<b>1.23</b>	<b>2.37</b>	-	-	<b>3.38</b>	<b>17.97</b>	<b>12.83</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>26.66</b>	<b>19.90</b>	<b>12.65</b>	<b>9.17</b>	-	<b>12.91</b>	<b>8.83</b>	<b>7.00</b>	<b>7.56</b>	-	<b>20.85</b>	<b>24.37</b>	<b>17.85</b>	<b>19.06</b>	-

S.No.	Accession No.	Number of primary branches per plant					Number of inflorescence per plant				Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
30	IC211622	-	1.73	-	3.00	<b>2.37</b>	-	-	22.50	<b>22.50</b>	-	-	10.90	<b>10.90</b>
31	IC274040	-	2.57	-	4.00	<b>3.28</b>	-	-	38.50	<b>38.50</b>	-	-	12.00	<b>12.00</b>
32	IC274423	-	2.40	-	3.00	<b>2.70</b>	-	-	22.55	<b>22.55</b>	-	-	12.30	<b>12.30</b>
33	IC313468	-	1.87	-	2.00	<b>1.93</b>	-	-	18.55	<b>18.55</b>	-	-	10.10	<b>10.10</b>
34	IC319581	-	2.13	-	3.50	<b>2.82</b>	-	-	25.75	<b>25.75</b>	-	-	7.20	<b>7.20</b>
35	IC319588	-	2.67	-	3.00	<b>2.83</b>	-	-	14.55	<b>14.55</b>	-	-	9.50	<b>9.50</b>
36	IC319595	-	2.13	-	3.00	<b>2.57</b>	-	-	20.65	<b>20.65</b>	-	-	10.20	<b>10.20</b>
37	IC323731	-	3.07	-	3.00	<b>3.03</b>	-	-	26.50	<b>26.50</b>	-	-	10.70	<b>10.70</b>
38	IC324244	-	2.00	-	3.00	<b>2.50</b>	-	-	31.00	<b>31.00</b>	-	-	13.60	<b>13.60</b>
39	IC324313	-	2.55	-	3.00	<b>2.78</b>	-	-	15.50	<b>15.50</b>	-	-	11.20	<b>11.20</b>
40	IC340307	-	2.43	-	2.00	<b>2.22</b>	-	-	18.00	<b>18.00</b>	-	-	13.30	<b>13.30</b>
41	IC340325	-	2.67	-	3.50	<b>3.08</b>	-	-	35.00	<b>35.00</b>	-	-	9.60	<b>9.60</b>
42	IC340361	-	2.97	-	3.00	<b>2.98</b>	-	-	17.50	<b>17.50</b>	-	-	10.60	<b>10.60</b>
43	IC363948	-	4.40	-	2.50	<b>3.45</b>	-	-	16.50	<b>16.50</b>	-	-	10.30	<b>10.30</b>
44	IC363973	-	3.60	-	4.00	<b>3.80</b>	-	-	24.50	<b>24.50</b>	-	-	10.60	<b>10.60</b>
45	IC412837	-	2.73	-	3.00	<b>2.87</b>	-	-	22.50	<b>22.50</b>	-	-	11.60	<b>11.60</b>
46	IC412849	-	1.97	-	4.00	<b>2.98</b>	-	-	28.50	<b>28.50</b>	-	-	10.50	<b>10.50</b>
47	IC421601	-	2.38	-	4.50	<b>3.44</b>	-	-	27.55	<b>27.55</b>	-	-	11.40	<b>11.40</b>
48	IC521296	-	2.67	-	4.00	<b>3.33</b>	-	-	22.50	<b>22.50</b>	-	-	9.50	<b>9.50</b>
49	IC521297	-	1.80	-	3.00	<b>2.40</b>	-	-	23.50	<b>23.50</b>	-	-	11.20	<b>11.20</b>
50	IC521299	-	2.20	-	4.00	<b>3.10</b>	-	-	37.55	<b>37.55</b>	-	-	9.90	<b>9.90</b>
<b>Mean for check variety</b>														
	<b>Himpriya(C)</b>	<b>5.40</b>	<b>3.33</b>	<b>5.66</b>	<b>5.00</b>	<b>4.85</b>	<b>54.00</b>	<b>12.28</b>	<b>17.88</b>	<b>28.05</b>	<b>3.20</b>	<b>7.50</b>	<b>10.20</b>	<b>6.97</b>
	<b>PRB-1 (C)</b>	<b>6.40</b>	<b>3.40</b>	<b>6.52</b>	<b>4.25</b>	<b>5.14</b>	<b>75.80</b>	<b>13.96</b>	<b>21.13</b>	<b>36.96</b>	<b>4.34</b>	<b>5.87</b>	<b>10.20</b>	<b>6.80</b>
	<b>Shimla-B1 (C)</b>	<b>6.00</b>	<b>4.47</b>	<b>5.44</b>	<b>4.75</b>	<b>5.16</b>	<b>73.40</b>	<b>15.58</b>	<b>29.00</b>	<b>39.33</b>	<b>2.98</b>	<b>6.78</b>	<b>8.45</b>	<b>6.07</b>
	<b>VL-7 (C)</b>	<b>3.00</b>	<b>3.13</b>	<b>4.06</b>	<b>3.00</b>	<b>3.30</b>	<b>45.80</b>	<b>6.32</b>	<b>19.25</b>	<b>23.79</b>	<b>6.60</b>	<b>5.38</b>	<b>8.65</b>	<b>6.88</b>
	<b>Minimum</b>	<b>3.00</b>	<b>1.47</b>	<b>2.60</b>	<b>2.00</b>	<b>1.93</b>	<b>31.00</b>	<b>2.20</b>	<b>9.50</b>	<b>14.55</b>	<b>2.90</b>	<b>2.50</b>	<b>7.20</b>	<b>5.10</b>
	<b>Maximum</b>	<b>7.00</b>	<b>4.90</b>	<b>8.60</b>	<b>5.50</b>	<b>5.48</b>	<b>147.00</b>	<b>28.00</b>	<b>40.50</b>	<b>59.10</b>	<b>8.10</b>	<b>9.60</b>	<b>13.60</b>	<b>13.60</b>
	<b>Mean</b>	<b>5.61</b>	<b>2.82</b>	<b>6.46</b>	<b>3.50</b>	<b>3.85</b>	<b>75.34</b>	<b>15.46</b>	<b>23.15</b>	<b>31.42</b>	<b>4.90</b>	<b>6.21</b>	<b>10.29</b>	<b>8.74</b>
	<b>CD(0.05)</b>	<b>1.00</b>	<b>0.90</b>	<b>3.16</b>	-	-	<b>14.34</b>	<b>6.86</b>	-	-	<b>1.04</b>	<b>2.92</b>	-	-
	<b>CV(%) Error</b>	<b>7.24</b>	<b>19.99</b>	<b>21.82</b>	-	-	<b>8.63</b>	<b>21.34</b>	-	-	<b>9.08</b>	<b>17.12</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>16.21</b>	<b>29.25</b>	<b>19.14</b>	<b>22.93</b>	-	<b>30.89</b>	<b>37.34</b>	<b>31.19</b>	-	<b>30.45</b>	<b>22.73</b>	<b>14.94</b>	-

S.No.	Accession No.	Leaf width (cm)				Number of leaves per plant				Number of seed per inflorescence			Petiole length (cm)			
		Almora	Sangla	Shimla	Mean	Almora	Ranichauri	Shimla	Mean	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
30	IC211622	-	-	9.60	<b>9.60</b>	-	25.47	14.50	<b>19.98</b>	-	6.00	<b>6.00</b>	-	-	4.20	<b>4.20</b>
31	IC274040	-	-	9.60	<b>9.60</b>	-	32.93	13.00	<b>22.97</b>	-	5.00	<b>5.00</b>	-	-	7.20	<b>7.20</b>
32	IC274423	-	-	11.40	<b>11.40</b>	-	21.40	14.00	<b>17.70</b>	-	6.00	<b>6.00</b>	-	-	5.20	<b>5.20</b>
33	IC313468	-	-	9.80	<b>9.80</b>	-	25.68	12.00	<b>18.84</b>	-	6.00	<b>6.00</b>	-	-	7.30	<b>7.30</b>
34	IC319581	-	-	7.00	<b>7.00</b>	-	24.53	13.50	<b>19.02</b>	-	4.00	<b>4.00</b>	-	-	8.70	<b>8.70</b>
35	IC319588	-	-	7.30	<b>7.30</b>	-	33.33	11.00	<b>22.17</b>	-	5.00	<b>5.00</b>	-	-	6.20	<b>6.20</b>
36	IC319595	-	-	8.30	<b>8.30</b>	-	31.40	12.00	<b>21.70</b>	-	5.00	<b>5.00</b>	-	-	5.30	<b>5.30</b>
37	IC323731	-	-	10.20	<b>10.20</b>	-	32.07	13.50	<b>22.78</b>	-	5.00	<b>5.00</b>	-	-	7.70	<b>7.70</b>
38	IC324244	-	-	11.40	<b>11.40</b>	-	53.30	14.00	<b>33.65</b>	-	7.00	<b>7.00</b>	-	-	3.40	<b>3.40</b>
39	IC324313	-	-	11.40	<b>11.40</b>	-	50.33	14.00	<b>32.17</b>	-	7.00	<b>7.00</b>	-	-	5.50	<b>5.50</b>
40	IC340307	-	-	12.00	<b>12.00</b>	-	33.07	16.50	<b>24.78</b>	-	6.00	<b>6.00</b>	-	-	3.60	<b>3.60</b>
41	IC340325	-	-	10.30	<b>10.30</b>	-	36.40	17.50	<b>26.95</b>	-	6.00	<b>6.00</b>	-	-	9.60	<b>9.60</b>
42	IC340361	-	-	9.40	<b>9.40</b>	-	43.13	15.00	<b>29.07</b>	-	5.00	<b>5.00</b>	-	-	6.20	<b>6.20</b>
43	IC363948	-	-	8.10	<b>8.10</b>	-	32.07	15.50	<b>23.78</b>	-	6.00	<b>6.00</b>	-	-	6.20	<b>6.20</b>
44	IC363973	-	-	9.70	<b>9.70</b>	-	30.27	10.50	<b>20.38</b>	-	7.00	<b>7.00</b>	-	-	3.40	<b>3.40</b>
45	IC412837	-	-	9.10	<b>9.10</b>	-	37.07	14.50	<b>25.78</b>	-	9.00	<b>9.00</b>	-	-	2.30	<b>2.30</b>
46	IC412849	-	-	10.75	<b>10.75</b>	-	43.87	15.00	<b>29.43</b>	-	6.00	<b>6.00</b>	-	-	4.90	<b>4.90</b>
47	IC421601	-	-	10.70	<b>10.70</b>	-	33.77	17.00	<b>25.38</b>	-	5.00	<b>5.00</b>	-	-	5.30	<b>5.30</b>
48	IC521296	-	-	10.10	<b>10.10</b>	-	33.93	16.00	<b>24.97</b>	-	7.00	<b>7.00</b>	-	-	6.50	<b>6.50</b>
49	IC521297	-	-	9.50	<b>9.50</b>	-	50.17	15.00	<b>32.58</b>	-	9.00	<b>9.00</b>	-	-	2.30	<b>2.30</b>
50	IC521299	-	-	7.80	<b>7.80</b>	-	41.60	15.50	<b>28.55</b>	-	7.00	<b>7.00</b>	-	-	6.60	<b>6.60</b>
<b>Mean for check variety</b>																
	<b>Himpriya(C)</b>	<b>2.28</b>	<b>6.61</b>	<b>13.00</b>	<b>7.30</b>	<b>91.20</b>	<b>39.20</b>	<b>14.50</b>	<b>48.30</b>	<b>12.00</b>	<b>5.50</b>	<b>8.75</b>	<b>1.42</b>	<b>3.32</b>	<b>9.25</b>	<b>4.66</b>
	<b>PRB-1 (C)</b>	<b>3.72</b>	<b>4.70</b>	<b>11.20</b>	<b>6.54</b>	<b>149.00</b>	<b>37.27</b>	<b>16.50</b>	<b>67.59</b>	<b>5.36</b>	<b>5.50</b>	<b>5.43</b>	<b>2.08</b>	<b>2.52</b>	<b>10.70</b>	<b>5.10</b>
	<b>Shimla-B1 (C)</b>	<b>2.84</b>	<b>5.06</b>	<b>11.35</b>	<b>6.42</b>	<b>139.60</b>	<b>38.20</b>	<b>17.00</b>	<b>64.93</b>	<b>18.24</b>	<b>7.00</b>	<b>12.62</b>	<b>1.84</b>	<b>2.78</b>	<b>6.65</b>	<b>3.76</b>
	<b>VL-7 (C)</b>	<b>5.12</b>	<b>4.01</b>	<b>8.15</b>	<b>5.76</b>	<b>37.00</b>	<b>41.47</b>	<b>12.00</b>	<b>30.16</b>	<b>8.44</b>	<b>6.00</b>	<b>7.22</b>	<b>2.20</b>	<b>2.26</b>	<b>7.45</b>	<b>3.97</b>
	<b>Minimum</b>	<b>2.20</b>	<b>1.60</b>	<b>7.00</b>	<b>5.10</b>	<b>37.00</b>	<b>21.40</b>	<b>10.00</b>	<b>17.70</b>	<b>3.40</b>	<b>4.00</b>	<b>4.00</b>	<b>1.30</b>	<b>1.20</b>	<b>2.30</b>	<b>2.10</b>
	<b>Maximum</b>	<b>5.40</b>	<b>7.70</b>	<b>13.30</b>	<b>12.00</b>	<b>181.00</b>	<b>53.30</b>	<b>19.50</b>	<b>77.60</b>	<b>18.24</b>	<b>9.00</b>	<b>12.62</b>	<b>7.60</b>	<b>5.70</b>	<b>11.00</b>	<b>10.60</b>
	<b>Mean</b>	<b>3.97</b>	<b>4.90</b>	<b>9.94</b>	<b>7.92</b>	<b>99.58</b>	<b>32.24</b>	<b>15.09</b>	<b>37.35</b>	<b>8.64</b>	<b>6.00</b>	<b>6.71</b>	<b>2.72</b>	<b>2.78</b>	<b>6.84</b>	<b>5.10</b>
	<b>CD(0.05)</b>	<b>1.44</b>	<b>1.69</b>	-	-	<b>19.75</b>	<b>3.71</b>	-	-	<b>9.11</b>	-	-	<b>0.82</b>	<b>1.54</b>	-	-
	<b>CV(%) Error</b>	<b>15.50</b>	<b>12.42</b>	-	-	<b>7.10</b>	<b>7.20</b>	-	-	<b>31.00</b>	-	-	<b>16.24</b>	<b>21.14</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>23.72</b>	<b>26.43</b>	<b>13.98</b>	-	<b>33.74</b>	<b>22.99</b>	<b>14.94</b>	-	<b>40.56</b>	<b>17.95</b>	-	<b>59.12</b>	<b>38.89</b>	<b>36.57</b>	-

S.No.	Accession No.	Length of cyme (cm)			No. of internodes			1000 seed weight (g)				Seed yield per plant (g)				Ranichauri	
		Almora	Shimla	Mean	Almora	Shimla	Mean	Almora	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean	Seed yield (q/ha)	No. of secondary branches
30	IC211622	-	3.40	<b>3.40</b>	-	13.50	<b>13.50</b>	-	-	30.00	<b>30.00</b>	-	-	3.20	<b>3.20</b>	8.70	4.78
31	IC274040	-	4.60	<b>4.60</b>	-	12.00	<b>12.00</b>	-	-	28.20	<b>28.20</b>	-	-	5.45	<b>5.45</b>	10.37	5.23
32	IC274423	-	5.20	<b>5.20</b>	-	13.00	<b>13.00</b>	-	-	27.50	<b>27.50</b>	-	-	3.75	<b>3.75</b>	11.11	5.80
33	IC313468	-	7.20	<b>7.20</b>	-	11.00	<b>11.00</b>	-	-	28.00	<b>28.00</b>	-	-	3.14	<b>3.14</b>	9.26	5.47
34	IC319581	-	4.70	<b>4.70</b>	-	12.50	<b>12.50</b>	-	-	25.70	<b>25.70</b>	-	-	2.64	<b>2.64</b>	11.11	5.33
35	IC319588	-	3.20	<b>3.20</b>	-	10.00	<b>10.00</b>	-	-	25.20	<b>25.20</b>	-	-	1.81	<b>1.81</b>	10.93	5.53
36	IC319595	-	5.10	<b>5.10</b>	-	11.00	<b>11.00</b>	-	-	27.60	<b>27.60</b>	-	-	2.84	<b>2.84</b>	10.19	5.53
37	IC323731	-	5.80	<b>5.80</b>	-	12.50	<b>12.50</b>	-	-	28.30	<b>28.30</b>	-	-	3.73	<b>3.73</b>	13.70	5.20
38	IC324244	-	7.20	<b>7.20</b>	-	13.00	<b>13.00</b>	-	-	28.70	<b>28.70</b>	-	-	6.26	<b>6.26</b>	11.85	5.70
39	IC324313	-	4.20	<b>4.20</b>	-	13.00	<b>13.00</b>	-	-	28.10	<b>28.10</b>	-	-	3.08	<b>3.08</b>	12.22	5.87
40	IC340307	-	6.10	<b>6.10</b>	-	15.50	<b>15.50</b>	-	-	24.00	<b>24.00</b>	-	-	2.59	<b>2.59</b>	11.85	5.73
41	IC340325	-	4.40	<b>4.40</b>	-	16.50	<b>16.50</b>	-	-	31.30	<b>31.30</b>	-	-	6.61	<b>6.61</b>	11.48	5.40
42	IC340361	-	4.50	<b>4.50</b>	-	14.00	<b>14.00</b>	-	-	27.00	<b>27.00</b>	-	-	2.36	<b>2.36</b>	13.33	5.93
43	IC363948	-	3.40	<b>3.40</b>	-	14.50	<b>14.50</b>	-	-	29.40	<b>29.40</b>	-	-	2.92	<b>2.92</b>	16.11	7.40
44	IC363973	-	6.20	<b>6.20</b>	-	15.50	<b>15.50</b>	-	-	32.00	<b>32.00</b>	-	-	5.51	<b>5.51</b>	14.07	6.13
45	IC412837	-	4.10	<b>4.10</b>	-	13.50	<b>13.50</b>	-	-	26.60	<b>26.60</b>	-	-	2.67	<b>2.67</b>	10.56	5.60
46	IC412849	-	3.25	<b>3.25</b>	-	14.00	<b>14.00</b>	-	-	28.70	<b>28.70</b>	-	-	4.84	<b>4.84</b>	9.26	4.73
47	IC421601	-	6.10	<b>6.10</b>	-	16.00	<b>16.00</b>	-	-	27.60	<b>27.60</b>	-	-	3.80	<b>3.80</b>	10.93	5.61
48	IC521296	-	7.20	<b>7.20</b>	-	15.00	<b>15.00</b>	-	-	25.50	<b>25.50</b>	-	-	3.99	<b>3.99</b>	11.85	5.83
49	IC521297	-	5.20	<b>5.20</b>	-	14.50	<b>14.50</b>	-	-	28.00	<b>28.00</b>	-	-	5.94	<b>5.94</b>	9.44	5.07
50	IC521299	-	3.20	<b>3.20</b>	-	14.50	<b>14.50</b>	-	-	26.50	<b>26.50</b>	-	-	6.99	<b>6.99</b>	10.00	4.93
<b>Mean for check variety</b>																	
	<b>Himpriya(C)</b>	<b>1.58</b>	<b>2.75</b>	<b>2.17</b>	<b>14.20</b>	<b>13.75</b>	<b>13.98</b>	<b>18.14</b>	<b>17.60</b>	<b>20.50</b>	<b>18.75</b>	<b>4.04</b>	<b>1.36</b>	<b>2.50</b>	<b>2.63</b>	<b>14.07</b>	<b>5.80</b>
	<b>PRB-1 (C)</b>	<b>2.12</b>	<b>4.65</b>	<b>3.39</b>	<b>22.00</b>	<b>15.50</b>	<b>18.75</b>	<b>22.73</b>	<b>19.00</b>	<b>22.20</b>	<b>21.31</b>	<b>4.20</b>	<b>1.02</b>	<b>3.11</b>	<b>2.78</b>	<b>14.07</b>	<b>7.07</b>
	<b>Shimla-B1 (C)</b>	<b>1.74</b>	<b>6.55</b>	<b>4.15</b>	<b>18.20</b>	<b>16.00</b>	<b>17.10</b>	<b>15.96</b>	<b>17.40</b>	<b>20.70</b>	<b>18.02</b>	<b>3.08</b>	<b>4.46</b>	<b>4.28</b>	<b>3.94</b>	<b>17.04</b>	<b>7.20</b>
	<b>VL-7 (C)</b>	<b>2.58</b>	<b>4.65</b>	<b>3.62</b>	<b>7.80</b>	<b>11.00</b>	<b>9.40</b>	<b>34.43</b>	<b>11.20</b>	<b>25.90</b>	<b>23.84</b>	<b>3.32</b>	<b>0.36</b>	<b>3.50</b>	<b>2.39</b>	<b>14.07</b>	<b>6.53</b>
	<b>Minimum</b>	<b>1.40</b>	<b>2.70</b>	<b>2.17</b>	<b>7.00</b>	<b>9.50</b>	<b>9.40</b>	<b>15.96</b>	<b>11.20</b>	<b>17.60</b>	<b>17.50</b>	<b>0.80</b>	<b>0.20</b>	<b>1.20</b>	<b>1.81</b>	<b>6.85</b>	<b>3.33</b>
	<b>Maximum</b>	<b>3.20</b>	<b>10.70</b>	<b>7.20</b>	<b>23.00</b>	<b>18.50</b>	<b>20.25</b>	<b>34.43</b>	<b>26.00</b>	<b>32.00</b>	<b>32.00</b>	<b>7.60</b>	<b>4.90</b>	<b>6.99</b>	<b>6.99</b>	<b>17.04</b>	<b>7.40</b>
	<b>Mean</b>	<b>1.93</b>	<b>5.43</b>	<b>4.42</b>	<b>18.04</b>	<b>14.16</b>	<b>15.00</b>	<b>22.45</b>	<b>20.80</b>	<b>25.51</b>	<b>24.80</b>	<b>4.35</b>	<b>1.60</b>	<b>3.63</b>	<b>3.50</b>	<b>12.07</b>	<b>5.78</b>
	<b>CD(0.05)</b>	<b>0.33</b>	-	-	<b>2.80</b>	-	-	<b>6.00</b>	<b>7.41</b>	-	-	<b>1.29</b>	<b>3.24</b>	-	-	<b>1.96</b>	<b>1.49</b>
	<b>CV(%) Error</b>	<b>6.09</b>	-	-	<b>6.74</b>	-	-	<b>9.85</b>	<b>17.03</b>	-	-	<b>13.15</b>	<b>34.11</b>	-	-	<b>10.17</b>	<b>16.06</b>
	<b>CV(%) Phenotypic</b>	<b>21.19</b>	<b>36.02</b>	-	<b>23.83</b>	<b>15.82</b>	-	<b>15.87</b>	<b>19.75</b>	<b>11.40</b>	-	<b>39.63</b>	<b>81.93</b>	<b>40.87</b>	-	<b>20.15</b>	<b>13.79</b>

**Table 79. Characterization of germplasm lines in buckwheat at Sangla and Shimla - Hills (2012)**

S.No.	Accession No.	Early plant vigour		Plant growth habit		Flower colour		Leaf colour		Leaf margin colour		Leaf blade shape		Seed colour		Seed shape		Seed shattering		Stem colour	
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla
1	EC018864	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
2	EC058322	2	3	3	1	5	5	3	3	7	3	2	2	5	5	1	1	3	5	7	7
3	EC125397	2	3	3	1	5	5	3	3	7	3	2	2	5	5	1	1	3	7	7	7
4	EC125935	2	3	3	1	5	5	3	3	7	3	2	2	5	5	1	1	3	7	7	7
5	EC125937	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
6	EC216631	2	3	3	1	3	5	3	3	7	5	4	2	5	5	1	1	3	5	7	7
7	EC218742	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	7	7	7
8	EC272442	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
9	EC323730	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
10	EC386667	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
11	IC015393	2	3	3	1	3	1	3	3	7	5	4	2	7	7	2	2	3	3	7	7
12	IC018870-1	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
13	IC107631	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	5	7	7
14	IC108497	2	3	3	1	3	1	3	3	7	5	2	2	3	3	2	2	3	5	7	7
15	IC202226	2	3	3	1	5	1	3	3	7	3	2	2	5	5	2	1	3	5	7	7
16	IC202264	3	3	3	1	3	1	3	3	7	5	2	2	3	3	2	2	3	3	7	7
17	IC202279	2	3	3	1	3	1	3	3	7	5	4	2	5	3	2	2	3	3	7	7
18	IC202286	2	3	3	1	3	1	3	3	7	5	4	2	5	3	2	2	3	3	7	7
19	IC202288	2	3	3	1	3	1	3	3	7	5	2	2	5	3	2	2	3	5	7	7
20	IC202293	2	3	3	1	3	1	3	3	7	5	2	2	5	3	2	2	3	3	7	7
21	IC204079	3	3	3	1	3	1	3	3	7	5	2	2	5	3	2	2	3	5	7	7
22	IC204085	2	3	3	1	5	5	3	3	7	3	2	2	5	5	1	1	3	5	7	7
23	IC204086	2	3	3	1	3	1	3	3	7	5	2	2	5	3	2	2	3	5	7	7
24	IC204088	2	3	3	1	3	1	3	3	7	5	4	2	5	3	2	2	3	5	7	7
25	IC204089	2	3	3	1	5	5	3	3	7	5	2	2	5	5	1	1	3	3	7	7
26	IC018864	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	3	-	7
27	IC018869	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	3	-	7
28	IC125357	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	3	-	7
29	IC188669	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	7	-	7
30	IC211622	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	7	-	7

S.No.	Accession No.	Early plant vigour		Plant growth habit		Flower colour		Leaf colour		Leaf margin colour		Leaf blade shape		Seed colour		Seed shape		Seed shattering		Stem colour	
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla
31	IC274040	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	3	-	7
32	IC274423	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
33	IC313468	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	3	-	7
34	IC319581	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
35	IC319588	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	3	-	7
36	IC319595	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	3	-	7
37	IC323731	-	3	-	1	-	5	-	3	-	3	-	1	-	5	-	1	-	5	-	7
38	IC324244	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
39	IC324313	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
40	IC340307	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	7	-	7
41	IC340325	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
42	IC340361	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	5	-	7
43	IC363948	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	7	-	7
44	IC363973	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
45	IC412837	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	7	-	7
46	IC412849	-	3	-	1	-	5	-	3	-	5	-	2	-	5	-	1	-	5	-	7
47	IC421601	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	5	-	5
48	IC521296	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	7	-	7
49	IC521297	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	5	-	7
50	IC521299	-	3	-	1	-	5	-	3	-	3	-	2	-	5	-	1	-	5	-	7
<b>Mean for check variety</b>																					
	<b>Himpriya(C)</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>PRB-1 (C)</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>7</b>	<b>7</b>
	<b>Shimla-B1 (C)</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>5</b>
	<b>VL-7 (C)</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>Minimum</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>7</b>	<b>5</b>
	<b>Maximum</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>7</b>
	<b>Mode</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>7</b>

**Qualitative characters:-** *Early plant vigour:* 1-Poor, 2-Good, 3-Very good; *Plant growth habit:* 3-Erect, 5-Semi-erect, 7-Spreading, 99-Others; *Flower colour:* 1-White, 3-Greenish yellow, 5-Pink, 7-Red, 99-Others; *Leaf colour:* 3-Green, 5-Pink, 7-Red, 99-Others; *Leaf margin colour:* 3-Green, 5-Pink, 7-Red, 99-Others; *Leaf blade shape:* 1-Ovate, 2-Hastate, 3-Sagittate, 4-Coradate, 99-Others; *Stem colour:* 3-Green, 5-Pink, 7-Red, 99-Others; *Seed shattering:* 0-Non-shattering, 3-Low, 5-Moderate, 7-High, 99-Others; *Seed shape:* 1-Triangular, 2-Ovate, 3-Conodial, 99-Others; *Seed colour:* 3-Grey, 5-Brown, 7-Black, 9-Mottled, 99-Others; *Biotic stress susceptibility:* 1-Very low or Visible sing of susceptibility, 3-Low, 5-Intermediate, 7-High, 9-Very high

**Table 80. Promising lines in chenopodium germplasm for various characters at various locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Sangla (Accession 25)</b>				
1.	Days to 50% flowering	74.00-101.00	-	EC507741 (74.00 Days)
2.	Days to maturity	133.50-147.00	-	EC507741 (133.50 days)
3.	Plant height (cm)	121.67-255.20	NIC-22508, NIC-22504, NIC-22510 (> 234.30 cm)	PRC-9801 (219.90 cm)
4.	Inflorescence length (cm)	17.00-45.20	NIC-22504, NIC-22509, NIC-22508, IC328878, IC329184 (>33.15 cm)	NIC-22503 (30.80 cm)
5.	Leaf length (cm)	6.35-10.90	NIC-22504, NIC-22519, IC313278, NIC-22520 (>10.28 cm)	PRC-9801 (10.12 cm)
6.	Leaf width (cm)	3.95-9.62	IC313278 (=9.62 cm)	EC507741 (8.83 cm)
7.	Seed yield per plant (g)	1.00-31.00	IC258382, NIC-22504 (>14.00 g)	NIC-22503 (12.00 g)
<b>Shimla(Accession 25)</b>				
1.	Days to 50% flowering	64.00-109.00	-	EC507741 (64.00 days)
2.	Days to maturity	115.00-166.00	NIC-22512, IC258235 (<124.00 days)	EC507741 (124.00 days)
3.	Plant height (cm)	174.25-366.40	IC109737 (=366.40 cm)	NIC-22503 (360.25 cm)
4.	Inflorescence length (cm)	27.25-63.20	NIC-22533, IC258235 (> 62.10 cm)	NIC-22503 (59.17 cm)
5.	Leaf length (cm)	4.60-14.00	IC328877, IC109737, NIC-22509, IC109480, NIC-22516 (>11.40)	PRC-9801 (11.25)
6.	Leaf width (cm)	2.00-14.35	-	PRC9801 (14.35 cm)
7.	1000 seed weight (g)	0.40-1.20	NIC-22512 (=1.20g)	PRC-9801 (1.00 g)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
8.	Seed yield per plant (g)	2.02-36.61	IC109737, IC328877, IC258382, IC313278, NIC-22511, NIC-22513, IC109480 (>22.74 g)	PRC-9801 (22.13 g)
<b>Best entries over locations (Accession 25)</b>				
1.	Days to 50% flowering	69.00-103.00	-	EC507741 (69.00 days)
2.	Days to maturity	127.50-155.50	NIC-22512 (=127.50 days)	EC507741 (128.75 days)
3.	Plant height (cm)	165.03-306.80	NIC-22508, NIC-22510, NIC-22520 (>281.60 cm)	NIC-22503 (277.33 cm)
4.	Inflorescence length (cm)	25.38-47.03	IC328878 (=47.03)	NIC-22503 (44.99 cm)
5.	Leaf length (cm)	5.68-10.92	IC109734 (=10.92)	PRC-9801 (10.69 cm)
6.	Leaf width (cm)	2.00-10.90	-	PRC-9801 (10.90 cm)
7.	Seed yield per plant (g)	2.51-29.91	IC258382, IC109734, IC328877, NIC-22504 (>17.92 g)	PRC-9801 (16.57 g)



**Table 81. Multilocation evaluation of germplasm lines in chenopodium at different locations - Hills (2012)**

S.No.	Accession No.	Days to 50% flowering			Days to 80% maturity			Plant height (cm)		
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean
1	IC107515	97.00	109.00	<b>103.00</b>	144.00	166.00	<b>155.00</b>	209.00	337.85	<b>273.43</b>
2	IC109480	101.00	103.00	<b>102.00</b>	147.00	164.00	<b>155.50</b>	121.67	351.75	<b>236.71</b>
3	IC109734	95.00	107.00	<b>101.00</b>	145.00	161.00	<b>153.00</b>	128.50	366.40	<b>247.45</b>
4	IC109739	101.00	105.00	<b>103.00</b>	147.00	160.00	<b>153.50</b>	163.50	326.20	<b>244.85</b>
5	IC258235	78.00	86.00	<b>82.00</b>	142.00	123.00	<b>132.50</b>	131.80	252.65	<b>192.23</b>
6	IC258253	78.00	85.00	<b>81.50</b>	144.00	144.00	<b>144.00</b>	126.40	222.45	<b>174.43</b>
7	IC258254	80.00	69.00	<b>74.50</b>	140.00	136.00	<b>138.00</b>	129.00	201.05	<b>165.03</b>
8	IC258382	87.00	92.00	<b>89.50</b>	145.00	157.00	<b>151.00</b>	219.00	332.90	<b>275.95</b>
9	IC313278	97.00	105.00	<b>101.00</b>	140.00	158.00	<b>149.00</b>	152.50	302.85	<b>227.68</b>
10	IC328854	80.00	72.00	<b>76.00</b>	144.00	145.00	<b>144.50</b>	203.60	231.25	<b>217.43</b>
11	IC328877	85.00	106.00	<b>95.50</b>	142.00	156.00	<b>149.00</b>	175.20	351.90	<b>263.55</b>
12	IC328878	80.00	91.00	<b>85.50</b>	142.00	154.00	<b>148.00</b>	162.60	312.00	<b>237.30</b>
13	IC329184	85.00	91.00	<b>88.00</b>	142.00	142.00	<b>142.00</b>	185.60	344.00	<b>264.80</b>
14	IC329185	85.00	98.00	<b>91.50</b>	142.00	143.00	<b>142.50</b>	185.40	223.50	<b>204.45</b>
15	NIC-22504	82.00	94.00	<b>88.00</b>	140.00	137.00	<b>138.50</b>	246.80	303.50	<b>275.15</b>
16	NIC-22508	82.00	93.00	<b>87.50</b>	143.00	140.00	<b>141.50</b>	255.20	358.40	<b>306.80</b>
17	NIC-22509	85.00	92.00	<b>88.50</b>	143.00	142.00	<b>142.50</b>	205.00	336.25	<b>270.63</b>
18	NIC-22510	82.00	90.00	<b>86.00</b>	142.00	138.00	<b>140.00</b>	234.40	344.85	<b>289.63</b>
19	NIC-22511	85.00	92.00	<b>88.50</b>	142.00	161.00	<b>151.50</b>	135.80	358.15	<b>246.98</b>
20	NIC-22512	78.00	78.00	<b>78.00</b>	140.00	115.00	<b>127.50</b>	189.60	174.25	<b>181.93</b>

S.No.	Accession No.	Inflorescence length (cm)			Leaf length (cm)			Leaf width (cm)			Seed yield per plant (g)			Shimla
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	1000 seed weight (g)
1	IC107515	26.00	37.40	<b>31.70</b>	8.54	8.00	<b>8.27</b>	5.90	6.90	<b>6.40</b>	3.60	16.18	<b>9.89</b>	0.50
2	IC109480	22.33	45.15	<b>33.74</b>	6.76	12.25	<b>9.51</b>	5.21	12.75	<b>8.98</b>	2.30	22.76	<b>12.53</b>	0.70
3	IC109734	25.00	40.25	<b>32.63</b>	9.04	12.80	<b>10.92</b>	6.12	13.70	<b>9.91</b>	4.50	36.61	<b>20.56</b>	0.80
4	IC109739	21.75	39.85	<b>30.80</b>	9.78	9.10	<b>9.44</b>	6.36	7.50	<b>6.93</b>	7.00	11.40	<b>9.20</b>	0.40
5	IC258235	23.00	62.15	<b>42.58</b>	-	7.50	<b>7.50</b>	-	2.00	<b>2.00</b>	3.60	4.00	<b>3.80</b>	0.40
6	IC258253	25.80	45.80	<b>35.80</b>	-	6.00	<b>6.00</b>	-	2.05	<b>2.05</b>	3.00	2.02	<b>2.51</b>	0.40
7	IC258254	24.00	50.00	<b>37.00</b>	6.35	5.00	<b>5.68</b>	3.95	2.15	<b>3.05</b>	1.20	15.30	<b>8.25</b>	0.60
8	IC258382	22.60	52.60	<b>37.60</b>	9.60	9.55	<b>9.58</b>	7.20	6.15	<b>6.68</b>	31.00	28.81	<b>29.91</b>	0.80
9	IC313278	21.50	34.60	<b>28.05</b>	10.50	9.05	<b>9.78</b>	9.62	7.35	<b>8.49</b>	6.00	26.61	<b>16.31</b>	0.40
10	IC328854	25.00	56.10	<b>40.55</b>	8.70	5.65	<b>7.18</b>	5.90	2.25	<b>4.08</b>	1.60	7.22	<b>4.41</b>	0.50
11	IC328877	28.40	53.25	<b>40.83</b>	6.52	14.00	<b>10.26</b>	5.32	12.50	<b>8.91</b>	2.00	35.78	<b>18.89</b>	0.80
12	IC328878	38.00	56.05	<b>47.03</b>	6.68	8.90	<b>7.79</b>	5.28	4.65	<b>4.97</b>	2.60	9.16	<b>5.88</b>	0.70
13	IC329184	33.20	54.47	<b>43.84</b>	8.95	8.60	<b>8.78</b>	5.37	4.70	<b>5.04</b>	3.80	16.70	<b>10.25</b>	0.90
14	IC329185	30.00	38.20	<b>34.10</b>	8.06	9.90	<b>8.98</b>	4.96	5.15	<b>5.06</b>	6.80	19.07	<b>12.94</b>	0.90
15	NIC-22504	45.20	38.60	<b>41.90</b>	10.90	9.60	<b>10.25</b>	7.80	5.00	<b>6.40</b>	15.00	20.92	<b>17.96</b>	0.60
16	NIC-22508	38.20	36.20	<b>37.20</b>	8.86	9.75	<b>9.31</b>	4.60	5.10	<b>4.85</b>	2.00	10.29	<b>6.15</b>	0.90
17	NIC-22509	40.20	45.80	<b>43.00</b>	8.90	12.35	<b>10.63</b>	6.80	7.40	<b>7.10</b>	1.30	15.68	<b>8.49</b>	0.60
18	NIC-22510	23.00	44.25	<b>33.63</b>	8.40	9.65	<b>9.03</b>	7.50	6.92	<b>7.21</b>	8.00	18.10	<b>13.05</b>	0.90
19	NIC-22511	23.00	33.75	<b>28.38</b>	7.00	9.78	<b>8.39</b>	6.37	6.15	<b>6.26</b>	3.30	25.36	<b>14.33</b>	0.80
20	NIC-22512	26.60	54.80	<b>40.70</b>	6.60	6.10	<b>6.35</b>	4.16	3.25	<b>3.71</b>	2.00	15.05	<b>8.53</b>	1.20

S.No.	Accession No.	Days to 50% flowering			Days to 80% maturity			Plant height (cm)		
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean
21	NIC-22513	78.00	96.00	<b>87.00</b>	142.00	157.00	<b>149.50</b>	202.20	331.35	<b>266.78</b>
22	NIC-22516	82.00	96.00	<b>89.00</b>	147.00	132.00	<b>139.50</b>	130.80	323.20	<b>227.00</b>
23	NIC-22519	82.00	80.00	<b>81.00</b>	144.00	137.00	<b>140.50</b>	160.40	226.90	<b>193.65</b>
24	NIC-22520	95.00	95.00	<b>95.00</b>	142.00	154.00	<b>148.00</b>	204.80	358.50	<b>281.65</b>
25	NIC-22533	87.00	87.00	<b>87.00</b>	142.00	159.00	<b>150.50</b>	200.00	303.75	<b>251.88</b>
<b>Mean for check varieties</b>										
	<b>EC507741 (C)</b>	<b>74.00</b>	<b>64.00</b>	<b>69.00</b>	<b>133.50</b>	<b>124.00</b>	<b>128.75</b>	<b>171.13</b>	<b>213.15</b>	<b>192.14</b>
	<b>NIC-22503 (C)</b>	<b>84.00</b>	<b>98.00</b>	<b>91.00</b>	<b>142.00</b>	<b>160.00</b>	<b>151.00</b>	<b>194.40</b>	<b>360.25</b>	<b>277.33</b>
	<b>PRC-9801 (C)</b>	<b>96.50</b>	<b>100.00</b>	<b>98.25</b>	<b>143.00</b>	<b>161.00</b>	<b>152.00</b>	<b>219.90</b>	<b>262.65</b>	<b>241.28</b>
	<b>Minimum</b>	<b>74.00</b>	<b>64.00</b>	<b>69.00</b>	<b>133.50</b>	<b>115.00</b>	<b>127.50</b>	<b>121.67</b>	<b>174.25</b>	<b>165.03</b>
	<b>Maximum</b>	<b>101.00</b>	<b>109.00</b>	<b>103.00</b>	<b>147.00</b>	<b>166.00</b>	<b>155.50</b>	<b>255.20</b>	<b>366.40</b>	<b>306.80</b>
	<b>Mean</b>	<b>85.77</b>	<b>91.93</b>	<b>88.85</b>	<b>142.55</b>	<b>147.36</b>	<b>144.96</b>	<b>180.15</b>	<b>300.43</b>	<b>240.29</b>
	<b>CV(%) Phenotypic</b>	<b>8.87</b>	<b>12.42</b>		<b>1.87</b>	<b>9.33</b>		<b>21.40</b>	<b>19.48</b>	

S.No.	Accession No.	Inflorescence length (cm)			Leaf length (cm)			Leaf width (cm)			Seed yield per plant (g)			Shimla
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	1000 seed weight (g)
21	NIC-22513	25.20	37.35	<b>31.28</b>	9.60	10.45	<b>10.03</b>	8.10	8.65	<b>8.38</b>	7.00	23.16	<b>15.08</b>	0.90
22	NIC-22516	17.00	50.25	<b>33.63</b>	9.10	11.45	<b>10.28</b>	7.20	9.85	<b>8.53</b>	1.00	16.61	<b>8.81</b>	0.80
23	NIC-22519	25.60	51.40	<b>38.50</b>	10.70	8.85	<b>9.78</b>	8.30	5.35	<b>6.83</b>	9.00	14.61	<b>11.81</b>	0.90
24	NIC-22520	20.60	56.75	<b>38.68</b>	10.30	9.95	<b>10.13</b>	8.52	5.65	<b>7.09</b>	4.00	16.96	<b>10.48</b>	0.80
25	NIC-22533	20.40	63.20	<b>41.80</b>	7.56	8.15	<b>7.86</b>	5.20	7.95	<b>6.58</b>	4.60	13.88	<b>9.24</b>	0.60
<b>Mean for check varieties</b>														
	<b>EC507741 (C)</b>	<b>23.50</b>	<b>27.25</b>	<b>25.38</b>	<b>10.02</b>	<b>4.60</b>	<b>7.31</b>	<b>8.83</b>	<b>2.05</b>	<b>5.44</b>	<b>9.00</b>	<b>10.05</b>	<b>9.53</b>	-
	<b>NIC-22503 (C)</b>	<b>30.80</b>	<b>59.17</b>	<b>44.99</b>	<b>9.64</b>	<b>10.20</b>	<b>9.92</b>	<b>6.99</b>	<b>5.35</b>	<b>6.17</b>	<b>12.00</b>	<b>17.39</b>	<b>14.70</b>	<b>0.80</b>
	<b>PRC-9801 (C)</b>	<b>28.30</b>	<b>38.70</b>	<b>33.50</b>	<b>10.12</b>	<b>11.25</b>	<b>10.69</b>	<b>7.45</b>	<b>14.35</b>	<b>10.90</b>	<b>11.00</b>	<b>22.13</b>	<b>16.57</b>	<b>1.00</b>
	<b>Minimum</b>	<b>17.00</b>	<b>27.25</b>	<b>25.38</b>	<b>6.35</b>	<b>4.60</b>	<b>5.68</b>	<b>3.95</b>	<b>2.00</b>	<b>2.00</b>	<b>1.00</b>	<b>2.02</b>	<b>2.51</b>	<b>0.40</b>
	<b>Maximum</b>	<b>45.20</b>	<b>63.20</b>	<b>47.03</b>	<b>10.90</b>	<b>14.00</b>	<b>10.92</b>	<b>9.62</b>	<b>14.35</b>	<b>10.90</b>	<b>31.00</b>	<b>36.61</b>	<b>29.91</b>	<b>1.20</b>
	<b>Mean</b>	<b>26.94</b>	<b>46.55</b>	<b>36.74</b>	<b>8.74</b>	<b>9.23</b>	<b>8.91</b>	<b>6.50</b>	<b>6.53</b>	<b>6.35</b>	<b>6.01</b>	<b>17.56</b>	<b>11.79</b>	<b>0.73</b>
	<b>CV(%) Phenotypic</b>	<b>24.60</b>	<b>20.54</b>	-	<b>16.13</b>	<b>25.24</b>	-	<b>23.09</b>	<b>53.79</b>	-	<b>101.07</b>	<b>47.11</b>	-	<b>28.49</b>

**Table 82. Characterization of germplasm lines in chenopodium at different locations - Hills (2012)**

S.No.	Accession No.	Early plant vigour			Plant growth habit			Leaf colour			Leaf shape			Leaf tip			Seed colour			Stem branching			Stem colour			Inflorescence colour			Inflorescence shape			Sangla				
		Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Flower clusters							
1	IC107515	3	3	3	1	1	1	1	1	1	8	2	8	1	1	1	4	4	4	3	1	3	3	2	3	2	3	3	2	3	3	2	4	4	7	
2	IC109480	2	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	1	1	1	1	2	2	1	3	3	1	2	2	1	2	2	7	
3	IC109734	2	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	1	2	2	1	2	2	3	1	3	3	1	3	3	1	3	7	
4	IC109739	2	3	3	1	1	1	1	1	1	7	6	7	1	2	2	4	4	4	1	2	2	3	2	3	3	2	3	2	1	2	2	1	2	7	
5	IC258235	2	3	3	1	1	1	-	1	1	-	2	2	-	1	1	3	3	3	1	1	1	1	2	2	1	1	1	3	2	3	3	2	3	3	
6	IC258253	2	3	3	1	1	1	-	1	1	-	6	6	-	1	1	4	3	4	1	1	1	3	2	3	1	1	1	3	2	3	3	2	3	3	
7	IC258254	2	3	3	1	1	1	1	1	1	7	5	7	1	1	1	4	4	4	3	1	3	1	3	3	1	1	1	3	4	4	3	4	4	3	
8	IC258382	3	3	3	1	1	1	1	1	1	8	2	8	1	1	1	4	4	4	2	1	2	1	3	3	1	1	1	3	2	3	3	2	3	3	
9	IC313278	3	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	2	1	2	1	2	2	3	3	3	1	2	2	1	2	2	7	
10	IC328854	2	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	2	2	3	2	3	3	1	3	3	2	3	3	2	3	3	
11	IC328877	2	3	3	1	1	1	1	1	1	8	2	8	1	1	1	4	4	4	1	1	1	1	2	2	1	1	1	2	2	2	2	2	2	7	
12	IC328878	3	3	3	1	1	1	1	1	1	8	2	8	-	1	1	4	4	4	1	1	1	3	2	3	3	1	3	3	2	3	3	2	3	3	
13	IC329184	3	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	3	4	1	1	1	3	2	3	1	1	1	2	1	2	2	1	2	7	
14	IC329185	3	3	3	1	1	1	1	1	1	8	2	8	1	1	1	4	4	4	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	7	
15	NIC-22504	3	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	1	2	2	1	2	2	1	1	1	3	1	3	3	1	3	7	
16	NIC-22508	3	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	1	1	1	1	2	2	1	1	1	1	1	1	1	1	1	7	
17	NIC-22509	3	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	1	1	1	2	2	2	2	2	2	1	4	4	4	4	4	3	
18	NIC-22510	3	3	3	1	1	1	1	1	1	7	2	7	1	2	2	3	4	4	1	1	1	1	2	2	1	1	1	2	1	2	2	2	1	2	7
19	NIC-22511	3	3	3	1	1	1	1	1	1	8	2	8	1	2	2	4	4	4	3	1	3	2	2	2	2	3	3	3	4	4	4	4	4	7	
20	NIC-22512	2	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	1	1	1	2	2	1	2	2	1	2	2	2	1	1	1	7

S.No.	Accession No.	Early plant vigour			Plant growth habit			Leaf colour			Leaf shape			Leaf tip			Seed colour			Stem branching			Stem colour			Inflorescence colour			Inflorescence shape			Sangla
		Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Sangla	Shimla	Mode	Flower clusters			
21	NIC-22513	2	3	3	1	1	1	1	1	1	7	2	7	1	1	1	3	4	4	2	2	2	1	2	2	1	3	3	2	2	2	7
22	NIC-22516	2	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	1	1	1	1	2	2	1	1	1	1	4	4	7
23	NIC-22519	2	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	1	1	1	2	2	1	1	1	2	2	2	7
24	NIC-22520	3	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	1	1	1	2	2	1	3	3	3	4	4	7
25	NIC-22533	2	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	1	1	3	2	3	1	3	3	3	2	3	7
<b>Mean for check variety</b>																																
	<b>EC507741 (C)</b>	2	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	1	1	1	3	3	1	3	3	3	1	3	7
	<b>NIC-22503 (C)</b>	3	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	2	1	2	1	2	2	3	1	3	2	1	2	3
	<b>PRC-9801 (C)</b>	3	3	3	1	1	1	1	1	1	7	2	7	1	2	2	4	4	4	2	1	2	1	2	2	3	2	3	2	1	2	3
	<b>Minimum</b>	2	3	3	1	1	1	1	1	1	7	2	2	1	1	1	3	3	3	1	1	1	1	2	2	1	1	1	1	1	1	3
	<b>Maximum</b>	3	3	3	1	1	1	1	1	1	8	6	8	1	2	2	4	4	4	3	2	3	3	3	3	3	3	3	3	4	4	7
	<b>Mode</b>	3	3	3	1	1	1	1	1	1	7	2	7	1	1	1	4	4	4	1	1	1	1	2	2	1	1	3	3	2	2	7

**Qualitative characters :** *Early plant vigour:* 1-Poor, 2-Good, 3-Very good; *Plant growth habit:* 1-Erect, 2-Semi-erect, 3-Angled, 99-Others; *Inflorescence colour:* 1-Yellowish green, 2-Reddish, 3-Pinkish green, 99-Others; *Inflorescence shape:* 1-Globose, 2-Slender with axillary cluster, 3-Terminal, 4-Panicled spike, 99-Others; *Flower clusters:* 3-Lax, 7-Dense, 99-Others; *Stem branching:* 1-Unbranched, 2-Moderately branched, 3-Profusedly branched, 99-Others; *Stem colour:* 1-Yellow, 2-Red, 3-Pink, 99-Others (Pinkish green); *Leaf colour:* 1-Green, 2-Red, 3-Pink, 99-Others; *Leaf tip:* 1-Obtuse, 2-Rounded, 99-Others; *Leaf shape:* 1-Triangular, 2-Hestate, 3-Deltoid, 4-Cordate, 5-Ovate, 6-Oblong, 7-Rhombic, 8-Deeply unequally toothed, 99-Others; *Seed colour:* 1-White, 2-Pink, 3-Brown, 4-Black, 99-Others; *Biotic stress susceptibility:* 1-Very low or Visible sing of susceptibility, 3-Low, 5-Intermediate, 7-High, 9-Very high

**Table 83. Promising lines in rice bean germplasm for various characters at different locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Almora (Accessions 25)</b>				
1.	Days to 50% flowering	61.20-80.00	-	PRR-2 (61.20 days)
2.	Days to maturity	96.60-140.00	-	PRR-2 (96.60 days)
3.	Plant height (cm)	92.00-162.00	IC524084, IC524085, IC421875 (>154.95 cm)	PRR-1 (148.00 cm)
4.	No. of primary branches	2.00-3.80	-	PRR-1 (3.80)
5.	Pod length (cm)	7.80-10.30	IC419489, IC524084 (> 10.05 cm)	RBL-6 (9.97 cm)
6.	No. of seed per pod (Obs.)	7.00-10.00	IC243512, IC421875, IC524076, IC524084, IC538870 (=10.00)	PRR-2 (9.80)
7.	No. of seed per pod (Adj.)	7.50-10.00	IC421875, IC538870 (=10.00)	PRR-2 (9.80)
8.	Seed yield per plant (g)	0.40-11.60	IC421875, IC419489, IC421926, IC524549 (>7.95 g)	PRR-2 (7.56 g)
9.	100 seed weight (g) (Obs.)	4.70-9.61	IC524068, IC419489, IC524549, IC243512, IC137189, IC394201, IC411730, IC524075, IC524070, IC524076, IC421875, IC524074, IC419806, IC524522, IC524080, IC524085, IC421926, IC394537, IC538870, IC538878 (> 6.20 g)	PRR-2 (6.05 g)
10.	100 seed weight (g) (Adj.)	5.15-9.54	IC419489, IC524068, IC524549, IC243512, IC411730, IC137189, IC524075, IC394201, IC524076, IC419806, IC524070, IC524080, IC421875, IC524085, IC524522, IC394537, IC538870, IC524084, IC538878 (> 6.18 g)	PRR-2 (6.05 g)
<b>Bhowali (Accession 25)</b>				
1.	Days to 50% flowering	68.00-83.67	-	PRR-1 (68.00 days)
2.	Days to 80% maturity	123.00-146.00	-	PRR-2 (123.00 days)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
3.	No. of primary branches	1.89-2.78	IC394537, IC421875, IC524070, IC524082, IC538983, IC421926 (>2.50)	BRS-1 (2.56)
4.	Plant height (cm)	95.86-162.17	IC394201, IC524085, IC524074, IC411730, IC394537, IC243512, IC524082, IC524084, IC419602, IC524549, IC369282, IC524075, IC137189 (>136.60 cm)	BRS-1 (136.58 cm)
5.	Pod length (cm)	9.29-12.57	IC538878 (= 12.57 cm)	LRB-460 (11.04 cm)
6.	No. of seed per pod	7.00-9.67	IC538878, IC419489, IC419602, IC421926, IC524082, IC524522 (>=9.00)	LRB-460 (9.00)
7.	No. of pods per plant	13.33-58.33	IC524070 (=58.33)	LRB-460 (55.33)
8.	100 seed weight (g)	6.03-10.49	IC419489, IC524549, IC524075, IC243512, IC524070, IC137189, IC419518, IC369282, IC524085, IC524076, IC394201, IC524084, IC411730, IC394537 (> 7.85 g)	BRS-1 (7.73 g)
9.	Seed yield (q/ha)	1.77-14.17	-	LRB-460 (14.17 q/ha)
<b>Palampur (Accessions 25)</b>				
1.	Days to 50% flowering	76.00-80.40	IC137189, IC538983, IC369282, IC419489, IC421926, IC524082, IC524084, IC538878, IC394201, IC524045, IC005240, IC411730, IC419602, IC419806, IC524074, IC524076, IC524085, IC524522, IC538870 (<=79.00 days)	PRR-2 (79.00 days)
2.	Days to maturity (Obs.)	126.00-134.00	IC419602 (=126.00 days)	PRR-2 & RBL-1 (127.60 days)
3.	Days to maturity (Adj.)	125.35-134.10	IC419602, IC524522 (<128.00 days)	PRR-2 & RBL-1 (127.60 days)
4.	Plant height (cm)	78.50-92.00	IC524045, IC243512, IC005240, IC524085, IC419518, IC524549, IC419602, IC524068, IC524522, IC137189, IC421875, IC369282 (> 86.40 cm)	RBL-6 (85.98 cm)
5.	Pod length (cm)	8.20-9.80	IC538878, IC524085, IC421875, IC419518, IC005240, IC369282, IC394201, IC394537, IC411730, IC524074, IC524084 (>=9.00 cm)	PRR-2 (8.98 cm)
6.	No. of primary branches	2.00-3.00	IC524068, IC243512, IC394201, IC524045, IC524074, IC524076, IC524082, IC538878, IC005240, IC369282, IC419602, IC421926, IC524084, IC538983 (>=2.60)	RBL-6 (2.56)



S. No.	Characters	Range	Promising lines	Value of best check
7.	No. of pods per plant (Obs.)	44.00-70.00	IC538878, IC421875, IC137189, IC411730, IC524068, IC538983, IC524084, IC538870, IC419602, IC524045, IC524522, IC419489, IC524085, IC421926, IC524076, IC524549 ( $\geq 58.00$ )	PRR-2 (56.40)
	No. of pods per plant (Adj.)	43.15-77.40	IC538878, IC538983, IC538870, IC137189, IC524522, IC524549, IC524084, IC411730, IC419602, IC524085, IC243512, IC419489, IC524076, IC421875 ( $\geq 57.90$ )	PRR-2 (56.40)
9.	Seed yield per plant (g)	24.00-32.00	IC419518, IC524082, IC419806, IC005240, IC524045, IC524068, IC524074, IC524085, IC524522 ( $\geq 30.00$ g)	PRR-1 (29.40 g)
10.	100 seed weight (g)	6.04-8.40	IC005240, IC394201, IC419518 ( $\geq 8.20$ g)	PRR-1 & RBL-6 (8.08 g)
11.	Seed yield(q/ha)	4.44-7.78	IC369282, IC005240, IC394201, IC419518, IC421875 ( $\geq 6.67$ q/ha)	PRR-1 & RBL-1 (6.24 q/ha)
<b>Ranichauri (Accessions 25)</b>				
1.	Days to 50% flowering	78.33-96.00	-	PRR 1 (78.33 days)
2.	Days to maturity	125.33-148.00	-	PRR 1 (125.33 days)
3.	Plant height(cm)	32.00-107.00	IC394201, IC243512, IC419489, IC524074, IC524082, IC524084, IC419806, IC421926, IC538983, IC137189, IC524522, IC524549, IC524070, IC421875, IC538870, IC524075, IC369282 ( $> 69.95$ )	RBL 6 (70.00 cm)
4.	Pod length (cm)	2.00-11.20	IC369282, IC419489, IC137189, IC394201, IC424076 ( $> 8.88$ cm)	RBL 1 (8.87 cm)
5.	No. of pods per plant	1.80-8.00	IC524082, IC137189 ( $> 6.86$ )	RBL 6 (6.87)
6.	No. of seed per pod	2.20-9.20	IC419806, IC419489, IC538870, IC424076 ( $> 7.00$ )	RBL 1 (7.07)
7.	100 seed weight (g)	6.65-8.81	IC524068, IC524522, IC421875, IC538870, IC419489, IC524084, IC538878 ( $> 7.90$ g)	PRR 1 (7.92 g)
8.	Seed yield(q/ha)	6.94-13.89	IC369282, IC524522, IC524082, IC538878, IC421926, IC524068, IC243512, IC524549 ( $> 12.20$ q/ha)	RBL 1 (11.85 q/ha)
<b>Shillong (Accession 25)</b>				
1.	Days to 50% flowering	46.00-72.00	IC421926 (=46.00 days)	RBL-1 (46.00 days)

S. No.	Characters	Range	Promising lines	Value of best check
2.	Days to 80% maturity	110.00-116.00	IC524068, IC524522, IC137189, IC243512, IC369282, IC411730, IC419518, IC419602, IC419806, IC421875, IC421926, IC524082, IC538870, IC538878, IC538983 ( $\leq 112.00$ days)	PRR-1 & PRR-2 & RBL-1 & RBL-6 (112.00 days)
3.	Plant height (cm)	82.50-140.20	IC524074, IC524522, IC524084, IC538870, IC394537, IC524549, IC411730, IC394201, IC524076, IC419518, IC524068, IC421926, IC137189, IC419602, IC524075, IC524082, IC421875 ( $> 101.00$ cm)	RBL-6 (101.00 cm)
4.	Pod length (cm)	8.68-51.70	IC538878, IC137189, IC524070, IC524549, IC524085, IC419518, IC524074, IC524076, IC524522, IC421875, IC419489, IC524075, IC524082, IC538870, IC538983, IC411730, IC524084, IC394201, IC419806 ( $> 10.65$ cm)	RBL-6 (10.62 cm)
5.	Stem thickness (mm)	0.44-0.90	IC419489, IC524549, IC538878, IC419518, IC524084, IC394537, IC524074, IC538870, IC421926, IC524522, IC137189, IC369282, IC524070, IC524076, IC524085, IC411730, IC394201, IC419806, IC524068 ( $> 0.65$ mm)	RBL-6 (0.68 mm)
6.	No. of primary branches	3.20-6.40	IC538878, IC419518, IC524082, IC538870, IC524522, IC524549, IC369282, IC421875, IC411730, IC524076, IC243512, IC394201, IC394537 ( $\geq 5.00$ )	RBL-6 (5.00)
7.	No. of seed per pod	7.20-11.80	IC538878, IC421875, IC243512, IC419518, IC419602, IC524549, IC538983, IC524082, IC524084, IC524522 ( $> 9.50$ )	RBL-6 (9.80)
8.	No. of pods per cluster	2.60-5.60	IC538983, IC137189, IC411730, IC524068, IC524084, IC421926, IC524070, IC524074, IC538870 ( $> 4.20$ )	RBL-1 (4.40)
9.	No. of pods per plant	86.60-231.60	IC419518, IC524522, IC524074, IC538870, IC369282, IC524549, IC524084, IC411730, IC538878, IC421875, IC524085, IC394201, IC524076, IC524070, IC419602, IC419806, IC524068, IC243512, IC394537, IC421926, IC524082 ( $> 141.50$ )	RBL-6 (137.40)
10.	100 seed weight (g)	6.70-12.10	IC524074, IC419489, IC524075, IC524549, IC394201, IC524082, IC411730, IC524076, IC419518, IC524084, IC524070, IC524522, IC137189, IC369282, IC524085 ( $> 8.50$ g)	PRR-1 (8.80 g)
11.	Seed yield per plant (g)	52.80-230.20	IC524074, IC524522, IC524549, IC419518, IC538870, IC524084, IC394201, IC411730, IC369282, IC421875, IC538878, IC524085, IC524070, IC524082, IC524068, IC524076, IC243512, IC419806, IC419602, IC394537, IC137189, IC421926 ( $> 91.50$ g)	PRR-1 (86.50 g)

S. No.	Characters	Range	Promising lines	Value of best check
<b>Shimla (Accession 25)</b>				
1.	Days to 50% flowering	85.00-104.00	-	PRR-2 & RBL-6 (85.00 days)
2.	Days to 80% maturity	138.00-192.00	-	PRR-2 (138.00 days)
3.	Plant height (cm)	241.70-299.00	IC419518, IC528878, IC411730 (> 287.25 cm)	RBL-1 (286.65 cm)
4.	Pod length (cm)	11.20-15.20	IC421926 (=15.20 cm)	RBL-6 (14.65 cm)
5.	No. of primary branches	3.00-6.00	IC369282, IC524070, IC528870, IC137189, IC421875, IC421926, IC524068, IC524085 (>=5.00)	PRR-2 (5.00)
6.	Stem thickness (mm)	1.03-9.75	IC421926, IC419806, IC538983, IC528878, IC524522 (>9.45 mm)	RBL-1 (9.46 mm)
7.	No. of seed per Plant	8.00-11.00	IC137189 (=11.00)	RBL-1 (11.00)
8.	100 seed weight (g)	4.29-9.70	IC411730, IC524085, IC524082, IC524522, IC243512, IC524076, IC528878, IC524075, IC538983, IC419518, IC524549 (>7.73g)	RBL-6 (7.59 g)
9.	Seed yield per plant (g)	5.79-54.45	-	RBL-1 (54.45 g)
<b>Best entries over location</b>				
1.	Days to 50% flowering	83.33-77.58	-	LRB-460 (70.67 days)
2.	Days to 80% maturity	142.94-133.36	-	PRR-2 (121.42 days)
3.	Plant height (cm)	146.20-133.16	IC524074, IC394201, IC524084, IC524085, IC243512, IC524549, IC538870 (>137.85 cm)	BRS-1 (136.58 cm)
4.	Pod length (cm)	16.42-9.98	IC421926 (=16.42 cm)	LRB-460 (11.04 cm)
5.	No. of primary branches	3.97-3.33	IC538870, IC369282, IC524070, IC524068, IC421875, IC524082 (> 3.66)	RBL-6 (3.69)
6.	Stem thickness (mm)	5.29-4.01	IC421926, IC538878, IC419806, IC524522, IC538983 (> 5.05 mm)	RBL-1 (5.01 mm)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
7.	No. of pods per plant	96.33-66.29	IC524074, IC538870, IC524068, IC538878, IC421875, IC524522, IC419518, IC524084, IC369282, IC411730, IC524085, IC524070, IC419602, IC524549, IC419806, IC524076, IC394201 (> 67.20)	RBL-6 (65.82)
8.	No. of seed per pod	9.07-7.94	IC538870 (=9.07)	LRB-460 (9.00)
9.	100 seed weight (g)	8.78-7.68	IC419489, IC524549, IC524075, IC411730, IC243512, IC524076, IC137189, IC524070, IC524074, IC524085, IC524082, IC394201, IC524068, IC419518 (7.75 g)	BRS-1 (7.73 g)
10.	Seed yield per plant (g)	68.17-44.74	IC524074, IC524522, IC524549, IC538870, IC419518, IC524084, IC421875, IC394201, IC411730, IC369282, IC538878, IC524085, IC524082, IC524076, IC524070, IC524068, IC419806, IC243512, IC419602, IC421926 (> 38.55 g)	RBL-1 (38.37 g)
11.	Seed yield (q/ha)	14.17-7.34	-	LRB-460 (14.17 q/ha)

**Table 84. Multilocation evaluation of germplasm lines in rice bean at different locations- Hills (2012)**

S.No.	Accession No.	Days to 50 % flowering							Days to 80% maturity						
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean
1	IC137189	72.00	76.00	76.00	86.00	53.00	88.00	<b>75.17</b>	121.00	135.00	130.00	131.00	112.00	179.00	<b>134.67</b>
2	IC243512	73.00	77.00	80.00	86.00	53.00	93.00	<b>77.00</b>	124.00	142.33	130.00	131.00	112.00	176.00	<b>135.89</b>
3	IC369282	72.00	77.67	77.00	90.00	66.00	95.00	<b>79.61</b>	121.00	135.00	130.00	137.00	112.00	184.00	<b>136.50</b>
4	IC394201	80.00	78.00	78.00	92.00	61.00	101.00	<b>81.67</b>	140.00	138.67	129.00	145.00	116.00	189.00	<b>142.94</b>
5	IC394537	78.00	77.33	80.00	88.00	61.00	100.00	<b>80.72</b>	116.00	142.33	129.00	140.00	116.00	192.00	<b>139.22</b>
6	IC411730	77.00	83.67	79.00	90.00	53.00	101.00	<b>80.61</b>	118.00	135.00	129.00	138.00	112.00	188.00	<b>136.67</b>
7	IC419489	77.00	79.33	77.00	90.00	66.00	104.00	<b>82.22</b>	118.00	142.00	131.00	142.00	116.00	179.00	<b>138.00</b>
8	IC419518	76.00	80.33	80.00	85.00	58.00	95.00	<b>79.06</b>	116.00	146.00	134.00	132.00	112.00	176.00	<b>136.00</b>
9	IC419602	70.00	69.33	79.00	94.00	51.00	88.00	<b>75.22</b>	102.00	135.00	126.00	141.00	112.00	152.00	<b>128.00</b>
10	IC419806	73.00	76.00	79.00	90.00	56.00	94.00	<b>78.00</b>	119.00	135.00	130.00	138.00	112.00	165.00	<b>133.17</b>
11	IC421875	74.00	77.33	80.00	85.00	53.00	93.00	<b>77.06</b>	119.00	131.33	131.00	130.00	112.00	172.00	<b>132.56</b>
12	IC421926	65.00	71.00	77.00	85.00	46.00	87.00	<b>71.83</b>	116.00	131.33	134.00	129.00	112.00	151.00	<b>128.89</b>
13	IC524068	77.00	-	80.00	90.00	58.00	98.00	<b>80.60</b>	112.00	-	130.00	138.00	110.00	165.00	<b>131.00</b>
14	IC524070	78.00	76.00	79.00	96.00	56.00	101.00	<b>81.00</b>	118.00	132.00	130.00	148.00	116.00	168.00	<b>135.33</b>
15	IC524074	80.00	78.00	79.00	91.00	72.00	100.00	<b>83.33</b>	118.00	-	130.00	144.00	116.00	173.00	<b>136.20</b>
16	IC524075	78.00	75.67	78.00	93.00	66.00	97.00	<b>81.28</b>	112.00	138.67	130.00	145.00	116.00	168.00	<b>134.94</b>
17	IC524076	71.00	70.33	79.00	85.00	58.00	93.00	<b>76.06</b>	119.00	131.33	129.00	134.00	116.00	150.00	<b>129.89</b>
18	IC524082	72.00	73.33	77.00	92.00	53.00	97.00	<b>77.39</b>	119.00	135.00	129.00	140.00	112.00	165.00	<b>133.33</b>
19	IC524084	71.00	80.00	77.00	94.00	58.00	95.00	<b>79.17</b>	114.00	142.33	132.00	146.00	116.00	164.00	<b>135.72</b>
20	IC524085	79.00	76.00	79.00	92.00	53.00	92.00	<b>78.50</b>	119.00	138.67	132.00	145.00	116.00	165.00	<b>135.94</b>
21	IC524522	68.00	79.67	79.00	92.00	54.00	100.00	<b>78.78</b>	114.00	142.33	128.00	141.00	110.00	165.00	<b>133.39</b>
22	IC524549	78.00	79.33	80.00	90.00	56.00	102.00	<b>80.89</b>	140.00	142.33	129.00	143.00	116.00	167.00	<b>139.56</b>

S.No.	Accession No.	Plant height (cm)							Number of primary branches					
		Almora	Bhowali	Palampur	Shillong	Shimla	Ranichauri	Mean	Almora	Bhowali	Palampur	Shillong	Shimla	Mean
1	IC137189	125.00	136.65	86.70	102.40	278.10	84.00	<b>135.48</b>	3.00	2.22	2.20	4.20	5.00	<b>3.32</b>
2	IC243512	128.00	149.54	90.20	85.80	281.00	104.00	<b>139.76</b>	2.00	1.89	2.80	5.00	4.00	<b>3.14</b>
3	IC369282	122.00	140.23	86.50	100.20	264.70	70.00	<b>130.60</b>	3.00	2.22	2.60	5.60	6.00	<b>3.88</b>
4	IC394201	132.00	162.17	78.50	114.40	276.90	107.00	<b>145.16</b>	3.00	2.00	2.80	5.00	3.50	<b>3.26</b>
5	IC394537	135.00	149.59	85.50	121.40	264.75	48.00	<b>134.04</b>	3.00	2.78	2.40	5.00	3.00	<b>3.24</b>
6	IC411730	92.00	154.68	84.40	118.40	287.25	54.00	<b>131.79</b>	3.00	1.89	2.40	5.20	3.50	<b>3.20</b>
7	IC419489	113.00	126.50	84.10	82.50	278.05	100.00	<b>130.69</b>	3.00	2.22	2.10	4.75	3.00	<b>3.01</b>
8	IC419518	106.00	129.89	89.20	110.60	299.00	43.00	<b>129.61</b>	3.00	2.33	2.20	6.00	4.00	<b>3.51</b>
9	IC419602	121.00	147.09	89.00	102.40	273.00	32.00	<b>127.41</b>	3.00	2.22	2.60	4.40	4.00	<b>3.24</b>
10	IC419806	115.00	115.55	82.30	98.80	244.50	92.00	<b>124.69</b>	2.00	2.11	2.20	3.60	4.50	<b>2.88</b>
11	IC421875	155.00	104.55	86.60	101.40	256.95	74.00	<b>129.75</b>	3.00	2.78	2.20	5.60	5.00	<b>3.72</b>
12	IC421926	137.00	95.86	85.10	104.40	267.50	90.00	<b>129.98</b>	3.00	2.56	2.60	4.00	5.00	<b>3.43</b>
13	IC524068	138.00	-	88.20	105.80	275.10	34.00	<b>128.22</b>	3.00	-	3.00	4.20	5.00	<b>3.80</b>
14	IC524070	147.00	112.87	90.00	98.20	269.20	81.00	<b>133.04</b>	3.00	2.78	2.60	4.80	6.00	<b>3.84</b>
15	IC524074	140.00	156.13	80.20	140.20	262.65	98.00	<b>146.20</b>	2.00	2.17	2.80	3.80	3.50	<b>2.85</b>
16	IC524075	147.00	137.42	92.00	102.00	264.00	71.00	<b>135.57</b>	3.00	2.00	2.80	3.20	4.50	<b>3.10</b>
17	IC524076	132.00	126.66	85.50	113.60	249.10	67.00	<b>128.98</b>	2.00	2.44	2.80	5.20	3.50	<b>3.19</b>
18	IC524082	108.00	149.27	78.50	102.00	251.65	98.00	<b>131.24</b>	3.00	2.67	2.80	6.00	4.00	<b>3.69</b>
19	IC524084	162.00	147.44	80.60	128.40	248.55	98.00	<b>144.17</b>	3.00	2.00	2.60	4.60	3.00	<b>3.04</b>
20	IC524085	160.00	160.79	90.00	100.60	279.45	53.00	<b>140.64</b>	3.00	2.11	2.40	4.00	5.00	<b>3.30</b>
21	IC524522	127.00	108.72	88.20	134.40	274.80	83.00	<b>136.02</b>	3.00	2.44	2.00	5.80	4.00	<b>3.45</b>
22	IC524549	142.00	142.02	89.20	118.80	259.20	83.00	<b>139.04</b>	3.00	2.11	2.40	5.80	4.00	<b>3.46</b>

S.No.	Accession No.	No. of pod per plant					No. of seeds per pod				
		Bhowali	Palampur	Ranichauri	Shillong	Mean	Almora	Bhowali	Ranichauri	Shillong	Mean
1	IC137189	15.67	65.00	7.20	134.00	<b>55.47</b>	8.00	8.00	6.60	9.00	<b>7.90</b>
2	IC243512	26.33	54.00	3.00	157.80	<b>60.28</b>	10.00	8.67	2.20	10.20	<b>7.77</b>
3	IC369282	37.67	44.00	2.80	221.60	<b>76.52</b>	8.00	8.00	6.00	9.00	<b>7.75</b>
4	IC394201	15.33	50.00	1.80	201.80	<b>67.23</b>	9.00	8.33	6.50	8.80	<b>8.16</b>
5	IC394537	23.00	45.00	3.00	156.00	<b>56.75</b>	8.00	7.00	6.00	9.60	<b>7.65</b>
6	IC411730	27.33	65.00	4.02	209.20	<b>76.39</b>	8.00	8.00	4.60	9.20	<b>7.45</b>
7	IC419489	24.00	60.00	5.00	107.20	<b>49.05</b>	9.00	9.00	9.00	8.40	<b>8.85</b>
8	IC419518	20.00	54.00	4.80	231.60	<b>77.60</b>	7.00	8.00	4.20	10.20	<b>7.35</b>
9	IC419602	45.33	63.00	5.40	180.80	<b>73.63</b>	7.00	9.00	3.60	10.20	<b>7.45</b>
10	IC419806	34.00	56.00	6.60	176.60	<b>68.30</b>	7.00	8.00	9.20	9.20	<b>8.35</b>
11	IC421875	36.67	68.00	6.20	206.60	<b>79.37</b>	10.00	8.67	6.60	10.40	<b>8.92</b>
12	IC421926	40.00	58.00	6.40	155.00	<b>64.85</b>	9.00	9.00	3.60	9.00	<b>7.65</b>
13	IC524068	-	65.00	6.00	171.20	<b>80.73</b>	8.00	-	3.80	8.40	<b>6.73</b>
14	IC524070	58.33	51.00	3.20	187.40	<b>74.98</b>	9.00	8.67	4.40	9.40	<b>7.87</b>
15	IC524074	-	55.00	4.80	229.20	<b>96.33</b>	8.00	-	2.40	9.60	<b>6.67</b>
16	IC524075	16.00	63.00	6.20	86.60	<b>42.95</b>	8.00	8.00	2.80	9.40	<b>7.05</b>
17	IC524076	23.33	58.00	2.00	188.40	<b>67.93</b>	10.00	8.33	7.60	9.00	<b>8.73</b>
18	IC524082	31.67	52.00	8.00	141.80	<b>58.37</b>	8.00	9.00	3.20	10.00	<b>7.55</b>
19	IC524084	26.33	64.00	6.00	210.00	<b>76.58</b>	10.00	8.00	2.60	10.00	<b>7.65</b>
20	IC524085	36.67	59.00	3.00	202.40	<b>75.27</b>	9.00	8.67	4.00	9.40	<b>7.77</b>
21	IC524522	19.00	62.00	6.20	229.80	<b>79.25</b>	9.00	9.00	2.80	9.80	<b>7.65</b>
22	IC524549	13.33	58.00	2.80	218.60	<b>73.18</b>	8.00	7.67	6.20	10.20	<b>8.02</b>

S.No.	Accession No.	Pod length (cm)							Stem thickness (mm)			Seed yield per plant (g)				
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Shillong	Shimla	Mean	Almora	Palampur	Shillong	Shimla	Mean
1	IC137189	8.70	10.33	8.60	10.00	12.18	12.60	<b>10.40</b>	0.76	8.90	<b>4.83</b>	2.40	25.00	96.00	21.95	<b>36.34</b>
2	IC243512	9.70	12.38	8.40	6.40	10.50	13.40	<b>10.13</b>	0.64	8.29	<b>4.47</b>	3.60	28.00	116.35	14.08	<b>40.51</b>
3	IC369282	8.60	11.47	9.00	11.20	9.98	11.70	<b>10.32</b>	0.76	1.11	<b>0.94</b>	4.00	24.00	150.55	12.07	<b>47.66</b>
4	IC394201	9.90	11.82	9.00	9.00	10.78	13.20	<b>10.62</b>	0.70	2.28	<b>1.49</b>	3.60	29.00	164.40	5.79	<b>50.70</b>
5	IC394537	9.00	10.70	9.00	8.00	10.52	12.50	<b>9.95</b>	0.84	8.99	<b>4.92</b>	6.80	25.00	100.20	5.97	<b>34.49</b>
6	IC411730	9.60	9.95	9.00	4.20	10.86	12.60	<b>9.37</b>	0.72	8.77	<b>4.75</b>	2.40	29.00	157.70	11.02	<b>50.03</b>
7	IC419489	10.30	10.80	8.50	11.00	11.10	13.00	<b>10.78</b>	0.90	7.91	<b>4.41</b>	10.40	27.00	85.40	13.50	<b>34.08</b>
8	IC419518	8.50	11.89	9.20	3.23	11.72	12.80	<b>9.56</b>	0.86	8.38	<b>4.62</b>	0.80	32.00	190.10	7.35	<b>57.56</b>
9	IC419602	7.80	10.99	8.70	2.40	10.16	11.80	<b>8.64</b>	0.62	5.98	<b>3.30</b>	3.20	24.00	109.20	22.02	<b>39.61</b>
10	IC419806	8.10	10.75	8.60	6.60	10.68	12.70	<b>9.57</b>	0.70	9.70	<b>5.20</b>	3.60	31.00	109.30	19.67	<b>40.89</b>
11	IC421875	9.60	10.80	9.50	3.80	11.38	11.60	<b>9.45</b>	0.64	8.77	<b>4.71</b>	11.60	24.00	145.20	22.57	<b>50.84</b>
12	IC421926	9.90	10.73	8.20	2.80	5.17	15.20	<b>8.67</b>	0.82	9.75	<b>5.29</b>	10.00	28.00	91.60	24.70	<b>38.58</b>
13	IC524068	8.10	-	8.60	2.50	10.50	12.90	<b>8.52</b>	0.68	8.01	<b>4.35</b>	1.60	30.00	125.20	8.34	<b>41.29</b>
14	IC524070	9.20	10.80	9.00	8.00	11.94	11.60	<b>10.09</b>	0.76	8.19	<b>4.48</b>	3.20	30.00	130.30	13.03	<b>44.13</b>
15	IC524074	8.10	-	9.00	2.00	11.48	11.20	<b>8.36</b>	0.84	8.68	<b>4.76</b>	0.40	30.00	230.20	12.06	<b>68.17</b>
16	IC524075	9.00	11.50	8.70	3.00	11.10	12.50	<b>9.30</b>	0.44	9.42	<b>4.93</b>	0.80	30.00	74.80	10.50	<b>29.03</b>
17	IC524076	9.90	10.19	8.60	9.00	11.46	14.40	<b>10.59</b>	0.76	1.06	<b>0.91</b>	4.00	29.00	123.20	21.87	<b>44.52</b>
18	IC524082	9.00	11.35	8.50	3.60	11.10	13.85	<b>9.57</b>	0.64	8.13	<b>4.39</b>	4.80	32.00	126.20	16.72	<b>44.93</b>
19	IC524084	10.10	10.99	9.00	6.00	10.80	13.48	<b>10.06</b>	0.86	8.16	<b>4.51</b>	1.20	28.00	167.50	18.48	<b>53.80</b>
20	IC524085	9.30	11.22	9.60	7.00	11.74	14.35	<b>10.54</b>	0.74	1.04	<b>0.89</b>	0.80	30.00	137.60	20.19	<b>47.15</b>
21	IC524522	9.50	11.93	8.40	2.60	11.44	12.80	<b>9.45</b>	0.80	9.47	<b>5.14</b>	0.80	30.00	207.30	14.30	<b>63.10</b>
22	IC524549	8.50	10.99	8.60	8.00	11.76	11.20	<b>9.84</b>	0.88	8.94	<b>4.91</b>	8.00	26.00	196.60	9.26	<b>59.97</b>



S.No.	Accession No.	100 seed weight (g)							Seed yield (q/ha)				Shimla	Shillong
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Bhowali	Palampur	Ranichauri	Mean	Number of seeds per plant	No. of pods/cluster
1	IC137189	8.45	8.84	7.50	7.69	8.90	7.44	<b>8.14</b>	4.77	5.56	6.94	<b>5.76</b>	11.00	5.00
2	IC243512	8.67	9.52	7.10	7.75	8.30	8.67	<b>8.34</b>	7.33	5.44	12.22	<b>8.33</b>	10.00	3.80
3	IC369282	5.98	8.71	8.00	7.77	8.80	6.42	<b>7.61</b>	6.07	7.78	13.89	<b>9.24</b>	8.50	3.40
4	IC394201	8.17	8.25	8.20	7.63	10.70	4.29	<b>7.87</b>	2.73	6.67	9.44	<b>6.28</b>	8.50	4.20
5	IC394537	6.41	7.88	8.00	7.76	8.40	7.11	<b>7.59</b>	4.33	5.44	8.33	<b>6.04</b>	9.00	4.20
6	IC411730	7.93	7.99	7.30	7.52	9.80	9.70	<b>8.37</b>	3.17	5.78	10.56	<b>6.50</b>	8.50	5.00
7	IC419489	9.09	10.49	7.51	7.99	11.40	6.17	<b>8.78</b>	2.60	4.44	11.11	<b>6.05</b>	8.50	3.20
8	IC419518	4.70	8.77	8.20	7.83	9.30	7.80	<b>7.77</b>	5.30	6.67	8.89	<b>6.95</b>	10.00	4.20
9	IC419602	5.17	6.86	6.50	7.59	6.70	6.23	<b>6.51</b>	7.07	5.33	10.00	<b>7.47</b>	8.50	2.60
10	IC419806	6.71	7.23	6.54	7.85	8.63	6.23	<b>7.20</b>	4.83	5.28	8.89	<b>6.33</b>	9.50	3.80
11	IC421875	7.48	7.23	7.20	8.06	7.56	7.39	<b>7.49</b>	4.07	6.67	8.33	<b>6.36</b>	9.50	4.00
12	IC421926	6.43	6.20	6.60	7.91	7.10	7.38	<b>6.94</b>	5.83	5.22	12.50	<b>7.85</b>	9.50	4.80
13	IC524068	9.61	-	7.40	8.81	8.10	5.06	<b>7.80</b>	-	5.28	12.50	<b>8.89</b>	8.50	5.00
14	IC524070	7.84	8.90	8.40	7.74	9.20	5.61	<b>7.95</b>	6.83	6.67	10.00	<b>7.83</b>	9.00	4.80
15	IC524074	6.72	-	6.04	7.76	12.10	6.98	<b>7.92</b>	-	5.28	11.67	<b>8.47</b>	8.50	4.60
16	IC524075	7.87	9.65	7.30	7.51	10.90	8.11	<b>8.56</b>	4.50	5.83	10.56	<b>6.96</b>	8.50	4.20
17	IC524076	7.70	8.26	7.72	7.79	9.50	8.19	<b>8.19</b>	10.87	6.11	7.78	<b>8.25</b>	8.50	3.80
18	IC524082	6.54	7.05	7.12	7.53	9.83	9.20	<b>7.88</b>	5.50	5.83	12.78	<b>8.04</b>	9.00	4.00
19	IC524084	5.97	8.03	7.40	7.97	9.30	7.16	<b>7.64</b>	3.47	5.11	8.89	<b>5.82</b>	9.00	5.00
20	IC524085	6.44	8.46	6.50	7.82	8.80	9.42	<b>7.91</b>	6.07	6.11	11.11	<b>7.76</b>	10.50	3.40
21	IC524522	6.71	6.17	7.20	8.10	9.10	8.82	<b>7.68</b>	3.83	5.28	13.33	<b>7.48</b>	9.00	4.00
22	IC524549	8.88	10.35	7.00	6.65	10.80	7.75	<b>8.57</b>	1.77	5.67	12.22	<b>6.55</b>	9.00	3.20

S.No.	Accession No.	Days to 50 % flowering							Days to 80% maturity						
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean
23	IC538870	71.00	75.67	79.00	85.00	56.00	99.00	<b>77.61</b>	116.00	135.00	132.00	131.00	112.00	168.00	<b>132.33</b>
24	IC538878	77.00	82.33	77.00	96.00	56.00	94.00	<b>80.39</b>	115.00	138.67	130.00	142.00	112.00	158.00	<b>132.61</b>
25	IC538983	73.00	77.00	76.00	96.00	56.00	97.00	<b>79.17</b>	140.00	142.33	130.00	145.00	112.00	162.00	<b>138.56</b>
<b>Mean for check variety</b>															
	<b>BRS-1 (C)</b>	-	<b>71.33</b>	-	-	-	-	<b>71.33</b>	-	<b>131.33</b>	-	-	-	-	<b>131.33</b>
	<b>LRB-460 (C)</b>	-	<b>70.67</b>	-	-	-	-	<b>70.67</b>	-	<b>138.67</b>	-	-	-	-	<b>138.67</b>
	<b>PRR-1 (C)</b>	<b>64.00</b>	<b>68.00</b>	<b>80.40</b>	<b>78.33</b>	<b>53.00</b>	<b>88.00</b>	<b>71.96</b>	<b>98.00</b>	<b>127.67</b>	<b>128.20</b>	<b>125.33</b>	<b>112.00</b>	<b>139.00</b>	<b>121.70</b>
	<b>PRR-2 (C)</b>	<b>61.20</b>	<b>69.33</b>	<b>79.00</b>	<b>83.33</b>	<b>50.00</b>	<b>85.00</b>	<b>71.31</b>	<b>96.60</b>	<b>123.00</b>	<b>127.60</b>	<b>131.33</b>	<b>112.00</b>	<b>138.00</b>	<b>121.42</b>
	<b>RBL-1 (C)</b>	<b>68.20</b>	-	<b>79.40</b>	<b>82.33</b>	<b>46.00</b>	<b>87.00</b>	<b>72.59</b>	<b>105.80</b>	-	<b>127.60</b>	<b>130.00</b>	<b>112.00</b>	<b>142.00</b>	<b>123.48</b>
	<b>RBL-6 (C)</b>	<b>67.00</b>	-	<b>79.60</b>	<b>89.00</b>	<b>53.00</b>	<b>85.00</b>	<b>74.72</b>	<b>104.20</b>	-	<b>129.00</b>	<b>134.67</b>	<b>112.00</b>	<b>152.00</b>	<b>126.37</b>
	<b>Minimum</b>	<b>61.20</b>	<b>68.00</b>	<b>76.00</b>	<b>78.33</b>	<b>46.00</b>	<b>85.00</b>	<b>70.67</b>	<b>96.60</b>	<b>123.00</b>	<b>126.00</b>	<b>125.33</b>	<b>110.00</b>	<b>138.00</b>	<b>121.42</b>
	<b>Maximum</b>	<b>80.00</b>	<b>83.67</b>	<b>80.40</b>	<b>96.00</b>	<b>72.00</b>	<b>104.00</b>	<b>83.33</b>	<b>140.00</b>	<b>146.00</b>	<b>134.00</b>	<b>148.00</b>	<b>116.00</b>	<b>192.00</b>	<b>142.94</b>
	<b>Mean</b>	<b>73.12</b>	<b>75.92</b>	<b>78.60</b>	<b>89.17</b>	<b>56.24</b>	<b>94.79</b>	<b>77.58</b>	<b>116.92</b>	<b>136.60</b>	<b>129.88</b>	<b>137.84</b>	<b>113.24</b>	<b>165.93</b>	<b>133.36</b>
	<b>CD(0.05)</b>	<b>2.91</b>	<b>5.13</b>	<b>2.59</b>	-	-	-	-	<b>8.69</b>	<b>10.16</b>	<b>2.43</b>	-	-	-	-
	<b>CV(%) Error</b>	<b>1.68</b>	<b>4.22</b>	<b>1.22</b>	-	-	-	-	<b>3.22</b>	<b>4.65</b>	<b>0.71</b>	-	-	-	-
	<b>CV(%) Phenotypic</b>	<b>6.84</b>	<b>5.40</b>	<b>1.66</b>	<b>4.96</b>	<b>10.40</b>	<b>0.05</b>	-	<b>8.94</b>	<b>3.93</b>	<b>1.36</b>	<b>4.55</b>	<b>1.85</b>	<b>0.14</b>	-

S.No.	Accession No.	Plant height (cm)							Number of primary branches					
		Almora	Bhowali	Palampur	Shillong	Shimla	Ranichauri	Mean	Almora	Bhowali	Palampur	Shillong	Shimla	Mean
23	IC538870	140.00	124.66	85.60	124.20	278.90	74.00	<b>137.89</b>	3.00	2.44	2.40	6.00	6.00	<b>3.97</b>
24	IC538878	128.00	106.11	85.20	90.40	288.15	37.00	<b>122.48</b>	3.00	2.00	2.80	6.40	4.00	<b>3.64</b>
25	IC538983	127.00	107.14	85.20	99.60	264.25	86.00	<b>128.20</b>	3.00	2.56	2.60	4.80	4.00	<b>3.39</b>
<b>Mean for check variety</b>														
	<b>BRS-1 (C)</b>	-	<b>136.58</b>	-	-	-	-	<b>136.58</b>	-	<b>2.56</b>	-	-	-	<b>2.56</b>
	<b>LRB-460 (C)</b>	-	<b>133.75</b>	-	-	-	-	<b>133.75</b>	-	<b>2.22</b>	-	-	-	<b>2.22</b>
	<b>PRR-1 (C)</b>	<b>148.00</b>	<b>99.53</b>	<b>83.06</b>	<b>93.00</b>	<b>241.70</b>	<b>61.00</b>	<b>121.05</b>	<b>3.80</b>	<b>2.22</b>	<b>2.44</b>	<b>3.40</b>	<b>4.50</b>	<b>3.27</b>
	<b>PRR-2 (C)</b>	<b>130.20</b>	<b>134.22</b>	<b>85.44</b>	<b>100.40</b>	<b>268.20</b>	<b>68.00</b>	<b>131.08</b>	<b>3.20</b>	<b>2.22</b>	<b>2.44</b>	<b>4.80</b>	<b>5.00</b>	<b>3.53</b>
	<b>RBL-1 (C)</b>	<b>144.50</b>	-	<b>85.72</b>	<b>93.60</b>	<b>286.65</b>	<b>59.33</b>	<b>133.96</b>	<b>3.00</b>	-	<b>2.44</b>	<b>4.60</b>	<b>4.00</b>	<b>3.51</b>
	<b>RBL-6 (C)</b>	<b>128.50</b>	-	<b>85.98</b>	<b>101.00</b>	<b>268.35</b>	<b>70.00</b>	<b>130.77</b>	<b>2.70</b>	-	<b>2.56</b>	<b>5.00</b>	<b>4.50</b>	<b>3.69</b>
	<b>Minimum</b>	<b>92.00</b>	<b>95.86</b>	<b>78.50</b>	<b>82.50</b>	<b>241.70</b>	<b>32.00</b>	<b>121.05</b>	<b>2.00</b>	<b>1.89</b>	<b>2.00</b>	<b>3.20</b>	<b>3.00</b>	<b>2.22</b>
	<b>Maximum</b>	<b>162.00</b>	<b>162.17</b>	<b>92.00</b>	<b>140.20</b>	<b>299.00</b>	<b>107.00</b>	<b>146.20</b>	<b>3.80</b>	<b>2.78</b>	<b>3.00</b>	<b>6.40</b>	<b>6.00</b>	<b>3.97</b>
	<b>Mean</b>	<b>132.08</b>	<b>131.99</b>	<b>85.75</b>	<b>106.51</b>	<b>269.02</b>	<b>73.08</b>	<b>133.16</b>	<b>2.89</b>	<b>2.29</b>	<b>2.52</b>	<b>4.85</b>	<b>4.31</b>	<b>3.33</b>
	<b>CD(0.05)</b>	<b>23.84</b>	<b>39.92</b>	<b>8.61</b>	-	-	-	-	<b>1.14</b>	<b>0.72</b>	<b>0.50</b>	-	-	-
	<b>CV(%) Error</b>	<b>6.48</b>	<b>18.90</b>	<b>3.79</b>	-	-	-	-	<b>13.49</b>	<b>19.55</b>	<b>7.54</b>	-	-	-
	<b>CV(%) Phenotypic</b>	<b>12.18</b>	<b>14.70</b>	<b>4.01</b>	<b>13.02</b>	<b>0.14</b>	<b>29.63</b>	-	<b>13.73</b>	<b>11.70</b>	<b>9.98</b>	<b>17.31</b>	<b>0.01</b>	-

S.No.	Accession No.	No. of pod per plant					No. of seeds per pod				
		Bhowali	Palampur	Ranichauri	Shillong	Mean	Almora	Bhowali	Ranichauri	Shillong	Mean
23	IC538870	25.67	64.00	6.20	228.00	<b>80.97</b>	10.00	8.67	8.20	9.40	<b>9.07</b>
24	IC538878	38.33	70.00	5.00	207.60	<b>80.23</b>	8.00	9.67	3.80	11.80	<b>8.32</b>
25	IC538983	14.67	65.00	6.00	123.60	<b>52.32</b>	9.00	8.00	5.80	10.20	<b>8.25</b>
<b>Mean for check variety</b>											
	<b>BRS-1 (C)</b>	<b>33.33</b>	-	-	-	<b>33.33</b>	-	<b>8.33</b>	-	-	<b>8.33</b>
	<b>LRB-460 (C)</b>	<b>55.33</b>	-	-	-	<b>55.33</b>	-	<b>9.00</b>	-	-	<b>9.00</b>
	<b>PRR-1 (C)</b>	<b>23.67</b>	<b>51.40</b>	<b>4.33</b>	<b>119.20</b>	<b>49.65</b>	<b>9.40</b>	<b>8.67</b>	<b>6.80</b>	<b>8.20</b>	<b>8.27</b>
	<b>PRR-2 (C)</b>	<b>47.67</b>	<b>56.40</b>	<b>5.13</b>	<b>98.20</b>	<b>51.85</b>	<b>9.80</b>	<b>8.67</b>	<b>4.33</b>	<b>7.20</b>	<b>7.50</b>
	<b>RBL-1 (C)</b>	-	<b>55.60</b>	<b>4.00</b>	<b>104.00</b>	<b>54.53</b>	<b>9.00</b>	-	<b>7.07</b>	<b>8.80</b>	<b>8.29</b>
	<b>RBL-6 (C)</b>	-	<b>53.20</b>	<b>6.87</b>	<b>137.40</b>	<b>65.82</b>	<b>9.80</b>	-	<b>5.07</b>	<b>9.80</b>	<b>8.22</b>
	<b>Minimum</b>	<b>13.33</b>	<b>44.00</b>	<b>1.80</b>	<b>86.60</b>	<b>33.33</b>	<b>7.00</b>	<b>7.00</b>	<b>2.20</b>	<b>7.20</b>	<b>6.67</b>
	<b>Maximum</b>	<b>58.33</b>	<b>70.00</b>	<b>8.00</b>	<b>231.60</b>	<b>96.33</b>	<b>10.00</b>	<b>9.67</b>	<b>9.20</b>	<b>11.80</b>	<b>9.07</b>
	<b>Mean</b>	<b>29.95</b>	<b>58.09</b>	<b>4.89</b>	<b>173.16</b>	<b>66.29</b>	<b>8.69</b>	<b>8.44</b>	<b>5.14</b>	<b>9.44</b>	<b>7.94</b>
	<b>CD(0.05)</b>	<b>20.19</b>	<b>19.76</b>	-	-	-	<b>0.88</b>	<b>1.35</b>	-	-	-
	<b>CV(%) Error</b>	<b>42.12</b>	<b>13.67</b>	-	-	-	<b>3.46</b>	<b>9.96</b>	-	-	-
	<b>CV(%) Phenotypic</b>	<b>40.95</b>	<b>11.35</b>	<b>33.90</b>	<b>25.96</b>	-	<b>11.01</b>	<b>6.57</b>	<b>38.89</b>	<b>9.12</b>	-

S.No.	Accession No.	Pod length (cm)							Stem thickness (mm)			Seed yield per plant (g)				
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Shillong	Shimla	Mean	Almora	Palampur	Shillong	Shimla	Mean
23	IC538870	9.80	11.13	8.50	2.80	11.08	13.75	<b>9.51</b>	0.84	1.03	<b>0.94</b>	2.80	29.00	188.60	17.08	<b>59.37</b>
24	IC538878	9.20	12.57	9.80	2.60	12.46	13.30	<b>9.99</b>	0.88	9.57	<b>5.23</b>	3.20	25.00	142.60	19.55	<b>47.59</b>
25	IC538983	8.90	11.40	8.60	2.00	11.06	13.30	<b>9.21</b>	0.56	9.64	<b>5.10</b>	6.80	26.00	85.54	17.11	<b>33.86</b>
<b>Mean for check variety</b>																
	<b>BRS-1 (C)</b>	-	<b>9.97</b>	-	-	-	-	<b>9.97</b>	-	-	-	-	-	-	-	-
	<b>LRB-460 (C)</b>	-	<b>11.04</b>	-	-	-	-	<b>11.04</b>	-	-	-	-	-	-	-	-
	<b>PRR-1 (C)</b>	<b>9.70</b>	<b>9.29</b>	<b>8.96</b>	<b>8.33</b>	<b>9.36</b>	<b>12.30</b>	<b>9.66</b>	<b>0.52</b>	<b>6.72</b>	<b>3.62</b>	<b>7.48</b>	<b>29.40</b>	<b>86.50</b>	<b>22.36</b>	<b>36.44</b>
	<b>PRR-2 (C)</b>	<b>9.08</b>	<b>9.45</b>	<b>8.98</b>	<b>4.80</b>	<b>8.68</b>	<b>13.10</b>	<b>9.02</b>	<b>0.54</b>	<b>7.91</b>	<b>4.23</b>	<b>7.56</b>	<b>26.60</b>	<b>52.80</b>	<b>27.01</b>	<b>28.49</b>
	<b>RBL-1 (C)</b>	<b>9.24</b>	-	<b>8.86</b>	<b>8.87</b>	<b>9.28</b>	<b>13.40</b>	<b>9.93</b>	<b>0.56</b>	<b>9.46</b>	<b>5.01</b>	<b>6.46</b>	<b>27.80</b>	<b>64.75</b>	<b>54.45</b>	<b>38.37</b>
	<b>RBL-6 (C)</b>	<b>9.97</b>	-	<b>8.94</b>	<b>3.73</b>	<b>10.62</b>	<b>14.65</b>	<b>9.58</b>	<b>0.68</b>	<b>7.56</b>	<b>4.12</b>	<b>3.60</b>	<b>26.20</b>	<b>84.60</b>	<b>29.78</b>	<b>36.05</b>
	<b>Minimum</b>	<b>7.80</b>	<b>9.29</b>	<b>8.20</b>	<b>2.00</b>	<b>5.17</b>	<b>11.20</b>	<b>8.36</b>	<b>0.44</b>	<b>1.03</b>	<b>0.89</b>	<b>0.40</b>	<b>24.00</b>	<b>52.80</b>	<b>5.79</b>	<b>28.49</b>
	<b>Maximum</b>	<b>10.30</b>	<b>12.57</b>	<b>9.80</b>	<b>11.20</b>	<b>12.46</b>	<b>15.20</b>	<b>11.04</b>	<b>0.90</b>	<b>9.75</b>	<b>5.29</b>	<b>11.60</b>	<b>32.00</b>	<b>230.20</b>	<b>54.45</b>	<b>68.17</b>
	<b>Mean</b>	<b>9.18</b>	<b>10.98</b>	<b>8.84</b>	<b>5.64</b>	<b>10.72</b>	<b>12.94</b>	<b>9.73</b>	<b>0.72</b>	<b>7.30</b>	<b>4.01</b>	<b>4.34</b>	<b>27.97</b>	<b>128.98</b>	<b>17.68</b>	<b>44.74</b>
	<b>CD(0.05)</b>	<b>1.42</b>	<b>1.34</b>	<b>1.36</b>	-	-	-	-	-	-	-	<b>2.88</b>	<b>9.22</b>	-	-	-
	<b>CV(%) Error</b>	<b>5.59</b>	<b>7.62</b>	<b>5.69</b>	-	-	-	-	-	-	-	<b>17.17</b>	<b>12.55</b>	-	-	-
	<b>CV(%) Phenotypic</b>	<b>7.35</b>	<b>7.24</b>	<b>4.18</b>	<b>52.72</b>	<b>12.77</b>	<b>0.01</b>	-	<b>17.05</b>	<b>0.03</b>	-	<b>71.68</b>	<b>8.55</b>	<b>35.14</b>	<b>0.09</b>	-

S.No.	Accession No.	100 seed weight (g)							Seed yield (q/ha)				Shimla	Shillong
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Bhowali	Palampur	Ranichauri	Mean	Number of seeds per plant	No. of pods/cluster
23	IC538870	6.33	7.54	7.50	8.04	8.04	7.00	<b>7.41</b>	4.30	5.89	9.44	<b>6.54</b>	8.00	4.40
24	IC538878	6.28	7.43	7.40	7.95	7.20	8.19	<b>7.41</b>	5.83	4.78	12.78	<b>7.80</b>	10.00	4.20
25	IC538983	5.95	7.71	7.80	7.71	8.43	7.88	<b>7.58</b>	2.80	5.78	8.33	<b>5.64</b>	9.00	5.60
<b>Mean for check variety</b>														
	<b>BRS-1 (C)</b>	-	<b>7.73</b>	-	-	-	-	<b>7.73</b>	<b>2.87</b>	-	-	<b>2.87</b>	-	-
	<b>LRB-460 (C)</b>	-	<b>6.46</b>	-	-	-	-	<b>6.46</b>	<b>14.17</b>	-	-	<b>14.17</b>	-	-
	<b>PRR-1 (C)</b>	<b>5.91</b>	<b>6.03</b>	<b>8.08</b>	<b>7.92</b>	<b>8.80</b>	<b>6.11</b>	<b>7.14</b>	<b>8.07</b>	<b>6.24</b>	<b>10.37</b>	<b>8.23</b>	<b>8.00</b>	<b>3.20</b>
	<b>PRR-2 (C)</b>	<b>6.05</b>	<b>6.40</b>	<b>7.83</b>	<b>7.77</b>	<b>7.20</b>	<b>7.16</b>	<b>7.07</b>	<b>5.83</b>	<b>5.76</b>	<b>8.15</b>	<b>6.58</b>	<b>9.00</b>	<b>4.20</b>
	<b>RBL-1 (C)</b>	<b>5.82</b>	-	<b>7.76</b>	<b>7.89</b>	<b>8.50</b>	<b>6.93</b>	<b>7.38</b>	-	<b>6.24</b>	<b>11.85</b>	<b>9.05</b>	<b>11.00</b>	<b>4.40</b>
	<b>RBL-6 (C)</b>	<b>5.99</b>	-	<b>8.08</b>	<b>7.75</b>	<b>7.20</b>	<b>7.59</b>	<b>7.32</b>	-	<b>5.61</b>	<b>9.44</b>	<b>7.53</b>	<b>8.00</b>	<b>3.80</b>
	<b>Minimum</b>	<b>4.70</b>	<b>6.03</b>	<b>6.04</b>	<b>6.65</b>	<b>6.70</b>	<b>4.29</b>	<b>6.46</b>	<b>1.77</b>	<b>4.44</b>	<b>6.94</b>	<b>2.87</b>	<b>8.00</b>	<b>2.60</b>
	<b>Maximum</b>	<b>9.61</b>	<b>10.49</b>	<b>8.40</b>	<b>8.81</b>	<b>12.10</b>	<b>9.70</b>	<b>8.78</b>	<b>14.17</b>	<b>7.78</b>	<b>13.89</b>	<b>14.17</b>	<b>11.00</b>	<b>5.60</b>
	<b>Mean</b>	<b>6.96</b>	<b>7.93</b>	<b>7.42</b>	<b>7.80</b>	<b>8.92</b>	<b>7.31</b>	<b>7.68</b>	<b>5.36</b>	<b>5.78</b>	<b>10.42</b>	<b>7.34</b>	<b>9.09</b>	<b>4.14</b>
	<b>CD(0.05)</b>	<b>1.03</b>	<b>1.63</b>	<b>1.16</b>	-	-	-	-	<b>3.55</b>	<b>3.06</b>	-	-	-	-
	<b>CV(%) Error</b>	<b>6.52</b>	<b>12.82</b>	<b>5.46</b>	-	-	-	-	<b>41.41</b>	<b>19.23</b>	-	-	-	-
	<b>CV(%) Phenotypic</b>	<b>17.76</b>	<b>15.47</b>	<b>7.97</b>	<b>4.22</b>	<b>15.11</b>	<b>0.01</b>	-	<b>49.34</b>	<b>11.72</b>	<b>18.03</b>	-	<b>0.01</b>	<b>16.45</b>

**Table 85. Characterization of germplasm lines in rice bean at different locations - Hills (2012)**

S.No.	Accession No.	Early plant vigour						Plant growth habit						Plant habit				Flower colour						Leaflet shape					
		Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Bhowali	Palampur	Shimla	Shillong	Mode	Almora	Shillong	Shimla	Mode	Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Bhowali	Palampur	Shillong	Shimla	Mode
1	IC137189	2	2	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
2	IC243512	2	3	2	3	3	3	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
3	IC369282	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
4	IC394201	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
5	IC394537	2	3	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
6	IC411730	2	1	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
7	IC419489	2	3	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
8	IC419518	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
9	IC419602	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
10	IC419806	2	1	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
11	IC421875	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
12	IC421926	2	3	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
13	IC524068	2	-	2	3	3	2	2	-	2	2	3	2	2	3	3	3	3	3	3	3	3	2	-	2	2	2	2	2
14	IC524070	2	3	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
15	IC524074	2	2	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
16	IC524075	2	2	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
17	IC524076	2	3	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
18	IC524082	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
19	IC524084	2	3	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
20	IC524085	2	3	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
21	IC524522	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2
22	IC524549	2	3	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	2	2	2	2	2	2	2

S.No.	Accession No.	Leaflet size					Pod colour					Pod shattering				Seed shape				Flowering			Palampur
		Almora	Bhowali	Palampur	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shimla	Mode	Palampur	Shillong	Shimla	Mode	Shillong	Shimla	Mode	Biotic stress susceptibility
1	IC137189	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
2	IC243512	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
3	IC369282	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
4	IC394201	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
5	IC394537	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
6	IC411730	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
7	IC419489	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
8	IC419518	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
9	IC419602	5	5	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
10	IC419806	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
11	IC421875	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
12	IC421926	5	5	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
13	IC524068	5	-	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
14	IC524070	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
15	IC524074	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
16	IC524075	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
17	IC524076	5	5	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
18	IC524082	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
19	IC524084	5	5	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
20	IC524085	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
21	IC524522	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
22	IC524549	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1



S.No.	Accession No.	Early plant vigour						Plant growth habit						Plant habit				Flower colour						Leaflet shape					
		Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Bhowali	Palampur	Shimla	Shillong	Mode	Almora	Shillong	Shimla	Mode	Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Bhowali	Palampur	Shillong	Shimla	Mode
23	IC538870	2	1	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
24	IC538878	2	3	2	3	3	3	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
25	IC538983	2	1	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
<b>Mean for check variety</b>																													
	<b>BRS-1 (C)</b>	-	2	-	-	-	2	-	3	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-	2	-	-	-	2
	<b>LRB-460 (C)</b>	-	3	-	-	-	3	-	3	-	-	-	3	-	-	-	-	-	3	-	-	-	3	-	2	-	-	-	2
	<b>PRR-1 (C)</b>	2	3	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
	<b>PRR-2 (C)</b>	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
	<b>RBL-1 (C)</b>	2	-	2	3	3	2	2	-	2	2	3	2	2	3	3	3	3	-	3	3	3	3	2	-	2	2	2	2
	<b>RBL-6 (C)</b>	2	-	2	3	3	2	2	-	2	2	3	2	2	3	3	3	3	-	3	3	3	3	2	-	2	2	2	2
	<b>Minimum</b>	2	1	2	2	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
	<b>Maximum</b>	2	3	2	3	3	3	2	3	2	2	3	3	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2
	<b>Mode</b>	2	2	2	3	3	2	2	3	2	2	3	2	2	3	3	3	3	3	3	3	3	3	2	2	2	2	2	2

**Qualitative characters :** **Early plant vigour:** 1 - Poor, 2 - Good, 3 - Very good, 99 - Others; **Plant growth habit:** 1 - Erect, 2 Spreading, 3 - Tralling, 99 - Others; **Plant habit:** 1 - Determinate, 2 - Semi- determinate, 3 - Indeterminate, 99 - Others; **Flower colour:** 1 - White, 2 - Violet, 3 - Yellow, 4 - Red, 5 - Pink, 6 - Light brown, 7 - Dark brown, 99 - Others; **Leaflet shape:** 1 - Narrow (elongate), 2 - Intermediate (sub elliptic), 3 - Round (sub orbicular), 99 - Others; **Leaflet size :** 3 - Small, 5 - Medium 7 - Large, 99 - Others; **Pod shattering:** 0 - Absent, 1 - Present; **Pod colour:** 1 - Light yellow, 2 - Brown, 3 - Dark brown, 4 - Black, 99 - Others; **Seed shape:** 1 - Cylindrical, 2 - Round, 3 - Flattened, 99 - Others; **Biotic stress susceptibility :** 1 - Very low or Visible sing of susceptibility, 3 - Low, 5 - Intermediate, 7 - High, 9 - Very high

S.No.	Accession No.	Leaflet size					Pod colour					Pod shattering				Seed shape				Flowering			Palampur
		Almora	Bhowali	Palampur	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shimla	Mode	Palampur	Shillong	Shimla	Mode	Shillong	Shimla	Mode	Biotic stress susceptibility
23	IC538870	5	5	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
24	IC538878	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
25	IC538983	5	5	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
<b>Mean for check varieties</b>																							
	<b>BRS-1 (C)</b>	-	5	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<b>LRB-460 (C)</b>	-	5	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	<b>PRR-1 (C)</b>	5	5	5	3	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
	<b>PRR-2 (C)</b>	5	5	5	3	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
	<b>RBL-1 (C)</b>	5	-	5	5	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
	<b>RBL-6 (C)</b>	5	-	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
	<b>Minimum</b>	5	5	5	3	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
	<b>Maximum</b>	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1
	<b>Mode</b>	5	5	5	7	5	2	4	2	2	2	1	1	1	1	1	1	3	1	1	1	1	1

**Table 86. Promising lines in adzuki bean germplasm for various characters at various locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Palampur (Accession 25)</b>				
1.	Days to 50% flowering	57.00-63.33	EC340251, EC340253 (<58.00 days)	HPU-51 (57.33 days)
2.	Days to maturity	110.33-116.67	EC340263, EC340273, EC340276, EC340283 (<111.00 days)	HPU-51 (111.33 days)
3.	Plant height (cm)	66.80-84.87	EC340252, EC340253, EC340266, EC340257, EC340268, EC340279, EC340278, EC340261, EC340259, EC340275, EC340283, EC340280, EC340281, EC340269, EC340265, EC340274, EC340272, EC340270, EC340264, EC340277, EC340251, EC340256, EC340263, EC340276 (>71.50 cm)	HPU-51 (70.40 cm)
4.	No. of primary branches per plant	2.07-2.93	EC340256, EC340274, EC340270, EC340276, EC340283, EC340268, EC340273, EC340278, EC340269, EC340280, EC340261, EC340263 (>2.40)	HPU-51 Totru local & (2.47)
5.	Pod length (cm)	7.63-8.23	-	Totru local 98.23 cm)
6.	Pod width (cm)	0.65-0.69	EC340261, EC340273, EC340275, EC340251, EC340279, EC340283, EC340259, EC340278, EC340252, EC340253, EC340256, EC340265, EC340268, EC340272, EC340274, EC340280 (>=0.67 cm)	Totru local (0.67 cm)
7..	Seed yield (q/ha)	11.18-39.99	EC340253, EC340279, EC340256, EC340266 (>32.00 q/ha)	HPU-51 (27.31 q/ha)
<b>Ranichauri (Accession 25)</b>				
1.	Plant height (cm)	28.20-46.40	EC340270, EC340272, EC340265, EC340252, EC340263, EC340277, EC340281, EC340276, EC340257 (>3.40 cm)	Totru local (38.33 cm)
<b>Shimla (Accession 25)</b>				
1.	Days to 50% flowering	59.00-71.00	EC340280, EC340270, EC340274, EC340283 (<=60.00 days)	HPU-51 (60.00 days)
2.	Days to maturity	101.00-126.00	-	HPU-51 (101.00 days)
3.	Plant height (cm)	16.30-108.10	EC340256 (=108.10 cm)	Totru local (107.10 cm)

S. No.	Characters	Range	Promising lines	Value of best check
4.	No. of primary branches per plant	1.00-4.00	EC340256, EC340273, EC340276, EC340253, EC340263, EC340266, EC340269, EC340272, EC340251, EC340252, EC340257, EC340259, EC340261, EC340264, EC340265, EC340268, EC340270, EC340274, EC340275, EC340278, EC340281 ( $\geq 2.00$ )	HPU-51 (2.00 )
5.	No. of cluster per plant	4.00-15.00	EC340256, EC340273, EC340272, EC340274, EC340257, EC340263, EC340270, EC340259, EC340261, EC340253, EC340264, EC340276, EC340252, EC340266, EC340268 ( $\geq 8.00$ )	HPU-51 (8.00)
6.	No. of pod per cluster	1.50-6.50	-	Totru local (6.50)
7.	No. of pod per plant	6.00-42.00	EC340256, EC340272, EC340263, EC340257, EC340268, EC340274, EC340259, EC340266, EC340273 ( $\geq 26.00$ )	Totru local (26.00)
8.	No. of seed per pod	4.00-9.50	EC340268, EC340263, EC340283 ( $\geq 8.50$ )	HPU-51 (8.50)
9.	100 seed weight(g)	4.92-13.10	EC340276 (=13.10 g)	HPU-51 (12.96 g)
10.	Seed yield per plant (g)	1.68-36.50	EC340263, EC340272, EC340268, EC340274, EC340257, EC340259, EC340256, EC340273 ( $> 19.80$ g)	HPU-51 (19.18 g)
<b>Best entries over location</b>				
1.	Days to 50% flowering	58.67-66.17	-	HPU-51 (58.67 days)
2.	Days to maturity	106.17-118.17	EC340276, EC340281, EC340265, EC340277, EC340261, EC340268, EC340256, EC340266, EC340270, EC340275, EC340280, EC340269, EC340259, EC340279, EC340252, EC340253 ( $< 112.00$ days)	Totru local (111.83 days)
3.	Plant height (cm)	41.37-71.28	EC340256 (=71.28)	Totru local (70.74 cm)
4.	No. of primary branches per plant	1.63-3.47	EC340256, EC340276, EC340273, EC340269, EC340263, EC340266, EC340253, EC340272, EC340274, EC340270, EC340268, EC340278, EC340261, EC340275 ( $\geq 2.23$ )	HPU-51 & Totru local (2.23)

**Table 87. Multilocation evaluation of germplasm lines in adzuki bean at different locations- Hills Kharif :2012**

S.No.	Accession No.	Days to 50% flowering			Days to 80% maturity			Plant height (cm)				No. of primary branches		
		Palampur	Shimla	Mean	Palampur	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Shimla	Mean
1	EC340251	57.00	69.00	<b>63.00</b>	114.00	108.00	<b>111.00</b>	75.53	36.47	60.03	<b>57.34</b>	2.07	2.00	<b>2.03</b>
2	EC340252	58.67	65.00	<b>61.83</b>	113.67	110.00	<b>111.83</b>	84.87	41.33	52.50	<b>59.57</b>	2.27	2.00	<b>2.13</b>
3	EC340253	57.33	66.00	<b>61.67</b>	114.67	109.00	<b>111.83</b>	84.07	30.07	57.20	<b>57.11</b>	2.33	3.00	<b>2.67</b>
4	EC340256	57.67	64.00	<b>60.83</b>	114.67	113.00	<b>113.83</b>	75.27	30.47	108.10	<b>71.28</b>	2.93	4.00	<b>3.47</b>
5	EC340257	57.67	61.00	<b>59.33</b>	115.67	107.00	<b>111.33</b>	82.20	38.60	70.10	<b>63.63</b>	2.13	2.00	<b>2.07</b>
6	EC340259	59.33	66.00	<b>62.67</b>	115.67	109.00	<b>112.33</b>	80.20	29.27	54.50	<b>54.66</b>	2.20	2.00	<b>2.10</b>
7	EC340261	57.67	69.00	<b>63.33</b>	116.67	112.00	<b>114.33</b>	80.27	31.73	53.60	<b>55.20</b>	2.47	2.00	<b>2.23</b>
8	EC340263	58.67	69.00	<b>63.83</b>	110.33	113.00	<b>111.67</b>	74.07	41.00	74.10	<b>63.06</b>	2.47	3.00	<b>2.73</b>
9	EC340264	58.00	62.00	<b>60.00</b>	115.33	108.00	<b>111.67</b>	75.67	32.20	70.40	<b>59.42</b>	2.33	2.00	<b>2.17</b>
10	EC340265	59.67	70.00	<b>64.83</b>	113.67	116.00	<b>114.83</b>	77.33	42.87	46.70	<b>55.63</b>	2.13	2.00	<b>2.07</b>
11	EC340266	58.33	69.00	<b>63.67</b>	116.67	110.00	<b>113.33</b>	82.93	35.47	50.40	<b>56.27</b>	2.40	3.00	<b>2.70</b>
12	EC340268	63.33	69.00	<b>66.17</b>	115.67	113.00	<b>114.33</b>	82.00	29.53	60.50	<b>57.34</b>	2.67	2.00	<b>2.33</b>
13	EC340269	57.67	61.00	<b>59.33</b>	115.00	110.00	<b>112.50</b>	78.07	37.00	90.50	<b>68.52</b>	2.60	3.00	<b>2.80</b>
14	EC340270	59.67	60.00	<b>59.83</b>	114.67	112.00	<b>113.33</b>	76.20	46.40	86.40	<b>69.67</b>	2.73	2.00	<b>2.37</b>
15	EC340272	58.33	64.00	<b>61.17</b>	116.33	106.00	<b>111.17</b>	76.67	45.40	76.40	<b>66.16</b>	2.33	3.00	<b>2.67</b>
16	EC340273	59.67	65.00	<b>62.33</b>	110.33	110.00	<b>110.17</b>	68.80	36.20	77.60	<b>60.87</b>	2.60	4.00	<b>3.30</b>
17	EC340274	60.00	60.00	<b>60.00</b>	114.67	106.00	<b>110.33</b>	77.27	37.07	57.50	<b>57.28</b>	2.80	2.00	<b>2.40</b>
18	EC340275	58.67	64.00	<b>61.33</b>	115.67	111.00	<b>113.33</b>	80.20	38.00	48.40	<b>55.53</b>	2.47	2.00	<b>2.23</b>
19	EC340276	61.00	71.00	<b>66.00</b>	110.33	126.00	<b>118.17</b>	71.80	38.93	61.10	<b>57.28</b>	2.73	4.00	<b>3.37</b>
20	EC340277	58.67	69.00	<b>63.83</b>	115.33	114.00	<b>114.67</b>	75.53	40.73	56.70	<b>57.66</b>	2.27	1.00	<b>1.63</b>
21	EC340278	60.67	67.00	<b>63.83</b>	116.33	106.00	<b>111.17</b>	81.27	34.40	30.90	<b>48.86</b>	2.60	2.00	<b>2.30</b>
22	EC340279	58.00	62.00	<b>60.00</b>	113.33	111.00	<b>112.17</b>	81.53	30.73	28.50	<b>46.92</b>	2.33	1.00	<b>1.67</b>

S.No.	Accession No.	Palampur			Shimla					
		Pod length (cm)	Pod width (cm)	Seed yield(q/ha)	No of cluster/plant	No of pod/cluster	No of pod/plant	No of seed/pod	100 seed weight (g)	Seed yield per plant (g)
1	EC340251	7.93	0.69	2.19	7.00	3.50	20.00	7.50	8.59	12.25
2	EC340252	8.00	0.67	2.51	8.00	3.50	18.00	7.00	11.65	14.00
3	EC340253	8.00	0.67	4.44	9.00	2.50	15.00	5.50	10.20	8.40
4	EC340256	7.73	0.67	3.66	15.00	3.50	42.00	6.50	8.45	21.23
5	EC340257	8.03	0.65	2.14	11.00	4.50	35.00	7.50	9.45	22.14
6	EC340259	8.13	0.69	1.87	10.00	3.50	26.00	7.00	12.46	21.69
7	EC340261	8.20	0.69	1.92	10.00	3.00	21.00	7.00	11.44	17.16
8	EC340263	7.90	0.67	2.66	11.00	4.50	40.00	8.50	11.50	36.50
9	EC340264	7.73	0.65	1.45	9.00	2.50	18.00	6.00	9.10	10.10
10	EC340265	8.17	0.67	2.83	7.00	2.50	14.00	7.00	9.92	9.90
11	EC340266	7.87	0.65	3.57	8.00	4.00	26.00	7.00	10.56	19.05
12	EC340268	8.00	0.67	2.15	8.00	4.50	30.00	9.50	10.10	26.25
13	EC340269	8.13	0.66	1.67	5.00	3.50	14.00	7.00	8.06	8.03
14	EC340270	8.13	0.67	2.42	11.00	3.00	22.00	6.50	11.65	15.96
15	EC340272	7.87	0.67	2.15	12.00	4.50	41.00	8.00	9.96	32.41
16	EC340273	7.93	0.69	1.53	13.00	2.50	26.00	6.00	12.69	19.82
17	EC340274	8.00	0.67	1.59	12.00	3.50	30.00	7.00	11.21	23.62
18	EC340275	8.13	0.69	2.84	6.00	2.50	11.00	6.50	8.73	6.78
19	EC340276	8.03	0.65	1.33	9.00	2.50	19.00	5.50	13.10	13.04
20	EC340277	8.20	0.66	2.78	6.00	3.00	15.00	6.50	7.65	7.56
21	EC340278	7.63	0.69	1.30	4.00	2.50	11.00	7.50	8.90	6.95
22	EC340279	7.90	0.69	3.82	5.00	1.50	9.00	5.50	7.46	3.96

S.No.	Accession No.	Days to 50% flowering			Days to 80% maturity			Plant height (cm)				No. of primary branches		
		Palampur	Shimla	Mean	Palampur	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Shimla	Mean
23	EC340280	59.00	59.00	<b>59.00</b>	114.67	112.00	<b>113.33</b>	79.60	28.20	16.30	<b>41.37</b>	2.53	1.00	<b>1.77</b>
24	EC340281	63.00	69.00	<b>66.00</b>	114.00	120.00	<b>117.00</b>	78.47	39.40	67.40	<b>61.76</b>	2.33	2.00	<b>2.17</b>
25	EC340283	57.67	60.00	<b>58.83</b>	110.33	104.00	<b>107.17</b>	80.13	33.27	29.90	<b>47.77</b>	2.73	1.00	<b>1.87</b>
<b>Mean for check variety</b>														
	<b>HPU-51 (C)</b>	<b>57.33</b>	<b>60.00</b>	<b>58.67</b>	<b>111.33</b>	<b>101.00</b>	<b>106.17</b>	<b>70.40</b>	<b>33.40</b>	<b>90.70</b>	<b>64.83</b>	<b>2.47</b>	<b>2.00</b>	<b>2.23</b>
	<b>Totru local (C)</b>	<b>58.00</b>	<b>64.00</b>	<b>61.00</b>	<b>112.67</b>	<b>111.00</b>	<b>111.83</b>	<b>66.80</b>	<b>38.33</b>	<b>107.10</b>	<b>70.74</b>	<b>2.47</b>	<b>2.00</b>	<b>2.23</b>
	<b>Minmum</b>	<b>57.00</b>	<b>59.00</b>	<b>58.67</b>	<b>110.33</b>	<b>101.00</b>	<b>106.17</b>	<b>66.80</b>	<b>28.20</b>	<b>16.30</b>	<b>41.37</b>	<b>2.07</b>	<b>1.00</b>	<b>1.63</b>
	<b>Maximum</b>	<b>63.33</b>	<b>71.00</b>	<b>66.17</b>	<b>116.67</b>	<b>126.00</b>	<b>118.17</b>	<b>84.87</b>	<b>46.40</b>	<b>108.10</b>	<b>71.28</b>	<b>2.93</b>	<b>4.00</b>	<b>3.47</b>
	<b>Mean</b>	<b>58.91</b>	<b>64.96</b>	<b>61.94</b>	<b>114.14</b>	<b>110.67</b>	<b>112.40</b>	<b>77.67</b>	<b>36.17</b>	<b>62.35</b>	<b>58.73</b>	<b>2.46</b>	<b>2.26</b>	<b>2.36</b>
	<b>CD(0.05)</b>	<b>1.62</b>	-	-	<b>1.35</b>	-	-	<b>2.59</b>	<b>10.27</b>	-	-	<b>0.55</b>	-	-
	<b>CV(%) Error</b>	<b>1.71</b>	-	-	<b>0.74</b>	-	-	<b>2.09</b>	<b>17.74</b>	-	-	<b>14.04</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>2.72</b>	<b>5.80</b>	-	<b>1.77</b>	<b>4.42</b>	-	<b>5.85</b>	<b>13.81</b>	<b>36.15</b>	-	<b>8.97</b>	<b>38.02</b>	-

S.No.	Accession No.	Palampur			Shimla					
		Pod length (cm)	Pod width (cm)	Seed yield(q/ha)	No of cluster/plant	No of pod/cluster	No of pod/plant	No of seed/pod	100 seed weight (g)	Seed yield per plant (g)
23	EC340280	8.07	0.67	1.24	4.00	1.50	6.00	4.00	6.72	1.68
24	EC340281	8.13	0.66	1.85	7.00	2.00	16.00	7.00	9.68	10.77
25	EC340283	8.17	0.69	2.18	4.00	2.50	11.00	8.50	9.91	8.68
<b>Mean for check variety</b>										
	<b>HPU-51 (C)</b>	<b>7.80</b>	<b>0.66</b>	<b>3.03</b>	<b>8.00</b>	<b>2.50</b>	<b>21.00</b>	<b>8.50</b>	<b>12.96</b>	<b>19.18</b>
	<b>Totru local (C)</b>	<b>8.23</b>	<b>0.67</b>	<b>1.67</b>	<b>6.00</b>	<b>6.50</b>	<b>26.00</b>	<b>7.50</b>	<b>4.92</b>	<b>9.21</b>
	<b>Minmum</b>	<b>7.63</b>	<b>0.65</b>	<b>1.24</b>	<b>4.00</b>	<b>1.50</b>	<b>6.00</b>	<b>4.00</b>	<b>4.92</b>	<b>1.68</b>
	<b>Maximum</b>	<b>8.23</b>	<b>0.69</b>	<b>4.44</b>	<b>15.00</b>	<b>6.50</b>	<b>42.00</b>	<b>9.50</b>	<b>13.10</b>	<b>36.50</b>
	<b>Mean</b>	<b>8.00</b>	<b>0.67</b>	<b>2.33</b>	<b>8.33</b>	<b>3.19</b>	<b>21.59</b>	<b>6.94</b>	<b>9.89</b>	<b>15.05</b>
	<b>CD(0.05)</b>	<b>0.30</b>	<b>0.03</b>	<b>0.30</b>	<b>35.06</b>	<b>34.05</b>	<b>45.76</b>	<b>16.39</b>	<b>20.19</b>	<b>-</b>
	<b>CV(%) Error</b>	<b>2.33</b>	<b>3.25</b>	<b>8.10</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>CV(%) Phenotypic</b>	<b>2.00</b>	<b>2.02</b>	<b>35.97</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>56.75</b>



**Table 88. Characterization of germplasm lines in adzuki bean at Palampur and Shimla - Hills Kharif :2012**

S.No.	Accession No.	Early plant vigour		Plant growth habit		Flower colour		Leaf colour		Leaf surface		Leaflet shape		Pod angle		Pod surface		Seed coat color		Stem color		Stem surface		Shimla
		Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Plant habit
1	EC340251	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
2	EC340252	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
3	EC340253	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	99	99	3	3	2	2	2
4	EC340256	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
5	EC340257	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
6	EC340259	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
7	EC340261	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
8	EC340263	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
9	EC340264	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
10	EC340265	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	99	4	3	3	2	2	2
11	EC340266	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
12	EC340268	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
13	EC340269	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	2	3	3	2	2	2
14	EC340270	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
15	EC340272	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
16	EC340273	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	99	3	3	2	2	2
17	EC340274	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
18	EC340275	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
19	EC340276	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	4	2	3	3	2	2	2
20	EC340277	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	99	2	3	3	2	2	2
21	EC340278	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	4	4	3	3	2	2	2
22	EC340279	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	99	4	3	3	2	2	2

S.No.	Accession No.	Early plant vigour		Plant growth habit		Flower colour		Leaf colour		Leaf surface		Leaflet shape		Pod angle		Pod surface		Seed coat color		Stem color		Stem surface		Shimla		
		Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Plant habit		
23	EC340280	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	1	4	4	3	3	2	2	2	
24	EC340281	2	3	1	1	2	2	1	2	1	2	1	1	2	1	1	1	1	99	4	2	3	2	2	2	
25	EC340283	2	3	1	1	2	2	3	2	1	2	1	1	2	1	1	1	1	4	4	3	3	2	2	2	
<b>Mean for check variety</b>																										
	<b>HPU-51 (C)</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>Totru local (C)</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>99</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	
	<b>Minmum</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>
	<b>Maximum</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>99</b>	<b>99</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	
	<b>Mode</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	

**Qualitative Descriptors:** **Early plant vigour:** 1-poor, 2-good, 3-very good; **Plant habit:** 1-determinate, 2-indeterminate, 99-others; **Plant growth habit:** 1-erect, 2-spreading, 99-others; **Leaf colour:** 1-yellowish green, 2-green, 3-dark green, 99-others; **Leaf surface:** 1-glabrous, 2-pubescent, 99-others; **Leaflet shape:** 1-entire, 2-lobed, 99-others; **Flower colour:** 1-light yellow, 2-yellow, 3-orange, 99-others; **Stem colour:** 1-light yellow, 2-purple, 3-green, 99-others; **Stem surface:** 1-glabrous, 2-pubescent, 99-others; **Pod angle:** 1-erect, 2-pendent, 99-others; **Pod surface:** 1-glabrous, 2-pubescent, 99-others; **Seed coat colour:** 1-green, 2-brown, 3-maroon, 4-red, 99-others.

**Table 89. Promising lines in Fababean germplasm (Rabi 2011-12) for various characters at Palampur (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Palampur (Accession 50)</b>				
1.	Days to 50% flowering	41.00-70.00	HB-48, EC276939, HB-12, EC243584, EC243626, EC243764, EC329428, HB-17, HB-87 (<54.00 days)	Vikrant (53.00 days)
2.	Days to maturity	150.00-168.00	EC329691, EC318948, EC329428, EC329605, HB-32, HB-56, EC354989, HB-52, IC329675, HB-21, EC243586, HB-16, HB-70, IC361485, EC117949, EC354686, HB-6, HB-33, IC243036, IC263634 (<158.00 days)	HPFB-1 (157.29 days)
3.	Plant height (cm)	77.00-109.00	IC243808, EC243860, EC329696, EC374735, HB-1, EC243584, EC329428, EC354085, EC361498, IC263634, EC329750, HB-33, HB-56, IC361485, EC276939, HB-52, IC024710 (>101.00 cm)	HPFB-1 (101.43 cm)
4.	No. of primary branches per plant	2.60-5.40	EC243626, EC329605, EC354686, IC263634, HB-56, EC243784, HB-1, EC243860, EC354989, HB-52 (>4.70)	HPFB-1 (4.77)
5.	Pod length (cm)	4.20-6.20	HB-33, EC243584, EC361498, HB-21, HB-12, IC243808, EC243860, EC329750, HB-62, IC263634, EC276939, EC329667, EC329691, EC351999, EC354686, HB-30, IC243036, IC329675 (>5.35 cm)	HPFB-1 (5.37 cm)
6.	Pod width (mm)	0.70-1.30	HB-28, HB-56, EC243784, EC329667, EC351999, EC329675, HB-48, HB-62, HB-87, EC243584, EC243860, HB-16, IC361485 (>0.95 mm)	HPFB-1 (0.96 mm)
7.	No. of seeds per pod	2.40-3.30	EC329667, IC243808, IC361485, EC243584, HB-32, HB-33, EC243586, EC318948, EC354686, IC243036 (>2.88)	HPFB-1 (2.83)
8.	100 seed weight (g)	23.38-32.16	IC263634, EC329696, EC329428, IC361485, HB-70, HB-32, HB-60, HB-52, EC329691, EC318948, EC329750, HB-21, EC248945, EC351999, IC243808, EC354686, EC354989 (>28.00 g)	HPFB-1 (28.85 g)
9.	Seed yield per plant (g)	1.24-6.40	EC276939, EC354686, EC329667, EC329605, IC243036, EC005873, HB-1, HB-30, IC024710, HB-6, EC329750, EC374735 (> 4.88 g)	HPFB-1 (4.63 g)

**Table 90. Multilocation evaluation of germplasm lines in faba bean at Palampur - Hills : Rabi 2011-12**

<b>S.No.</b>	<b>Accession No.</b>	<b>Days to flowering</b>	<b>Days to maturity</b>	<b>Plant height (cm)</b>	<b>No. of primary branches per plant</b>	<b>Pod length (cm)</b>	<b>Pod width (mm)</b>	<b>No. of seed per pod</b>	<b>Seed yield per plant</b>	<b>100 seed weight (g)</b>
1	EC005873	62.00	159.00	100.00	2.60	5.30	0.88	2.80	5.60	24.48
2	EC117949	68.00	157.00	92.00	3.40	5.30	0.90	2.80	2.70	25.92
3	EC243584	49.00	163.00	106.00	3.80	5.80	0.97	3.00	4.40	26.24
4	EC243586	60.00	156.00	90.00	3.00	4.50	0.84	2.90	2.20	27.74
5	EC243626	49.00	160.00	97.00	5.40	5.20	0.90	2.40	2.40	26.14
6	EC243764	49.00	163.00	93.00	4.40	5.10	0.92	2.80	4.40	25.48
7	EC243784	68.00	164.00	89.00	5.00	5.30	1.20	2.60	2.80	25.15
8	EC243860	58.00	162.00	107.00	4.80	5.50	0.97	2.50	4.00	26.24
9	EC248945	60.00	159.00	94.00	3.00	5.20	0.87	2.50	2.36	29.57
10	EC276939	48.00	158.00	102.00	3.00	5.40	0.90	2.50	6.40	27.94
11	EC318948	67.00	151.00	90.00	4.40	5.00	0.84	2.90	3.44	29.80
12	EC329428	51.00	152.00	106.00	4.60	4.80	0.88	2.80	2.00	31.19
13	EC329605	63.00	152.00	96.00	5.40	5.20	0.84	2.70	5.96	28.14
14	EC329662	70.00	158.00	101.00	3.80	5.00	0.92	2.70	2.96	26.04
15	EC329667	65.00	163.00	97.00	3.80	5.40	1.20	3.30	6.16	26.98
16	EC329675	68.00	158.00	93.00	2.80	5.20	1.00	2.40	4.00	26.15
17	EC329691	64.00	150.00	78.00	3.20	5.40	0.90	2.40	1.36	30.00
18	EC329696	67.00	160.00	107.00	4.20	5.30	0.90	2.60	2.80	32.01
19	EC329750	63.00	159.00	103.00	2.60	5.50	0.88	2.80	4.96	29.65
20	EC351999	67.00	164.00	99.00	4.40	5.40	1.20	2.70	2.60	29.40
21	EC354085	57.00	164.00	105.00	2.60	5.20	0.80	2.70	3.20	25.75
22	EC354686	67.00	157.00	100.00	5.40	5.40	0.88	2.90	6.24	29.15

<b>S.No.</b>	<b>Accession No.</b>	<b>Days to flowering</b>	<b>Days to maturity</b>	<b>Plant height (cm)</b>	<b>No. of primary branches per plant</b>	<b>Pod length (cm)</b>	<b>Pod width (mm)</b>	<b>No. of seed per pod</b>	<b>Seed yield per plant</b>	<b>100 seed weight (g)</b>
23	EC354989	61.00	154.00	96.00	4.80	4.80	0.92	2.70	2.20	29.00
24	EC361498	55.00	159.00	104.00	2.80	5.80	0.80	2.70	4.20	23.38
25	EC374735	60.00	164.00	107.00	4.00	5.20	0.87	2.70	4.90	26.07
26	HB-1	66.00	158.00	107.00	5.00	5.30	0.80	2.80	5.50	27.92
27	HB-6	63.00	157.00	100.00	4.00	5.20	0.92	2.60	5.00	25.16
28	HB-10	67.00	159.00	96.00	4.20	4.80	0.88	2.70	1.60	25.78
29	HB-12	48.00	168.00	94.00	3.60	5.60	0.90	2.60	3.00	26.04
30	HB-16	58.00	156.00	96.00	3.60	5.20	0.97	2.70	3.60	28.10
31	HB-17	51.00	158.00	99.00	3.80	4.60	0.90	2.60	2.80	25.75
32	HB-21	58.00	155.00	93.00	4.60	5.80	0.86	2.50	2.44	29.62
33	HB-28	67.00	159.00	84.00	3.20	4.70	1.30	2.80	2.40	25.75
34	HB-30	58.00	162.00	99.00	4.20	5.40	0.94	2.60	5.20	25.10
35	HB-32	69.00	152.00	77.00	3.00	4.70	0.88	3.00	2.10	31.05
36	HB-33	68.00	157.00	103.00	3.20	6.20	0.92	3.00	2.00	25.92
37	HB-48	41.00	159.00	89.00	3.80	5.10	1.00	2.70	2.70	28.00
38	HB-52	60.00	154.00	102.00	4.80	5.10	0.88	2.80	2.44	30.01
39	HB-56	69.00	152.00	103.00	5.20	4.80	1.30	2.70	2.60	28.00
40	HB-60	63.00	164.00	79.00	3.40	4.60	0.87	2.60	1.24	31.05
41	HB-62	61.00	160.00	81.00	3.40	5.50	1.00	2.50	1.24	26.19
42	HB-70	64.00	156.00	92.00	3.00	5.20	0.87	2.40	2.70	31.08
43	HB-87	53.00	160.00	100.00	3.60	5.10	1.00	2.60	3.70	28.05
44	IC003293	69.00	168.00	98.00	3.80	4.20	0.92	2.70	2.52	28.54
45	IC024710	67.00	164.00	102.00	3.80	5.30	0.87	2.70	5.04	25.23
46	IC243036	55.00	157.00	97.00	3.80	5.40	0.84	2.90	5.96	26.98
47	IC243808	60.00	164.00	109.00	3.20	5.60	0.93	3.20	2.80	29.40

<b>S.No.</b>	<b>Accession No.</b>	<b>Days to flowering</b>	<b>Days to maturity</b>	<b>Plant height (cm)</b>	<b>No. of primary branches per plant</b>	<b>Pod length (cm)</b>	<b>Pod width (mm)</b>	<b>No. of seed per pod</b>	<b>Seed yield per plant</b>	<b>100 seed weight (g)</b>
48	IC263634	61.00	157.00	104.00	5.40	5.50	0.86	2.50	3.80	32.16
49	IC329675	69.00	154.00	95.00	3.80	5.40	0.70	2.80	3.68	28.17
50	IC361485	60.00	156.00	103.00	4.00	5.00	0.97	3.20	2.50	31.14
<b>Mean for check variety</b>										
	<b>HPFB-1 (C)</b>	<b>62.86</b>	<b>157.29</b>	<b>101.43</b>	<b>4.77</b>	<b>5.37</b>	<b>0.96</b>	<b>2.83</b>	<b>4.63</b>	<b>28.85</b>
	<b>HPFB-2 (C)</b>	<b>57.57</b>	<b>160.86</b>	<b>99.71</b>	<b>4.54</b>	<b>5.01</b>	<b>0.91</b>	<b>2.71</b>	<b>3.71</b>	<b>28.71</b>
	<b>Vikrant (C)</b>	<b>53.00</b>	<b>157.71</b>	<b>100.86</b>	<b>4.06</b>	<b>5.27</b>	<b>0.87</b>	<b>2.67</b>	<b>3.61</b>	<b>28.30</b>
	<b>Minimum</b>	<b>41.00</b>	<b>150.00</b>	<b>77.00</b>	<b>2.60</b>	<b>4.20</b>	<b>0.70</b>	<b>2.40</b>	<b>1.24</b>	<b>23.38</b>
	<b>Maximum</b>	<b>70.00</b>	<b>168.00</b>	<b>109.00</b>	<b>5.40</b>	<b>6.20</b>	<b>1.30</b>	<b>3.30</b>	<b>6.40</b>	<b>32.16</b>
	<b>Mean</b>	<b>60.65</b>	<b>158.64</b>	<b>97.28</b>	<b>3.92</b>	<b>5.21</b>	<b>0.93</b>	<b>2.72</b>	<b>3.49</b>	<b>27.80</b>
	<b>CD(0.05)</b>	<b>14.08</b>	<b>7.98</b>	<b>28.93</b>	<b>2.70</b>	<b>0.94</b>	<b>0.24</b>	<b>0.66</b>	<b>3.52</b>	<b>4.75</b>
	<b>CV(%) Error</b>	<b>9.05</b>	<b>1.87</b>	<b>10.68</b>	<b>22.49</b>	<b>6.68</b>	<b>9.77</b>	<b>8.91</b>	<b>32.80</b>	<b>6.17</b>
	<b>CV(%) Phenotypic</b>	<b>11.43</b>	<b>2.63</b>	<b>7.87</b>	<b>20.41</b>	<b>6.90</b>	<b>12.60</b>	<b>7.30</b>	<b>40.08</b>	<b>7.69</b>

**Table 91. Characterization of germplasm lines in faba bean at Palampur - Hills : Rabi 2011-12**

S.No.	Accession No.	Early plant vigour	Plant habit	Flower ground colour	Wing petal colour	Leaflet shape	Leaflet size	Stem colour	Stem pigmentation	Pod angle/attitude	Pod colour	Pod shape	Hilum colour	Seed coat colour	Seed shape
1	EC005873	2	2	1	2	2	5	1	0	1	2	3	1	7	1
2	EC117949	3	2	1	2	2	5	1	0	1	2	3	1	7	1
3	EC243584	2	2	1	2	2	5	1	0	1	2	3	1	7	1
4	EC243586	1	2	1	2	2	5	1	0	1	2	3	1	7	1
5	EC243626	1	2	1	2	2	5	1	0	1	2	3	1	7	1
6	EC243764	3	2	1	2	2	5	1	0	1	2	3	1	7	1
7	EC243784	2	2	1	2	2	5	1	0	1	2	3	1	7	1
8	EC243860	3	2	1	2	2	5	1	0	1	2	3	1	7	1
9	EC248945	3	2	1	2	2	5	1	0	1	2	3	1	7	1
10	EC276939	2	2	1	2	2	5	1	0	1	2	3	1	7	1
11	EC318948	3	2	1	2	2	5	1	0	1	2	3	1	7	1
12	EC329428	1	2	1	2	2	5	1	0	1	2	3	1	7	1
13	EC329605	3	2	1	2	2	5	1	0	1	2	3	1	7	1
14	EC329662	3	2	1	2	2	5	1	0	1	2	3	1	7	1
15	EC329667	3	2	1	2	2	5	1	0	1	2	3	1	7	1
16	EC329675	3	2	1	2	2	5	1	0	1	2	3	1	7	1
17	EC329691	1	2	1	2	2	5	1	0	1	2	3	1	7	1
18	EC329696	3	2	1	2	2	5	1	0	1	2	3	1	7	1
19	EC329750	3	2	1	2	2	5	1	0	1	2	3	1	7	1
20	EC351999	1	2	1	2	2	5	1	0	1	2	3	1	7	1
21	EC354085	2	2	1	2	2	5	1	0	1	2	3	1	7	1
22	EC354686	3	2	1	2	2	5	1	0	1	2	3	1	7	1

S.No.	Accession No.	Early plant vigour	Plant habit	Flower ground colour	Wing petal colour	Leaflet shape	Leaflet size	Stem colour	Stem pigmentation	Pod angle/attitude	Pod colour	Pod shape	Hilum colour	Seed coat colour	Seed shape
23	EC354989	3	2	1	2	2	5	1	0	1	2	3	1	7	1
24	EC361498	3	2	1	2	2	5	1	0	1	2	3	1	7	1
25	EC374735	2	2	1	2	2	5	1	0	1	2	3	1	7	1
26	HB-1	3	2	1	2	2	5	1	0	1	2	3	1	7	1
27	HB-6	3	2	1	2	2	5	1	0	1	2	3	1	7	1
28	HB-10	1	2	1	2	2	5	1	0	1	2	3	1	7	1
29	HB-12	1	2	1	2	2	5	1	0	1	2	3	1	7	1
30	HB-16	3	2	1	2	2	5	1	0	1	2	3	1	7	1
31	HB-17	3	2	1	2	2	5	1	0	1	2	3	1	7	1
32	HB-21	1	2	1	2	2	5	1	0	1	2	3	1	7	1
33	HB-28	1	2	1	2	2	5	1	0	1	2	3	1	7	1
34	HB-30	3	2	1	2	2	5	1	0	1	2	3	1	7	1
35	HB-32	1	2	1	2	2	5	1	0	1	2	3	1	7	1
36	HB-33	1	2	1	2	2	5	1	0	1	2	3	1	7	1
37	HB-48	3	2	1	2	2	5	1	0	1	2	3	1	7	1
38	HB-52	1	2	1	2	2	5	1	0	1	2	3	1	7	1
39	HB-56	2	2	1	2	2	5	1	0	1	2	3	1	7	1
40	HB-60	1	2	1	2	2	5	1	0	1	2	3	1	7	1
41	HB-62	2	2	1	2	2	5	1	0	1	2	3	1	7	1
42	HB-70	3	2	1	2	2	5	1	0	1	2	3	1	7	1
43	HB-87	2	2	1	2	2	5	1	0	1	2	3	1	7	1
44	IC003293	2	2	1	2	2	5	1	0	1	2	3	1	7	1
45	IC024710	3	2	1	2	2	5	1	0	1	2	3	1	7	1
46	IC243036	3	2	1	2	2	5	1	0	1	2	3	1	7	1
47	IC243808	2	2	1	2	2	5	1	0	1	2	3	1	7	1



S.No.	Accession No.	Early plant vigour	Plant habit	Flower ground colour	Wing petal colour	Leaflet shape	Leaflet size	Stem colour	Stem pigmentation	Pod angle/attitude	Pod colour	Pod shape	Hilum colour	Seed coat colour	Seed shape
48	IC263634	3	2	1	2	2	5	1	0	1	2	3	1	7	1
49	IC329675	3	2	1	2	2	5	1	0	1	2	3	1	7	1
50	IC361485	2	2	1	2	2	5	1	0	1	2	3	1	7	1
<b>Mean for check variety</b>															
	<b>HPFB-1 (C)</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>
	<b>HPFB-2 (C)</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>
	<b>Vikrant (C)</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>
	<b>Minimum</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>
	<b>Maximum</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>
	<b>Mean</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>1</b>

**Qualitative characters :** *Early plant vigour* : 1-Poor, 2-Good, 3-Very good, 99-Others; *Plant habit* : 1-Determinate, 2-Semi determinate, 3-Indeterminate, 99-Others; *Flower ground colour* : 1-White, 2-Yellow, 3-Violet, 4-Pink, 5-Red, 6-Light brown, 7-Dark brown, 99-Others; *Wing petal colour* : 1-Uniformly white, 2-Spotted, 3-Uniformly coloured, 99-Others; *Leaflet shape* : 1-Narrow (elongate), 2-Intermediate (sub-elliptic), 3-Rounded (sub orbicular), 99-Others; *Leaflet size* : 3-Small, 5-Medium, 7-Large, 99-Others; *Stem colour* : 1-Light green, 2-Dark green, 99-Others; *Stem pigmentation* : 0-Absent, 1-Weak, 2-Intermediate, 3-Strong, 99-Others; *Pod angle/attitude* : 1-Erect, 2-Horizontal, 3-Pendent, 99-Others; *Pod colours* : 1-Light yellow, 2-Dark (brown/black), 99-Others; *Pod distribution on the stem* : 1-Mainly basal, 2-Uniform, 3-Mainly terminal, 99-Others; *Pod shape* : 1-Flattened non constricted, 2-Flattened constricted, 3-Sub cylindrical, 99-Others; *Seed coat colour* : 1-White, 2-Yellow, 3-Grey, 4-Violet, 5-Light green, 6-Dark green, 7-Light brown, 8-Dark brown, 9-Red, 10-Black, 99-Others; *Hilum colour* : 1-Black, 99-Others; *Seed shape* : 1-Flattened, 2-Round 3-Angular, 99-Others

**Table 92. Promising lines in job's tear (coix) germplasm for various characters at different locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Ranichauri (Accession 25)</b>				
1.	Plant height (cm)	105.80-177.93	IC416868, IC203983, IC022280, IC540267, IC089389, IC521340, IC360791, IC540236, IC036667 (>147.00 cm)	Pollin (139.80 cm)
2.	No. of tillers per plant	2.80-6.93	IC203983, IC416829, IC540236, IC022280 (>5.90)	Mayeun (5.20)
3.	Fresh forage yield (q/ha)	5.01-14.11	IC203983, IC417053, IC521340, IC540267, IC360791, IC022280, IC416868, IC416971, IC036667, IC521631, IC419466, IC089389, IC077150, IC089390, IC089393, IC203934, IC374506, IC419448 (>=9.00 q/ha)	Pollin (7.50 q/ha)
4.	Dry forage yield (q/ha)	18.52-65.43	IC203983, IC417053, IC521340, IC360791, IC022280, IC540267, IC416868, IC416971, IC521631, IC036667, IC089389, IC419466, IC077150, IC203934, IC089390, IC089393 (>=35.80 q/ha)	Pollin (29.63 q/ha)
<b>Shillong (Accession 25)</b>				
1.	Days to 50% flowering	69.33-86.67	IC360791, IC419466, IC077150, IC203983, IC416971, IC416831, IC036667, IC416868, IC540236, IC022280, IC416824, IC417053, IC540267, IC001274, IC334314, IC374506, IC419448 (<80.00 days)	Pollin (79.33 days)
2.	Days to maturity	144.00-166.33	IC374506, IC360791 (< 145.00 days)	Pollin (145.00 days)
3.	Plant height (cm)	319.67-374.33	IC089390, IC416884, IC001274, IC419466, IC036667, IC416971, IC417053, IC416829, IC089393, IC521340, IC419448 (>355.00 cm)	Mayun (350.07 cm)
4.	Leaf length (cm)	74.97-83.80	IC419466, IC203983, IC360791 (>82.00 cm)	Mayun (81.80 cm)
5.	Leaf width (cm)	5.23-6.11	IC419466, IC521340, IC022280, IC416971, IC540267, IC036667, IC360791, IC417053, IC419448 (>5.50 cm)	Mayun (5.78 cm)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
6.	No. of tillers per hill	1.60-3.20	IC524631, IC203934, IC077150, IC416824, IC360791, IC089393, IC416884, IC416971, IC022280, IC334314 (>2.60)	Mayun (2.60)
7.	No. of nodes per tillers	10.00-11.67	IC089390, IC416829, IC416831, IC419448, IC540236, IC334314, IC416884, IC521340, IC416868, IC419466(>11.00)	Mayun (11.00)
8.	100 seed weight (g)	9.15-11.60	IC521340, IC203983, IC540236 (>11.35 g)	Pollin (11.37 g)
9.	Seed yield per plant (g)	11.06-19.83	IC417053, IC540236, IC334314, IC089393, IC374506, IC419448, IC540267, IC089389, IC360791, IC524631, IC022280, IC416868, IC036667, IC419466, IC203934, IC089390, IC077150 (> 14.05 g)	Pollin (13.65 g)
10.	Seed yield (q/ha)	8.33-19.44	IC540267, IC001274, IC416868, IC089389, IC540236, IC334314, IC524631, IC089393, IC022280, IC416971 (>15.95 q/ha)	Pollin (15.75 q/ha)

**Table 93. Evaluation of germplasm lines in job's tear (coix) at Ranichauri and Shillong - Hills : Kharif 2012**

S.No.	Accession No.	Ranichauri				Shillong									
		Plant height (cm)	No. of tillers/ plant	Fresh forage yield (q/ha)	Dry forage yield (q/ ha)	Days to 50% flowering	Days to 80% maturity	Plant height (cm)	Leaf length (cm)	Leaf width (cm)	No. of tillers per hill	No. of nodes per tillers	100 seed weight (g)	Seed yield/ plant (g)	Seed yield (q/ha)
1	IC001274	121.27	5.00	6.76	25.93	79.00	156.00	367.33	81.00	5.35	2.27	10.20	9.53	13.22	18.98
2	IC022280	165.20	5.93	12.68	54.32	77.00	148.67	356.00	78.07	6.03	2.67	10.73	9.18	16.07	16.20
3	IC036667	147.20	4.67	11.34	44.44	75.67	159.33	364.00	78.20	5.93	2.47	10.60	9.40	15.15	13.89
4	IC077150	115.40	4.67	10.89	38.27	72.00	159.67	342.00	76.57	5.67	3.00	10.80	11.21	14.09	13.70
5	IC089389	153.87	5.40	11.11	44.44	81.33	146.00	348.00	78.87	5.23	2.20	10.80	9.25	17.49	18.29
6	IC089390	105.80	3.73	9.44	35.80	82.00	158.00	374.33	79.33	5.67	2.47	11.67	9.74	14.27	14.81
7	IC089393	120.20	4.93	9.33	35.80	86.67	153.67	360.00	80.53	5.41	2.87	10.53	10.90	18.59	16.20
8	IC203934	133.60	5.47	9.31	38.27	85.33	159.00	344.87	79.40	5.70	3.13	10.80	10.28	14.29	14.81
9	IC203983	166.33	6.93	14.11	65.43	74.00	159.33	350.00	83.20	5.55	2.47	10.47	11.47	12.73	14.81
10	IC334314	140.40	3.87	5.06	20.99	79.33	153.33	345.33	77.97	5.61	2.67	11.20	10.99	18.60	17.36
11	IC360791	149.87	4.27	12.78	54.32	69.33	144.33	339.67	82.13	5.93	2.93	10.60	11.09	16.36	13.43
12	IC374506	126.13	2.80	9.00	33.33	79.33	144.00	319.67	75.47	5.71	1.60	10.20	9.78	18.26	15.74
13	IC416824	112.27	3.87	5.01	20.99	78.00	154.33	329.67	79.27	5.62	3.00	10.00	10.01	13.36	11.30
14	IC416829	106.13	6.27	8.44	33.33	82.00	155.67	361.00	81.47	5.59	2.47	11.60	10.82	11.06	15.05
15	IC416831	131.20	3.87	7.89	30.86	75.33	157.00	345.00	80.13	5.64	2.40	11.33	9.15	12.73	11.34
16	IC416868	177.93	3.80	12.11	48.15	76.33	150.00	331.33	79.00	5.71	2.27	11.13	10.16	15.16	18.52
17	IC416884	145.20	5.13	7.44	28.40	81.00	161.00	370.00	79.87	5.72	2.73	11.20	9.81	12.07	10.14
18	IC416971	142.00	3.73	11.67	46.91	74.33	160.00	363.33	79.73	6.01	2.73	10.80	11.28	12.97	15.97
19	IC417053	130.53	4.40	13.94	62.96	78.67	163.33	361.33	78.27	5.83	2.13	10.20	9.34	19.83	15.09
20	IC419448	115.47	5.20	9.00	33.33	79.33	157.00	357.00	80.40	5.80	2.40	11.27	10.57	18.16	13.43
21	IC419466	141.47	4.93	11.17	43.21	70.33	153.00	367.33	83.80	6.11	2.27	11.07	10.78	14.43	11.11
22	IC521340	150.07	5.33	13.44	59.26	79.67	166.33	360.00	78.00	6.08	2.47	11.20	11.60	11.72	12.96

S.No.	Accession No.	Ranichauri				Shillong										
		Plant height (cm)	No. of tillers/ plant	Fresh forage yield (q/ha)	Dry forage yield (q/ ha)	Days to 50% flowering	Days to 80% maturity	Plant height (cm)	Leaf length (cm)	Leaf width (cm)	No. of tillers per hill	No. of nodes per tillers	100 seed weight (g)	Seed yield/ plant (g)	Seed yield (q/ha)	
23	IC521631	120.67	4.87	11.33	46.91	82.33	164.33	349.00	81.53	5.66	3.20	10.73	9.60	16.35	17.13	
24	IC540236	149.80	6.00	5.07	18.52	76.67	154.00	348.00	77.90	5.75	1.93	11.27	11.38	19.16	17.87	
25	IC540267	156.40	4.07	12.89	49.38	78.67	147.33	334.33	77.40	5.97	2.53	10.47	11.08	17.78	19.44	
<b>Mean for check variety</b>																
	<b>Mayeun (C)</b>	<b>122.13</b>	<b>5.20</b>	<b>5.17</b>	<b>18.52</b>	<b>81.67</b>	<b>158.00</b>	<b>350.07</b>	<b>81.80</b>	<b>5.78</b>	<b>2.60</b>	<b>11.00</b>	<b>9.85</b>	<b>11.22</b>	<b>8.33</b>	
	<b>Pollin (C)</b>	<b>139.80</b>	<b>4.13</b>	<b>7.50</b>	<b>29.63</b>	<b>79.33</b>	<b>145.00</b>	<b>341.00</b>	<b>74.97</b>	<b>5.63</b>	<b>2.27</b>	<b>10.73</b>	<b>11.37</b>	<b>13.65</b>	<b>15.75</b>	
	<b>Minimum</b>	<b>105.80</b>	<b>2.80</b>	<b>5.01</b>	<b>18.52</b>	<b>69.33</b>	<b>144.00</b>	<b>319.67</b>	<b>74.97</b>	<b>5.23</b>	<b>1.60</b>	<b>10.00</b>	<b>9.15</b>	<b>11.06</b>	<b>8.33</b>	
	<b>Maximum</b>	<b>177.93</b>	<b>6.93</b>	<b>14.11</b>	<b>65.43</b>	<b>86.67</b>	<b>166.33</b>	<b>374.33</b>	<b>83.80</b>	<b>6.11</b>	<b>3.20</b>	<b>11.67</b>	<b>11.60</b>	<b>19.83</b>	<b>19.44</b>	
	<b>Mean</b>	<b>136.53</b>	<b>4.76</b>	<b>9.77</b>	<b>39.32</b>	<b>78.32</b>	<b>155.10</b>	<b>351.10</b>	<b>79.42</b>	<b>5.73</b>	<b>2.52</b>	<b>10.84</b>	<b>10.36</b>	<b>15.14</b>	<b>14.88</b>	
	<b>CD(0.05)</b>	<b>7.16</b>	<b>0.59</b>	<b>1.36</b>	<b>5.45</b>	<b>5.38</b>	<b>9.07</b>	<b>35.74</b>	<b>6.34</b>	<b>0.54</b>	<b>1.11</b>	<b>1.61</b>	<b>2.13</b>	<b>6.57</b>	<b>6.31</b>	
	<b>CV(%) Error</b>	<b>3.28</b>	<b>7.80</b>	<b>8.71</b>	<b>8.65</b>	<b>4.29</b>	<b>3.65</b>	<b>6.36</b>	<b>4.99</b>	<b>5.90</b>	<b>27.41</b>	<b>9.29</b>	<b>12.83</b>	<b>27.13</b>	<b>26.49</b>	
	<b>CV(%) Phenotypic</b>	<b>13.94</b>	<b>19.48</b>	<b>29.14</b>	<b>33.78</b>	<b>5.25</b>	<b>3.99</b>	<b>3.84</b>	<b>2.70</b>	<b>3.74</b>	<b>14.48</b>	<b>4.00</b>	<b>7.89</b>	<b>17.32</b>	<b>18.83</b>	

**Table 94. Promising lines in Perilla germplasm for various characters at different locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Ranichauri (Accession 25)</b>				
1.	Days to 50% flowering	100.33-124.00	IC369449, IC521284, IC006447, IC211608, IC526701, IC204185, IC374609, IC216268, IC374593, IC521291, IC521286 (<111.00 days)	BDS-1650 (110.67 days)
2.	Days to maturity	151.93-176.27	IC521284, IC369449, IC006447, IC211608, IC526701, IC204185, IC216268, IC521291, IC335408, IC521286, IC374593 (<162.00 days)	BDS-1650 (162.80 days)
3.	Plant height (cm)	24.67-51.13	IC374593, IC526660, IC334313, IC216268, IC526701, IC374494, IC521292, IC010240, IC003955(>44.30 cm)	BDS-1650 (43.13 cm)
4.	No. of primary branches	4.20-5.40	IC204185, IC419598, IC211608, IC419477, IC419706, IC521286, IC521291, IC521292, IC526701, IC334313, IC335408, IC369449, IC374593 (>=5.00)	BDS-1650 (5.00)
5.	100 seed weight (g)	0.21-0.26	IC204185, IC374609, IC010240, IC334813, IC335408, IC419477, IC521284, IC521292, IC003942, IC521286, IC526701, IC006447, IC211608, IC369449, IC419598, IC526660, IC521291 (>=0.24)	BDS-1650 (0.24 g)
6.	Seed yield (q/ha)	1.23-6.42	IC003942, IC374609, IC374494, IC416861, IC526701, IC419706, IC521284, IC369449, IC419477, IC419598, IC526660, IC521286, IC006447, IC334313, IC010240, IC211608, IC216268, IC335408 (>=2.35 q/ha)	BDS-1650 (2.35 q/ha)
<b>Shillong (Accession 25)</b>				
1.	Days to 50% flowering	129.00-152.33	IC521284, IC419598 (< 130.00 days)	Shillong (129.67 days)
2.	Days to maturity	167.33-188.00	IC521284, IC419598 (< 170.00 days)	Jaintia (169.67 days)
3.	Plant height (cm)	92.60-176.00	IC003955, IC419475, IC419477, IC003942 (>158.85 cm)	Jaintia (152.67 cm)
4.	No. of primary branches	11.40-30.13	IC211608, IC419475, IC334313, IC526660, IC335408, PL, IC419706, IC003942, IC521286, IC419477, IC216268, IC521291, IC374593, IC334813, IC006447, IC526701, IC521292, IC010240, IC416861, IC374609 (>13.78)	Jaintia (13.73)
5.	Leaf length (cm)	9.55-14.28	IC526660, IC419706, IC419598, IC419475, IC374593, IC003942, IC416861, IC526701, IC419598, IC521292 (>11.45 cm)	Jaintia (11.47 cm)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
6.	Leaf width (cm)	7.87-12.73	IC419475, IC003955, IC374593, IC526660, IC526701, IC419706, IC416861, IC003942, IC374609, IC211608, IC521292, IC419477, IC010240, IC374494, IC334313, IC419598, IC521284, IC335408, IC521286, IC334813 (>9.20 cm)	Jaintia (9.17 cm)
7.	Petiole length (cm)	3.11-7.09	IC526660, IC419706, IC003955, IC419475, IC374593, IC335408 (>6.00 cm)	Jaintia (5.70 cm)
8.	Inflorescence length (cm)	9.37-16.76	IC521286, IC003942, IC335408, IC526701, IC211608, IC003955, IC216268, IC374593, IC419706, IC521291(> 11.70 cm)	Shillong (11.73 cm)
9.	No. of inflorescence per plant	29.73-101.07	IC216268, IC010240 (>97.85)	Shillong (96.73)
10.	100 seed weight (g)	0.12-0.20	IC374593, IC419706, IC003955, IC526701, IC526660, IC521286 (>0.18 g)	Shillong (0.19 g)
11.	Seed yield per plant (g)	7.76-27.39	IC526660, IC374609, IC335408, IC521286, IC216268 (>17.55 g)	Shillong (16.86 g)
12.	Seed yield (q/ha)	3.00-9.63	IC526660 (=9.63q/ha)	Jaintia (9.35 q/ha)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	110.67-152.33	-	BDS-1650 (110.67 days)
2.	Days to maturity	161.83-188.00	IC526701, IC369449 (<163.00 days)	BDS-1650 (162.80 days)
3.	Plant height (cm)	43.13-152.67	-	Jaintia (152.67 cm)
4.	No. of primary branches	5.00-17.67	IC211608, IC419475, IC334313 (>14.05)	Jaintia (13.73)
5.	100 seed weight (g)	0.15-0.24	-	BDS-1650 (0.24 g)
6.	Seed yield (q/ha)	2.35-9.35	-	Jaintia (9.35 q/ha)

**Table 95. Characterization and evaluation of germplasm lines in Perilla at Ranichauri and Shillong - Hills : Kharif 2012**

S.No.	Accession No.	Shillong					Days to 50% flowering			Days to 80% maturity			Plant height (cm)		
		Early plant vigour	Leaf Colour	Anthocynin coloration of leaf	Flower colour	Leaf trichoms	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean
1	IC003942	2	4	0	1	1	115.33	131.67	<b>123.50</b>	165.47	175.67	<b>170.57</b>	41.13	152.88	<b>97.01</b>
2	IC003955	3	4	0	1	1	118.67	131.33	<b>125.00</b>	167.93	184.67	<b>176.30</b>	44.33	176.00	<b>110.17</b>
3	IC006447	3	4	0	1	1	104.67	149.00	<b>126.83</b>	155.87	172.00	<b>163.93</b>	24.67	151.93	<b>88.30</b>
4	IC010240	2	4	0	1	1	114.33	130.33	<b>122.33</b>	166.37	170.67	<b>168.52</b>	44.47	137.27	<b>90.87</b>
5	IC204185	2	4	0	1	1	106.33	131.00	<b>118.67</b>	157.13	176.00	<b>166.57</b>	42.80	137.17	<b>89.98</b>
6	IC211608	3	4	0	1	1	105.00	131.67	<b>118.33</b>	156.20	176.33	<b>166.27</b>	32.87	132.83	<b>82.85</b>
7	IC216268	2	4	0	1	1	109.33	131.67	<b>120.50</b>	159.93	176.67	<b>168.30</b>	48.87	136.00	<b>92.43</b>
8	IC334313	3	4	0	1	1	114.67	132.00	<b>123.33</b>	165.20	172.67	<b>168.93</b>	49.20	148.03	<b>98.62</b>
9	IC334813	2	4	0	1	1	123.67	135.00	<b>129.33</b>	175.33	173.33	<b>174.33</b>	24.93	129.93	<b>77.43</b>
10	IC335408	3	4	0	1	1	113.33	130.33	<b>121.83</b>	160.93	175.33	<b>168.13</b>	42.87	124.00	<b>83.43</b>
11	IC369449	3	4	0	1	1	100.33	138.33	<b>119.33</b>	153.87	170.67	<b>162.27</b>	26.20	140.50	<b>83.35</b>
12	IC374494	3	4	0	1	1	115.33	130.33	<b>122.83</b>	165.20	171.00	<b>168.10</b>	46.20	92.60	<b>69.40</b>
13	IC374593	3	4	0	1	1	109.33	149.67	<b>129.50</b>	161.13	173.00	<b>167.07</b>	51.13	147.00	<b>99.07</b>
14	IC374609	3	4	0	1	1	107.00	139.00	<b>123.00</b>	163.13	173.00	<b>168.07</b>	35.20	149.45	<b>92.33</b>
15	IC416861	2	4	0	1	1	113.33	131.00	<b>122.17</b>	164.87	172.00	<b>168.43</b>	28.80	124.62	<b>76.71</b>
16	IC419475	3	4	0	1	1	122.00	142.33	<b>132.17</b>	176.27	183.00	<b>179.63</b>	34.80	157.00	<b>95.90</b>
17	IC419477	3	4	0	1	1	124.00	137.33	<b>130.67</b>	175.73	187.33	<b>181.53</b>	28.73	156.73	<b>92.73</b>
18	IC419598	2	4	0	1	1	118.00	129.67	<b>123.83</b>	168.07	183.00	<b>175.53</b>	30.00	148.28	<b>89.14</b>
19	IC419706	3	4	0	1	1	115.67	147.67	<b>131.67</b>	166.47	187.33	<b>176.90</b>	37.73	131.62	<b>84.68</b>
20	IC521284	3	4	0	1	1	100.67	129.00	<b>114.83</b>	151.93	178.00	<b>164.97</b>	37.60	115.87	<b>76.73</b>
21	IC521286	3	4	0	1	1	110.67	131.67	<b>121.17</b>	161.00	174.00	<b>167.50</b>	38.00	146.73	<b>92.37</b>
22	IC521291	2	4	0	1	1	109.67	130.33	<b>120.00</b>	160.33	169.00	<b>164.67</b>	36.87	146.00	<b>91.43</b>
23	IC521292	3	4	0	1	1	113.67	145.67	<b>129.67</b>	164.73	170.67	<b>167.70</b>	45.47	133.60	<b>89.53</b>



S.No.	Accession No.	No. of primary branches			100 seeds weight (g)			Seed yield (q/ha)			Shillong					
		Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Seed yield per plant (g)	No. of inflorescence per plant
1	IC003942	4.73	19.87	<b>12.30</b>	0.25	0.18	<b>0.22</b>	6.42	5.13	<b>5.77</b>	14.80	12.17	10.58	4.95	10.43	73.95
2	IC003955	4.20	11.40	<b>7.80</b>	0.23	0.20	<b>0.22</b>	1.23	7.03	<b>4.13</b>	12.70	10.92	12.48	6.90	11.70	63.89
3	IC006447	4.40	16.13	<b>10.27</b>	0.25	0.14	<b>0.19</b>	2.84	3.00	<b>2.92</b>	11.57	9.60	8.02	3.87	9.89	70.53
4	IC010240	4.67	14.60	<b>9.63</b>	0.26	0.15	<b>0.20</b>	2.47	4.45	<b>3.46</b>	9.73	10.91	9.70	4.43	7.76	97.87
5	IC204185	5.40	12.35	<b>8.88</b>	0.26	0.12	<b>0.19</b>	2.10	5.28	<b>3.69</b>	10.13	10.36	8.93	4.75	10.98	85.20
6	IC211608	5.20	30.13	<b>17.67</b>	0.25	0.16	<b>0.20</b>	2.47	4.55	<b>3.51</b>	12.87	11.00	10.18	5.28	10.61	79.67
7	IC216268	4.87	18.13	<b>11.50</b>	0.23	0.14	<b>0.19</b>	2.47	7.38	<b>4.92</b>	12.59	10.53	7.87	4.23	17.57	101.07
8	IC334313	5.00	23.13	<b>14.07</b>	0.23	0.16	<b>0.20</b>	2.84	5.99	<b>4.41</b>	11.07	10.89	9.41	5.01	10.11	70.00
9	IC334813	4.60	16.40	<b>10.50</b>	0.26	0.16	<b>0.21</b>	1.73	6.57	<b>4.15</b>	10.53	10.59	9.23	5.43	11.57	83.20
10	IC335408	5.00	21.00	<b>13.00</b>	0.26	0.13	<b>0.19</b>	2.35	3.27	<b>2.81</b>	14.19	11.07	9.35	6.07	18.32	80.07
11	IC369449	5.00	12.63	<b>8.82</b>	0.25	0.16	<b>0.20</b>	3.21	6.60	<b>4.91</b>	9.40	9.85	9.10	4.30	14.30	74.70
12	IC374494	4.80	11.67	<b>8.23</b>	0.22	0.16	<b>0.19</b>	3.70	3.96	<b>3.83</b>	11.08	10.11	9.51	3.11	11.54	82.93
13	IC374593	5.00	16.47	<b>10.73</b>	0.23	0.20	<b>0.22</b>	1.73	7.28	<b>4.51</b>	12.30	12.97	12.00	6.41	15.92	66.73
14	IC374609	4.80	13.80	<b>9.30</b>	0.26	0.14	<b>0.20</b>	4.57	8.90	<b>6.73</b>	10.17	11.23	10.27	4.60	19.53	82.27
15	IC416861	4.80	13.93	<b>9.37</b>	0.24	0.13	<b>0.18</b>	3.70	7.00	<b>5.35</b>	10.49	12.17	10.80	5.03	14.07	66.28
16	IC419475	4.73	25.20	<b>14.97</b>	0.22	0.17	<b>0.19</b>	1.48	5.97	<b>3.73</b>	9.37	13.08	12.73	6.69	12.07	88.07
17	IC419477	5.20	18.80	<b>12.00</b>	0.26	0.15	<b>0.20</b>	3.21	6.66	<b>4.94</b>	9.63	13.38	9.73	5.47	15.28	56.47
18	IC419598	5.33	12.67	<b>9.00</b>	0.25	0.17	<b>0.21</b>	3.21	5.60	<b>4.41</b>	10.38	11.78	9.38	5.50	12.62	29.73
19	IC419706	5.20	20.00	<b>12.60</b>	0.21	0.20	<b>0.21</b>	3.58	7.28	<b>5.43</b>	11.91	14.12	10.95	6.98	14.65	81.93
20	IC521284	4.67	13.13	<b>8.90</b>	0.26	0.16	<b>0.21</b>	3.58	6.15	<b>4.87</b>	11.07	11.07	9.37	4.27	11.94	91.47
21	IC521286	5.20	19.40	<b>12.30</b>	0.25	0.19	<b>0.22</b>	3.09	4.22	<b>3.65</b>	16.76	10.66	9.26	4.65	17.99	77.80
22	IC521291	5.13	17.27	<b>11.20</b>	0.24	0.15	<b>0.20</b>	1.60	5.10	<b>3.35</b>	11.73	9.55	7.90	5.03	11.01	84.47
23	IC521292	5.13	15.00	<b>10.07</b>	0.26	0.16	<b>0.21</b>	1.23	5.55	<b>3.39</b>	10.73	11.47	10.03	5.17	9.01	72.53

S.No.	Accession No.	Shillong					Days to 50% flowering			Days to 80% maturity			Plant height (cm)		
		Early plant vigour	Leaf Colour	Anthocyanin coloration of leaf	Flower colour	Leaf trichoms	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean
24	IC526660	2	4	0	1	1	114.67	134.33	<b>124.50</b>	166.40	185.00	<b>175.70</b>	49.33	118.93	<b>84.13</b>
25	IC526701	2	4	0	1	1	105.33	131.00	<b>118.17</b>	156.33	167.33	<b>161.83</b>	46.33	108.80	<b>77.57</b>
<b>Mean for check variety</b>															
	<b>BDS-1650 (C)</b>	-	-	-	-	-	<b>110.67</b>	-	<b>110.67</b>	<b>162.80</b>	-	<b>162.80</b>	<b>43.13</b>	-	<b>43.13</b>
	<b>Jaintia (C)</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	-	<b>152.33</b>	<b>152.33</b>	-	<b>169.67</b>	<b>169.67</b>	-	<b>152.67</b>	<b>152.67</b>
	<b>Shillong (C)</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	-	<b>129.67</b>	<b>129.67</b>	-	<b>188.00</b>	<b>188.00</b>	-	<b>131.87</b>	<b>131.87</b>
	<b>Minimum</b>	<b>2</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>100.33</b>	<b>129.00</b>	<b>110.67</b>	<b>151.93</b>	<b>167.33</b>	<b>161.83</b>	<b>24.67</b>	<b>92.60</b>	<b>43.13</b>
	<b>Maximum</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>124.00</b>	<b>152.33</b>	<b>152.33</b>	<b>176.27</b>	<b>188.00</b>	<b>188.00</b>	<b>51.13</b>	<b>176.00</b>	<b>152.67</b>
	<b>Mean</b>	<b>3</b>	<b>4</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>112.14</b>	<b>135.68</b>	<b>124.49</b>	<b>163.41</b>	<b>176.12</b>	<b>170.08</b>	<b>38.91</b>	<b>138.09</b>	<b>90.49</b>
	<b>CD(0.05)</b>						<b>2.11</b>	<b>5.96</b>	-	<b>2.38</b>	<b>9.08</b>	-	<b>16.72</b>	<b>31.80</b>	-
	<b>CV(%) Error</b>						<b>1.18</b>	<b>2.75</b>	-	<b>0.91</b>	<b>3.22</b>	-	<b>26.85</b>	<b>14.39</b>	-
	<b>CV(%) Phenotypic</b>						<b>5.68</b>	<b>5.32</b>	-	<b>3.88</b>	<b>3.53</b>	-	<b>20.87</b>	<b>12.45</b>	-

**Qualitative characters :** *Early plant vigour* : 1-Poor, 2-Good, 3-Very good; *Leaf colour* : 1-Pale white, 2-Purple green, 3-Greenish white, 4-Green, 99- Others; *Anthocyanin coloration of leaf* : 0-Absent, 1-Present; *Leaf trichomes* : 0-Absent, 1-Present; *Flower colour* : 1-White, 2-Purple, 3-Violet, 99- Others

S.No.	Accession No.	No. of primary branches			100 seeds weight (g)			Seed yield (q/ha)			Shillong					
		Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Seed yield per plant (g)	No. of inflorescence per plant
24	IC526660	4.33	23.04	<b>13.69</b>	0.25	0.19	<b>0.22</b>	3.21	9.63	<b>6.42</b>	10.24	14.28	11.41	7.09	27.39	87.67
25	IC526701	5.07	15.30	<b>10.18</b>	0.25	0.20	<b>0.23</b>	3.70	5.75	<b>4.73</b>	13.82	12.17	11.17	5.54	15.19	52.20
<b>Mean for check variety</b>																
	<b>BDS-1650 (C)</b>	<b>5.00</b>	-	<b>5.00</b>	<b>0.24</b>	-	<b>0.24</b>	<b>2.35</b>	-	<b>2.35</b>	-	-	-	-	-	-
	<b>Jaintia</b>	-	<b>13.73</b>	<b>13.73</b>	-	<b>0.15</b>	<b>0.15</b>	-	<b>9.35</b>	<b>9.35</b>	<b>9.47</b>	<b>11.47</b>	<b>9.17</b>	<b>5.70</b>	<b>16.37</b>	<b>82.73</b>
	<b>Shillong</b>	-	<b>13.20</b>	<b>13.20</b>	-	<b>0.19</b>	<b>0.19</b>	-	<b>6.26</b>	<b>6.26</b>	<b>11.73</b>	<b>10.37</b>	<b>8.23</b>	<b>4.88</b>	<b>16.86</b>	<b>96.73</b>
	<b>Minimum</b>	<b>4.20</b>	<b>11.40</b>	<b>5.00</b>	<b>0.21</b>	<b>0.12</b>	<b>0.15</b>	<b>1.23</b>	<b>3.00</b>	<b>2.35</b>	<b>9.37</b>	<b>9.55</b>	<b>7.87</b>	<b>3.11</b>	<b>7.76</b>	<b>29.73</b>
	<b>Maximum</b>	<b>5.40</b>	<b>30.13</b>	<b>17.67</b>	<b>0.26</b>	<b>0.20</b>	<b>0.24</b>	<b>6.42</b>	<b>9.63</b>	<b>9.35</b>	<b>16.76</b>	<b>14.28</b>	<b>12.73</b>	<b>7.09</b>	<b>27.39</b>	<b>101.07</b>
	<b>Mean</b>	<b>4.90</b>	<b>16.98</b>	<b>11.03</b>	<b>0.24</b>	<b>0.16</b>	<b>0.20</b>	<b>2.85</b>	<b>6.07</b>	<b>4.57</b>	<b>11.50</b>	<b>11.40</b>	<b>9.88</b>	<b>5.23</b>	<b>13.88</b>	<b>77.04</b>
	<b>CD(0.05)</b>	<b>0.59</b>	<b>7.00</b>	-	<b>0.01</b>	<b>0.23</b>	-	<b>0.48</b>	<b>3.06</b>	-	<b>2.42</b>	<b>1.82</b>	<b>1.81</b>	<b>1.08</b>	<b>9.02</b>	<b>44.07</b>
	<b>CV(%) Error</b>	<b>7.53</b>	<b>25.77</b>	-	<b>2.20</b>	<b>8.97</b>	-	<b>10.52</b>	<b>31.47</b>	-	<b>13.13</b>	<b>9.98</b>	<b>11.42</b>	<b>12.95</b>	<b>40.62</b>	<b>35.75</b>
	<b>CV(%) Phenotypic</b>	<b>6.23</b>	<b>27.10</b>	-	<b>5.75</b>	<b>14.36</b>	-	<b>39.83</b>	<b>27.40</b>	-	<b>15.80</b>	<b>11.26</b>	<b>13.21</b>	<b>18.78</b>	<b>29.76</b>	<b>19.61</b>

## **3.2 PLAINS**

Germplasm evaluation was planned to be conducted on grain amaranth, rice bean, faba bean, winged bean, kalingada, kankoda, jatropha, tumba and simarouba. The germplasm accessions were evaluated in augmented design with standard check cultivars.

### **3.2.1 Grain Amaranth**

#### **3.2.1.1 Rabi 2011-12**

Germplasm screening nursery consisting of 100 lines along with four checks was planned to be evaluated at eight locations. The results were received from seven locations. The checks used were GA-1 and GA-2, BGA-2 and Suvarna at all locations. The list of promising accessions for all characters has been presented in Table 96 and statistical parameters for all the characters of different locations have been presented in Table 97.

A set of 100 accessions and four checks were evaluated for twelve quantitative and twelve qualitative characters (Table 98) at S.K. Nagar. Accession SKGPA-73 (46.00 g/plant) was observed highest yielder. The maximum plant height (182.24 cm) was observed in the check GA-2. The maximum no. of branches was recorded in accession SKGPA-96 (6.00) followed by IC035642 (5.00). The longest inflorescence (89.80 cm) was recorded in the check GA-1. Accession SKGPA-66 (46.00 days) was earliest in flowering while IC120649 was early in maturing (117.00 days).

A total of 50 accessions and four checks were also evaluated at OUA&T, Bhubaneswar for seven quantitative characters. Accessions IC035642 (39.00 days) were earliest in flowering while IC035651 was early in maturity (81.00 days). The entry IC035701 (8.71 g) followed by IC095371 (8.58 g) had the highest test weight. The highest grain yield per plant was observed in IC120621 (10.40 g). The highest seed yield was observed in accession IC120621 (19.17 q/ha) followed by IC035651 (18.75 q/ha).

A set of 100 genotypes and four checks were screened for six yield related attributes at SKRAU, Mandor. Accessions IC035615 (36.00 days) was found earlier to the check variety in flowering and SKGPA-68 (124.00 days) was

earliest for maturity. The maximum height (175.80 cm) was found in the accession IC021803-A followed by IC021938 (156.40 cm), and SKGPA-68 (34.00 g) was found superior to the check in yield per plant (34.00 g). The highest test weight (7.94 g) was observed in the genotype SKGPA-72.

A set of 56 genotypes and four check varieties were screened for six yield related attributes at NDUA&T, Faizabad. Accessions IC021803-A (35.00 days) were found earlier to the check variety in flowering while IC035665 was early in maturing (104.00 days). The maximum height (117.00 cm) was found in the accession IC095556 followed by IC120670 (110.60 cm). The IC095498 was superior to the check for grain yield per plant (16.00 g). The highest inflorescence length (46.00 cm) was found in the accession IC035742.

A total of 100 genotypes were also evaluated at Ranchi for ten yield attributes. IC095382-B (57.00 days) was earliest in flowering and IC035661 was found superior to check variety in maturity (125.00 days). Maximum plant height (98.30 cm) was observed in check variety GA-2 while highest seed yield (34.00 g/plant) was observed in genotype IC094661. The highest inflorescence length (40.00 cm) was noted in the accession SKGPA-98.

At Rahuri, a set of 100 genotypes and four checks were evaluated for eleven quantitative characters. The entry IC021937 (106.80 cm) was superior as compared to check variety for plant height. IC035415 (73.00 days) was earliest in flowering and SKGPA-77 (116.00 days) was found superior to the check variety in maturity. The highest yield per plant (41.00 g) was observed in the genotype IC094654.

A total of 100 accessions and four checks were also evaluated at NBPGR, New Delhi for twelve quantitative characters and nine qualitative characters (Table 97). Accessions IC035742 (63.00 days) was earliest in flowering while SKGPA-101 was earliest in maturity (155.00 days). The longest inflorescence length was found in SKGPA-91 (70.00cm) followed by IC035661 (64.80 cm). The entry SKGPA-107 (8.68 g) followed by SKGPA-105 (7.54 g) had the highest test weight. The highest grain yield per plant was observed in IC035404 (14.45 g).

The performance of entries based on adjusted value and average over the locations has been summarized in the following paragraphs:

Significant differences were observed among the accessions for seed yield per plant at seven centres. Seed yield per plant (g) was low at Bhubaneswar (5.97 g) and high at Ranchi (21.47 g). The genotype SKGPA-68 (24.00 g) was the highest seed yielder followed by genotype SKGPA-91 (23.63 g).

Plant height was the highest at Mandor (114.12 cm) and lowest at Ranchi (46.10 cm) on the basis of average over the seven locations. The genotype SKGPA-71 had the highest plant height (154.51 cm).

Flowering time showed considerable variation among the locations as well as among the accessions within a location. The mean flowering time was the lowest (44.58 days) at Faizabad while it was the longest (92.97 days) at Delhi. The variety SKGPA-95 showed consistency for early flowering over the locations and ranked first (46.00 days) based on the overall performance.

Maturity period was the earliest at Bhubaneswar (89.83 days) followed by Faizabad (112.09 days). The entry SKGPA-95 (120.00 days) was the earliest maturing line based on seven locations.

The length of inflorescence of the accessions was the highest at S.K. Nagar (54.98 cm) and lowest at Ranchi (23.88 cm). Based on the average over seven locations, the entry SKGPA-71 had the longest inflorescence (58.65 cm).

Test weight expressed in terms of weight of g/10ml seed recorded at five centres showed that it was the highest at Ranchi (9.67 g/10ml) and low at Mandor (6.99 g/10ml). Based on the average over five locations, the entry SKGPA-107 showed the highest test weight as compare to check variety GA-1 (9.09 g/10ml).

### **3.2.1.2 Kharif 2012**

Germplasm screening nursery consisting of 100 lines was planned to be evaluated at two locations. The results were received from both the centres. The list of promising accessions for all characters has been presented in Table 99 and statistical parameters for all the characters of different locations have been presented in Table 100.

A set of 100 accessions along with four checks were evaluated for thirteen quantitative and eleven qualitative characters (Table 100) at UAS, Bangalore.

Accession SKGPA-77 (60.00 g/plant) was observed highest yielder. The maximum plant height (165.00 cm) was observed in the genotype SKGPA-61 and SKGPA-77. Accession IC035635 (31.00 days) was earliest in flowering and IC095382-B in maturity (70.00 days).

A total of 100 accessions with four checks were also evaluated at TNAU, Mettupalayam for five quantitative characters. Accession IC095383 (37.00 days) was earliest in flowering while SKGPA-103 was earliest in maturity (63.00 days). The entry SKGPA-80 (227.00 cm) followed by SKGPA-81 (215.00 cm) had the highest plant height. The highest grain yield per plant was observed in SKGPA-65 (23.00 g).

The performance of entries based on adjusted value and average over the locations has been summarized in the following paragraphs:

Significant differences were observed among the accessions for seed yield per plant at two centres. Seed yield per plant (g) was low at Mettupalayam (13.33 g) and high at Bangalore (20.42 g). The genotype KBGA-2 (40.00 g) was the highest seed yielder followed by genotype SKGPA-77 (39.00 g).

Plant height was the highest at Mettupalayam (167.80 cm) and lowest at Bangalore (120.60 cm) on the basis of average over the two locations. The genotype IC021937 had the highest plant height (193.00 cm).

The mean flowering time was the lowest (45.29 days) at Bangalore while it was the longest (50.71 days) at Mettupalayam. The variety IC035635 showed consistency for early flowering over the locations and ranked first (39.50 days) based on the overall performance.

Maturity period was the earliest at Mettupalayam (80.35 days) followed by Bangalore (86.94 days). The entry SKGPA-103 (68.50 days) was the earliest maturing line based on two locations.

### **3.2.2 Rice bean (*Vigna umbellata*)**

In rice bean 50 genotypes along with four checks supplied by NBPGR, Shimla were planned to be evaluated at six locations viz. PAU Ludhiana; OUA&T Bhubaneswar; UAS, Bangalore; NBPGR, New Delhi; MPKV, Rahuri and TNAU,

Mettupalayam. The list of promising accessions for all characters has been presented in Table 101 and statistical parameters for all the characters have been presented in Table 102. The qualitative characters were recorded at three locations Bangalore, Delhi and Rahuri (Table 103).

A total of 50 genotypes and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were screened for three characters in Augmented Design at UAS, Bangalore. Genotypes IC520892 flowered in 36.00 days early as compared to check variety RBL-1 (41.40 days). The accessions IC520892 (73.00 days) was superior to check variety RBL-1 (76.60 days) in maturity. The highest seed yield per plant (14.20 g) was recorded in the genotypes IC018183.

A total of 50 accessions and four checks were screened for ten characters in Augmented Design at MPKV Rahuri. Entry IC018171 (45.00 days) was earliest in flowering while IC002074 was earliest in maturity (92.00 days). The maximum plant height (146.60 cm) was observed in EC098453 followed by EC037228 (145.50 cm). The genotype IC016342 (11.70) had the highest number of seeds per pod. The longest pod (9.73cm) was observed in the genotypes IC176563. The top seed yielder genotype was EC018563 (50.50 g/plant).

A total of 50 accessions and four checks were screened in Augmented Design at PAU Ludhiana. Entry EC018556 (51.00 days) was earliest in flowering while EC018563 was earliest in maturity (83.00 days). The maximum plant height (147.50 cm) was observed in EC087989 followed by IC521068 (140.00 cm). The genotype IC521061 (7.80) had the highest number of seeds per pod. The longest pod (8.00 cm) was observed in the genotypes EC016136 & IC248733. The top seed yielder genotype was EC114076 (19.58 q/ha).

A total of 50 accessions and four checks were screened for eight characters in Augmented Design at OUAT, Bhubaneswar. Entry EC000262 (49.00 days) was earliest in flowering while IC002074 was earliest in maturity (94.00 days). The maximum plant height (83.40cm) was observed in IC176563 followed by RBL-6 (75.46 cm). The genotype EC000262 (8.00) had the highest number of seeds per pod. The longest pod (9.05 cm) was observed in the genotypes IC521144. The top seed yielder genotype was IC016342 (7.92 q/ha).



A total of 50 accessions and four checks were screened for seven characters in Augmented Design at FCRI, Mettupalayam. No entry was earlier to check variety in flowering while EC000262 was earliest in maturity (82.00 days). The maximum plant height (71.00 cm) was observed in IC026973 followed by IC176563 (70.00 cm). The genotype IC521144 (54.00) had the highest number of pods per plant. The highest no. of primary branches (5.50) was observed in the genotypes IC176563. The top seed yielder genotype was IC521081 (9.10 g/plant).

A total of 50 accessions and four checks were screened for twelve characters in Augmented Design at NBPGR, New Delhi. The entry EC001843 (60.00 days) was earlier to check variety in flowering while IC016751 was earliest in maturity (75.00 days). The maximum plant height (123.60 cm) was observed in EC018181 followed by EC037228 (120.20 cm). The genotype EC012436 (219.00) had the highest number of pods per plant. The top seed yielder genotype was EC012436 (78.00 g/plant).

The performance of the entries based on average over the six locations has been given as below.

The mean flowering time was the earliest at Bangalore (41.69 days), while it was very late at Delhi (69.09 days). On the basis of average over six locations, the entry IC018171 (49.80 days) was superior to the check varieties in flowering.

Maturity period was also of same trend as flowering, the earliest at Bangalore (79.93 days) and delayed at Delhi (104.02 days). There was a difference of about 25 days between Bangalore and Delhi. Based on the average over six locations entries EC018563 (88.00 days) was the earliest in maturity.

Mean plant height was highest at Ludhiana (110.92 cm) and very less at Mettupalayam (50.17 cm). Based on the average over the six locations the entry EC018181 (97.03 cm) was found superior to check variety.

The grain yield per plant recorded at four locations showed that Rahuri centre had the highest seed yield per plant (22.00 g) followed by Delhi (15.58 g). Based on average over the two locations, the entry IC016767 (28.73 g) had the highest grain yield per plant.

The number of seeds per pod recorded at four locations revealed that it was highest at Rahuri (9.45) followed by Delhi (7.58). IC016342 (8.55) had highest number of seeds per pod on the basis of four locations.

The mean pod length was recorded at four locations. It was highest at Rahuri (8.42 cm) followed by Delhi (8.33 cm). Based on the average over four locations the entry IC521061 (8.31 cm) had the longest pod length.

100 seed weight was observed at four locations. It showed that highest seed weight was at Bhubaneswar (6.13 g) followed by Rahuri (6.09 g). Based on average over four locations, the entry EC097882 (8.00 g) was superior to check variety.

### **3.2.3 Fababean (*Vicia faba*)**

Germplasm screening nursery was evaluated at three locations viz. Hisar, New Delhi and Faizabad. The results were received from all the locations. The checks used were PRT-7, PRT-12 and Vikrant and the list of promising genotypes of the all centres has been presented in Table 104 and statistical parameters for all the characters of different locations have been presented in Table 105.

At CCS HAU, Hisar, a set of 51 including checks was evaluated for ten quantitative and nine qualitative characters. The genotype IC003293 (51.00 days) were earlier in flowering while HB, (140.00 days) for maturity. Maximum plant height (100.20 cm) was observed in the genotype EC243586 followed by EC243584 (100.10 cm). The entry HB-17 (19.00) had the highest number of cluster per plant and number of pods per plant (74.00). The longest pod (6.60 cm) was recorded in EC243586. The entry EC354685 (32.50 g) had the highest 100 seed weight while the genotype HB-17 (49.80 g) had the highest seed yield per plant.

A total of 53 genotypes including three checks were evaluated in Augmented Design at NBPGR, New Delhi for twelve quantitative and five qualitative characters (Table-105). Early flowering was observed (77.00 days) in the genotype HB-06 whereas early maturity was observed (143.00 days) in the genotype HB-17 and EC329605. Highest pods per plant (100.00) were observed in the genotype EC005873. Maximum plant height (86.80 cm) was recorded in the genotype EC005873. The entry EC243626 had the highest number of seeds

per pod (3.80). The maximum seed yield (44.56 q/ha) was produced by the genotype EC243626.

At Faizabad, a set of 53 including checks was evaluated for eight quantitative characters. The genotype IC263634 (54.00 days) was earlier in flowering, while EC243764 (140.0 days) was earlier in maturity. Maximum plant height (105.00 cm) was observed in the genotype EC354685. The entries IC243036 (5.80) had the highest number of branches per plant. The genotype HB-28 (32.10 g) had the highest 100 seed weight while the genotype IC361485 (32.00 g/plant) had the highest seed yield.

The performance of the entries based on average over the locations has been given as below.

The mean flowering time was the earliest at Hisar (62.92 days), while it was late at Delhi (79.86 days) and Faizabad (64.63). On the basis of average over three locations, no entry was superior to the check varieties in flowering.

Maturity period was the earliest at Delhi (147.33 days) and delayed at Hisar (155.47 days). There was a difference of about 8 days between Hisar and Delhi. Based on the average over three locations entry EC329691 (115.33 days) was the earliest in maturity.

Mean plant height was highest at Faizabad (94.69 cm) and very low at Delhi (70.77 cm). Based on the average over the locations no entry was found superior to check variety.

The number of primary branches was highest at Hisar (4.63) followed by Delhi (4.56). Based on the average over the three locations the entry HB-17 (5.33) had the highest number of branches.

The grain yield per plant recorded at three locations showed that Delhi centre had the very highest seed yield per plant (80.54 g) followed by Hisar (23.70 g). Based on average over the three locations, the entry EC991665 (84.60 g) had the highest grain yield per plant.

The number of seeds per pod recorded at three locations revealed that it was highest at Delhi (48.75) followed by Hisar (36.31). EC329662 (3.33) had highest number of seeds per pod on the basis of three locations.

100 seed weight was observed at three locations. It showed that highest seed weight was at Delhi (32.12 g) followed by Hisar (27.96 g). Based on average over three locations, the entry EC329605 (39.50 g) was superior to check variety.

### **3.2.4 Winged bean (*Psophocarpus tetragonlogus*)**

Germplasm screening nursery was evaluated at two locations at Akola and Ranchi. List of promising genotypes of the centres has been presented in Table 107 and statistical parameters for all the characters of different locations have been presented in Table 108.

At NBPGR RS, Akola, a set of 101 accessions was evaluated with one check AKWB-1 for eight quantitative and 13 qualitative characters. The genotype IC015018 was observed superior for flowering (80.00 days). Maximum pod length (17.70 cm) was observed in the genotype IC178265, while the genotype IC178269 (33.15 g) had the highest seed weight.

A set of 101 genotype alongwith one check were evaluated at BAU, Ranchi for nine characters. Early flowering (61.00 days) was observed in genotype IC015018 while IC038821-2 was early maturing (145.00 days). The maximum no of pods per plant (21.30 cm) was recorded in the genotype IC178292 while no entry was superior to check variety for seed yield.

The performance of the entries based on average over the locations has been given as below.

The mean flowering time was earliest at Ranchi (84.00 days) and delayed at Akola (86.97 days). On the basis of average over two locations, the entry IC015018 (70.50 days) was superior to the check variety in flowering.

The mean maturity time was earliest at Ranchi (153.78 days) and delayed at Akola (154.03 days). On the basis of average over two locations, IC178279 (141.50 days) was superior to the check variety in maturity.

The number of seeds per pod recorded at two locations revealed that it was almost same at both the centres at Akola (10.24) and Ranchi (10.27). IC026940-A-2 (13.35) had highest number of seeds per pod on the basis of two locations.

100 seed weight was observed at two locations. It showed that highest seed weight was at Akola (23.96 g) and low at Ranchi (8.70 g). Based on average over two locations, the entry IC178269 (21.38 g) was superior to check variety.

### **3.2.5 Kalingada**

Germplasm screening nursery consisting of 20 genotypes supplied by SDAU, S.K. Nagar and SKRA, Mandor was evaluated at three locations viz. SDAU, S.K. Nagar, CAZRI, Jaisalmer and SKRAU, Mandor. The data were received from three centres. The check used was GK-1. The list of promising entries has been presented in Table 109 and statistical parameters for all the characters of different locations have been presented in Table 110.

A total of 20 genotypes with one check were evaluated at SKRAU, Mandor for eight characters. The seed yield (q/ha) was recorded in genotype SKGPK-26 (1.41 q/ha) followed by SKGPK-27 (1.40 q/ha). The entry MGPK-10-5 had the highest number of fruit per plant (7.40). The entry SKGPK-25 (9.67 cm) had the highest fruit diameter. The 100 seed weight (g) was recorded highest in the genotype SKGPK-27 (5.43 g).

At SDAU, S.K. Nagar, a set of 20 genotypes with one check were evaluated for twelve characters. The test weight (g) was highest in the genotypes SKGPK-23 (7.36 g). Large fruit length (19.10 cm) was recorded in the genotype MGPK-10-3, while the seed yield was highest in the genotype SKGPK-34 (0.44 q/ha) and highest fruit yield was recorded in genotype SKGPK-29 (35.83 q/ha).

A total of 20 genotypes with one check were evaluated at CAZRI, Jaisalmer for six characters. The seed yield (q/ha) was recorded in genotype SKGPK-22 (6.30 q/ha) followed by SKGPK-34 (6.00 q/ha). The entry SKGPK-29 had the highest number of fruit per plant (8.60). The 100 seed weight (g) was recorded highest in the genotype SKGPK-33 (8.11g).

The performance of the entries based on average over the locations has been given as below.

Seed yield levels were highest at Jaisalmer (4.01 q/ha) and lowest at S.K. Nagar (0.26 q/ha). Based on three locations the entry, SKGPK-34 was the highest yielder (2.51 q/ha).

Fruit yield was the highest at Jaisalmer (98.04 q/ha) and lowest at S.K. Nagar (17.37 q/ha) centre. Based on average SKGPK-34 (67.06 q/ha) was the highest fruit yielder.

Test weight recorded at three centres showed that it was the highest at Jaisalmer (7.03 g) and low at Mandor (4.30 g). Based on the average over three locations, the entry MGPK-10-3 (6.22 g) showed the highest test weight.

### **3.2.6 Kankoda**

At MPKV, Rahuri, a set of 10 genotypes without check were evaluated for seven characters. The promising genotypes and statistical parameters for all the characters have been presented in Tables 111 and 112, respectively. The earliness in first picking was observed in the genotype RMFG-39 (80.00 days). The genotype RMFG-39 had the highest total yield per plant (46 g) while the genotype RMFG-37 had the highest fruit weight (23.40 g).

### **3.2.7 Tumba**

Germplasm consisting of 34 accessions without check were maintained at SKRAU, Mandor centre. The list of promising genotypes for all the characters and data have been presented in Tables 113 and 114, respectively.

The entry IC281126 (89.00 g) had the highest seed yield per plant followed by IC262408 (87.50g). The maximum number of fruit per plant was recorded in the genotypes IC373506 (18.00). The entry IC281174 (3750 g) had the highest fruit yield per plant. The highest diameter of fruit was recorded in the genotype IC370485 (7.90 cm). The entry IC281157 (3.47 g) had the maximum 100 seed weight (g).

### **3.2.8 Jatropha**

Jatropha accessions consisting of 158 genotypes along with one check at Hisar were maintained and evaluated. The list of promising genotypes for various characters at different locations has been presented in Table 115.

A set of 159 genotypes including check was evaluated at Hisar. Statistical parameters for all the characters have been presented in Table 116. The maximum plant height (520.50 cm) was recorded in the entry JH-14. The entry JH-109 (30.00) had the highest number of branches. The highest seed yield per plant was 730.50 g in genotype JH-1 and longest seed size (63.90 mm) in genotype JH-1.

### **3.2.9 Simarouba**

Simarouba genotypes were planned for maintaining the germplasm at two centres. The list of promising genotypes for all the characters has been presented in Table 117.

A set of 5 genotypes was maintained at SKRAU, Mandor. The Plant No. 3 (78.00 cm) had the highest stem girth. The maximum seed yield per plant was observed in Plant No. 4 (4.80 kg). The highest test weight 106.80 g was observed in Plant No. 1 (Table 118).

A set of 36 female genotypes along with 18 male genotypes was maintained at MPKV Rahuri. The maximum seed yield per plant was observed in genotype PS-2003-45 (7.64 kg) and genotype PS-2003-29 (196.00 g) had the highest test weight (Tables 119a and 119b).

**Table 96. Promising lines in grain amaranth germplasm (Rabi, 2011-12) for various characters at different locations (Plains)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Bhubaneswar (Accessions 50)</b>				
1.	Days to 50% flowering	39.00-63.00	IC035642, IC035651, IC035635, IC120670, IC081698-B, IC094654, IC095248, IC095251, IC120689, IC035742 (< 44.00 days)	BGA-2 (48.20 days)
2.	Days to maturity	81.00-102.00	IC035651, IC081698-B, IC094654, IC120670, IC035635, IC095248, IC095251, IC035742, IC120689, IC035735, IC095389, IC095391 (<86.00 days)	BGA-2 (89.00 days)
3.	Plant height (cm)	78.40-127.20	IC035711 (>127.00 cm)	GA-2 (114.64 cm)
3.	Inflorescence length (cm) (Obs.)	31.40-62.80	IC120621, IC095383, IC095556 (> 56.50 cm)	BGA-2 (50.18 cm)
4.	Inflorescence length (cm) (Adj.)	33.78-61.33	IC120621, IC095556, IC095383, IC035719, IC035651, IC094654, IC095204 (> 51.75 cm)	BGA-2 (50.18 cm)
5.	Seed yield per plant (g)	3.20-10.40	IC120621, IC035651, IC035716 (>10.18 g)	BGA-2 (C)910.00 g)
6.	Seed weight (g/10 ml)	7.15-8.71	IC035701, IC095371, IC095382-B (>8.50 g/10ml)	BGA-2 (C)(8.08 g/10 ml)
7.	Seed yield (q/ha)	7.08-19.17	IC120621, IC035651 ,IC035716 (>17.48 (q/ha)	BGA-2 (16.92 q/ha)
<b>Delhi (Accessions 100)</b>				
1.	Days to 50% flowering	63.00-118.00	IC35742, IC95406, IC94661, SKGPA-94, SKGPA-75, IC94654, IC95244, IC95251, SKGPA-77, SKGPA-78, SKGPA-98, IC95204, IC95248, SKGPA-99, SKGPA-79, SKGPA-92, SKGPA-107, SKGPA-110, IC120689, SKGPA-106, SKGPA-67, SKGPA-96, IC120668, IC95391, SKGPA-100, SKGPA-109, IC120670, IC432086, SKGPA-91, IC120649, IC35713, SKGPA-63, SKGPA-65, SKGPA-86, SKGPA-82, SKGPA-85, SKGPA-102, SKGPA-62, IC35702, IC95430 (< 92.00 days)	Suvarna (91.80 Days)
2.	Days to maturity	155.00-179.00	SKGPA-101, IC120621, IC35404, IC35702, SKGPA-106, SKGPA-107, SKGPA-62, SKGPA-75, IC94654, SKGPA-102, SKGPA-74, SKGPA-82, SKGPA-92, IC35701, IC35713, SKGPA-105, SKGPA-65, SKGPA-66,	GA-1 (163.00 days)



S. No.	Characters	Range	Promising lines	Value of best check
			SKGPA-77, IC21938, IC32195, IC35711, SKGPA-86, IC35415, IC35716, IC95244, IC95516, SKGPA-64, SKGPA-79, SKGPA-85, SKGPA-89, SKGPA-94, SKGPA-97, IC120670, IC21937, IC35717, IC81898-B, IC94661, IC95382-B, SKGPA-110, SKGPA-81, IC32186, IC95510, IC95556, SKGPA-78, SKGPA-96 (< 164.00 days)	
3.	Plant height (cm)	20.00-148.20	IC35651, IC35635, IC35642, IC35404 (>120.98 cm)	Suvarna (119.08 cm)
4.	No. of primary branches per plant	1.00-15.00	SKGPA-91 (=15.00)	GA-1 (8.50)
5.	Leaf length (cm)	6.90-17.24	IC32190, IC35735, IC35642, IC35719 (> 16.38 cm)	GA-2 (16.19 cm)
6.	Petiole length (cm)	2.25-13.82	IC35642, IC35635, IC35651, IC32195, IC32193, IC32190, IC21803-A, IC35633, IC95371, IC35404, IC35665, IC35719, IC21937 (> 9.85 cm)	GA-2 (9.68 cm)
7.	Inflorescence length (cm)	9.50-70.00	SKGPA-91 ,IC35661, IC35615 (>62.88 cm)	Suvarna (62.54 cm)
8.	Lateral spikelet length (cm)	2.80-27.92	IC032186, SKGPA-67, SKGPA-91 (>26.98 cm)	GA-2 (17.08 cm)
9.	Stem thickness (cm)	7.78-28.14	SKGPA-98, SKGPA-74, SKGPA-81, SKGPA-79, IC35642, SKGPA-87, IC95510, IC35651 (>20.00 cm)	GA-2 (19.99 cm)
10.	Seed yield per plant (g)	0.70-41.50	SKGPA-66, SKGPA-74, SKGPA-91 (>39.98 g)	GA-1 (27.08 g)
11.	Seed yield (q/ha)	0.13-14.46	IC35404, IC35635, IC35661, IC32195, IC21937, IC432086, IC21803-A, IC32186, IC32193, IC35651, IC35633, IC21938 (>9.60 q/ha)	Suvarna (5.71 q/ha)
12.	1000 seed weight (g)	5.32-8.68	SKGPA-107, SKGPA-105, IC120689, SKGPA-96, IC95248, IC95371, IC95382-B (> 7.15 g)	GA-2 (6.23 g)
<b>Faizabad (Accessions 56)</b>				
1.	Days to 50% flowering	35.00-55.00	IC021803-A, IC120670, IC035633, IC095248, IC120689, IC032195, IC035635, IC035661, IC081698-B, IC095244, IC095382-B, IC095389, IC021937, IC021938, IC035665, IC035742, IC095391, IC032186, IC035404, IC035701, IC035702, IC035735, IC095406, IC432086, IC095204, IC095251, IC095430, SKGPA-61 (< 44.00 days)	GA-1 (43.86 days)

S. No.	Characters	Range	Promising lines	Value of best check
2.	Days to maturity	104.00-135.00	IC035665, IC035716, IC035719, IC035615, IC035642, IC095371, IC095406, IC032195, IC035415, IC035651, IC035735, IC095248, IC095251, IC095430, IC095516, IC035661, IC035702, IC035713, IC035717, IC095382-B, IC120670, SKGPA-67, IC021937, IC021938, IC095383, SKGPA-63, IC032186, IC035404, IC035633, IC035701, IC035711, IC095389, IC095510, IC095556, IC120668, SKGPA-64, SKGPA-6 (113.00 days)	GA-2(112.57 days)
3.	Plant height (cm)	71.30-117.00	IC095556, IC120670, IC095251, SKGPA-61, IC094661, IC095382-B, IC095516, IC035633, IC035615, IC035661, IC035415, IC035716, IC095371, IC094654, IC035635, IC095248, IC035638, IC432086, SKGPA-62, IC035642, IC120689 (>94.98 cm)	GA-1 (94.43 cm)
4.	Inflorescence length (cm)	30.00-46.00	IC035742, IC081698-B, IC032186, IC035638, IC035661, IC120670, IC035651, IC094654, IC035633, IC095516, IC035719, IC095389, SKGPA-61, IC035717, IC095248, IC032190, IC035716, IC095251, SKGPA-63, IC095556, IC021938, IC035415, IC035701, IC035713, IC095204, IC095391, IC095430, IC095498, IC120689, SKGPA-67 (>37.98 cm)	GA-1 (37.83 cm)
5.	No. of primary branches per plant	6.00-16.00	IC035404, IC095371, IC094661, IC095251, IC120649, IC032195, IC035651, IC035661, IC035701, IC094654, IC095204, IC095516, IC120621, IC120668, SKGPA-61 (>111.00)	GA-2(12.00)
6.	Seed yield per plant (g)	8.00-16.00	IC095498, SKGPA-67, IC032190, IC035638, IC035651, IC095510, SKGPA-65, IC035415, IC032193, IC035642, SKGPA-62 (> 13.98 g)	Suvarna (13.82 g)
<b>Mandor (Accessions 100)</b>				
1.	Days to 50% flowering - Obs.	36.00-64.18	IC035615, SKGPA-103, IC035635, IC035642, SKGPA-68, SKGPA-92, SKGPA-78, SKGPA-81, SKGPA-100, SKGPA-106, IC021937, IC035742, IC094654, SKGPA-75, SKGPA-77, SKGPA-86, SKGPA-99, IC032186, IC035651, IC035735, IC095244, IC120689, IC432086, IC035717, IC035719, IC081698-B, IC094661, IC095251, IC095383, IC095430, IC120649, IC120670, SKGPA-66, SKGPA-79, SKGPA-82, SKGPA-89, SKGPA-97, IC021803-A, IC021938, IC032193, IC035661, IC035701, IC035702, IC035713, IC095204, IC095389, IC095516, SKGPA-65, SKGPA-70, SKGPA-72, SKGPA-83, IC032190, IC035404, IC035716, IC095556, IC120668, SKGPA-84, IC035415, IC095382-B, IC095406, IC095510, SKGPA-62, SKGPA-63, SKGPA-73, SKGPA-80, IC035711,	GA 1 (56.00 days)

S. No.	Characters	Range	Promising lines	Value of best check
			IC095371, SKGPA-87, IC035665, SKGPA-69, IC032195, SKGPA-64, SKGPA-104, SKGPA-109, SKGPA-76, SKGPA-105, SKGPA-98 (<56.00 days)	
2.	Days to maturity – Obs.	124.00-144.00	SKGPA-68, IC035615, SKGPA-66, SKGPA-65, SKGPA-62, SKGPA-81, SKGPA-92, SKGPA-106, SKGPA-63, SKGPA-70, SKGPA-79, SKGPA-103, IC081698-B, SKGPA-78, SKGPA-97, IC035404, IC035702, IC094654, IC095244, IC120649, SKGPA-75, SKGPA-82, IC032186, IC035635, IC035651, IC035701, IC035735, IC094661, IC095251, IC095383, SKGPA-69, SKGPA-77, SKGPA-84, SKGPA-86, SKGPA-105, IC021937, IC035415, IC035642, IC035742, IC095204, IC095382-B, IC095556, IC120670, IC432086, SKGPA-64, SKGPA-80, SKGPA-83, SKGPA-89, SKGPA-104, IC021938, IC035661, IC095389, IC095430, IC095516, IC120668, IC120689, SKGPA-109, IC021803-A, IC032190, IC032195, IC095371, SKGPA-72, SKGPA-76, SKGPA-87, SKGPA-99, IC035711, IC035717, IC095406, IC095510, SKGPA-73 (<139.00 days)	GA 1 (138.27 days)
3.	Days to maturity – Adj.	124.91-143.66	SKGPA-68, IC035615, SKGPA-66, SKGPA-92, SKGPA-65, SKGPA-79, SKGPA-81, SKGPA-106, SKGPA-62, SKGPA-103, SKGPA-78, SKGPA-97, SKGPA-63, SKGPA-70, IC081698-B, IC094654, IC095244, SKGPA-75, IC035404, IC120649, IC035702, IC094661, IC095251, IC095383, SKGPA-77, SKGPA-82, IC035635, IC035651, IC035701, IC032186, IC095556, IC035735, IC095204, IC095382-B, SKGPA-80, SKGPA-84, SKGPA-86, IC035642, IC021937, IC035415, SKGPA-105, SKGPA-69, IC095430, IC095516, IC120670, IC432086, IC035742, IC095389, SKGPA-83, SKGPA-89, IC035661, IC021938, SKGPA-104, SKGPA-64, IC120668, IC120689, IC095371, SKGPA-72, SKGPA-76, SKGPA-99, IC021803-A, IC032190, IC032195, SKGPA-109, IC095406, IC095510, SKGPA-73, SKGPA-87, IC095498 (< 139.00 days)	GA 1 (138.27 days)
4.	Plant height (cm)	51.00-175.80	IC021803-A, IC021938, IC035717, SKGPA-71 (>152.28 cm)	Suvarna (151.32 cm)
5.	Inflorescence length (cm)	26.00-70.00	IC035651, IC035701, SKGPA-109, IC035742, IC035717, IC035716, IC035719, SKGPA-72, IC035661, SKGPA-65, IC035713, SKGPA-75, IC035735, IC035702, IC094654, IC095406, IC081698-B, IC035711, IC035415, IC095204, SKGPA-73, SKGPA-68, SKGPA-106, SKGPA-77, IC035635, IC094661, IC032193, IC021938, IC035404, SKGPA-80, SKGPA-70, IC095244, SKGPA-78, IC095251 (>49.38 cm)	GA 1 (49.37 cm)

S. No.	Characters	Range	Promising lines	Value of best check
6.	Seed yield per plant (g)	1.70-34.00	SKGPA-68, IC095382B, IC035711, IC035404, IC032193, SKGPA-100, IC035716, SKGPA-80, IC035701, SKGPA-70, SKGPA-74, IC021938, SKGPA-65, IC035415, IC035638 (>17.98 g)	Suvarna (16.27 g)
7.	Seed weight (g/10 ml) - Obs.	6.26-7.94	SKGPA-72, SKGPA-76, IC021803-A, IC032193, SKGPA-79, SKGPA-73, IC035638, SKGPA-62, SKGPA-68, SKGPA-64, IC035633, IC095556, IC095498, IC095244, SKGPA-70, IC035615, IC035711, SKGPA-75, IC095516, SKGPA-65, SKGPA-100 (>7.20 g/10 ml)	GA 1 (7.22 g/10 ml)
8.	Seed weight (g/10 ml) - Adj.	5.93-8.19	SKGPA-72, SKGPA-76, IC021803-A, IC032193, SKGPA-79, SKGPA-73, SKGPA-62, SKGPA-68, SKGPA-64, SKGPA-70, IC035404, SKGPA-75, IC021937, IC035415, SKGPA-65, SKGPA-69, IC095556, IC095244, IC095498, SKGPA-63, IC032195, SKGPA-80, IC021938, SKGPA-106, IC032190, IC095516 (> 7.20 days)	GA 1 7.22 g/10 ml)
<b>Rahuri (Accessions 100)</b>				
1.	Days to 50% flowering	73.00-86.00	IC035415, IC032193, IC081698-B, IC120689, IC035615, IC095516, SKGPA-64, SKGPA-67, SKGPA-69, SKGPA-78 (< 80.00 days)	Suvarna (79.40 days)
2.	Days to maturity	116.00-139.00	SKGPA-77, SKGPA-79, IC120689, SKGPA-78, SKGPA-68, IC120649, IC120670, SKGPA-66, SKGPA-67, SKGPA-69, IC032193, IC081698-B, IC095383, SKGPA-64 (< 124.00 days)	Suvarna (123.00 days)
3.	Plant height (cm)	41.00-106.80	IC021937, IC032186, IC035633, IC035638, IC032195, IC095430, IC095251 (> 91.58 cm)	Suvarna (91.08 cm)
4.	Inflorescence length (cm)	14.00-60.80	IC095430, IC095516, SKGPA-64, IC120621, IC095204, IC094654, IC120670, IC094661, SKGPA-68, IC035717, SKGPA-72, IC095406, IC095248, IC095371, IC095498, SKGPA-67, IC035742, IC035635, IC035713, IC432086, IC035719, IC081698-B, IC095382-B, SKGPA-69, SKGPA-77, SKGPA-106, SKGPA-89, IC120668, IC095389 (> 41.49 cm)	Suvarna (39.74 cm)
5.	Leaf length (cm)	8.30-30.50	IC032195, IC032193, IC095430, SKGPA-73, IC094654, IC021937, SKGPA-77, IC095251, IC035635, IC095389 (>21.58 cm)	BGA-2 (21.26 cm)
6.	Leaf width (cm)	2.20-9.00	SKGPA-77, IC032195, IC032193 (> 8.08 cm)	Suvarna (7.90 cm)
7.	Petiole length (cm)	2.10-14.40	IC032195, IC095430, IC094654, SKGPA-73, IC081698-B, IC095389, IC035719, IC095251, IC032193, IC021937, IC035735 (> 8.58 cm)	BGA-2 (8.28 cm)
8.	Stem thickness (cm)	0.50-2.30	IC021937, SKGPA-77 (=2.30 cm)	Suvarna (2.30 cm)

S. No.	Characters	Range	Promising lines	Value of best check
9.	Lateral spikelet length (cm)	7.00-25.30	IC095516, IC035415, IC120621, IC095430, IC035635, IC120670, SKGPA-64, IC120668, SKGPA-66, IC035713, IC120689, IC094661, IC095406, SKGPA-67, IC095204, IC081698-B, IC035742, IC095382-B, IC035719, IC035615, SKGPA-68, IC095371, IC095391, IC094654, IC095248, SKGPA-89, IC035716, IC095383, IC432086, SKGPA-69, IC021937, IC035701, SKGPA-79, IC035717, IC035642, SKGPA-77 (> 12.48 cm)	Suvarna (12.34 cm)
10.	Seed yield per plant (g)	4.70-41.00	IC094654, SKGPA-67, IC095430, SKGPA-68, IC095382-B, IC094661, IC095371, SKGPA-89, IC035742, IC035702, IC035735, IC120668, IC035717, IC095251, IC120621, IC081698-B, IC095406, IC095248, IC095389, IC120649, IC095516, IC095244, IC095498, IC120670, SKGPA-64, IC095204, IC035713, IC035711, SKGPA-72 (<15.78 g)	BGA-2 (15.64 g)
11.	Seed weight (g/10 ml)	6.60-8.60	IC094661, IC095406, IC095204, IC095430, IC095382-B, SKGPA-68, IC081698-B, IC095371, IC095391, IC095516, SKGPA-106, IC035415, IC095248, SKGPA-66 (> 8.09 g/10 ml)	BGA-2 (8.08 g/10 ml)
<b>Ranchi (Accessions 100)</b>				
1.	Days to 50% flowering	57.00-96.00	IC095382-B, SKGPA-75, SKGPA-100, SKGPA-92, SKGPA-105, SKGPA-107, SKGPA-66, SKGPA-93, SKGPA-65, SKGPA-89, SKGPA-99, SKGPA-106, SKGPA-69, SKGPA-91, IC035702, IC094654, SKGPA-79, SKGPA-101, IC022186, IC035717, IC035719, SKGPA-80, IC035635, IC035711, IC035716, SKGPA-67, IC035661, IC120689, SKGPA-68, SKGPA-70, SKGPA-104, IC094661, IC021938, IC035651, IC035735, IC081698-B, IC095204, IC035701, IC035713, IC095251, SKGPA-78, IC035665, IC035642, IC035742, IC095371, IC095406, SKGPA-76, SKGPA-98, SKGPA-108, IC095391, IC095516, SKGPA-73, SKGPA-77, IC021803-A, IC035415, SKGPA-62, SKGPA-64, SKGPA-97, IC095510, SKGPA-72, SKGPA-88, IC032195, IC120670, SKGPA-63, IC021937, IC095244, IC120668, IC035404, IC095248, IC095389, IC095430, IC120621, IC095498, IC432086, IC032190, IC095383, IC032193, IC120649, IC095556, IC035638, SKGPA-61, IC035633 (<91.00 days)	GA-2 (90.00 days)
2.	Days to maturity	125.00-161.00	IC035661, SKGPA-79, SKGPA-101, SKGPA-69, IC035642, IC035665, SKGPA-100, SKGPA-107, SKGPA-92, SKGPA-108, IC032195, IC120670, SKGPA-106, IC032193, IC120668, SKGPA-89, IC022186, IC035635, SKGPA-68, SKGPA-93, IC095382-B, IC095516, SKGPA-67, SKGPA-74,	GA-2 & Suvarna (160.00 days)

S. No.	Characters	Range	Promising lines	Value of best check
			SKGPA-91, SKGPA-99, IC021803-A, IC035651, SKGPA-64, SKGPA-65, SKGPA-75, SKGPA-70, SKGPA-72, SKGPA-73, SKGPA-76, SKGPA-77, IC120649, SKGPA-66, IC035404, IC095556, IC035702, IC035716, IC035717, IC035719, IC095391, IC432086, SKGPA-61, IC035713, IC081698-B, IC032190, IC035735, IC035742, IC094661, IC095406, IC021938, IC035701, IC094654, IC095251, IC120621, IC021937, IC035711, IC095371, IC035415 IC095204, IC095244, IC095248, SKGPA-104, IC095383, IC095498, IC095510, IC035638, IC095389, IC120689, IC035615, IC035633, IC095430, SKGPA-63, SKGPA-62, SKGPA-78, SKGPA-97, SKGPA-105, SKGPA-80, SKGPA-88, SKGPA-98 (<156.00 days)	
3.	Plant height (cm)	14.00-98.30	-	GA-2 (98.30 cm)
4.	No. of primary branches per plant	3.00-8.00	IC021803-A, IC095406, IC120621, SKGPA-80, SKGPA-98, IC035615, IC035638, IC035661, IC095383, IC095389, SKGPA-64, SKGPA-78, SKGPA-89, SKGPA-91 (> 6.98)	GA-2 (7.00)
5.	Inflorescence length (cm)	13.30-40.00	SKGPA-98, IC095510, SKGPA-104, IC035651 (> 34.0)	GA-2 (35.00 cm)
6.	Leaf length (cm)	3.00-16.00	IC021938, IC021803-A, IC035404, SKGPA-99, IC094654, SKGPA-98, IC095556, SKGPA-88, SKGPA-91 (=>13.00)	GA-2 (13.00 cm)
7.	Leaf width (cm)	2.00-8.00	SKGPA-107, IC021803-A, IC021938, IC035404, IC035415, SKGPA-64, SKGPA-66, SKGPA-77, SKGPA-80, SKGPA-99, IC095510, SKGPA-76, IC022186, IC032193, IC035661, IC094661, IC095371, IC095383, IC095391, IC095498, IC095516, SKGPA-74, SKGPA-78, SKGPA-88, SKGPA-91, SKGPA-93, SKGPA-105, SKGPA-106 (=>6.00 cm)	GA-2 & Suvarna (6.00 cm)
8.	Petiole length (cm)	2.00-12.00	IC021803-A, SKGPA-80, IC095556, IC120621, SKGPA-91, SKGPA-99, SKGPA-106, SKGPA-107 (=>9.00 cm)	GA-2 & Suvarna (6.00 cm)
9.	Seed yield per plant (g)	9.50-34.00	IC094661, SKGPA-106, IC035713, IC035735, IC120689, SKGPA-101, IC021937, IC095516, IC095248, IC021803-A, SKGPA-80, SKGPA-105, SKGPA-88, SKGPA-72, IC035651, IC095389, SKGPA-98, IC432086, IC095371, SKGPA-73, IC095406, SKGPA-63, IC120621, IC095204, IC035717, IC095510, SKGPA-64, SKGPA-78, IC035415, IC032190, IC035742 (=> 23.40 g)	GA-2 (9.12 g)

S. No.	Characters	Range	Promising lines	Value of best check
10.	Seed weight (g/10 ml)	6.10-10.48	IC021803-A, IC035642, IC095244, IC120670, IC032193, SKGPA-64, IC120689, SKGPA-79, IC035661, IC095516, SKGPA-66, IC035713, IC035735, IC095556, IC035651, IC035404, IC035638, SKGPA-104, SKGPA-107, SKGPA-106, IC032195, IC035719, IC120649, SKGPA-74, IC094654, IC120621, SKGPA-93, IC022186, IC035717, IC095371, IC095510, IC021938, SKGPA-99, IC432086, SKGPA-65, SKGPA-108, IC095406, SKGPA-70, IC095382-B, IC095498, SKGPA-77, IC035742, IC095248, SKGPA-100, SKGPA-67, SKGPA-92, IC035665, IC035711, SKGPA-69, IC095430, SKGPA-73, IC095204, IC095251, SKGPA-75, IC035633, IC081698-B, SKGPA-89, IC094661, IC095383, SKGPA-91, SKGPA-97, IC120668, IC032190, IC095391, SKGPA-62, SKGPA-101, IC035635, IC035702, IC021937, SKGPA-72, SKGPA-78, SKGPA-68, IC035716, IC035415, IC035615, IC035701, IC095389, SKGPA-61, SKGPA-76, SKGPA-98 (= >9.20 g/10ml)	GA-2 (23.30 g/10 ml)
<b>S.K. Nagar (Accessions 100)</b>				
1.	Days to 50% flowering – Obs.	46.00-60.20	SKGPA-66, SKGPA-74, SKGPA-78, SKGPA-89, SKGPA-95, SKGPA-62, SKGPA-63, SKGPA-64, SKGPA-67, SKGPA-68, SKGPA-69, SKGPA-70, SKGPA-75, SKGPA-77, SKGPA-79, SKGPA-97, SKGPA-99, SKGPA-103, IC035642, SKGPA-65, SKGPA-71, SKGPA-73, SKGPA-82, SKGPA-83, SKGPA-85, SKGPA-86, SKGPA-92, SKGPA-94, SKGPA-96, SKGPA-100, SKGPA-106, SKGPA-108, IC021938, IC035651, SKGPA-61, SKGPA-72, SKGPA-76, SKGPA-81, SKGPA-88, SKGPA-93, SKGPA-101, SKGPA-107, IC035415, IC035665, SKGPA-80, SKGPA-87, SKGPA-109 (<51.00 days)	GA-2 (50.00 days)
2.	Days to 50% flowering – Adj.	43.55-58.80	SKGPA-95, SKGPA-97, SKGPA-99, SKGPA-89, SKGPA-92, SKGPA-94, SKGPA-96, SKGPA-100, SKGPA-103, SKGPA-93, SKGPA-66, SKGPA-74, SKGPA-78, SKGPA-82, SKGPA-83, SKGPA-85, SKGPA-86, SKGPA-106, SKGPA-108, SKGPA-62, SKGPA-63, SKGPA-64, SKGPA-67, SKGPA-68, SKGPA-69, SKGPA-70, SKGPA-75, SKGPA-77, SKGPA-79, SKGPA-81, SKGPA-88, SKGPA-101, SKGPA-107, SKGPA-91, SKGPA-65, SKGPA-71, SKGPA-73, SKGPA-87, IC035642, SKGPA-109 (<50.00 days)	GA-2 (50.00 days)
3.	Days to maturity	117.00-129.00	IC120649, SKGPA-73, SKGPA-110, IC032195, IC035404, IC035713, IC095516, IC120668, SKGPA-72, SKGPA-76, SKGPA-77, SKGPA-93, SKGPA-94, SKGPA-102, SKGPA-104, SKGPA-105, SKGPA-109, IC032193,	GA-2 (123.40 days)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
			IC035717, IC035719, IC094661, IC095244, IC095251, IC095383, IC095430, IC095556, IC120621, IC120670, SKGPA-65, SKGPA-69, SKGPA-75, SKGPA-95, SKGPA-101, IC035716, IC095382-B, IC095391, IC095406, IC095498, IC095510, IC120689, IC432086, SKGPA-64, SKGPA-66, SKGPA-74, SKGPA-83, SKGPA-92, SKGPA-96, SKGPA-97, SKGPA-99, SKGPA-107, IC035615, IC035735, IC094654, IC095204, IC095248, IC095371, IC095389, SKGPA-81, SKGPA-85, SKGPA-103, SKGPA-106, SKGPA-108, IC035415, IC035642, SKGPA-67, SKGPA-70, SKGPA-71, SKGPA-79, SKGPA-82, SKGPA-91, SKGPA-100 (< 124.00 days)	
4.	Plant height (cm) – Obs.	47.00-182.24	-	GA-2 (182.24 cm)
5.	Plant height (cm) – Adj.	44.99-201.84	IC035615, IC035415 (> 185.82 cm)	GA-2 (182.24 cm)
6.	Inflorescence length (cm) – Obs.	27.00-89.80	-	GA-1 (89.80 cm)
7.	Inflorescence length (cm) – Adj.	26.39-94.89	SKGPA-105 (>94.89 cm)	GA-1 (89.80 cm)
8.	No. of primary branches per plant	2.00-6.00	SKGPA-96, IC035642, IC035701, SKGPA-69, SKGPA-83, SKGPA-92 (=>5.00)	-
9.	Leaf length (cm) – Obs.	1.55-21.50	SKGPA-71, SKGPA-63, IC095371, SKGPA-61, SKGPA-98, SKGPA-80, IC035633 (>17.98 cm)	Suvarna (17.80 cm)
10.	Leaf length (cm) – Adj.	0.24-24.21	SKGPA-98, SKGPA-71, SKGPA-91, IC095371, SKGPA-63, IC035633 (>18.18 cm)	Suvarna ( 17.80 cm)
11.	Petiole length (cm) – Obs.	2.50-18.00	SKGPA-71, SKGPA-98 (>15.98 cm)	Suvarna (13.01 cm)
12.	Petiole length (cm) – Adj.	2.51-21.26	SKGPA-98, SKGPA-72, SKGPA-91, SKGPA-92, SKGPA-100, SKGPA-99 (>13.60 cm)	Suvarna (13.01 cm)
13.	Stem thickness (cm) – Obs.	2.00-9.50	SKGPA-71 (=9.50 cm)	GA-2 (8.70 cm)
14.	Stem thickness (cm) – Adj.	1.36-10.32	SKGPA-98, SKGPA-71, SKGPA-109, SKGPA-91 (>8.80 cm)	GA-2 (8.70 cm)



<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
15.	Lateral spikelet length (cm) – Obs.	5.50-28.40	SKGPA-66, SKGPA-61 (> 27.48 cm)	GA-2 (26.28 cm)
16.	Lateral spikelet length (cm) – Adj.	6.20-27.90	SKGPA-96, SKGPA-93, SKGPA-97 (> 26.40 cm)	GA-2 (26.28 cm)
17.	Seed weight (g/10 ml) – Obs.	6.36-8.56	IC095244, IC432086, SKGPA-92, IC035633, IC095248, IC120689, SKGPA-79, IC035635, IC095251, SKGPA-104, IC095556 (=> 8.21 g/10 ml)	GA-1 (8.21 g/10 ml)
18.	Seed weight (g/10 ml) – Adj.	6.26-8.60	IC432086, IC095244, IC095204, IC035633, SKGPA-92, IC120689, IC035635, IC095248, SKGPA-89, IC095556, IC120649, IC035701, SKGPA-86, IC095251, IC035661 (> 8.21 g/10 ml)	GA-1 (8.21 g/10 ml)
19.	Seed yield per plant (g) – Obs.	3.05-46.00	SKGPA-73, SKGPA-61, SKGPA-69, IC035711, IC095516, SKGPA-86, SKGPA-62, SKGPA-72, IC095248, IC095204, IC095244, IC032193, SKGPA-63, SKGPA-77, SKGPA-96, PL, IC035717, IC021937, IC035702, IC035713, IC035742, IC095406, IC095430, IC095498, SKGPA-68, SKGPA-75, SKGPA-79 (> 19.98 g)	GA-2 (19.78 g)
20.	Seed yield per plant (g) – Adj.	3.00-46.18	SKGPA-73, SKGPA-61, SKGPA-69, SKGPA-62, IC095516, IC035711, SKGPA-72, SKGPA-86, IC095248, IC095204, SKGPA-63, IC095244, SKGPA-77, SKGPA-96, IC032193, SKGPA-68, IC095498, IC035702, SKGPA-75, SKGPA-79, IC035717, IC035713, IC035742 (>19.95 g)	GA-2 (19.78 g)
21.	Straw weight per plant (g) – Obs.	11.00-230.00	SKGPA-61, IC035633, SKGPA-71 (163.98 g)	GA-1 (154.85 g)
22.	Straw weight per plant (g) – Adj.	10.95-232.08	SKGPA-61, IC035633, SKGPA-71 (> 172.80 g)	GA-1 (154.85 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	46.00-75.25	SKGPA-95, SKGPA-83, SKGPA-84, SKGPA-70, SKGPA-93, SKGPA-71, SKGPA-75, SKGPA-92, SKGPA-99, IC035742, IC120689, SKGPA-65, SKGPA-100, IC094654, SKGPA-76, IC095251, IC095204, SKGPA-86, SKGPA-61, IC095244, IC095382-B, IC095406, IC094661, SKGPA-82, SKGPA-94, IC120670, IC035702 (<62.00 days)	GA-1 (61.53 days)
2.	Days to maturity	120.00-148.00	SKGPA-95, IC120670, IC095516, IC081698-B, IC120649, IC035717, IC095382-B, SKGPA-93, SKGPA-108, IC095251, IC095248, IC095556, IC035719, IC120621, IC120668, IC035665, IC120689, IC035661, IC094654, IC035415, IC035713, IC035716, IC095383, IC035735 (< 128.00 days)	GA-1 (127.34 days)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
3.	Plant height (cm)	42.50-154.15	SKGPA-71 (=154.15)	GA-1 (122.54 cm)
4.	Inflorescence length (cm)	25.50-58.65	SKGPA-71, SKGPA-109 (>56.00 cm)	GA-1 (54.28 cm)
5.	No. of primary branches per plant	1.00-10.00	SKGPA-87 (=10.00)	GA-1 (9.66)
6.	Leaf length (cm)	6.52-21.50	SKGPA-71, IC032195, IC032193, IC094654, IC095371, IC035404 (> 15.65 cm)	GA-2 (15.59 cm)
	Leaf width (cm)	2.65-8.00	SKGPA-77, SKGPA-107, IC032193, SKGPA-80, SKGPA-99 (> 6.98 cm)	
7.	Petiole length (cm)	3.38-18.00	SKGPA-71, SKGPA-80, SKGPA-98 (> 10.22 cm)	Suvarna (6.95 cm)
8.	Stem thickness (cm)	2.30-17.82	SKGPA-98, SKGPA-74 (>14.40 cm)	GA-2 (14.34 cm)
9.	Lateral spikelet length (cm)	7.75-27.50	SKGPA-61, SKGPA-70, SKGPA-93, SKGPA-67 (> 21.85 cm)	GA-2 (21.68 cm)
10.	Seed yield per plant (g)	7.54-24.00	SKGPA-68, SKGPA-91, SKGPA-74, SKGPA-86, SKGPA-72, SKGPA-73, SKGPA-80, SKGPA-67, SKGPA-61, SKGPA-101, SKGPA-94, SKGPA-62, SKGPA-93, SKGPA-63, SKGPA-66, SKGPA-104, SKGPA-65, SKGPA-98, SKGPA-96, IC095382-B, SKGPA-64, IC035711, SKGPA-78, SKGPA-105, IC095248, IC095430, SKGPA-106, SKGPA-87, IC035713, IC035717, SKGPA-79, SKGPA-100, IC035742, SKGPA-97, IC095516, IC432086, IC032193, SKGPA-92, IC094661, IC035735, IC035415, SKGPA-89, IC021937 (> 15.00 g)	GA-1 (14.97 g)
11.	Seed weight (g/10 ml)	6.88-9.09	SKGPA-107, SKGPA-93, SKGPA-108, SKGPA-91, SKGPA-61, SKGPA-101, IC095248, SKGPA-79, SKGPA-70, IC095244, SKGPA-92, SKGPA-104, SKGPA-76, SKGPA-75, SKGPA-100, IC095391, IC120689, SKGPA-68, IC095556, IC120670, IC095382-B, SKGPA-62, SKGPA-66, SKGPA-73, IC095371, IC035415, IC021803-A, IC035635, IC095251, SKGPA-65, IC095204, SKGPA-69, IC035651, IC094661, IC095406, IC032186, SKGPA-64, IC081698-B, IC035633 (> 8.05 g/10 ml)	GA-2 (8.08 g/10 ml)
12.	Seed yield (q/ha)	0.13-14.24	IC035651, IC035635, IC035716, IC035713, IC035415, IC035404, IC035642, IC035665, IC035661 (> 11.35 q/ha)	BGA-2 (11.06 q/ha)

**Table 97. Multilocation evaluation of germplasm lines in grain amaranth at different locations : Rabi 2011-12 (Plains)**

S. No.	Acesion No.	Days to 50% flowering								Days to 80% maturity							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
1	IC021803-A	48.00	103.00	35.00	47.00	81.00	78.00	53.00	<b>63.57</b>	89.00	176.00	135.00	137.00	137.00	136.00	124.00	<b>133.43</b>
2	IC021937	56.00	105.00	41.00	44.00	80.00	81.00	52.00	<b>65.57</b>	98.00	162.00	111.00	135.00	136.00	144.00	125.00	<b>130.14</b>
3	IC021938	57.00	108.00	41.00	47.00	83.00	73.00	49.00	<b>65.43</b>	97.00	160.00	111.00	136.00	139.00	143.00	128.00	<b>130.57</b>
4	IC032186	56.00	102.00	42.00	45.00	82.00	68.00	51.00	<b>63.71</b>	97.00	163.00	112.00	134.00	138.00	134.00	126.00	<b>129.14</b>
5	IC032190	56.00	116.00	46.00	48.00	84.00	84.00	53.00	<b>69.57</b>	97.00	172.00	115.00	137.00	138.00	142.00	124.00	<b>132.14</b>
6	IC032193	63.00	100.00	47.00	47.00	75.00	85.00	52.00	<b>67.00</b>	101.00	167.00	118.00	139.00	122.00	133.00	120.00	<b>128.57</b>
7	IC032195	63.00	98.00	40.00	53.00	80.00	80.00	53.00	<b>66.71</b>	100.00	160.00	108.00	137.00	138.00	132.00	119.00	<b>127.71</b>
8	IC035404	61.00	96.00	42.00	48.00	80.00	82.00	53.00	<b>66.00</b>	102.00	157.00	112.00	133.00	137.00	139.00	119.00	<b>128.43</b>
9	IC035415	50.00	100.00	46.00	49.00	73.00	78.00	50.00	<b>63.71</b>	91.00	161.00	108.00	135.00	127.00	145.00	123.00	<b>127.14</b>
10	IC035615	63.00	105.00	44.00	36.00	79.00	93.00	52.00	<b>67.43</b>	100.00	169.00	107.00	126.00	129.00	149.00	122.00	<b>128.86</b>
11	IC035633	60.00	114.00	38.00	63.00	82.00	90.00	52.00	<b>71.29</b>	98.00	172.00	112.00	142.00	138.00	149.00	128.00	<b>134.14</b>
12	IC035635	41.00	105.00	40.00	42.00	83.00	69.00	52.00	<b>61.71</b>	82.00	168.00	116.00	134.00	137.00	134.00	126.00	<b>128.14</b>
13	IC035638	60.00	105.00	46.00	62.00	84.00	89.00	53.00	<b>71.29</b>	100.00	169.00	114.00	144.00	138.00	148.00	128.00	<b>134.43</b>
14	IC035642	39.00	116.00	51.00	42.00	85.00	76.00	48.00	<b>65.29</b>	98.00	179.00	107.00	135.00	134.00	128.00	123.00	<b>129.14</b>
15	IC035651	40.00	105.00	45.00	45.00	81.00	73.00	49.00	<b>62.57</b>	81.00	171.00	108.00	134.00	137.00	136.00	127.00	<b>127.71</b>
16	IC035661	45.00	103.00	40.00	47.00	83.00	70.00	53.00	<b>63.00</b>	87.00	167.00	110.00	136.00	136.00	125.00	128.00	<b>127.00</b>
17	IC035665	46.00	105.00	41.00	52.00	83.00	75.00	50.00	<b>64.57</b>	88.00	165.00	104.00	139.00	138.00	128.00	126.00	<b>126.86</b>
18	IC035701	57.00	92.00	42.00	47.00	84.00	74.00	56.00	<b>64.57</b>	97.00	159.00	112.00	134.00	133.00	143.00	127.00	<b>129.29</b>
19	IC035702	48.00	91.00	42.00	47.00	85.00	65.00	52.00	<b>61.43</b>	89.00	157.00	110.00	133.00	138.00	140.00	129.00	<b>128.00</b>
20	IC035711	47.00	94.00	50.00	50.00	84.00	69.00	52.00	<b>63.71</b>	88.00	160.00	112.00	138.00	135.00	144.00	129.00	<b>129.43</b>
21	IC035713	49.00	88.00	51.00	47.00	80.00	74.00	54.00	<b>63.29</b>	91.00	159.00	110.00	139.00	131.00	141.00	119.00	<b>127.14</b>
22	IC035716	45.00	94.00	48.00	48.00	84.00	69.00	55.00	<b>63.29</b>	87.00	161.00	105.00	140.00	136.00	140.00	121.00	<b>127.14</b>
23	IC035717	46.00	105.00	50.00	46.00	83.00	68.00	54.00	<b>64.57</b>	88.00	162.00	110.00	138.00	127.00	140.00	120.00	<b>126.43</b>
24	IC035719	46.00	102.00	55.00	46.00	83.00	68.00	54.00	<b>64.86</b>	88.00	167.00	105.00	139.00	128.00	140.00	120.00	<b>126.71</b>
25	IC035735	45.00	104.00	42.00	45.00	84.00	73.00	54.00	<b>63.86</b>	85.00	169.00	108.00	134.00	131.00	142.00	122.00	<b>127.29</b>
26	IC035742	43.00	63.00	41.00	44.00	85.00	76.00	54.00	<b>58.00</b>	84.00	165.00	116.00	135.00	130.00	142.00	126.00	<b>128.29</b>

S. No.	Acesion No.	Plant height (cm)								Inflorescence length (cm)							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
1	IC021803-A	78.40	99.60	85.00	175.80	82.80	63.00	68.00	<b>93.23</b>	34.60	56.16	35.50	41.30	32.00	29.00	47.90	<b>39.49</b>
2	IC021937	114.20	96.60	90.50	147.80	106.80	51.00	104.00	<b>101.56</b>	45.60	37.20	36.00	46.50	34.00	32.00	58.00	<b>41.33</b>
3	IC021938	96.40	76.00	85.00	156.40	70.20	66.00	98.00	<b>92.57</b>	34.40	39.20	38.00	52.20	29.00	22.00	63.00	<b>39.69</b>
4	IC032186	98.60	103.80	90.00	125.60	105.20	57.00	118.00	<b>99.74</b>	37.00	61.48	42.00	46.20	37.50	31.00	74.85	<b>47.15</b>
5	IC032190	107.90	89.40	80.50	122.40	86.40	68.00	112.00	<b>95.23</b>	38.20	25.82	39.00	42.80	29.00	17.00	54.00	<b>35.12</b>
6	IC032193	86.20	99.40	80.60	127.80	80.00	56.00	112.00	<b>91.71</b>	33.00	55.38	36.50	52.30	31.80	22.00	53.85	<b>40.69</b>
7	IC032195	86.60	96.50	85.30	112.60	98.40	50.00	97.00	<b>89.49</b>	38.60	55.16	34.00	42.00	33.80	23.00	51.00	<b>39.65</b>
8	IC035404	84.20	121.00	90.50	140.60	90.40	59.00	129.00	<b>102.10</b>	38.20	61.56	35.00	51.60	37.00	24.00	63.00	<b>44.34</b>
9	IC035415	103.40	90.40	100.00	132.00	57.80	71.00	102.00	<b>93.80</b>	39.20	47.04	38.00	54.60	36.80	24.00	51.00	<b>41.52</b>
10	IC035615	108.80	119.00	100.40	134.00	49.80	69.00	150.00	<b>104.43</b>	43.20	62.90	37.60	39.00	28.50	23.00	66.00	<b>42.89</b>
11	IC035633	109.60	114.60	101.00	132.40	102.20	64.00	166.00	<b>112.83</b>	37.40	61.84	40.40	40.40	30.30	24.00	77.00	<b>44.48</b>
12	IC035635	93.80	130.80	98.40	107.00	71.20	44.00	122.00	<b>95.31</b>	38.40	54.20	35.00	52.70	43.80	25.00	60.80	<b>44.27</b>
13	IC035638	101.10	114.20	97.00	134.40	99.80	55.00	170.00	<b>110.21</b>	31.40	54.90	42.00	32.80	36.50	22.00	84.00	<b>43.37</b>
14	IC035642	83.80	127.20	96.00	140.60	82.40	23.00	98.00	<b>93.00</b>	43.20	54.30	37.00	48.20	36.30	14.00	55.70	<b>41.24</b>
15	IC035651	104.80	148.20	88.00	135.00	59.20	32.00	89.00	<b>93.74</b>	50.80	60.56	41.00	70.00	31.30	35.00	53.00	<b>48.81</b>
16	IC035661	110.80	105.60	100.20	127.80	56.00	53.00	100.00	<b>93.34</b>	44.00	64.80	42.00	60.80	28.50	23.00	51.30	<b>44.91</b>
17	IC035665	91.60	91.60	92.70	104.00	59.00	55.00	84.00	<b>82.56</b>	39.20	62.10	35.00	49.30	25.80	20.00	55.00	<b>40.91</b>
18	IC035701	108.80	93.60	88.60	140.60	70.80	55.00	109.00	<b>95.20</b>	45.40	53.14	38.00	70.00	32.00	20.00	52.00	<b>44.36</b>
19	IC035702	98.80	71.80	88.00	124.00	62.60	64.00	98.00	<b>86.74</b>	42.40	44.76	37.00	56.40	27.50	17.30	66.00	<b>41.62</b>
20	IC035711	127.20	80.00	87.00	126.00	73.60	52.00	116.00	<b>94.54</b>	45.20	48.66	34.00	55.20	29.00	21.00	67.00	<b>42.87</b>
21	IC035713	114.80	78.40	89.00	137.80	58.20	46.00	119.00	<b>91.89</b>	49.40	49.14	38.00	59.00	43.30	25.00	74.00	<b>48.26</b>
22	IC035716	108.00	103.60	100.00	133.80	79.80	40.00	118.00	<b>97.60</b>	44.20	61.40	39.00	64.60	39.00	19.00	72.00	<b>48.46</b>
23	IC035717	98.80	91.00	88.00	155.20	71.00	52.00	98.00	<b>93.43</b>	50.40	54.20	39.60	65.60	47.80	31.00	59.80	<b>49.77</b>
24	IC035719	121.80	115.00	92.00	128.40	60.40	33.00	107.00	<b>93.94</b>	54.40	60.06	40.00	62.60	43.00	15.00	58.00	<b>47.58</b>
25	IC035735	122.40	118.60	85.70	119.40	60.80	49.00	70.00	<b>89.41</b>	49.60	59.70	36.30	57.60	32.00	27.00	41.00	<b>43.31</b>
26	IC035742	111.00	93.40	77.00	143.20	61.00	48.00	129.00	<b>94.66</b>	46.20	53.08	46.00	67.00	44.50	16.00	77.00	<b>49.97</b>

S. No.	Acesion No.	Number of branches per plant					Lateral spikelet length (cm)				Leaf length (cm)					Leaf width (cm)		
		Delhi	Faizabad	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Rahuri	Ranchi	Mean
1	IC021803-A	5.00	8.00	8.00	4.00	<b>6.25</b>	20.30	7.00	16.00	<b>14.43</b>	14.08	15.90	15.00	11.50	<b>14.12</b>	4.80	7.00	<b>5.90</b>
2	IC021937	7.60	6.00	6.00	-	<b>6.53</b>	16.44	13.50	13.50	<b>14.48</b>	15.04	24.00	7.00	13.50	<b>14.89</b>	7.20	4.00	<b>5.60</b>
3	IC021938	4.80	8.00	5.00	2.00	<b>4.95</b>	17.52	9.50	19.50	<b>15.51</b>	15.10	18.60	16.00	11.58	<b>15.32</b>	5.20	7.00	<b>6.10</b>
4	IC032186	4.00	11.00	5.00	-	<b>6.67</b>	27.92	10.50	16.15	<b>18.19</b>	12.94	16.70	12.00	14.50	<b>14.04</b>	3.90	6.00	<b>4.95</b>
5	IC032190	-	11.00	6.00	-	<b>8.50</b>	9.10	8.30	18.00	<b>11.80</b>	17.24	16.20	11.00	16.50	<b>15.24</b>	5.10	4.00	<b>4.55</b>
6	IC032193	4.60	11.00	5.00	-	<b>6.87</b>	23.50	7.00	11.90	<b>14.13</b>	15.82	25.50	11.00	15.10	<b>16.86</b>	8.10	6.00	<b>7.05</b>
7	IC032195	5.80	12.00	5.00	-	<b>7.60</b>	19.30	9.50	11.50	<b>13.43</b>	15.76	30.50	10.00	13.50	<b>17.44</b>	8.40	2.30	<b>5.35</b>
8	IC035404	4.60	16.00	6.00	-	<b>8.87</b>	22.90	11.30	12.10	<b>15.43</b>	14.12	18.10	15.00	15.50	<b>15.68</b>	5.30	7.00	<b>6.15</b>
9	IC035415	6.20	8.00	5.00	-	<b>6.40</b>	21.56	24.00	17.50	<b>21.02</b>	12.68	8.30	12.00	14.39	<b>11.84</b>	2.60	7.00	<b>4.80</b>
10	IC035615	4.20	7.00	7.00	-	<b>6.07</b>	17.14	15.30	13.85	<b>15.43</b>	11.28	11.60	10.00	12.00	<b>11.22</b>	2.90	5.00	<b>3.95</b>
11	IC035633	3.80	6.00	6.00	-	<b>5.27</b>	16.26	9.80	20.50	<b>15.52</b>	14.28	15.00	9.00	18.00	<b>14.07</b>	4.70	5.00	<b>4.85</b>
12	IC035635	5.60	9.00	5.00	3.00	<b>5.65</b>	14.24	21.00	22.50	<b>19.25</b>	14.90	22.30	8.00	9.50	<b>13.68</b>	6.50	4.00	<b>5.25</b>
13	IC035638	7.00	10.00	7.00	-	<b>8.00</b>	17.30	10.00	22.50	<b>16.60</b>	13.64	16.50	9.00	15.85	<b>13.75</b>	6.20	5.00	<b>5.60</b>
14	IC035642	6.00	11.00	4.00	5.00	<b>6.50</b>	17.04	12.50	18.00	<b>15.85</b>	16.40	15.90	5.00	10.50	<b>11.95</b>	3.30	2.00	<b>2.65</b>
15	IC035651	-	12.00	5.00	4.00	<b>7.00</b>	15.10	10.00	17.50	<b>14.20</b>	14.66	9.00	7.00	7.00	<b>9.42</b>	2.60	4.00	<b>3.30</b>
16	IC035661	5.80	12.00	7.00	4.00	<b>7.20</b>	24.24	10.30	14.20	<b>16.25</b>	13.94	11.10	8.00	8.89	<b>10.48</b>	3.20	6.00	<b>4.60</b>
17	IC035665	8.20	8.00	5.00	4.00	<b>6.30</b>	24.50	9.80	20.00	<b>18.10</b>	14.96	10.90	6.00	11.50	<b>10.84</b>	3.00	4.50	<b>3.75</b>
18	IC035701	7.00	12.00	5.00	5.00	<b>7.25</b>	16.20	13.50	20.50	<b>16.73</b>	11.74	14.20	9.00	12.50	<b>11.86</b>	3.60	4.00	<b>3.80</b>
19	IC035702	5.00	8.00	5.00	3.00	<b>5.25</b>	17.20	9.80	18.50	<b>15.17</b>	11.34	12.60	8.00	13.95	<b>11.47</b>	3.50	4.80	<b>4.15</b>
20	IC035711	4.20	9.50	5.00	-	<b>6.23</b>	21.30	10.50	16.50	<b>16.10</b>	13.12	11.40	11.00	12.50	<b>12.01</b>	2.90	5.00	<b>3.95</b>
21	IC035713	5.20	11.00	5.00	-	<b>7.07</b>	17.06	16.80	15.00	<b>16.29</b>	11.56	17.10	7.00	8.48	<b>11.04</b>	4.20	3.00	<b>3.60</b>
22	IC035716	4.60	9.00	4.00	-	<b>5.87</b>	25.50	14.00	15.50	<b>18.33</b>	13.10	10.40	5.00	10.50	<b>9.75</b>	5.40	3.00	<b>4.20</b>
23	IC035717	3.40	11.00	5.00	-	<b>6.47</b>	23.10	13.30	20.55	<b>18.98</b>	13.78	18.50	7.00	12.50	<b>12.95</b>	4.50	4.00	<b>4.25</b>
24	IC035719	3.40	10.00	6.00	-	<b>6.47</b>	24.14	15.50	13.50	<b>17.71</b>	16.40	20.70	5.00	12.00	<b>13.53</b>	5.80	3.00	<b>4.40</b>
25	IC035735	4.40	10.00	4.00	-	<b>6.13</b>	22.84	11.80	18.50	<b>17.71</b>	16.44	20.70	7.00	11.12	<b>13.82</b>	6.30	4.00	<b>5.15</b>
26	IC035742	6.00	8.00	6.00	-	<b>6.67</b>	22.84	15.80	16.50	<b>18.38</b>	11.90	12.20	5.00	14.50	<b>10.90</b>	3.90	2.00	<b>2.95</b>

S. No.	Acesion No.	Petiole length (cm)					Stem thickness (mm)				Seed yield per plant (g)							
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
1	IC021803-A	10.68	5.10	12.00	4.50	<b>8.07</b>	14.48	1.40	4.61	<b>6.83</b>	3.20	10.81	12.50	8.00	7.50	28.50	10.00	<b>11.50</b>
2	IC021937	9.88	8.60	5.00	7.50	<b>7.75</b>	17.26	2.30	5.00	<b>8.19</b>	4.00	13.20	11.40	15.00	11.60	30.20	20.00	<b>15.06</b>
3	IC021938	9.62	7.10	8.00	8.12	<b>8.21</b>	12.07	1.40	6.53	<b>6.67</b>	4.40	15.29	13.40	19.60	9.50	21.50	8.00	<b>13.10</b>
4	IC032186	7.86	6.20	7.00	7.50	<b>7.14</b>	16.24	1.40	7.00	<b>8.21</b>	4.20	11.96	12.20	12.00	9.20	14.60	14.04	<b>11.17</b>
5	IC032190	10.94	5.40	6.00	10.50	<b>8.21</b>	17.25	1.80	7.50	<b>8.85</b>	7.80	7.61	15.20	3.00	13.90	23.40	8.00	<b>11.27</b>
6	IC032193	11.02	9.60	7.00	9.12	<b>9.19</b>	15.67	2.10	8.25	<b>8.67</b>	4.00	19.18	14.00	25.00	4.70	17.80	22.00	<b>15.24</b>
7	IC032195	11.04	14.40	6.00	6.50	<b>9.49</b>	14.93	2.20	6.50	<b>7.88</b>	3.20	16.64	9.60	12.00	8.90	22.60	14.00	<b>12.42</b>
8	IC035404	10.10	6.50	8.00	13.00	<b>9.40</b>	15.11	1.80	7.50	<b>8.14</b>	4.00	15.02	12.00	28.00	9.70	13.60	14.00	<b>13.76</b>
9	IC035415	8.70	2.70	7.30	9.42	<b>7.03</b>	15.22	0.90	5.99	<b>7.37</b>	8.00	13.65	14.50	18.00	9.80	24.00	18.09	<b>15.15</b>
10	IC035615	9.32	3.90	7.00	8.00	<b>7.06</b>	12.52	1.40	5.50	<b>6.47</b>	4.20	14.41	13.20	16.00	5.40	15.50	15.00	<b>11.96</b>
11	IC035633	10.46	4.50	5.00	9.50	<b>7.37</b>	17.02	1.80	7.50	<b>8.77</b>	4.40	13.79	11.50	16.00	9.30	18.20	12.00	<b>12.17</b>
12	IC035635	12.94	6.40	6.00	9.50	<b>8.71</b>	18.46	0.80	4.50	<b>7.92</b>	8.44	17.75	12.00	6.00	12.60	21.30	9.96	<b>12.58</b>
13	IC035638	9.66	4.80	6.30	12.36	<b>8.28</b>	15.34	1.80	7.56	<b>8.23</b>	4.60	16.54	15.00	18.00	12.20	22.70	12.00	<b>14.43</b>
14	IC035642	13.82	6.60	3.00	8.50	<b>7.98</b>	21.16	1.80	4.50	<b>9.15</b>	8.20	16.54	14.00	14.00	7.10	18.30	12.00	<b>12.88</b>
15	IC035651	12.76	2.10	6.00	6.00	<b>6.72</b>	20.04	1.30	4.50	<b>8.61</b>	10.24	9.72	15.00	2.00	10.20	27.40	10.00	<b>12.08</b>
16	IC035661	8.08	3.90	6.00	6.12	<b>6.03</b>	13.28	1.10	3.50	<b>5.96</b>	6.40	22.14	12.50	12.00	9.70	22.00	8.00	<b>13.25</b>
17	IC035665	10.00	2.90	6.00	8.00	<b>6.73</b>	14.53	0.80	2.50	<b>5.94</b>	8.20	8.55	13.50	15.00	6.70	16.50	5.87	<b>10.62</b>
18	IC035701	6.38	4.70	6.00	8.50	<b>6.40</b>	10.89	1.80	3.50	<b>5.40</b>	7.80	13.67	12.80	20.00	8.00	11.50	12.00	<b>12.25</b>
19	IC035702	6.84	5.10	6.00	6.44	<b>6.10</b>	11.56	1.40	4.35	<b>5.77</b>	6.00	8.89	11.50	15.00	22.50	19.40	20.00	<b>14.76</b>
20	IC035711	7.02	4.20	5.00	6.50	<b>5.68</b>	13.02	1.30	3.50	<b>5.94</b>	8.40	0.88	11.50	30.00	16.00	22.30	28.00	<b>16.73</b>
21	IC035713	6.26	5.40	4.00	6.12	<b>5.45</b>	14.54	0.90	4.46	<b>6.63</b>	9.00	16.30	8.50	10.00	16.30	32.50	20.00	<b>16.09</b>
22	IC035716	7.60	2.70	2.00	7.50	<b>4.95</b>	12.30	1.30	4.50	<b>6.03</b>	10.20	17.73	10.50	24.00	7.40	14.50	18.00	<b>14.62</b>
23	IC035717	7.22	6.30	4.00	6.95	<b>6.12</b>	14.01	1.40	5.10	<b>6.84</b>	5.00	25.30	8.80	6.00	21.00	24.80	20.02	<b>15.85</b>
24	IC035719	10.00	9.90	4.00	8.50	<b>8.10</b>	13.81	1.20	4.00	<b>6.34</b>	8.00	10.46	8.00	5.00	12.10	11.80	18.00	<b>10.48</b>
25	IC035735	8.74	8.60	4.00	7.98	<b>7.33</b>	15.18	2.10	6.00	<b>7.76</b>	9.60	8.71	13.30	5.00	21.90	31.60	16.00	<b>15.16</b>
26	IC035742	7.00	3.60	3.00	8.00	<b>5.40</b>	14.90	0.90	7.00	<b>7.60</b>	6.20	20.17	10.90	5.00	22.90	23.40	20.00	<b>15.51</b>

S. No.	Acesion No.	Seed volume weight (g/10ml)						Seed yield (q/ha)			Delhi	S.K. Nagar
		Bhubaneswar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Mean	1000 seed weight (g)	Straw weight per plant (g)
1	IC021803-A	7.46	7.73	7.30	10.48	7.75	<b>8.14</b>	7.71	10.41	<b>9.06</b>	6.64	50.00
2	IC021937	7.26	7.18	7.20	9.45	7.68	<b>7.75</b>	8.54	10.76	<b>9.65</b>	6.30	50.00
3	IC021938	7.30	7.01	7.70	9.85	7.65	<b>7.90</b>	8.75	9.63	<b>9.19</b>	6.58	62.00
4	IC032186	7.90	6.83	7.70	9.90	8.12	<b>8.09</b>	8.33	10.19	<b>9.26</b>	6.46	62.00
5	IC032190	7.64	6.92	7.30	9.51	7.62	<b>7.80</b>	13.54	6.20	<b>9.87</b>	6.40	16.00
6	IC032193	7.41	7.70	7.50	10.33	7.35	<b>8.06</b>	8.96	9.94	<b>9.45</b>	6.94	56.00
7	IC032195	7.28	7.08	8.00	9.97	7.44	<b>7.95</b>	7.29	11.09	<b>9.19</b>	7.02	68.00
8	IC035404	7.41	7.22	7.50	10.00	8.12	<b>8.05</b>	8.54	14.46	<b>11.50</b>	6.48	102.00
9	IC035415	8.28	7.18	8.10	9.36	7.89	<b>8.16</b>	15.00	8.59	<b>11.80</b>	6.14	38.00
10	IC035615	7.44	7.37	6.90	9.27	7.75	<b>7.75</b>	9.17	8.54	<b>8.85</b>	6.60	133.00
11	IC035633	7.73	7.50	7.20	9.62	8.33	<b>8.08</b>	8.96	9.70	<b>9.33</b>	6.42	222.00
12	IC035635	8.24	7.17	7.60	9.48	8.23	<b>8.14</b>	15.63	11.83	<b>13.73</b>	6.32	46.00
13	IC035638	7.42	7.53	7.20	10.00	7.81	<b>7.99</b>	9.58	7.96	<b>8.77</b>	6.82	144.00
14	IC035642	7.88	6.81	6.60	10.46	7.76	<b>7.90</b>	15.00	7.96	<b>11.48</b>	6.14	96.00
15	IC035651	8.24	7.06	7.40	10.03	7.80	<b>8.11</b>	18.75	9.72	<b>14.24</b>	6.26	60.00
16	IC035661	7.22	7.12	7.20	10.10	8.07	<b>7.94</b>	11.25	11.48	<b>11.37</b>	6.12	42.00
17	IC035665	7.15	7.12	7.30	9.74	7.61	<b>7.78</b>	15.83	6.96	<b>11.40</b>	5.40	16.00
18	IC035701	8.71	6.66	7.40	9.27	8.11	<b>8.03</b>	12.50	7.59	<b>10.05</b>	6.90	32.00
19	IC035702	7.75	6.86	7.70	9.48	7.80	<b>7.92</b>	11.25	6.26	<b>8.75</b>	6.20	68.00
20	IC035711	7.89	7.33	7.40	9.73	7.52	<b>7.97</b>	14.58	0.82	<b>7.70</b>	5.96	72.00
21	IC035713	7.62	7.02	7.40	10.08	8.16	<b>8.06</b>	16.67	9.06	<b>12.86</b>	6.96	40.00
22	IC035716	7.89	7.14	7.60	9.38	7.39	<b>7.88</b>	17.50	8.54	<b>13.02</b>	6.28	46.00
23	IC035717	7.51	6.45	7.70	9.90	7.57	<b>7.83</b>	11.67	4.69	<b>8.18</b>	6.32	96.00
24	IC035719	8.04	6.43	7.50	9.96	6.80	<b>7.75</b>	12.50	8.91	<b>10.70</b>	5.92	82.00
25	IC035735	7.92	6.89	7.80	10.08	7.64	<b>8.07</b>	15.83	5.48	<b>10.66</b>	6.54	88.00
26	IC035742	7.55	6.38	8.00	9.78	7.89	<b>7.92</b>	9.58	2.24	<b>5.91</b>	6.16	100.00

S. No.	Accession No.	Days to 50% flowering								Days to 80% maturity							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
27	IC081698-B	42.00	109.00	40.00	46.00	76.00	73.00	53.00	<b>62.71</b>	81.00	162.00	115.00	132.00	123.00	141.00	124.00	<b>125.43</b>
28	IC094654	42.00	76.00	52.00	44.00	82.00	66.00	52.00	<b>59.14</b>	81.00	158.00	118.00	133.00	134.00	143.00	122.00	<b>127.00</b>
29	IC094661	47.00	73.00	49.00	46.00	83.00	72.00	56.00	<b>60.86</b>	88.00	162.00	120.00	134.00	133.00	142.00	120.00	<b>128.43</b>
30	IC095204	45.00	78.00	43.00	47.00	81.00	73.00	53.00	<b>60.00</b>	86.00	166.00	115.00	135.00	136.00	146.00	122.00	<b>129.43</b>
31	IC095244	44.00	77.00	40.00	45.00	81.00	81.00	55.00	<b>60.43</b>	86.00	161.00	118.00	133.00	135.00	146.00	120.00	<b>128.43</b>
32	IC095248	42.00	78.00	38.00	-	83.00	82.00	54.00	<b>62.83</b>	83.00	167.00	108.00	-	134.00	146.00	122.00	<b>126.67</b>
33	IC095251	42.00	77.00	43.00	46.00	84.00	74.00	53.00	<b>59.86</b>	83.00	165.00	108.00	134.00	133.00	143.00	120.00	<b>126.57</b>
34	IC095371	46.00	94.00	44.00	51.00	81.00	76.00	55.00	<b>63.86</b>	88.00	165.00	107.00	137.00	135.00	144.00	122.00	<b>128.29</b>
35	IC095382-B	45.00	94.00	40.00	49.00	85.00	57.00	55.00	<b>60.71</b>	88.00	162.00	110.00	135.00	134.00	135.00	121.00	<b>126.43</b>
36	IC095383	45.00	94.00	50.00	46.00	86.00	84.00	54.00	<b>65.57</b>	88.00	167.00	111.00	134.00	123.00	147.00	120.00	<b>127.14</b>
37	IC095389	44.00	105.00	40.00	47.00	83.00	82.00	56.00	<b>65.29</b>	85.00	169.00	112.00	136.00	132.00	148.00	122.00	<b>129.14</b>
38	IC095391	45.00	85.00	41.00	-	81.00	77.00	55.00	<b>64.00</b>	85.00	172.00	115.00	-	134.00	140.00	121.00	<b>127.83</b>
39	IC095406	47.00	72.00	42.00	49.00	84.00	76.00	55.00	<b>60.71</b>	88.00	170.00	107.00	138.00	134.00	142.00	121.00	<b>128.57</b>
40	IC095430	47.00	91.00	43.00	46.00	85.00	82.00	53.00	<b>63.86</b>	88.00	166.00	108.00	136.00	134.00	149.00	120.00	<b>128.71</b>
41	IC095498	48.00	101.00	50.00	57.00	81.00	83.00	53.00	<b>67.57</b>	88.00	173.00	115.00	139.00	128.00	147.00	121.00	<b>130.14</b>
42	IC095510	53.00	97.00	51.00	49.00	-	79.00	54.00	<b>63.83</b>	94.00	163.00	112.00	138.00	-	147.00	121.00	<b>129.17</b>
43	IC095516	45.00	93.00	48.00	47.00	79.00	77.00	54.00	<b>63.29</b>	87.00	161.00	108.00	136.00	127.00	135.00	119.00	<b>124.71</b>
44	IC095556	50.00	95.00	47.00	48.00	-	87.00	55.00	<b>63.67</b>	91.00	163.00	112.00	135.00	-	139.00	120.00	<b>126.67</b>
45	IC120621	49.00	93.00	49.00	57.00	80.00	82.00	54.00	<b>66.29</b>	90.00	157.00	113.00	140.00	124.00	143.00	120.00	<b>126.71</b>
46	IC120649	47.00	88.00	50.00	46.00	81.00	85.00	55.00	<b>64.57</b>	88.00	169.00	115.00	133.00	121.00	138.00	117.00	<b>125.86</b>
47	IC120668	44.00	85.00	51.00	48.00	84.00	81.00	53.00	<b>63.71</b>	86.00	167.00	112.00	136.00	134.00	133.00	119.00	<b>126.71</b>
48	IC120670	41.00	87.00	36.00	46.00	85.00	80.00	54.00	<b>61.29</b>	81.00	162.00	110.00	135.00	121.00	132.00	120.00	<b>123.00</b>
49	IC120689	42.00	84.00	38.00	45.00	76.00	70.00	54.00	<b>58.43</b>	84.00	166.00	115.00	136.00	118.00	148.00	121.00	<b>126.86</b>
50	IC432086	45.00	87.00	42.00	45.00	81.00	83.00	56.00	<b>62.71</b>	86.00	173.00	116.00	135.00	135.00	140.00	121.00	<b>129.43</b>
51	SKGPA-61	-	-	43.00	-	-	89.00	49.00	<b>60.33</b>	-	-	118.00	-	-	140.00	127.00	<b>128.33</b>
52	SKGPA-62	-	90.00	44.00	49.00	-	78.00	47.00	<b>61.60</b>	-	157.00	115.00	130.00	-	152.00	128.00	<b>136.40</b>
53	SKGPA-63	-	88.00	50.00	49.00	-	80.00	47.00	<b>62.80</b>	-	166.00	111.00	131.00	-	151.00	129.00	<b>137.60</b>
54	SKGPA-64	-	92.00	51.00	53.00	79.00	78.00	47.00	<b>66.67</b>	-	161.00	112.00	135.00	123.00	136.00	121.00	<b>131.33</b>
55	SKGPA-65	-	88.00	48.00	47.00	-	62.00	48.00	<b>58.60</b>	-	159.00	112.00	129.00	-	136.00	120.00	<b>131.20</b>
56	SKGPA-66	-	94.00	49.00	46.00	80.00	61.00	46.00	<b>62.67</b>	-	159.00	110.00	128.00	121.00	138.00	121.00	<b>129.50</b>



S. No.	Accession No.	Plant height (cm)								Inflorescence length (cm)							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
27	IC081698-B	115.60	93.60	94.00	112.50	67.20	35.00	110.00	<b>89.70</b>	44.60	51.66	45.60	55.30	43.00	25.00	58.00	<b>46.17</b>
28	IC094654	110.40	74.80	98.80	124.20	68.20	50.00	97.00	<b>89.06</b>	52.60	37.54	40.60	55.80	50.50	29.00	57.55	<b>46.23</b>
29	IC094661	119.20	76.20	105.00	147.60	72.40	39.00	127.00	<b>98.06</b>	47.40	44.88	36.00	52.40	50.30	30.00	59.00	<b>45.71</b>
30	IC095204	123.80	84.40	79.40	144.80	70.60	45.00	130.00	<b>96.86</b>	52.20	50.30	38.00	54.40	50.80	16.00	64.10	<b>46.54</b>
31	IC095244	114.20	92.80	85.40	139.30	69.20	39.00	119.00	<b>94.13</b>	48.60	56.32	36.00	51.00	35.80	15.00	57.00	<b>42.82</b>
32	IC095248	107.00	84.60	98.00	-	62.20	40.00	109.00	<b>83.47</b>	45.40	47.60	39.40	-	45.80	25.00	56.00	<b>43.20</b>
33	IC095251	102.80	79.80	110.00	123.00	91.60	41.00	58.00	<b>86.60</b>	39.40	49.80	39.00	49.40	38.30	13.50	45.00	<b>39.20</b>
34	IC095371	119.00	116.80	100.00	140.80	65.20	52.00	107.00	<b>100.11</b>	42.00	57.60	34.00	43.40	45.00	28.10	45.80	<b>42.27</b>
35	IC095382-B	97.80	91.80	105.00	119.80	76.00	31.00	108.00	<b>89.91</b>	51.40	51.72	30.00	45.60	42.80	20.00	58.00	<b>42.79</b>
36	IC095383	111.80	115.80	84.60	120.50	56.60	80.00	97.00	<b>95.19</b>	57.20	60.88	35.60	46.80	39.30	33.40	50.00	<b>46.17</b>
37	IC095389	108.20	113.40	82.20	120.40	77.00	31.50	81.00	<b>87.67</b>	49.20	48.08	40.00	42.80	41.50	13.30	46.00	<b>40.13</b>
38	IC095391	96.60	93.64	91.40	-	60.60	55.50	103.00	<b>83.46</b>	42.40	51.34	38.00	-	35.30	31.00	68.50	<b>44.42</b>
39	IC095406	108.60	86.20	71.30	134.80	72.20	59.00	108.00	<b>91.44</b>	44.60	47.86	37.30	55.40	46.50	17.00	59.00	<b>43.95</b>
40	IC095430	104.40	69.20	88.00	133.00	95.60	33.50	102.00	<b>89.39</b>	42.00	40.44	38.00	46.20	60.80	18.20	51.00	<b>42.38</b>
41	IC095498	108.80	75.80	78.00	113.80	80.00	45.20	97.00	<b>85.51</b>	46.00	49.94	38.00	35.50	45.00	29.00	54.75	<b>42.60</b>
42	IC095510	108.20	98.00	87.00	107.70	-	66.00	97.00	<b>93.98</b>	43.60	51.10	36.00	43.30	-	38.00	58.00	<b>45.00</b>
43	IC095516	115.60	89.00	105.00	91.30	53.20	34.00	97.00	<b>83.59</b>	44.40	46.86	40.30	30.00	56.50	25.00	56.20	<b>42.75</b>
44	IC095556	120.20	103.60	117.00	102.60	-	81.20	99.00	<b>103.93</b>	56.60	49.22	38.00	34.60	-	27.00	60.00	<b>44.24</b>
45	IC120621	117.60	57.33	88.00	95.20	49.80	43.00	104.00	<b>79.28</b>	62.80	40.23	37.00	31.60	51.00	34.00	61.00	<b>45.38</b>
46	IC120649	115.00	97.00	76.00	106.00	41.00	39.00	104.00	<b>82.57</b>	47.40	55.84	35.00	38.20	14.00	22.00	57.90	<b>38.62</b>
47	IC120668	104.80	77.80	86.00	104.60	52.00	36.00	92.00	<b>79.03</b>	51.00	46.30	35.60	38.20	42.00	22.00	57.00	<b>41.73</b>
48	IC120670	89.20	63.40	110.60	103.80	68.00	40.00	92.00	<b>81.00</b>	48.00	39.80	41.60	45.60	50.50	17.00	77.00	<b>45.64</b>
49	IC120689	109.60	60.20	95.00	113.50	54.40	45.00	98.00	<b>82.24</b>	41.40	35.56	38.00	41.30	36.80	20.00	59.50	<b>38.94</b>
50	IC432086	106.40	90.00	97.00	109.00	82.40	51.00	102.00	<b>91.11</b>	41.00	53.78	33.20	42.00	43.30	25.00	60.00	<b>42.61</b>
51	SKGPA-61	-	-	106.50	-	-	46.00	132.00	<b>94.83</b>	-	-	40.00	-	-	22.00	68.00	<b>43.33</b>
52	SKGPA-62	-	68.75	97.00	107.00	-	33.20	166.00	<b>94.39</b>	-	39.00	35.20	42.00	-	25.00	68.00	<b>41.84</b>
53	SKGPA-63	-	67.00	85.00	111.20	-	48.10	124.00	<b>87.06</b>	-	44.25	38.60	37.20	-	19.00	59.30	<b>39.67</b>
54	SKGPA-64	-	74.20	82.60	106.80	54.60	36.00	76.00	<b>71.70</b>	-	43.02	35.30	48.80	52.80	29.00	52.00	<b>43.49</b>
55	SKGPA-65	-	80.00	75.60	79.50	-	21.00	82.00	<b>67.62</b>	-	53.55	37.60	60.00	-	18.00	57.90	<b>45.41</b>
56	SKGPA-66	-	80.00	78.40	82.50	56.00	21.50	67.00	<b>64.23</b>	-	58.00	38.00	48.50	38.00	28.00	40.00	<b>41.75</b>

S. No.	Accession No.	Number of branches per plant					Lateral spikelet length (cm)				Leaf length (cm)					Leaf width (cm)		
		Delhi	Faizabad	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Rahuri	Ranchi	Mean
27	IC081698-B	4.40	11.00	4.00	-	<b>6.47</b>	22.30	16.00	21.50	<b>19.93</b>	14.10	20.70	10.00	15.50	<b>15.08</b>	4.10	5.00	<b>4.55</b>
28	IC094654	4.80	12.00	6.00	-	<b>7.60</b>	14.72	14.30	19.50	<b>16.17</b>	8.60	24.30	14.00	17.00	<b>15.98</b>	6.30	5.00	<b>5.65</b>
29	IC094661	4.60	13.00	4.00	-	<b>7.20</b>	15.92	16.50	16.53	<b>16.32</b>	9.78	19.40	10.00	15.00	<b>13.55</b>	5.90	6.00	<b>5.95</b>
30	IC095204	4.00	12.00	5.00	-	<b>7.00</b>	19.14	16.30	15.50	<b>16.98</b>	12.30	18.00	7.00	11.50	<b>12.20</b>	4.00	3.00	<b>3.50</b>
31	IC095244	5.20	9.00	4.00	-	<b>6.07</b>	18.70	11.80	19.90	<b>16.80</b>	13.92	15.30	9.00	10.20	<b>12.11</b>	3.60	5.20	<b>4.40</b>
32	IC095248	2.60	9.00	5.00	-	<b>5.53</b>	18.18	14.30	22.00	<b>18.16</b>	13.34	10.80	8.00	14.00	<b>11.54</b>	2.30	4.20	<b>3.25</b>
33	IC095251	4.80	13.00	5.00	-	<b>7.60</b>	17.52	12.00	8.10	<b>12.54</b>	11.60	22.50	9.20	10.00	<b>13.33</b>	4.70	4.00	<b>4.35</b>
34	IC095371	6.80	15.00	5.00	-	<b>8.93</b>	20.50	14.80	18.00	<b>17.77</b>	15.04	17.10	11.20	19.50	<b>15.71</b>	4.10	6.00	<b>5.05</b>
35	IC095382-B	5.60	9.00	3.00	-	<b>5.87</b>	19.24	15.80	15.10	<b>16.71</b>	13.60	18.00	3.50	14.30	<b>12.35</b>	3.60	3.00	<b>3.30</b>
36	IC095383	2.40	8.00	7.00	-	<b>5.80</b>	20.36	14.00	22.50	<b>18.95</b>	15.42	10.40	11.00	15.00	<b>12.96</b>	3.20	6.00	<b>4.60</b>
37	IC095389	5.60	10.00	7.00	4.00	<b>6.65</b>	16.22	9.80	5.50	<b>10.51</b>	12.42	21.60	5.00	10.00	<b>12.26</b>	5.00	3.00	<b>4.00</b>
38	IC095391	4.60	11.00	6.00	-	<b>7.20</b>	17.52	14.80	19.00	<b>17.11</b>	12.02	14.00	10.00	12.90	<b>12.23</b>	2.70	6.00	<b>4.35</b>
39	IC095406	4.40	10.00	8.00	-	<b>7.47</b>	18.88	16.50	13.10	<b>16.16</b>	12.08	16.20	11.00	15.00	<b>13.57</b>	3.80	5.00	<b>4.40</b>
40	IC095430	6.00	9.00	5.00	-	<b>6.67</b>	16.14	22.80	13.50	<b>17.48</b>	10.30	25.20	5.00	14.00	<b>13.63</b>	4.50	4.00	<b>4.25</b>
41	IC095498	4.20	9.00	5.00	4.00	<b>5.55</b>	20.24	11.30	18.00	<b>16.51</b>	11.10	9.00	8.00	10.00	<b>9.53</b>	2.20	6.00	<b>4.10</b>
42	IC095510	5.00	8.00	3.00	4.00	<b>5.00</b>	16.88	-	19.00	<b>17.94</b>	15.74	-	12.00	16.50	<b>14.75</b>	-	6.20	<b>6.20</b>
43	IC095516	5.60	12.00	6.00	-	<b>7.87</b>	17.78	25.30	18.45	<b>20.51</b>	11.18	13.10	9.00	9.80	<b>10.77</b>	3.00	6.00	<b>4.50</b>
44	IC095556	3.00	10.00	5.00	-	<b>6.00</b>	13.28	-	17.50	<b>15.39</b>	15.16	-	13.00	16.00	<b>14.72</b>	-	5.00	<b>5.00</b>
45	IC120621	5.33	12.00	8.00	-	<b>8.44</b>	17.20	23.00	13.50	<b>17.90</b>	8.70	9.00	10.00	9.00	<b>9.18</b>	3.90	4.00	<b>3.95</b>
46	IC120649	6.40	13.00	6.00	-	<b>8.47</b>	19.88	9.00	17.00	<b>15.29</b>	11.82	11.30	9.00	1.60	<b>8.43</b>	3.20	4.00	<b>3.60</b>
47	IC120668	4.20	12.00	6.00	2.00	<b>6.05</b>	15.06	17.00	14.80	<b>15.62</b>	10.08	17.10	8.00	13.50	<b>12.17</b>	4.50	4.00	<b>4.25</b>
48	IC120670	6.80	9.00	6.00	4.00	<b>6.45</b>	12.14	20.00	16.00	<b>16.05</b>	8.46	11.70	10.00	10.00	<b>10.04</b>	3.90	4.00	<b>3.95</b>
49	IC120689	5.60	9.00	3.00	4.00	<b>5.40</b>	9.10	16.80	13.10	<b>13.00</b>	9.46	11.70	6.00	8.90	<b>9.02</b>	2.70	5.00	<b>3.85</b>
50	IC432086	6.00	10.00	5.00	-	<b>7.00</b>	20.24	14.00	15.00	<b>16.41</b>	12.44	15.30	11.00	16.50	<b>13.81</b>	3.80	4.00	<b>3.90</b>
51	SKGPA-61	-	12.00	5.00	-	<b>8.50</b>	-	-	27.50	<b>27.50</b>	-	-	6.00	19.50	<b>12.75</b>	-	3.00	<b>3.00</b>
52	SKGPA-62	8.00	9.00	6.00	-	<b>7.67</b>	8.75	-	18.00	<b>13.38</b>	10.32	-	10.00	13.40	<b>11.24</b>	-	4.00	<b>4.00</b>
53	SKGPA-63	6.00	8.00	5.00	-	<b>6.33</b>	13.50	-	22.40	<b>17.95</b>	9.40	-	7.00	20.50	<b>12.30</b>	-	4.00	<b>4.00</b>
54	SKGPA-64	8.20	9.00	7.00	3.00	<b>6.80</b>	15.48	19.80	20.50	<b>18.59</b>	11.42	12.60	12.00	12.00	<b>12.01</b>	3.10	7.00	<b>5.05</b>
55	SKGPA-65	6.00	10.00	4.00	4.00	<b>6.00</b>	23.40	-	18.50	<b>20.95</b>	10.70	-	7.00	11.50	<b>9.73</b>	-	4.00	<b>4.00</b>
56	SKGPA-66	6.00	11.00	5.00	3.00	<b>6.25</b>	18.50	17.00	28.40	<b>21.30</b>	10.60	16.20	10.00	7.50	<b>11.08</b>	5.00	7.00	<b>6.00</b>

S. No.	Accession No.	Petiole length (cm)					Stem thickness (mm)				Seed yield per plant (g)							
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
27	IC081698-B	7.70	10.40	5.00	9.00	<b>8.03</b>	16.48	1.10	4.50	<b>7.36</b>	4.40	16.27	8.60	6.00	19.70	21.60	6.46	<b>11.86</b>
28	IC094654	4.62	12.20	7.00	9.00	<b>8.21</b>	10.85	1.40	5.50	<b>5.92</b>	5.20	9.88	10.20	4.00	41.00	17.80	8.00	<b>13.73</b>
29	IC094661	5.60	7.20	6.00	8.00	<b>6.70</b>	11.16	1.30	4.00	<b>5.49</b>	4.40	9.03	8.70	10.00	26.00	34.00	14.00	<b>15.16</b>
30	IC095204	5.94	8.10	4.00	8.50	<b>6.64</b>	10.86	1.40	4.50	<b>5.59</b>	6.20	9.53	9.40	10.00	17.10	25.40	24.00	<b>14.52</b>
31	IC095244	7.08	6.30	5.00	5.50	<b>5.97</b>	12.64	1.40	6.10	<b>6.71</b>	6.40	11.05	9.80	10.00	17.80	22.40	24.00	<b>14.49</b>
32	IC095248	7.82	3.60	5.50	12.00	<b>7.23</b>	14.41	0.50	7.00	<b>7.30</b>	4.00	8.96	10.60	-	19.20	29.50	26.04	<b>16.38</b>
33	IC095251	6.56	9.90	5.30	4.50	<b>6.57</b>	10.78	1.60	2.50	<b>4.96</b>	4.60	8.61	10.60	8.00	20.40	13.70	12.00	<b>11.13</b>
34	IC095371	10.26	7.20	8.00	8.50	<b>8.49</b>	11.43	0.60	6.00	<b>6.01</b>	6.40	9.47	10.40	10.00	25.40	26.80	14.00	<b>14.64</b>
35	IC095382-B	7.62	7.20	2.20	6.00	<b>5.76</b>	12.45	0.80	6.20	<b>6.48</b>	4.60	10.21	11.60	32.00	29.80	18.70	14.00	<b>17.27</b>
36	IC095383	8.78	4.50	8.00	7.00	<b>7.07</b>	17.35	0.70	4.50	<b>7.52</b>	4.80	7.37	12.30	5.00	12.70	16.00	16.00	<b>10.60</b>
37	IC095389	7.58	10.40	3.50	6.50	<b>7.00</b>	13.90	1.30	4.00	<b>6.40</b>	3.60	10.17	11.40	10.00	19.20	27.40	10.08	<b>13.12</b>
38	IC095391	6.72	5.90	7.00	6.90	<b>6.63</b>	11.39	1.80	4.50	<b>5.90</b>	4.20	7.55	12.30	-	14.70	18.50	10.00	<b>11.21</b>
39	IC095406	7.22	6.80	6.00	7.00	<b>6.76</b>	13.28	0.90	7.50	<b>7.23</b>	4.40	10.88	10.20	8.00	19.30	26.40	20.00	<b>14.17</b>
40	IC095430	5.50	13.10	3.50	8.50	<b>7.65</b>	12.28	1.30	5.20	<b>6.26</b>	4.00	10.07	11.20	10.00	36.50	22.30	20.00	<b>16.30</b>
41	IC095498	6.66	4.10	5.00	6.00	<b>5.44</b>	12.07	0.90	4.50	<b>5.82</b>	6.20	7.79	16.00	8.00	17.60	9.80	20.00	<b>12.20</b>
42	IC095510	7.60	-	7.00	7.00	<b>7.20</b>	20.31	-	6.00	<b>13.15</b>	5.40	7.25	15.00	4.00	-	24.70	14.00	<b>11.73</b>
43	IC095516	6.56	4.00	5.00	6.10	<b>5.42</b>	14.99	1.10	4.60	<b>6.90</b>	3.40	11.31	10.30	6.00	18.30	29.80	28.00	<b>15.30</b>
44	IC095556	7.20	-	9.00	5.50	<b>7.23</b>	16.11	-	6.00	<b>11.06</b>	8.20	3.28	11.40	5.00	-	21.00	12.05	<b>10.15</b>
45	IC120621	2.94	5.60	9.00	3.50	<b>5.26</b>	10.19	0.50	2.00	<b>4.23</b>	10.40	9.50	12.60	4.00	20.20	25.50	10.00	<b>13.17</b>
46	IC120649	7.12	3.60	5.00	4.30	<b>5.01</b>	15.39	1.30	3.50	<b>6.73</b>	4.40	8.37	11.60	5.00	19.00	14.00	10.00	<b>10.34</b>
47	IC120668	5.30	5.80	5.00	5.50	<b>5.40</b>	13.87	1.20	3.50	<b>6.19</b>	6.00	9.44	10.00	12.00	21.90	23.00	10.04	<b>13.20</b>
48	IC120670	5.16	5.40	5.00	6.50	<b>5.52</b>	13.00	0.80	2.00	<b>5.27</b>	5.20	5.08	11.60	10.00	17.50	17.00	10.00	<b>10.91</b>
49	IC120689	5.78	5.00	4.00	5.10	<b>4.97</b>	12.97	0.90	2.90	<b>5.59</b>	3.60	5.44	11.20	2.00	14.20	30.40	6.00	<b>10.41</b>
50	IC432086	6.68	7.20	5.00	5.50	<b>6.10</b>	13.30	1.20	5.50	<b>6.67</b>	5.20	24.17	12.50	10.00	13.90	27.00	13.98	<b>15.25</b>
51	SKGPA-61	-	-	4.00	9.50	<b>6.75</b>	-	-	8.00	<b>8.00</b>	-	-	13.60	-	-	15.60	30.00	<b>19.73</b>
52	SKGPA-62	5.60	-	7.00	10.10	<b>7.57</b>	17.86	-	4.50	<b>11.18</b>	-	16.13	14.00	15.00	-	19.40	27.96	<b>18.50</b>
53	SKGPA-63	7.15	-	8.00	12.00	<b>9.05</b>	13.88	-	8.00	<b>10.94</b>	-	15.00	11.60	16.00	-	26.00	22.00	<b>18.12</b>
54	SKGPA-64	5.76	4.50	7.00	9.50	<b>6.69</b>	19.41	0.90	3.40	<b>7.90</b>	-	20.08	12.60	14.60	17.50	24.60	14.05	<b>17.24</b>
55	SKGPA-65	6.75	-	4.00	8.00	<b>6.25</b>	18.80	-	3.00	<b>10.90</b>	-	22.25	14.60	18.70	-	18.40	14.00	<b>17.59</b>
56	SKGPA-66	5.70	6.80	8.00	4.50	<b>6.25</b>	10.98	0.80	3.00	<b>4.93</b>	-	41.50	16.00	5.00	13.90	17.00	14.00	<b>17.90</b>

S. No.	Accession No.	Seed volume weight (g/10ml)						Seed yield (q/ha)			Delhi	S.K. Nagar
		Bhubaneswar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Mean	1000 seed weight (g)	Straw weight per plant (g)
27	IC081698-B	8.10	6.77	8.20	9.62	7.71	<b>8.08</b>	8.33	6.63	<b>7.48</b>	6.70	64.00
28	IC094654	8.05	6.63	7.90	9.92	7.76	<b>8.05</b>	10.42	4.39	<b>7.40</b>	5.76	62.00
29	IC094661	7.60	6.63	8.60	9.60	8.09	<b>8.10</b>	8.75	5.69	<b>7.22</b>	6.34	46.00
30	IC095204	7.46	7.16	8.40	9.66	7.90	<b>8.12</b>	11.25	7.06	<b>9.15</b>	6.04	80.00
31	IC095244	7.66	7.41	8.00	10.42	8.56	<b>8.41</b>	11.67	7.78	<b>9.72</b>	6.34	116.00
32	IC095248	7.99	-	8.10	9.78	8.33	<b>8.55</b>	8.75	4.65	<b>6.70</b>	7.20	104.00
33	IC095251	7.91	7.21	7.70	9.64	8.23	<b>8.14</b>	10.00	4.46	<b>7.23</b>	6.62	78.00
34	IC095371	8.58	6.96	8.20	9.89	7.18	<b>8.16</b>	11.25	6.67	<b>8.96</b>	7.16	90.00
35	IC095382-B	8.53	6.66	8.30	9.80	7.80	<b>8.22</b>	10.83	5.67	<b>8.25</b>	7.16	46.00
36	IC095383	7.51	6.91	7.60	9.60	7.81	<b>7.89</b>	11.67	6.28	<b>8.97</b>	6.90	54.00
37	IC095389	7.49	7.10	7.40	9.26	7.59	<b>7.77</b>	7.50	4.52	<b>6.01</b>	7.00	40.00
38	IC095391	7.82	-	8.20	9.50	7.50	<b>8.26</b>	8.33	2.80	<b>5.56</b>	6.38	66.00
39	IC095406	7.38	6.55	8.60	9.82	8.15	<b>8.10</b>	9.17	4.83	<b>7.00</b>	6.88	64.00
40	IC095430	7.79	6.33	8.40	9.68	7.96	<b>8.03</b>	8.33	2.61	<b>5.47</b>	5.70	42.00
41	IC095498	7.44	7.42	7.30	9.80	7.82	<b>7.96</b>	11.25	3.46	<b>7.36</b>	6.74	76.00
42	IC095510	7.16	6.50	-	9.86	8.06	<b>7.90</b>	10.00	2.69	<b>6.34</b>	6.60	62.00
43	IC095516	7.29	7.25	8.20	10.10	7.03	<b>7.97</b>	7.08	3.35	<b>5.22</b>	6.22	42.00
44	IC095556	7.19	7.47	-	10.05	8.21	<b>8.23</b>	14.17	2.19	<b>8.18</b>	6.70	68.00
45	IC120621	7.57	6.76	7.20	9.92	8.00	<b>7.89</b>	19.17	1.06	<b>10.11</b>	5.76	78.00
46	IC120649	7.64	7.05	7.10	9.95	8.19	<b>7.99</b>	8.33	4.65	<b>6.49</b>	6.10	40.00
47	IC120668	8.28	6.37	7.20	9.55	6.91	<b>7.66</b>	11.67	2.80	<b>7.23</b>	6.72	54.00
48	IC120670	8.29	6.66	8.00	10.40	7.79	<b>8.23</b>	10.42	1.13	<b>5.77</b>	6.24	32.00
49	IC120689	8.02	7.20	7.40	10.26	8.31	<b>8.24</b>	7.92	1.61	<b>4.76</b>	7.28	34.00
50	IC432086	7.67	6.84	7.30	9.84	8.50	<b>8.03</b>	8.33	10.74	<b>9.54</b>	5.66	50.00
51	SKGPA-61	-	-	-	9.20	8.13	<b>8.67</b>	-	-	-	-	230.00
52	SKGPA-62	-	7.51	-	9.50	7.64	<b>8.22</b>	-	2.39	<b>2.39</b>	6.52	52.00
53	SKGPA-63	-	7.15	-	9.02	7.54	<b>7.90</b>	-	1.11	<b>1.11</b>	6.58	126.00
54	SKGPA-64	-	7.50	7.00	10.28	7.57	<b>8.09</b>	-	2.97	<b>2.97</b>	6.50	146.00
55	SKGPA-65	-	7.24	-	9.84	7.32	<b>8.13</b>	-	1.65	<b>1.65</b>	5.82	75.00
56	SKGPA-66	-	6.54	8.10	10.10	8.08	<b>8.20</b>	-	1.54	<b>1.54</b>	6.34	46.00

S. No.	Acesion No.	Days to 50% flowering								Days to 80% maturity							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
57	SKGPA-67	-	84.00	-	-	79.00	69.00	47.00	<b>69.75</b>	-	167.00	-	-	121.00	135.00	123.00	<b>136.50</b>
58	SKGPA-68	-	105.00	-	42.00	82.00	70.00	47.00	<b>69.20</b>	-	168.00	-	124.00	120.00	134.00	126.00	<b>134.40</b>
59	SKGPA-69	-	105.00	-	52.00	79.00	63.00	47.00	<b>69.20</b>	-	168.00	-	134.00	121.00	127.00	120.00	<b>134.00</b>
60	SKGPA-70	-	-	-	47.00	-	70.00	47.00	<b>54.67</b>	-	-	-	131.00	-	137.00	123.00	<b>130.33</b>
61	SKGPA-71	-	-	-	64.00	-	-	48.00	<b>56.00</b>	-	-	-	142.00	-	-	123.00	<b>132.50</b>
62	SKGPA-72	-	105.00	-	47.00	84.00	79.00	49.00	<b>72.80</b>	-	170.00	-	137.00	132.00	137.00	119.00	<b>139.00</b>
63	SKGPA-73	-	93.00	-	49.00	83.00	77.00	48.00	<b>70.00</b>	-	173.00	-	138.00	132.00	137.00	118.00	<b>139.60</b>
64	SKGPA-74	-	105.00	-	59.00	-	91.00	46.00	<b>75.25</b>	-	158.00	-	143.00	-	135.00	121.00	<b>139.25</b>
65	SKGPA-75	-	75.00	-	44.00	-	59.00	47.00	<b>56.25</b>	-	157.00	-	133.00	-	136.00	120.00	<b>136.50</b>
66	SKGPA-76	-	-	-	54.00	-	76.00	49.00	<b>59.67</b>	-	-	-	137.00	-	137.00	119.00	<b>131.00</b>
67	SKGPA-77	-	77.00	-	44.00	80.00	77.00	47.00	<b>65.00</b>	-	159.00	-	134.00	116.00	137.00	119.00	<b>133.00</b>
68	SKGPA-78	-	77.00	-	43.00	79.00	74.00	46.00	<b>63.80</b>	-	163.00	-	132.00	118.00	152.00	126.00	<b>138.20</b>
69	SKGPA-79	-	79.00	-	46.00	80.00	67.00	47.00	<b>63.80</b>	-	161.00	-	131.00	117.00	126.00	123.00	<b>131.60</b>
70	SKGPA-80	-	104.00	-	49.00	-	68.00	50.00	<b>67.75</b>	-	172.00	-	135.00	-	155.00	126.00	<b>147.00</b>
71	SKGPA-81	-	105.00	-	43.00	-	-	49.00	<b>65.67</b>	-	162.00	-	130.00	-	-	122.00	<b>138.00</b>
72	SKGPA-82	-	89.00	-	46.00	-	-	48.00	<b>61.00</b>	-	158.00	-	133.00	-	-	123.00	<b>138.00</b>
73	SKGPA-83	-	-	-	47.00	-	-	48.00	<b>47.50</b>	-	-	-	135.00	-	-	121.00	<b>128.00</b>
74	SKGPA-84	-	-	-	48.00	-	-	-	<b>48.00</b>	-	-	-	134.00	-	-	-	<b>134.00</b>
75	SKGPA-85	-	89.00	-	-	-	-	48.00	<b>68.50</b>	-	161.00	-	-	-	-	122.00	<b>141.50</b>
76	SKGPA-86	-	88.00	-	44.00	-	-	48.00	<b>60.00</b>	-	160.00	-	134.00	-	-	124.00	<b>139.33</b>
77	SKGPA-87	-	118.00	-	51.00	-	-	50.00	<b>73.00</b>	-	172.00	-	137.00	-	-	128.00	<b>145.67</b>
78	SKGPA-88	-	-	-	62.00	-	79.00	49.00	<b>63.33</b>	-	-	-	142.00	-	155.00	129.00	<b>142.00</b>
79	SKGPA-89	-	101.00	-	46.00	81.00	62.00	46.00	<b>67.20</b>	-	161.00	-	135.00	133.00	133.00	124.00	<b>137.20</b>
80	SKGPA-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	SKGPA-91	-	87.00	-	-	-	63.00	51.00	<b>67.00</b>	-	164.00	-	-	-	135.00	123.00	<b>140.67</b>
82	SKGPA-92	-	79.00	-	42.00	-	60.00	48.00	<b>57.25</b>	-	158.00	-	130.00	-	130.00	121.00	<b>134.75</b>
83	SKGPA-93	-	-	-	-	-	61.00	49.00	<b>55.00</b>	-	-	-	-	-	134.00	119.00	<b>126.50</b>
84	SKGPA-94	-	74.00	-	-	-	-	48.00	<b>61.00</b>	-	161.00	-	-	-	-	119.00	<b>140.00</b>
85	SKGPA-95	-	-	-	-	-	-	46.00	<b>46.00</b>	-	-	-	-	-	-	120.00	<b>120.00</b>
86	SKGPA-96	-	84.00	-	-	-	-	48.00	<b>66.00</b>	-	163.00	-	-	-	-	121.00	<b>142.00</b>

S. No.	Accession No.	Plant height (cm)								Inflorescence length (cm)							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
57	SKGPA-67	-	58.00	-	-	46.20	19.30	77.00	<b>50.13</b>	-	40.14	-	-	45.00	27.00	47.00	<b>39.79</b>
58	SKGPA-68	-	51.00	-	108.70	71.80	19.00	74.00	<b>64.90</b>	-	39.50	-	53.70	50.30	23.00	48.10	<b>42.92</b>
59	SKGPA-69	-	44.65	-	88.00	65.40	30.00	78.00	<b>61.21</b>	-	36.60	-	45.70	42.50	28.00	46.00	<b>39.76</b>
60	SKGPA-70	-	-	-	83.30	-	32.30	75.00	<b>63.53</b>	-	-	-	51.30	-	28.10	53.20	<b>44.20</b>
61	SKGPA-71	-	-	-	152.30	-	-	156.00	<b>154.15</b>	-	-	-	36.30	-	-	81.00	<b>58.65</b>
62	SKGPA-72	-	41.00	-	115.50	57.60	28.50	106.00	<b>69.72</b>	-	28.00	-	62.30	46.80	24.00	58.00	<b>43.82</b>
63	SKGPA-73	-	51.20	-	74.70	59.40	26.00	97.00	<b>61.66</b>	-	34.02	-	54.00	35.00	16.00	53.90	<b>38.58</b>
64	SKGPA-74	-	85.00	-	147.70	-	63.20	131.00	<b>106.73</b>	-	51.50	-	35.70	-	28.00	47.00	<b>40.55</b>
65	SKGPA-75	-	52.33	-	103.70	-	29.30	91.00	<b>69.08</b>	-	38.40	-	58.00	-	22.00	49.00	<b>41.85</b>
66	SKGPA-76	-	-	-	92.00	-	36.50	102.00	<b>76.83</b>	-	-	-	48.30	-	19.40	44.00	<b>37.23</b>
67	SKGPA-77	-	40.00	-	124.00	64.00	22.00	97.00	<b>69.40</b>	-	21.83	-	53.30	42.50	19.00	45.10	<b>36.35</b>
68	SKGPA-78	-	70.60	-	125.80	51.60	45.00	91.00	<b>76.80</b>	-	43.36	-	50.80	35.30	32.20	37.00	<b>39.73</b>
69	SKGPA-79	-	46.25	-	86.50	59.20	14.00	75.00	<b>56.19</b>	-	31.05	-	31.00	37.80	21.00	32.00	<b>30.57</b>
70	SKGPA-80	-	74.00	-	145.50	-	77.00	141.00	<b>109.38</b>	-	53.30	-	51.50	-	28.00	73.80	<b>51.65</b>
71	SKGPA-81	-	61.75	-	78.70	-	-	72.00	<b>70.82</b>	-	42.95	-	49.00	-	-	38.00	<b>43.32</b>
72	SKGPA-82	-	46.00	-	85.70	-	-	68.00	<b>66.57</b>	-	24.50	-	46.00	-	-	35.00	<b>35.17</b>
73	SKGPA-83	-	-	-	61.00	-	-	66.00	<b>63.50</b>	-	-	-	26.00	-	-	39.10	<b>32.55</b>
74	SKGPA-84	-	-	-	51.00	-	-	-	<b>51.00</b>	-	-	-	29.00	-	-	-	<b>29.00</b>
75	SKGPA-85	-	65.00	-	-	-	-	64.00	<b>64.50</b>	-	44.70	-	-	-	-	38.00	<b>41.35</b>
76	SKGPA-86	-	66.00	-	88.30	-	-	70.00	<b>74.77</b>	-	46.68	-	44.50	-	-	40.12	<b>43.77</b>
77	SKGPA-87	-	115.00	-	125.50	-	-	104.00	<b>114.83</b>	-	57.40	-	43.50	-	-	42.00	<b>47.63</b>
78	SKGPA-88	-	-	-	71.00	-	49.00	135.00	<b>85.00</b>	-	-	-	37.00	-	31.00	67.00	<b>45.00</b>
79	SKGPA-89	-	51.50	-	115.00	64.40	35.00	97.00	<b>72.58</b>	-	39.55	-	46.00	42.30	17.00	40.30	<b>37.03</b>
80	SKGPA-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	SKGPA-91	-	102.00	-	-	-	72.00	98.00	<b>90.67</b>	-	70.00	-	-	-	21.00	40.00	<b>43.67</b>
82	SKGPA-92	-	48.75	-	82.00	-	24.00	85.00	<b>59.94</b>	-	36.73	-	42.00	-	18.00	38.00	<b>33.68</b>
83	SKGPA-93	-	-	-	-	-	30.00	85.00	<b>57.50</b>	-	-	-	-	-	24.00	32.20	<b>28.10</b>
84	SKGPA-94	-	51.00	-	-	-	-	51.00	<b>51.00</b>	-	41.50	-	-	-	-	27.00	<b>34.25</b>
85	SKGPA-95	-	-	-	-	-	-	96.00	<b>96.00</b>	-	-	-	-	-	-	48.10	<b>48.10</b>
86	SKGPA-96	-	40.75	-	-	-	-	106.00	<b>73.38</b>	-	28.70	-	-	-	-	31.00	<b>29.85</b>

S. No.	Accession No.	Number of branches per plant					Lateral spikelet length (cm)				Leaf length (cm)					Leaf width (cm)		
		Delhi	Faizabad	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Rahuri	Ranchi	Mean
57	SKGPA-67	8.80	-	4.00	-	<b>6.40</b>	27.62	16.50	21.50	<b>21.87</b>	9.86	19.80	8.00	9.60	<b>11.82</b>	4.50	5.00	<b>4.75</b>
58	SKGPA-68	6.00	-	4.00	4.00	<b>4.67</b>	17.00	15.30	21.40	<b>17.90</b>	8.10	17.10	8.00	12.00	<b>11.30</b>	5.40	3.50	<b>4.45</b>
59	SKGPA-69	4.50	-	3.00	5.00	<b>4.17</b>	15.50	14.00	20.50	<b>16.67</b>	10.10	10.90	9.00	13.50	<b>10.88</b>	2.70	5.20	<b>3.95</b>
60	SKGPA-70	-	-	6.00	4.00	<b>5.00</b>	-	-	23.50	<b>23.50</b>	-	-	9.00	11.40	<b>10.20</b>	-	5.00	<b>5.00</b>
61	SKGPA-71	-	-	-	-	-	-	-	19.50	-	-	-	-	21.50	<b>21.50</b>	-	-	-
62	SKGPA-72	2.00	-	5.00	3.00	<b>3.33</b>	12.50	11.30	18.00	<b>13.93</b>	7.50	18.50	9.50	13.90	<b>12.35</b>	5.00	5.00	<b>5.00</b>
63	SKGPA-73	5.80	-	5.00	-	<b>5.40</b>	17.30	12.00	20.00	<b>16.43</b>	8.48	25.20	9.00	12.00	<b>13.67</b>	6.30	5.00	<b>5.65</b>
64	SKGPA-74	9.00	-	4.00	-	<b>6.50</b>	15.50	-	11.70	<b>13.60</b>	11.50	-	11.00	13.00	<b>11.83</b>	-	6.00	<b>6.00</b>
65	SKGPA-75	6.33	-	3.00	-	<b>4.67</b>	16.13	-	17.50	<b>16.82</b>	11.57	-	10.00	11.50	<b>11.02</b>	-	5.00	<b>5.00</b>
66	SKGPA-76	-	-	6.00	-	<b>6.00</b>	-	-	11.50	<b>11.50</b>	-	-	12.00	16.50	<b>14.25</b>	-	6.10	<b>6.10</b>
67	SKGPA-77	5.00	-	4.00	3.00	<b>4.00</b>	5.17	12.50	20.50	<b>12.72</b>	12.73	23.40	10.00	14.50	<b>15.16</b>	9.00	7.00	<b>8.00</b>
68	SKGPA-78	7.40	-	7.00	-	<b>7.20</b>	14.48	10.50	13.90	<b>12.96</b>	11.10	18.90	9.00	8.50	<b>11.88</b>	6.80	6.00	<b>6.40</b>
69	SKGPA-79	5.75	-	4.00	4.00	<b>4.58</b>	15.75	13.50	8.50	<b>12.58</b>	7.06	15.60	7.00	8.60	<b>9.57</b>	3.90	3.00	<b>3.45</b>
70	SKGPA-80	8.00	-	8.00	-	<b>8.00</b>	23.30	-	17.50	<b>20.40</b>	11.01	-	3.00	19.00	<b>11.00</b>	-	7.00	<b>7.00</b>
71	SKGPA-81	6.75	-	-	4.00	<b>5.38</b>	19.48	-	11.00	<b>15.24</b>	8.50	-	-	10.50	<b>9.50</b>	-	-	-
72	SKGPA-82	8.00	-	-	4.00	<b>6.00</b>	7.50	-	17.95	<b>12.73</b>	7.60	-	-	10.40	<b>9.00</b>	-	-	-
73	SKGPA-83	-	-	-	5.00	<b>5.00</b>	-	-	18.50	<b>18.50</b>	-	-	-	9.50	<b>9.50</b>	-	-	-
74	SKGPA-84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	SKGPA-85	5.00	-	-	3.00	<b>4.00</b>	17.50	-	19.00	<b>18.25</b>	9.20	-	-	11.80	<b>10.50</b>	-	-	-
76	SKGPA-86	6.25	-	-	4.00	<b>5.13</b>	18.85	-	13.50	<b>16.18</b>	9.83	-	-	8.50	<b>9.17</b>	-	-	-
77	SKGPA-87	10.00	-	-	-	<b>10.00</b>	17.50	-	17.95	<b>17.73</b>	14.00	-	-	16.00	<b>15.00</b>	-	-	-
78	SKGPA-88	-	-	5.00	-	<b>5.00</b>	-	-	13.50	<b>13.50</b>	-	-	13.00	1.55	<b>7.28</b>	-	6.00	<b>6.00</b>
79	SKGPA-89	4.50	-	7.00	-	<b>5.75</b>	17.00	14.30	22.50	<b>17.93</b>	10.15	19.80	7.00	7.50	<b>11.11</b>	4.10	5.00	<b>4.55</b>
80	SKGPA-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	SKGPA-91	15.00	-	7.00	3.00	<b>8.33</b>	27.00	-	13.50	<b>20.25</b>	14.90	-	13.00	15.00	<b>14.30</b>	-	6.00	<b>6.00</b>
82	SKGPA-92	5.75	-	6.00	5.00	<b>5.58</b>	14.20	-	21.50	<b>17.85</b>	7.82	-	7.00	9.50	<b>8.11</b>	-	4.00	<b>4.00</b>
83	SKGPA-93	-	-	4.00	4.00	<b>4.00</b>	-	-	23.45	<b>23.45</b>	-	-	9.00	9.60	<b>9.30</b>	-	6.00	<b>6.00</b>
84	SKGPA-94	6.00	-	-	4.00	<b>5.00</b>	20.50	-	20.50	<b>20.50</b>	10.30	-	-	9.50	<b>9.90</b>	-	-	-
85	SKGPA-95	-	-	-	4.00	<b>4.00</b>	-	-	19.85	<b>19.85</b>	-	-	-	6.52	<b>6.52</b>	-	-	-
86	SKGPA-96	6.75	-	-	6.00	<b>6.38</b>	11.20	-	24.00	<b>17.60</b>	7.10	-	-	7.50	<b>7.30</b>	-	-	-

S. No.	Accession No.	Petiole length (cm)					Stem thickness (mm)				Seed yield per plant (g)							
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
57	SKGPA-67	4.96	5.40	5.20	8.10	<b>5.92</b>	11.17	0.80	2.50	<b>4.82</b>	-	0.70	-	-	41.00	22.00	16.03	<b>19.93</b>
58	SKGPA-68	4.65	4.50	4.00	8.40	<b>5.39</b>	19.24	0.70	3.50	<b>7.81</b>	-	15.50	-	34.00	31.00	19.50	20.00	<b>24.00</b>
59	SKGPA-69	4.65	3.60	5.00	7.00	<b>5.06</b>	14.56	1.90	4.00	<b>6.82</b>	-	10.00	-	5.20	11.90	11.50	30.00	<b>13.72</b>
60	SKGPA-70	-	-	4.00	8.50	<b>6.25</b>	-	-	2.30	<b>2.30</b>	-	-	-	20.00	-	16.40	8.06	<b>14.82</b>
61	SKGPA-71	-	-	-	18.00	<b>18.00</b>	-	-	9.50	<b>9.50</b>	-	-	-	10.00	-	-	16.00	<b>13.00</b>
62	SKGPA-72	4.50	7.20	6.40	12.00	<b>7.53</b>	14.06	1.40	4.00	<b>6.49</b>	-	-	-	15.00	15.80	27.80	27.95	<b>21.64</b>
63	SKGPA-73	4.44	11.70	3.00	7.90	<b>6.76</b>	18.16	0.90	3.50	<b>7.52</b>	-	3.90	-	16.00	13.40	26.50	46.00	<b>21.16</b>
64	SKGPA-74	7.00	-	8.00	10.50	<b>8.50</b>	24.54	-	4.30	<b>14.42</b>	-	41.00	-	20.00	-	17.80	14.00	<b>23.20</b>
65	SKGPA-75	6.30	-	6.00	7.00	<b>6.43</b>	15.48	-	5.50	<b>10.49</b>	-	13.50	-	10.00	-	13.20	20.00	<b>14.18</b>
66	SKGPA-76	-	-	6.00	8.00	<b>7.00</b>	-	-	6.00	<b>6.00</b>	-	-	-	12.00	-	14.00	14.08	<b>13.36</b>
67	SKGPA-77	4.83	8.10	5.00	7.00	<b>6.23</b>	12.16	2.30	6.00	<b>6.82</b>	-	6.83	-	10.00	12.50	18.60	22.00	<b>13.99</b>
68	SKGPA-78	5.14	8.10	7.00	7.50	<b>6.94</b>	14.54	1.30	7.00	<b>7.61</b>	-	17.44	-	15.60	11.10	24.20	14.00	<b>16.47</b>
69	SKGPA-79	3.44	5.40	4.00	6.10	<b>4.74</b>	22.16	1.20	3.60	<b>8.99</b>	-	21.63	-	2.00	14.00	21.00	20.00	<b>15.73</b>
70	SKGPA-80	7.20	-	12.00	12.00	<b>10.40</b>	15.37	-	6.50	<b>10.93</b>	-	26.00	-	22.00	-	28.50	7.00	<b>20.88</b>
71	SKGPA-81	4.65	-	-	6.00	<b>5.33</b>	24.32	-	3.30	<b>13.81</b>	-	16.25	-	5.00	-	-	10.00	<b>10.42</b>
72	SKGPA-82	2.60	-	-	5.80	<b>4.20</b>	15.94	-	4.60	<b>10.27</b>	-	-	-	5.00	-	-	10.08	<b>7.54</b>
73	SKGPA-83	-	-	-	5.00	<b>5.00</b>	-	-	4.50	<b>4.50</b>	-	-	-	12.50	-	-	10.00	<b>11.25</b>
74	SKGPA-84	-	-	-	-	-	-	-	-	-	-	-	-	12.50	-	-	-	<b>12.50</b>
75	SKGPA-85	5.00	-	-	4.70	<b>4.85</b>	13.70	-	3.40	<b>8.55</b>	-	-	-	-	-	-	8.00	<b>8.00</b>
76	SKGPA-86	4.77	-	-	5.50	<b>5.13</b>	15.20	-	2.50	<b>8.85</b>	-	25.00	-	15.00	-	-	28.00	<b>22.67</b>
77	SKGPA-87	5.00	-	-	9.00	<b>7.00</b>	20.77	-	7.00	<b>13.89</b>	-	25.50	-	15.00	-	-	8.06	<b>16.19</b>
78	SKGPA-88	-	-	7.00	8.50	<b>7.75</b>	-	-	6.90	<b>6.90</b>	-	-	-	2.50	-	28.30	7.00	<b>12.60</b>
79	SKGPA-89	5.60	4.90	-	6.00	<b>5.50</b>	13.09	1.50	2.50	<b>5.70</b>	-	10.75	-	10.00	24.30	20.50	9.98	<b>15.11</b>
80	SKGPA-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	SKGPA-91	8.65	-	9.00	9.00	<b>8.88</b>	15.28	-	6.00	<b>10.64</b>	-	40.00	-	-	-	18.90	12.00	<b>23.63</b>
82	SKGPA-92	3.90	-	3.00	8.50	<b>5.13</b>	12.75	-	4.50	<b>8.63</b>	-	22.50	-	5.00	-	20.30	13.00	<b>15.20</b>
83	SKGPA-93	-	-	5.00	5.10	<b>5.05</b>	-	-	5.20	<b>5.20</b>	-	-	-	-	-	22.30	14.06	<b>18.18</b>
84	SKGPA-94	4.50	-	-	5.50	<b>5.00</b>	14.84	-	3.50	<b>9.17</b>	-	34.00	-	-	-	-	4.00	<b>19.00</b>
85	SKGPA-95	-	-	-	7.51	<b>7.51</b>	-	-	3.95	<b>3.95</b>	-	-	-	-	-	-	14.00	<b>14.00</b>
86	SKGPA-96	3.48	-	-	4.50	<b>3.99</b>	11.44	-	4.50	<b>7.97</b>	-	12.83	-	-	-	-	22.00	<b>17.42</b>



S. No.	Accession No.	Seed volume weight (g/10ml)						Seed yield (q/ha)			Delhi	S.K. Nagar
		Bhubaneswar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Mean	1000 seed weight (g)	Straw weight per plant (g)
57	SKGPA-67	-	-	7.10	9.75	6.36	<b>7.74</b>	-	4.69	<b>4.69</b>	5.78	54.00
58	SKGPA-68	-	7.51	8.30	9.40	7.72	<b>8.23</b>	-	1.15	<b>1.15</b>	6.68	90.00
59	SKGPA-69	-	7.22	7.60	9.72	7.89	<b>8.11</b>	-	0.74	<b>0.74</b>	6.18	46.00
60	SKGPA-70	-	7.38	-	9.82	8.13	<b>8.44</b>	-	-	-	-	42.00
61	SKGPA-71	-	6.86	-	-	7.22	<b>7.04</b>	-	-	-	-	164.00
62	SKGPA-72	-	7.94	7.30	9.45	7.58	<b>8.07</b>	-	0.26	<b>0.26</b>	6.29	132.00
63	SKGPA-73	-	7.61	7.40	9.67	8.07	<b>8.19</b>	-	0.72	<b>0.72</b>	5.32	84.00
64	SKGPA-74	-	6.60	-	9.95	6.95	<b>7.83</b>	-	1.52	<b>1.52</b>	6.28	76.00
65	SKGPA-75	-	7.25	-	9.64	8.05	<b>8.31</b>	-	1.50	<b>1.50</b>	6.84	60.00
66	SKGPA-76	-	7.82	-	9.20	7.95	<b>8.32</b>	-	-	-	-	116.00
67	SKGPA-77	-	6.48	7.80	9.80	7.65	<b>7.93</b>	-	0.76	<b>0.76</b>	6.04	118.00
68	SKGPA-78	-	6.57	8.00	9.43	7.77	<b>7.94</b>	-	5.81	<b>5.81</b>	5.90	86.00
69	SKGPA-79	-	7.65	8.00	10.26	8.28	<b>8.55</b>	-	3.20	<b>3.20</b>	6.56	20.00
70	SKGPA-80	-	7.08	-	9.07	7.42	<b>7.86</b>	-	0.96	<b>0.96</b>	5.66	103.00
71	SKGPA-81	-	6.92	-	-	7.58	<b>7.25</b>	-	2.41	<b>2.41</b>	7.04	40.00
72	SKGPA-82	-	6.69	-	-	8.05	<b>7.37</b>	-	-	-	5.76	30.00
73	SKGPA-83	-	6.81	-	-	7.60	<b>7.21</b>	-	-	-	-	50.00
74	SKGPA-84	-	6.94	-	-	-	<b>6.94</b>	-	-	-	-	-
75	SKGPA-85	-	-	-	-	7.70	<b>7.70</b>	-	-	-	6.14	28.00
76	SKGPA-86	-	6.93	-	-	8.13	<b>7.53</b>	-	3.70	<b>3.70</b>	6.08	122.00
77	SKGPA-87	-	6.54	-	-	7.47	<b>7.01</b>	-	0.94	<b>0.94</b>	-	32.00
78	SKGPA-88	-	6.98	-	9.00	7.73	<b>7.90</b>	-	-	-	-	133.00
79	SKGPA-89	-	6.26	7.30	9.62	8.18	<b>7.84</b>	-	0.80	<b>0.80</b>	5.88	80.00
80	SKGPA-90	-	-	-	-	-	-	-	-	-	-	-
81	SKGPA-91	-	-	-	9.58	7.92	<b>8.75</b>	-	2.96	<b>2.96</b>	6.59	48.00
82	SKGPA-92	-	7.00	-	9.75	8.41	<b>8.39</b>	-	6.67	<b>6.67</b>	6.38	57.00
83	SKGPA-93	-	-	-	9.92	8.07	<b>9.00</b>	-	-	-	-	26.00
84	SKGPA-94	-	-	-	-	7.35	<b>7.35</b>	-	1.26	<b>1.26</b>	6.62	36.00
85	SKGPA-95	-	-	-	-	7.48	<b>7.48</b>	-	-	-	-	56.00
86	SKGPA-96	-	-	-	-	7.55	<b>7.55</b>	-	1.43	<b>1.43</b>	7.22	78.00

S. No.	Accession No.	Days to 50% flowering								Days to 80% maturity							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
87	SKGPA-97	-	94.00	-	46.00	-	78.00	47.00	<b>66.25</b>	-	161.00	-	132.00	-	153.00	121.00	<b>141.75</b>
88	SKGPA-98	-	77.00	-	55.00	-	76.00	53.00	<b>65.25</b>	-	169.00	-	142.00	-	155.00	126.00	<b>148.00</b>
89	SKGPA-99	-	78.00	-	44.00	-	62.00	47.00	<b>57.75</b>	-	168.00	-	137.00	-	135.00	121.00	<b>140.25</b>
90	SKGPA-100	-	85.00	-	43.00	-	59.00	48.00	<b>58.75</b>	-	172.00	-	139.00	-	128.00	123.00	<b>140.50</b>
91	SKGPA-101	-	94.00	-	-	-	67.00	49.00	<b>70.00</b>	-	155.00	-	-	-	126.00	120.00	<b>133.67</b>
92	SKGPA-102	-	90.00	-	-	-	-	51.00	<b>70.50</b>	-	158.00	-	-	-	-	119.00	<b>138.50</b>
93	SKGPA-103	-	113.00	-	41.00	-	-	47.00	<b>67.00</b>	-	164.00	-	131.00	-	-	122.00	<b>139.00</b>
94	SKGPA-104	-	94.00	-	53.00	-	71.00	53.00	<b>67.75</b>	-	165.00	-	135.00	-	146.00	119.00	<b>141.25</b>
95	SKGPA-105	-	94.00	-	54.00	-	60.00	54.00	<b>65.50</b>	-	159.00	-	134.00	-	153.00	119.00	<b>141.25</b>
96	SKGPA-106	-	84.00	-	43.00	84.00	62.00	48.00	<b>64.20</b>	-	157.00	-	130.00	136.00	132.00	122.00	<b>135.40</b>
97	SKGPA-107	-	83.00	-	-	-	60.00	49.00	<b>64.00</b>	-	157.00	-	-	-	129.00	121.00	<b>135.67</b>
98	SKGPA-108	-	-	-	-	-	76.00	48.00	<b>62.00</b>	-	-	-	-	-	131.00	122.00	<b>126.50</b>
99	SKGPA-109	-	85.00	-	53.00	-	-	50.00	<b>62.67</b>	-	169.00	-	136.00	-	-	119.00	<b>141.33</b>
100	SKGPA-110	-	83.00	-	-	-	-	51.00	<b>67.00</b>	-	162.00	-	-	-	-	118.00	<b>140.00</b>
<b>Mean for check variety</b>																	
	<b>BGA-2 (C)</b>	<b>48.20</b>	<b>96.00</b>	<b>-</b>	<b>62.18</b>	<b>83.40</b>	<b>93.00</b>	<b>57.60</b>	<b>73.40</b>	<b>89.00</b>	<b>173.80</b>	<b>-</b>	<b>143.82</b>	<b>129.00</b>	<b>161.00</b>	<b>126.30</b>	<b>137.15</b>
	<b>GA-1 (C)</b>	<b>56.80</b>	<b>96.60</b>	<b>43.86</b>	<b>56.00</b>	<b>-</b>	<b>-</b>	<b>54.40</b>	<b>61.53</b>	<b>97.80</b>	<b>163.00</b>	<b>113.43</b>	<b>138.27</b>	<b>-</b>	<b>-</b>	<b>124.20</b>	<b>127.34</b>
	<b>GA-2 (C)</b>	<b>55.20</b>	<b>100.80</b>	<b>44.14</b>	<b>56.09</b>	<b>-</b>	<b>90.00</b>	<b>50.00</b>	<b>66.04</b>	<b>96.20</b>	<b>166.80</b>	<b>112.57</b>	<b>138.45</b>	<b>-</b>	<b>160.00</b>	<b>123.40</b>	<b>132.90</b>
	<b>Suvarna (C)</b>	<b>50.40</b>	<b>91.80</b>	<b>44.14</b>	<b>64.18</b>	<b>79.40</b>	<b>96.00</b>	<b>60.20</b>	<b>69.45</b>	<b>92.00</b>	<b>174.20</b>	<b>113.57</b>	<b>143.09</b>	<b>123.00</b>	<b>160.00</b>	<b>125.90</b>	<b>133.11</b>
	<b>Minimum</b>	<b>39.00</b>	<b>63.00</b>	<b>35.00</b>	<b>36.00</b>	<b>73.00</b>	<b>57.00</b>	<b>46.00</b>	<b>46.00</b>	<b>81.00</b>	<b>155.00</b>	<b>104.00</b>	<b>124.00</b>	<b>116.00</b>	<b>125.00</b>	<b>117.00</b>	<b>120.00</b>
	<b>Maximum</b>	<b>63.00</b>	<b>118.0</b>	<b>55.00</b>	<b>64.18</b>	<b>86.00</b>	<b>96.00</b>	<b>60.20</b>	<b>75.25</b>	<b>102.00</b>	<b>179.00</b>	<b>135.00</b>	<b>144.00</b>	<b>139.00</b>	<b>161.00</b>	<b>129.00</b>	<b>148.00</b>
	<b>Mean</b>	<b>48.66</b>	<b>92.97</b>	<b>44.58</b>	<b>48.53</b>	<b>81.69</b>	<b>74.77</b>	<b>51.01</b>	<b>63.71</b>	<b>89.83</b>	<b>164.46</b>	<b>112.09</b>	<b>135.42</b>	<b>130.52</b>	<b>140.52</b>	<b>122.40</b>	<b>132.32</b>
	<b>CD(0.05)</b>	<b>4.24</b>	<b>35.18</b>	<b>10.81</b>	<b>7.00</b>			<b>2.68</b>		<b>3.94</b>	<b>8.76</b>	<b>11.04</b>	<b>1.61</b>			<b>3.27</b>	
	<b>CV(%) Error</b>	<b>3.02</b>	<b>13.68</b>	<b>9.12</b>	<b>5.13</b>			<b>2.01</b>		<b>1.57</b>	<b>1.94</b>	<b>3.62</b>	<b>0.50</b>			<b>1.09</b>	
	<b>CV(%) Pheno.</b>	<b>13.33</b>	<b>12.28</b>	<b>10.30</b>	<b>11.44</b>	<b>3.23</b>	<b>12.09</b>	<b>6.33</b>		<b>6.57</b>	<b>3.22</b>	<b>4.20</b>	<b>2.79</b>	<b>5.06</b>	<b>5.84</b>	<b>2.49</b>	

S. No.	Accession No.	Plant height (cm)								Inflorescence length (cm)							
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
87	SKGPA-97	-	56.00	-	56.00	-	29.00	95.00	<b>59.00</b>	-	33.50	-	26.00	-	15.00	37.90	<b>28.10</b>
88	SKGPA-98	-	102.50	-	87.00	-	72.00	141.00	<b>100.63</b>	-	56.10	-	33.00	-	40.00	68.00	<b>49.28</b>
89	SKGPA-99	-	71.75	-	83.00	-	33.00	59.00	<b>61.69</b>	-	48.93	-	37.00	-	20.00	30.75	<b>34.17</b>
90	SKGPA-100	-	45.25	-	60.00	-	24.00	47.00	<b>44.06</b>	-	33.00	-	27.80	-	25.00	28.00	<b>28.45</b>
91	SKGPA-101	-	21.00	-	-	-	31.00	99.00	<b>50.33</b>	-	9.50	-	-	-	25.00	54.00	<b>29.50</b>
92	SKGPA-102	-	20.00	-	-	-	-	95.00	<b>57.50</b>	-	12.00	-	-	-	-	39.00	<b>25.50</b>
93	SKGPA-103	-	34.00	-	62.70	-	-	81.00	<b>59.23</b>	-	14.50	-	31.30	-	-	41.00	<b>28.93</b>
94	SKGPA-104	-	103.60	-	63.30	-	56.00	149.00	<b>92.98</b>	-	44.12	-	36.30	-	38.00	75.85	<b>48.57</b>
95	SKGPA-105	-	109.00	-	72.50	-	72.20	152.00	<b>101.43</b>	-	61.50	-	31.50	-	25.00	88.00	<b>51.50</b>
96	SKGPA-106	-	39.20	-	97.00	67.60	28.00	121.00	<b>70.56</b>	-	29.10	-	53.50	42.50	19.00	80.10	<b>44.84</b>
97	SKGPA-107	-	38.00	-	-	-	49.00	83.00	<b>56.67</b>	-	31.10	-	-	-	27.00	40.00	<b>32.70</b>
98	SKGPA-108	-	-	-	-	-	16.00	69.00	<b>42.50</b>	-	-	-	-	-	17.00	38.00	<b>27.50</b>
99	SKGPA-109	-	39.50	-	135.00	-	-	128.00	<b>100.83</b>	-	30.50	-	67.50	-	-	70.20	<b>56.07</b>
100	SKGPA-110	-	24.50	-	-	-	-	65.00	<b>44.75</b>	-	17.00	-	-	-	-	42.00	<b>29.50</b>
<b>Mean for check variety</b>																	
	<b>BGA-2 (C)</b>	<b>102.20</b>	<b>111.06</b>	<b>-</b>	<b>144.56</b>	<b>85.64</b>	<b>77.00</b>	<b>165.67</b>	<b>114.36</b>	<b>50.18</b>	<b>60.51</b>	<b>-</b>	<b>34.61</b>	<b>37.08</b>	<b>25.00</b>	<b>57.80</b>	<b>44.20</b>
	<b>GA-1 (C)</b>	<b>109.44</b>	<b>88.20</b>	<b>94.43</b>	<b>139.24</b>	<b>-</b>	<b>-</b>	<b>181.38</b>	<b>122.54</b>	<b>46.96</b>	<b>47.42</b>	<b>37.83</b>	<b>49.37</b>	<b>-</b>	<b>-</b>	<b>89.80</b>	<b>54.28</b>
	<b>GA-2 (C)</b>	<b>114.64</b>	<b>97.41</b>	<b>92.03</b>	<b>125.44</b>	<b>-</b>	<b>98.30</b>	<b>182.24</b>	<b>118.34</b>	<b>42.60</b>	<b>43.32</b>	<b>35.81</b>	<b>48.78</b>	<b>-</b>	<b>35.00</b>	<b>85.69</b>	<b>48.53</b>
	<b>Suvarna (C)</b>	<b>103.96</b>	<b>119.08</b>	<b>90.67</b>	<b>151.32</b>	<b>91.08</b>	<b>80.00</b>	<b>157.07</b>	<b>113.31</b>	<b>40.76</b>	<b>62.54</b>	<b>37.38</b>	<b>35.02</b>	<b>39.74</b>	<b>24.00</b>	<b>63.25</b>	<b>43.24</b>
	<b>Minimum</b>	<b>78.40</b>	<b>20.00</b>	<b>71.30</b>	<b>51.00</b>	<b>41.00</b>	<b>14.00</b>	<b>47.00</b>	<b>42.50</b>	<b>31.40</b>	<b>9.50</b>	<b>30.00</b>	<b>26.00</b>	<b>14.00</b>	<b>13.30</b>	<b>27.00</b>	<b>25.50</b>
	<b>Maximum</b>	<b>127.20</b>	<b>148.20</b>	<b>117.00</b>	<b>175.80</b>	<b>106.80</b>	<b>98.30</b>	<b>182.24</b>	<b>154.15</b>	<b>62.80</b>	<b>70.00</b>	<b>46.00</b>	<b>70.00</b>	<b>60.80</b>	<b>40.00</b>	<b>89.80</b>	<b>58.65</b>
	<b>Mean</b>	<b>106.24</b>	<b>80.71</b>	<b>91.38</b>	<b>114.12</b>	<b>69.93</b>	<b>46.10</b>	<b>104.18</b>	<b>84.39</b>	<b>44.73</b>	<b>46.09</b>	<b>37.76</b>	<b>46.62</b>	<b>39.56</b>	<b>23.88</b>	<b>54.98</b>	<b>41.69</b>
	<b>CD(0.05)</b>	<b>9.56</b>	<b>54.67</b>	<b>33.34</b>	<b>37.09</b>			<b>31.94</b>		<b>5.90</b>	<b>24.69</b>	<b>11.77</b>	<b>20.69</b>			<b>12.68</b>	
	<b>CV(%) Error</b>	<b>3.33</b>	<b>19.70</b>	<b>13.41</b>	<b>11.56</b>			<b>7.74</b>		<b>4.90</b>	<b>17.30</b>	<b>11.82</b>	<b>21.55</b>			<b>7.12</b>	
	<b>CV(%) Pheno.</b>	<b>10.27</b>	<b>34.07</b>	<b>10.49</b>	<b>23.63</b>	<b>21.99</b>	<b>38.18</b>	<b>27.58</b>		<b>14.08</b>	<b>27.23</b>	<b>7.46</b>	<b>22.57</b>	<b>21.06</b>	<b>25.14</b>	<b>25.56</b>	

S. No.	Accession No.	Number of branches per plant					Lateral spikelet length (cm)				Leaf length (cm)					Leaf width (cm)		
		Delhi	Faizabad	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Rahuri	Ranchi	Mean
87	SKGPA-97	6.00	-	4.00	4.00	<b>4.67</b>	14.50	-	22.50	<b>18.50</b>	9.00	-	5.00	7.00	<b>7.00</b>	-	5.00	<b>5.00</b>
88	SKGPA-98	6.50	-	8.00	-	<b>7.25</b>	14.95	-	18.50	<b>16.73</b>	13.25	-	14.00	19.50	<b>15.58</b>	-	5.00	<b>5.00</b>
89	SKGPA-99	5.00	-	6.00	2.00	<b>4.33</b>	19.30	-	20.20	<b>19.75</b>	12.33	-	15.00	6.50	<b>11.28</b>	-	7.00	<b>7.00</b>
90	SKGPA-100	5.25	-	5.00	2.00	<b>4.08</b>	14.98	-	18.00	<b>16.49</b>	8.15	-	8.00	12.00	<b>9.38</b>	-	4.00	<b>4.00</b>
91	SKGPA-101	-	-	4.00	2.00	<b>3.00</b>	3.50	-	12.00	<b>7.75</b>	7.80	-	8.00	5.50	<b>7.10</b>	-	4.00	<b>4.00</b>
92	SKGPA-102	-	-	-	-	<b>-</b>	2.80	-	13.50	<b>8.15</b>	7.85	-	-	9.48	<b>8.67</b>	-	-	<b>-</b>
93	SKGPA-103	1.00	-	-	-	<b>1.00</b>	3.50	-	21.00	<b>12.25</b>	9.00	-	-	14.50	<b>11.75</b>	-	-	<b>-</b>
94	SKGPA-104	7.60	-	3.00	-	<b>5.30</b>	19.02	-	17.10	<b>18.06</b>	11.93	-	9.00	13.57	<b>11.50</b>	-	4.00	<b>4.00</b>
95	SKGPA-105	11.00	-	5.00	-	<b>8.00</b>	16.50	-	15.00	<b>15.75</b>	9.30	-	12.00	9.00	<b>10.10</b>	-	6.00	<b>6.00</b>
96	SKGPA-106	3.40	-	5.00	3.00	<b>3.80</b>	11.90	12.00	18.10	<b>14.00</b>	12.33	15.80	10.00	13.50	<b>12.91</b>	4.90	6.00	<b>5.45</b>
97	SKGPA-107	3.50	-	6.00	3.00	<b>4.17</b>	12.60	-	16.00	<b>14.30</b>	8.25	-	12.00	14.50	<b>11.58</b>	-	8.00	<b>8.00</b>
98	SKGPA-108	-	-	4.00	4.00	<b>4.00</b>	-	-	13.45	<b>13.45</b>	-	-	7.00	10.36	<b>8.68</b>	-	3.00	<b>3.00</b>
99	SKGPA-109	3.00	-	-	4.00	<b>3.50</b>	10.90	-	17.00	<b>13.95</b>	7.20	-	-	13.50	<b>10.35</b>	-	-	<b>-</b>
100	SKGPA-110	2.00	-	-	-	<b>2.00</b>	9.00	-	14.00	<b>11.50</b>	6.90	-	-	8.50	<b>7.70</b>	-	-	<b>-</b>
<b>Mean for check variety</b>																		
	<b>BGA-2 (C)</b>	<b>8.16</b>	<b>-</b>	<b>6.00</b>	<b>-</b>	<b>7.08</b>	<b>14.66</b>	<b>11.02</b>	<b>21.29</b>	<b>15.66</b>	<b>12.76</b>	<b>21.26</b>	<b>11.50</b>	<b>16.44</b>	<b>15.49</b>	<b>6.02</b>	<b>5.00</b>	<b>5.51</b>
	<b>GA-1 (C)</b>	<b>8.50</b>	<b>10.83</b>	<b>-</b>	<b>-</b>	<b>9.66</b>	<b>14.40</b>	<b>-</b>	<b>24.12</b>	<b>19.26</b>	<b>11.70</b>	<b>-</b>	<b>-</b>	<b>14.03</b>	<b>12.87</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>GA-2 (C)</b>	<b>5.31</b>	<b>12.00</b>	<b>7.00</b>	<b>-</b>	<b>8.10</b>	<b>17.08</b>	<b>-</b>	<b>26.28</b>	<b>21.68</b>	<b>16.19</b>	<b>-</b>	<b>13.00</b>	<b>17.58</b>	<b>15.59</b>	<b>-</b>	<b>6.00</b>	<b>6.00</b>
	<b>Suvarna (C)</b>	<b>6.52</b>	<b>11.17</b>	<b>6.00</b>	<b>-</b>	<b>7.90</b>	<b>16.74</b>	<b>12.34</b>	<b>21.03</b>	<b>16.70</b>	<b>11.76</b>	<b>20.66</b>	<b>10.00</b>	<b>17.80</b>	<b>15.06</b>	<b>7.90</b>	<b>6.00</b>	<b>6.95</b>
	<b>Minimum</b>	<b>1.00</b>	<b>6.00</b>	<b>3.00</b>	<b>2.00</b>	<b>1.00</b>	<b>2.80</b>	<b>7.00</b>	<b>5.50</b>	<b>7.75</b>	<b>6.90</b>	<b>8.30</b>	<b>3.00</b>	<b>1.55</b>	<b>6.52</b>	<b>2.20</b>	<b>2.00</b>	<b>2.65</b>
	<b>Maximum</b>	<b>15.00</b>	<b>16.00</b>	<b>8.00</b>	<b>6.00</b>	<b>10.00</b>	<b>27.92</b>	<b>25.30</b>	<b>28.40</b>	<b>27.50</b>	<b>17.24</b>	<b>30.50</b>	<b>16.00</b>	<b>21.50</b>	<b>21.50</b>	<b>9.00</b>	<b>8.00</b>	<b>8.00</b>
	<b>Mean</b>	<b>5.66</b>	<b>10.21</b>	<b>5.31</b>	<b>3.70</b>	<b>6.13</b>	<b>16.97</b>	<b>13.85</b>	<b>17.64</b>	<b>16.59</b>	<b>11.74</b>	<b>16.63</b>	<b>9.25</b>	<b>12.35</b>	<b>11.98</b>	<b>4.56</b>	<b>4.90</b>	<b>4.82</b>
	<b>CD(0.05)</b>	<b>5.74</b>	<b>4.42</b>				<b>9.72</b>		<b>5.89</b>		<b>4.91</b>			<b>5.03</b>				
	<b>CV(%) Error</b>	<b>30.20</b>	<b>14.48</b>				<b>23.15</b>		<b>10.56</b>		<b>14.04</b>			<b>12.72</b>				
	<b>CV(%) Pheno.</b>	<b>35.80</b>	<b>19.44</b>	<b>23.73</b>	<b>24.71</b>		<b>29.65</b>	<b>29.07</b>	<b>23.13</b>		<b>22.68</b>	<b>29.56</b>	<b>29.58</b>	<b>30.19</b>		<b>34.54</b>	<b>27.00</b>	

S. No.	Accession No.	Petiole length (cm)					Stem thickness (mm)				Seed yield per plant (g)							
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
87	SKGPA-97	5.50	-	3.00	3.00	<b>3.83</b>	14.53	-	3.50	<b>9.02</b>	-	25.00	-	8.00	-	13.40	15.00	<b>15.35</b>
88	SKGPA-98	7.75	-	7.00	16.00	<b>10.25</b>	28.14	-	7.50	<b>17.82</b>	-	18.75	-	8.00	-	27.20	16.00	<b>17.49</b>
89	SKGPA-99	6.17	-	9.00	8.35	<b>7.84</b>	13.71	-	3.58	<b>8.64</b>	-	15.83	-	10.00	-	21.50	8.96	<b>14.07</b>
90	SKGPA-100	4.85	-	6.00	8.50	<b>6.45</b>	15.29	-	4.00	<b>9.64</b>	-	11.00	-	25.00	-	16.50	10.00	<b>15.63</b>
91	SKGPA-101	2.50	-	5.00	4.00	<b>3.83</b>	7.78	-	6.00	<b>6.89</b>	-	-	-	-	-	30.40	8.00	<b>19.20</b>
92	SKGPA-102	2.70	-	-	6.51	<b>4.61</b>	8.12	-	5.10	<b>6.61</b>	-	5.75	-	-	-	-	14.10	<b>9.93</b>
93	SKGPA-103	3.20	-	-	6.50	<b>4.85</b>	11.20	-	6.00	<b>8.60</b>	-	14.50	-	7.00	-	-	10.00	<b>10.50</b>
94	SKGPA-104	4.33	-	5.00	8.50	<b>5.94</b>	19.72	-	4.00	<b>11.86</b>	-	19.25	-	10.00	-	22.50	19.00	<b>17.69</b>
95	SKGPA-105	2.80	-	7.00	2.50	<b>4.10</b>	19.54	-	3.50	<b>11.52</b>	-	25.50	-	1.70	-	28.40	10.00	<b>16.40</b>
96	SKGPA-106	5.13	5.40	9.00	5.50	<b>6.26</b>	14.93	0.90	5.00	<b>6.94</b>	-	15.17	-	12.00	7.30	33.40	13.08	<b>16.19</b>
97	SKGPA-107	5.15	-	9.00	5.00	<b>6.38</b>	9.81	-	4.50	<b>7.15</b>	-	-	-	-	-	9.50	14.00	<b>11.75</b>
98	SKGPA-108	-	-	4.00	5.10	<b>4.55</b>	-	-	3.45	<b>3.45</b>	-	-	-	-	-	14.60	8.00	<b>11.30</b>
99	SKGPA-109	4.85	-	-	7.50	<b>6.18</b>	12.18	-	8.50	<b>10.34</b>	-	11.50	-	5.00	-	-	10.00	<b>8.83</b>
100	SKGPA-110	2.25	-	-	4.50	<b>3.38</b>	8.42	-	4.50	<b>6.46</b>	-	14.00	-	-	-	-	3.05	<b>8.52</b>
<b>Mean for check variety</b>																		
	<b>BGA-2 (C)</b>	<b>7.22</b>	<b>8.28</b>	<b>8.30</b>	<b>9.32</b>	<b>8.28</b>	<b>15.70</b>	<b>1.76</b>	<b>8.65</b>	<b>8.70</b>	<b>10.00</b>	<b>5.74</b>	<b>-</b>	<b>14.55</b>	<b>15.64</b>	<b>20.60</b>	<b>14.64</b>	<b>13.53</b>
	<b>GA-1 (C)</b>	<b>6.45</b>	<b>-</b>	<b>-</b>	<b>9.25</b>	<b>7.85</b>	<b>19.48</b>	<b>-</b>	<b>7.40</b>	<b>13.44</b>	<b>5.72</b>	<b>27.08</b>	<b>12.92</b>	<b>10.36</b>	<b>-</b>	<b>-</b>	<b>18.75</b>	<b>14.97</b>
	<b>GA-2 (C)</b>	<b>9.68</b>	<b>-</b>	<b>9.00</b>	<b>11.67</b>	<b>10.11</b>	<b>19.99</b>	<b>-</b>	<b>8.70</b>	<b>14.34</b>	<b>6.20</b>	<b>15.56</b>	<b>13.33</b>	<b>11.00</b>	<b>-</b>	<b>23.30</b>	<b>19.78</b>	<b>14.86</b>
	<b>Suvarna (C)</b>	<b>7.92</b>	<b>7.62</b>	<b>9.00</b>	<b>13.01</b>	<b>9.39</b>	<b>15.46</b>	<b>2.30</b>	<b>8.25</b>	<b>8.67</b>	<b>7.80</b>	<b>6.15</b>	<b>13.82</b>	<b>16.27</b>	<b>11.72</b>	<b>21.80</b>	<b>15.79</b>	<b>13.34</b>
	<b>Minimum</b>	<b>2.25</b>	<b>2.10</b>	<b>2.00</b>	<b>2.50</b>	<b>3.38</b>	<b>7.78</b>	<b>0.50</b>	<b>2.00</b>	<b>2.30</b>	<b>3.20</b>	<b>0.70</b>	<b>8.00</b>	<b>1.70</b>	<b>4.70</b>	<b>9.50</b>	<b>3.05</b>	<b>7.54</b>
	<b>Maximum</b>	<b>13.82</b>	<b>14.40</b>	<b>12.00</b>	<b>18.00</b>	<b>18.00</b>	<b>28.14</b>	<b>2.30</b>	<b>9.50</b>	<b>17.82</b>	<b>10.40</b>	<b>41.50</b>	<b>16.00</b>	<b>34.00</b>	<b>41.00</b>	<b>34.00</b>	<b>46.00</b>	<b>24.00</b>
	<b>Mean</b>	<b>6.76</b>	<b>6.39</b>	<b>5.96</b>	<b>7.64</b>	<b>6.74</b>	<b>14.90</b>	<b>1.31</b>	<b>5.06</b>	<b>7.88</b>	<b>5.97</b>	<b>14.60</b>	<b>12.02</b>	<b>11.72</b>	<b>16.27</b>	<b>21.47</b>	<b>15.03</b>	<b>14.52</b>
	<b>CD(0.05)</b>	<b>4.15</b>			<b>4.86</b>		<b>9.76</b>		<b>2.80</b>		<b>0.84</b>	<b>9.00</b>	<b>4.46</b>	<b>14.82</b>			<b>2.15</b>	
	<b>CV(%) Error</b>	<b>19.88</b>			<b>18.69</b>		<b>20.71</b>		<b>14.13</b>		<b>4.25</b>	<b>24.74</b>	<b>12.41</b>	<b>49.63</b>			<b>5.19</b>	
	<b>CV(%) Pheno.</b>	<b>36.29</b>	<b>40.94</b>	<b>33.78</b>	<b>33.61</b>		<b>24.27</b>	<b>35.62</b>	<b>34.34</b>		<b>34.66</b>	<b>55.56</b>	<b>16.12</b>	<b>59.76</b>	<b>48.71</b>	<b>26.91</b>	<b>45.44</b>	

S. No.	Accession No.	Seed volume weight (g/10ml)						Seed yield (q/ha)			Delhi	S.K. Nagar
		Bhubaneswar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Mean	1000 seed weight (g)	Straw weight per plant (g)
87	SKGPA-97	-	6.75	-	9.58	7.59	<b>7.97</b>	-	0.93	<b>0.93</b>	6.64	25.00
88	SKGPA-98	-	6.70	-	9.20	8.01	<b>7.97</b>	-	1.39	<b>1.39</b>	6.52	84.00
89	SKGPA-99	-	6.49	-	9.85	7.51	<b>7.95</b>	-	1.76	<b>1.76</b>	6.68	11.00
90	SKGPA-100	-	7.23	-	9.76	7.85	<b>8.28</b>	-	1.63	<b>1.63</b>	6.62	40.00
91	SKGPA-101	-	-	-	9.50	7.60	<b>8.55</b>	-	0.13	<b>0.13</b>	-	42.00
92	SKGPA-102	-	-	-	-	6.88	<b>6.88</b>	-	0.43	<b>0.43</b>	5.38	46.00
93	SKGPA-103	-	6.90	-	-	7.91	<b>7.40</b>	-	0.54	<b>0.54</b>	6.53	70.00
94	SKGPA-104	-	6.77	-	10.00	8.22	<b>8.33</b>	-	4.28	<b>4.28</b>	6.78	61.00
95	SKGPA-105	-	6.85	-	8.00	8.00	<b>7.62</b>	-	0.94	<b>0.94</b>	7.54	50.00
96	SKGPA-106	-	7.06	8.20	9.98	6.77	<b>8.00</b>	-	1.69	<b>1.69</b>	5.32	67.00
97	SKGPA-107	-	-	-	10.00	8.17	<b>9.09</b>	-	0.44	<b>0.44</b>	8.68	26.00
98	SKGPA-108	-	-	-	9.83	7.75	<b>8.79</b>	-	-	-	-	32.00
99	SKGPA-109	-	6.45	-	-	8.12	<b>7.28</b>	-	0.85	<b>0.85</b>	5.74	90.00
100	SKGPA-110	-	-	-	-	7.80	<b>7.80</b>	-	0.52	<b>0.52</b>	6.22	13.00
<b>Mean for check variety</b>												
	<b>BGA-2 (C)</b>	<b>8.08</b>	<b>6.72</b>	<b>8.08</b>	<b>6.10</b>	<b>7.68</b>	<b>7.33</b>	<b>16.92</b>	<b>5.21</b>	<b>11.06</b>	<b>5.97</b>	<b>151.37</b>
	<b>GA-1 (C)</b>	<b>7.63</b>	<b>7.22</b>	-	-	<b>8.21</b>	<b>7.69</b>	<b>10.58</b>	<b>1.31</b>	<b>5.95</b>	<b>6.05</b>	<b>154.85</b>
	<b>GA-2 (C)</b>	<b>7.92</b>	<b>7.09</b>	-	<b>9.12</b>	<b>8.18</b>	<b>8.08</b>	<b>12.75</b>	<b>1.99</b>	<b>7.37</b>	<b>6.23</b>	<b>152.42</b>
	<b>Suvarna (C)</b>	<b>7.89</b>	<b>6.69</b>	<b>7.58</b>	<b>8.14</b>	<b>7.78</b>	<b>7.61</b>	<b>14.00</b>	<b>5.71</b>	<b>9.85</b>	<b>5.77</b>	<b>150.42</b>
	<b>Minimum</b>	<b>7.15</b>	<b>6.26</b>	<b>6.60</b>	<b>6.10</b>	<b>6.36</b>	<b>6.88</b>	<b>7.08</b>	<b>0.13</b>	<b>0.13</b>	<b>5.32</b>	<b>11.00</b>
	<b>Maximum</b>	<b>8.71</b>	<b>7.94</b>	<b>8.60</b>	<b>10.48</b>	<b>8.56</b>	<b>9.09</b>	<b>19.17</b>	<b>14.46</b>	<b>14.24</b>	<b>8.68</b>	<b>230.00</b>
	<b>Mean</b>	<b>7.74</b>	<b>6.99</b>	<b>7.67</b>	<b>9.67</b>	<b>7.78</b>	<b>7.97</b>	<b>11.33</b>	<b>4.48</b>	<b>5.97</b>	<b>6.40</b>	<b>71.79</b>
	<b>CD(0.05)</b>	<b>0.34</b>	<b>0.57</b>			<b>0.29</b>		<b>3.28</b>	<b>3.86</b>		<b>0.86</b>	<b>23.92</b>
	<b>CV(%) Error</b>	<b>1.61</b>	<b>3.59</b>			<b>1.52</b>		<b>9.05</b>	<b>40.70</b>		<b>5.35</b>	<b>6.54</b>
	<b>CV(%) Pheno.</b>	<b>4.90</b>	<b>5.37</b>	<b>5.84</b>	<b>5.88</b>	<b>5.08</b>		<b>27.97</b>	<b>78.53</b>		<b>8.23</b>	<b>58.61</b>

**Table 98. Characterization of germplasm lines in grain amaranth at different locations : Rabi 2011-12 (Plains)**

S. No.	Accession No.	Early plant vigour			Plant growth habit					Inflorescence colour					Inflorescence compactness				Inflorescence shape					Inflorescence spininess				
		Rahuri	Ranchi	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode	
1	IC021803-A	2	2	2	1	1	1	1	1	3	11	4	2	11	5	5	3	5	4	4	2	4	4	2	3	2	2	2
2	IC021937	2	2	2	1	1	2	1	1	8	6	9	9	9	5	7	3	7	4	4	2	4	4	2	2	2	2	2
3	IC021938	3	2	3	1	1	2	1	1	8	6	9	9	9	3	7	3	3	4	4	2	4	4	2	3	2	2	2
4	IC032186	2	2	2	1	1	1	1	1	9	6	6	9	9	5	5	3	5	4	4	4	4	4	3	2	2	2	2
5	IC032190	3	2	3	1	1	2	1	1	3	6	6	9	9	5	3	2	5	4	4	2	1	4	3	2	2	2	2
6	IC032193	2	2	2	1	1	1	1	1	3	11	4	1	11	5	5	3	5	4	4	4	4	4	3	3	2	3	3
7	IC032195	2	2	2	1	1	1	1	1	3	11	4	2	11	5	5	3	5	4	4	4	4	4	3	3	2	3	3
8	IC035404	2	2	2	1	1	1	1	1	3	11	4	2	11	3	5	3	3	4	4	4	4	4	3	3	2	3	3
9	IC035415	2	2	2	1	1	1	1	1	3	11	4	2	11	5	5	2	5	4	4	4	4	4	3	3	2	3	3
10	IC035615	2	2	2	1	1	1	1	1	3	11	4	4	11	3	5	3	3	4	4	4	4	4	3	3	2	3	3
11	IC035633	1	2	2	1	1	1	1	1	3	11	4	2	11	3	5	3	3	4	4	4	4	4	3	3	2	3	3
12	IC035635	2	2	2	1	2	2	1	1	3	3	6	6	6	3	3	3	3	4	4	2	4	4	3	3	2	3	3
13	IC035638	3	2	3	1	1	2	1	1	3	11	1	2	11	3	5	3	3	4	4	4	4	4	3	3	2	3	3
14	IC035642	2	1	2	1	1	1	1	1	10	3	6	6	10	5	3	2	5	4	4	4	4	4	2	3	2	2	2
15	IC035651	2	2	2	1	1	1	1	1	10	3	2	2	10	5	5	1	5	4	4	2	4	4	2	3	2	2	2
16	IC035661	3	1	3	1	1	2	1	1	9	6	9	9	9	5	3	2	5	4	4	4	4	4	3	3	2	3	3
17	IC035665	1	1	1	1	1	1	1	1	2	11	1	9	11	5	7	3	7	4	4	4	4	4	2	3	2	2	2
18	IC035701	3	2	3	1	1	1	1	1	8	6	6	9	9	5	5	3	5	4	4	4	4	4	4	2	2	2	2
19	IC035702	2	2	2	1	1	1	1	1	8	6	6	9	9	5	5	3	5	4	4	4	4	4	1	2	2	2	2
20	IC035711	2	2	2	1	1	1	1	1	8	6	6	9	9	5	5	3	5	4	4	2	4	4	3	2	2	2	2
21	IC035713	3	2	3	1	1	1	1	1	8	6	6	9	9	5	5	3	5	4	4	2	4	4	3	2	2	2	2
22	IC035716	3	1	3	1	1	2	1	1	8	6	6	9	9	5	3	3	3	4	4	4	4	4	3	3	2	3	3
23	IC035717	2	1	2	1	1	2	1	1	8	6	6	9	9	5	3	3	3	4	4	4	4	4	3	3	2	3	3
24	IC035719	2	1	2	1	1	1	1	1	8	6	6	9	9	5	5	3	5	2	4	4	4	4	3	2	2	2	2
25	IC035735	2	2	2	1	1	1	1	1	8	6	9	9	9	5	5	3	5	4	4	4	4	4	3	2	2	2	2

S. No.	Acesion No.	Leaf colour at flowering stage					Stem colour					Stem surface					Delhi	S.K. Nagar			
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Seed colour	Popping ability of seed	Seed colour others	Seed shattering	Seedling vigour
1	IC021803-A	5	5	3	3	5	1	2	1	1	1	1	1	2	2	1	3	2	1	1	2
2	IC021937	7	10	8	10	10	2	6	5	4	6	1	1	2	2	1	3	3	1	1	2
3	IC021938	8	10	8	10	8	2	6	5	4	6	1	1	2	2	1	3	2	1	2	3
4	IC032186	10	6	8	10	10	2	4	4	4	4	1	1	1	2	1	3	3	1	1	3
5	IC032190	3	6	8	10	10	2	6	4	4	4	1	1	1	2	1	3	3	1	1	3
6	IC032193	5	5	3	3	5	1	2	1	1	1	1	1	1	2	1	3	3	1	1	3
7	IC032195	5	5	3	3	5	1	2	1	1	1	1	1	1	2	1	3	3	1	1	3
8	IC035404	5	5	3	5	5	1	2	1	2	1	1	1	1	2	1	3	3	1	1	3
9	IC035415	5	5	3	5	5	1	2	1	2	1	1	1	1	2	1	3	3	1	1	3
10	IC035615	5	5	3	5	5	1	2	1	2	1	1	1	1	2	1	3	3	1	1	3
11	IC035633	3	5	3	1	3	2	2	1	2	2	1	1	1	2	1	3	3	1	1	3
12	IC035635	10	3	1	10	10	2	7	3	4	7	1	1	1	2	1	3	3	1	1	3
13	IC035638	3	5	3	3	3	2	2	2	2	2	1	1	1	2	1	3	3	1	1	3
14	IC035642	3	3	3	9	3	2	4	3	4	4	2	1	1	2	2	3	3	1	1	3
15	IC035651	3	3	3	1	3	2	4	5	4	4	2	1	1	2	2	3	3	1	1	3
16	IC035661	8	6	11	1	11	2	4	5	4	4	1	1	2	2	1	5	2	7	1	3
17	IC035665	5	5	3	10	5	1	2	2	4	2	1	1	1	2	1	2/5	2	1	2	3
18	IC035701	8	10	7	10	10	6	4	5	4	4	1	1	1	2	1	2	3	1	1	3
19	IC035702	10	6	8	10	10	6	4	3	4	4	1	1	1	2	1	3	3	1	1	3
20	IC035711	8	11	8	10	8	6	5	4	4	4	1	1	1	2	1	2	3	1	1	3
21	IC035713	8	6	7	10	10	2	4	3	4	4	1	1	1	2	1	3	3	1	1	3
22	IC035716	8	6	8	10	8	2	4	6	4	4	1	1	2	2	1	2	3	1	1	3
23	IC035717	8	6	8	10	8	2	4	6	4	4	1	1	2	2	1	2	3	1	1	3
24	IC035719	5	6	8	10	10	2	4	4	4	4	1	1	2	2	1	2	3	1	1	3
25	IC035735	8	10	8	10	8	2	4	3	4	4	1	1	2	2	1	3	3	1	1	3



S. No.	Accession No.	Early plant vigour			Plant growth habit					Inflorescence colour					Inflorescence compactness				Inflorescence shape					Inflorescence spininess			
		Rahuri	Ranchi	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode
26	IC035742	1	1	1	1	1	1	1	1	1	6	6	9	9	7	3	3	3	4	2	4	4	4	3	2	2	2
27	IC081698-B	3	1	3	1	1	1	1	1	8	6	6	9	9	5	3	3	3	4	4	4	4	4	3	2	2	2
28	IC094654	3	1	3	1	1	1	1	1	8	6	6	9	9	5	3	3	3	4	4	4	4	4	4	2	2	2
29	IC094661	3	2	3	1	1	2	1	1	8	6	6	9	9	5	5	3	5	4	4	2	4	4	4	2	2	2
30	IC095204	3	2	3	1	1	2	1	1	9	6	6	9	9	5	5	3	5	1	4	2	4	4	4	2	2	2
31	IC095244	3	2	3	1	1	2	1	1	9	6	6	9	9	5	5	3	5	1	4	4	4	4	4	2	2	2
32	IC095248	3	2	3	1	1	2	1	1	8	6	6	9	9	5	5	3	5	1	4	4	4	4	4	2	2	2
33	IC095251	3	2	3	1	1	2	1	1	8	6	6	9	9	5	5	3	5	1	4	4	4	4	4	2	2	2
34	IC095371	3	3	3	1	1	1	1	1	8	6	9	9	9	5	7	3	7	1	4	4	4	4	1	2	2	2
35	IC095382-B	2	3	3	1	1	1	1	1	8/1	11	9	2	11	7	5	3	7	1/2	4	4	4	4	4/2	3	2	3
36	IC095383	3	3	3	1	1	1	1	1	8	6	6	9	9	5	5	2	5	1	4	4	4	4	1	2	2	2
37	IC095389	2	2	2	1	1	1	1	1	1	11	2	2	11	7	5	3	7	2	4	4	4	4	2	3	2	2
38	IC095391	2	2	2	1	1	1	1	1	8	6	6	9	9	5	5	2	5	1	4	4	4	4	3	2	2	2
39	IC095406	2	2	2	1	1	1	1	1	9	6	6	9	9	5	5	3	5	4	4	4	4	4	4	2	2	2
40	IC095430	2	3	3	1	1	1	1	1	3	11	2	2	11	5	5	2	5	4	4	4	4	4	2	3	2	2
41	IC095498	1	3	3	1	1	1	1	1	2	11	2	2	11	5	5	3	5	4	4	4	4	4	3	3	2	3
42	IC095510	-	3	3	1	-	1	1	1	8	-	9	9	9	5	5	3	5	1	-	4	4	4	3	2	2	2
43	IC095516	3	1	3	1	1	2	1	1	2	11	2	2	11	5	5	3	5	4	2	2	4	4	3	3	2	3
44	IC095556	-	2	2	1	-	1	1	1	8	-	9	2	9	5	7	3	7	4	-	4	4	4	3	2	2	2
45	IC120621	3	1	3	1	1	1	1	1	1	11	2	2	11	7	3	3	3	1	4	4	4	4	2	3	2	2
46	IC120649	3	1	3	1	1	1	1	1	3	11	2	2	11	7	3	3	3	1	4	4	4	4	2	3	2	2
47	IC120668	3	1	3	1	1	1	1	1	3	11	2	2	11	5	3	3	3	4	4	4	4	4	1	3	2	3
48	IC120670	3	1	3	1	1	1	1	1	3	11	2	2	11	7	3	3	3	4	4	4	4	4	1	3	2	3
49	IC120689	2	1	2	1	1	1	1	1	3	11	2	2	11	7	3	3	3	4	4	4	4	4	1	3	2	3
50	IC432086	3	1	3	1	1	1	1	1	3	11	2	2	11	5	3	3	3	4	4	4	4	4	3	3	2	3
51	SKGPA-61	-	2	2	-	-	1	1	1	-	-	9	6	9	-	5	3	5	-	-	4	4	4	-	3	2	3
52	SKGPA-62	-	3	3	1	-	1	1	1	3	-	9	9	9	5	7	3	7	4	-	2	1	2	1	1	2	1
53	SKGPA-63	-	2	2	1	-	2	1	1	8	-	9	9	9	5	5	3	5	2	-	2	4	2	2	3	1	3
54	SKGPA-64	3	1	3	1	2	1	1	1	3	11	1	2	11	5	7	3	7	4	2	4	4	4	3	3	2	3
55	SKGPA-65	-	1	1	1	-	1	1	1	3	-	1	2	3	5	7	3	7	4	-	4	4	4	3	3	2	3

S. No.	Accession No.	Leaf colour at flowering stage					Stem colour					Stem surface					Delhi	S.K. Nagar			
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Seed colour	Popping ability of seed	Seed colour others	Seed shattering	Seedling vigour
26	IC035742	5	3	8	10	10	2	4	4	4	4	1	1	2	2	1	3	2	1	1	3
27	IC081698-B	5	2	8	10	10	2	7	4	4	4	1	1	2	2	1	2	3	1	2	3
28	IC094654	8	6	8	10	8	6	7	4	4	4	1	1	2	2	1	3	3	1	1	3
29	IC094661	8	10	2	10	10	6	7	5	4	7	1	1	2	2	1	3	3	1	1	3
30	IC095204	8	6	2	10	10	2	7	3	4	7	1	1	2	2	1	5	3	7	1	3
31	IC095244	8	6	2	10	10	2	7	4	4	4	1	1	2	2	1	5	3	7	1	2
32	IC095248	8	6	2	10	10	2	7	3	4	7	1	1	2	2	1	5	3	7	1	3
33	IC095251	8	6	2	10	10	2	7	4	4	4	1	1	2	2	1	5	3	7	1	2
34	IC095371	8	11	2	10	11	2	7	5	4	7	1	1	2	2	1	2	3	1	1	3
35	IC095382-B	8/5	5	2	1	5	2/1	2	5	1	5	1/1	1	1	2	1	2	3	1	1	3
36	IC095383	8	10	8	10	8	2	6	4	4	4	1	1	2	2	1	3	3	1	1	2
37	IC095389	5	5	1	3	5	1	2	1	2	1	1	1	1	2	1	1/5	2	1	1	3
38	IC095391	5	6	8	10	10	2	6	4	4	4	1	1	2	2	1	2	2	1	1	2
39	IC095406	5	6	8	10	10	2	4	4	4	4	2	1	2	2	2	3	3	1	1	3
40	IC095430	5	5	1	1	5	1	2	1	2	1	1	1	1	2	1	3	3	1	1	3
41	IC095498	5	5	1	1	5	1	2	1	1	1	1	1	1	2	1	3	3	1	1	3
42	IC095510	7	-	7	10	7	6	-	4	4	4	2	-	2	2	2	5	3	1	1	3
43	IC095516	5	5	1	1	5	1	2	1	1	1	1	1	2	2	1	3	3	1	1	2
44	IC095556	8	-	8	1	8	6	-	6	2	6	2	-	2	2	2	3	3	1	2	3
45	IC120621	5	5	1	3	5	1	2	1	2	1	1	1	1	2	1	2	2	1	2	3
46	IC120649	5	5	1	3	5	1	2	1	2	1	1	1	1	2	1	3	3	1	1	2
47	IC120668	5	5	1	1	5	2	2	1	2	2	1	1	1	2	1	3	3	1	1	3
48	IC120670	5	5	3	1	5	2	2	1	2	2	1	1	1	2	1	2	3	1	1	3
49	IC120689	5	5	1	3	5	2	2	1	2	2	1	1	1	2	1	5	3	6	1	3
50	IC432086	5	5	1	3	5	2	2	1	2	2	1	1	1	2	1	3	3	1	1	3
51	SKGPA-61	-	-	3	10	10	-	-	1	4	4	-	-	1	2	2	-	2	1	1	3
52	SKGPA-62	5	-	8	10	10	2	-	6	4	6	1	-	1	2	1	3	3	1	1	3
53	SKGPA-63	10	-	5	10	10	6	-	2	4	6	1	-	2	2	2	2	3	1	1	2
54	SKGPA-64	5	5	3	3	5	2	2	2	2	2	1	1	1	2	1	3	3	1	1	3
55	SKGPA-65	5	-	3	3	3	2	-	2	2	2	1	-	1	2	1	3	3	1	1	2

S. No.	Accession No.	Early plant vigour			Plant growth habit					Inflorescence colour					Inflorescence compactness				Inflorescence shape					Inflorescence spininess					
		Rahuri	Ranchi	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode		
56	SKGPA-66	3	1	3	1	2	1	1	1	8	6	9	6	9	7	3	2	7	4	99	4	4	4	4	4	2	3	2	2
57	SKGPA-67	2	1	2	1	2	1	2	1	8	7	9	6	9	7	3	2	7	4	4	4	4	4	4	3	3	2	3	
58	SKGPA-68	2	1	2	1	1	1	1	1	3	11	1	2	11	7	7	3	7	4	4	4	4	4	4	2	3	2	2	
59	SKGPA-69	1	1	1	1	2	1	2	1	3	11	1	2	11	7	7	2	7	4	4	4	4	4	4	2	3	2	2	
60	SKGPA-70	-	1	1	-	-	1	1	1	-	-	1	2	2	-	7	3	7	-	-	4	4	4	4	-	3	2	3	
61	SKGPA-71	-	-	-	-	-	-	2	2	-	-	-	12	12	-	-	1	1	-	-	-	2	2	2	-	-	2	2	
62	SKGPA-72	3	1	3	1	1	1	1	1	3	11	1	2	11	7	7	3	7	4	4	2	4	4	4	2	3	1	3	
63	SKGPA-73	2	1	2	1	1	1	1	1	3	11	1	2	11	5	7	3	7	4	4	2	4	4	4	2	3	2	2	
64	SKGPA-74	-	3	3	1	-	3	1	1	3	-	11	2	11	7	7	3	7	4	-	1	1	1	1	2	2	2	2	
65	SKGPA-75	-	1	1	1	-	1	1	1	3	-	4	4	4	7	7	2	7	4	-	4	4	4	4	2	3	1	3	
66	SKGPA-76	-	1	1	-	-	1	1	1	-	-	4	2	4	-	7	3	7	-	-	4	4	4	4	-	3	2	3	
67	SKGPA-77	2	1	2	1	1	1	1	1	3	11	4	2	11	7	7	3	7	1	4	4	4	4	4	1	3	2	3	
68	SKGPA-78	1	2	2	1	1	1	1	1	3	7	7	6	7	7	5	2	7	1	2	4	4	4	4	2	2	2	2	
69	SKGPA-79	-	1	1	1	-	1	1	1	3	-	4	2	4	7	3	3	3	4	-	4	4	4	4	3	3	2	3	
70	SKGPA-80	-	2	2	1	-	1	1	1	8	-	9	9	9	7	5	3	7	1	-	1	1	1	1	3	2	1	3	
71	SKGPA-81	-	-	-	1	-	-	1	1	1	-	-	2	2	7	-	2	7	4	-	-	4	4	4	2	-	2	2	
72	SKGPA-82	-	-	-	1	-	-	1	1	2	-	-	2	2	5	-	3	5	4	-	-	4	4	4	2	-	2	2	
73	SKGPA-83	-	-	-	-	-	-	1	1	-	-	-	9	9	-	-	2	2	-	-	-	4	4	4	-	-	2	2	
74	SKGPA-84	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
75	SKGPA-85	-	-	-	1	-	-	1	1	8	-	-	9	9	7	-	2	7	1	-	-	4	4	4	3	-	2	3	
76	SKGPA-86	-	-	-	1	-	-	1	1	8	-	-	9	9	3	-	2	3	1	-	-	4	4	4	3	-	2	3	
77	SKGPA-87	-	-	-	1	-	-	1	1	8	-	-	9	9	3	-	1	3	1	-	-	1	1	1	3	-	1	3	
78	SKGPA-88	-	2	2	-	-	1	1	1	-	-	11	6	11	-	5	1	5	-	-	4	2	4	4	-	1	2	2	
79	SKGPA-89	3	2	3	1	1	1	1	1	2	6	4	6	6	7	5	3	7	4	99	4	4	4	4	2	2	2	2	
80	SKGPA-90	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
81	SKGPA-91	-	3	3	1	-	1	1	1	8	-	9	6	9	5	7	3	7	1	-	4	4	4	4	3	3	2	3	
82	SKGPA-92	-	1	1	1	-	1	2	1	8	-	9	6	9	7	5	2	7	4	-	4	4	4	4	3	3	2	3	
83	SKGPA-93	-	1	1	-	-	1	2	1	-	-	7	6	7	-	5	1	5	-	-	4	4	4	4	-	3	2	3	
84	SKGPA-94	-	-	-	1	-	-	2	1	9	-	-	6	9	7	-	2	7	4	-	-	4	4	4	3	-	2	3	
85	SKGPA-95	-	-	-	-	-	-	1	1	-	-	-	9	9	-	-	2	2	-	-	-	4	4	4	-	-	2	2	

S. No.	Accession No.	Leaf colour at flowering stage					Stem colour					Stem surface					Delhi	S.K. Nagar			
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Seed colour	Popping ability of seed	Seed colour others	Seed shattering	Seedling vigour
56	SKGPA-66	8	10	8	10	8	2	6	7	4	7	1	1	1	2	1	3	3	1	1	2
57	SKGPA-67	8	11	8	10	8	6	7	4	2	7	1	1	1	2	1	3	3	1	1	3
58	SKGPA-68	5	5	1	3	5	2	2	2	2	2	1	1	2	2	1	3	3	1	1	3
59	SKGPA-69	5	5	3	1	5	2	2	2	2	2	1	1	2	2	1	3	3	1	1	3
60	SKGPA-70	-	-	3	3	3	-	-	2	2	2	-	-	2	2	2	-	2	1	1	2
61	SKGPA-71	-	-	-	3	3	-	-	-	2	2	-	-	-	2	2	-	3	1	1	3
62	SKGPA-72	5	5	3	3	5	2	2	2	2	2	1	1	2	2	1	3	3	1	1	3
63	SKGPA-73	5	5	3	3	5	2	2	2	2	2	1	1	2	2	1	3	3	1	1	3
64	SKGPA-74	5	-	5	3	5	2	-	99	2	2	1	-	1	2	1	2	3	1	1	2
65	SKGPA-75	5	-	3	3	3	2	-	2	2	2	1	-	2	2	2	2	3	1	1	2
66	SKGPA-76	-	-	3	1	3	-	-	2	2	2	-	-	2	2	2	-	3	1	1	3
67	SKGPA-77	3	5	3	3	3	1	2	2	2	2	1	1	2	2	1	3	3	1	1	3
68	SKGPA-78	5	10	2	6	10	2	7	2	4	2	1	1	1	2	1	3	3	1	1	3
69	SKGPA-79	5	-	3	5	5	1	-	2	2	2	1	-	2	2	2	2	3	1	1	2
70	SKGPA-80	8	-	8	11	8	6	-	5	4	6	1	-	2	2	2	2	2	1	2	2
71	SKGPA-81	5	-	-	3	5	1	-	-	2	2	1	-	-	2	2	3	2	1	1	2
72	SKGPA-82	5	-	-	3	5	2	-	-	2	2	1	-	-	2	2	3	3	1	1	2
73	SKGPA-83	-	-	-	10	10	-	-	-	6	6	-	-	-	2	2	-	3	1	2	1
74	SKGPA-84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
75	SKGPA-85	8	-	-	10	10	6	-	-	2	6	1	-	-	2	2	3	3	1	1	2
76	SKGPA-86	8	-	-	10	10	6	-	-	2	6	2	-	-	2	2	3	3	1	1	3
77	SKGPA-87	8	-	-	10	10	6	-	-	6	6	2	-	-	2	2	-	3	1	1	3
78	SKGPA-88	-	-	5	10	10	-	-	99	6	99	-	-	1	2	2	-	2	1	2	3
79	SKGPA-89	5	10	3	3	3	1	6	2	4	6	1	1	1	2	1	3	3	1	1	3
80	SKGPA-90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
81	SKGPA-91	8	-	8	10	8	6	-	3	6	6	2	-	1	2	2	2	2	1	1	3
82	SKGPA-92	8	-	8	10	8	6	-	5	6	6	1	-	2	2	2	3	3	1	1	3
83	SKGPA-93	-	-	8	10	10	-	-	5	6	6	-	-	2	2	2	-	3	1	1	1
84	SKGPA-94	8	-	-	10	10	2	-	-	6	6	1	-	-	2	2	2	2	1	2	3
85	SKGPA-95	-	-	-	10	10	-	-	-	6	6	-	-	-	2	2	-	3	1	1	2

S. No.	Accession No.	Early plant vigour			Plant growth habit					Inflorescence colour					Inflorescence compactness				Inflorescence shape					Inflorescence spininess			
		Rahuri	Ranchi	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Ranchi	S.K. Nagar	Mode
86	SKGPA-96	-	-	-	1	-	-	2	1	1	-	-	6	6	7	-	3	7	1	-	-	4	4	3	-	2	3
87	SKGPA-97	-	1	1	1	-	1	1	1	8	-	9	9	9	7	5	3	7	1	-	4	4	4	3	2	2	2
88	SKGPA-98	-	3	3	1	-	1	1	1	8	-	9	7	9	7	7	3	7	4	-	4	4	4	3	2	2	2
89	SKGPA-99	-	2	2	1	-	1	1	1	8	-	9	9	9	5	5	3	5	4	-	4	4	4	3	3	2	3
90	SKGPA-100	-	1	1	1	-	1	1	1	1	-	1	2	2	7	7	3	7	4	-	4	4	4	2	3	2	2
91	SKGPA-101	-	1	1	1	-	1	1	1	5	-	1	1	5	3	7	2	7	4	-	4	4	4	2	3	2	2
92	SKGPA-102	-	-	-	1	-	-	1	1	5	-	-	2	5	3	-	2	3	4	-	-	4	4	2	-	2	2
93	SKGPA-103	-	-	-	1	-	-	1	1	3	-	-	2	3	3	-	3	3	4	-	-	4	4	2	-	2	2
94	SKGPA-104	-	2	2	2	-	3	2	2	2	-	2	2	2	7	3	1	7	3	-	3	3	3	1	2	1	1
95	SKGPA-105	-	2	2	2	-	3	2	2	9	-	9	9	9	7	3	1	7	3	-	2	3	3	2	2	1	2
96	SKGPA-106	2	1	2	1	1	1	1	1	8	11	1	4	11	5	7	3	7	1	99	4	4	4	3	3	2	3
97	SKGPA-107	-	1	1	2	-	1	1	1	2	-	1	2	2	7	7	2	7	4	-	4	4	4	2	3	2	2
98	SKGPA-108	-	1	1	-	-	1	1	1	-	-	1	2	2	-	7	1	7	-	-	4	4	4	-	3	2	3
99	SKGPA-109	-	-	-	1	-	-	1	1	5	-	-	4	5	7	-	3	7	4	-	-	4	4	3	-	2	3
100	SKGPA-110	-	-	-	1	-	-	1	1	5	-	-	1	5	7	-	3	7	4	-	-	4	4	3	-	2	3
<b>Mean for check variety</b>																											
<b>BGA-2 (C)</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>11</b>	<b>11</b>	<b>2</b>	<b>11</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>99</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>GA-1 (C)</b>		<b>-</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>-</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>-</b>	<b>-</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>-</b>	<b>2</b>	<b>3</b>
<b>GA-2 (C)</b>		<b>-</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>-</b>	<b>9</b>	<b>9</b>	<b>9</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>-</b>	<b>1</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Suvarna (C)</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>11</b>	<b>11</b>	<b>2</b>	<b>11</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>7</b>	<b>1</b>	<b>99</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>
<b>Minimum</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Maximum</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>12</b>	<b>7</b>	<b>7</b>	<b>3</b>	<b>7</b>	<b>4</b>	<b>99</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>
<b>Mode</b>		<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>8</b>	<b>11</b>	<b>6</b>	<b>2</b>	<b>9</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>

**Qualitative characters:-** Early plant vigour : 1 - Poor, 2 - Good, 3 - Very good; Plant growth habit: 1-Erect, 2-Spreading, 3-Drooping, 4-Other; nflorescence colour: 1-Light yellow, 2-Yellow, 3-Yellowish orange, 4-Yellowish green, 5-Orange, 6-Pink, 7-Pinkish green, 8-Purple, 9-Red, 10-Redish Green, 11-Green, 12-Yellow with red tip on all spiklets, 99-Other; Inflorescence compactness: 1-Lax, 2-Intermediate, 3-Dense, 99-Others; Inflorescence shape: 1-Globose, 2-Semi drooping, 3-Completely drooping, 4-Straght, 99-Other; Inflorescence spininess: 1-Smooth, 2-Glabrous, 3-Prickly, 4-Spiny, 99-Others;

S. No.	Accession No.	Leaf colour at flowering stage					Stem colour					Stem surface					Delhi	S.K. Nagar			
		Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Delhi	Rahuri	Ranchi	S.K. Nagar	Mode	Seed colour	Popping ability of seed	Seed colour others	Seed shattering	Seedling vigour
86	SKGPA-96	5	-	-	10	10	1	-	-	6	6	1	-	-	2	2	3	3	1	1	3
87	SKGPA-97	8	-	8	10	8	2	-	5	4	5	1	-	1	2	1	2	3	1	1	2
88	SKGPA-98	8	-	8	3	8	6	-	6	2	6	1	-	1	2	1	3	1	1	3	
89	SKGPA-99	8	-	3	10	10	2	-	2	4	2	2	-	2	2	2	2	1	2	2	
90	SKGPA-100	5	-	3	3	3	1	-	2	1	1	1	-	2	2	3	3	1	2	1	
91	SKGPA-101	3	-	3	1	3	2	-	2	2	2	1	-	2	2	-	2	1	1	3	
92	SKGPA-102	3	-	-	2	3	2	-	-	1	2	1	-	-	2	3	3	1	1	1	
93	SKGPA-103	3	-	-	3	3	2	-	-	2	2	1	-	-	2	3	3	1	1	3	
94	SKGPA-104	3	-	5	3	3	2	-	1	2	2	2	-	1	2	3	3	1	2	2	
95	SKGPA-105	3	-	5	9	9	1	-	5	4	5	1	-	1	2	3	3	4	2	3	
96	SKGPA-106	8	5	3	3	3	2	2	2	1	2	1	2	2	2	3	3	1	1	3	
97	SKGPA-107	5	-	3	3	3	1	-	2	2	2	1	-	2	2	3	3	1	1	2	
98	SKGPA-108	-	-	3	3	3	-	-	2	2	2	-	-	2	2	-	2	1	1	3	
99	SKGPA-109	5	-	-	3	5	1	-	-	2	2	1	-	-	2	3	2	1	1	3	
100	SKGPA-110	5	-	-	3	5	1	-	-	2	2	1	-	-	2	3	2	1	1	1	
<b>Mean for check variety</b>																					
	<b>BGA-2 (C)</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>99</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>GA-1 (C)</b>	<b>5</b>	<b>-</b>	<b>-</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>-</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>GA-2 (C)</b>	<b>8</b>	<b>-</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>2</b>	<b>-</b>	<b>6</b>	<b>7</b>	<b>7</b>	<b>2</b>	<b>-</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	
	<b>Suvarna (C)</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>2</b>	<b>99</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>Minimum</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>
	<b>Maximum</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>11</b>	<b>6</b>	<b>7</b>	<b>99</b>	<b>7</b>	<b>99</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>3</b>	<b>7</b>	<b>2</b>	<b>3</b>
	<b>Mode</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>10</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>

**Qualitative characters:-** Leaf colour at flowering stage: 1-Yellow, 2-Yellowish orange, 3-Yellowish green, 4-Orange, 5-Green, 6-Greenish orange, 7-Pink, 8-Pinkish green, 9-Redish yellow, 10-Redish Green, 11-Red, 12-Dark red 99-Other; **Stem colour:** 1-Yellow, 2-Yellowish green, 3-Orange, 4-Pink, 5-Red, 6-Redish green, 7-Redish orange, 99-Other; **Stem surface:** 1-Smooth, 2-Ridged, 99-Others; **Seed shattering:** 1-Low (<10%), 2-Intermediate (10-50%), 3-High (>50%), 99-Others; **Seed Colour:** 1-Ivory (dull white), 2-Creamish, 3-Pale yellow, 4-Pink, 5-Red, 6-Brown, 7-Black, 8-Golden, 9-White, 99-Others; **Popping ability of seed:** 1-Poor, 2-Medium, 3-Good, 99-Others

**Table 99. Promising lines in grain amaranth germplasm (Kharif, 2012) for various characters at different locations (Plains)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Bangalore (Accessions 100)</b>				
1.	Days to 50% flowering (Obs.)	31.00-61.00	IC035635, IC095382-B, IC035702, IC032186, IC035651, IC035742, IC095244, IC095498, IC120689, SKGPA-83, SKGPA-92, IC094654, IC032195, IC035661, IC094661, IC095430, SKGPA-80, SKGPA-88, IC081698-B, IC095204, IC095251, IC120649, IC432086, SKGPA-102, SKGPA-73, SKGPA-79 (<46.00 days)	KBGA-1 (42.70 days)
2.	Days to 50% flowering (Adj.)	30.80-60.80	IC035635, IC095382-B, IC035702, IC035742, IC095244, SKGPA-83, SKGPA-92, IC032186, IC035651, IC120689, IC094654, IC095498, IC094661, IC032195, IC035661, SKGPA-88, IC081698-B, IC095204, IC095251, SKGPA-102, IC095430, IC120649, IC432086, SKGPA-86, SKGPA-89, SKGPA-96, SKGPA-101, SKGPA-103, SKGPA-108 (<43.00 days)	KBGA-1 (42.70 days)
3.	Days to maturity	70.00-110.00	IC095382-B, SKGPA-83, SKGPA-92, SKGPA-103, IC035635, SKGPA-102, IC035651, IC035702, SKGPA-108, SKGPA-96, IC095244, IC095498, SKGPA-89, IC032195, IC035742, IC094654, IC095430, IC120689, SKGPA-70, SKGPA-87, IC035661, IC095204, SKGPA-65, IC032186, SKGPA-64, SKGPA-106, SKGPA-88, IC032190, IC035404, IC035701, IC081698-B, IC094661, IC095248, IC095251, IC095371, IC120649, IC432086, KBGA-2, SKGPA-68, SKGPA-77, SKGPA-105, SKGPA-82, SKGPA-63, SKGPA-66, SKGPA-73, IC035415, IC035615, IC035665, IC035711, IC095516, SKGPA-69, SKGPA-84, SKGPA-101 (<87.00 days)	KBGA-1 (86.20 days)
4.	Plant height (cm)	75.00-165.00	SKGPA-61, SKGPA-77, SKGPA-84, SKGPA-62, SKGPA-65, SKGPA-89 (>149.00 cm)	Suvarna (147.10 cm)
5.	Leaf length (cm)	8.50-33.00	SKGPA-63 (> 32.00 cm)	Suvarna (24.10 cm)
6.	Leaf width (cm)	2.50-9.50	SKGPA-63 (> 9.45 cm)	Suvarna (7.93cm)
7.	Petiole length (cm)	3.20-13.00	SKGPA-63, IC120649, SKGPA-86, IC095556, SKGPA-65, SKGPA-64, SKGPA-74, IC095516, SKGPA-66, SKGPA-67, SKGPA-82, IC035665, IC021803-A, IC095510, SKGPA-68 (> 6.78 cm)	BGA-2 (6.71 cm)
8.	Inflorescence length	20.00-	IC095204, IC095510, SKGPA-67, SKGPA-99, SKGPA-105, SKGPA-92	KBGA-1

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
	(cm) (Obs.)	92.00	(>61.98 cm)	(61.20 cm)
9.	Inflorescence length (cm) (Adj.)	18.88-89.63	IC095204, IC095510, SKGPA-99, SKGPA-67, SKGPA-105, SKGPA-92, SKGPA-64, SKGPA-85, SKGPA-89, SKGPA-90 (> 61.35)	KBGA-1 (61.20 cm)
10.	Stem thickness (mm)	1.60-3.90	SKGPA-61, SKGPA-100, SKGPA-63, SKGPA-65, SKGPA-64, SKGPA-62, SKGPA-71, SKGPA-99, SKGPA-89 (> 3.12 mm)	Suvarna (3.13 mm)
11.	Seed yield per plant (g)	5.60-60.00	SKGPA-77, SKGPA-69, KBGA-2, KBGA-3, MGA-4, SKGPA-65, IC021803-A, SKGPA-89, SKGPA-71, SKGPA-110 (> 35.98 g)	BGA-2 (35.80 g)
12.	Seed weight (g/10 ml) (Obs.)	7.30-10.50	SKGPA-61, SKGPA-89, SKGPA-62, IC035635, SKGPA-63, SKGPA-91, IC095391, SKGPA-70, MGA-4, SKGPA-90, KBGA-2, SKGPA-67, SKGPA-84, IC094654, SKGPA-68, SKGPA-72, SKGPA-75, SKGPA-85 (=>8.80 ml)	Suvarna 98.71ml)
13.	Seed weight (g/10 ml) (Adj.)	7.29-10.27	SKGPA-61, SKGPA-89, SKGPA-91, IC035635, SKGPA-62, IC095391, SKGPA-63, SKGPA-90, SKGPA-84, MGA-4, SKGPA-70, SKGPA-85, SKGPA-72, SKGPA-75, KBGA-2, IC035370 (> 8.72 g/10 ml)	Suvarna (8.71 g/10 ml)
<b>Mettupalayam (Accessions 100)</b>				
1.	Days to 50% flowering (Obs.)	37.00-58.00	IC095383, SKGPA-100, SKGPA-64, IC095382-B, SKGPA-107, SKGPA-79, SKGPA-94 (< 47.00 days)	Annapurna (46.75 days)
2.	Days to 50% flowering (Adj.)	36.75-57.55	IC095383, SKGPA-100, SKGPA-64, IC095382-B, SKGPA-107, SKGPA-79, SKGPA-94 (<47.00 days)	Annapurna (46.75 days)
3.	Days to maturity	63.00-93.00	SKGPA-103, SKGPA-102, IC035635, SKGPA-100, SKGPA-104, SKGPA-79, SKGPA-101, SKGPA-77, SKGPA-78, SKGPA-74, SKGPA-82, SKGPA-83, SKGPA-75, SKGPA-81, SKGPA-84, SKGPA-85, IC021938, IC035642, IC120649, SKGPA-86 (< 74.00 days)	Annapurna (73.75 days)
4.	Plant height (cm)	99.75-227.00	SKGPA-80, SKGPA-81, SKGPA-71, SKGPA-73 (211.98 cm)	BGA -2 (211.25 cm)
5.	Panicle length (cm)	34.00-90.00	SKGPA-65, SKGPA-66, SKGPA-85, SKGPA-73, SKGPA-86, SKGPA-99, IC21803A, IC035661, IC035713, SKGPA-77, IC032195, IC035404, SKGPA-75, SKGPA-78, SKGPA-82, IC035701, SKGPA-79, SKGPA-81, SKGPA-98, IC021937, IC120621, SKGPA-106, SKGPA-64, SKGPA-83, SKGPA-109, SKGPA-96, SKGPA-95, SKGPA-69, SKGPA-87, IC120670, SKGPA-102, SKGPA-68, SKGPA-91, IC035638, SKGPA-92, IC035651, SKGPA-101, SKGPA-103, IC032193, SKGPA-72, SKGPA-76, SKGPA-88,	Suvarna (54.50 cm)



<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
			SKGPA-93, IC032186, IC120689, SKGPA-94, IC095510, SKGPA-70, SKGPA-67, IC035635, IC021938, IC032190, IC035719, SKGPA-100, SKGPA-89, SKGPA-90, IC095389, IC095430, IC035716, IC095371, SKGPA-107, SKGPA-74, IC120649, SKGPA-63, SKGPA-71, IC095516, IC432086, SKGPA-110 ( <54.98 cm)	
5.	Seed yield per plant (g)	9.00-23.00	SKGPA-65, SKGPA-74, SKGPA-71, IC035642, SKGPA-64, SKGPA-78, IC035635, SKGPA-63 (19.00 g)	Suvarna (19.15 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	39.50-59.50	IC035635, IC095382-B, IC035651, IC035702, MGA-4, SKGPA-83, IC094654, IC035370, IC095383, KBGA-2, SKGPA-64, SKGPA-79, SKGPA-92, IC035742, IC095244, IC095498, SKGPA-102, SKGPA-80, IC032186, IC035661, IC095430, KBGA-3, SKGPA-88, SKGPA-77, SKGPA-101 (<46.00 days)	GA -2 (45.60 days)
2.	Days to maturity	68.50-100.00	SKGPA-103, SKGPA-102, IC035635, SKGPA-83, IC035642 (<74.00 days)	Annapurna (73.75 days))
3.	Plant height (cm)	99.75-193.00	IC021937, SKGPA-77, SKGPA-84 (>181.99 cm)	BGA -2 (173.03 cm)
4.	Seed yield per plant (g)	7.80-40.00	KBGA-2, SKGPA-77, KBGA-3, MGA-4, IC035370, IC035532, SKGPA-65, SKGPA-71, SKGPA-69 (> 28.48 g)	Suvarna (26.53 g)

**Table 100. Characterization & evaluation of germplasm lines in grain amaranth at Bangalore & Mettupalayam : Kharif 2012 (Plain)**

S.No	Accession No.	Qualitative characters											Quantitative characters									
		Bangalore											Days to 50% flowering			Days to maturity			Plant height (cm)			
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Seed shattering	Seed colour	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	
1	IC021803-A	3	2	6	11	7	6	99	4	3	3	3	3	52.00	53.00	<b>52.50</b>	93.00	83.00	<b>88.00</b>	112.00	195.00	<b>153.50</b>
2	IC021937	-	-	-	-	-	-	-	-	-	-	-	-	-	51.00	<b>51.00</b>	-	79.00	<b>79.00</b>	-	193.00	<b>193.00</b>
3	IC021938	3	2	8	8	5	3	99	1	2	5	3	48.00	49.00	<b>48.50</b>	93.00	73.00	<b>83.00</b>	105.00	184.00	<b>144.50</b>	
4	IC032186	1	3	6	8	7	3	-	4	-	-	3	38.00	52.00	<b>45.00</b>	84.00	74.00	<b>79.00</b>	130.00	153.00	<b>141.50</b>	
5	IC032190	2	1	6	8	5	-	-	4	-	-	3	44.00	49.00	<b>46.50</b>	85.00	80.00	<b>82.50</b>	105.00	168.00	<b>136.50</b>	
6	IC032193	1	1	5	11	7	-	-	2	-	-	3	52.00	52.00	<b>52.00</b>	95.00	81.00	<b>88.00</b>	120.00	158.00	<b>139.00</b>	
7	IC032195	3	1	3	11	7	-	-	2	3	3	3	40.00	56.00	<b>48.00</b>	82.00	79.00	<b>80.50</b>	95.00	189.00	<b>142.00</b>	
8	IC035370	1	1	5	11	3	2	1	1	1	3	3	44.00	-	<b>44.00</b>	92.00	-	<b>92.00</b>	135.00	-	<b>135.00</b>	
9	IC035404	2	3	5	11	7	2	1	4	3	3	3	45.00	54.00	<b>49.50</b>	85.00	80.00	<b>82.50</b>	112.00	191.00	<b>151.50</b>	
10	IC035415	2	3	5	11	7	2	1	4	3	3	3	46.00	56.00	<b>51.00</b>	86.00	82.00	<b>84.00</b>	118.00	158.00	<b>138.00</b>	
11	IC035532	1	1	5	11	3	2	1	1	1	3	3	52.00	-	<b>52.00</b>	100.00	-	<b>100.00</b>	132.00	-	<b>132.00</b>	
12	IC035615	2	3	5	11	7	2	1	4	3	3	3	43.00	58.00	<b>50.50</b>	86.00	88.00	<b>87.00</b>	116.00	142.00	<b>129.00</b>	
13	IC035633	2	3	5	11	7	-	-	4	-	-	3	61.00	58.00	<b>59.50</b>	110.00	88.00	<b>99.00</b>	125.00	188.00	<b>156.50</b>	
14	IC035635	1	3	-	4	3	6	99	3	3	3	3	31.00	48.00	<b>39.50</b>	75.00	65.00	<b>70.00</b>	95.00	200.00	<b>147.50</b>	
15	IC035638	2	3	5	11	7	-	-	4	-	-	3	55.00	52.00	<b>53.50</b>	95.00	81.00	<b>88.00</b>	115.00	178.00	<b>146.50</b>	
16	IC035642	-	-	-	-	-	-	-	-	-	-	-	-	48.00	<b>48.00</b>	-	73.00	<b>73.00</b>	-	149.00	<b>149.00</b>	
17	IC035651	2	1	99	8	3	1	99	3	3	3	3	38.00	48.00	<b>43.00</b>	78.00	74.00	<b>76.00</b>	95.00	175.00	<b>135.00</b>	
18	IC035661	2	1	3	8	3	1	99	2	1	3	3	40.00	50.00	<b>45.00</b>	83.00	79.00	<b>81.00</b>	135.00	186.00	<b>160.50</b>	
19	IC035665	2	1	5	11	7	2	1	4	1	3	3	46.00	53.00	<b>49.50</b>	86.00	81.00	<b>83.50</b>	85.00	154.00	<b>119.50</b>	
20	IC035701	2	1	8	8	5	-	-	2	-	-	3	44.00	52.00	<b>48.00</b>	85.00	79.00	<b>82.00</b>	135.00	160.00	<b>147.50</b>	
21	IC035702	1	1	5	9	5	2	1	4	1	5	3	36.00	50.00	<b>43.00</b>	78.00	80.00	<b>79.00</b>	98.00	118.00	<b>108.00</b>	
22	IC035711	2	1	5	8	3	6	99	3	1	5	3	47.00	54.00	<b>50.50</b>	86.00	88.00	<b>87.00</b>	145.00	163.00	<b>154.00</b>	
23	IC035713	2	1	5	8	7	1	1	4	1	5	3	45.00	52.00	<b>48.50</b>	88.00	80.00	<b>84.00</b>	135.00	166.00	<b>150.50</b>	

S.No	Accession No.	Quantitative characters									
		Seed yield per plant (g)			Bangalore						Mettupalayam
		Bangalore	Mettupalayam	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Stem thickness (mm)	10 ml Seed volume weight (g)	Panicle length (cm)
1	IC021803-A	37.00	12.60	<b>24.80</b>	48.00	22.00	5.60	7.00	2.10	7.50	82.00
2	IC021937	-	13.50	<b>13.50</b>	-	-	-	-	-	-	75.00
3	IC021938	13.60	10.60	<b>12.10</b>	42.00	16.00	4.20	5.20	2.50	8.50	60.00
4	IC032186	28.00	10.20	<b>19.10</b>	50.00	8.50	5.60	3.20	2.10	8.10	64.00
5	IC032190	29.00	10.30	<b>19.65</b>	30.00	11.50	3.20	3.20	1.90	7.90	60.00
6	IC032193	20.00	14.20	<b>17.10</b>	35.00	11.50	5.20	4.20	2.10	8.20	66.00
7	IC032195	22.00	12.00	<b>17.00</b>	30.00	13.50	5.20	4.50	2.30	7.80	80.00
8	IC035370	35.00	-	<b>35.00</b>	38.00	18.00	6.50	5.40	2.30	8.60	-
9	IC035404	26.00	14.50	<b>20.25</b>	58.00	12.00	3.80	3.80	1.80	8.10	80.00
10	IC035415	24.00	13.60	<b>18.80</b>	56.00	13.00	3.90	3.90	2.10	8.30	40.00
11	IC035532	32.00	-	<b>32.00</b>	34.00	17.00	5.70	5.20	2.40	8.30	-
12	IC035615	26.00	10.20	<b>18.10</b>	54.00	11.50	4.20	3.60	2.10	8.30	38.00
13	IC035633	13.60	9.50	<b>11.55</b>	38.00	16.50	5.10	5.60	1.90	8.70	50.00
14	IC035635	15.40	20.00	<b>17.70</b>	60.00	11.00	2.50	4.20	1.90	9.50	61.00
15	IC035638	13.20	10.60	<b>11.90</b>	52.00	16.50	4.20	5.20	1.90	8.60	69.00
16	IC035642	-	21.00	<b>21.00</b>	-	-	-	-	-	-	52.00
17	IC035651	13.40	19.00	<b>16.20</b>	48.00	16.50	3.10	6.50	1.90	8.20	68.00
18	IC035661	32.00	17.00	<b>24.50</b>	43.00	10.50	3.20	4.20	2.10	8.20	81.00
19	IC035665	18.40	11.20	<b>14.80</b>	35.00	19.00	5.40	7.20	1.90	8.20	52.00
20	IC035701	16.00	13.10	<b>14.55</b>	45.00	16.50	5.20	6.20	1.80	8.30	77.00
21	IC035702	15.60	14.20	<b>14.90</b>	38.00	9.50	3.80	3.80	2.10	8.40	49.00
22	IC035711	19.20	10.60	<b>14.90</b>	48.00	16.50	4.50	5.60	1.90	8.20	46.00
23	IC035713	18.00	11.20	<b>14.60</b>	43.00	22.00	5.60	6.20	1.90	8.30	81.00

S.No	Accession No.	Qualitative characters											Quantitative characters								
		Bangalore											Days to 50% flowering			Days to maturity			Plant height (cm)		
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Seed shattering	Seed colour	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
24	IC035716	-	-	-	-	-	-	-	-	-	-	-	49.00	49.00	-	81.00	81.00	-	141.00	141.00	
25	IC035717	-	-	-	-	-	-	-	-	-	-	-	54.00	54.00	-	81.00	81.00	-	145.00	145.00	
26	IC035719	-	-	-	-	-	-	-	-	-	-	-	55.00	55.00	-	80.00	80.00	-	169.00	169.00	
27	IC035735	2	1	5	8	3	1	1	4	3	3	3	48.00	56.00	52.00	92.00	80.00	86.00	145.00	158.00	151.50
28	IC035742	2	1	5	8	3	1	1	1	1	3	3	38.00	51.00	44.50	82.00	93.00	87.50	98.00	134.00	116.00
29	IC081698-B	3	2	5	8	3	2	2	4	2	3	3	42.00	50.00	46.00	85.00	92.00	88.50	145.00	126.00	135.50
30	IC094654	1	1	5	8	3	99	1	4	3	3	3	39.00	48.00	43.50	82.00	92.00	87.00	98.00	137.00	117.50
31	IC094661	3	1	8	8	5	-	-	4	-	-	3	40.00	53.00	46.50	85.00	91.00	88.00	88.00	141.00	114.50
32	IC095204	2	1	8	8	7	-	-	4	-	-	3	42.00	52.00	47.00	83.00	90.00	86.50	94.00	110.00	102.00
33	IC095244	1	1	5	8	3	1	2	4	3	3	3	38.00	51.00	44.50	80.00	92.00	86.00	85.00	142.00	113.50
34	IC095248	2	1	5	8	7	1	1	4	1	3	3	47.00	52.00	49.50	85.00	92.00	88.50	140.00	145.00	142.50
35	IC095251	2	1	3	8	7	1	1	4	1	3	3	42.00	51.00	46.50	85.00	93.00	89.00	110.00	153.00	131.50
36	IC095371	1	1	5	8	-	-	-	4	1	3	3	44.00	49.00	46.50	85.00	93.00	89.00	126.00	166.00	146.00
37	IC095382-B	3	1	2	6	7	-	-	2	-	-	3	33.00	46.00	39.50	70.00	82.00	76.00	115.00	168.00	141.50
38	IC095383	1	1	10	8	3	1	1	4	1	3	3	51.00	37.00	44.00	93.00	81.00	87.00	110.00	168.00	139.00
39	IC095389	2	1	5	11	5	-	-	2	3	3	3	51.00	49.00	50.00	95.00	81.00	88.00	115.00	170.00	142.50
40	IC095391	3	2	5	8	5	-	-	2	-	-	3	46.00	52.00	49.00	87.00	82.00	84.50	130.00	160.00	145.00
41	IC095406	2	2	6	8	7	-	-	4	-	-	3	56.00	51.00	53.50	102.00	83.00	92.50	120.00	144.00	132.00
42	IC095430	2	1	5	11	7	1	1	4	1	3	3	41.00	49.00	45.00	82.00	82.00	82.00	140.00	167.00	153.50
43	IC095498	2	1	-	11	-	1	1	4	1	3	3	38.00	51.00	44.50	80.00	82.00	81.00	110.00	153.00	131.50
44	IC095510	2	1	5	8	7	1	1	4	1	5	3	46.00	52.00	49.00	87.00	88.00	87.50	145.00	172.00	158.50
45	IC095516	1	2	5	11	7	1	2	4	1	3	3	43.00	54.00	48.50	86.00	82.00	84.00	125.00	156.00	140.50
46	IC095556	2	1	5	8	3	2	1	4	1	3	3	55.00	50.00	52.50	96.00	83.00	89.50	145.00	158.00	151.50
47	IC120621	2	1	5	11	7	1	2	4	1	3	3	48.00	52.00	50.00	91.00	82.00	86.50	135.00	172.00	153.50
48	IC120649	3	1	5	11	5	1	99	4	-	-	3	42.00	51.00	46.50	85.00	73.00	79.00	135.00	164.00	149.50
49	IC120668	2	2	8	8	5	-	-	4	-	-	3	44.00	52.00	48.00	88.00	82.00	85.00	118.00	155.00	136.50

S.No	Accession No.	Quantitative characters									
		Seed yield per plant (g)			Bangalore						Mettupalayam
		Bangalore	Mettupalayam	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Stem thickness (mm)	10 ml Seed volume weight (g)	Panicle length (cm)
24	IC035716	-	13.20	<b>13.20</b>	-	-	-	-	-	-	58.00
25	IC035717	-	14.10	<b>14.10</b>	-	-	-	-	-	-	53.00
26	IC035719	-	15.60	<b>15.60</b>	-	-	-	-	-	-	60.00
27	IC035735	9.00	12.20	<b>10.60</b>	42.00	15.50	3.60	4.80	1.60	8.10	53.00
28	IC035742	21.00	12.70	<b>16.85</b>	33.00	12.00	3.80	3.60	1.90	7.90	40.00
29	IC081698-B	19.00	13.80	<b>16.40</b>	52.00	15.50	4.40	5.40	1.80	7.90	49.00
30	IC094654	18.00	12.90	<b>15.45</b>	36.00	15.50	5.60	4.30	1.60	8.80	50.00
31	IC094661	15.00	10.60	<b>12.80</b>	35.00	15.40	5.40	5.20	1.90	7.90	43.00
32	IC095204	22.00	11.20	<b>16.60</b>	92.00	16.10	3.80	5.80	1.90	7.90	34.00
33	IC095244	16.00	11.30	<b>13.65</b>	30.00	17.50	5.40	5.20	1.60	8.40	44.00
34	IC095248	15.00	10.20	<b>12.60</b>	52.00	13.50	3.60	5.70	2.10	8.10	48.00
35	IC095251	16.80	11.50	<b>14.15</b>	29.00	17.50	5.20	5.20	1.80	8.30	48.00
36	IC095371	20.00	12.60	<b>16.30</b>	44.00	17.00	4.60	6.20	2.10	8.00	58.00
37	IC095382-B	17.30	14.50	<b>15.90</b>	32.00	14.20	3.60	5.10	2.10	7.90	46.00
38	IC095383	23.30	12.40	<b>17.85</b>	40.00	11.20	3.40	3.80	1.90	7.90	54.00
39	IC095389	18.20	12.00	<b>15.10</b>	42.00	14.00	6.20	5.60	1.80	7.80	59.00
40	IC095391	13.50	10.20	<b>11.85</b>	54.00	13.20	3.20	5.40	1.80	9.30	45.00
41	IC095406	7.50	9.50	<b>8.50</b>	20.00	19.50	4.40	5.80	1.80	8.60	45.00
42	IC095430	16.50	11.60	<b>14.05</b>	48.00	15.00	3.10	4.30	1.80	7.80	59.00
43	IC095498	18.20	10.00	<b>14.10</b>	32.00	19.50	5.60	6.50	1.90	8.30	50.00
44	IC095510	13.60	9.90	<b>11.75</b>	70.00	21.00	4.80	6.80	2.10	7.30	63.00
45	IC095516	28.00	10.20	<b>19.10</b>	43.00	20.00	6.50	7.90	1.80	8.40	55.00
46	IC095556	25.50	11.60	<b>18.55</b>	44.00	23.00	4.10	8.60	2.30	8.60	53.00
47	IC120621	16.30	12.30	<b>14.30</b>	25.00	17.50	5.30	5.40	1.80	7.60	75.00
48	IC120649	14.90	10.00	<b>12.45</b>	36.00	23.00	6.80	9.50	1.90	8.70	56.00
49	IC120668	19.00	11.50	<b>15.25</b>	32.00	12.50	4.20	3.50	1.80	8.10	54.00

S.No	Accession No.	Qualitative characters										Quantitative characters									
		Bangalore										Days to 50% flowering			Days to maturity			Plant height (cm)			
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Seed shattering	Seed colour	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
50	IC120670	2	2	3	11	7	-	-	4	-	-	3	45.00	53.00	<b>49.00</b>	88.00	81.00	<b>84.50</b>	115.00	174.00	<b>144.50</b>
51	IC120689	2	1	5	11	3	-	-	2	-	-	3	38.00	54.00	<b>46.00</b>	82.00	81.00	<b>81.50</b>	120.00	160.00	<b>140.00</b>
52	IC432086	1	-	-	-	-	-	-	-	1	3	3	42.00	55.00	<b>48.50</b>	85.00	88.00	<b>86.50</b>	116.00	162.00	<b>139.00</b>
53	KBGA-2	1	1	10	8	7	6	1	8	1	3	3	44.00	-	<b>44.00</b>	85.00	-	<b>85.00</b>	128.00	-	<b>128.00</b>
54	KBGA-3	1	1	10	8	7	6	1	8	1	3	3	45.00	-	<b>45.00</b>	88.00	-	<b>88.00</b>	125.00	-	<b>125.00</b>
55	MGA-4	3	1	5	11	7	2	1	1	1	3	3	43.00	-	<b>43.00</b>	88.00	-	<b>88.00</b>	140.00	-	<b>140.00</b>
56	SKGPA-61	1	1	5	8	7	2	99	4	3	7	3	47.90	56.00	<b>51.95</b>	88.20	88.00	<b>88.10</b>	165.00	144.00	<b>154.50</b>
57	SKGPA-62	2	1	6	8	7	6	99	4	3	7	3	47.30	56.00	<b>51.65</b>	88.40	89.00	<b>88.70</b>	150.50	145.00	<b>147.75</b>
58	SKGPA-63	2	1	3	8	3	7	1	1	1	5	3	43.60	52.00	<b>47.80</b>	85.50	88.00	<b>86.75</b>	130.00	172.00	<b>151.00</b>
59	SKGPA-64	2	2	5	11	7	2	99	4	3	3	3	43.00	45.00	<b>44.00</b>	84.00	89.00	<b>86.50</b>	135.00	173.00	<b>154.00</b>
60	SKGPA-65	3	2	5	11	7	2	99	4	3	3	3	44.25	53.00	<b>48.63</b>	83.50	89.00	<b>86.25</b>	150.00	182.00	<b>166.00</b>
61	SKGPA-66	3	1	5	4	5	2	99	2	1	5	3	46.50	53.00	<b>49.75</b>	85.60	88.00	<b>86.80</b>	140.00	182.00	<b>161.00</b>
62	SKGPA-67	2	2	5	7	7	2	99	2	3	3	3	48.90	52.00	<b>50.45</b>	86.30	89.00	<b>87.65</b>	140.00	165.00	<b>152.50</b>
63	SKGPA-68	1	2	5	11	7	2	99	4	3	3	3	43.00	53.00	<b>48.00</b>	85.00	89.00	<b>87.00</b>	123.00	185.00	<b>154.00</b>
64	SKGPA-69	3	1	3	8	5	2	99	4	3	5	3	49.00	52.00	<b>50.50</b>	86.00	88.00	<b>87.00</b>	140.00	182.00	<b>161.00</b>
65	SKGPA-70	1	1	5	11	3	2	99	2	3	3	3	43.60	50.00	<b>46.80</b>	82.00	88.00	<b>85.00</b>	115.00	175.00	<b>145.00</b>
66	SKGPA-71	1	1	5	10	7	1	99	1	1	5	3	56.00	51.00	<b>53.50</b>	93.00	79.00	<b>86.00</b>	120.00	214.00	<b>167.00</b>
67	SKGPA-72	1	1	5	4	7	2	1	4	3	3	3	49.00	50.00	<b>49.50</b>	95.00	79.00	<b>87.00</b>	120.00	163.00	<b>141.50</b>
68	SKGPA-73	1	1	5	4	7	2	99	3	1	3	3	42.60	51.00	<b>46.80</b>	85.80	81.00	<b>83.40</b>	110.00	212.00	<b>161.00</b>
69	SKGPA-74	1	1	5	4	5	2	99	4	2	3	3	45.00	49.00	<b>47.00</b>	94.00	71.00	<b>82.50</b>	105.00	211.00	<b>158.00</b>
70	SKGPA-75	1	3	5	4	3	2	99	4	2	3	3	49.00	49.00	<b>49.00</b>	91.00	72.00	<b>81.50</b>	120.00	199.00	<b>159.50</b>
71	SKGPA-76	1	3	5	4	3	2	1	4	2	3	3	48.00	52.00	<b>50.00</b>	95.00	81.00	<b>88.00</b>	95.00	176.00	<b>135.50</b>
72	SKGPA-77	3	1	5	4	5	2	99	4	1	5	3	43.00	48.00	<b>45.50</b>	85.00	70.00	<b>77.50</b>	165.00	200.00	<b>182.50</b>
73	SKGPA-78	2	2	5	4	5	2	99	4	2	3	3	57.00	47.00	<b>52.00</b>	96.00	70.00	<b>83.00</b>	120.00	205.00	<b>162.50</b>
74	SKGPA-79	1	2	3	11	3	2	99	4	1	3	3	42.60	46.00	<b>44.30</b>	88.70	65.00	<b>76.85</b>	90.00	175.00	<b>132.50</b>
75	SKGPA-80	1	1	5	10	3	2	99	4	2	3	3	41.50	48.00	<b>44.75</b>	89.00	78.00	<b>83.50</b>	96.00	227.00	<b>161.50</b>

S.No	Accession No.	Quantitative characters									
		Seed yield per plant (g)			Bangalore						Mettupalayam
		Bangalore	Mettupalayam	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Stem thickness (mm)	10 ml Seed volume weight (g)	Panicle length (cm)
50	IC120670	10.00	12.50	<b>11.25</b>	36.00	14.20	3.90	5.30	1.90	8.20	70.00
51	IC120689	16.00	11.60	<b>13.80</b>	36.00	14.20	3.40	5.30	1.90	8.40	64.00
52	IC432086	10.20	10.40	<b>10.30</b>	32.00	12.20	3.80	5.10	2.10	8.30	55.00
53	KBGA-2	40.00	-	<b>40.00</b>	55.00	16.50	6.50	3.80	2.10	8.90	-
54	KBGA-3	38.00	-	<b>38.00</b>	58.00	16.60	5.10	6.10	2.70	8.50	-
55	MGA-4	38.00	-	<b>38.00</b>	46.00	14.50	5.80	3.40	2.50	9.10	-
56	SKGPA-61	18.60	12.20	<b>15.40</b>	48.00	22.00	4.60	6.00	3.90	10.50	42.00
57	SKGPA-62	10.60	15.60	<b>13.10</b>	50.00	16.00	6.60	6.50	3.22	9.68	40.00
58	SKGPA-63	19.00	20.00	<b>19.50</b>	45.00	33.00	9.50	13.00	3.45	9.50	56.00
59	SKGPA-64	18.00	21.00	<b>19.50</b>	60.00	20.20	5.50	8.20	3.25	8.50	75.00
60	SKGPA-65	38.00	23.00	<b>30.50</b>	55.00	16.00	4.50	8.30	3.30	8.65	90.00
61	SKGPA-66	20.80	19.00	<b>19.90</b>	45.00	18.50	6.50	7.50	2.45	8.70	90.00
62	SKGPA-67	20.00	14.00	<b>17.00</b>	65.00	18.50	6.20	7.30	2.90	8.90	62.00
63	SKGPA-68	24.00	16.00	<b>20.00</b>	55.00	16.00	5.30	6.80	2.65	8.80	70.00
64	SKGPA-69	42.00	15.00	<b>28.50</b>	45.50	15.20	3.50	5.60	2.60	8.40	72.00
65	SKGPA-70	16.20	9.00	<b>12.60</b>	38.00	17.50	4.50	5.60	2.20	9.20	63.00
66	SKGPA-71	36.00	22.00	<b>29.00</b>	35.00	15.50	4.20	5.20	3.20	8.35	56.00
67	SKGPA-72	32.00	12.00	<b>22.00</b>	55.00	15.20	6.60	5.40	2.65	8.80	66.00
68	SKGPA-73	22.00	15.00	<b>18.50</b>	45.00	15.50	4.60	5.60	2.80	8.60	85.00
69	SKGPA-74	13.20	23.00	<b>18.10</b>	35.00	18.00	4.20	8.00	2.90	8.40	58.00
70	SKGPA-75	18.00	14.00	<b>16.00</b>	47.00	14.60	4.30	6.50	2.70	8.80	79.00
71	SKGPA-76	22.40	12.00	<b>17.20</b>	33.00	9.00	5.40	5.80	2.80	8.20	66.00
72	SKGPA-77	60.00	18.00	<b>39.00</b>	58.00	17.00	4.60	5.50	3.10	8.30	81.00
73	SKGPA-78	32.00	21.00	<b>26.50</b>	55.00	11.50	3.50	4.60	2.85	8.40	79.00
74	SKGPA-79	26.00	15.00	<b>20.50</b>	35.00	9.50	3.70	4.20	3.10	8.10	77.00
75	SKGPA-80	22.00	19.00	<b>20.50</b>	31.00	8.50	3.80	3.90	2.80	8.00	51.00

S.No	Accession No.	Qualitative characters											Quantitative characters								
		Bangalore											Days to 50% flowering			Days to maturity			Plant height (cm)		
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Seed shattering	Seed colour	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
76	SKGPA-81	1	1	5	10	3	2	99	4	2	3	3	47.00	52.00	<b>49.50</b>	91.00	72.00	<b>81.50</b>	115.00	215.00	<b>165.00</b>
77	SKGPA-82	1	1	5	8	7	7	99	4	1	5	3	45.50	49.00	<b>47.25</b>	85.20	71.00	<b>78.10</b>	105.00	171.00	<b>138.00</b>
78	SKGPA-83	1	1	5	8	3	7	99	2	2	5	3	38.50	48.00	<b>43.25</b>	72.30	71.00	<b>71.65</b>	95.00	173.00	<b>134.00</b>
79	SKGPA-84	2	1	3	8	7	2	99	2	2	3	3	45.00	56.00	<b>50.50</b>	86.00	72.00	<b>79.00</b>	155.00	209.00	<b>182.00</b>
80	SKGPA-85	2	1	5	4	5	1	1	4	3	3	3	49.00	54.00	<b>51.50</b>	95.00	72.00	<b>83.50</b>	135.00	208.00	<b>171.50</b>
81	SKGPA-86	1	1	5	4	3	2	99	4	3	3	3	43.00	50.00	<b>46.50</b>	87.00	73.00	<b>80.00</b>	110.00	182.00	<b>146.00</b>
82	SKGPA-87	2	1	5	8	3	2	1	4	1	5	3	46.00	50.00	<b>48.00</b>	82.00	79.00	<b>80.50</b>	110.00	172.00	<b>141.00</b>
83	SKGPA-88	2	2	5	8	3	7	99	2	1	3	3	41.50	49.00	<b>45.25</b>	84.60	79.00	<b>81.80</b>	125.00	183.00	<b>154.00</b>
84	SKGPA-89	3	1	5	8	3	5	1	2	2	3	3	43.00	50.00	<b>46.50</b>	80.00	79.00	<b>79.50</b>	150.00	158.00	<b>154.00</b>
85	SKGPA-90	2	1	3	8	7	6	99	2	1	3	3	48.00	52.00	<b>50.00</b>	93.00	80.00	<b>86.50</b>	132.00	170.00	<b>151.00</b>
86	SKGPA-91	2	1	5	8	3	6	1	4	1	3	3	48.90	56.00	<b>52.45</b>	86.30	80.00	<b>83.15</b>	135.00	173.00	<b>154.00</b>
87	SKGPA-92	2	1	10	9	7	1	1	1	1	3	3	38.75	50.00	<b>44.38</b>	72.50	80.00	<b>76.25</b>	146.00	153.00	<b>149.50</b>
88	SKGPA-93	2	1	5	8	3	7	1	3	2	5	3	55.00	49.00	<b>52.00</b>	92.00	82.00	<b>87.00</b>	122.00	145.00	<b>133.50</b>
89	SKGPA-94	2	2	5	8	3	2	99	2	2	3	3	48.50	46.00	<b>47.25</b>	88.00	82.00	<b>85.00</b>	122.00	120.00	<b>121.00</b>
90	SKGPA-95	2	2	5	8	3	2	99	2	2	3	3	53.50	47.00	<b>50.25</b>	91.50	81.00	<b>86.25</b>	128.00	182.00	<b>155.00</b>
91	SKGPA-96	1	3	1	8	3	7	1	3	2	5	3	43.50	48.00	<b>45.75</b>	79.80	82.00	<b>80.90</b>	112.00	154.00	<b>133.00</b>
92	SKGPA-97	1	1	6	5	-	-	-	-	-	-	3	46.20	50.00	<b>48.10</b>	88.60	83.00	<b>85.80</b>	90.10	148.00	<b>119.05</b>
93	SKGPA-98	1	3	1	5	3	7	1	3	2	5	3	48.00	56.00	<b>52.00</b>	91.00	79.00	<b>85.00</b>	128.00	194.00	<b>161.00</b>
94	SKGPA-99	1	2	5	5	3	2	99	2	2	3	3	48.00	48.00	<b>48.00</b>	88.00	79.00	<b>83.50</b>	110.00	177.00	<b>143.50</b>
95	SKGPA-100	1	2	5	8	2	7	-	-	1	3	3	52.00	45.00	<b>48.50</b>	92.00	65.00	<b>78.50</b>	95.00	147.00	<b>121.00</b>
96	SKGPA-101	1	2	5	4	3	2	99	2	3	3	3	43.00	48.00	<b>45.50</b>	86.00	66.00	<b>76.00</b>	80.00	186.00	<b>133.00</b>
97	SKGPA-102	1	1	5	4	3	2	99	4	3	5	3	42.00	47.00	<b>44.50</b>	75.00	64.00	<b>69.50</b>	75.00	166.00	<b>120.50</b>
98	SKGPA-103	1	1	5	4	3	2	99	4	3	3	3	43.00	49.00	<b>46.00</b>	74.00	63.00	<b>68.50</b>	-	130.00	<b>130.00</b>
99	SKGPA-104	3	3	8	8	3	2	1	3	1	3	3	48.00	51.00	<b>49.50</b>	92.00	65.00	<b>78.50</b>	105.00	142.00	<b>123.50</b>
100	SKGPA-105	2	3	5	8	3	2	1	2	1	-	3	45.00	50.00	<b>47.50</b>	85.00	79.00	<b>82.00</b>	140.00	144.00	<b>142.00</b>
101	SKGPA-106	1	3	1	8	3	7	1	3	2	5	3	45.00	47.00	<b>46.00</b>	84.00	78.00	<b>81.00</b>	95.00	182.00	<b>138.50</b>



S.No	Accession No.	Quantitative characters									
		Seed yield per plant (g)			Bangalore						Mettupalayam
		Bangalore	Mettupalayam	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Stem thickness (mm)	10 ml Seed volume weight (g)	Panicle length (cm)
76	SKGPA-81	16.00	10.60	<b>13.30</b>	30.00	16.00	4.50	6.50	2.90	7.90	76.00
77	SKGPA-82	16.00	15.40	<b>15.70</b>	35.00	15.60	4.35	7.30	3.10	8.50	79.00
78	SKGPA-83	18.00	10.00	<b>14.00</b>	36.00	16.60	4.20	4.50	2.80	8.10	75.00
79	SKGPA-84	10.80	15.00	<b>12.90</b>	50.00	14.50	3.40	4.10	2.30	8.90	52.00
80	SKGPA-85	12.50	11.00	<b>11.75</b>	60.00	15.20	3.45	5.20	2.60	8.80	90.00
81	SKGPA-86	18.20	13.00	<b>15.60</b>	45.00	21.00	3.10	8.80	2.80	8.10	83.00
82	SKGPA-87	13.00	12.00	<b>12.50</b>	35.00	14.00	5.30	6.50	2.70	8.50	71.00
83	SKGPA-88	8.00	11.00	<b>9.50</b>	45.00	13.00	5.30	5.50	2.90	7.80	65.00
84	SKGPA-89	37.00	12.00	<b>24.50</b>	60.00	18.00	6.50	5.50	3.15	9.80	60.00
85	SKGPA-90	5.60	10.00	<b>7.80</b>	60.00	14.00	6.30	5.50	2.80	9.10	60.00
86	SKGPA-91	16.80	11.00	<b>13.90</b>	55.00	16.50	4.80	5.60	2.90	9.50	70.00
87	SKGPA-92	26.00	11.40	<b>18.70</b>	62.00	17.20	4.50	4.60	2.90	8.50	69.00
88	SKGPA-93	6.60	10.30	<b>8.45</b>	38.00	-	4.20	-	2.80	8.10	65.00
89	SKGPA-94	20.00	12.10	<b>16.05</b>	35.00	-	5.50	-	2.20	8.50	64.00
90	SKGPA-95	19.00	12.50	<b>15.75</b>	-	-	4.10	-	3.10	8.10	73.00
91	SKGPA-96	19.20	12.10	<b>15.65</b>	42.00	-	4.30	-	2.80	7.90	74.00
92	SKGPA-97	16.60	14.60	<b>15.60</b>	28.00	-	4.50	-	3.10	7.80	46.00
93	SKGPA-98	21.20	12.30	<b>16.75</b>	40.00	-	4.60	-	2.80	7.80	76.00
94	SKGPA-99	14.00	11.20	<b>12.60</b>	65.00	-	4.60	-	3.20	8.40	83.00
95	SKGPA-100	9.20	15.10	<b>12.15</b>	34.00	-	5.20	-	3.80	7.90	60.00
96	SKGPA-101	18.60	14.20	<b>16.40</b>	32.00	-	3.60	-	3.10	8.20	68.00
97	SKGPA-102	9.60	16.20	<b>12.90</b>	32.00	-	4.50	-	2.60	7.80	70.00
98	SKGPA-103	10.00	13.20	<b>11.60</b>	31.00	-	3.50	-	2.50	7.50	67.00
99	SKGPA-104	6.00	10.20	<b>8.10</b>	32.00	-	4.30	-	3.10	7.80	46.00
100	SKGPA-105	5.60	11.50	<b>8.55</b>	65.00	-	4.20	-	2.80	7.90	45.00
101	SKGPA-106	9.60	15.50	<b>12.55</b>	35.00	-	4.50	-	3.10	7.80	75.00

S.No	Accession No.	Qualitative characters											Quantitative characters								
		Bangalore											Days to 50% flowering			Days to maturity			Plant height (cm)		
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Seed shattering	Seed colour	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
102	SKGPA-107	1	1	5	5	3	2	1	1	2	5	3	52.00	46.00	<b>49.00</b>	94.00	80.00	<b>87.00</b>	135.00	176.00	<b>155.50</b>
103	SKGPA-108	1	2	5	8	3	2	1	4	2	5	3	43.00	57.00	<b>50.00</b>	78.00	81.00	<b>79.50</b>	102.00	145.00	<b>123.50</b>
104	SKGPA-109	1	1	5	11	7	2	1	1	2	3	3	46.00	48.00	<b>47.00</b>	92.00	82.00	<b>87.00</b>	135.00	180.00	<b>157.50</b>
105	SKGPA-110	1	1	5	11	7	2	1	1	2	3	3	47.00	49.00	<b>48.00</b>	91.00	81.00	<b>86.00</b>	130.00	156.00	<b>143.00</b>
<b>Mean for check variety</b>																					
	<b>Annapurna (C)</b>	-	-	-	-	-	-	-	-	-	-	-	-	<b>46.75</b>	<b>46.75</b>	-	<b>73.75</b>	<b>73.75</b>	-	<b>99.75</b>	<b>99.75</b>
	<b>BGA -2 (C)</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>8</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>44.70</b>	<b>47.75</b>	<b>46.23</b>	<b>88.30</b>	<b>74.50</b>	<b>81.40</b>	<b>134.80</b>	<b>211.25</b>	<b>173.03</b>
	<b>GA- 1 (C)</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>8</b>	<b>5</b>	<b>6</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>44.30</b>	<b>49.75</b>	<b>47.03</b>	<b>86.80</b>	<b>84.00</b>	<b>85.40</b>	<b>113.80</b>	<b>171.80</b>	<b>142.80</b>
	<b>GA -2 (C)</b>	<b>1</b>	<b>1</b>	<b>10</b>	<b>8</b>	<b>7</b>	<b>6</b>	<b>1</b>	<b>8</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>42.70</b>	<b>48.50</b>	<b>45.60</b>	<b>86.20</b>	<b>88.00</b>	<b>87.10</b>	<b>120.50</b>	<b>171.05</b>	<b>145.78</b>
	<b>Suvarna (C)</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>11</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>46.50</b>	<b>48.00</b>	<b>47.25</b>	<b>89.60</b>	<b>74.25</b>	<b>81.93</b>	<b>147.10</b>	<b>198.75</b>	<b>172.93</b>
	<b>Minimum</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>31.00</b>	<b>37.00</b>	<b>39.50</b>	<b>70.00</b>	<b>63.00</b>	<b>68.50</b>	<b>75.00</b>	<b>99.75</b>	<b>99.75</b>
	<b>Maximum</b>	<b>3</b>	<b>3</b>	<b>99</b>	<b>11</b>	<b>7</b>	<b>99</b>	<b>99</b>	<b>8</b>	<b>3</b>	<b>7</b>	<b>3</b>	<b>61.00</b>	<b>58.00</b>	<b>59.50</b>	<b>110.00</b>	<b>93.00</b>	<b>100.00</b>	<b>165.00</b>	<b>227.00</b>	<b>193.00</b>
	<b>Mean</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>8</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>45.29</b>	<b>50.71</b>	<b>48.03</b>	<b>86.94</b>	<b>80.34</b>	<b>83.63</b>	<b>120.60</b>	<b>167.80</b>	<b>144.21</b>
	<b>CD(0.05)</b>												<b>2.85</b>	<b>1.74</b>		<b>2.98</b>	<b>2.57</b>		<b>9.78</b>	<b>10.71</b>	
	<b>CV(%) Error</b>												<b>2.66</b>	<b>1.35</b>		<b>1.41</b>	<b>1.22</b>		<b>3.15</b>	<b>2.35</b>	
	<b>CV(%) Phenotypic</b>												<b>0.11</b>	<b>6.40</b>		<b>0.07</b>	<b>8.84</b>		<b>0.16</b>	<b>14.15</b>	

**Qualitative characters** : **Early plant vigour** : 1-Poor, 2-Good, 3-Very good; **Plant growth habit** : 1-Erect, 2-Spreading, 3-Drooping, 99-Others; **Leaf colour** : 1-Yellow, 2-Yellowish orange, 3-Yellowish green, 4-Orange, 5-Green, 6-Greenish orange, 7-Pink, 8-Pinkish green, 9-Reddish yellow, 10-Redish green, 11-Red, 12-Dark red, 99-Others; **Inflorescence colour** : 1-Light yellow, 2-Yellow, 3-Yellowish orange, 4-Yellowish green, 5-Orange, 6-Pink, 7-Pinkish green, 8-Purple, 9-Red, 10-Reddish green, 11-Green, 99-Others; **Inflorescence compactness** : 3-Lax, 5-Intermediate, 7-Dense, 99-Others; **Stem colour** : 1-Yellow, 2-Yellowish green, 3-Orange, 4-Pink, 5-Red, 6-Reddish green, 7-Reddish orange, 99-Others; **Stem surface** : 1-Smooth, 2-Ridged, 99-Others; **Inflorescence shape** : 1-Globose, 2-Semi drooping, 3-Completely drooping, 4-Straight, 99-Others; **Inflorescence spininess** : 1-Smooth, 2-Glabrous, 3-Prickly, 4-Spiny, 99-Others; **Seed shattering** : 3-Low (%), 5-Intermediate (10-50%), 7-High (50%), 99-Others; **Seed colour** : 1-White, 2-Creamish, 3-Pale yellow, 4-Pink, 5-Red, 6-Brown, 7-Black, 8-Golden, 99-Others; **Popping ability of seed** : 3-Poor, 5-Medium, 7-Good, 99-Others

S.No	Accession No.	Quantitative characters									
		Seed yield per plant (g)			Bangalore						Mettupalayam
		Bangalore	Mettupalayam	Mean	Inflorescence length (cm)	Leaf length (cm)	Leaf width (cm)	Petiole length (cm)	Stem thickness (mm)	10 ml Seed volume weight (g)	Panicle length (cm)
102	SKGPA-107	21.60	10.20	<b>15.90</b>	48.00	-	6.50	-	2.90	8.60	58.00
103	SKGPA-108	10.00	12.20	<b>11.10</b>	38.00	-	6.20	-	2.60	7.50	43.00
104	SKGPA-109	15.60	10.20	<b>12.90</b>	52.00	-	4.50	-	2.60	8.60	74.00
105	SKGPA-110	36.00	16.30	<b>26.15</b>	53.00	-	4.30	-	2.70	8.70	55.00
<b>Mean for check variety</b>											
		<b>11.30</b>	-	<b>11.30</b>	-	-	-	-	-	-	<b>52.50</b>
	<b>BGA -2 (C)</b>	<b>35.80</b>	<b>12.63</b>	<b>24.21</b>	<b>45.70</b>	<b>14.66</b>	<b>6.18</b>	<b>6.71</b>	<b>2.48</b>	<b>8.38</b>	<b>51.75</b>
	<b>GA- 1 (C)</b>	<b>27.52</b>	<b>12.28</b>	<b>19.90</b>	<b>54.30</b>	<b>16.30</b>	<b>3.67</b>	<b>4.19</b>	<b>2.31</b>	<b>8.36</b>	<b>51.28</b>
	<b>GA -2 (C)</b>	<b>35.30</b>	<b>12.63</b>	<b>23.96</b>	<b>61.20</b>	<b>16.48</b>	<b>4.74</b>	<b>5.81</b>	<b>2.86</b>	<b>8.62</b>	<b>50.25</b>
	<b>Suvarna (C)</b>	<b>33.90</b>	<b>19.15</b>	<b>26.53</b>	<b>45.30</b>	<b>24.10</b>	<b>7.93</b>	<b>6.55</b>	<b>3.13</b>	<b>8.71</b>	<b>54.50</b>
	<b>Minimum</b>	<b>5.60</b>	<b>9.00</b>	<b>7.80</b>	<b>20.00</b>	<b>8.50</b>	<b>2.50</b>	<b>3.20</b>	<b>1.60</b>	<b>7.30</b>	<b>34.00</b>
	<b>Maximum</b>	<b>60.00</b>	<b>23.00</b>	<b>40.00</b>	<b>92.00</b>	<b>33.00</b>	<b>9.50</b>	<b>13.00</b>	<b>3.90</b>	<b>10.50</b>	<b>90.00</b>
	<b>Mean</b>	<b>20.42</b>	<b>13.33</b>	<b>17.28</b>	<b>44.33</b>	<b>15.89</b>	<b>4.75</b>	<b>5.64</b>	<b>2.45</b>	<b>8.37</b>	<b>61.74</b>
	<b>CD(0.05)</b>	<b>11.72</b>	<b>4.41</b>		<b>4.62</b>	<b>3.50</b>	<b>0.96</b>	<b>1.33</b>	<b>0.48</b>	<b>0.40</b>	<b>8.32</b>
	<b>CV(%) Error</b>	<b>14.72</b>	<b>12.14</b>		<b>3.72</b>	<b>8.15</b>	<b>7.08</b>	<b>9.50</b>	<b>7.36</b>	<b>1.96</b>	<b>5.98</b>
	<b>CV(%) Phenotypic</b>	<b>0.47</b>	<b>24.45</b>		<b>0.26</b>	<b>0.24</b>	<b>0.24</b>	<b>0.28</b>	<b>0.22</b>	<b>0.06</b>	<b>21.62</b>

**Table 101. Promising lines in rice bean germplasm (Kharif, 2012) for various characters at different locations (Plains)**

S. No.	Characters	Range	Promising lines	Highest value of best check
<b>Bangalore (Accessions 52)</b>				
1.	Days to 50% flowering	36.00-47.00	IC520892, IC176563, EC018184, EC018563, EC087898, IC248733, KBR-1, EC018181, EC018222, EC097882, IC007537-C, IC016751, IC019336, IC019781-2, IC521068, EC000262, EC181185, EC018171, EC018556, EC078228, EC098453, IC016342, IC018183, IC521061, IC521148 (< 42.00 days)	RBL-1 (41.40 days)
2.	Days to maturity	73.00-86.00	IC520892, EC018563, IC018183, EC018184, EC018556, IC016342, IC016767, IC176563, IC521144 (< 75.00 days)	RBL-1 (76.60 days)
3.	Seed yield per plant (g)	3.80-14.20	IC018183, IC018452, EC018563, IC016767, EC018260, IC016342, KBR-1, IC521144, IC002074, IC008565-3, EC108887-A (> 9.20 g)	RBL-50 (9.25 g)
<b>Bhubaneswar (Accessions 50)</b>				
1.	Days to 50% flowering	49.00-56.00	EC000262, EC001843, EC018556, EC018563, EC037228, EC078228, EC087898, EC098453, EC108887-A, EC181185, IC002074, IC0025687, IC007537-C, IC016767, IC019781-2, IC521068, IC011723, IC018452, IC018563 (< 51.00 days)	RBL-35 (50.80 days)
2.	Days to maturity	94.00-105.00	IC002074, EC000262, IC0025687, EC018556, EC078228, IC007537-C, IC019781-2, IC026973 (< 98.00 days)	RBL-35 (97.20 days)
3.	Plant height (cm)	41.00-83.40	IC176563 (=83.40 g)	RBL-6 (75.46 cm)
4.	Primary branches per plant	1.20-4.40	IC018183, IC016751, IC016767, IC007537-C, EC012436, EC114076, IC008565-3, IC015640, IC019781-2, EC016136, IC002074 (=> 3.20)	RBL-35 (2.54 )
5.	Pod length (cm) – Obs.	5.60-8.80	IC521144, EC000262, IC521049, EC012436, EC087898, IC019336 (=> 8.20 cm)	RBL-6 (7.60 cm)
6.	Pod length (cm) – Adj.	5.72-9.05	IC521144, IC521049, EC000262, IC019336, IC015640, IC019781-2, IC016342, IC016751, EC087898, IC026973, IC521061, IC521081, IC018563, EC012436, IC176563, IC016767, IC018183, IC520892 (>7.63 cm)	RBL-6 (7.60 cm)
7.	No. of pods per cluster	1.00-2.14	-	RBL-6 (2.14)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Highest value of best check</b>
8.	Number of seeds per pod	4.00-8.00	EC000262, IC521144 (=8.00)	RBL-6 (6.90)
9.	100 seed weight (g)	4.28-9.22	EC097882, IC521049, EC018222, EC018260, EC014075, IC521081, EC016136, IC521061, EC018184, IC016751, EC037228, IC015640, IC019781-2 (> 6.78 g)	RBL-1 (6.09 g)
10.	Seed yield (q/ha)	1.66-7.92	IC016342, IC019781-2, IC521148 (>7.90 q/ha)	RBL-6 (5.83 q/ha)
<b>Delhi (Accessions 50)</b>				
1.	Days to 50% flowering	60.00-87.00	EC001843, EC000262, EC181185, IC019336, EC108887-A, EC018563, EC087898, EC018260, EC018771, EC037226, EC037228, EC098453, IC016767, IC018183, IC018563, IC521081, IC007537-C, IC008565-3, EC018184, EC018222, EC078228, IC015640, IC016342, EC012416, EC048452, EC098452, EC114076, IC016751, IC018452, IC019781-2, IC026973, IC521049, IC521068 (< 68.00 days)	RBL-6 (67.60 days)
2.	Days to maturity	75.00-136.00	IC016751, EC018563, IC007537-C, EC037226, EC098453, EC018556, EC087898, IC521081, EC000262, EC018260, IC015640, IC521068, IC016342, EC048452, IC019781-2, IC521049, EC018222, EC018184, EC181185, IC018183, IC019336, IC521061, IC008565-3, EC012436, EC108887-A, EC014075, IC016767, IC018452, IC026973 (<106.00 days)	RBL-35 (105.00 days)
3.	Plant height (cm)	59.20-123.60	EC018181, EC037228, IC019781-2, IC018563, IC016751, EC018563, EC016136, EC108887-A, IC016767, IC520892, IC521061, EC018556, EC114076, EC097882, IC248733, IC019336, EC018222, EC098452, EC018260, IC015640, IC521081, EC087898, EC078228, EC018771, IC521049 (> 80.38 cm)	RBL-1 (88.20 cm)
4.	Primary branches per plant	4.20-19.87	-	RBL-6 (19.87 )
5.	No. of pods per cluster	2.00-4.20	IC016767, EC001843, EC012436, EC016136, EC018222, IC015640, IC520892, IC521081, EC018181, EC018260, IC016342, IC016751, IC026973, EC018184, EC037226, IC002067, IC019781-2, IC248733, IC008565-3, EC014075, EC037228, EC087898, IC018183, IC018452, IC521061 (> 3.18)	RBL-1 (3.10 )

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Highest value of best check</b>
6.	Pod length (cm)	6.72-9.94	EC012416, IC019781-2, IC521148, IC521061, EC012436, IC026973, EC048452, IC002909 (>9.00 cm)	RBL-35 (9.02 cm)
7.	Number of seeds per pod	5.50-9.20	EC048452, EC012436, IC002909, IC176563, EC012416, IC026973, IC002074, IC015640, IC016751, IC521061, EC037228, IC018563, EC016136, EC018771, EC108887-A, EC181185, IC011723, IC521068, IC521148, IC019336 (> 7.78)	RBL-1 (7.80)
8.	No. of clusters per plant	4.20-88.00	EC012436, EC016136, IC521061, IC521081, EC001843, EC018222, EC018184, EC012416, IC520892, EC014075, EC018563, EC018260, IC521049, EC037228, IC011723, EC037226, IC002909, EC018771, IC016767, IC016751, IC016342, EC018556, IC521068, EC098453, IC248733, EC108887-A, IC018452, EC087898 (> 24.18)	RBL-1 (23.90)
9.	Number of pods per plant	6.60-219.00	EC012436, EC016136, EC018222, EC014075, IC521081, IC521061, EC018184, EC001843, EC018563, IC520892, IC016342, EC037228, EC018260, IC011723, IC016767, EC018771, EC012416, IC016751, IC248733, IC521049, EC098453, EC108887-A, EC037226, IC521068, IC002909, IC018452, EC087898, IC015640 (> 60.98)	RBL-1 (57.50)
10.	Seed yield per plant (g)	4.10-78.00	EC012436, IC016767, EC048452, EC016136, EC108887-A, EC014075, EC018184, EC018181, EC018222, EC018563, EC012416, EC018260, IC521148, EC018556, IC026973, IC016342, IC520892 (> 14.90 g)	RBL-50 (14.71 g)
11	100 seed weight (g)	2.88-6.58	EC097882, IC176563, EC018181, EC078228, EC018563, EC018556, EC048452, IC002067, EC037228, IC019781-2, EC018771, IC018563, EC018222, EC108887-A, IC248733, EC012416, EC012436, EC087898, IC016342, EC114076, IC026973, IC521068 (>4.54 g)	RBL-6 (4.50 g)
12.	Seed yield (q/ha)	0.67-11.80	EC018222, EC018563, EC048452, IC016767, EC018260, EC018556, EC108887-A, IC016751, EC018771, EC078228, IC521148, IC018452, EC018184, IC019336 (> 4.72 q/ha)	RBL-6 (4.73 q/ha)
<b>Mettupalayam (Accessions 50)</b>				
1.	Days to 50% flowering	48.40-56.00	-	RBL-1 (48.40 days)
2.	Days to maturity	82.00-84.00	EC000262, EC012416, EC016136, EC018171, EC018181, EC018771, EC037226, EC048452, EC087898, EC097882, EC108887-A, EC114076, IC002074, IC002567, IC008565-3, IC011723, IC016342, IC018183,	RBL-35 & RBL-50 (82.00 days)

S. No.	Characters	Range	Promising lines	Highest value of best check
			IC019336, IC176563, IC248733, IC521081, IC521144 (= < 82.00 days)	
3.	Plant height (cm)	39.00-71.00	IC026973, IC176563, IC019781-2, IC019336, IC016342 (> 56.98 cm)	RBL-1 (56.33 cm)
4.	Primary branches per plant – Obs.	2.00-5.50	IC176563, IC019781-2, EC016136, IC002909, IC018563, IC019336, EC012436, EC037226, EC037228, IC011723, IC016342, IC026973, IC248733, IC520892, EC012416, EC018171, EC018556, EC018563, EC078228, EC097882, EC098452, EC181185, IC002074, IC002567, IC008565-3, IC015640, IC016751, IC016767, IC521148 (= > 3.50)	RBL-1 (3.50)
5.	Primary branches per plant – Adj.	2.06-5.56	IC176563, IC019781-2, IC002909, EC016136, IC018563, IC019336, IC026973, IC248733, IC520892, EC012436, IC011723, IC016342, EC098452, EC181185, IC002074, IC002567, IC008565-3, EC037226, EC037228, IC521148 (> 3.54)	RBL-1 (3.50 )
6.	Number of pods per plant	25.00-54.00	IC521144, IC521148, EC018556, EC014075, EC012436, EC018184 (> 45.98)	RBL-6 (46.00)
7.	Seed yield per plant (g)	2.00-9.10	IC521081, EC098452, EC098453 ,IC520892 (> 7.98 g)	RBL-6 (7.93 g)
<b>Ludhiana(Accessions 50)</b>				
1.	Days to 50% flowering	51.00-64.00	EC018556, EC037228, EC087989, EC098453, IC007537, IC018452, EC000262, EC018260, EC018563, EC037226, EC078228, EC181185, IC019336, IC019781-2, EC001843, EC018771, EC108887-A, IC521068, EC018171, EC048452, IC521081, EC016136, EC114076, IC015640, IC521144, IC008565, IC011723 (< 57.00 days)	RBL-1 (58.20 days)
2.	Days to maturity	83.00-101.00	EC018563, EC078228, EC000262, EC018556, EC087989, EC098453, EC037226, EC001843, EC018171, EC018222, EC018771, EC018260, EC108887-A, EC181185, IC521148, IC019336, IC019781-2, EC012416, EC037228, EC098452, IC026973, EC097882, IC008565, IC018452, EC012436, EC018184, IC015640, IC016342, IC521049, EC114076, IC007537, IC018183, IC018563, IC521068, EC014075, EC048452, IC002909, IC011723, IC016767, IC248733 (<= 95.00)	RBL-35 (95.20 days)
3.	Plant height (cm)	75.00-147.50	EC087989, IC521068, EC018222, EC018771, EC037226, IC521061, EC097882, IC018183, EC012436, EC014075, IC521148, IC016751, IC520892, EC018181, IC521081, IC018563, IC019336, IC248733, IC176563, EC018556, EC098452, IC521049, IC521144, EC181185,	RBL-35 (110.20 cm)

S. No.	Characters	Range	Promising lines	Highest value of best check
			IC016342 (>112.50 cm)	
4.	Primary branches per plant	1.50-4.50	IC016751, EC016136, IC521144, EC114076, IC015640, IC016767, IC018183, IC018452 (=>3.50)	RBL-1 (3.10)
5.	Pod length (cm)	5.20-8.00	EC016136, IC248733, IC521148, EC087989, EC181185, IC026973, IC521061, EC108887-A, IC002567, IC018183, EC078228, EC018556, EC098453, EC114076, IC008565, IC018452 (=> 7.20 cm)	RBL-6 (7.10 cm)
6.	Number of seeds per pod	5.40-7.80	IC521061, IC521081, IC002567, IC002909, IC018563, EC016136, IC002074, EC108887-A, IC016342, IC521068 (> 7.20)	RBL-6 (6.94)
7.	Number of pods per plant	15.00-57.00	IC016751, IC521144, EC016136, IC018183, IC019336, IC521061, IC521081, IC018452, EC114076, IC002074 (> 30.00 cm)	RBL-35 (29.20)
8.	100 seed weight (g)	4.50-7.50	EC097882, IC176563, EC037228, EC018222, EC000262, EC012416, EC018171, EC048452, IC015640, IC018452, IC018563, EC018260, EC018556, EC018563, EC108887-A, IC002567, IC007537, IC008565, IC026973 (=>6.00 g)	RBL-35 (5.96 g)
9.	Seed yield (q/ha)	0.63-19.58	EC114076, IC521144, EC016136, IC248733, EC018260, IC521081, EC048452, EC181185, IC002074, IC007537, IC018183, IC520892, EC108887-A, IC002909, IC015640, EC037226, IC016342, EC018181, IC011723, IC016767, IC018452 (=> 6.25 q/ha)	RBL-35 (5.96 q/ha)
<b>Rahuri (Accessions 50)</b>				
1.	Days to 50% flowering	45.00-58.00	EC018171, IC002074, IC002909, EC016136, IC007537-C, IC016767, IC018563, IC520892, IC011723, IC248733, IC008565-3, IC016342 (< 50.00 days)	RBL-50 (50.60 days)
2.	Days to maturity	92.00-106.00	IC002074, IC002909, EC018171, IC007537-C, IC011723, EC016136, IC008565-3, IC016767, IC018563, IC016342, IC256700, IC520892, IC521081 (<97.00 days)	RBL-6 (97.40 days)
3.	Plant height (cm) – Obs.	32.60-146.60	EC098453, EC037228, EC114076, IC026973, EC048452, IC248733, EC018563, EC087989, IC019781-2, EC018171, IC521068, IC520892, EC001843, EC016136, EC018556, IC016342, EC018181 (> 90.50 cm)	RBL-50 (89.10 cm)
4.	Plant height (cm) – Adj.	27.54-151.09	EC098453, EC114076, IC026973, EC037228, EC018171, IC019781-2, IC248733, EC048452, EC018563, EC087989, EC001843, EC016136, EC018181, EC014075, IC016342, IC521068, EC018222, IC520892, IC018563 (> 89.90 cm)	RBL-50 (89.10 cm)
5.	Primary branches per	3.30-	EC001843, IC007537-C, IC008565-3, IC011723, IC018452, IC019336,	RBL-50 (5.70)



<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Highest value of best check</b>
	plant	7.30	IC520892, IC521049, EC014075, EC018771, EC087989, EC098453, IC002074, IC016751, IC016767, IC521061, IC521144 (=>6.30)	
6.	Stem thickness (cm)	0.47-1.17	IC016751, IC018452, EC014075, EC018556, EC097882, IC008565-3, IC011723, IC016342, IC026973, IC176563, IC520892 (>0.77 cm)	RBL-50 (0.73 cm)
7.	Pod length (cm)	5.23-9.73	IC176563, EC000262, EC037228, EC078228, IC520892 (> 9.55 cm)	RBL-1 (9.45 cm)
8.	Number of seeds per pod	7.67-11.70	IC016342, IC520892 (= 11.70)	RBL-1 (11.09)
9.	Number of pods per cluster	2.67-7.67	IC018452, EC001843, EC087989, IC011723, IC018563, IC026973, EC016136, EC018181, EC018184, EC018563, EC037226, IC008565-3, IC016342, IC018183, IC521049, IC002074 (>5.55)	RBL-1 & RBL-50 (4.87)
10.	100 seed weight (g)	4.62-8.70	EC097882, EC018181, IC176563, IC026973, EC098453, EC018222, EC037228, EC078228, EC108887-A (>6.68 g)	RBL-35 (6.60 g)
11.	Seed yield per plant (g) - Obs.	10.20-50.50	EC018563, IC019781-2, IC026973, EC037226, IC176563, EC018556, EC037228, EC018222, EC018181, EC108887-A, EC018260, EC018771, EC181185, EC097882, IC248733, IC007537-C, IC015640, EC012436, IC521061, EC087989, EC098453, IC520892 (> 20.98 g)	RBL-35 (20.52 g)
12.	Seed yield per plant (g) - Adj.	9.61-50.84	EC018563, IC019781-2, IC026973, EC037226, IC176563, EC018222, EC018556, EC037228, EC018181, EC108887-A, EC018260, EC181185, EC018771, EC097882, EC012436, IC248733, IC007537-C, IC015640, EC098453, EC087989, EC018171, IC521061, EC114076, EC048452, EC078228 (>20.52 g)	RBL-35 (20.52 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	49.80-59.80	EC018171, EC087898, EC181185, IC019336, EC018563, IC007537-C, EC000262, IC521068, EC098453, EC108887-A, EC078228, IC016767, IC019781-2, IC521081, EC018260, EC018556, EC037228, IC008565-3, EC001843, EC018771, EC018184, EC037226, EC048452, IC011723, IC015640 (< 54.00 days)	RBL-1 (53.23 days)
2.	Days to maturity	88.00-98.67	EC018563, IC016751, EC018556, IC007537-C, EC018171, EC000262, EC098453, EC087898, IC016342, EC018260, IC015640, IC019781-2, IC521081, EC037226, IC002074, IC008565-3, EC181185, IC521068, EC018222, IC019336, EC018184, EC078228, IC016767, EC108887-A, IC018183, EC001843, EC048452 (< 93.00 days)	RBL-35 (92.83 days)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Highest value of best check</b>
3.	Plant height (cm)	58.62-97.03	EC018181, EC087898, EC037228, IC019781-2, IC026973, EC114076, IC520892, IC248733, EC097882, EC098453, IC018563, IC016751, IC176563, EC018222, IC019336, IC521068, EC014075, IC016342, EC018556, EC037226 (> 80.96 cm)	RBL-1 (80.64 cm)
4.	Primary branches per plant	3.18-6.50	-	RBL-6 (6.50)
5.	Pod length (cm)	6.48-8.31	IC521061, IC026973, IC521148, IC248733, EC016136, IC019781-2 (> 8.11 cm)	RBL-1 (8.09 cm)
6.	Number of pod per cluster	2.09-4.64	EC018181, IC018452, EC001843, EC087898, IC026973, IC011723, IC018563, IC016342, EC016136, IC008565-3, EC012436, EC018184, EC037226, IC015640, IC016767, IC002074, EC018260, IC016751, IC018183, EC018563, IC520892 (>3.27)	RBL-1 (3.28)
7.	Number of seeds per pod	6.12-8.55	IC016342, IC002909, EC000262, IC176563, EC012436, IC002074 (> 7.95)	RBL-1 (7.92)
8.	Number of pods per plant	21.33-95.00	EC012436, EC016136, EC014075, IC521081, IC521061, EC018222, IC016751, IC520892, EC018184, IC016342, EC001843, EC018260, EC018563, IC011723, IC018452, IC016767, IC521144, IC018183, IC248733, EC098453, IC015640, EC037228, EC108887-A, EC018556 (> 42.78)	RBL-1 (42.48)
9.	100 seed weight (g)	4.38-8.00	EC097882, EC018181, IC176563, EC018222, EC037228, EC018171, EC048452, IC019781-2, EC018563, EC078228, EC012416, IC026973, EC018260, IC016342, EC108887-A, IC521049, IC018452, EC098453, EC000262, IC018183, IC015640, EC087898, IC521081, IC007537-C, EC018556, IC019336, IC248733, IC002567, EC016136 (> 5.57 g)	RBL-1 (5.57 g)
10.	Seed yield per plant (g)	6.39-28.73	IC016767, EC012436, EC018563, EC108887-A, IC026973, EC048452, EC037226, EC018260, IC019781-2, EC018222, IC176563, EC018556, EC016136, EC018181, EC037228, IC016342, EC181185, EC018771, EC014075, EC097882, IC520892, IC521148 (>12.50g)	RBL-50 (12.39 g)
11.	Seed yield (q/ha)	1.89-9.46	EC114076, IC521144, IC016767, EC018260, EC048452, IC248733, EC018556, EC016136, EC018222, IC002074, EC018563, IC016342, EC108887-A, IC018183, IC002909 (>5.52 q/ha)	RBL-6 (5.48 q/ha)

**Table 102. Multilocation evaluation of germplasm lines in rice bean at different locations : Kharif 2012 (Plains)**

S.No	Accession No.	Days to 50% flowering							Days to 80% maturity						
		Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
1	EC000262	40.00	49.00	61.00	52.00	51.00	55.00	<b>51.33</b>	80.00	95.00	94.00	85.00	82.00	100.00	<b>89.33</b>
2	EC001843	46.00	49.00	60.00	53.00	55.00	54.00	<b>52.83</b>	81.00	98.00	107.00	87.00	83.00	100.00	<b>92.67</b>
3	EC012416	46.00	56.00	67.00	61.00	53.00	53.00	<b>56.00</b>	82.00	101.00	109.00	91.00	82.00	103.00	<b>94.67</b>
4	EC012436	45.00	56.00	70.00	62.00	55.00	52.00	<b>56.67</b>	79.00	101.00	104.00	93.00	83.00	100.00	<b>93.33</b>
5	EC014075	43.00	53.00	72.00	61.00	51.00	53.00	<b>55.50</b>	82.00	100.00	105.00	95.00	83.00	101.00	<b>94.33</b>
6	EC016136	42.00	56.00	79.00	55.00	50.00	46.00	<b>54.67</b>	83.00	100.00	109.00	99.00	82.00	95.00	<b>94.67</b>
7	EC018171	41.00	56.00	-	54.00	53.00	45.00	<b>49.80</b>	80.00	103.00	-	87.00	82.00	94.00	<b>89.20</b>
8	EC018181	39.00	-	85.00	63.00	55.00	57.00	<b>59.80</b>	77.00	-	128.00	99.00	82.00	106.00	<b>98.40</b>
9	EC018184	38.00	51.00	66.00	61.00	52.00	50.00	<b>53.00</b>	76.00	100.00	103.00	93.00	84.00	98.00	<b>92.33</b>
10	EC018222	39.00	56.00	66.00	61.00	52.00	51.00	<b>54.17</b>	78.00	102.00	102.00	87.00	84.00	100.00	<b>92.17</b>
11	EC018260	44.00	51.00	65.00	52.00	52.00	52.00	<b>52.67</b>	83.00	100.00	94.00	88.00	84.00	100.00	<b>91.50</b>
12	EC018556	41.00	49.00	73.00	51.00	51.00	51.00	<b>52.67</b>	76.00	97.00	93.00	85.00	83.00	100.00	<b>89.00</b>
13	EC018563	38.00	49.00	64.00	52.00	50.00	53.00	<b>51.00</b>	75.00	98.00	88.00	83.00	83.00	101.00	<b>88.00</b>
14	EC018771	43.00	56.00	65.00	53.00	50.00	50.00	<b>52.83</b>	84.00	103.00	136.00	87.00	82.00	98.00	<b>98.33</b>
15	EC037226	43.00	56.00	65.00	52.00	50.00	52.00	<b>53.00</b>	85.00	104.00	92.00	86.00	82.00	101.00	<b>91.67</b>
16	EC037228	44.00	49.00	65.00	51.00	50.00	57.00	<b>52.67</b>	86.00	100.00	109.00	91.00	83.00	103.00	<b>95.33</b>
17	EC048452	42.00	51.00	67.00	54.00	49.00	56.00	<b>53.17</b>	80.00	98.00	101.00	95.00	82.00	101.00	<b>92.83</b>
18	EC078228	41.00	49.00	66.00	52.00	50.00	54.00	<b>52.00</b>	80.00	97.00	110.00	84.00	83.00	100.00	<b>92.33</b>
19	EC087898	38.00	49.00	64.00	51.00	50.00	51.00	<b>50.50</b>	82.00	98.00	93.00	85.00	82.00	100.00	<b>90.00</b>
20	EC097882	39.00	53.00	87.00	64.00	53.00	57.00	<b>58.83</b>	81.00	102.00	130.00	92.00	82.00	105.00	<b>98.67</b>
21	EC098452	42.00	51.00	67.00	63.00	51.00	57.00	<b>55.17</b>	82.00	99.00	108.00	91.00	83.00	106.00	<b>94.83</b>
22	EC098453	41.00	49.00	65.00	51.00	51.00	53.00	<b>51.67</b>	79.00	99.00	92.00	85.00	83.00	99.00	<b>89.50</b>
23	EC108887-A	43.00	49.00	63.00	53.00	51.00	51.00	<b>51.67</b>	83.00	99.00	104.00	88.00	82.00	99.00	<b>92.50</b>
24	EC114076	44.00	56.00	67.00	55.00	50.00	50.00	<b>53.67</b>	86.00	105.00	106.00	94.00	82.00	98.00	<b>95.17</b>
25	EC181185	40.00	49.00	62.00	52.00	50.00	52.00	<b>50.83</b>	82.00	98.00	103.00	88.00	83.00	98.00	<b>92.00</b>

S.No	Accession No.	Plant height (cm)						Number of primary branches/plant					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
1	EC000262	58.80	87.80	100.00	48.00	77.50	<b>74.42</b>	2.60	7.00	1.50	3.00	5.30	<b>3.88</b>
2	EC001843	54.20	65.40	105.00	49.00	94.50	<b>73.62</b>	2.60	6.80	1.50	2.50	7.30	<b>4.14</b>
3	EC012416	49.00	84.00	107.50	52.00	73.50	<b>73.20</b>	2.20	9.00	2.00	3.50	5.30	<b>4.40</b>
4	EC012436	64.00	77.00	130.00	51.00	78.50	<b>80.10</b>	3.40	12.00	2.00	4.00	5.30	<b>5.34</b>
5	EC014075	66.20	74.00	130.00	54.00	88.60	<b>82.56</b>	2.60	7.50	2.50	3.00	6.30	<b>4.38</b>
6	EC016136	52.40	104.50	87.50	53.00	94.50	<b>78.38</b>	3.20	10.00	4.00	4.50	4.30	<b>5.20</b>
7	EC018171	50.80	-	95.00	50.00	118.50	<b>78.58</b>	1.40	-	2.50	3.50	5.30	<b>3.18</b>
8	EC018181	-	123.60	125.00	48.00	91.50	<b>97.03</b>	-	9.00	2.50	3.00	3.30	<b>4.45</b>
9	EC018184	51.60	74.60	100.00	47.00	63.50	<b>67.34</b>	2.40	8.00	2.50	2.50	4.30	<b>3.94</b>
10	EC018222	51.40	94.60	135.00	52.00	85.50	<b>83.70</b>	1.80	6.60	2.00	3.00	5.30	<b>3.74</b>
11	EC018260	50.40	94.00	100.00	48.00	69.50	<b>72.38</b>	2.80	6.60	2.50	3.00	3.30	<b>3.64</b>
12	EC018556	46.60	99.00	115.00	53.00	93.50	<b>81.42</b>	1.60	8.20	2.00	3.50	5.30	<b>4.12</b>
13	EC018563	49.80	105.20	75.00	46.00	123.50	<b>79.90</b>	1.80	6.20	2.00	3.50	5.30	<b>3.76</b>
14	EC018771	43.60	89.40	135.00	47.00	85.50	<b>80.10</b>	2.20	8.40	2.50	3.00	6.30	<b>4.48</b>
15	EC037226	51.20	80.20	135.00	48.00	90.50	<b>80.98</b>	1.60	8.00	2.00	4.00	4.30	<b>3.98</b>
16	EC037228	50.20	120.20	90.00	52.00	145.50	<b>91.58</b>	1.20	10.20	2.00	4.00	4.30	<b>4.34</b>
17	EC048452	47.60	59.20	102.50	47.00	129.50	<b>77.16</b>	1.60	8.40	1.50	3.00	5.30	<b>3.96</b>
18	EC078228	50.40	91.00	92.50	51.00	64.60	<b>69.90</b>	1.40	8.20	3.00	3.50	3.30	<b>3.88</b>
19	EC087898	56.80	91.40	147.50	48.00	122.50	<b>93.24</b>	2.60	8.80	1.50	2.50	6.30	<b>4.34</b>
20	EC097882	71.20	96.50	132.50	52.00	78.50	<b>86.14</b>	2.60	13.00	1.50	3.50	5.30	<b>5.18</b>
21	EC098452	58.40	94.40	115.00	46.00	82.50	<b>79.26</b>	1.60	9.50	2.00	3.50	4.30	<b>4.18</b>
22	EC098453	50.40	81.40	97.50	51.00	146.60	<b>85.38</b>	2.00	7.00	2.00	2.50	6.30	<b>3.96</b>
23	EC108887-A	63.60	103.60	92.50	44.00	59.50	<b>72.64</b>	2.40	9.00	2.50	2.00	4.30	<b>4.04</b>
24	EC114076	65.40	97.60	100.00	51.00	134.50	<b>89.70</b>	3.40	8.20	3.50	3.00	5.30	<b>4.68</b>
25	EC181185	61.60	66.80	112.50	52.00	52.50	<b>69.08</b>	2.80	4.20	2.00	3.50	4.30	<b>3.36</b>

S.No	Accession No.	Pod length (cm)					Number of pod per cluster				Number of seeds per pod				
		Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Delhi	Bhubaneswar	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean
1	EC000262	8.60	7.92	6.00	9.70	<b>8.06</b>	2.80	1.60	3.67	<b>2.69</b>	8.00	7.40	6.30	10.70	<b>8.10</b>
2	EC001843	6.80	8.58	5.30	5.23	<b>6.48</b>	4.00	1.60	6.67	<b>4.09</b>	5.20	7.20	6.90	8.67	<b>6.99</b>
3	EC012416	6.80	9.94	5.80	6.23	<b>7.19</b>	2.80	1.40	4.67	<b>2.96</b>	6.20	8.80	6.50	7.67	<b>7.29</b>
4	EC012436	8.20	9.20	6.10	5.77	<b>7.32</b>	4.00	1.80	4.67	<b>3.49</b>	7.00	9.00	6.30	9.67	<b>7.99</b>
5	EC014075	6.80	8.18	5.50	6.03	<b>6.63</b>	3.25	1.60	4.67	<b>3.17</b>	6.60	7.00	6.40	10.70	<b>7.68</b>
6	EC016136	7.60	8.35	8.00	8.63	<b>8.15</b>	4.00	1.20	5.67	<b>3.62</b>	5.80	8.00	7.40	9.67	<b>7.72</b>
7	EC018171	7.00	-	6.60	9.17	<b>7.59</b>	-	1.20	4.67	<b>2.94</b>	6.00	-	6.40	10.70	<b>7.70</b>
8	EC018181	-	8.06	6.10	8.43	<b>7.53</b>	3.60	-	5.67	<b>4.64</b>	-	7.40	6.40	9.67	<b>7.82</b>
9	EC018184	7.40	7.44	6.90	7.97	<b>7.43</b>	3.40	1.20	5.67	<b>3.42</b>	5.80	6.60	6.50	10.70	<b>7.40</b>
10	EC018222	6.40	8.64	6.10	8.57	<b>7.43</b>	4.00	1.20	3.67	<b>2.96</b>	4.00	6.40	6.00	9.67	<b>6.52</b>
11	EC018260	7.40	7.62	6.20	8.93	<b>7.54</b>	3.60	1.60	4.67	<b>3.29</b>	7.20	6.60	6.60	10.70	<b>7.78</b>
12	EC018556	6.10	7.68	7.20	8.69	<b>7.42</b>	2.40	1.40	4.67	<b>2.82</b>	5.20	7.40	5.90	9.67	<b>7.04</b>
13	EC018563	6.40	8.38	6.30	7.03	<b>7.03</b>	2.80	1.40	5.67	<b>3.29</b>	5.00	7.60	6.40	8.67	<b>6.92</b>
14	EC018771	6.40	8.64	6.90	9.13	<b>7.77</b>	2.80	1.00	4.67	<b>2.82</b>	5.80	8.00	6.80	9.67	<b>7.57</b>
15	EC037226	6.80	8.56	5.20	7.63	<b>7.05</b>	3.40	1.20	5.67	<b>3.42</b>	5.80	7.60	5.50	7.67	<b>6.64</b>
16	EC037228	6.40	8.86	6.50	9.70	<b>7.87</b>	3.20	1.00	3.67	<b>2.62</b>	5.40	8.20	5.70	10.70	<b>7.50</b>
17	EC048452	6.00	9.18	6.70	9.17	<b>7.76</b>	2.40	1.20	4.67	<b>2.76</b>	4.80	9.20	5.90	9.67	<b>7.39</b>
18	EC078228	6.80	8.32	7.30	9.70	<b>8.03</b>	2.80	1.00	4.67	<b>2.82</b>	5.40	7.40	7.20	10.70	<b>7.68</b>
19	EC087898	8.20	7.82	7.80	8.43	<b>8.06</b>	3.20	1.80	6.67	<b>3.89</b>	6.00	7.00	6.00	8.67	<b>6.92</b>
20	EC097882	5.80	7.15	6.50	9.10	<b>7.14</b>	2.00	1.20	3.67	<b>2.29</b>	4.20	5.50	6.10	8.67	<b>6.12</b>
21	EC098452	6.00	7.48	6.00	7.97	<b>6.86</b>	2.80	1.00	4.67	<b>2.82</b>	5.60	7.40	6.00	7.67	<b>6.67</b>
22	EC098453	6.20	6.72	7.20	8.63	<b>7.19</b>	3.00	1.00	3.67	<b>2.56</b>	5.20	6.20	5.70	8.67	<b>6.44</b>
23	EC108887-A	6.10	8.78	7.40	8.50	<b>7.70</b>	3.00	1.40	3.67	<b>2.69</b>	6.00	8.00	7.30	8.67	<b>7.49</b>
24	EC114076	6.80	8.80	7.20	8.30	<b>7.78</b>	2.60	1.60	3.67	<b>2.62</b>	6.20	7.40	5.90	9.67	<b>7.29</b>
25	EC181185	6.40	7.70	7.60	7.50	<b>7.30</b>	2.60	1.00	2.67	<b>2.09</b>	6.60	8.00	6.70	8.67	<b>7.49</b>

S.No	Accession No.	Number of pods per plant				Seed yield per plant (g)					Seed yield (q/ha)			
		Delhi	Mettupalayam	Ludhiana	Mean	Bangalore	Delhi	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mean
1	EC000262	50.40	38.00	19.00	<b>35.80</b>	5.50	5.36	4.20	10.50	<b>6.39</b>	3.75	1.46	2.50	<b>2.57</b>
2	EC001843	87.20	42.00	21.00	<b>50.07</b>	8.30	13.23	4.00	18.30	<b>10.96</b>	7.50	4.25	2.08	<b>4.61</b>
3	EC012416	68.80	42.00	15.00	<b>41.93</b>	6.70	18.33	4.70	13.50	<b>10.81</b>	4.17	4.07	0.63	<b>2.96</b>
4	EC012436	219.00	46.00	20.00	<b>95.00</b>	5.60	78.00	4.30	22.00	<b>27.48</b>	6.67	1.93	2.92	<b>3.84</b>
5	EC014075	104.75	48.00	25.00	<b>59.25</b>	4.50	22.60	5.30	19.00	<b>12.85</b>	7.50	2.79	4.17	<b>4.82</b>
6	EC016136	132.50	38.00	51.00	<b>73.83</b>	6.50	33.00	5.10	14.50	<b>14.78</b>	3.33	1.63	14.58	<b>6.51</b>
7	EC018171	-	39.00	20.00	<b>29.50</b>	7.20	-	5.10	20.00	<b>10.77</b>	2.91	-	2.92	<b>2.91</b>
8	EC018181	23.40	45.00	22.00	<b>30.13</b>	5.20	20.20	2.10	30.50	<b>14.50</b>	-	2.49	6.25	<b>4.37</b>
9	EC018184	90.00	46.00	18.00	<b>51.33</b>	6.30	21.44	3.60	12.00	<b>10.84</b>	3.33	4.77	4.17	<b>4.09</b>
10	EC018222	106.80	42.00	20.00	<b>56.27</b>	5.80	19.12	3.50	32.00	<b>15.11</b>	1.87	11.80	4.58	<b>6.09</b>
11	EC018260	78.60	43.00	28.00	<b>49.87</b>	11.60	17.50	4.50	30.10	<b>15.93</b>	2.50	8.64	10.00	<b>7.05</b>
12	EC018556	57.40	50.00	21.00	<b>42.80</b>	5.60	16.05	5.60	32.20	<b>14.86</b>	5.83	8.32	5.42	<b>6.52</b>
13	EC018563	87.00	40.00	22.00	<b>49.67</b>	13.20	18.41	5.70	50.50	<b>21.95</b>	3.75	10.00	4.17	<b>5.97</b>
14	EC018771	69.00	35.00	22.00	<b>42.00</b>	5.30	10.50	6.50	30.00	<b>13.08</b>	2.92	6.22	4.58	<b>4.58</b>
15	EC037226	65.80	36.00	21.00	<b>40.93</b>	6.30	8.89	7.00	41.80	<b>16.00</b>	2.50	3.95	6.67	<b>4.37</b>
16	EC037228	82.80	34.00	15.00	<b>43.93</b>	7.30	5.95	7.20	32.20	<b>13.16</b>	2.92	2.79	3.75	<b>3.15</b>
17	EC048452	45.40	35.00	24.00	<b>34.80</b>	6.60	36.36	6.50	20.20	<b>17.42</b>	2.50	9.88	8.33	<b>6.90</b>
18	EC078228	35.80	36.00	17.00	<b>29.60</b>	5.30	10.35	5.50	20.20	<b>10.34</b>	3.33	5.88	3.33	<b>4.18</b>
19	EC087898	61.60	38.00	25.00	<b>41.53</b>	6.20	10.00	6.80	21.00	<b>11.00</b>	2.92	3.21	4.17	<b>3.43</b>
20	EC097882	9.00	40.00	15.00	<b>21.33</b>	5.70	13.50	6.20	26.00	<b>12.85</b>	3.75	0.67	1.25	<b>1.89</b>
21	EC098452	53.40	42.00	26.00	<b>40.47</b>	6.20	12.78	8.90	12.00	<b>9.97</b>	3.33	2.84	4.17	<b>3.45</b>
22	EC098453	66.60	43.00	23.00	<b>44.20</b>	7.50	9.90	8.20	21.00	<b>11.65</b>	1.66	2.44	4.58	<b>2.90</b>
23	EC108887-A	66.60	36.00	28.00	<b>43.53</b>	9.30	27.27	7.50	30.50	<b>18.64</b>	2.08	7.41	7.92	<b>5.80</b>
24	EC114076	46.20	37.00	36.00	<b>39.73</b>	6.70	6.06	7.20	20.20	<b>10.04</b>	6.25	2.54	19.58	<b>9.46</b>
25	EC181185	41.40	42.00	28.00	<b>37.13</b>	7.80	7.88	6.80	30.00	<b>13.12</b>	4.16	1.56	8.33	<b>4.68</b>

S.No	Accession No.	100 seed weight (g)					Delhi	Rahuri
		Delhi	Ludhiana	Rahuri	Bhubaneswar	Mean	No. of cluster/plant	Stem thickness (cm)
1	EC000262	4.24	6.20	6.42	6.20	<b>5.77</b>	22.20	0.47
2	EC001843	4.44	5.80	6.23	5.60	<b>5.52</b>	37.60	0.77
3	EC012416	4.76	6.20	6.12	6.64	<b>5.93</b>	31.80	0.77
4	EC012436	4.76	5.60	5.52	6.14	<b>5.51</b>	88.00	0.47
5	EC014075	3.88	5.70	5.54	7.04	<b>5.54</b>	31.50	0.87
6	EC016136	4.18	5.20	6.07	6.86	<b>5.58</b>	48.50	0.77
7	EC018171	-	6.20	6.11	6.12	<b>6.14</b>	-	0.47
8	EC018181	6.06	5.60	8.58	-	<b>6.75</b>	11.20	0.77
9	EC018184	3.68	4.50	4.62	6.84	<b>4.91</b>	36.20	0.47
10	EC018222	4.88	6.30	6.85	7.20	<b>6.31</b>	37.00	0.57
11	EC018260	4.50	6.00	5.93	7.08	<b>5.88</b>	30.40	0.67
12	EC018556	5.54	6.00	6.05	4.96	<b>5.64</b>	25.80	0.87
13	EC018563	5.66	6.00	6.49	5.86	<b>6.00</b>	31.40	0.47
14	EC018771	5.02	5.60	5.63	4.54	<b>5.20</b>	27.60	0.77
15	EC037226	4.48	5.60	5.73	5.84	<b>5.41</b>	28.20	0.57
16	EC037228	5.14	6.40	6.79	6.81	<b>6.29</b>	29.60	0.77
17	EC048452	5.44	6.20	6.43	6.19	<b>6.07</b>	21.60	0.67
18	EC078228	5.70	5.40	6.76	6.08	<b>5.99</b>	17.20	0.47
19	EC087898	4.64	5.60	6.34	6.09	<b>5.67</b>	24.20	0.67
20	EC097882	6.58	7.50	8.70	9.22	<b>8.00</b>	6.00	0.87
21	EC098452	3.30	5.00	4.69	4.62	<b>4.40</b>	23.80	0.57
22	EC098453	4.38	5.60	6.86	6.28	<b>5.78</b>	24.80	0.77
23	EC108887-A	4.88	6.00	6.70	5.86	<b>5.86</b>	24.60	0.57
24	EC114076	4.60	5.00	4.86	5.36	<b>4.96</b>	21.20	0.77
25	EC181185	4.16	4.90	5.35	5.92	<b>5.08</b>	18.20	0.47

S.No	Accession No.	Days to 50% flowering							Days to 80% maturity						
		Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
26	IC002074	43.00	49.00	80.00	59.00	52.00	45.00	<b>54.67</b>	78.00	94.00	106.00	98.00	82.00	92.00	<b>91.67</b>
27	IC002567	45.00	49.00	75.00	58.00	50.00	50.00	<b>54.50</b>	81.00	96.00	108.00	97.00	82.00	96.00	<b>93.33</b>
28	IC002909	46.00	51.00	75.00	59.00	55.00	45.00	<b>55.17</b>	83.00	102.00	110.00	95.00	83.00	92.00	<b>94.17</b>
29	IC007537-C	39.00	49.00	65.00	51.00	56.00	46.00	<b>51.00</b>	77.00	97.00	90.00	94.00	83.00	94.00	<b>89.17</b>
30	IC008565-3	42.00	51.00	65.00	56.00	53.00	49.00	<b>52.67</b>	79.00	99.00	103.00	92.00	82.00	95.00	<b>91.67</b>
31	IC011723	45.00	50.00	68.00	56.00	52.00	48.00	<b>53.17</b>	85.00	99.00	106.00	95.00	82.00	94.00	<b>93.50</b>
32	IC015640	42.00	51.00	66.00	55.00	53.00	52.00	<b>53.17</b>	80.00	99.00	96.00	93.00	83.00	98.00	<b>91.50</b>
33	IC016342	41.00	53.00	66.00	59.00	52.00	49.00	<b>53.33</b>	76.00	100.00	100.00	93.00	82.00	96.00	<b>91.17</b>
34	IC016751	39.00	52.00	67.00	61.00	51.00	51.00	<b>53.50</b>	77.00	99.00	75.00	98.00	83.00	97.00	<b>88.17</b>
35	IC016767	42.00	49.00	65.00	60.00	49.00	47.00	<b>52.00</b>	76.00	99.00	105.00	95.00	84.00	95.00	<b>92.33</b>
36	IC018183	41.00	51.00	65.00	59.00	50.00	55.00	<b>53.50</b>	75.00	100.00	103.00	94.00	82.00	101.00	<b>92.50</b>
37	IC018452	46.00	50.00	67.00	51.00	52.00	55.00	<b>53.50</b>	82.00	98.00	105.00	92.00	83.00	103.00	<b>93.83</b>
38	IC018563	47.00	50.00	65.00	62.00	53.00	47.00	<b>54.00</b>	83.00	100.00	106.00	94.00	83.00	95.00	<b>93.50</b>
39	IC019336	39.00	51.00	62.00	52.00	50.00	51.00	<b>50.83</b>	81.00	98.00	103.00	90.00	82.00	99.00	<b>92.17</b>
40	IC019781-2	39.00	49.00	67.00	52.00	51.00	54.00	<b>52.00</b>	78.00	97.00	101.00	90.00	83.00	100.00	<b>91.50</b>
41	IC026973	45.00	51.00	67.00	62.00	49.00	51.00	<b>54.17</b>	83.00	97.00	105.00	91.00	84.00	99.00	<b>93.17</b>
42	IC176563	37.00	56.00	80.00	61.00	55.00	58.00	<b>57.83</b>	76.00	101.00	115.00	98.00	82.00	104.00	<b>96.00</b>
43	IC248733	38.00	56.00	69.00	60.00	50.00	48.00	<b>53.50</b>	77.00	104.00	108.00	95.00	82.00	97.00	<b>93.83</b>
44	IC520892	36.00	53.00	81.00	62.00	50.00	47.00	<b>54.83</b>	73.00	102.00	106.00	98.00	83.00	96.00	<b>93.00</b>
45	IC521049	42.00	56.00	67.00	61.00	51.00	54.00	<b>55.17</b>	81.00	102.00	101.00	93.00	83.00	100.00	<b>93.33</b>
46	IC521061	41.00	56.00	74.00	62.00	49.00	55.00	<b>56.17</b>	79.00	103.00	103.00	98.00	83.00	103.00	<b>94.83</b>
47	IC521068	39.00	49.00	67.00	53.00	50.00	50.00	<b>51.33</b>	79.00	99.00	99.00	94.00	83.00	98.00	<b>92.00</b>
48	IC521081	42.00	51.00	65.00	54.00	51.00	50.00	<b>52.17</b>	81.00	98.00	93.00	99.00	82.00	96.00	<b>91.50</b>
49	IC521144	42.00	51.00	83.00	55.00	52.00	52.00	<b>55.83</b>	76.00	99.00	110.00	101.00	82.00	100.00	<b>94.67</b>
50	IC521148	41.00	52.00	72.00	62.00	53.00	55.00	<b>55.83</b>	82.00	98.00	106.00	89.00	83.00	101.00	<b>93.17</b>
<b>Mean for check variety</b>															
	<b>RBL-1 (C)</b>	<b>41.40</b>	<b>51.00</b>	<b>69.40</b>	<b>58.20</b>	<b>48.40</b>	<b>51.00</b>	<b>53.23</b>	<b>76.60</b>	<b>100.60</b>	<b>108.00</b>	<b>97.20</b>	<b>82.60</b>	<b>99.60</b>	<b>94.10</b>
	<b>RBL-6 (C)</b>	<b>43.60</b>	<b>51.20</b>	<b>67.60</b>	<b>59.00</b>	<b>48.80</b>	<b>50.80</b>	<b>53.50</b>	<b>81.00</b>	<b>97.60</b>	<b>105.20</b>	<b>99.20</b>	<b>83.20</b>	<b>97.40</b>	<b>93.93</b>
	<b>RBL-35 (C)</b>	<b>42.60</b>	<b>50.80</b>	<b>72.60</b>	<b>58.60</b>	<b>49.80</b>	<b>52.20</b>	<b>54.43</b>	<b>79.00</b>	<b>97.20</b>	<b>105.00</b>	<b>95.20</b>	<b>82.00</b>	<b>98.60</b>	<b>92.83</b>
	<b>RBL-50 (C)</b>	<b>42.60</b>	<b>52.60</b>	<b>78.20</b>	<b>-</b>	<b>48.80</b>	<b>50.60</b>	<b>54.56</b>	<b>79.60</b>	<b>98.20</b>	<b>111.60</b>	<b>-</b>	<b>82.00</b>	<b>99.00</b>	<b>94.08</b>



S.No	Accession No.	Plant height (cm)						Number of primary branches/plant					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
26	IC002074	41.00	72.00	100.00	39.00	45.60	<b>59.52</b>	3.20	5.00	2.50	3.50	6.30	<b>4.10</b>
27	IC002567	50.40	73.80	95.00	50.00	48.00	<b>63.44</b>	2.40	6.40	3.00	3.50	5.30	<b>4.12</b>
28	IC002909	41.60	73.40	97.50	48.00	32.60	<b>58.62</b>	3.00	6.40	2.00	4.50	5.30	<b>4.24</b>
29	IC007537-C	54.80	60.20	90.00	40.00	64.70	<b>61.94</b>	3.60	5.00	2.50	2.50	7.30	<b>4.18</b>
30	IC008565-3	60.20	87.00	92.50	49.00	46.50	<b>67.04</b>	3.40	6.20	2.00	3.50	7.30	<b>4.48</b>
31	IC011723	48.20	81.60	107.50	49.00	79.60	<b>73.18</b>	3.00	6.60	3.00	4.00	7.30	<b>4.78</b>
32	IC015640	63.80	93.80	102.50	56.00	56.50	<b>74.52</b>	3.40	7.60	3.50	3.50	4.30	<b>4.46</b>
33	IC016342	61.60	86.00	112.50	57.00	91.60	<b>81.74</b>	3.00	8.00	2.00	4.00	5.30	<b>4.46</b>
34	IC016751	62.40	106.00	127.50	54.00	72.50	<b>84.48</b>	3.80	7.00	4.50	3.50	6.30	<b>5.02</b>
35	IC016767	54.20	100.80	97.50	40.00	71.60	<b>72.82</b>	3.80	7.60	3.50	3.50	6.30	<b>4.94</b>
36	IC018183	54.20	82.80	132.50	56.00	41.60	<b>73.42</b>	4.40	5.80	3.50	3.00	4.30	<b>4.20</b>
37	IC018452	46.80	87.00	95.00	54.00	81.50	<b>72.86</b>	3.00	7.60	3.50	2.50	7.30	<b>4.78</b>
38	IC018563	56.60	108.00	120.00	55.00	83.60	<b>84.64</b>	2.80	7.60	2.50	4.50	5.30	<b>4.54</b>
39	IC019336	72.20	95.20	117.50	59.00	72.60	<b>83.30</b>	2.80	6.80	2.00	4.50	7.30	<b>4.68</b>
40	IC019781-2	61.40	111.20	97.50	63.00	120.50	<b>90.72</b>	3.40	6.20	2.00	5.00	5.30	<b>4.38</b>
41	IC026973	57.20	87.20	105.50	71.00	131.60	<b>90.50</b>	2.40	7.20	2.50	4.00	4.30	<b>4.08</b>
42	IC176563	83.40	68.20	115.50	70.00	82.70	<b>83.96</b>	2.20	6.20	2.00	5.50	4.30	<b>4.04</b>
43	IC248733	56.80	95.80	117.00	42.00	123.80	<b>87.08</b>	2.60	8.20	3.00	4.00	5.30	<b>4.62</b>
44	IC520892	63.20	100.60	125.50	48.00	99.50	<b>87.36</b>	2.20	8.20	3.00	4.00	7.30	<b>4.94</b>
45	IC521049	59.80	88.40	115.00	45.00	82.60	<b>78.16</b>	1.80	7.60	2.00	3.00	7.30	<b>4.34</b>
46	IC521061	63.60	99.20	135.00	47.00	38.70	<b>76.70</b>	2.20	8.20	3.00	3.00	6.30	<b>4.54</b>
47	IC521068	43.60	85.20	140.00	46.00	101.50	<b>83.26</b>	1.20	6.20	1.50	3.00	4.30	<b>3.24</b>
48	IC521081	46.60	92.00	125.00	44.00	43.50	<b>70.22</b>	2.20	6.80	3.00	2.50	4.30	<b>3.76</b>
49	IC521144	48.00	76.40	115.00	43.00	32.80	<b>63.04</b>	2.20	6.80	4.00	2.00	6.30	<b>4.26</b>
50	IC521148	48.80	75.60	130.00	46.00	45.60	<b>69.20</b>	1.20	9.00	3.00	3.50	4.30	<b>4.20</b>
<b>Mean for check variety</b>													
	<b>RBL-1 (C)</b>	<b>71.40</b>	<b>88.20</b>	<b>102.00</b>	<b>56.33</b>	<b>85.28</b>	<b>80.64</b>	<b>2.50</b>	<b>7.75</b>	<b>3.10</b>	<b>3.50</b>	<b>4.30</b>	<b>4.23</b>
	<b>RBL-6 (C)</b>	<b>75.46</b>	<b>86.27</b>	<b>100.50</b>	<b>47.33</b>	<b>67.58</b>	<b>75.43</b>	<b>2.50</b>	<b>19.87</b>	<b>2.80</b>	<b>2.83</b>	<b>4.50</b>	<b>6.50</b>
	<b>RBL-35 (C)</b>	<b>73.22</b>	<b>78.64</b>	<b>110.20</b>	<b>49.00</b>	<b>53.80</b>	<b>72.97</b>	<b>2.54</b>	<b>6.31</b>	<b>2.90</b>	<b>3.33</b>	<b>5.10</b>	<b>4.04</b>
	<b>RBL-50 (C)</b>	<b>71.12</b>	<b>73.27</b>	<b>-</b>	<b>45.33</b>	<b>89.10</b>	<b>69.71</b>	<b>2.06</b>	<b>6.27</b>	<b>-</b>	<b>2.67</b>	<b>5.70</b>	<b>4.17</b>

S.No	Accession No.	Pod length (cm)					Number of pod per cluster				Number of seeds per pod				
		Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Delhi	Bhubaneswar	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean
26	IC002074	7.00	8.16	6.30	8.63	<b>7.52</b>	2.60	1.80	5.57	<b>3.32</b>	7.40	8.40	7.40	8.67	<b>7.97</b>
27	IC002567	7.40	7.78	7.40	8.23	<b>7.70</b>	3.40	1.60	3.67	<b>2.89</b>	6.50	6.20	7.70	9.67	<b>7.52</b>
28	IC002909	7.50	9.06	6.90	8.60	<b>8.02</b>	2.60	1.80	4.67	<b>3.02</b>	6.80	9.00	7.60	9.67	<b>8.27</b>
29	IC007537-C	7.40	7.90	6.60	8.90	<b>7.70</b>	2.60	1.80	4.67	<b>3.02</b>	6.80	6.60	6.60	7.67	<b>6.92</b>
30	IC008565-3	7.30	8.74	7.20	8.67	<b>7.98</b>	3.40	1.80	5.67	<b>3.62</b>	6.20	7.40	6.30	8.67	<b>7.14</b>
31	IC011723	6.40	8.16	6.40	6.90	<b>6.97</b>	3.00	1.60	6.67	<b>3.76</b>	7.00	8.00	6.40	7.67	<b>7.27</b>
32	IC015640	8.10	8.68	5.80	8.23	<b>7.70</b>	3.80	1.80	4.67	<b>3.42</b>	6.20	8.40	5.60	10.70	<b>7.73</b>
33	IC016342	8.00	7.52	6.50	9.07	<b>7.77</b>	3.60	1.80	5.67	<b>3.69</b>	7.60	7.60	7.30	11.70	<b>8.55</b>
34	IC016751	8.00	8.44	5.90	8.57	<b>7.73</b>	3.60	1.60	4.67	<b>3.29</b>	7.20	8.40	6.40	8.67	<b>7.67</b>
35	IC016767	7.60	8.28	6.70	8.20	<b>7.70</b>	4.20	1.40	4.67	<b>3.42</b>	6.40	6.80	5.40	7.67	<b>6.57</b>
36	IC018183	7.50	7.62	7.40	9.07	<b>7.90</b>	3.20	1.00	5.67	<b>3.29</b>	6.90	7.60	6.40	10.70	<b>7.90</b>
37	IC018452	6.80	7.50	7.20	8.73	<b>7.56</b>	3.20	1.60	7.67	<b>4.16</b>	6.40	7.00	6.60	10.70	<b>7.68</b>
38	IC018563	7.80	8.80	6.50	8.70	<b>7.95</b>	3.00	1.60	6.67	<b>3.76</b>	6.40	8.20	7.60	8.67	<b>7.72</b>
39	IC019336	8.20	8.26	6.30	8.97	<b>7.93</b>	2.80	1.60	3.67	<b>2.69</b>	7.00	7.80	5.60	9.67	<b>7.52</b>
40	IC019781-2	8.10	9.34	6.50	8.60	<b>8.14</b>	3.40	1.60	3.67	<b>2.89</b>	6.80	7.40	5.70	9.67	<b>7.39</b>
41	IC026973	7.80	9.20	7.60	8.57	<b>8.29</b>	3.60	1.40	6.67	<b>3.89</b>	7.20	8.80	6.20	8.67	<b>7.72</b>
42	IC176563	7.60	7.76	6.90	9.73	<b>8.00</b>	2.20	1.20	4.67	<b>2.69</b>	7.00	9.00	6.50	9.67	<b>8.04</b>
43	IC248733	7.00	8.74	8.00	9.07	<b>8.20</b>	3.40	1.20	3.67	<b>2.76</b>	6.50	7.20	5.60	9.67	<b>7.24</b>
44	IC520892	7.40	8.16	7.00	9.57	<b>8.03</b>	3.80	1.40	4.67	<b>3.29</b>	5.10	7.40	5.90	11.70	<b>7.53</b>
45	IC521049	8.60	7.74	6.10	8.83	<b>7.82</b>	2.60	1.40	5.67	<b>3.22</b>	6.60	7.60	5.90	9.67	<b>7.44</b>
46	IC521061	7.80	9.24	7.50	8.70	<b>8.31</b>	3.20	1.80	4.67	<b>3.22</b>	5.80	8.40	7.80	8.67	<b>7.67</b>
47	IC521068	5.60	8.48	6.00	8.60	<b>7.17</b>	3.00	1.60	3.67	<b>2.76</b>	5.40	8.00	7.30	9.67	<b>7.59</b>
48	IC521081	7.80	8.82	6.30	7.73	<b>7.66</b>	3.80	1.60	3.67	<b>3.02</b>	5.00	7.00	7.80	8.67	<b>7.12</b>
49	IC521144	8.80	7.50	5.90	7.80	<b>7.50</b>	2.40	1.40	3.67	<b>2.49</b>	8.00	6.60	5.90	7.67	<b>7.04</b>
50	IC521148	6.80	9.32	8.00	8.77	<b>8.22</b>	3.00	1.60	3.67	<b>2.76</b>	4.40	8.00	5.60	9.67	<b>6.92</b>
<b>Mean for check variety</b>															
	<b>RBL-1 (C)</b>	<b>7.44</b>	<b>8.91</b>	<b>6.54</b>	<b>9.45</b>	<b>8.09</b>	<b>3.10</b>	<b>1.88</b>	<b>4.87</b>	<b>3.28</b>	<b>6.56</b>	<b>7.80</b>	<b>6.22</b>	<b>11.09</b>	<b>7.92</b>
	<b>RBL-6 (C)</b>	<b>7.60</b>	<b>8.53</b>	<b>7.10</b>	<b>8.53</b>	<b>7.94</b>	<b>2.87</b>	<b>2.14</b>	<b>4.47</b>	<b>3.16</b>	<b>6.90</b>	<b>7.20</b>	<b>6.94</b>	<b>9.88</b>	<b>7.73</b>
	<b>RBL-35 (C)</b>	<b>7.06</b>	<b>9.02</b>	<b>6.56</b>	<b>8.58</b>	<b>7.80</b>	<b>2.87</b>	<b>2.00</b>	<b>4.07</b>	<b>2.98</b>	<b>6.60</b>	<b>7.78</b>	<b>6.58</b>	<b>9.47</b>	<b>7.61</b>
	<b>RBL-50 (C)</b>	<b>7.18</b>	<b>7.81</b>	-	<b>8.45</b>	<b>7.81</b>	<b>2.73</b>	<b>1.96</b>	<b>4.87</b>	<b>3.19</b>	<b>6.44</b>	<b>6.73</b>	-	<b>10.09</b>	<b>7.75</b>

S.No	Accession No.	Number of pods per plant				Seed yield per plant (g)					Seed yield (q/ha)			
		Delhi	Mettupalayam	Ludhiana	Mean	Bangalore	Delhi	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mean
26	IC002074	56.80	25.00	33.00	<b>38.27</b>	9.50	9.44	5.60	15.00	<b>9.88</b>	6.04	3.73	8.33	<b>6.03</b>
27	IC002567	46.80	28.00	25.00	<b>33.27</b>	6.50	8.82	4.50	19.80	<b>9.91</b>	4.17	3.70	5.00	<b>4.29</b>
28	IC002909	63.20	32.00	20.00	<b>38.40</b>	5.70	8.92	3.20	18.20	<b>9.01</b>	6.25	2.86	7.50	<b>5.54</b>
29	IC007537-C	47.00	36.00	18.00	<b>33.67</b>	4.70	7.67	5.20	22.20	<b>9.94</b>	2.08	2.27	8.33	<b>4.23</b>
30	IC008565-3	51.00	37.00	24.00	<b>37.33</b>	9.40	7.00	4.20	16.20	<b>9.20</b>	4.17	1.73	5.42	<b>3.77</b>
31	IC011723	74.80	40.00	30.00	<b>48.27</b>	5.30	9.06	6.50	15.80	<b>9.16</b>	5.83	4.02	6.25	<b>5.37</b>
32	IC015640	61.00	42.00	29.00	<b>44.00</b>	3.80	11.88	7.00	22.20	<b>11.22</b>	6.66	2.35	6.88	<b>5.29</b>
33	IC016342	83.00	40.00	29.00	<b>50.67</b>	11.50	15.00	6.30	19.80	<b>13.15</b>	7.92	2.96	6.67	<b>5.85</b>
34	IC016751	67.60	38.00	57.00	<b>54.20</b>	5.60	12.05	4.20	11.50	<b>8.34</b>	7.50	6.25	2.50	<b>5.42</b>
35	IC016767	74.80	39.00	30.00	<b>47.93</b>	13.20	76.20	5.30	20.20	<b>28.73</b>	7.08	9.41	6.25	<b>7.58</b>
36	IC018183	46.20	42.00	51.00	<b>46.40</b>	14.20	10.14	5.60	12.00	<b>10.49</b>	5.00	3.51	8.33	<b>5.61</b>
37	IC018452	61.80	45.00	38.00	<b>48.27</b>	13.60	10.25	5.70	10.50	<b>10.01</b>	3.33	5.06	6.25	<b>4.88</b>
38	IC018563	47.00	43.00	30.00	<b>40.00</b>	6.50	10.08	3.80	10.20	<b>7.64</b>	4.17	3.23	2.08	<b>3.16</b>
39	IC019336	42.60	42.00	40.00	<b>41.53</b>	8.50	12.80	6.10	20.00	<b>11.85</b>	5.00	4.74	4.58	<b>4.77</b>
40	IC019781-2	48.20	40.00	22.00	<b>36.73</b>	7.50	4.32	5.80	44.30	<b>15.48</b>	7.92	2.35	4.17	<b>4.81</b>
41	IC026973	34.00	42.00	19.00	<b>31.67</b>	8.60	15.50	4.60	43.00	<b>17.93</b>	4.17	3.06	2.08	<b>3.11</b>
42	IC176563	6.60	43.00	18.00	<b>22.53</b>	7.80	14.33	2.00	36.00	<b>15.03</b>	4.58	1.06	0.83	<b>2.16</b>
43	IC248733	67.60	40.00	28.00	<b>45.20</b>	6.80	10.78	4.50	24.00	<b>11.52</b>	2.92	2.40	14.58	<b>6.63</b>
44	IC520892	85.60	42.00	30.00	<b>52.53</b>	7.30	14.91	8.00	21.00	<b>12.80</b>	3.33	4.05	8.33	<b>5.24</b>
45	IC521049	67.00	36.00	16.00	<b>39.67</b>	6.50	10.63	4.60	19.80	<b>10.38</b>	4.17	2.10	2.92	<b>3.06</b>
46	IC521061	91.80	38.00	40.00	<b>56.60</b>	4.50	14.44	7.60	22.00	<b>12.14</b>	2.92	3.21	4.17	<b>3.43</b>
47	IC521068	63.80	39.00	17.00	<b>39.93</b>	6.20	10.57	7.80	15.90	<b>10.12</b>	3.75	1.83	2.92	<b>2.83</b>
48	IC521081	101.20	35.00	40.00	<b>58.73</b>	7.20	12.40	9.10	17.00	<b>11.43</b>	2.08	1.53	9.58	<b>4.40</b>
49	IC521144	33.00	54.00	56.00	<b>47.67</b>	10.30	4.10	7.30	12.40	<b>8.53</b>	7.50	1.01	16.67	<b>8.39</b>
50	IC521148	52.60	52.00	17.00	<b>40.53</b>	6.90	17.00	6.40	19.80	<b>12.53</b>	7.91	5.46	2.08	<b>5.15</b>
<b>Mean for check variety</b>														
	<b>RBL-1 (C)</b>	<b>57.50</b>	<b>41.33</b>	<b>28.60</b>	<b>42.48</b>	<b>8.03</b>	<b>11.57</b>	<b>6.90</b>	<b>15.74</b>	<b>10.56</b>	<b>4.32</b>	<b>4.57</b>	<b>5.38</b>	<b>4.76</b>
	<b>RBL-6 (C)</b>	<b>52.67</b>	<b>46.00</b>	<b>27.60</b>	<b>42.09</b>	<b>7.18</b>	<b>8.96</b>	<b>7.93</b>	<b>14.40</b>	<b>9.62</b>	<b>5.83</b>	<b>4.73</b>	<b>5.88</b>	<b>5.48</b>
	<b>RBL-35 (C)</b>	<b>39.60</b>	<b>39.00</b>	<b>29.20</b>	<b>35.93</b>	<b>8.50</b>	<b>9.78</b>	<b>7.40</b>	<b>20.52</b>	<b>11.55</b>	<b>4.96</b>	<b>1.94</b>	<b>5.96</b>	<b>4.29</b>
	<b>RBL-50 (C)</b>	<b>19.40</b>	<b>42.00</b>	<b>-</b>	<b>30.70</b>	<b>9.25</b>	<b>14.71</b>	<b>7.10</b>	<b>18.48</b>	<b>12.39</b>	<b>4.92</b>	<b>2.26</b>	<b>-</b>	<b>3.59</b>

S.No	Accession No.	100 seed weight (g)					Delhi	Rahuri
		Delhi	Ludhiana	Rahuri	Bhubaneswar	Mean	No. of cluster/plant	Stem thickness (cm)
26	IC002074	3.70	5.50	5.52	4.66	<b>4.85</b>	21.00	0.57
27	IC002567	5.20	6.00	6.05	5.12	<b>5.59</b>	19.00	0.77
28	IC002909	4.32	5.40	4.64	5.63	<b>5.00</b>	28.00	0.57
29	IC007537-C	4.48	6.00	5.52	6.56	<b>5.64</b>	19.60	0.67
30	IC008565-3	4.38	6.00	5.59	6.32	<b>5.57</b>	17.20	0.87
31	IC011723	3.68	4.80	4.77	4.28	<b>4.38</b>	29.00	0.87
32	IC015640	3.98	6.20	6.06	6.80	<b>5.76</b>	23.60	0.67
33	IC016342	4.64	5.80	6.38	6.62	<b>5.86</b>	26.00	0.87
34	IC016751	4.28	5.50	5.30	6.82	<b>5.48</b>	27.20	1.17
35	IC016767	4.24	5.80	5.46	5.58	<b>5.27</b>	27.60	0.47
36	IC018183	4.32	5.60	6.54	6.59	<b>5.76</b>	18.60	0.77
37	IC018452	4.46	6.20	6.40	6.19	<b>5.81</b>	24.40	0.97
38	IC018563	4.98	6.20	4.66	6.20	<b>5.51</b>	23.00	0.77
39	IC019336	4.48	5.80	6.20	5.94	<b>5.61</b>	19.80	0.47
40	IC019781-2	5.12	5.60	6.55	6.80	<b>6.02</b>	20.60	0.77
41	IC026973	4.60	6.00	6.94	6.06	<b>5.90</b>	15.00	0.87
42	IC176563	6.40	6.80	7.77	6.01	<b>6.75</b>	4.20	0.87
43	IC248733	4.82	5.80	5.54	6.26	<b>5.61</b>	24.80	0.77
44	IC520892	3.98	5.60	6.24	5.98	<b>5.45</b>	31.80	0.87
45	IC521049	2.88	5.80	6.42	8.28	<b>5.85</b>	30.00	0.77
46	IC521061	4.14	4.80	5.92	6.86	<b>5.43</b>	40.60	0.77
47	IC521068	4.56	5.00	6.30	6.42	<b>5.57</b>	25.40	0.57
48	IC521081	3.66	5.50	6.39	7.01	<b>5.64</b>	39.80	0.47
49	IC521144	3.58	5.40	6.27	5.82	<b>5.27</b>	17.80	0.67
50	IC521148	3.96	5.80	6.36	5.72	<b>5.46</b>	23.00	0.57
<b>Mean for check variety</b>								
	<b>RBL-1 (C)</b>	<b>4.30</b>	<b>5.76</b>	<b>6.12</b>	<b>6.09</b>	<b>5.57</b>	<b>23.90</b>	<b>0.67</b>
	<b>RBL-6 (C)</b>	<b>4.50</b>	<b>5.90</b>	<b>5.60</b>	<b>5.04</b>	<b>5.26</b>	<b>21.40</b>	<b>0.57</b>
	<b>RBL-35 (C)</b>	<b>4.32</b>	<b>5.96</b>	<b>6.60</b>	<b>5.33</b>	<b>5.55</b>	<b>17.33</b>	<b>0.61</b>
	<b>RBL-50 (C)</b>	<b>4.39</b>	<b>-</b>	<b>5.60</b>	<b>4.28</b>	<b>4.76</b>	<b>11.13</b>	<b>0.73</b>

S.No	Accession No.	Days to 50% flowering							Days to 80% maturity						
		Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
	Minimum	36.00	49.00	60.00	51.00	48.40	45.00	49.80	73.00	94.00	75.00	83.00	82.00	92.00	88.00
	Maximum	47.00	56.00	87.00	64.00	56.00	58.00	59.80	86.00	105.00	136.00	101.00	84.00	106.00	98.67
	Mean	41.69	51.69	69.09	56.73	51.29	51.49	53.62	79.93	99.45	104.02	92.37	82.63	98.92	92.84
	CD(0.05)	2.79	2.93	16.10		2.23	5.77		2.07	5.93	16.26		2.59	3.30	
	CV(%)(Error)	2.46	2.14	4.11		1.71	4.22		0.98	2.26	2.78		1.18	1.25	
	CV(%) Phenotypic	6.19	5.11	9.16	7.52	3.64	6.44		3.79	2.32	9.45	5.07	0.79	3.25	

S.No	Accession No.	Plant height (cm)						Number of primary branches/plant					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
	<b>Minimum</b>	<b>41.00</b>	<b>59.20</b>	<b>75.00</b>	<b>39.00</b>	<b>32.60</b>	<b>58.62</b>	<b>1.20</b>	<b>4.20</b>	<b>1.50</b>	<b>2.00</b>	<b>3.30</b>	<b>3.18</b>
	<b>Maximum</b>	<b>83.40</b>	<b>123.60</b>	<b>147.50</b>	<b>71.00</b>	<b>146.60</b>	<b>97.03</b>	<b>4.40</b>	<b>19.87</b>	<b>4.50</b>	<b>5.50</b>	<b>7.30</b>	<b>6.50</b>
	<b>Mean</b>	<b>56.74</b>	<b>88.10</b>	<b>110.92</b>	<b>50.17</b>	<b>82.07</b>	<b>77.56</b>	<b>2.50</b>	<b>7.82</b>	<b>2.52</b>	<b>3.39</b>	<b>5.36</b>	<b>4.31</b>
	<b>CD(0.05)</b>	<b>6.52</b>	<b>40.41</b>		<b>3.54</b>	<b>24.49</b>		<b>0.47</b>	<b>39.92</b>		<b>0.39</b>	<b>2.83</b>	
	<b>CV(%(Error)</b>	<b>3.36</b>	<b>9.09</b>		<b>2.68</b>	<b>12.40</b>		<b>7.40</b>	<b>72.87</b>		<b>4.76</b>	<b>21.65</b>	
	<b>CV(%) Phenotypic</b>	<b>16.63</b>	<b>16.00</b>	<b>14.74</b>	<b>12.42</b>	<b>35.34</b>		<b>29.31</b>	<b>29.54</b>	<b>28.30</b>	<b>21.16</b>	<b>21.22</b>	

S.No	Accession No.	Pod length (cm)					Number of pod per cluster				Number of seeds per pod				
		Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Delhi	Bhubaneswar	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean
	<b>Minimum</b>	5.60	6.72	5.20	5.23	6.48	2.00	1.00	2.67	2.09	4.00	5.50	5.40	7.67	6.12
	<b>Maximum</b>	8.80	9.94	8.00	9.73	8.31	4.20	2.14	7.67	4.64	8.00	9.20	7.80	11.70	8.55
	<b>Mean</b>	7.19	8.33	6.67	8.42	7.65	3.12	1.48	4.77	3.14	6.19	7.58	6.45	9.45	7.43
	<b>CD(0.05)</b>	0.55	3.90		1.85		3.66	0.48	2.15		0.88	4.73		2.84	
	<b>CV(%(Error))</b>	2.83	8.36		7.91		23.20	8.92	17.64		4.99	11.77		10.50	
	<b>CV(%) Phenotypic</b>	10.74	7.88	10.33	11.42		16.43	20.08	21.87		14.68	10.55	10.19	11.31	

S.No	Accession No.	Number of pods per plant				Seed yield per plant (g)					Seed yield (q/ha)			
		Delhi	Mettupalayam	Ludhiana	Mean	Bangalore	Delhi	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mean
	<b>Minimum</b>	<b>6.60</b>	<b>25.00</b>	<b>15.00</b>	<b>21.33</b>	<b>3.80</b>	<b>4.10</b>	<b>2.00</b>	<b>10.20</b>	<b>6.39</b>	<b>1.66</b>	<b>0.67</b>	<b>0.63</b>	<b>1.89</b>
	<b>Maximum</b>	<b>219.00</b>	<b>54.00</b>	<b>57.00</b>	<b>95.00</b>	<b>14.20</b>	<b>78.00</b>	<b>9.10</b>	<b>50.50</b>	<b>28.73</b>	<b>7.92</b>	<b>11.80</b>	<b>19.58</b>	<b>9.46</b>
	<b>Mean</b>	<b>64.03</b>	<b>40.21</b>	<b>26.88</b>	<b>43.52</b>	<b>7.46</b>	<b>15.58</b>	<b>5.78</b>	<b>22.00</b>	<b>12.68</b>	<b>4.49</b>	<b>3.94</b>	<b>5.87</b>	<b>4.74</b>
	<b>CD(0.05)</b>	<b>85.71</b>	<b>3.85</b>			<b>3.37</b>	<b>33.70</b>	<b>1.49</b>	<b>1.46</b>		<b>1.94</b>	<b>8.75</b>		
	<b>CV(%(Error)</b>	<b>37.18</b>	<b>3.43</b>			<b>15.34</b>	<b>54.94</b>	<b>7.60</b>	<b>3.16</b>		<b>14.48</b>	<b>47.56</b>		
	<b>CV(%) Phenotypic</b>	<b>50.79</b>	<b>12.82</b>	<b>37.80</b>		<b>32.15</b>	<b>88.88</b>	<b>27.91</b>	<b>41.48</b>		<b>40.58</b>	<b>64.55</b>	<b>65.24</b>	



S.No	Accession No.	100 seed weight (g)					Delhi	Rahuri
		Delhi	Ludhiana	Rahuri	Bhubaneswar	Mean	No. of cluster/plant	Stem thickness (cm)
	<b>Minimum</b>	<b>2.88</b>	<b>4.50</b>	<b>4.62</b>	<b>4.28</b>	<b>4.38</b>	<b>4.20</b>	<b>0.47</b>
	<b>Maximum</b>	<b>6.58</b>	<b>7.50</b>	<b>8.70</b>	<b>9.22</b>	<b>8.00</b>	<b>88.00</b>	<b>1.17</b>
	<b>Mean</b>	<b>4.55</b>	<b>5.75</b>	<b>6.09</b>	<b>6.13</b>	<b>5.64</b>	<b>25.84</b>	<b>0.69</b>
	<b>CD(0.05)</b>	<b>2.33</b>			<b>0.56</b>		<b>26.92</b>	<b>0.34</b>
	<b>CV(%(Error)</b>	<b>9.76</b>			<b>4.05</b>		<b>26.78</b>	<b>19.46</b>
	<b>CV(%) Phenotypic</b>	<b>15.79</b>	<b>8.94</b>	<b>13.63</b>	<b>14.74</b>		<b>46.37</b>	<b>22.80</b>

**Table 103. Characterization of germplasm lines in rice bean at different locations : Kharif 2012 (Plains)**

S.No	Accession No.	Early plant vigour				Plant growth habit				Plant habit				Flower colour			Seed shape			Leaflet shape				Leaflet size				Pod colour			Pod shattering			Delhi	Rahuri		
		Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Rahuri	Mode	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Plant strength	Biotic stress susceptibility			
1	EC000262	2	2	2	2	1	2	1	1	1	2	1	1	3	3	3	1	1	1	2	3	2	2	3	5	5	5	1	1	1	1	1	1	1	1	1	3
2	EC001843	2	2	3	2	1	1	2	1	1	1	1	3	3	3	1	1	1	1	1	2	1	1	3	5	3	3	1	2	2	0	1	1	3	3	3	
3	EC012416	2	3	2	2	1	2	2	2	1	3	1	1	3	3	3	3	1	3	2	2	2	3	5	3	3	2	2	2	0	1	1	3	3	3		
4	EC012436	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	1	2	2	3	3	3	3	3	1	3	0	1	1	3	5	3	
5	EC014075	2	2	2	2	1	1	2	1	1	2	1	1	3	3	3	1	1	1	2	3	1	3	3	2	3	3	1	3	3	0	1	1	3	3	3	
6	EC016136	2	2	3	2	1	3	1	1	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	3	1	3	0	1	1	1	3	3	
7	EC018171	2	-	3	3	1	-	2	2	1	-	1	1	3	3	3	-	1	1	2	-	3	3	3	-	5	5	-	1	1	-	1	1	-	3	3	
8	EC018181	2	3	3	3	1	2	2	2	1	3	1	1	3	3	3	2	1	2	2	3	2	2	3	7	3	3	0	3	3	0	1	1	1	5	5	
9	EC018184	2	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	3	2	2	3	5	5	5	0	3	3	0	1	1	1	3	3	
10	EC018222	2	3	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	3	2	3	0	1	1	2	3	3	
11	EC018260	2	2	3	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	2	2	2	7	5	5	5	2	2	2	0	1	1	2	3	3	
12	EC018556	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	1	1	1	3	5	3	3	1	2	2	0	1	1	2	3	3	
13	EC018563	2	2	3	2	1	2	2	2	2	1	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	1	3	3	0	1	1	2	5	5	
14	EC018771	2	3	2	2	1	2	2	2	1	3	1	1	3	3	3	1	1	1	2	2	2	2	3	5	3	3	2	3	3	0	1	1	2	3	3	
15	EC037226	3	2	1	3	2	3	2	2	1	2	1	1	3	3	3	1	1	1	1	2	2	2	5	5	3	5	3	1	3	1	1	1	1	5	5	
16	EC037228	3	3	3	3	1	2	2	2	1	3	1	1	3	3	3	1	1	1	1	2	3	3	5	7	5	5	2	2	2	0	1	1	1	3	3	
17	EC048452	3	3	3	3	1	2	2	2	1	3	1	1	3	3	3	1	1	1	3	2	3	3	5	7	3	7	2	3	3	0	1	1	2	3	3	
18	EC078228	2	3	3	3	1	2	1	1	1	3	1	1	3	3	3	-	1	1	2	2	3	2	5	7	5	5	3	2	3	0	1	1	2	3	3	
19	EC087898	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	3	1	3	2	3	3	3	5	5	5	5	2	2	2	0	1	1	2	3	3	
20	EC097882	2	1	3	3	1	3	2	3	1	1	1	1	3	3	3	1	1	1	2	2	3	2	3	5	5	5	-	1	1	0	1	1	2	3	3	
21	EC098452	2	3	2	2	1	2	2	2	1	3	1	1	3	3	3	1	1	1	2	2	2	2	3	7	3	3	1	1	1	0	1	1	2	3	3	
22	EC098453	2	2	3	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	1	2	2	3	7	5	7	2	2	2	0	1	1	2	3	3	

S.No	Accession No.	Early plant vigour				Plant growth habit				Plant habit				Flower colour			Seed shape			Leaflet shape				Leaflet size				Pod colour			Pod shattering			Delhi	Rahuri
		Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Rahuri	Mode	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Plant strength	Biotic stress susceptibility
23	EC108887-A	2	3	3	3	1	2	2	2	1	3	1	1	3	3	3	1	1	1	2	3	1	3	3	7	3	3	3	2	3	1	1	1	2	3
24	EC114076	2	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	2	1	2	3	5	3	3	2	2	2	1	1	1	2	5
25	EC181185	2	2	3	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	1	1	1	3	5	5	5	2	1	2	1	1	1	1	3
26	IC002074	2	2	1	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	2	1	2	0	1	1	1	5
27	IC002567	2	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	3	3	2	2	2	1	1	1	1	3
28	IC002909	2	1	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	3	2	2	3	3	3	3	1	2	2	1	1	1	1	5
29	IC007537-C	2	1	2	2	1	1	2	1	1	3	1	1	3	3	3	1	1	1	2	2	1	2	3	5	5	5	2	1	2	1	1	1	1	3
30	IC008565-3	2	2	2	2	1	3	1	1	1	2	1	1	3	3	3	1	1	1	1	2	3	3	3	5	3	3	1	3	3	1	1	1	1	3
31	IC011723	3	1	2	3	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	3	1	3	3	5	3	3	1	3	3	1	1	1	2	3
32	IC015640	2	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	3	1	3	3	5	3	3	2	3	3	1	1	1	1	5
33	IC016342	3	2	2	2	1	1	2	1	1	1	1	1	3	3	3	1	1	1	2	1	2	2	5	5	5	5	3	2	3	0	1	1	3	3
34	IC016751	2	3	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	3	1	3	3	7	3	3	2	2	2	0	1	1	2	5
35	IC016767	3	3	1	3	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	3	2	2	5	7	5	5	1	3	3	1	1	1	2	3
36	IC018183	3	2	2	2	1	2	2	2	1	1	1	1	3	3	3	1	1	1	1	3	2	3	3	3	5	3	2	1	2	1	1	1	2	5
37	IC018452	3	2	2	2	2	3	2	2	1	2	1	1	3	3	3	1	1	1	2	2	2	2	7	7	3	7	1	3	3	0	1	1	1	3
38	IC018563	2	2	2	2	1	2	2	2	1	1	1	1	3	3	3	1	1	1	2	2	1	2	3	7	3	3	2	3	3	0	1	1	1	5
39	IC019336	2	3	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	2	1	2	3	5	5	5	2	2	2	1	1	1	2	5
40	IC019781-2	2	2	2	2	1	2	2	2	1	3	1	1	3	3	3	1	1	1	2	3	2	2	3	7	3	3	1	1	1	1	1	1	1	5
41	IC026973	3	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	1	3	2	3	3	7	5	7	3	2	3	0	1	1	1	3
42	IC176563	2	2	1	2	1	3	1	1	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	2	2	2	1	1	1	3	3
43	IC248733	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	1	2	2	0	1	1	1	3
44	IC520892	2	3	2	2	1	2	2	2	1	3	1	1	3	3	3	1	1	1	2	3	1	3	3	7	3	3	1	2	2	0	1	1	1	5
45	IC521049	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	2	1	2	3	3	3	3	1	3	3	0	1	1	3	3
46	IC521061	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	3	2	2	3	7	5	7	2	2	2	0	1	1	1	3
47	IC521068	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	3	1	3	3	5	3	3	1	2	2	1	1	1	1	5

S.No	Accession No.	Early plant vigour				Plant growth habit				Plant habit				Flower colour			Seed shape			Leaflet shape				Leaflet size				Pod colour			Pod shattering			Delhi	Rahuri
		Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Bangalore	Rahuri	Mode	Delhi	Rahuri	Mode	Bangalore	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Delhi	Rahuri	Mode	Plant strength	Biotic stress susceptibility				
48	IC521081	2	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	-	2	2	3	-	5	5	2	3	3	0	1	1	1	5
49	IC521144	3	1	2	3	1	1	2	1	1	1	1	1	3	3	3	1	1	1	2	1	1	1	7	5	3	7	2	1	2	0	1	1	3	5
50	IC521148	2	2	2	2	1	3	2	3	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	3	5	3	2	2	2	0	1	1	1	3
<b>Mean for check variety</b>																																			
	<b>RBL-1 (C)</b>	2	2	2	2	1	3	1	1	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	2	4	4	0	1	1	1	3
	<b>RBL-6 (C)</b>	3	3	1	3	1	2	2	2	1	3	2	3	3	3	3	1	1	1	2	2	2	2	5	5	5	5	2	4	4	0	1	1	2	3
	<b>RBL-35 (C)</b>	2	1	2	2	1	1	2	1	1	2	2	2	3	3	3	1	1	1	2	1	1	1	5	5	5	5	1	4	4	0	1	1	3	3
	<b>RBL-50 (C)</b>	3	2	2	2	1	3	1	1	1	1	1	1	3	3	3	1	1	1	2	2	1	2	5	5	5	5	1	2	2	0	1	1	3	3
	<b>Minimum</b>	2	1	1	2	1	1	1	1	1	1	1	1	3	3	3	1	1	1	1	1	1	1	3	2	3	3	0	1	1	0	1	1	1	3
	<b>Maximum</b>	3	3	3	3	2	3	2	3	2	3	2	3	3	3	3	3	1	3	3	3	3	3	7	7	5	7	3	4	4	1	1	1	3	5
	<b>Mode</b>	2	2	2	2	1	2	2	2	1	2	1	1	3	3	3	1	1	1	2	2	2	2	3	5	5	5	2	2	2	0	1	1	1	3

**Qualitative characters :** *Early plant vigour* : 1-Poor, 2-Good, 3-Very good, 99-Others; *Plant growth habit* : 1-Erect, 2-Spreading, 3-Trailing, 99-Others; *Plant habit* : 1-Determinate, 2-Semi-determinate, 3-Indeterminate, 99-Others; *Flower colour* : 1-White, 2-Violet, 3-Yellow, 4-Red, 5-Pink, 6-Light brown, 7-Dark brown, 99-Others; *Leaflet shape* : 1-Narrow (elongate), 2-Intermediate (sub elliptic), 3-Round (sub orbicular), 99-Others; *Leaflet size* : 3-Small, 5-Medium 7-Large, 99-Others; *Pod shattering* : 0-Absent, 1-Present; *Pod colour* : 1-Light yellow, 2-Brown, 3-Dark brown, 4-Black, 99-Others; *Seed shape* : 1-Cylindrical, 2-Round, 3-Flattened, 99-Others; *Biotic stress susceptibility* : 1-Very low or Visible sing of susceptibility, 3-Low, 5-Intermediate, 7-High, 9-Very high

**Table 104. Promising lines in Fababean germplasm for various characters at different locations : Rabi 2011-12 (Plains)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Delhi (Accessions 50)</b>				
1.	Days to 50% flowering	77.00-85.00	HB-6, HB-10, HB-56, HB-70, HB-83, EC329750 (=77.00 days)	Vikrant (77.71 days)
2.	Days to maturity	143.00-154.00	HB-70, EC329605, HB-10, HB-56, HB-60, HB-83, EC248945, EC329750, EC354685, HB-21, HB-28, EC329662, EC329696, HB-6, HB-12, HB-52, HB-62, EC243586, EC329728 (<147.00 days)	PRT-12 (147.43 days)
3.	Plant height (cm)	55.60-86.80	EC005873, EC243584, IC329083, EC276939, HB-56, HB-70, EC117749, IC361485, EC243626, IC263634, IC329675, EC243860, HB-16, EC243586, EC354686, EC248945, EC318948, EC329728, HB-17, HB-1, EC354685, EC329691, EC329750, HB-21, HB-48 (> 71.58 cm)	PRT-12 (70.40 cm)
4.	No. of primary branches per plant	3.20-6.00	HB-83, EC005873, IC003293, HB-48, EC243764, EC318948, IC243808, EC329605, EC243586 (> 5.00)	Vikrant & EC591665 (4.88)
5.	Pod length (cm)	47.73-67.05	HB-17, EC243584, EC243784, IC243036, IC024710, EC329691, IC329083, EC318948, HB-12, HB-21 (> 6.20 cm)	PRT-12 (6.06 cm)
6.	Pod width (mm)	8.73-11.27	EC329691, IC243036, EC329728, EC351999, HB-56, EC243764, HB-62, EC243626, HB-28, EC243784, IC243808, HB-70, EC005873, HB-21, HB-30, EC117749, IC329083, HB-17, HB-60, EC243584 (> 10.32 mm)	PRT-12 (10.31 mm)
7.	No. of pods per plant	30.60-100.00	EC005873, EC117749 (> 9.78)	PRT-12 (60.31)
8.	No. of seeds per pod	3.00-3.80	IC024710, HB-17, HB-30, HB-48, EC243584, EC243784, EC329605, EC351999, EC354685 (=> 3.60)	PRT-12 (3.48)
9.	No. of leaflets per plant	5.00-7.00	IC329083, HB-83, EC243764, EC329667 (> 6.98)	EC591665 (6.00)
10.	Seed yield (q/ha)	7.00-44.56	EC243626, EC243584, EC329750, EC243764, HB-10, EC243860, HB-1, EC243586, EC005873, EC117749, HB-48, HB-17, HB-83, IC329675, IC361485, EC276939, EC243784 (> 30.15 q/ha)	PRT-12 (29.44 q/ha)
11.	Seed yield per plant (g)	27.50-164.00	HB-21, HB-10, HB-17, HB-1, HB-6 (> 124.98 g)	EC591665 (84.60 g)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
12.	100 seed weight (g)	11.50-58.40	EC329605, EC276939 (> 57.08 g)	PRT-12 (30.24 g)
<b>Faizabad (Accessions 50)</b>				
1.	Days to 50% flowering	54.00-72.00	IC263634, HB-12, HB-16, EC329750, HB-01 , HB-06 , EC374735, HB-17, EC243586, EC248945, EC329728, EC354686, HB-70, IC243036 (<62.00 days)	PRT-7 (61.57 days)
2.	Days to maturity	140.00-162.00	EC243764, EC329691, HB-10 , HB-28, HB-30, EC243584, EC005873, EC243860, EC276939, EC329675, EC374735, HB-17, EC117749, EC243586, HB-56, IC024710, IC243808, EC243626, EC243784, EC329662, HB-06 , IC361498, EC248945, EC318948, EC329667, EC329750 (< 147.00 days)	Vikrant (146.86 days)
3.	Plant height (cm)	70.50-105.00	EC354685, EC354989, HB-52, HB-56, EC248945, EC243626, IC003293, EC318948, EC243586, EC329696, EC354686, EC374735, HB-48, IC243808, EC329728, EC329675, HB-33, IC243036, HB-62, HB-28, EC329662, HB-70, EC329691, HB-10 , IC263634, EC117749, IC024710 (> 95.78)	PRT-7 (95.74 cm)
4.	No. of primary branches per plant	2.40-5.80	IC243036, EC243626, EC329728, HB-56, IC003293, IC263634, EC329696, EC276939, EC354685, IC361485, HB-62, HB-70, IC329083, HB-17, HB-83, EC329750, EC354686, EC354989, EC374735, HB-01 , HB-33, HB-60 (>4.20)	PRT-7 (4.14)
5.	No. of seeds per pod	2.40-3.60	EC329662 (=3.60)	PRT-7 & PRT-12 (2.97)
6.	No. of pods per plant	13.00-35.20	HB-12, HB-06 , HB-56, HB-21, HB-33, HB-52 (> 31.98)	PRT-7 (22.60)
7.	100 seed weight (g)	22.80-32.10	HB-28, IC243808, EC243584, EC243764, EC248945, EC329605, EC351999, HB-12, EC117749, EC243860, HB-30, HB-06 , HB-21, HB-60, EC276939, EC329662, EC243586, EC329696, HB-10 , HB-56, HB-83, EC243784, EC354686, HB-01 , IC024710 (> 28.08 g)	Vikrant (28.06 g)
8.	Seed yield per plant (g)	13.20-32.00	IC361485, EC318948, EC329662, EC117749, EC248945, EC374735, EC329696, EC329728, EC354989, EC354686, EC329750, EC351999, IC243036, EC243584, IC003293, IC329083, EC354685, IC243808,	Vikrant (22.79 g)

S. No.	Characters	Range	Promising lines	Value of best check
			EC243784, EC329675, IC024710, IC329675, IC361498, EC243860, EC329691, EC243626, EC243764, EC243586, EC329605, HB-10 (> 22.78 g)	
<b>Hisar (Accessions 50)</b>				
1.	Days to 50% flowering	51.00-75.00	IC003293, HB-48, HB-62, EC351999, EC243626, HB-6, HB-21, EC354686, HB-12, HB-30, HB-60, EC329750, HB-10, HB-17, HB-28, HB-33, EC243586, IC243036, HB-16, EC243860, EC329728, HB-52, EC248945, EC276939, HB-56, HB-83, IC329083, HB-1, HB-70, EC243584, EC243764, EC329667 (<65.00 days)	Vikrant (65.00 days)
2.	Days to maturity	59.00-173.00	HB-48, EC351999, EC329728, HB-16, HB-21, HB-28, HB-56, HB-83, EC329750, HB-6, IC003293, HB-30, HB-62, HB-33, HB-70, EC243860, EC354686, EC374735, HB-1, HB-17, HB-60, EC005873, EC329667, EC243626, HB-12 (< 154.00 days)	Vikrant (154.00 days)
3.	Plant height (cm)	51.50-100.20	EC243586, EC243584, HB-1, EC243764, EC243626, IC329675, HB-12, EC329605, IC243036, HB-10, IC243634, EC243784, EC329675, EC329750, IC243808, IC329083, EC354989, IC024710, HB-28, HB-16, HB-56, HB-30, HB-52, HB-21, EC354686, EC329667, HB-70, HB-17, EC276939, HB-60, EC248945, EC005873, HB-33, HB-83, HB-48, EC329696, EC318948, HB-6, EC329728, EC354685, HB-62, IC361498, EC329691, EC117749, EC329662, IC361485, EC351999 (> 65.08 cm)	Vikrant (62.80 cm)
4.	No. of primary branches per plant	2.00-7.00	HB-10, HB-17, HB-28, HB-33, HB-48, HB-52, EC329696, HB-1, HB-6, HB-12, HB-16, HB-21, HB-30, HB-60, HB-83, EC243584, EC243586, EC243626, EC243764, EC243784, EC248945, EC318948, EC329662, EC329675, EC354686, IC024710, IC243036, IC243634, IC243808, IC329083, IC361485, HB-56, HB-62, HB-70, EC005873, EC243860, EC329605, EC329691, EC329750, EC351999, IC003293, IC329675, IC361498 (=> 4.00 days)	Vikrant (4.00)
5.	No. of clusters per plant	4.00-19.00	HB-17, HB-10, HB-28, EC329662, EC243584, EC243626, EC329675, HB-1, HB-30, HB-52, HB-60, IC024710, IC243808, HB-16, HB-21, HB-33, EC243586, EC243784, EC318948, EC329696, IC329675 (=> 10.00)	Vikrant (10.00)
6.	No. of pods per plant	18.00-74.00	HB-17, HB-10, HB-28, EC243584, EC243586, EC243626, EC329696, EC329675, EC329750, IC243808, HB-33, IC024710, EC318948 (> 40.98)	Vikrant (41.00)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
7.	Pod length (cm)	2.50-6.60	EC243586, EC243584, EC329728, EC354989, IC243036, HB-83, HB-52, EC329696, IC003293, IC329083, HB-6, EC329667, HB-1, HB-21, HB-70, EC005873, EC117749, EC243764, EC248945, EC276939, EC329675, EC329691, EC354686, IC024710, IC243634, IC243808, IC329675, IC361498, HB-28, HB-56, EC243626, EC329605, HB-10, HB-16, HB-30, HB-33, HB-48, EC243860, EC318948, EC329750, EC351999, IC361485, HB-12, EC243784, EC374735, HB-62 (> 4.98 cm)	Vikrant (4.90 cm)
8.	No. of seeds per pod	3.00-3.00	HB-1, HB-6, HB-10, HB-12, HB-16, HB-17, HB-21, HB-28, HB-30, HB-33 (=3.00)	Vikrant (3.00)
9.	100 seed weight (g)	24.80-32.50	EC354685, EC351999, EC318948, EC374735, EC354989, EC329667, IC361485, EC117749, EC329605, HB-12, EC243860, EC329691, HB-83, EC329696, HB-56, IC361498, EC243626, EC243784, HB-10, HB-16, IC003293, IC243808, EC248945, EC243584, HB-6, EC005873, EC329728, EC329750, HB-60, HB-48, HB-33, EC243586, EC243764, IC243634, HB-30, EC329675, IC243036, IC329675, HB-17, HB-62, EC276939, EC354686, IC024710, HB-1, HB-70 (>26.38 g)	Vikrant (26.10 g)
10.	Seed yield per plant (g)	10.00-49.80	HB-17, HB-10, EC243584, HB-28, EC243626, EC329696, HB-12, EC243784, IC243808, EC329750, HB-1, HB-33, HB-16, EC329675, HB-30, EC318948 (> 25.78 g)	Vikrant (25.40 g)
11.	Plant population at harvest (%)	80.00-95.00	HB-1, HB-10, HB-17, HB-60, EC243584, EC243626, EC243764, EC243784, EC248945, EC329605, EC329696, EC329750, EC354686, IC243036, IC329083, IC361485, EC117749, EC243586, EC276939, EC318948, EC329675, IC003293, IC024710, IC243634, IC329675, HB-12, HB-28, HB-70, EC005873, EC329662, EC329667, EC329728, EC354685, IC243808, HB-52, HB-83, IC361498 (>90.00%)	Vikrant (90.00 %)
<b>Best entries over location</b>				
1.	Days to 50% flowering	61.57-81.29	-	PRT-7 (61.57 days)
2.	Days to maturity	115.33-157.33	HB-28, HB-56, EC351999, EC329750, HB-30, HB-6, HB-10, EC329728, HB-16, EC005873, EC243860, HB-17, HB-21, HB-70, HB-83 (<148.00 days)	PRT-12 (147.36 days)



<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
3.	Plant height (cm)	67.72-95.74	-	PRT-7 (95.74 cm)
4.	No. of primary branches per plant	3.53-5.33	HB-17, EC329696, HB-83, HB-10, HB-33, IC003293, EC243626, HB-48, IC243036 (> 4.90)	EC591665 (4.88)
5.	Pod length (cm)	4.17-6.52	EC243584, EC243586, IC243036 (> 6.10 cm)	PRT-12 (6.06 cm)
6.	No. of pods per plant	22.60-51.80	EC005873, HB-17 (> 51.18)	EC591665 (48.40)
7.	No. of seeds per pod	2.87-3.33	EC329662, IC024710 (> 3.25)	EC591665 (3.24)
8.	100 seed weight (g)	22.07-39.50	EC329605, EC276939, EC351999, EC243784, EC243584, EC329728, EC354686, EC243860, EC329691, HB-17, IC329083, EC243764, HB-56, EC329662, EC243626, EC318948, EC354685, IC243808, IC361485, IC243036, EC329675, HB-70 (> 30.05 g)	EC591665 (30.01 g)
9.	Seed yield per plant (g)	22.50-84.60	-	EC591665 (84.60 g)

**Table 105. Multilocation evaluation of germplasm lines in faba bean at different locations : Rabi 2010-11 (Plains)**

S.No.	Accession No.	Days to 50% flowering				Days to 80% maturity				Plant height (cm)			
		Delhi	Hisar	Faizabad	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
1	EC005873	82.00	65.00	68.00	<b>71.67</b>	148.00	142.00	151.00	<b>147.00</b>	86.80	95.20	77.70	<b>86.57</b>
2	EC117749	81.00	71.00	66.00	<b>72.67</b>	147.00	144.00	169.00	<b>153.33</b>	79.20	95.80	66.50	<b>80.50</b>
3	EC243584	80.00	64.00	68.00	<b>70.67</b>	149.00	141.00	155.00	<b>148.33</b>	86.60	94.00	100.10	<b>93.57</b>
4	EC243586	80.00	60.00	61.00	<b>67.00</b>	146.00	144.00	155.00	<b>148.33</b>	75.20	100.00	100.20	<b>91.80</b>
5	EC243626	81.00	55.00	70.00	<b>68.67</b>	148.00	145.00	152.00	<b>148.33</b>	77.20	102.00	95.40	<b>91.53</b>
6	EC243764	78.00	64.00	62.00	<b>68.00</b>	147.00	140.00	161.00	<b>149.33</b>	68.60	88.00	98.80	<b>85.13</b>
7	EC243784	81.00	70.00	66.00	<b>72.33</b>	148.00	145.00	161.00	<b>151.33</b>	65.60	79.00	90.60	<b>78.40</b>
8	EC243860	82.00	61.00	68.00	<b>70.33</b>	149.00	142.00	150.00	<b>147.00</b>	76.40	91.20	59.90	<b>75.83</b>
9	EC248945	79.00	62.00	61.00	<b>67.33</b>	144.00	146.00	156.00	<b>148.67</b>	74.80	102.20	78.40	<b>85.13</b>
10	EC276939	81.00	62.00	70.00	<b>71.00</b>	147.00	142.00	161.00	<b>150.00</b>	83.00	94.80	79.40	<b>85.73</b>
11	EC318948	82.00	73.00	67.00	<b>74.00</b>	149.00	146.00	165.00	<b>153.33</b>	74.80	100.50	75.50	<b>83.60</b>
12	EC329605	78.00	70.00	70.00	<b>72.67</b>	143.00	147.00	166.00	<b>152.00</b>	55.60	94.40	93.30	<b>81.10</b>
13	EC329662	80.00	65.00	70.00	<b>71.67</b>	145.00	145.00	169.00	<b>153.00</b>	61.80	97.00	65.60	<b>74.80</b>
14	EC329667	82.00	64.00	70.00	<b>72.00</b>	150.00	146.00	151.00	<b>149.00</b>	64.20	88.00	83.10	<b>78.43</b>
15	EC329675	78.00	65.00	68.00	<b>70.33</b>	149.00	142.00	162.00	<b>151.00</b>	63.80	99.00	90.50	<b>84.43</b>
16	EC329691	81.00	69.00	71.00	<b>73.67</b>	147.00	140.00	159.00	<b>148.67</b>	73.20	96.00	67.20	<b>78.80</b>
17	EC329696	78.00	70.00	62.00	<b>70.00</b>	145.00	148.00	167.00	<b>153.33</b>	61.60	100.00	76.50	<b>79.37</b>
18	EC329728	82.00	61.00	61.00	<b>68.00</b>	146.00	151.00	143.00	<b>146.67</b>	74.60	99.50	71.80	<b>81.97</b>
19	EC329750	77.00	59.00	58.00	<b>64.67</b>	144.00	146.00	145.00	<b>145.00</b>	72.60	86.00	90.50	<b>83.03</b>
20	EC351999	78.00	53.00	67.00	<b>66.00</b>	147.00	147.00	140.00	<b>144.67</b>	67.00	91.60	65.10	<b>74.57</b>
21	EC354685	79.00	72.00	68.00	<b>73.00</b>	144.00	150.00	169.00	<b>154.33</b>	73.40	105.00	70.70	<b>83.03</b>
22	EC354686	81.00	57.00	61.00	<b>66.33</b>	149.00	148.00	150.00	<b>149.00</b>	75.20	100.00	85.70	<b>86.97</b>
23	EC354989	81.00	75.00	62.00	<b>72.67</b>	148.00	147.00	170.00	<b>155.00</b>	63.80	105.00	90.30	<b>86.37</b>
24	EC374735	83.00	65.00	60.00	<b>69.33</b>	152.00	142.00	150.00	<b>148.00</b>	57.20	100.00	60.40	<b>72.53</b>
25	HB-1	78.00	64.00	58.00	<b>66.67</b>	147.00	150.00	151.00	<b>149.33</b>	73.60	80.00	99.00	<b>84.20</b>
26	HB-6	77.00	57.00	59.00	<b>64.33</b>	146.00	145.00	147.00	<b>146.00</b>	64.00	86.40	75.10	<b>75.17</b>
27	HB-10	77.00	60.00	62.00	<b>66.33</b>	144.00	140.00	155.00	<b>146.33</b>	67.20	96.00	91.20	<b>84.80</b>
28	HB-12	78.00	58.00	55.00	<b>63.67</b>	146.00	150.00	153.00	<b>149.67</b>	64.80	75.50	95.10	<b>78.47</b>
29	HB-16	80.00	61.00	57.00	<b>66.00</b>	148.00	148.00	144.00	<b>146.67</b>	75.40	90.00	87.80	<b>84.40</b>

S.No.	Accession No.	Number of primary branches				Pod length (cm)			Number of pods per plant				Number of seeds per pod			
		Delhi	Faizabad	Hisar	Mean	Delhi	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
1	EC005873	6.00	3.00	4.00	<b>4.33</b>	6.04	5.50	<b>5.77</b>	100.00	20.40	35.00	<b>51.80</b>	3.00	3.00	3.00	<b>3.00</b>
2	EC117749	5.00	4.00	3.00	<b>4.00</b>	5.92	5.50	<b>5.71</b>	90.80	20.80	29.00	<b>46.87</b>	3.20	3.20	3.00	<b>3.13</b>
3	EC243584	3.60	3.20	5.00	<b>3.93</b>	6.55	6.50	<b>6.52</b>	56.80	19.40	55.00	<b>43.73</b>	3.60	3.00	3.00	<b>3.20</b>
4	EC243586	5.20	3.20	5.00	<b>4.47</b>	5.95	6.60	<b>6.27</b>	54.80	25.20	51.00	<b>43.67</b>	3.40	2.80	3.00	<b>3.07</b>
5	EC243626	4.40	5.60	5.00	<b>5.00</b>	5.92	5.40	<b>5.66</b>	54.20	17.80	50.00	<b>40.67</b>	3.20	3.00	3.00	<b>3.07</b>
6	EC243764	5.60	4.00	5.00	<b>4.87</b>	5.77	5.50	<b>5.63</b>	47.00	24.80	32.00	<b>34.60</b>	3.20	3.20	3.00	<b>3.13</b>
7	EC243784	4.80	3.30	5.00	<b>4.37</b>	6.40	5.20	<b>5.80</b>	40.00	19.20	35.00	<b>31.40</b>	3.60	2.40	3.00	<b>3.00</b>
8	EC243860	4.40	3.40	4.00	<b>3.93</b>	5.58	5.30	<b>5.44</b>	45.00	14.60	20.00	<b>26.53</b>	3.40	2.60	3.00	<b>3.00</b>
9	EC248945	4.40	4.20	5.00	<b>4.53</b>	5.88	5.50	<b>5.69</b>	53.20	15.80	34.00	<b>34.33</b>	3.00	2.80	3.00	<b>2.93</b>
10	EC276939	4.60	5.00	3.00	<b>4.20</b>	5.83	5.50	<b>5.67</b>	38.60	18.40	27.00	<b>28.00</b>	3.40	3.00	3.00	<b>3.13</b>
11	EC318948	5.60	4.00	5.00	<b>4.87</b>	6.28	5.30	<b>5.79</b>	44.40	19.60	41.00	<b>35.00</b>	3.40	3.00	3.00	<b>3.13</b>
12	EC329605	5.40	4.20	4.00	<b>4.53</b>	5.25	5.40	<b>5.32</b>	32.60	15.00	29.00	<b>25.53</b>	3.60	2.80	3.00	<b>3.13</b>
13	EC329662	3.60	3.40	5.00	<b>4.00</b>	5.57	4.50	<b>5.03</b>	37.80	19.40	39.00	<b>32.07</b>	3.40	3.60	3.00	<b>3.33</b>
14	EC329667	4.40	3.80	3.00	<b>3.73</b>	5.60	5.60	<b>5.60</b>	45.00	14.00	18.00	<b>25.67</b>	3.40	2.60	3.00	<b>3.00</b>
15	EC329675	5.00	3.40	5.00	<b>4.47</b>	5.68	5.50	<b>5.59</b>	31.40	13.00	47.00	<b>30.47</b>	3.40	2.80	3.00	<b>3.07</b>
16	EC329691	4.40	3.60	4.00	<b>4.00</b>	6.33	5.50	<b>5.92</b>	42.20	13.40	30.00	<b>28.53</b>	3.40	2.80	3.00	<b>3.07</b>
17	EC329696	4.40	5.40	6.00	<b>5.27</b>	5.70	5.70	<b>5.70</b>	30.60	20.40	49.00	<b>33.33</b>	3.40	3.20	3.00	<b>3.20</b>
18	EC329728	3.20	5.60	3.00	<b>3.93</b>	5.68	6.10	<b>5.89</b>	49.60	19.80	28.00	<b>32.47</b>	3.00	2.80	3.00	<b>2.93</b>
19	EC329750	4.40	4.40	4.00	<b>4.27</b>	5.72	5.30	<b>5.51</b>	38.20	16.80	47.00	<b>34.00</b>	3.20	2.80	3.00	<b>3.00</b>
20	EC351999	4.40	3.60	4.00	<b>4.00</b>	5.84	5.30	<b>5.57</b>	52.80	25.00	21.00	<b>32.93</b>	3.60	2.80	3.00	<b>3.13</b>
21	EC354685	4.00	5.00	2.00	<b>3.67</b>	5.84	2.50	<b>4.17</b>	38.00	19.60	28.00	<b>28.53</b>	3.60	3.00	3.00	<b>3.20</b>
22	EC354686	3.60	4.40	5.00	<b>4.33</b>	5.65	5.50	<b>5.58</b>	34.00	18.50	35.00	<b>29.17</b>	3.20	3.20	3.00	<b>3.13</b>
23	EC354989	4.20	4.40	3.00	<b>3.87</b>	5.50	6.00	<b>5.75</b>	52.60	17.00	22.00	<b>30.53</b>	3.40	3.20	3.00	<b>3.20</b>
24	EC374735	4.80	4.40	3.00	<b>4.07</b>	5.49	5.10	<b>5.30</b>	43.60	30.00	29.00	<b>34.20</b>	3.20	3.20	3.00	<b>3.13</b>
25	HB-1	4.80	4.40	5.00	<b>4.73</b>	5.69	5.50	<b>5.59</b>	70.40	25.40	40.00	<b>45.27</b>	3.40	2.80	3.00	<b>3.07</b>
26	HB-6	5.00	4.20	5.00	<b>4.73</b>	5.19	5.60	<b>5.40</b>	69.60	34.80	32.00	<b>45.47</b>	3.40	2.60	3.00	<b>3.00</b>
27	HB-10	4.80	3.40	7.00	<b>5.07</b>	5.58	5.30	<b>5.44</b>	61.20	23.60	59.00	<b>47.93</b>	3.00	3.00	3.00	<b>3.00</b>
28	HB-12	4.40	3.80	5.00	<b>4.40</b>	6.28	5.20	<b>5.74</b>	43.40	35.20	37.00	<b>38.53</b>	3.40	3.00	3.00	<b>3.13</b>
29	HB-16	4.20	3.40	5.00	<b>4.20</b>	5.45	5.30	<b>5.37</b>	58.40	23.60	35.00	<b>39.00</b>	3.00	2.60	3.00	<b>2.87</b>

S.No.	Accession No.	Seed yield/ plant (g)				100 seed weight (g)				Delhi			Hisar	
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Pod width (mm)	Seed yield (q/ha)	No. of leaflets per leaf	Cluster/plant	Plant population at harvest (%)
1	EC005873	99.50	22.70	17.40	<b>46.53</b>	21.18	27.40	27.50	<b>25.36</b>	10.45	33.72	5.00	9.00	93.00
2	EC117749	107.50	30.50	19.50	<b>52.50</b>	20.30	29.60	30.10	<b>26.67</b>	10.42	33.33	6.00	7.00	94.00
3	EC243584	95.50	25.90	39.50	<b>53.63</b>	42.90	30.00	27.60	<b>33.50</b>	10.33	39.94	5.00	12.00	95.00
4	EC243586	78.50	23.20	19.70	<b>40.47</b>	25.98	28.50	26.80	<b>27.09</b>	9.81	33.89	6.00	10.00	94.00
5	EC243626	55.50	23.60	36.10	<b>38.40</b>	40.26	25.50	28.60	<b>31.45</b>	10.57	44.56	6.00	12.00	95.00
6	EC243764	86.50	23.60	19.20	<b>43.10</b>	39.54	30.00	26.80	<b>32.11</b>	10.59	35.78	7.00	9.00	95.00
7	EC243784	94.00	24.40	32.50	<b>50.30</b>	45.20	28.10	28.40	<b>33.90</b>	10.51	30.17	6.00	10.00	95.00
8	EC243860	62.50	23.90	12.70	<b>33.03</b>	39.80	29.60	29.50	<b>32.97</b>	9.97	34.72	5.00	6.00	90.00
9	EC248945	68.50	30.10	20.80	<b>39.80</b>	22.06	30.00	27.70	<b>26.59</b>	9.44	18.44	5.00	9.00	95.00
10	EC276939	79.50	20.70	11.50	<b>37.23</b>	57.10	29.10	26.50	<b>37.57</b>	10.26	30.94	5.00	9.00	94.00
11	EC318948	100.00	31.10	25.80	<b>52.30</b>	36.20	26.00	31.40	<b>31.20</b>	10.07	22.94	6.00	10.00	94.00
12	EC329605	46.50	23.20	19.70	<b>29.80</b>	58.40	30.00	30.10	<b>39.50</b>	9.53	15.78	6.00	7.00	95.00
13	EC329662	85.00	31.00	24.10	<b>46.70</b>	41.32	29.10	24.80	<b>31.74</b>	10.32	22.22	6.00	13.00	93.00
14	EC329667	48.00	22.30	10.00	<b>26.77</b>	25.66	22.80	30.50	<b>26.32</b>	10.12	14.44	7.00	5.00	93.00
15	EC329675	56.00	24.00	27.90	<b>35.97</b>	41.68	23.00	26.70	<b>30.46</b>	10.23	13.11	6.00	12.00	94.00
16	EC329691	76.50	23.90	20.50	<b>40.30</b>	45.16	24.00	29.50	<b>32.89</b>	11.27	29.39	5.00	5.00	90.00
17	EC329696	62.00	29.00	35.80	<b>42.27</b>	23.64	28.50	29.00	<b>27.05</b>	9.26	18.44	6.00	10.00	95.00
18	EC329728	98.00	28.60	16.90	<b>47.83</b>	48.40	24.00	27.50	<b>33.30</b>	10.92	21.67	5.00	8.00	93.00
19	EC329750	82.50	26.50	31.00	<b>46.67</b>	30.26	28.00	27.50	<b>28.59</b>	9.92	39.67	5.00	9.00	95.00
20	EC351999	79.50	26.50	15.90	<b>40.63</b>	44.20	30.00	31.80	<b>35.33</b>	10.75	25.11	6.00	4.00	90.00
21	EC354685	98.50	25.00	23.10	<b>48.87</b>	33.26	27.10	32.50	<b>30.95</b>	10.11	27.06	6.00	5.00	93.00
22	EC354686	79.50	27.10	19.40	<b>42.00</b>	44.68	28.10	26.50	<b>33.09</b>	10.27	24.72	5.00	8.00	95.00
23	EC354989	50.00	28.30	14.70	<b>31.00</b>	31.20	24.40	31.00	<b>28.87</b>	9.68	19.11	6.00	6.00	87.00
24	EC374735	63.50	29.30	22.50	<b>38.43</b>	26.04	26.00	31.40	<b>27.81</b>	9.43	15.00	6.00	5.00	90.00
25	HB-1	133.50	18.60	30.70	<b>60.93</b>	24.52	28.10	26.40	<b>26.34</b>	9.90	34.11	5.00	11.00	95.00
26	HB-6	125.00	18.40	25.20	<b>56.20</b>	23.62	29.40	27.50	<b>26.84</b>	9.32	25.28	5.00	9.00	80.00
27	HB-10	152.00	22.80	42.90	<b>72.57</b>	24.00	28.30	28.10	<b>26.80</b>	9.88	35.67	6.00	14.00	95.00
28	HB-12	44.00	18.20	33.00	<b>31.73</b>	27.80	29.70	29.80	<b>29.10</b>	10.32	26.67	6.00	9.00	93.00
29	HB-16	71.50	16.30	27.90	<b>38.57</b>	26.64	27.90	27.90	<b>27.48</b>	9.75	26.39	6.00	10.00	87.00

S.No.	Accession No.	Days to 50% flowering				Days to 80% maturity				Plant height (cm)			
		Delhi	Hisar	Faizabad	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
30	HB-17	81.00	60.00	60.00	<b>67.00</b>	148.00	142.00	151.00	<b>147.00</b>	74.00	95.00	81.80	<b>83.60</b>
31	HB-21	78.00	57.00	62.00	<b>65.67</b>	145.00	152.00	144.00	<b>147.00</b>	72.40	95.20	85.80	<b>84.47</b>
32	HB-28	81.00	60.00	68.00	<b>69.67</b>	145.00	140.00	145.00	<b>143.33</b>	63.80	98.00	88.50	<b>83.43</b>
33	HB-30	78.00	59.00	62.00	<b>66.33</b>	148.00	140.00	148.00	<b>145.33</b>	65.20	93.80	86.90	<b>81.97</b>
34	HB-33	79.00	60.00	62.00	<b>67.00</b>	149.00	148.00	149.00	<b>148.67</b>	68.80	99.00	77.50	<b>81.77</b>
35	HB-48	78.00	52.00	66.00	<b>65.33</b>	147.00	162.00	140.00	<b>149.67</b>	71.60	100.00	77.30	<b>82.97</b>
36	HB-52	80.00	62.00	65.00	<b>69.00</b>	146.00	157.00	159.00	<b>154.00</b>	70.20	104.00	85.90	<b>86.70</b>
37	HB-56	77.00	63.00	66.00	<b>68.67</b>	144.00	144.00	145.00	<b>144.33</b>	81.80	102.50	87.70	<b>90.67</b>
38	HB-60	80.00	59.00	67.00	<b>68.67</b>	144.00	148.00	151.00	<b>147.67</b>	65.80	88.50	78.50	<b>77.60</b>
39	HB-62	81.00	52.00	65.00	<b>66.00</b>	146.00	155.00	148.00	<b>149.67</b>	68.40	98.40	69.30	<b>78.70</b>
40	HB-70	77.00	64.00	61.00	<b>67.33</b>	143.00	148.00	150.00	<b>147.00</b>	79.20	96.60	82.90	<b>86.23</b>
41	HB-83	77.00	63.00	68.00	<b>69.33</b>	144.00	153.00	145.00	<b>147.33</b>	69.20	94.60	77.50	<b>80.43</b>
42	IC003293	85.00	51.00	67.00	<b>67.67</b>	154.00	150.00	147.00	<b>150.33</b>	59.00	100.60	51.50	<b>70.37</b>
43	IC024710	84.00	67.00	68.00	<b>73.00</b>	150.00	144.00	170.00	<b>154.67</b>	63.00	95.80	89.90	<b>82.90</b>
44	IC243036	82.00	60.00	61.00	<b>67.67</b>	148.00	149.00	155.00	<b>150.67</b>	64.80	99.00	91.50	<b>85.10</b>
45	IC243634	81.00	65.00	54.00	<b>66.67</b>	151.00	148.00	160.00	<b>153.00</b>	76.80	96.00	90.90	<b>87.90</b>
46	IC243808	80.00	65.00	70.00	<b>71.67</b>	150.00	144.00	171.00	<b>155.00</b>	69.00	100.00	90.50	<b>86.50</b>
47	IC329083	78.00	63.00	66.00	<b>69.00</b>	149.00	151.00	161.00	<b>153.67</b>	83.80	88.00	90.50	<b>87.43</b>
48	IC329675	79.00	65.00	70.00	<b>71.33</b>	151.00	149.00	171.00	<b>157.00</b>	76.40	95.20	95.40	<b>89.00</b>
49	IC361485	80.00	75.00	67.00	<b>74.00</b>	151.00	148.00	173.00	<b>157.33</b>	77.20	70.50	65.40	<b>71.03</b>
50	IC361498	82.00	70.00	72.00	<b>74.67</b>	149.00	145.00	165.00	<b>153.00</b>	66.20	90.00	69.30	<b>75.17</b>
<b>Mean for check variety</b>													
	<b>EC591665 (C)</b>	<b>81.29</b>	-	-	<b>81.29</b>	<b>149.57</b>	-	-	<b>149.57</b>	<b>67.72</b>	-	-	<b>67.72</b>
	<b>PRT-7 (C)</b>	-	-	<b>61.57</b>	<b>61.57</b>	-	<b>148.29</b>	-	<b>148.29</b>	-	<b>95.74</b>	-	<b>95.74</b>
	<b>PRT-12 (C)</b>	<b>80.57</b>	-	<b>66.43</b>	<b>73.50</b>	<b>147.43</b>	<b>147.29</b>	-	<b>147.36</b>	<b>70.40</b>	<b>94.97</b>	-	<b>82.69</b>
	<b>Vikrant (C)</b>	<b>77.71</b>	<b>65.00</b>	<b>64.14</b>	<b>68.95</b>	<b>147.57</b>	<b>146.86</b>	<b>154.00</b>	<b>149.48</b>	<b>68.80</b>	<b>95.16</b>	<b>62.80</b>	<b>75.59</b>
	<b>Minimum</b>	<b>77.00</b>	<b>51.00</b>	<b>54.00</b>	<b>61.57</b>	<b>143.00</b>	<b>140.00</b>	<b>140.00</b>	<b>143.33</b>	<b>55.60</b>	<b>70.50</b>	<b>51.50</b>	<b>67.72</b>
	<b>Maximum</b>	<b>85.00</b>	<b>75.00</b>	<b>72.00</b>	<b>81.29</b>	<b>154.00</b>	<b>162.00</b>	<b>173.00</b>	<b>157.33</b>	<b>86.80</b>	<b>105.00</b>	<b>100.20</b>	<b>95.74</b>
	<b>Mean</b>	<b>79.86</b>	<b>62.92</b>	<b>64.63</b>	<b>69.30</b>	<b>147.33</b>	<b>146.57</b>	<b>155.47</b>	<b>149.69</b>	<b>70.77</b>	<b>94.69</b>	<b>81.54</b>	<b>82.33</b>
	<b>CD(0.05)</b>	<b>6.25</b>	-	<b>13.26</b>		<b>6.68</b>	<b>10.10</b>	-		<b>22.93</b>	<b>19.23</b>	-	
	<b>CV(%) Error</b>	<b>2.91</b>	-	<b>7.69</b>		<b>1.67</b>	<b>2.55</b>	-		<b>12.36</b>	<b>7.50</b>	-	
	<b>CV(%) Phenotypic</b>	<b>2.44</b>	<b>9.04</b>	<b>6.76</b>		<b>1.65</b>	<b>3.03</b>	<b>5.94</b>		<b>10.12</b>	<b>7.51</b>	<b>14.65</b>	

S.No.	Accession No.	Number of primary branches				Pod length (cm)			Number of pods per plant				Number of seeds per pod			
		Delhi	Faizabad	Hisar	Mean	Delhi	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
30	HB-17	4.40	4.60	7.00	<b>5.33</b>	6.70	4.90	<b>5.80</b>	51.40	28.20	74.00	<b>51.20</b>	3.80	2.80	3.00	<b>3.20</b>
31	HB-21	4.40	4.20	5.00	<b>4.53</b>	6.21	5.50	<b>5.86</b>	47.40	32.20	30.00	<b>36.53</b>	3.40	3.20	3.00	<b>3.20</b>
32	HB-28	4.00	4.00	6.00	<b>4.67</b>	5.55	5.40	<b>5.48</b>	41.20	30.20	55.00	<b>42.13</b>	3.00	2.60	3.00	<b>2.87</b>
33	HB-30	4.00	3.80	5.00	<b>4.27</b>	5.71	5.30	<b>5.50</b>	48.40	30.20	39.00	<b>39.20</b>	3.80	2.80	3.00	<b>3.20</b>
34	HB-33	4.80	4.40	6.00	<b>5.07</b>	6.00	5.30	<b>5.65</b>	47.20	32.20	44.00	<b>41.13</b>	3.40	2.50	3.00	<b>2.97</b>
35	HB-48	5.60	3.40	6.00	<b>5.00</b>	5.82	5.30	<b>5.56</b>	52.20	28.60	30.00	<b>36.93</b>	3.80	2.80	3.00	<b>3.20</b>
36	HB-52	4.00	3.40	6.00	<b>4.47</b>	5.98	5.70	<b>5.84</b>	51.60	32.00	39.00	<b>40.87</b>	3.40	3.00	3.00	<b>3.13</b>
37	HB-56	4.40	5.60	4.00	<b>4.67</b>	5.67	5.40	<b>5.53</b>	57.40	33.00	25.00	<b>38.47</b>	3.40	3.00	3.00	<b>3.13</b>
38	HB-60	4.00	4.40	5.00	<b>4.47</b>	5.92	4.90	<b>5.41</b>	40.40	27.00	38.00	<b>35.13</b>	3.20	3.00	3.00	<b>3.07</b>
39	HB-62	4.60	4.80	4.00	<b>4.47</b>	5.91	5.00	<b>5.46</b>	45.80	16.60	27.00	<b>29.80</b>	3.20	2.80	3.00	<b>3.00</b>
40	HB-70	4.40	4.80	4.00	<b>4.40</b>	5.79	5.50	<b>5.65</b>	49.40	19.60	28.00	<b>32.33</b>	3.40	2.60	3.00	<b>3.00</b>
41	HB-83	6.00	4.60	5.00	<b>5.20</b>	5.84	5.80	<b>5.82</b>	70.60	18.60	35.00	<b>41.40</b>	3.20	2.80	3.00	<b>3.00</b>
42	IC003293	5.60	5.60	4.00	<b>5.07</b>	4.77	5.70	<b>5.24</b>	45.60	19.60	30.00	<b>31.73</b>	3.40	3.20	3.00	<b>3.20</b>
43	IC024710	4.20	4.20	5.00	<b>4.47</b>	6.34	5.50	<b>5.92</b>	44.60	20.60	43.00	<b>36.07</b>	3.80	3.00	3.00	<b>3.27</b>
44	IC243036	4.00	5.80	5.00	<b>4.93</b>	6.36	5.90	<b>6.13</b>	39.80	18.60	35.00	<b>31.13</b>	3.40	3.00	3.00	<b>3.13</b>
45	IC243634	3.80	5.60	5.00	<b>4.80</b>	5.99	5.50	<b>5.75</b>	44.40	18.00	31.00	<b>31.13</b>	3.40	3.00	3.00	<b>3.13</b>
46	IC243808	5.40	3.00	5.00	<b>4.47</b>	5.87	5.50	<b>5.69</b>	39.40	19.60	45.00	<b>34.67</b>	3.40	2.80	3.00	<b>3.07</b>
47	IC329083	4.00	4.80	5.00	<b>4.60</b>	6.33	5.70	<b>6.01</b>	34.60	20.00	31.00	<b>28.53</b>	3.40	3.20	3.00	<b>3.20</b>
48	IC329675	4.20	2.40	4.00	<b>3.53</b>	5.38	5.50	<b>5.44</b>	41.60	17.80	35.00	<b>31.47</b>	3.20	3.00	3.00	<b>3.07</b>
49	IC361485	4.00	5.00	5.00	<b>4.67</b>	5.37	5.30	<b>5.33</b>	35.20	20.00	31.00	<b>28.73</b>	3.00	2.80	3.00	<b>2.93</b>
50	IC361498	5.00	3.00	4.00	<b>4.00</b>	5.11	5.50	<b>5.31</b>	41.40	17.60	32.00	<b>30.33</b>	3.00	3.00	3.00	<b>3.00</b>
<b>Mean for check variety</b>																
<b>EC591665 (C)</b>		<b>4.88</b>	-	-	<b>4.88</b>	<b>5.83</b>	-	<b>5.83</b>	<b>48.40</b>	-	-	<b>48.40</b>	<b>3.24</b>	-	-	<b>3.24</b>
<b>PRT-7 (C)</b>		-	<b>4.14</b>	-	<b>4.14</b>	-	-	-	-	<b>22.60</b>	-	<b>22.60</b>	-	<b>2.97</b>	-	<b>2.97</b>
<b>PRT-12 (C)</b>		<b>4.76</b>	<b>4.03</b>	-	<b>4.39</b>	<b>6.06</b>	-	<b>6.06</b>	<b>60.31</b>	<b>21.17</b>	-	<b>40.74</b>	<b>3.48</b>	<b>2.97</b>	-	<b>3.23</b>
<b>Vikrant (C)</b>		<b>4.88</b>	<b>4.06</b>	<b>4.00</b>	<b>4.31</b>	<b>5.91</b>	<b>4.90</b>	<b>5.41</b>	<b>49.16</b>	<b>21.66</b>	<b>41.00</b>	<b>37.27</b>	<b>3.28</b>	<b>2.91</b>	<b>3.00</b>	<b>3.07</b>
<b>Minimum</b>		<b>3.20</b>	<b>2.40</b>	<b>2.00</b>	<b>3.53</b>	<b>4.77</b>	<b>2.50</b>	<b>4.17</b>	<b>30.60</b>	<b>13.00</b>	<b>18.00</b>	<b>22.60</b>	<b>3.00</b>	<b>2.40</b>	<b>3.00</b>	<b>2.87</b>
<b>Maximum</b>		<b>6.00</b>	<b>5.80</b>	<b>7.00</b>	<b>5.33</b>	<b>6.70</b>	<b>6.60</b>	<b>6.52</b>	<b>100.00</b>	<b>35.20</b>	<b>74.00</b>	<b>51.80</b>	<b>3.80</b>	<b>3.60</b>	<b>3.00</b>	<b>3.33</b>
<b>Mean</b>		<b>4.56</b>	<b>4.18</b>	<b>4.63</b>	<b>4.45</b>	<b>5.82</b>	<b>5.41</b>	<b>5.62</b>	<b>48.75</b>	<b>22.00</b>	<b>36.31</b>	<b>35.71</b>	<b>3.35</b>	<b>2.92</b>	<b>3.00</b>	<b>3.09</b>
<b>CD(0.05)</b>		<b>1.80</b>	<b>2.41</b>	-		<b>11.13</b>	-		<b>26.27</b>	<b>9.35</b>	-		<b>0.55</b>	<b>0.57</b>	-	
<b>CV(%) Error</b>		<b>13.82</b>	<b>21.98</b>	-		<b>6.97</b>	-		<b>18.55</b>	<b>15.93</b>	-		<b>6.13</b>	<b>7.22</b>	-	
<b>CV(%) Phenotypic</b>		<b>13.64</b>	<b>19.26</b>	<b>22.02</b>		<b>6.34</b>	<b>10.10</b>		<b>27.09</b>	<b>26.37</b>	<b>29.44</b>		<b>6.44</b>	<b>7.62</b>	-	

S.No.	Accession No.	Seed yield/ plant (g)				100 seed weight (g)				Delhi			Hisar	
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Pod width (mm)	Seed yield (q/ha)	No. of leaflets per leaf	Cluster/plant	Plant population at harvest (%)
30	HB-17	146.50	15.00	49.80	<b>70.43</b>	44.60	26.20	26.50	<b>32.43</b>	10.38	32.00	6.00	19.00	95.00
31	HB-21	164.00	18.00	21.90	<b>67.97</b>	27.56	29.30	26.10	<b>27.65</b>	10.45	25.67	5.00	10.00	83.00
32	HB-28	113.50	15.60	38.40	<b>55.83</b>	26.70	32.10	25.70	<b>28.17</b>	10.56	14.56	6.00	13.00	93.00
33	HB-30	42.50	13.20	26.30	<b>27.33</b>	25.02	29.60	26.70	<b>27.11</b>	10.43	17.33	6.00	11.00	83.00
34	HB-33	83.50	16.50	30.70	<b>43.57</b>	24.70	26.40	27.10	<b>26.07</b>	9.53	22.22	5.00	10.00	85.00
35	HB-48	77.00	15.00	18.50	<b>36.83</b>	23.00	25.00	27.20	<b>25.07</b>	10.13	32.33	6.00	9.00	87.00
36	HB-52	78.50	16.60	24.60	<b>39.90</b>	19.00	24.90	25.80	<b>23.23</b>	9.98	22.39	5.00	11.00	92.00
37	HB-56	102.50	14.50	15.10	<b>44.03</b>	38.18	28.20	28.90	<b>31.76</b>	10.70	23.00	5.00	6.00	87.00
38	HB-60	51.50	16.00	24.80	<b>30.77</b>	18.30	29.20	27.40	<b>24.97</b>	10.38	20.56	5.00	11.00	95.00
39	HB-62	84.50	18.20	15.00	<b>39.23</b>	26.36	26.60	26.50	<b>26.49</b>	10.59	16.22	6.00	7.00	87.00
40	HB-70	102.50	19.30	17.10	<b>46.30</b>	36.62	27.20	26.40	<b>30.07</b>	10.48	27.78	6.00	9.00	93.00
41	HB-83	79.00	20.00	24.70	<b>41.23</b>	22.46	28.20	29.10	<b>26.59</b>	9.81	31.44	7.00	9.00	92.00
42	IC003293	27.50	25.50	14.50	<b>22.50</b>	26.72	26.00	27.90	<b>26.87</b>	8.73	7.00	5.00	9.00	94.00
43	IC024710	62.00	24.00	20.50	<b>35.50</b>	27.34	28.10	26.50	<b>27.31</b>	9.92	11.67	6.00	11.00	94.00
44	IC243036	55.50	26.00	21.40	<b>34.30</b>	37.80	27.00	26.70	<b>30.50</b>	11.07	11.22	6.00	8.00	95.00
45	IC243634	119.00	22.10	17.90	<b>53.00</b>	27.84	27.00	26.80	<b>27.21</b>	9.86	24.83	6.00	9.00	94.00
46	IC243808	52.50	25.00	32.50	<b>36.67</b>	34.10	30.50	27.80	<b>30.80</b>	10.50	15.67	6.00	11.00	93.00
47	IC329083	76.00	25.50	17.90	<b>39.80</b>	43.22	28.00	25.70	<b>32.31</b>	10.38	25.78	7.00	9.00	95.00
48	IC329675	32.50	24.00	15.70	<b>24.07</b>	28.56	27.00	26.70	<b>27.42</b>	10.03	31.11	5.00	10.00	94.00
49	IC361485	56.50	32.00	20.30	<b>36.27</b>	34.16	27.60	30.20	<b>30.65</b>	10.08	31.11	5.00	8.00	95.00
50	IC361498	69.50	24.00	19.70	<b>37.73</b>	11.50	26.00	28.70	<b>22.07</b>	9.54	21.44	5.00	9.00	91.00
<b>Mean for check variety</b>														
	<b>EC591665 (C)</b>	<b>84.60</b>	-	-	<b>84.60</b>	<b>30.01</b>	-	-	<b>30.01</b>	<b>10.18</b>	<b>25.28</b>	<b>6.00</b>	-	-
	<b>PRT-7 (C)</b>	-	<b>22.60</b>	-	<b>22.60</b>	-	<b>27.44</b>	-	<b>27.44</b>	-	-	-	-	-
	<b>PRT-12 (C)</b>	<b>61.20</b>	<b>21.39</b>	-	<b>41.29</b>	<b>30.24</b>	<b>26.91</b>	-	<b>28.58</b>	<b>10.31</b>	<b>29.44</b>	<b>5.80</b>	-	-
	<b>Vikrant (C)</b>	<b>67.10</b>	<b>22.79</b>	<b>25.40</b>	<b>38.43</b>	<b>27.23</b>	<b>28.06</b>	<b>26.10</b>	<b>27.13</b>	<b>10.29</b>	<b>23.16</b>	<b>5.60</b>	<b>10.00</b>	<b>90.00</b>
	<b>Minimum</b>	<b>27.50</b>	<b>13.20</b>	<b>10.00</b>	<b>22.50</b>	<b>11.50</b>	<b>22.80</b>	<b>24.80</b>	<b>22.07</b>	<b>8.73</b>	<b>7.00</b>	<b>5.00</b>	<b>4.00</b>	<b>80.00</b>
	<b>Maximum</b>	<b>164.00</b>	<b>32.00</b>	<b>49.80</b>	<b>84.60</b>	<b>58.40</b>	<b>32.10</b>	<b>32.50</b>	<b>39.50</b>	<b>11.27</b>	<b>44.56</b>	<b>7.00</b>	<b>19.00</b>	<b>95.00</b>
	<b>Mean</b>	<b>80.54</b>	<b>22.86</b>	<b>23.70</b>	<b>42.87</b>	<b>32.12</b>	<b>27.64</b>	<b>27.96</b>	<b>29.24</b>	<b>10.15</b>	<b>25.20</b>	<b>5.69</b>	<b>9.25</b>	<b>92.04</b>
	<b>CD(0.05)</b>	<b>35.28</b>	<b>15.88</b>	-		<b>19.55</b>	<b>5.18</b>	-		<b>1.71</b>	<b>17.35</b>	<b>2.05</b>	-	-
	<b>CV(%) Error</b>	<b>18.47</b>	<b>26.52</b>	-		<b>24.91</b>	<b>7.00</b>	-		<b>6.20</b>	<b>24.83</b>	<b>13.11</b>	-	-
	<b>CV(%) Phenotypic</b>	<b>36.41</b>	<b>21.11</b>	<b>35.51</b>		<b>31.01</b>	<b>7.22</b>	<b>6.44</b>		<b>4.69</b>	<b>32.32</b>	<b>10.63</b>	<b>28.41</b>	<b>4.04</b>

**Table 106.Characterization of germplasm lines in faba bean at Delhi, and Hisar: Rabi 2011-12 (Plains)**

S.No.	Accession No.	Pod shape		Delhi				Hisar							
		Delhi	Hisar	Hilum colour	Pod colour maturity	Seed coat colour	Seed shape	Early plant vigour	Leaflet shape	Leaflet size	Plant growth habit	Plant habit	Plant strength	Pod color	Pod shattering
1	EC005873	3	2	1	2	4	3	3	2	5	1	3	3	2	1
2	EC117749	3	3	1	2	5/8	3	3	2	5	1	3	3	2	1
3	EC243584	3	3	1	1	8	2	3	2	5	1	3	3	2	1
4	EC243586	1	2	1	2	2	3	3	2	5	1	3	3	2	1
5	EC243626	3	3	1	2	7	3	3	2	5	1	3	3	2	1
6	EC243764	3	2	1	2	7	3	3	2	5	1	3	3	2	1
7	EC243784	3	3	1	2	7	3	3	2	5	1	3	3	2	1
8	EC243860	3	3	1	2	7	3	3	2	5	1	3	3	2	1
9	EC248945	3	3	1	2	7	3	3	2	5	1	3	3	2	1
10	EC276939	3	3	1	2	4	3	3	2	5	1	3	3	2	1
11	EC318948	3	2	1	2	7	3	3	2	5	1	3	3	2	1
12	EC329605	3	3	1	2	2	3	3	2	5	1	3	3	2	1
13	EC329662	3	3	1	2	2	3	3	2	5	1	3	3	2	1
14	EC329667	3	3	1	2	7	3	3	2	5	1	3	3	2	1
15	EC329675	3	3	1	2	7	3	3	2	5	1	3	3	2	1
16	EC329691	3	2	1	2	7	3	3	2	5	1	3	3	2	1
17	EC329696	3	3	1	2	2	3	3	2	5	1	3	3	2	1
18	EC329728	3	3	1	2	5	3	3	2	5	1	3	3	2	1
19	EC329750	3	2	1	2	2	3	3	2	5	1	3	3	2	1
20	EC351999	3	3	1	2	7	3	3	2	5	1	3	3	2	1
21	EC354685	3	3	1	2	7	3	3	2	5	1	3	3	2	1
22	EC354686	3	2	1	2	2	3	3	2	5	1	3	3	2	1
23	EC354989	3	3	1	2	7	3	3	2	5	1	3	3	2	1
24	EC374735	3	3	1	2	5/7	3	3	2	5	1	3	3	2	1
25	HB-1	3	3	1	2	7	3	3	2	5	1	3	3	2	1
26	HB-6	3	3	1	2	7	2	3	2	5	1	3	3	2	1
27	HB-10	3	3	1	2	7	3	3	2	5	1	3	3	2	1
28	HB-12	3	3	1	2	7	3	3	2	5	1	3	3	2	1
29	HB-16	3	3	1	2	7	3	3	2	5	1	3	3	2	1
30	HB-17	3	3	1	2	7	3	3	2	5	1	3	3	2	1
31	HB-21	3	2	1	2	7	3	3	2	5	1	3	3	2	1
32	HB-28	3	2	1	2	2	3	3	2	5	1	3	3	2	1



S.No.	Accession No.	Pod shape		Delhi				Hisar							
		Delhi	Hisar	Hilum colour	Pod colour maturity	Seed coat colour	Seed shape	Early plant vigour	Leaflet shape	Leaflet size	Plant growth habit	Plant habit	Plant strength	Pod color	Pod shattering
33	HB-30	3	2	1	2	8	2	3	2	5	1	3	3	2	1
34	HB-33	3	2	1	2	2	3	3	2	5	1	3	3	2	1
35	HB-48	3	3	1	2	7/2	3	3	2	5	1	3	3	2	1
36	HB-52	3	3	1	2	7	3	3	2	5	1	3	3	2	1
37	HB-56	3	3	1	2	7	3	3	2	5	1	3	3	2	1
38	HB-60	3	3	1	2	7	2	3	2	5	1	3	3	2	1
39	HB-62	3	3	1	2	7	3	3	2	5	1	3	3	2	1
40	HB-70	3	3	1	2	7	3/2	3	2	5	1	3	3	2	1
41	HB-83	3	3	1	2	8	3	3	2	5	1	3	3	2	1
42	IC003293	3	3	1	2	7	3	3	2	5	1	3	3	2	1
43	IC024710	3	3	1	2	7	3	3	2	5	1	3	3	2	1
44	IC243036	3	3	1	2	7	3	3	2	5	1	3	3	2	1
45	IC243634	3	3	1	2	2	3	3	2	5	1	3	3	2	1
46	IC243808	3	3	1	2	4	2	3	2	5	1	3	3	2	1
47	IC329083	3	3	1	2	7	3	3	2	5	1	3	3	2	1
48	IC329675	3	3	1	2	7	3	3	2	5	1	3	3	2	1
49	IC361485	3	3	1	2	2	3	3	2	5	1	3	3	2	1
50	IC361498	3	3	1	2	7	3	3	2	5	1	3	3	2	1
<b>Mean for check variety</b>															
	<b>EC591665 (C)</b>	<b>3</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>PRT-7 (C)</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>PRT-12 (C)</b>	<b>3</b>	<b>-</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
	<b>Vikrant (C)</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
	<b>Minimum</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
	<b>Maximum</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>8</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>
	<b>Mode</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>

**Qualitative Characters :-** **Plant Strength :-** 1-Poor, 2-Good, 3-Very Good; **Early Plant vigour :-** 1-Poor, 2-Good, 3-Very Good, 99-Others; **Plant growth habit :-** 1- Erect, 2-Spreading, 3-Trailing, 99-Others; **Plant habit :-** 1-Determinate, 2-Semi determinate 3-Indeterminate, 99-Others; **Flower color :-** 1- White, 2-Violet, 3-Yellow, 4-Red, 5-Pink , 6-Light brown, 7-Dark brown, 99-Others; **Leaflet Shape :-** 1-Narrow (elongate, 2-Intermediate (sub elliptic), 3-Round (sun orbicular), 99 Others; **Leaflet Size :-** 3 small, 5-Medium 7-Large, 99-others; **Pod shattering :-** 0-Absent, 1-Present; **Pod color :-** 1-White yellow, 2- Brown, 3-Dark brown, 4-Black, 99-Others; **Seed shape :-** 1-Cylindrical, 2-Round, 3-Flattened, 99-Others; **Pod colours :-** 1 - Light yellow, 2 - Dark (brown/black), 99 - Others; **Pod shape :-**1 - Flattened non constricted, 2 - Flattened constricted, 3 - Sub -cylindrical, 99 - Others; **Seed coat colour :-** 1 - White, 2 - Yellow, 3 - Grey, 4 - Violet, 5 - Light green, 6 - Dark green, 7 - Light brown, 8 - Dark brown, 9 - Red, 10 - Black, 99 - Others; **Hilum colour :-** 1 - Black, 99 - Others; **Seed shape :-** 1 - Flattened, 2 - Round 3 - Angular, 99 - Others;

**Table 107. Promising lines in winged bean germplasm for various characters at different locations (Plains) Kharif 2012**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Akola (Accessions 100)</b>				
1.	Days to 50% flowering	80.00-96.00	IC015018, IC038821-P-1, IC038821-P-2, IC095239, IC026940-A-1, IC038821-2, IC017005-2, IC038825, IC038956-1, IC178277, IC178295, IC178304, IC178317, IC095221, IC178286, IC017005, IC017009, IC027885-2, IC038821-P2-1, IC178308 (<85.00 days)	AKWB-1 (84.80 days)
2.	Days to maturity	126.00-163.00	IC178279, IC251022, IC038956, IC038955-B, IC038956-1, IC038821-P2-1, IC027886-1, IC038825, IC038956-3, IC178267, IC178277, IC178286, IC178335 (< 152.00 days)	AKWB-1 (151.80 days)
3.	Green pod weight per pod (g)	4.21-12.26	IC142654-1, IC142661, IC038825-P3-4, IC142653-1, IC038821-P2-1, IC178340, IC038821-P4-3, IC038825, IC178299, IC038821-P4-2, IC038821-P-2, IC038821-2, IC178265, IC038956-1, IC178292, IC017009, IC095221, IC121919-2, IC017002, IC251025, IC178331, IC178269, IC178314, IC251020, IC178311, IC095237-1, IC178334, IC038956-3, IC027886-1, IC178279, IC178304, IC178341, IC027886-A, IC178327, IC026904, IC251022, IC178332, IC038957-B, IC178335, IC178284, IC178337, IC178267, IC178308, IC142667, IC178315, IC178272, IC178289, IC026940-A-2, IC130184-2, IC178336 (> 7.65 g)	AKWB-1 (7.64 g)
4.	Pod width (mm)	12.80-26.80	IC038821-P4-3, IC178269, IC017005-2, IC142653-1, IC038956, IC027886-A, IC178265, IC142662, IC178284, IC121919-2, IC017005, IC038825-P3-4, IC178288, IC178291, IC026940-A-2, IC178308, IC178313, IC026940-A-1, IC027885-2, IC038825, IC178310, IC178304, IC142654-1, IC038821-2, IC178289, IC178292, IC178335, IC026904, IC095221, IC130184-2, IC178279, IC178293, IC142667-1, IC178315, IC038821-P2-1, IC038821-P4-2, IC178275, IC038956-1, IC038957-B, IC178267, IC178282, IC178341, IC251020, IC0178289-1, IC038821-B, IC178296, IC178302, IC178277, IC178311, IC178331, IC017009, IC038956-3, IC017002, IC038954-A, IC178287, IC178295, IC178299, IC178334, IC142666-1, IC038821-P-2, IC178301, IC178317, IC121919-1, IC251021, IC251022, IC038955-B, IC095229, IC142661, IC178327, IC178337, IC178286, IC251025,	AKWB-1 (17.64 mm)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
			IC015018, IC027886-A3, IC095237-1, IC095239, IC142667 (> 18.00 mm)	
5.	Pod length (cm)	10.10-17.70	IC178265, IC038956, IC178279, IC121919-2, IC178315, IC178302, IC038821-P4-3, IC178269, IC251022, IC038821-P4-2, IC038821-P2-1, IC038825-P3-4, IC178282, IC038825, IC178308, IC178340, IC251021, IC017009, IC142662, IC178291, IC038821-P4-1, IC142661, IC178304, IC251025, IC178335, IC178292, IC038821-2, IC095221, IC178284, IC026940-A-2, IC178275, IC038956-1, IC142653-1, IC251020, IC178340, IC017005-2, IC178327, IC027885-2, IC178293, IC178299, IC130184-2, IC178268, IC178288, IC142667-1, IC026940-A-1, IC142667, IC178289, IC178296, IC142654-1, IC178277, IC017005, IC178267, IC178311, IC121919-A, IC178295, IC178272, IC178301, IC178317, IC027886-A3, IC038821-P-2, IC038956-3, IC095239, IC027886-A, IC178310, IC095237-1, IC178334, IC178309, IC178319, IC038821-B, IC026904, IC017006, IC178331, IC038821-P-1, IC178318, IC178287, IC178336 (>13.04 cm)	AKWB-1 (13.02 cm)
6.	No. of pods per plant	6.65-16.00	IC027886-1, IC178314, IC178312, IC015018, IC178311, IC026940-A-2, IC178267, IC251025, IC178265, IC178277, IC178315, IC038821-P-2, IC121921, IC178317, IC178289, IC178318, IC142653-1, IC178296, IC027885-2, IC178332, IC178297, IC038955-B, IC178334, IC178335, IC142666-1, IC178284, IC178319, IC178269, IC178309, IC178304, IC178293, IC178279, IC178313, IC178272, IC178275 (> 11.08)	AKWB-1 (11.07)
7.	No. of seeds per pod	7.60-12.60	IC121919-2, IC121919-1, IC026940-A-2, IC038821-P4-3, IC178304, IC038821-2, IC142667, IC178296, IC121919-A, IC038821-P2-1, IC038954-A, IC178292, IC142653-1, IC178293, IC142666-1, IC026940-A-1, IC027885-2, IC027886-A3, IC038821-B, IC038825-P3-4, IC178318, IC178341, IC026904, IC038821-P4-2, IC095239, IC178269, IC178279, IC178284 (> 10.75 )	AKWB-1 (10.44)
8.	100-seed weight (g)	19.50-33.15	IC178269, IC142666-1, IC178314, IC142654-1, IC142661, IC038825, IC178299, IC142667, IC178282, IC038821-P2-1, IC178272, IC178275, IC026904, IC015018, IC142662, IC142653-1, IC178291, IC178301, IC027885-2, IC027886-1, IC121919-1 (> 28.78 g)	AKWB-1 (28.43 g)

S. No.	Characters	Range	Promising lines	Value of best check
<b>Ranchi (Accessions 100)</b>				
1.	Days to 50% flowering	61.00-96.00	IC015018, IC130184-2, IC178301, IC38821-P1, IC038821-2, IC026940-A-1, IC026940-A-2, IC038956, IC142661, IC178267, IC017009, IC095221, IC027885-2, IC038825, IC142653-1, IC178295, IC178310, IC178318, IC38821-P4-2, IC017002, IC038954-A, IC178277, IC178331, IC178291, IC178304, IC178308, IC178340, IC038955-B, IC116887, IC178282, IC178288, IC178289, IC178287, IC178299, IC178311, IC178314, IC251020, IC142666-1, IC142667, IC178275, IC178317, IC026904 (<83.00 days)	AKWB-1 (83.00 days)
2.	Days to maturity	145.00-165.00	IC038821-2, IC178332, IC026940-A-2, IC038821-B, IC038956-1, IC116887, IC178327, IC178334, IC026904, IC178278, IC251020, IC026940-A-1, IC038955-B, IC038957-B, IC178265, IC178301, IC178313, IC026944-1, IC038956, IC178267, IC178292, IC178308, IC178319, IC178336, IC178340-1, IC027886-A3, IC38821-P4-2, IC026170-1 (= <150.00 days)	AKWB-1 (150.00 days)
3.	Plant height (cm)	146.60-421.60	IC015018, IC178286, IC178284, IC178277, IC178275, IC178337, IC178289-1, IC178296, IC178268, IC142667-1, IC178295, IC178272, IC178299, IC178291, IC095221, IC178287, IC142654-4, IC178340, IC142653-1, IC178293, IC017006, IC178288, IC142666-1, IC178297, IC026170-1, IC178269, IC038821-2, IC116887, IC142662, IC178289, IC178282, IC178292, IC178302, IC142661 (> 338.55 cm)	AKWB-1 (336.60 cm)
4.	No. of primary branches	1.30-4.60	IC178267, IC178269, IC178277, IC178291, IC015018, IC095221, IC027885-2, IC178282, IC178288, IC178292, IC178313, IC178337, IC38821-P4-2, IC130184-2, IC038956, IC142654-4, IC142662, IC142667-1, IC178268, IC178284, IC178286, IC178287, IC178289, IC178289-1, IC178293, IC178295, IC178296, IC178308, IC178314, IC178317, IC178331, IC178332, IC178340, IC017005-2, IC026170-1, IC026940-A-2, IC178301, IC038825, IC121919-A, IC142666-1, IC142667, IC178272, IC178299, IC178304, IC178309, IC178311, IC178315, IC178319, IC178340-1, IC027886-A3, IC38821-P4-3, IC017005, IC017006, IC017009, IC026904, IC095229, IC026940-A-1, IC038957-A, IC116887, IC121921, IC142661, IC178278, IC178297, IC178310, IC178318, IC178327, IC178334, IC251020, IC38821-P4-1, IC095239 (> 2.00)	AKWB-1 (2.00)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
5.	Pod length (cm)	10.00-17.30	IC178292, IC178291, IC178295, IC026940-A-2, IC017002, IC178269, IC178282, IC015018, IC178297, IC027885-2, IC178299, IC017005-2, IC121921, IC178337, IC142653-1, IC142666-1, IC178268, IC178286, IC178287, IC178308, IC178313, IC178314, IC017009, IC178331, IC178340-1, IC017005, IC026904, IC038957-A, IC121919-A, IC038821-2, IC142667, IC178279, IC178289, IC178302, IC178310, IC178340, IC38821-P4-1, IC026944-1, IC116887, IC142662, IC178275, IC178277, IC178289-1, IC178293, IC178296, IC178301, IC178311, IC095221, IC130184-2 (> 13.89 cm)	AKWB-1 (13.60 cm)
6.	No. of pods per plant	3.60-21.30	IC178292, IC095221, IC178282, IC178295, IC026940-A-1, IC015018, IC178269, IC178308, IC026940-A-2, IC178268, IC017005, IC027885-2, IC178277, IC178267, IC178279, IC178289, IC017005-2, IC017009, IC38821-P4-2, IC178291, IC142662, IC178284, IC038821-2, IC178289-1, IC178297, IC178299, IC178334, IC095229, IC038957-B, IC178309, IC178314, IC38821-P1, IC017006, IC178286, IC027886-A3, IC121919-1, IC121921, IC38821-P4-1, IC017002, IC038821-B, IC130184-2, IC142667, IC178287, IC178293, IC178296, IC178337, IC178340, IC038825, IC121919-2, IC121919-A, IC142654-4, IC142667-1, IC178317, IC38821-P4-3, IC026170-1, IC026904 (> 9.28)	AKWB-1 (9.00)
7.	No. of seeds per pod	7.00-14.30	IC026940-A-2, IC178291, IC121921, IC178282, IC178295, IC015018, IC178314, IC121919-A, IC178299, IC017005, IC017005-2, IC017009, IC027885-2, IC038957-A, IC142666-1, IC178292, IC178297, IC178308, IC178313, IC026904, IC116887, IC121919-1, IC130184-2, IC178310, IC178337, IC026944-1, IC038954-A, IC178334, IC178340-1, IC251020, IC095221, IC026940-A-1, IC038956-1, IC038956-3, IC142653-1, IC178331, IC017002, IC095237-1, IC178289, IC178302, IC178311, IC178335, IC178340, IC178341, IC095239, IC142654-4, IC038821-2, IC121919-2, IC178284, IC178286, IC178309, IC178312, IC178336, IC38821-P4-3, IC026170-1, IC178319 (> 10.08)	AKWB-1 (10.00)
8.	100-seed weight (g)	6.40-11.20	IC015018, IC178317, IC017002, IC095229, IC178286, IC178312, IC178279, IC178295, IC178284, IC038954-A, IC178293, IC026170-1, IC095237-1, IC026904, IC178311, IC017006, IC178297, IC178296, IC251025, IC178315, IC027885-2, IC038955-B, IC178269, IC251022,	AKWB-1 (8.09g)

S. No.	Characters	Range	Promising lines	Value of best check
			IC095221, IC026940-A-1, IC017005, IC38821-P4-2, IC038825, IC178268, IC017009, IC178313, IC026944-1, IC178282, IC178327, IC251021, IC026940-A-2, IC178272, IC038957-A, IC038821-B, IC178299, IC027886-A3, IC178310, IC038956-3, IC178275, IC116887, IC178341, IC178331, IC178319, IC178301, IC017005-2, IC178318, IC027886-A, IC038956, IC142666-1, IC178314, IC178334, IC142653-1, IC178277, IC178267, IC178340-1, IC121921, IC027886-1, IC095239, IC178335, IC130184-2, IC178340, IC178332, IC38821-P4-3, IC178278, IC178337 ( >8.08 g)	
9.	Seed yield (q/ha)	7.70-14.60	-	AKWB-1 (14.60 q/ha)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	70.50-94.00	IC015018, IC038821-P-1, IC130184-2, IC026940-A-1, IC038821-2, IC178301, IC038825, IC095221, IC178295, IC017009, IC178267, IC027885-2, IC178277, IC038956, IC142661, IC178304, IC038821-P4-2, IC095239, IC178308, IC178317, IC017002, IC038954-A, IC038955-B, IC178289, IC178340, IC038821-P-2, IC038956-1, IC142653-1, IC178291, IC178331, IC026940-A-2, IC116887, IC178311, IC178314 (< 84.00 days)	AKWB-1 (83.90 days)
2.	Days to maturity	141.50-160.50	IC178279, IC251022, IC038956-1, IC038955-B, IC038956, IC038821-2, IC178327, IC178334, IC026940-A-1, IC038821-B, IC178267 (< 151.00)	AKWB-1 (150.90 days)
3.	Pod length (cm)	12.04-16.34	IC178269, IC178292, IC178291, IC178282, IC026940-A-2, IC178279, IC178295, IC178265, IC178302, IC178308, IC017009, IC017005-2, IC027885-2, IC178340-1, IC178299, IC038821-P4-3, IC142653-1, IC017002, IC038821-P4-1, IC178268, IC038821-2, IC121919-2, IC142662, IC178340, IC038821-P2-1, IC095221, IC178275, IC017005, IC178315, IC178335, IC142667, IC178289, IC038825-P3-4, IC178293, IC038956, IC121919-A, IC251020, IC130184-2, IC178296, IC178297, IC015018, IC178327, IC178277, IC038956-1, IC142661, IC178311, IC178287, IC038821-P4-2, IC178301, IC026904, IC178284, IC178310, IC178337, IC178331, IC178267, IC178288, IC026940-A-1, IC142666-1, IC178314, IC178304, IC121921, IC038825, IC178313, IC251021, IC178272, IC095239,	AKWB-1 (13.31 cm)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
			IC095237-1, IC142667-1, IC178286, IC178289-1, IC178309, IC251022, IC142654-1, IC121919-1 (>3.30 cm)	
4.	No. of pods per plant	6.23-15.74	IC178292, IC015018, IC026940-A-2, IC095221, IC178269, IC178282, IC178314, IC178295, IC178267, IC178277, IC178308, IC027885-2, IC178289, IC026940-A-1, IC178279, IC178311, IC178297, IC178284, IC178334, IC178268, IC121921, IC038821-P4-2, IC178309, IC178296, IC178317, IC142662, IC038821-P-2, IC178312, IC038957-B, IC178293, IC017005, IC027886-1, IC178332, IC178289-1, IC017009, IC178286, IC178318, IC038821-2, IC038821-P-1, IC178340, IC251025, IC027886-A3, IC178287 (>10.10)	AKWB-1 (10.04)
5.	No. of seeds per pod	8.35-13.35	IC026940-A-2, IC121919-1, IC121921, IC121919-A, IC178292, IC178295, IC015018, IC027885-2, IC178291, IC142666-1, IC121919-2, IC026904, IC017009, IC038954-A, IC178297, IC038821-P4-3, IC178299, IC178308, IC017005-2, IC026940-A-1, IC142653-1, IC178282, IC038957-A, IC178313, IC038821-2, IC178340-1, IC251020, IC178314, IC178337, IC178341, IC095221, IC178334, IC026944-1, IC095239, IC017005, IC017002, IC178310, IC178340, IC178284, IC026170-1, IC142667, IC038821-P4-2, IC038956-1, IC178331, IC178302, IC178304, IC178335, IC038821-P2-1, IC038821-P4-1, IC095237-1 (>10.28)	AKWB-1 (10.22)
6.	100-seed weight (g)	14.08-21.38	IC178269, IC142666-1, IC015018, IC178314, IC038825, IC026904, IC178299, IC178282, IC142654-1, IC142661, IC178272, IC027885-2, IC178275, IC142667, IC017006, IC038821-P2-1, IC017002, IC178301, IC095221, IC142662, IC142653-1, IC178313, IC027886-1, IC178291, IC026940-A-2, IC178296 (>18.40 g)	AKWB-1 (18.26)

**Table 108. Characterization & Multilication evaluation of germplasm lines in winged bean at Akola and Ranchi :  
Kharif 2012 (Plain)**

S.No.	Accession No.	Akola												Days to 50% flowering			Days to maturity			Pod length (cm)			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Presence of tubers	Tuber size	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
1	IC015018	5	5	2	1	1	2	2	0	2	3	1	1	5	80.00	61.00	<b>70.50</b>	154.00	151.00	<b>152.50</b>	12.08	16.30	<b>14.19</b>
2	IC017002	5	5	2	1	1	2	2	0	2	3	1	1	3	88.00	77.00	<b>82.50</b>	155.00	153.00	<b>154.00</b>	12.98	16.60	<b>14.79</b>
3	IC017005	7	3	2	1	1	2	2	0	2	3	1	1	7	84.00	85.00	<b>84.50</b>	153.00	155.00	<b>154.00</b>	14.26	14.60	<b>14.43</b>
4	IC017005-2	5	5	2	1	1	2	2	0	2	3	1	1	3	82.00	87.00	<b>84.50</b>	157.00	157.00	<b>157.00</b>	14.78	15.60	<b>15.19</b>
5	IC017006	7	7	2	1	1	2	2	0	2	3	1	1	5	92.00	91.00	<b>91.50</b>	156.00	159.00	<b>157.50</b>	13.40	12.30	<b>12.85</b>
6	IC017009	5	5	2	1	1	2	2	0	2	3	1	1	5	84.00	75.00	<b>79.50</b>	154.00	152.00	<b>153.00</b>	15.48	15.00	<b>15.24</b>
7	IC026170-1	3	5	2	1	1	2	2	0	2	3	1	1	5	92.00	92.00	<b>92.00</b>	158.00	150.00	<b>154.00</b>	12.62	13.00	<b>12.81</b>
8	IC026904	5	5	2	1	1	3	2	0	2	3	1	1	5	87.00	82.00	<b>84.50</b>	156.00	147.00	<b>151.50</b>	13.44	14.60	<b>14.02</b>
9	IC026940-A-1	5	3	2	1	1	2	2	0	2	3	1	1	5	81.00	72.00	<b>76.50</b>	153.00	148.00	<b>150.50</b>	14.50	13.30	<b>13.90</b>
10	IC026940-A-2	5	3	2	1	1	2	2	0	2	3	1	1	5	94.00	73.00	<b>83.50</b>	161.00	146.00	<b>153.50</b>	14.98	16.80	<b>15.89</b>
11	IC026944-1	7	5	2	1	1	3	2	0	2	3	1	1	5	96.00	92.00	<b>94.00</b>	163.00	149.00	<b>156.00</b>	10.12	14.30	<b>12.21</b>
12	IC027885-2	3	5	2	1	1	3	2	0	2	3	1	1	5	84.00	76.00	<b>80.00</b>	153.00	158.00	<b>155.50</b>	14.70	15.60	<b>15.15</b>
13	IC027886-1	1	5	2	1	1	2	2	0	2	3	1	1	7	85.00	93.00	<b>89.00</b>	151.00	161.00	<b>156.00</b>	12.96	12.60	<b>12.78</b>
14	IC027886-A	3	7	2	1	1	2	2	0	2	3	1	1	5	86.00	93.00	<b>89.50</b>	156.00	162.00	<b>159.00</b>	13.76	11.30	<b>12.53</b>
15	IC027886-A3	5	7	2	1	1	2	2	0	2	3	1	1	3	89.00	86.00	<b>87.50</b>	157.00	150.00	<b>153.50</b>	14.00	11.00	<b>12.50</b>
16	IC038821-2	5	7	2	1	1	2	2	0	2	3	1	1	3	81.00	72.00	<b>76.50</b>	153.00	145.00	<b>149.00</b>	15.14	14.30	<b>14.72</b>
17	IC038821-B	7	5	2	1	1	2	2	0	2	3	1	1	5	86.00	85.00	<b>85.50</b>	154.00	147.00	<b>150.50</b>	13.50	11.00	<b>12.25</b>
18	IC038821-P-1	5	5	2	1	1	2	2	0	2	3	1	1	5	80.00	68.00	<b>74.00</b>	155.00	151.00	<b>153.00</b>	13.20	10.90	<b>12.05</b>
19	IC038821-P-2	5	5	2	1	1	2	2	0	2	3	1	1	5	80.00	86.00	<b>83.00</b>	153.00	153.00	<b>153.00</b>	13.92	11.30	<b>12.61</b>
20	IC038821-P2-1	3	5	2	1	1	2	2	0	2	3	1	1	5	84.00	84.00	<b>84.00</b>	150.00	156.00	<b>153.00</b>	16.12	13.00	<b>14.56</b>
21	IC038821-P4-1	3	5	2	1	1	2	2	0	2	3	1	1	3	87.00	84.00	<b>85.50</b>	156.00	154.00	<b>155.00</b>	15.28	14.30	<b>14.79</b>
22	IC038821-P4-2	5	5	2	1	1	2	2	0	2	3	1	1	3	86.00	77.00	<b>81.50</b>	157.00	150.00	<b>153.50</b>	16.14	12.00	<b>14.07</b>
23	IC038821-P4-3	3	7	2	1	1	2	2	0	2	3	1	1	5	87.00	94.00	<b>90.50</b>	154.00	163.00	<b>158.50</b>	16.52	13.60	<b>15.06</b>
24	IC038825	5	5	2	1	1	2	2	0	2	3	1	1	5	82.00	76.00	<b>79.00</b>	151.00	160.00	<b>155.50</b>	15.92	11.60	<b>13.76</b>
25	IC038825-P3-4	5	5	2	1	1	2	2	0	2	3	1	1	3	86.00	83.00	<b>84.50</b>	154.00	158.00	<b>156.00</b>	16.08	12.60	<b>14.34</b>



S.No.	Accession No.	Number of seeds per pod			No.of pods per plant			100 seed weight (g)			Akola		Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Green pod weight/pod (g)	Pod width (mm)	No. of branches	Plant height (cm)	Seed yield(q/ha)
1	IC015018	10.20	13.00	<b>11.60</b>	15.00	16.20	<b>15.60</b>	29.88	11.20	<b>20.54</b>	7.54	18.20	4.00	421.60	12.40
2	IC017002	10.20	11.00	<b>10.60</b>	6.65	10.30	<b>8.48</b>	27.10	10.80	<b>18.95</b>	9.33	19.20	2.00	261.30	8.60
3	IC017005	9.00	12.30	<b>10.65</b>	6.70	14.60	<b>10.65</b>	23.15	9.28	<b>16.22</b>	6.92	22.80	2.60	326.30	9.40
4	IC017005-2	10.00	12.30	<b>11.15</b>	6.72	13.00	<b>9.86</b>	22.60	8.60	<b>15.60</b>	7.45	26.00	3.00	306.40	7.80
5	IC017006	9.60	10.00	<b>9.80</b>	7.08	11.00	<b>9.04</b>	27.90	10.11	<b>19.01</b>	6.37	15.00	2.60	355.00	10.20
6	IC017009	10.40	12.30	<b>11.35</b>	8.55	12.60	<b>10.58</b>	23.15	9.20	<b>16.18</b>	9.55	19.40	2.60	282.60	8.90
7	IC026170-1	10.60	10.30	<b>10.45</b>	7.80	9.30	<b>8.55</b>	24.10	10.28	<b>17.19</b>	6.01	17.40	3.00	348.60	7.70
8	IC026904	10.80	12.00	<b>11.40</b>	7.90	9.30	<b>8.60</b>	30.15	10.20	<b>20.18</b>	8.38	20.80	2.60	291.30	12.50
9	IC026940-A-1	11.00	11.30	<b>11.15</b>	9.25	16.30	<b>12.78</b>	24.90	9.36	<b>17.13</b>	7.27	21.60	2.60	256.50	9.80
10	IC026940-A-2	12.40	14.30	<b>13.35</b>	14.10	15.60	<b>14.85</b>	28.00	8.88	<b>18.44</b>	7.75	22.00	3.00	321.00	7.80
11	IC026944-1	9.80	11.60	<b>10.70</b>	7.61	5.60	<b>6.61</b>	26.70	8.95	<b>17.83</b>	6.58	12.80	1.60	216.60	13.60
12	IC027885-2	11.00	12.20	<b>11.60</b>	12.40	13.60	<b>13.00</b>	29.00	9.95	<b>19.48</b>	7.46	21.60	3.30	333.30	8.50
13	IC027886-1	10.40	9.60	<b>10.00</b>	16.00	5.30	<b>10.65</b>	28.90	8.26	<b>18.58</b>	8.49	17.20	1.60	195.00	13.50
14	IC027886-A	9.40	7.30	<b>8.35</b>	6.86	5.60	<b>6.23</b>	26.85	8.46	<b>17.66</b>	8.40	23.60	1.60	233.00	11.20
15	IC027886-A3	11.00	8.60	<b>9.80</b>	9.70	10.60	<b>10.15</b>	25.32	8.73	<b>17.03</b>	5.03	18.20	2.60	258.30	10.50
16	IC038821-2	11.60	10.30	<b>10.95</b>	9.40	11.30	<b>10.35</b>	24.90	6.40	<b>15.65</b>	9.67	21.20	2.00	346.30	11.70
17	IC038821-B	11.00	8.30	<b>9.65</b>	8.23	10.00	<b>9.12</b>	23.90	8.78	<b>16.34</b>	6.74	19.80	2.00	288.30	9.40
18	IC038821-P-1	9.40	8.30	<b>8.85</b>	9.65	11.00	<b>10.33</b>	24.55	7.30	<b>15.93</b>	5.95	17.40	2.00	200.00	8.40
19	IC038821-P-2	10.00	8.60	<b>9.30</b>	12.75	9.00	<b>10.88</b>	25.12	7.25	<b>16.19</b>	9.68	19.00	2.00	335.00	7.90
20	IC038821-P2-1	11.40	9.30	<b>10.35</b>	9.77	8.30	<b>9.04</b>	30.95	7.00	<b>18.98</b>	10.76	20.20	1.60	301.00	11.00
21	IC038821-P4-1	10.60	10.00	<b>10.30</b>	8.19	10.30	<b>9.25</b>	23.10	6.95	<b>15.03</b>	7.58	16.00	2.30	315.00	9.10
22	IC038821-P4-2	10.80	10.00	<b>10.40</b>	10.63	12.30	<b>11.47</b>	23.65	9.23	<b>16.44</b>	10.04	20.20	3.30	260.00	13.50
23	IC038821-P4-3	12.20	10.30	<b>11.25</b>	9.00	9.30	<b>9.15</b>	25.87	8.15	<b>17.01</b>	10.51	26.80	2.60	273.30	12.40
24	IC038825	9.80	9.00	<b>9.40</b>	10.40	9.30	<b>9.85</b>	31.22	9.22	<b>20.22</b>	10.35	21.60	2.60	286.60	10.30
25	IC038825-P3-4	11.00	7.60	<b>9.30</b>	9.52	6.60	<b>8.06</b>	22.00	7.31	<b>14.66</b>	12.15	22.80	1.30	175.00	10.40

S.No.	Accession No.	Akola												Days to 50% flowering			Days to maturity			Pod length (cm)			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Presence of tubers	Tuber size	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
26	IC038954-A	5	5	2	1	1	2	2	0	2	3	1	1	5	87.00	78.00	<b>82.50</b>	152.00	153.00	<b>152.50</b>	12.64	13.30	<b>12.97</b>
27	IC038955-B	5	5	2	1	1	2	2	0	2	3	1	1	3	85.00	80.00	<b>82.50</b>	148.00	149.00	<b>148.50</b>	12.90	11.50	<b>12.20</b>
28	IC038956	7	5	2	1	1	2	2	0	2	3	1	1	3	87.00	74.00	<b>80.50</b>	147.00	150.00	<b>148.50</b>	17.50	11.10	<b>14.30</b>
29	IC038956-1	5	5	2	1	1	2	2	0	2	3	1	1	5	82.00	84.00	<b>83.00</b>	149.00	147.00	<b>148.00</b>	14.96	13.30	<b>14.13</b>
30	IC038956-3	5	5	2	1	1	2	2	0	2	3	1	1	5	92.00	94.00	<b>93.00</b>	151.00	151.00	<b>151.00</b>	13.88	12.50	<b>13.19</b>
31	IC038957-A	3	3	2	1	1	2	2	0	2	3	1	1	3	88.00	89.00	<b>88.50</b>	154.00	154.00	<b>154.00</b>	10.10	14.50	<b>12.30</b>
32	IC038957-B	5	5	2	1	1	2	2	0	2	3	1	1	3	87.00	86.00	<b>86.50</b>	155.00	149.00	<b>152.00</b>	12.80	11.30	<b>12.05</b>
33	IC095221	7	5	2	1	1	2	2	0	2	3	1	1	5	83.00	75.00	<b>79.00</b>	153.00	155.00	<b>154.00</b>	15.12	14.00	<b>14.56</b>
34	IC095229	3	7	2	1	1	2	2	0	2	3	1	1	5	85.00	91.00	<b>88.00</b>	152.00	157.00	<b>154.50</b>	11.64	12.60	<b>12.12</b>
35	IC095237-1	5	5	2	1	1	2	2	0	2	3	1	1	3	88.00	92.00	<b>90.00</b>	156.00	158.00	<b>157.00</b>	13.66	13.60	<b>13.63</b>
36	IC095239	3	5	2	1	1	2	2	0	2	3	1	1	5	80.00	83.00	<b>81.50</b>	155.00	157.00	<b>156.00</b>	13.78	13.60	<b>13.69</b>
37	IC116887	5	5	2	1	1	2	2	0	2	3	1	1	7	87.00	80.00	<b>83.50</b>	155.00	147.00	<b>151.00</b>	12.36	14.00	<b>13.18</b>
38	IC121919-1	3	5	2	1	1	2	2	0	2	3	1	1	7	87.00	91.00	<b>89.00</b>	152.00	160.00	<b>156.00</b>	13.04	13.60	<b>13.32</b>
39	IC121919-2	5	3	2	1	1	3	2	0	2	3	1	1	7	86.00	90.00	<b>88.00</b>	153.00	161.00	<b>157.00</b>	16.84	12.60	<b>14.72</b>
40	IC121919-A	3	5	2	1	1	2	2	0	2	3	1	1	7	89.00	88.00	<b>88.50</b>	153.00	155.00	<b>154.00</b>	14.20	14.40	<b>14.30</b>
41	IC121921	1	3	2	1	1	2	2	0	2	3	1	1	5	89.00	87.00	<b>88.00</b>	157.00	157.00	<b>157.00</b>	12.22	15.30	<b>13.76</b>
42	IC130184-2	5	5	2	1	1	2	2	0	2	3	1	1	5	85.00	65.00	<b>75.00</b>	152.00	158.00	<b>155.00</b>	14.58	13.90	<b>14.24</b>
43	IC142653-1	5	5	2	1	1	3	2	0	2	3	1	1	7	90.00	76.00	<b>83.00</b>	154.00	153.00	<b>153.50</b>	14.94	15.00	<b>14.97</b>
44	IC142654-1	7	7	2	1	1	2	2	0	2	3	1	1	5	87.00	87.00	<b>87.00</b>	156.00	155.00	<b>155.50</b>	14.36	12.50	<b>13.43</b>
45	IC142661	5	5	2	1	1	3	2	0	2	3	1	1	5	87.00	74.00	<b>80.50</b>	156.00	157.00	<b>156.50</b>	15.26	13.00	<b>14.13</b>
46	IC142662	5	5	2	1	1	3	2	0	2	3	1	1	3	87.00	86.00	<b>86.50</b>	158.00	151.00	<b>154.50</b>	15.40	14.00	<b>14.70</b>
47	IC142666-1	5	5	2	1	1	2	2	0	2	3	1	1	5	89.00	82.00	<b>85.50</b>	158.00	152.00	<b>155.00</b>	12.70	15.00	<b>13.85</b>
48	IC142667	7	5	2	1	1	3	2	0	2	3	1	1	3	87.00	82.00	<b>84.50</b>	155.00	153.00	<b>154.00</b>	14.48	14.30	<b>14.39</b>
49	IC142667-1	5	5	2	1	1	2	2	0	2	3	1	1	5	86.00	84.00	<b>85.00</b>	154.00	152.00	<b>153.00</b>	14.50	12.60	<b>13.55</b>
50	IC178265	5	3	2	1	1	3	2	0	2	3	1	1	5	90.00	86.00	<b>88.00</b>	155.00	149.00	<b>152.00</b>	17.70	13.30	<b>15.50</b>
51	IC178267	7	5	2	1	1	3	2	0	2	3	1	1	3	85.00	74.00	<b>79.50</b>	151.00	150.00	<b>150.50</b>	14.24	13.60	<b>13.92</b>
52	IC178268	5	5	2	1	1	2	2	0	2	3	1	1	5	88.00	90.00	<b>89.00</b>	154.00	160.00	<b>157.00</b>	14.54	15.00	<b>14.77</b>
53	IC178269	5	5	2	1	1	3	2	0	2	3	1	1	3	87.00	92.00	<b>89.50</b>	155.00	152.00	<b>153.50</b>	16.38	16.30	<b>16.34</b>
54	IC178272	7	5	2	1	1	2	2	0	2	3	1	1	3	86.00	83.00	<b>84.50</b>	153.00	156.00	<b>154.50</b>	14.08	13.30	<b>13.69</b>

S.No.	Accession No.	Number of seeds per pod			No.of pods per plant			100 seed weight (g)			Akola		Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Green pod weight/pod (g)	Pod width (mm)	No. of branches	Plant height (cm)	Seed yield(q/ha)
26	IC038954-A	11.40	11.30	<b>11.35</b>	8.34	8.30	<b>8.32</b>	23.85	10.38	<b>17.12</b>	6.83	19.20	2.00	259.60	8.80
27	IC038955-B	9.60	8.30	<b>8.95</b>	12.10	7.60	<b>9.85</b>	21.15	9.93	<b>15.54</b>	7.14	18.60	2.00	280.00	9.20
28	IC038956	9.00	9.00	<b>9.00</b>	9.88	6.00	<b>7.94</b>	25.85	8.40	<b>17.13</b>	4.70	24.00	3.00	268.00	7.80
29	IC038956-1	9.80	11.00	<b>10.40</b>	9.40	8.60	<b>9.00</b>	23.60	7.70	<b>15.65</b>	9.58	20.00	1.60	185.00	12.40
30	IC038956-3	7.60	11.00	<b>9.30</b>	7.00	8.00	<b>7.50</b>	19.50	8.65	<b>14.08</b>	8.63	19.40	2.00	200.00	11.60
31	IC038957-A	10.00	12.00	<b>11.00</b>	8.70	9.00	<b>8.85</b>	21.10	8.81	<b>14.96</b>	4.50	14.40	2.30	231.30	8.40
32	IC038957-B	9.80	9.30	<b>9.55</b>	10.35	11.00	<b>10.68</b>	28.15	7.28	<b>17.72</b>	8.23	20.00	2.00	206.30	9.40
33	IC095221	10.20	11.30	<b>10.75</b>	10.69	18.60	<b>14.65</b>	28.15	9.42	<b>18.79</b>	9.55	20.80	3.60	368.30	8.50
34	IC095229	9.60	9.30	<b>9.45</b>	8.70	11.30	<b>10.00</b>	23.55	10.68	<b>17.12</b>	6.91	18.60	2.60	240.00	9.60
35	IC095237-1	9.60	11.00	<b>10.30</b>	9.42	6.60	<b>8.01</b>	24.15	10.22	<b>17.19</b>	8.94	18.20	1.60	206.60	11.40
36	IC095239	10.80	10.60	<b>10.70</b>	9.80	8.60	<b>9.20</b>	24.50	8.24	<b>16.37</b>	6.89	18.20	2.30	266.60	9.50
37	IC116887	8.40	11.60	<b>10.00</b>	7.90	9.00	<b>8.45</b>	26.22	8.63	<b>17.43</b>	7.13	16.80	2.30	345.30	10.50
38	IC121919-1	12.40	11.60	<b>12.00</b>	8.65	10.50	<b>9.58</b>	28.80	7.44	<b>18.12</b>	6.90	18.80	2.00	211.60	13.70
39	IC121919-2	12.60	10.30	<b>11.45</b>	8.46	9.30	<b>8.88</b>	27.95	8.05	<b>18.00</b>	9.42	22.80	2.00	243.30	10.80
40	IC121919-A	11.40	12.30	<b>11.85</b>	8.22	9.30	<b>8.76</b>	28.10	7.75	<b>17.93</b>	6.58	18.00	2.60	210.00	12.70
41	IC121921	10.60	13.30	<b>11.95</b>	12.71	10.30	<b>11.51</b>	26.85	8.28	<b>17.57</b>	5.22	12.80	2.30	300.00	8.30
42	IC130184-2	8.60	11.60	<b>10.10</b>	10.00	10.00	<b>10.00</b>	26.35	8.18	<b>17.27</b>	7.70	20.60	3.20	310.00	12.60
43	IC142653-1	11.20	11.00	<b>11.10</b>	12.50	7.00	<b>9.75</b>	29.10	8.34	<b>18.72</b>	11.78	24.00	2.00	355.00	13.40
44	IC142654-1	9.60	10.50	<b>10.05</b>	10.21	9.30	<b>9.76</b>	31.94	7.88	<b>19.91</b>	12.26	21.20	3.00	360.00	10.50
45	IC142661	9.60	9.00	<b>9.30</b>	10.21	8.60	<b>9.41</b>	31.94	7.73	<b>19.84</b>	12.26	18.60	2.30	338.60	12.70
46	IC142662	9.40	10.00	<b>9.70</b>	10.25	11.60	<b>10.93</b>	29.52	7.95	<b>18.74</b>	6.52	23.00	3.00	345.00	13.70
47	IC142666-1	11.00	12.00	<b>11.50</b>	12.00	7.30	<b>9.65</b>	32.93	8.40	<b>20.67</b>	4.21	19.00	2.60	349.60	10.80
48	IC142667	11.60	9.30	<b>10.45</b>	9.40	10.00	<b>9.70</b>	31.15	7.64	<b>19.40</b>	7.93	18.20	2.60	327.30	12.40
49	IC142667-1	8.80	8.30	<b>8.55</b>	9.33	9.30	<b>9.32</b>	26.84	7.69	<b>17.27</b>	6.19	20.40	3.00	385.00	9.40
50	IC178265	10.00	9.00	<b>9.50</b>	13.00	7.00	<b>10.00</b>	27.12	7.27	<b>17.20</b>	9.61	23.20	1.60	241.60	11.60
51	IC178267	10.00	8.60	<b>9.30</b>	13.30	13.30	<b>13.30</b>	27.85	8.31	<b>18.08</b>	8.05	20.00	4.60	333.30	13.40
52	IC178268	9.60	9.30	<b>9.45</b>	8.35	15.00	<b>11.68</b>	26.38	9.20	<b>17.79</b>	6.08	17.40	3.00	386.00	11.70
53	IC178269	10.80	9.60	<b>10.20</b>	11.70	15.60	<b>13.65</b>	33.15	9.60	<b>21.38</b>	9.22	26.40	4.00	347.00	9.70
54	IC178272	10.20	8.00	<b>9.10</b>	11.22	6.60	<b>8.91</b>	30.65	8.83	<b>19.74</b>	7.87	18.00	2.60	373.60	8.40

S.No.	Accession No.	Akola												Days to 50% flowering			Days to maturity			Pod length (cm)			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Presence of tubers	Tuber size	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
55	IC178275	5	7	2	1	1	2	2	0	2	3	1	1	3	92.00	82.00	<b>87.00</b>	157.00	156.00	<b>156.50</b>	14.98	14.00	<b>14.49</b>
56	IC178277	3	5	2	1	1	3	2	0	2	3	1	1	5	82.00	78.00	<b>80.00</b>	151.00	157.00	<b>154.00</b>	14.30	14.00	<b>14.15</b>
57	IC178278	3	5	2	1	1	2	2	0	2	3	1	1	5	92.00	94.00	<b>93.00</b>	156.00	148.00	<b>152.00</b>	12.70	12.30	<b>12.50</b>
58	IC178279	5	5	2	1	1	2	2	0	2	3	1	1	3	92.00	83.00	<b>87.50</b>	126.00	157.00	<b>141.50</b>	17.48	14.30	<b>15.89</b>
59	IC178282	7	5	2	1	1	2	2	0	2	3	1	1	3	90.00	80.00	<b>85.00</b>	158.00	158.00	<b>158.00</b>	15.96	16.30	<b>16.13</b>
60	IC178284	7	5	2	1	1	3	2	0	2	3	1	1	3	93.00	83.00	<b>88.00</b>	158.00	163.00	<b>160.50</b>	15.02	13.00	<b>14.01</b>
61	IC178286	5	5	2	1	1	2	2	0	2	3	1	1	5	83.00	95.00	<b>89.00</b>	151.00	162.00	<b>156.50</b>	12.10	15.00	<b>13.55</b>
62	IC178287	7	5	2	1	1	1	2	0	2	3	1	1	5	87.00	81.00	<b>84.00</b>	158.00	151.00	<b>154.50</b>	13.18	15.00	<b>14.09</b>
63	IC178288	5	5	2	1	1	3	2	0	2	3	1	1	5	88.00	80.00	<b>84.00</b>	156.00	153.00	<b>154.50</b>	14.54	13.30	<b>13.92</b>
64	IC178289	5	5	2	1	1	2	2	0	2	3	1	1	3	85.00	80.00	<b>82.50</b>	153.00	155.00	<b>154.00</b>	14.48	14.30	<b>14.39</b>
65	IC178289-1	5	5	2	1	1	1	2	0	2	3	1	1	5	87.00	86.00	<b>86.50</b>	155.00	153.00	<b>154.00</b>	13.04	14.00	<b>13.52</b>
66	IC178291	7	5	2	1	1	2	2	0	2	3	1	1	3	87.00	79.00	<b>83.00</b>	154.00	151.00	<b>152.50</b>	15.38	17.00	<b>16.19</b>
67	IC178292	7	5	2	1	1	2	2	0	2	3	1	1	5	86.00	87.00	<b>86.50</b>	153.00	150.00	<b>151.50</b>	15.16	17.30	<b>16.23</b>
68	IC178293	5	3	2	1	1	2	2	0	2	3	1	1	5	87.00	85.00	<b>86.00</b>	157.00	162.00	<b>159.50</b>	14.66	14.00	<b>14.33</b>
69	IC178295	5	5	2	1	1	2	2	0	2	3	1	1	5	82.00	76.00	<b>79.00</b>	153.00	153.00	<b>153.00</b>	14.12	17.00	<b>15.56</b>
70	IC178296	3	3	2	1	1	2	2	0	2	3	1	1	5	86.00	94.00	<b>90.00</b>	153.00	156.00	<b>154.50</b>	14.48	14.00	<b>14.24</b>
71	IC178297	3	3	2	1	1	2	2	0	2	3	1	1	3	87.00	91.00	<b>89.00</b>	156.00	163.00	<b>159.50</b>	12.84	15.60	<b>14.22</b>
72	IC178299	5	5	2	1	1	2	2	0	2	3	1	1	3	92.00	81.00	<b>86.50</b>	158.00	157.00	<b>157.50</b>	14.60	15.60	<b>15.10</b>
73	IC178301	7	5	2	1	1	2	2	0	2	3	1	1	3	88.00	67.00	<b>77.50</b>	154.00	149.00	<b>151.50</b>	14.08	14.00	<b>14.04</b>
74	IC178302	7	7	2	1	1	2	2	0	2	3	1	1	3	90.00	84.00	<b>87.00</b>	157.00	151.00	<b>154.00</b>	16.64	14.30	<b>15.47</b>
75	IC178304	5	5	2	1	1	2	2	0	2	3	1	1	3	82.00	79.00	<b>80.50</b>	153.00	153.00	<b>153.00</b>	15.24	12.30	<b>13.77</b>
76	IC178308	5	5	2	1	1	3	2	0	2	3	1	1	3	84.00	79.00	<b>81.50</b>	154.00	150.00	<b>152.00</b>	15.82	15.00	<b>15.41</b>
77	IC178309	5	3	2	1	1	3	2	0	2	3	1	1	3	93.00	95.00	<b>94.00</b>	156.00	152.00	<b>154.00</b>	13.62	13.30	<b>13.46</b>
78	IC178310	5	5	2	1	1	3	2	0	2	3	1	1	3	92.00	77.00	<b>84.50</b>	157.00	153.00	<b>155.00</b>	13.70	14.30	<b>14.00</b>
79	IC178311	5	5	2	1	1	2	2	0	2	3	1	1	3	86.00	81.00	<b>83.50</b>	153.00	155.00	<b>154.00</b>	14.22	14.00	<b>14.11</b>
80	IC178312	1	3	2	1	1	2	2	0	2	3	1	1	3	85.00	87.00	<b>86.00</b>	153.00	157.00	<b>155.00</b>	11.08	13.00	<b>12.04</b>
81	IC178313	5	5	2	1	1	3	2	0	2	3	1	1	3	89.00	93.00	<b>91.00</b>	155.00	149.00	<b>152.00</b>	12.52	15.00	<b>13.76</b>
82	IC178314	5	5	2	1	1	2	2	0	2	3	1	1	5	86.00	81.00	<b>83.50</b>	156.00	153.00	<b>154.50</b>	12.68	15.00	<b>13.84</b>
83	IC178315	5	3	2	1	1	2	2	0	2	3	1	1	5	85.00	95.00	<b>90.00</b>	154.00	155.00	<b>154.50</b>	16.80	12.00	<b>14.40</b>

S.No.	Accession No.	Number of seeds per pod			No.of pods per plant			100 seed weight (g)			Akola		Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Green pod weight/pod (g)	Pod width (mm)	No. of branches	Plant height (cm)	Seed yield(q/ha)
55	IC178275	9.40	8.30	<b>8.85</b>	11.10	7.30	<b>9.20</b>	30.18	8.65	<b>19.42</b>	6.78	20.20	2.00	393.60	10.20
56	IC178277	10.40	8.60	<b>9.50</b>	12.80	13.60	<b>13.20</b>	22.84	8.32	<b>15.58</b>	5.59	19.60	4.00	400.00	8.30
57	IC178278	10.60	7.00	<b>8.80</b>	10.74	8.00	<b>9.37</b>	28.15	8.12	<b>18.14</b>	6.12	15.00	2.30	280.60	11.40
58	IC178279	10.80	9.30	<b>10.05</b>	11.25	13.30	<b>12.28</b>	24.92	10.48	<b>17.70</b>	8.47	20.60	1.30	296.60	9.70
59	IC178282	9.20	13.00	<b>11.10</b>	10.59	16.30	<b>13.45</b>	31.00	8.90	<b>19.95</b>	7.33	20.00	3.30	342.60	13.40
60	IC178284	10.80	10.30	<b>10.55</b>	11.88	11.60	<b>11.74</b>	25.30	10.40	<b>17.85</b>	8.22	23.00	3.00	401.00	14.00
61	IC178286	9.60	10.30	<b>9.95</b>	10.40	10.60	<b>10.50</b>	25.55	10.60	<b>18.08</b>	6.80	18.40	3.00	401.60	9.60
62	IC178287	10.20	9.00	<b>9.60</b>	10.26	10.00	<b>10.13</b>	27.98	7.86	<b>17.92</b>	6.37	19.20	3.00	367.00	8.30
63	IC178288	10.00	9.30	<b>9.65</b>	9.95	8.60	<b>9.28</b>	28.15	7.34	<b>17.75</b>	5.99	22.60	3.30	353.30	10.40
64	IC178289	9.00	10.60	<b>9.80</b>	12.66	13.30	<b>12.98</b>	23.40	6.70	<b>15.05</b>	7.87	21.00	3.00	344.60	8.80
65	IC178289-1	10.40	9.00	<b>9.70</b>	9.91	11.30	<b>10.61</b>	23.90	7.70	<b>15.80</b>	7.35	19.80	3.00	389.00	9.20
66	IC178291	9.60	13.60	<b>11.60</b>	7.05	12.00	<b>9.53</b>	29.10	7.85	<b>18.48</b>	7.64	22.20	4.00	370.00	7.80
67	IC178292	11.40	12.00	<b>11.70</b>	10.17	21.30	<b>15.74</b>	25.22	8.00	<b>16.61</b>	9.57	21.00	3.30	340.00	12.40
68	IC178293	11.20	8.30	<b>9.75</b>	11.35	10.00	<b>10.68</b>	23.85	10.38	<b>17.12</b>	7.64	20.60	3.00	355.00	11.60
69	IC178295	10.40	13.00	<b>11.70</b>	10.39	16.30	<b>13.35</b>	22.30	10.45	<b>16.38</b>	6.78	19.20	3.00	378.30	8.40
70	IC178296	11.60	8.30	<b>9.95</b>	12.46	10.00	<b>11.23</b>	26.80	10.06	<b>18.43</b>	6.93	19.80	3.00	387.50	9.40
71	IC178297	10.60	12.00	<b>11.30</b>	12.26	11.30	<b>11.78</b>	25.50	10.10	<b>17.80</b>	6.07	17.40	2.30	349.00	8.30
72	IC178299	10.20	12.30	<b>11.25</b>	8.65	11.30	<b>9.98</b>	31.20	8.78	<b>19.99</b>	10.10	19.20	2.60	372.00	12.60
73	IC178301	10.20	10.00	<b>10.10</b>	9.55	6.60	<b>8.08</b>	29.10	8.60	<b>18.85</b>	4.61	19.00	2.60	266.60	13.40
74	IC178302	10.20	10.60	<b>10.40</b>	10.94	8.30	<b>9.62</b>	22.48	7.86	<b>15.17</b>	7.33	19.80	2.00	339.30	10.50
75	IC178304	12.20	8.60	<b>10.40</b>	11.37	5.60	<b>8.49</b>	27.38	7.28	<b>17.33</b>	8.45	21.40	2.60	335.60	12.70
76	IC178308	10.40	12.00	<b>11.20</b>	10.45	15.60	<b>13.03</b>	27.42	7.42	<b>17.42</b>	7.97	22.00	3.00	258.30	13.70
77	IC178309	9.60	10.30	<b>9.95</b>	11.61	11.00	<b>11.31</b>	23.60	8.02	<b>15.81</b>	5.54	18.00	2.60	315.00	10.80
78	IC178310	9.60	11.60	<b>10.60</b>	10.63	7.00	<b>8.82</b>	23.15	8.71	<b>15.93</b>	7.30	21.60	2.30	228.30	12.40
79	IC178311	8.80	10.60	<b>9.70</b>	14.69	9.00	<b>11.85</b>	21.45	10.11	<b>15.78</b>	8.97	19.60	2.60	263.30	9.40
80	IC178312	9.20	10.30	<b>9.75</b>	15.12	6.30	<b>10.71</b>	24.10	10.53	<b>17.32</b>	4.92	16.20	2.00	231.30	11.60
81	IC178313	10.00	12.00	<b>11.00</b>	11.24	7.00	<b>9.12</b>	28.05	9.18	<b>18.62</b>	7.52	22.00	3.30	286.60	13.10
82	IC178314	9.20	12.60	<b>10.90</b>	15.84	11.00	<b>13.42</b>	32.15	8.40	<b>20.28</b>	9.14	15.20	3.00	286.60	9.50
83	IC178315	9.60	8.00	<b>8.80</b>	12.77	6.30	<b>9.54</b>	23.80	10.00	<b>16.90</b>	7.89	20.40	2.60	259.00	11.40

S.No.	Accession No.	Akola												Days to 50% flowering			Days to maturity			Pod length (cm)															
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Presence of tubers	Tuber size	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean												
84	IC178317	7	5	2	1	1	1	2	0	2	3	1	1	3	82.00	82.00	<b>82.00</b>	155.00	157.00	<b>156.00</b>	14.04	12.30	<b>13.17</b>												
85	IC178318	1	5	2	1	1	3	2	0	2	3	1	1	5	94.00	77.00	<b>85.50</b>	157.00	152.00	<b>154.50</b>	13.20	12.00	<b>12.60</b>												
86	IC178319	3	5	2	1	1	3	2	0	2	3	1	1	3	92.00	86.00	<b>89.00</b>	158.00	150.00	<b>154.00</b>	13.60	11.30	<b>12.45</b>												
87	IC178327	5	7	2	1	1	3	2	0	2	3	1	1	3	87.00	96.00	<b>91.50</b>	153.00	147.00	<b>150.00</b>	14.76	13.60	<b>14.18</b>												
88	IC178331	7	5	2	1	1	2	2	0	2	3	1	1	3	88.00	78.00	<b>83.00</b>	155.00	154.00	<b>154.50</b>	13.28	14.60	<b>13.94</b>												
89	IC178332	3	7	2	1	1	1	2	0	2	3	1	1	3	92.00	96.00	<b>94.00</b>	156.00	146.00	<b>151.00</b>	12.48	13.00	<b>12.74</b>												
90	IC178334	3	7	2	1	1	3	2	0	2	3	1	1	7	87.00	93.00	<b>90.00</b>	153.00	147.00	<b>150.00</b>	13.64	12.60	<b>13.12</b>												
91	IC178335	5	7	2	1	1	2	2	0	2	3	1	1	3	85.00	90.00	<b>87.50</b>	151.00	164.00	<b>157.50</b>	15.20	13.60	<b>14.40</b>												
92	IC178336	5	5	2	1	1	2	2	0	2	3	1	1	3	88.00	94.00	<b>91.00</b>	154.00	150.00	<b>152.00</b>	13.08	13.30	<b>13.19</b>												
93	IC178337	7	5	2	1	1	2	2	0	2	3	1	1	5	87.00	86.00	<b>86.50</b>	156.00	152.00	<b>154.00</b>	12.86	15.10	<b>13.98</b>												
94	IC178340	5	5	2	1	1	2	2	0	2	3	1	1	3	86.00	79.00	<b>82.50</b>	154.00	154.00	<b>154.00</b>	14.84	14.30	<b>14.57</b>												
95	IC178340-1	7	5	2	1	1	2	2	0	2	3	1	1	3	86.00	96.00	<b>91.00</b>	153.00	150.00	<b>151.50</b>	15.66	14.60	<b>15.13</b>												
96	IC178341	5	5	2	1	1	2	2	0	2	3	1	1	3	88.00	96.00	<b>92.00</b>	155.00	165.00	<b>160.00</b>	11.20	13.60	<b>12.40</b>												
97	IC251020	5	5	2	1	1	3	2	0	2	3	1	1	3	90.00	81.00	<b>85.50</b>	155.00	148.00	<b>151.50</b>	14.94	13.60	<b>14.27</b>												
98	IC251021	5	5	2	1	1	2	2	0	2	3	1	1	3	87.00	87.00	<b>87.00</b>	156.00	151.00	<b>153.50</b>	15.50	12.00	<b>13.75</b>												
99	IC251022	3	5	2	1	1	2	2	0	2	3	1	1	3	91.00	88.00	<b>89.50</b>	134.00	157.00	<b>145.50</b>	16.32	10.60	<b>13.46</b>												
100	IC251025	5	5	2	1	1	2	2	0	2	3	1	1	5	92.00	96.00	<b>94.00</b>	158.00	163.00	<b>160.50</b>	15.24	10.00	<b>12.62</b>												
<b>Mean for check variety</b>																																			
<b>AKWB-1 (C)</b>		<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>84.80</b>	<b>83.00</b>	<b>83.90</b>	<b>151.80</b>	<b>150.00</b>	<b>150.90</b>	<b>13.02</b>	<b>13.60</b>	<b>13.31</b>												
<b>Minimum</b>		<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>80.00</b>	<b>61.00</b>	<b>70.50</b>	<b>126.00</b>	<b>145.00</b>	<b>141.50</b>	<b>10.10</b>	<b>10.00</b>	<b>12.04</b>												
<b>Maximum</b>		<b>7</b>	<b>7</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>96.00</b>	<b>96.00</b>	<b>94.00</b>	<b>163.00</b>	<b>165.00</b>	<b>160.50</b>	<b>17.70</b>	<b>17.30</b>	<b>16.34</b>												
<b>Mean</b>		<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>86.97</b>	<b>84.00</b>	<b>85.48</b>	<b>154.03</b>	<b>153.78</b>	<b>153.90</b>	<b>14.21</b>	<b>13.69</b>	<b>13.95</b>												
<b>CV(%) Phenotypic</b>															<b>3.97</b>	<b>9.01</b>		<b>2.79</b>	<b>3.06</b>		<b>10.59</b>	<b>11.19</b>													

**Qualitative descriptors:-** Plant type: 1-Poor, 2-Sparse, 3-Moderate, 4-Good, 5-Luxuriant; Leaflet size: 1-Small, 2-Medium, 3-Large; Leaflet shape: 1-Ovate, 2-Deltoid, 3-Ovate-lanceolate, 4-Lanceolate, 5-Long lanceolate; Stem colour: 1-Green, 2-Greenish purple, 3-Purple, 4-Others; Calyx colour: 1-Green, 2-Greenish purple, 3-Purple, 4-Others; Corolla colour: 1-White, 2-Light blue, 3-Blue, 4-Bluish purple, 5-Others; Pod colour: 1-Cream, 2-Light green, 3-Green, 4-Dark green, 5-Pink, 6-Purple, 7-Others; Wing colour: 1-Light green, 2-Green, 3-Dark green, 4-Light purple, 5-Purple, 6-Dark purple, 7-Others; Pod surface texture : 1-Smooth, 2-Medium, 3-Rough; Pod shape : 1-Rectangular, 2-Semi flat, 3-Flat on sides, 4-Flat on sutures; Presence of tubers : 0-Absent, 1-Present; Tuber size : 3-Small, 5-Medium, 7-Large, 99-Others

S.No.	Accession No.	Number of seeds per pod			No.of pods per plant			100 seed weight (g)			Akola		Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Green pod weight/pod (g)	Pod width (mm)	No. of branches	Plant height (cm)	Seed yield(q/ha)
84	IC178317	9.00	8.30	<b>8.65</b>	12.68	9.30	<b>10.99</b>	24.10	10.80	<b>17.45</b>	6.96	19.00	3.00	328.30	9.60
85	IC178318	11.00	8.30	<b>9.65</b>	12.61	8.30	<b>10.46</b>	21.30	8.55	<b>14.93</b>	6.38	16.00	2.30	304.30	8.50
86	IC178319	9.60	10.10	<b>9.85</b>	11.83	7.60	<b>9.72</b>	22.10	8.61	<b>15.36</b>	5.19	17.20	2.60	321.60	13.60
87	IC178327	10.40	9.60	<b>10.00</b>	10.35	9.00	<b>9.68</b>	21.85	8.90	<b>15.38</b>	8.40	18.60	2.30	288.00	7.80
88	IC178331	9.80	11.00	<b>10.40</b>	9.95	8.30	<b>9.13</b>	24.50	8.62	<b>16.56</b>	9.26	19.60	3.00	285.30	9.40
89	IC178332	9.00	9.00	<b>9.00</b>	12.30	9.00	<b>10.65</b>	21.85	8.15	<b>15.00</b>	8.30	15.80	3.00	290.00	8.60
90	IC178334	10.20	11.30	<b>10.75</b>	12.07	11.30	<b>11.69</b>	24.00	8.40	<b>16.20</b>	8.87	19.20	2.30	281.60	12.40
91	IC178335	10.20	10.60	<b>10.40</b>	12.01	8.00	<b>10.01</b>	23.85	8.22	<b>16.04</b>	8.23	21.00	2.00	311.60	8.50
92	IC178336	9.80	10.30	<b>10.05</b>	11.00	7.30	<b>9.15</b>	22.10	7.92	<b>15.01</b>	7.66	17.60	2.00	246.60	13.50
93	IC178337	10.20	11.60	<b>10.90</b>	10.36	9.60	<b>9.98</b>	26.60	8.10	<b>17.35</b>	8.13	18.60	3.30	390.00	11.20
94	IC178340	10.60	10.60	<b>10.60</b>	10.85	9.60	<b>10.23</b>	23.05	8.16	<b>15.61</b>	10.62	17.20	3.00	356.60	10.50
95	IC178340-1	10.60	11.30	<b>10.95</b>	9.45	5.30	<b>7.38</b>	23.25	8.31	<b>15.78</b>	7.50	16.20	2.60	273.30	9.40
96	IC178341	11.00	10.60	<b>10.80</b>	10.85	4.30	<b>7.58</b>	25.05	8.63	<b>16.84</b>	8.44	20.00	2.00	236.60	10.20
97	IC251020	10.60	11.30	<b>10.95</b>	10.11	8.00	<b>9.06</b>	25.10	7.43	<b>16.27</b>	9.02	20.00	2.30	268.30	8.90
98	IC251021	10.40	8.00	<b>9.20</b>	9.09	3.60	<b>6.35</b>	22.20	8.90	<b>15.55</b>	7.28	18.80	2.00	218.30	7.70
99	IC251022	10.00	8.00	<b>9.00</b>	8.20	7.60	<b>7.90</b>	21.35	9.52	<b>15.44</b>	8.32	18.80	1.60	176.60	12.50
100	IC251025	9.80	7.00	<b>8.40</b>	13.10	7.30	<b>10.20</b>	23.70	10.06	<b>16.88</b>	9.29	18.40	1.30	146.60	9.80
<b>Mean for check variety</b>															
<b>AKWB-1 (C)</b>		<b>10.44</b>	<b>10.00</b>	<b>10.22</b>	<b>11.07</b>	<b>9.00</b>	<b>10.04</b>	<b>28.43</b>	<b>8.09</b>	<b>18.26</b>	<b>7.64</b>	<b>17.64</b>	<b>2.00</b>	<b>336.60</b>	<b>14.60</b>
<b>Minimum</b>		<b>7.60</b>	<b>7.00</b>	<b>8.35</b>	<b>6.65</b>	<b>3.60</b>	<b>6.23</b>	<b>19.50</b>	<b>6.40</b>	<b>14.08</b>	<b>4.21</b>	<b>12.80</b>	<b>1.30</b>	<b>146.60</b>	<b>7.70</b>
<b>Maximum</b>		<b>12.60</b>	<b>14.30</b>	<b>13.35</b>	<b>16.00</b>	<b>21.30</b>	<b>15.74</b>	<b>33.15</b>	<b>11.20</b>	<b>21.38</b>	<b>12.26</b>	<b>26.80</b>	<b>4.60</b>	<b>421.60</b>	<b>14.60</b>
<b>Mean</b>		<b>10.24</b>	<b>10.27</b>	<b>10.25</b>	<b>10.47</b>	<b>9.91</b>	<b>10.19</b>	<b>25.96</b>	<b>8.70</b>	<b>17.33</b>	<b>7.82</b>	<b>19.55</b>	<b>2.55</b>	<b>300.13</b>	<b>10.58</b>
<b>CV(%) Phenotypic</b>		<b>8.81</b>	<b>15.62</b>		<b>19.50</b>	<b>31.93</b>		<b>12.06</b>	<b>12.37</b>		<b>21.75</b>	<b>13.14</b>	<b>25.20</b>	<b>20.52</b>	<b>18.09</b>

**Table 109. Promising lines in kalingada germplasm for various characters at different locations (Plains):  
Kharif 2012**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Jaisalmer (Accessions 20)</b>				
1.	Days to fruit setting	32.00 - 44.00	MGPK-10-2 , SKGPK-26, SKGPK-34, MGPK-10-3, SKGPK-33, MGPK-10-1, SKGPK-25, SKGPK-35, SKGPK-23, SKGPK-32 (< 38.00 days)	GK-1 (38.00 days)
2.	Fruit diameter (cm)	33.00 - 43.20	SKGPK-33, SKGPK-22, SKGPK-24, SKGPK-31 (>40.58 cm)	GK-1 (40.00 cm)
3.	No. of fruits per plant	3.80 - 8.60	SKGPK-29, SKGPK-21 (>8.48)	GK-1 (7.10)
4.	100-seed weight (g)	6.09 - 8.11	SKGPK-33, SKGPK-24, SKGPK-34, SKGPK-32, SKGPK-27, SKGPK-22, SKGPK-35, MGPK-10-4, SKGPK-31, SKGPK-26, SKGPK-23, SKGPK-25, MGPK-10-3, MGPK-10-2 , MGPK-10-1 (> 6.80 g)	GK-1 (6.74 g)
5.	Fruit yield (q/ha)	47.10 - 154.60	SKGPK-22, SKGPK-33 (>146.68 q/ha)	GK-1 (121.30 q/ha)
6.	Seed yield (q/ha)	2.00 - 6.30	SKGPK-22, SKGPK-34, SKGPK-32, SKGPK-33, SKGPK-21 (> 5.78 q/ha)	GK-1 (5.00 q/ha)
<b>Mandor (Accessions 20)</b>				
1.	Days to fruit setting	51.33 - 60.67	SKGPK-21, SKGPK-35, SKGPK-23, SKGPK-28, SKGPK-32 (< 54.00 days)	GK 1 (54.00 days)
2.	Days to fruit maturity	76.33 - 82.33	SKGPK-23, SKGPK-21, SKGPK-25, SKGPK-22, SKGPK-31, MGPK-10-2, SKGPK-29, SKGPK-35, SKGPK-32, SKGPK-28, SKGPK-33, MGPK-10-1, MGPK-10-3 (< 80.30 days)	GK 1 (80.67 days)
3.	Fruit diameter (cm)	6.57 - 9.67	SKGPK-25, SKGPK-27, SKGPK-21, SKGPK-26 (> 8.67 cm)	GK 1 (8.67 cm)
4.	No. of fruits per plant	3.90 - 7.40	MGPK-10-5 (= 7.40)	GK 1 (5.10)
5.	Single fruit weight (g)	150.00 - 409.40	SKGPK-25, SKGPK-27 (>365.35 g)	GK 1 (278.70 g)
6.	100-seed weight (g)	3.11 - 5.43	SKGPK-27, SKGPK-35, MGPK-10-2 (>5.00 g)	GK 1 (4.74 g)



<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
7.	Fruit yield (q/ha)	20.74 - 73.70	SKGPK-25,SKGPK-27 (>68.10 q/ha)	GK 1 (47.04 q/ha)
8.	Seed yield (q/ha)	0.26 - 1.41	SKGPK-26, SKGPK-27 , SKGPK-34 (>1.07 q/ha)	GK 1 (1.80 q/ha)
<b>S.K. Nagar (Accessions 20)</b>				
1.	Days to first male flower opening	25.00 - 40.00	SKGPK-26, SKGPK-34, SKGPK-28, SKGPK-23, MGPK-10-4, SKGPK-33, SKGPK-24, MGPK-10-2, SKGPK-27 (< 31.00 days)	GK-1 (30.50 days)
2.	Days to first female flower opening	36.00 - 49.00	SKGPK-23, SKGPK-26, SKGPK-34, SKGPK-28, SKGPK-33, MGPK-10-4, SKGPK-27, SKGPK-32, MGPK-10-2, SKGPK-22, SKGPK-24, SKGPK-30, SKGPK-21, SKGPK-29, SKGPK-35, MGPK-10-5 (= < 44.00 days)	GK-1 (44.50 days)
3.	Days to fruit maturity	74.50 - 80.00	SKGPK-24, SKGPK-35, SKGPK-21, SKGPK-29, MGPK-10-2, SKGPK-27, MGPK-10-4, SKGPK-23, SKGPK-26, SKGPK-30, SKGPK-34, SKGPK-22, SKGPK-25, SKGPK-32, SKGPK-33 (< 79.00 days)	GK-1 (78.50 days)
4.	Fruit length (cm)	15.00 - 19.10	MGPK-10-3,SKGPK-29, MGPK-10-1 (> 17.10 cm)	GK-1 (17.20 cm)
5.	Fruit diameter (cm)	30.00 - 34.15	MGPK-10-3 (= 34.15 cm)	GK-1 (33.90 cm)
6.	Vine length (m)	2.37 - 4.19	-	GK-1 (4.19 m)
7.	Cotyledone ratio (%)	30.28 - 36.98	MGPK-10-1, SKGPK-32, SKGPK-23, MGPK-10-5, SKGPK-35, SKGPK-31, SKGPK-24, SKGPK-22, MGPK-10-2, SKGPK-27, SKGPK-26, SKGPK-33, SKGPK-30, SKGPK-28, SKGPK-25, MGPK-10-3 (31.42 %)	GK-1 (31.35 %)
8.	100-seed weight (g)	2.25 - 7.36	SKGPK-23, SKGPK-24, SKGPK-26, SKGPK-34, SKGPK-22 (6.36 g)	GK-1 (5.73 g)
9.	No. of fruits per plant	0.28 - 3.40	SKGPK-29, SKGPK-27, SKGPK-34, SKGPK-26, MGPK-10-2 (>2.14)	GK-1 (2.14)
10.	Fruit yield (q/ha)	3.33 - 35.83	SKGPK-29 (=35.83 q/ha)	GK-1 (32.50 q/ha)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
11.	Seed yield (q/ha)	0.05 - 0.44	SKGPK-34, SKGPK-29, MGPK-10-2, SKGPK-33 (> 0.39 q/ha)	GK-1 (0.39 q/ha)
12.	No. of plant stand at maturity	7.00 - 11.00	SKGPK-25, SKGPK-32, SKGPK-30, MGPK-10-1 (=>10.50)	GK-1 (10.50)
<b>Best entries over locations</b>				
1.	Days to fruit setting	43.00 - 51.33	MGPK-10-2 , SKGPK-35, SKGPK-26, SKGPK-23, SKGPK-21, SKGPK-25, SKGPK-34, MGPK-10-3, SKGPK-33, SKGPK-32 (<46.00 days)	GK-1 (46.00 days)
2.	Days to fruit maturity	76.50 - 81.17	SKGPK-21, SKGPK-23, MGPK-10-2 , SKGPK-35, SKGPK-25, SKGPK-29, SKGPK-24, SKGPK-22, SKGPK-27, SKGPK-32, SKGPK-33, MGPK-10-4, SKGPK-31, SKGPK-34, MGPK-10-1, SKGPK-26 (< 80.00 days)	GK-1 (79.58 days)
3.	Fruit diameter (cm)	24.18 - 27.70	SKGPK-33 (= 23.70 cm)	GK-1 (27.52 cm)
4.	No. of fruits per plant	2.79 - 5.97	SKGPK-29, SKGPK-21, SKGPK-34 (> 5.25)	GK-1 (4.78)
5.	Fruit yield (q/ha)	29.80 - 67.06	SKGPK-34 (> 67.06)	GK-1 (66.95 q/ha)
6.	Seed yield (q/ha)	0.82 - 2.51	SKGPK-34, SKGPK-22, SKGPK-32, SKGPK-21, SKGPK-33, SKGPK-26 (> 2.20 q/ha)	GK-1 (2.06 q/ha)
7.	100-seed weight (g)	4.39 - 6.22	MGPK-10-3, SKGPK-22, SKGPK-21, SKGPK-32, SKGPK-29 (> 5.75 g)	GK-1 (5.74 g)

**Table 110. Multilication evaluation of germplasm lines in kalingada at different locations: Kharif 2012**

S.No.	Accession No.	Days to fruit setting			Days to fruit maturity			Fruit diameter (cm)				Number of fruits per plant			
		Jaisalmer	Mandor	Mean	Mandor	S.K. Nagar	Mean	Jaisalmer	Mandor	S.K. Nagar	Mean	Jaisalmer	Mandor	S.K. Nagar	Mean
1	MGPK-10-1	35.00	60.67	<b>47.83</b>	80.00	78.50	<b>79.25</b>	38.20	7.27	33.85	<b>26.44</b>	4.30	4.67	0.95	<b>3.31</b>
2	MGPK-10-2	32.00	54.00	<b>43.00</b>	78.67	76.00	<b>77.33</b>	37.00	8.50	33.00	<b>26.17</b>	4.30	4.67	2.16	<b>3.71</b>
3	MGPK-10-3	33.00	57.33	<b>45.17</b>	80.33	79.50	<b>79.92</b>	35.60	7.50	34.15	<b>25.75</b>	4.10	4.00	0.28	<b>2.79</b>
4	MGPK-10-4	38.00	55.67	<b>46.83</b>	81.67	76.50	<b>79.08</b>	34.60	7.47	32.03	<b>24.70</b>	6.00	4.33	1.81	<b>4.05</b>
5	MGPK-10-5	42.00	56.00	<b>49.00</b>	82.33	80.00	<b>81.17</b>	34.60	8.20	32.00	<b>24.93</b>	4.40	7.40	0.78	<b>4.19</b>
6	SKGPK-21	38.00	51.33	<b>44.67</b>	77.00	76.00	<b>76.50</b>	36.60	8.93	31.00	<b>25.51</b>	8.50	6.00	1.50	<b>5.33</b>
7	SKGPK-22	41.00	55.67	<b>48.33</b>	78.67	78.00	<b>78.33</b>	41.20	7.37	31.20	<b>26.59</b>	4.10	4.70	1.73	<b>3.51</b>
8	SKGPK-23	36.00	52.33	<b>44.17</b>	76.33	77.00	<b>76.67</b>	36.60	7.77	33.00	<b>25.79</b>	4.90	4.43	1.06	<b>3.46</b>
9	SKGPK-24	44.00	55.00	<b>49.50</b>	81.00	74.50	<b>77.75</b>	41.00	6.57	32.03	<b>26.53</b>	4.70	4.77	1.44	<b>3.63</b>
10	SKGPK-25	35.00	54.33	<b>44.67</b>	77.33	78.00	<b>77.67</b>	38.20	9.67	30.60	<b>26.16</b>	6.00	6.20	0.88	<b>4.36</b>
11	SKGPK-26	32.00	56.00	<b>44.00</b>	82.00	77.00	<b>79.50</b>	34.40	8.70	32.33	<b>25.14</b>	6.00	5.50	2.30	<b>4.60</b>
12	SKGPK-27	41.00	56.67	<b>48.83</b>	80.67	76.50	<b>78.58</b>	33.00	9.43	31.85	<b>24.76</b>	5.40	5.57	2.78	<b>4.58</b>
13	SKGPK-28	39.00	53.00	<b>46.00</b>	80.00	79.50	<b>79.75</b>	34.40	8.13	30.00	<b>24.18</b>	6.30	4.73	0.53	<b>3.86</b>
14	SKGPK-29	42.00	55.33	<b>48.67</b>	79.33	76.00	<b>77.67</b>	35.80	8.00	32.85	<b>25.55</b>	8.60	5.90	3.40	<b>5.97</b>
15	SKGPK-30	42.00	60.67	<b>51.33</b>	81.67	77.50	<b>79.58</b>	36.20	7.30	30.58	<b>24.69</b>	3.80	6.77	1.49	<b>4.02</b>
16	SKGPK-31	39.00	54.33	<b>46.67</b>	78.67	79.50	<b>79.08</b>	40.60	7.70	30.00	<b>26.10</b>	5.50	5.23	0.65	<b>3.79</b>
17	SKGPK-32	37.00	53.67	<b>45.33</b>	79.67	78.00	<b>78.83</b>	38.20	7.60	32.00	<b>25.93</b>	6.40	4.43	1.31	<b>4.05</b>
18	SKGPK-33	33.00	57.33	<b>45.17</b>	80.00	78.00	<b>79.00</b>	43.20	7.80	32.10	<b>27.70</b>	6.90	4.07	1.77	<b>4.25</b>
19	SKGPK-34	32.00	57.67	<b>44.83</b>	80.67	77.50	<b>79.08</b>	36.00	8.07	31.10	<b>25.06</b>	7.00	6.33	2.48	<b>5.27</b>
20	SKGPK-35	35.00	51.67	<b>43.33</b>	79.33	75.50	<b>77.42</b>	38.20	8.40	30.00	<b>25.53</b>	5.30	3.90	1.38	<b>3.53</b>
<b>Mean for check variety</b>															
<b>GK-1 (C)</b>		<b>38.00</b>	<b>54.00</b>	<b>46.00</b>	<b>80.67</b>	<b>78.50</b>	<b>79.58</b>	<b>40.00</b>	<b>8.67</b>	<b>33.90</b>	<b>27.52</b>	<b>7.10</b>	<b>5.10</b>	<b>2.14</b>	<b>4.78</b>
<b>Minimum</b>		<b>32.00</b>	<b>51.33</b>	<b>43.00</b>	<b>76.33</b>	<b>74.50</b>	<b>76.50</b>	<b>33.00</b>	<b>6.57</b>	<b>30.00</b>	<b>24.18</b>	<b>3.80</b>	<b>3.90</b>	<b>0.28</b>	<b>2.79</b>
<b>Maximum</b>		<b>44.00</b>	<b>60.67</b>	<b>51.33</b>	<b>82.33</b>	<b>80.00</b>	<b>81.17</b>	<b>43.20</b>	<b>9.67</b>	<b>34.15</b>	<b>27.70</b>	<b>8.60</b>	<b>7.40</b>	<b>3.40</b>	<b>5.97</b>
<b>Mean</b>		<b>37.33</b>	<b>55.37</b>	<b>46.35</b>	<b>79.81</b>	<b>77.50</b>	<b>78.65</b>	<b>37.31</b>	<b>8.05</b>	<b>31.88</b>	<b>25.75</b>	<b>5.70</b>	<b>5.18</b>	<b>1.56</b>	<b>4.14</b>
<b>CD (0.05)</b>		-	<b>7.08</b>		<b>4.34</b>	<b>3.48</b>		-	<b>1.35</b>	<b>2.55</b>		-	<b>1.84</b>	<b>1.45</b>	
<b>CV (%) Error</b>		-	<b>7.99</b>		<b>3.40</b>	<b>2.15</b>		-	<b>10.51</b>	<b>3.82</b>		-	<b>22.19</b>	<b>44.29</b>	
<b>CV (%) Phenotypic</b>		<b>10.11</b>	<b>4.53</b>		<b>2.03</b>	<b>1.90</b>		<b>7.19</b>	<b>9.39</b>	<b>4.01</b>		<b>24.43</b>	<b>18.58</b>	<b>50.51</b>	

S.No.	Accession No.	Fruit yield (q/ha)				Seed yield (q/ha)				100 seed weight (g)			
		Jaisalmer	Mandor	S.K. Nagar	Mean	Jaisalmer	Mandor	S.K. Nagar	Mean	Jaisalmer	Mandor	S.K. Nagar	Mean
1	MGPK-10-1	65.60	21.11	10.00	<b>32.24</b>	2.00	0.26	0.19	<b>0.82</b>	6.82	4.60	4.49	<b>5.30</b>
2	MGPK-10-2	50.40	25.85	27.50	<b>34.58</b>	2.90	0.46	0.40	<b>1.25</b>	6.84	3.65	6.39	<b>5.63</b>
3	MGPK-10-3	66.70	21.22	3.33	<b>30.42</b>	3.00	0.46	0.17	<b>1.21</b>	6.85	4.46	7.36	<b>6.22</b>
4	MGPK-10-4	112.10	28.15	20.83	<b>53.69</b>	4.10	0.36	0.20	<b>1.55</b>	7.10	3.15	6.93	<b>5.73</b>
5	MGPK-10-5	70.40	47.04	10.00	<b>42.48</b>	2.50	0.57	0.20	<b>1.09</b>	6.57	4.44	3.92	<b>4.98</b>
6	SKGPK-21	136.30	35.85	16.67	<b>62.94</b>	5.80	0.73	0.20	<b>2.24</b>	6.72	4.61	6.81	<b>6.05</b>
7	SKGPK-22	154.60	23.74	18.33	<b>65.56</b>	6.30	0.43	0.19	<b>2.31</b>	7.42	5.43	5.61	<b>6.15</b>
8	SKGPK-23	111.70	25.93	17.50	<b>51.71</b>	4.20	0.37	0.27	<b>1.61</b>	6.95	4.64	3.39	<b>4.99</b>
9	SKGPK-24	101.70	27.41	14.50	<b>47.87</b>	3.10	0.31	0.18	<b>1.20</b>	7.69	4.09	4.31	<b>5.36</b>
10	SKGPK-25	81.30	73.70	10.00	<b>55.00</b>	3.40	0.95	0.30	<b>1.55</b>	6.92	3.11	4.61	<b>4.88</b>
11	SKGPK-26	88.30	49.26	26.33	<b>54.63</b>	4.90	1.41	0.33	<b>2.22</b>	7.00	3.92	2.25	<b>4.39</b>
12	SKGPK-27	70.00	68.11	29.67	<b>55.93</b>	2.90	1.40	0.34	<b>1.55</b>	7.48	4.08	5.53	<b>5.70</b>
13	SKGPK-28	54.60	29.63	5.17	<b>29.80</b>	2.90	0.50	0.18	<b>1.20</b>	6.65	4.57	4.72	<b>5.31</b>
14	SKGPK-29	103.30	31.48	35.83	<b>56.87</b>	3.50	0.39	0.44	<b>1.44</b>	6.09	4.64	6.54	<b>5.76</b>
15	SKGPK-30	47.10	23.70	23.33	<b>31.38</b>	2.10	0.31	0.15	<b>0.85</b>	6.28	5.22	5.66	<b>5.72</b>
16	SKGPK-31	121.70	20.74	8.33	<b>50.26</b>	4.50	0.36	0.05	<b>1.64</b>	7.01	3.77	4.93	<b>5.24</b>
17	SKGPK-32	141.70	30.96	11.67	<b>61.44</b>	5.90	0.76	0.16	<b>2.27</b>	7.58	5.03	4.92	<b>5.84</b>
18	SKGPK-33	146.70	22.22	20.83	<b>63.25</b>	5.90	0.38	0.40	<b>2.23</b>	8.11	4.11	4.00	<b>5.41</b>
19	SKGPK-34	130.80	54.56	15.83	<b>67.06</b>	6.00	1.09	0.44	<b>2.51</b>	7.61	4.04	4.65	<b>5.43</b>
20	SKGPK-35	82.50	29.81	6.67	<b>39.66</b>	3.40	0.60	0.16	<b>1.39</b>	7.19	4.07	3.74	<b>5.00</b>
<b>Mean for check variety</b>													
<b>GK-1 (C)</b>		<b>121.30</b>	<b>47.04</b>	<b>32.50</b>	<b>66.95</b>	<b>5.00</b>	<b>0.80</b>	<b>0.39</b>	<b>2.06</b>	<b>6.74</b>	<b>4.74</b>	<b>5.73</b>	<b>5.74</b>
<b>Minimum</b>		<b>47.10</b>	<b>20.74</b>	<b>3.33</b>	<b>29.80</b>	<b>2.00</b>	<b>0.26</b>	<b>0.05</b>	<b>0.82</b>	<b>6.09</b>	<b>3.11</b>	<b>2.25</b>	<b>4.39</b>
<b>Maximum</b>		<b>154.60</b>	<b>73.70</b>	<b>35.83</b>	<b>67.06</b>	<b>6.30</b>	<b>1.41</b>	<b>0.44</b>	<b>2.51</b>	<b>8.11</b>	<b>5.43</b>	<b>7.36</b>	<b>6.22</b>
<b>Mean</b>		<b>98.04</b>	<b>35.12</b>	<b>17.37</b>	<b>50.18</b>	<b>4.01</b>	<b>0.61</b>	<b>0.26</b>	<b>1.63</b>	<b>7.03</b>	<b>4.30</b>	<b>5.07</b>	<b>5.47</b>
<b>CD (0.05)</b>		<b>21.45</b>	<b>16.36</b>	<b>14.20</b>		<b>1.58</b>	<b>0.28</b>	<b>0.14</b>		-	<b>0.99</b>	<b>0.40</b>	
<b>CV (%) Error</b>		<b>13.26</b>	<b>29.10</b>	<b>39.12</b>		<b>23.81</b>	<b>28.07</b>	<b>26.76</b>		-	<b>14.34</b>	<b>3.76</b>	
<b>CV(%) Phenotypic</b>		<b>34.20</b>	<b>44.24</b>	<b>53.27</b>		<b>34.39</b>	<b>55.94</b>	<b>43.85</b>		<b>6.93</b>	<b>13.98</b>	<b>25.49</b>	

S.No.	Accession No.	Mandor	S.K. Nagar					
		Single fruit weight (g)	Days to first female flower opening	Days to first male flower opening	Fruit length (cm)	No. of plant stand at maturity	Vine length (m)	Cotyledone ratio %
1	MGPK-10-1	150.00	46.00	34.00	17.30	10.50	2.96	30.92
2	MGPK-10-2	270.83	42.00	29.50	16.80	9.00	2.86	33.25
3	MGPK-10-3	217.43	49.00	40.00	19.10	7.50	3.17	35.43
4	MGPK-10-4	280.50	41.00	28.50	16.65	7.50	3.53	33.75
5	MGPK-10-5	224.37	44.00	32.00	16.00	10.00	3.20	31.85
6	SKGPK-21	296.67	43.50	31.50	15.90	9.00	3.52	32.50
7	SKGPK-22	171.53	42.50	30.50	16.20	8.00	3.35	32.56
8	SKGPK-23	196.50	36.00	28.00	16.95	9.00	3.61	31.91
9	SKGPK-24	169.93	42.50	29.50	16.45	8.00	2.37	31.35
10	SKGPK-25	409.40	46.50	33.50	15.70	11.00	3.52	32.22
11	SKGPK-26	306.37	36.00	25.00	16.20	9.00	3.45	34.28
12	SKGPK-27	365.37	42.00	30.00	16.55	8.50	3.70	36.68
13	SKGPK-28	200.40	40.00	27.00	15.00	8.50	2.67	32.25
14	SKGPK-29	175.00	44.00	32.00	17.35	10.00	3.64	30.28
15	SKGPK-30	152.67	43.00	31.00	15.80	10.50	3.60	35.05
16	SKGPK-31	230.33	45.00	33.50	15.20	9.50	3.14	36.98
17	SKGPK-32	206.97	42.00	30.50	16.55	11.00	3.68	32.65
18	SKGPK-33	255.07	41.00	29.00	15.95	10.00	3.54	31.45
19	SKGPK-34	259.90	38.00	26.00	15.90	9.50	2.86	30.73
20	SKGPK-35	301.40	44.00	32.00	15.70	7.00	2.52	35.30
<b>Mean for check variety</b>								
<b>GK-1 (C)</b>		<b>278.70</b>	<b>44.50</b>	<b>30.50</b>	<b>17.20</b>	<b>10.50</b>	<b>4.19</b>	<b>31.35</b>
<b>Minimum</b>		<b>150.00</b>	<b>36.00</b>	<b>25.00</b>	<b>15.00</b>	<b>7.00</b>	<b>2.37</b>	<b>30.28</b>
<b>Maximum</b>		<b>409.40</b>	<b>49.00</b>	<b>40.00</b>	<b>19.10</b>	<b>11.00</b>	<b>4.19</b>	<b>36.98</b>
<b>Mean</b>		<b>243.78</b>	<b>42.50</b>	<b>30.64</b>	<b>16.40</b>	<b>9.21</b>	<b>3.29</b>	<b>32.99</b>
<b>CD (0.05)</b>		<b>75.37</b>	<b>6.21</b>	<b>6.40</b>	<b>1.32</b>	<b>3.11</b>	<b>1.04</b>	<b>1.46</b>
<b>CV (%) Error</b>		<b>19.32</b>	<b>6.99</b>	<b>9.99</b>	<b>3.84</b>	<b>16.15</b>	<b>15.07</b>	<b>2.11</b>
<b>CV(%) Phenotypic</b>		<b>28.30</b>	<b>7.53</b>	<b>10.46</b>	<b>5.44</b>	<b>12.91</b>	<b>13.71</b>	<b>5.91</b>

**Table 111. Promising lines in Kankoda germplasm for various characters at Rahuri (Plains): Kharif 2012**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Rahuri (Accessions 10)</b>				
1.	Days to picking first	80.00 - 87.00	RMFG-39, RMFG-59, RMFG-37, RMFG-52, RMFG-2, RMFG-45, RMFG-21, RMFG-36 (< 88.00 days)	-
2.	Days to picking last	92.00 - 125.00	RMFG-36, RMFG-39, RMFG-37, RMFG-2, RMFG-45, RMFG-21, RMFG-59, RMFG-52 (<126.00 days)	-
3.	Fruit weight (g)	8.90 - 23.40	RMFG-37, RMFG-39, RMFG-59, RMFG-21, RMFG-52, RMFG-2, RMFG-45, RMFG-36 (> 8.88 g)	-
4.	Number of fruits per vine	3.00 - 20.00	RMFG-39, RMFG-37, RMFG-52, RMFG-45, RMFG-36, RMFG-21, RMFG-59, RMFG-2 (> 2.99)	-
5.	Fruit girth (cm)	8.80 - 12.10	RMFG-37, RMFG-21, RMFG-2, RMFG-39, RMFG-52, RMFG-59, RMFG-36, RMFG-45 (> 8.78 cm)	-
6.	Fruit length (cm)	4.00 - 5.70	RMFG-37, RMFG-39, RMFG-52, RMFG-59, RMFG-21, RMFG-2, RMFG-36, RMFG-45 (> 3.99 cm)	-
7.	Seed yield /plant (kg)	0.04 - 0.46	RMFG-39, RMFG-37, RMFG-52, RMFG-59, RMFG-45, RMFG-21, RMFG-36, RMFG-2 (> 0.03 kg)	-

**Table 112. Multilication evaluation of germplasm lines in Kankoda at Rahuri - Kharif, 2012 (Plain)**

S.No.	Accession No.	Days to picking first	Days to picking last	Fruit weight (g)	Number of fruits per vine	Fruit girth (cm)	Fruit length (cm)	Seed yield /plant (kg)
1	RMFG-2	84.00	103.00	11.80	3.00	10.40	4.40	0.04
2	RMFG-16	-	-	-	-	-	-	-
3	RMFG-21	85.00	104.00	16.00	4.00	10.50	4.70	0.06
4	RMFG-36	87.00	92.00	8.90	5.00	8.80	4.10	0.05
5	RMFG-37	81.00	102.00	23.40	13.00	12.10	5.70	0.30
6	RMFG-39	80.00	101.00	23.10	20.00	10.20	5.40	0.46
7	RMFG-45	84.00	103.00	9.40	7.00	8.80	4.00	0.07
8	RMFG-51	-	-	-	-	-	-	-
9	RMFG-52	81.00	125.00	16.00	13.00	10.20	5.00	0.21
10	RMFG-59	80.00	122.00	18.40	4.00	9.00	4.80	0.07
	<b>Minimum</b>	<b>80.00</b>	<b>92.00</b>	<b>8.90</b>	<b>3.00</b>	<b>8.80</b>	<b>4.00</b>	<b>0.04</b>
	<b>Maximum</b>	<b>87.00</b>	<b>125.00</b>	<b>23.40</b>	<b>20.00</b>	<b>12.10</b>	<b>5.70</b>	<b>0.46</b>
	<b>Mean</b>	<b>82.75</b>	<b>106.50</b>	<b>15.88</b>	<b>8.63</b>	<b>10.00</b>	<b>4.76</b>	<b>0.16</b>
	<b>CV(%) Phenotypic</b>	<b>3.15</b>	<b>10.49</b>	<b>35.51</b>	<b>70.37</b>	<b>11.20</b>	<b>12.55</b>	<b>98.66</b>

**Table 113. Promising lines in tumba germplasm for various characters at Mandor (Plains): Kharif 2012**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Mandor (Accessions 34)</b>				
1.	Days to fruit setting	50.00 - 79.00	IC281192, IC281126, IC281143, IC281160, IC281178, IC373493, IC281203, IC281175, IC281190, IC281201, IC281208, IC281209, IC281225, IC373506 (<64.00 days)	-
2.	Fruit diameter (cm)	5.30 - 7.90	IC370485, IC281126, IC281157, IC281209, IC281143, IC373496, IC281175, IC281192, IC373493, IC262408, IC373436, IC281190, IC281203, IC370514 (>6.50 cm)	-
3.	No. of fruits per plant	3.00 - 18.00	IC373506, IC281174, IC281225, IC373493, IC281208, IC262408, IC281234, IC282661, IC281193, IC370505 (>10.00)	-
4.	100-seed weight (g)	2.08 - 3.47	IC281157, IC370485, IC281177, IC281225, IC281122, IC281175, IC281176, IC281190, IC370505, IC262409 (>2.89 g)	-
5.	Seed yield per plant (g)	17.70 - 89.00	IC281126, IC262408, IC281193, IC281176, IC281208, IC370485, IC281234, IC373493, IC370514, IC373496 (>72.00 g)	-
6.	Fruit yield per plant (g)	400.00 - 3750.00	IC281174, IC370485, IC373506, IC262408, IC281209, IC373493, IC281208, IC373496, IC281126, IC281190 (>2050 g)	-



**Table 114. Multilication evaluation of germplasm lines in tumba at Mandor - Kharif, 2012 (Plain)**

S. No.	Accession No.	Days to fruit setting	Fruit diameter (cm)	No. of fruit per plant	100 seed weight (g)	Seed yield per plant (g)	Fruit yield per plant (g)
1	IC262408	67.00	6.70	13.50	2.52	87.50	2500.00
2	IC262409	65.00	5.90	3.70	2.91	23.30	530.00
3	IC262410	65.00	5.50	3.00	2.56	17.70	400.00
4	IC281122	65.00	6.40	4.50	2.99	26.50	800.00
5	IC281125	65.00	6.40	6.00	2.74	24.00	1300.00
6	IC281126	59.00	7.60	10.00	2.70	89.00	2250.00
7	IC281143	59.00	7.20	6.50	2.62	69.00	1500.00
8	IC281157	65.00	7.30	3.30	3.47	22.70	700.00
9	IC281160	59.00	6.10	6.00	2.40	43.00	1030.00
10	IC281169	65.00	5.50	10.00	2.67	28.00	1000.00
11	IC281174	67.00	6.40	16.50	2.71	48.00	3750.00
12	IC281175	63.00	7.00	6.50	2.96	50.00	1100.00
13	IC281176	65.00	6.10	9.00	2.95	75.00	1700.00
14	IC281177	67.00	6.50	3.30	3.23	21.30	500.00
15	IC281178	59.00	6.40	10.00	2.89	41.00	1600.00
16	IC281190	63.00	6.60	9.70	2.95	70.00	2100.00
17	IC281192	50.00	7.00	6.50	2.32	42.00	1550.00
18	IC281193	75.00	6.10	11.50	2.70	80.00	1800.00
19	IC281201	63.00	5.70	5.50	2.23	40.50	1150.00
20	IC281202	67.00	5.90	4.50	2.39	24.50	600.00
21	IC281203	62.00	6.60	7.50	2.55	62.50	1650.00
22	IC281206	67.00	6.20	7.50	2.48	45.00	1250.00
23	IC281208	63.00	5.40	14.00	2.62	75.00	2300.00
24	IC281209	63.00	7.30	10.00	2.08	66.70	2500.00
25	IC281225	63.00	5.40	15.00	3.00	55.00	2050.00
26	IC281234	67.00	6.10	13.30	2.16	73.30	1765.00
27	IC282661	79.00	5.30	13.00	2.48	44.00	1700.00
28	IC370485	65.00	7.90	8.00	3.24	75.00	3250.00
29	IC370505	67.00	6.20	11.00	2.93	61.50	1550.00
30	IC370514	67.00	6.60	8.30	2.77	73.30	2000.00
31	IC373436	67.00	6.70	9.00	2.70	33.00	2000.00
32	IC373493	59.00	7.00	14.30	2.16	73.30	2330.00
33	IC373496	67.00	7.10	10.00	2.88	73.00	2300.00
34	IC373506	63.00	6.30	18.00	2.58	27.50	2650.00
	<b>Minimum</b>	<b>50.00</b>	<b>5.30</b>	<b>3.00</b>	<b>2.08</b>	<b>17.70</b>	<b>400.00</b>
	<b>Maximum</b>	<b>79.00</b>	<b>7.90</b>	<b>18.00</b>	<b>3.47</b>	<b>89.00</b>	<b>3750.00</b>
	<b>Mean</b>	<b>64.47</b>	<b>6.42</b>	<b>9.07</b>	<b>2.69</b>	<b>51.80</b>	<b>1681.03</b>
	<b>CV(%) Phenotypic</b>	<b>7.49</b>	<b>10.17</b>	<b>43.81</b>	<b>11.96</b>	<b>42.43</b>	<b>46.60</b>

**Table 115. Promising lines in *Jatropha* germplasm for various characters at Hisar (Plains): (Kharif, 2012)**

S. No.	Characters	Range	Promising lines	Highest value of best check
<b>Hisar (Accessions 158)</b>				
1.	Plant height (cm)	213.50-520.50	JH-14 (= 520.50 cm)	Chhattarpati (512.50 cm)
2.	Girth at base (cm)	33.80-100.10	JH-40, JH-29, JH-15, JH-59, JH-22, JH-14, JH-133, JH-7, JH-23, JH-1, JH-37, JH-4, JH-103, JH-53, JH-30, JH-19, JH-39, JH-2, JH-82, JH-92, JH-54, JH-61, JH-138, JH-48, JH-55, JH-44, JH-49, JH-68, JH-86, JH-47, JH-43, JH-130, JH-45, JH-113, JH-6, JH-33, JH-120, JH-21, JH-34, JH-42, JH-57, JH-16, JH-93, JH-50, JH-64, JH-28, JH-32, JH-100, JH-46, JH-5, JH-27, JH-83, JH-56, JH-58, JH-65, JH-106, JH-18, JH-36, JH-104, JH-134, JH-107, JH-99, JH-147, JH-17, JH-35, JH-129, JH-132, JH-101, JH-105, JH-121, JH-26, JH-117, JH-3, JH-141, JH-71, JH-41, JH-20, JH-31, JH-9, JH-72, JH-8, JH-60, JH-116, JH-142, JH-79, JH-97, JH-70, JH-139, JH-112, JH-10, JH-140, JH-143, JH-136, JH-91, JH-11, JH-73, JH-62, JH-102, JH-51, JH-84, JH-118, JH-69, JH-89, JH-128, JH-115, JH-63, JH-75, JH-111, JH-38, JH-149, JH-85, JH-13, JH-98, JH-124, JH-25, JH-67, JH-90, SKNA-1 (> 47.88 cm)	Chhattarpati (47.90 cm)
3.	Branches per plant	6.00-30.00	JH-109, JH-106, JH-1, JH-102, JH-22, JH-62, JH-93, JH-107, JH-112, JH-133, JH-27, JH-40, JH-121 (> 18.00)	Chhattarpati (17.00)
4.	Pods per plant	79.00-425.00	JH-1, JH-40, JH-109, JH-60, JH-36, JH-106, JH-22, JH-27, JH-142, JH-56, JH-64, JH-102, JH-139, JH-53, JH-130, JH-2, JH-133, JH-48, JH-93, JH-85, JH-59, JH-14, JH-47, JH-112, JH-120, JH-129, JH-62, JH-100, JH-121, JH-17, JH-125, JH-84, JH-92, JH-105, JH-127, JH-118, JH-34, JH-57, JH-67, JH-79, JH-95, JH-43, JH-141, JH-39, JH-117, JH-81, JH-128, JH-76, JH-137, JH-7, JH-21, JH-51, JH-63, JH-111, JH-123, JH-149, JH-29, JH-19, JH-71, JH-90, JH-107, JH-15, JH-26, JH-28, JH-41, JH-55, JH-68, JH-132, JH-140, JH-150, JH-3, JH-98, JH-74, JH-83, JH-110, JH-30, JH-124, JH-6, JH-37, JH-46, JH-75, JH-89, JH-99, JH-115, JH-11, JH-13, JH-65, JH-108, JH-25, JH-35, JH-70, JH-44, JH-122 (> 156.00)	Chhattarpati (155.00)

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Highest value of best check</b>
5.	No. of seeds per plant	230.00-1260.00	JH-1, JH-40, JH-2, JH-109, JH-60, JH-36, JH-27, JH-56, JH-130, JH-102, JH-139, JH-48, JH-133, JH-93, JH-85, JH-100, JH-14, JH-47, JH-129, JH-112, JH-62, JH-120, JH-121, JH-125, JH-17, JH-127, JH-84, JH-92, JH-105, JH-34, JH-79, JH-57, JH-67, JH-118, JH-106, JH-43, JH-95, JH-39, JH-142, JH-81, JH-117, JH-128, JH-141, JH-76, JH-7, JH-137, JH-21, JH-64, JH-51, JH-63, JH-123, JH-29, JH-111, JH-149, JH-19, JH-53, JH-71, JH-15, JH-28, JH-41, JH-55, JH-68, JH-90, JH-132, JH-140, JH-26, JH-107, JH-98, JH-3, JH-74, JH-83, JH-150, JH-30, JH-124, JH-110, JH-37, JH-46, JH-75, JH-6, JH-89, JH-115, JH-13, JH-59, JH-65, JH-99, JH-25, JH-11, JH-35, JH-108, JH-70, JH-12, JH-44, JH-122, JH-80, JH-42, JH-87, JH-82, JH-113 (> 454.00)	Chhattarpati (452.00)
6.	No. of seeds per ball	3.00-3.00	JH-1, JH-2, JH-3, JH-4, JH-5, JH-6, JH-7, JH-8, JH-9, JH-10 (= 3.00)	Chhattarpati (3.00)
7.	100 seed weight (g)	1.63-1.86	JH-43, JH-2, JH-40, JH-42, JH-102, JH-125, JH-1, JH-130, JH-141, JH-46, JH-142, JH-150, JH-34, JH-37, JH-52, JH-61, JH-94, JH-122, JH-128, JH-132, JH-9, JH-24, JH-28, JH-31, JH-45, JH-62, JH-74, JH-85, JH-87, JH-98, JH-101, JH-110, JH-137, JH-22, JH-49, JH-75, JH-84, JH-114, JH-126, JH-146, JH-148, JH-14, JH-21, JH-27, JH-32, JH-44, JH-47, JH-67, JH-82, JH-96, JH-112, JH-139, JH-41, JH-48, JH-53, JH-58, JH-91, JH-115, JH-121, JH-145, JH-20, JH-23, JH-26, JH-30, JH-38, JH-64, JH-83, JH-86, JH-93, JH-123, JH-143, JH-11, JH-17, JH-18, JH-39, JH-51, JH-60, JH-65, JH-68, JH-73, JH-76, JH-78, JH-81, JH-88, JH-103, JH-104, JH-106, JH-108, JH-116, JH-124, JH-135, JH-136, JH-138, JH-8, JH-25, JH-70, JH-95, JH-131, JH-7, JH-19, JH-29, JH-33, JH-35, JH-50, JH-55, JH-59, JH-80, JH-89, JH-129, JH-133, JH-149, JH-10, JH-12, JH-56, JH-63, JH-90, JH-99, JH-100, JH-69, JH-72, JH-97, JH-105, JH-109, JH-118, JH-120, JH-134, JH-147, Phule J-1, JH-3, JH-4, JH-5, JH-13, JH-36, JH-54, JH-66, JH-77, JH-79, JH-92, JH-107, JH-111, JH-127, JH-140, TNMC-25, JH-6, SKN (Big), JH-15, JH-71, JH-117, JH-144, JH-57, SKNA-1, TNMC-7, JH-16, JH-113, JH-119, Urlikanchan, Hansraj (= > 1.65 g)	Chhattarpati (1.65 g)
8.	Seed size (cm)	48.50-63.90	JH-1, JH-40, JH-13, JH-82, JH-77, JH-84, JH-99, JH-116, JH-8, JH-83, JH-135, JH-88, JH-97, JH-141, JH-30, JH-92, JH-100, JH-110, JH-117, JH-129, JH-131, JH-136, JH-140, JH-61, JH-53, JH-70, JH-15, JH-37, JH-46,	Chhattarpati (52.50 cm)

S. No.	Characters	Range	Promising lines	Highest value of best check
			JH-51, JH-54, JH-58, JH-86, JH-102, JH-104, JH-56, JH-85, JH-95, JH-103, JH-121, JH-124, JH-125, JH-128, JH-130, JH-139, JH-69, JH-50, JH-42, JH-49, JH-101, JH-134, JH-91, JH-98, JH-113, JH-45, JH-55, JH-59, JH-71, JH-115, JH-2, JH-43, JH-81, JH-89, JH-105, JH-147, JH-150, JH-24, JH-39, JH-67, JH-76, JH-80, JH-87, JH-96, JH-109, JH-111, JH-112, JH-122, JH-127, JH-133, JH-137, JH-143, JH-146, SKNA-1, JH-22, JH-63, JH-106, JH-132, JH-31, JH-52, JH-94, JH-108, JH-114, JH-93, JH-17, JH-28, JH-73, JH-79, JH-90, JH-4, JH-12, JH-14, JH-32, JH-38, JH-62, JH-74, JH-123, JH-138, JH-142, JH-149, Phule J-1, JH-68, JH-72, JH-7, JH-47, JH-118, JH-36, JH-6, JH-9, JH-27, JH-48, JH-57, JH-60, JH-65, JH-75, JH-78, JH-107, JH-119, JH-126, JH-144, TNMC-7, JH-26, JH-16, JH-35, JH-5, JH-145, JH-25, JH-66, JH-3, JH-10, JH-21, JH-41, JH-64, JH-148, JH-120, SKN (Big), ISJ-1, JH-29, JH-23, JH-11, JH-34, Urlikanchan (= > 52.50 cm)	
9.	Seed yield per plant (g)	100.90-730.50	JH-1, JH-40, JH-92, JH-2, JH-60, JH-109, JH-79, JH-27, JH-102, JH-56, JH-139, JH-36, JH-100, JH-130, JH-15, JH-48, JH-133, JH-62, JH-51, JH-85, JH-93, JH-129, JH-14, JH-17, JH-84, JH-112, JH-47, JH-121, JH-34, JH-105, JH-125, JH-120, JH-30, JH-43, JH-53, JH-55, JH-64, JH-67, JH-106, JH-118, JH-111, JH-95, JH-39, JH-68, JH-117, JH-132, JH-141, JH-78, JH-19, JH-26, JH-113, JH-29, JH-57, JH-83, JH-90, JH-127, JH-142, JH-74, JH-149, JH-131, JH-107, JH-123, JH-110, JH-13, JH-81, JH-99, JH-128, JH-137, JH-140, JH-21, JH-63, JH-76, JH-75, JH-115, JH-124, JH-98, JH-6, JH-28, JH-37, JH-46, JH-80, JH-70, JH-3, JH-59, JH-41, JH-150, JH-71, JH-82, JH-108, JH-12, JH-25, JH-42, JH-65, JH-89, JH-11, JH-116, JH-4, JH-52, JH-69, JH-77, JH-101 (> 244.00 g)	Chhattarpati 240.90 g)

**Table 116 . Evaluation of germplasm lines in Jatropha at Hisar: Kharif 2012 (Plain)**

S. No.	Accession No.	Plant height (cm)	Girth at base (cm)	Branches/plant	Pods/plant	No. of seed per plant	No. of seed per ball	100 seed weight (g)	Seed size (cm)	Seed yield/plant (g)
1	JH-1	428.00	82.50	24.00	425.00	1260.00	3.00	1.83	63.90	730.50
2	JH-2	391.50	77.00	16.00	290.00	1165.00	3.00	1.84	55.70	560.00
3	JH-3	375.50	56.80	14.00	186.00	550.00	3.00	1.70	53.50	275.50
4	JH-4	361.00	80.10	10.00	150.00	450.00	3.00	1.70	55.00	250.00
5	JH-5	354.00	64.20	13.00	111.00	330.00	3.00	1.70	54.00	180.00
6	JH-6	347.50	68.00	13.00	175.00	523.00	3.00	1.69	54.50	290.50
7	JH-7	350.00	84.50	10.00	198.00	590.00	3.00	1.73	54.80	240.50
8	JH-8	400.90	55.50	9.00	79.00	237.00	3.00	1.74	59.00	170.50
9	JH-9	345.50	56.00	12.00	129.00	387.00	3.00	1.80	54.50	210.50
10	JH-10	415.00	53.90	9.00	84.00	250.00	3.00	1.72	53.50	170.50
11	JH-11	417.00	53.50	13.00	170.00	505.00	3.00	1.75	52.50	250.50
12	JH-12	390.50	45.10	10.00	155.00	470.00	3.00	1.72	55.00	260.50
13	JH-13	452.50	49.00	13.00	170.00	510.00	3.00	1.70	60.60	300.60
14	JH-14	520.50	85.50	15.00	260.00	780.00	3.00	1.78	55.00	400.50
15	JH-15	415.00	90.50	11.00	190.00	570.00	3.00	1.68	57.00	435.50
16	JH-16	400.90	66.00	9.00	93.00	278.00	3.00	1.65	54.10	155.60
17	JH-17	380.50	58.10	15.00	225.00	670.00	3.00	1.75	55.10	400.50
18	JH-18	369.10	63.00	9.00	125.00	372.00	3.00	1.75	52.00	200.00
19	JH-19	360.90	77.50	16.00	191.00	573.00	3.00	1.73	51.50	315.50
20	JH-20	353.00	56.20	11.00	105.00	315.00	3.00	1.76	52.10	165.40
21	JH-21	368.90	67.30	12.00	196.00	586.00	3.00	1.78	53.50	300.00
22	JH-22	390.70	87.40	21.00	310.00	330.00	3.00	1.79	55.40	175.00
23	JH-23	359.10	83.50	10.00	129.00	385.00	3.00	1.76	52.80	190.50
24	JH-24	354.00	47.00	9.00	101.00	303.00	3.00	1.80	55.50	165.00
25	JH-25	360.40	48.70	13.00	169.00	507.00	3.00	1.74	53.90	260.50
26	JH-26	369.10	56.90	10.00	190.00	566.00	3.00	1.76	54.30	315.50
27	JH-27	433.30	64.20	19.00	305.00	910.00	3.00	1.78	54.50	480.50
28	JH-28	452.50	65.10	10.00	190.00	570.00	3.00	1.80	55.10	290.50
29	JH-29	420.00	99.00	14.00	192.00	575.00	3.00	1.73	53.00	310.50
30	JH-30	429.00	77.80	15.00	180.00	540.00	3.00	1.76	57.50	350.00
31	JH-31	417.80	56.20	9.00	99.00	297.00	3.00	1.80	55.30	180.00
32	JH-32	403.50	65.00	12.00	117.00	350.00	3.00	1.78	55.00	240.00
33	JH-33	392.50	68.00	6.00	95.00	285.00	3.00	1.73	52.30	155.00
34	JH-34	453.00	67.00	15.00	215.00	645.00	3.00	1.81	52.50	370.50
35	JH-35	410.50	57.90	12.00	167.00	501.00	3.00	1.73	54.10	200.80
36	JH-36	395.50	62.90	14.00	315.00	945.00	3.00	1.70	54.60	450.50
37	JH-37	369.40	80.20	10.00	175.00	525.00	3.00	1.81	57.00	290.50
38	JH-38	329.00	50.40	7.00	125.00	370.00	3.00	1.76	55.00	210.50
39	JH-39	333.40	77.50	15.00	205.00	610.00	3.00	1.75	55.50	330.50
40	JH-40	447.50	100.10	19.00	390.00	1170.00	3.00	1.84	60.80	650.50
41	JH-41	455.00	56.30	12.00	190.00	570.00	3.00	1.77	53.50	275.00
42	JH-42	431.50	66.90	12.00	155.00	462.00	3.00	1.84	56.20	260.50
43	JH-43	442.90	70.50	12.00	210.00	630.00	3.00	1.86	55.60	350.00
44	JH-44	448.50	73.80	15.00	157.00	470.00	3.00	1.78	51.00	220.50
45	JH-45	435.00	69.60	11.00	135.00	405.00	3.00	1.80	55.80	200.00
46	JH-46	376.50	64.50	8.00	175.00	525.00	3.00	1.82	57.00	290.50

S. No.	Accession No.	Plant height (cm)	Girth at base (cm)	Branches/plant	Pods/plant	No. of seed per plant	No. of seed per ball	100 seed weight (g)	Seed size (cm)	Seed yield/plant (g)
47	JH-47	449.50	71.10	14.00	255.00	765.00	3.00	1.78	54.80	385.50
48	JH-48	435.00	74.90	15.00	280.00	840.00	3.00	1.77	54.50	435.50
49	JH-49	344.50	73.50	10.00	115.00	342.00	3.00	1.79	56.20	210.50
50	JH-50	356.90	65.80	8.00	95.00	285.00	3.00	1.73	56.30	165.40
51	JH-51	308.50	52.00	8.00	195.00	580.00	3.00	1.75	57.00	420.50
52	JH-52	276.00	45.40	7.00	145.00	433.00	3.00	1.81	55.30	250.00
53	JH-53	447.50	77.90	13.00	291.00	573.00	3.00	1.77	57.10	350.00
54	JH-54	389.50	76.20	9.00	115.00	343.00	3.00	1.70	56.90	210.50
55	JH-55	436.20	74.00	11.00	190.00	570.00	3.00	1.73	55.80	350.00
56	JH-56	391.00	63.80	15.00	300.00	900.00	3.00	1.72	56.50	455.50
57	JH-57	400.00	66.30	10.00	215.00	642.00	3.00	1.67	54.50	310.50
58	JH-58	423.50	63.50	9.00	110.00	330.00	3.00	1.77	56.90	190.50
59	JH-59	345.30	88.50	17.00	270.00	510.00	3.00	1.73	55.80	275.50
60	JH-60	389.10	55.50	15.00	325.00	970.00	3.00	1.75	54.50	510.50
61	JH-61	453.50	75.90	11.00	115.00	340.00	3.00	1.81	57.20	185.00
62	JH-62	351.00	53.00	20.00	250.00	740.00	3.00	1.80	55.00	425.00
63	JH-63	310.80	50.50	13.00	195.00	580.00	3.00	1.72	55.40	300.00
64	JH-64	379.50	65.20	14.00	295.00	584.00	3.00	1.76	53.50	350.00
65	JH-65	313.50	63.50	10.00	170.00	510.00	3.00	1.75	54.50	255.00
66	JH-66	340.50	33.80	9.00	131.00	390.00	3.00	1.70	53.80	200.50
67	JH-67	340.90	48.70	11.00	215.00	641.00	3.00	1.78	55.50	350.00
68	JH-68	356.40	71.50	13.00	190.00	570.00	3.00	1.75	54.90	330.50
69	JH-69	335.00	51.40	11.00	125.00	375.00	3.00	1.71	56.40	250.00
70	JH-70	420.10	54.50	13.00	165.00	495.00	3.00	1.74	57.10	280.50
71	JH-71	340.50	56.40	12.00	191.00	571.00	3.00	1.68	55.80	270.50
72	JH-72	333.50	55.90	10.00	125.00	375.00	3.00	1.71	54.90	200.00
73	JH-73	330.10	53.50	8.00	90.00	270.00	3.00	1.75	55.10	150.00
74	JH-74	251.50	45.20	15.00	185.00	550.00	3.00	1.80	55.00	310.00
75	JH-75	340.50	50.50	9.00	175.00	525.00	3.00	1.79	54.50	295.50
76	JH-76	322.50	45.90	12.00	199.00	592.00	3.00	1.75	55.50	300.00
77	JH-77	300.00	44.50	9.00	145.00	433.00	3.00	1.70	60.50	250.00
78	JH-78	260.50	42.40	8.00	151.00	451.00	3.00	1.75	54.50	325.00
79	JH-79	315.50	54.90	12.00	215.00	645.00	3.00	1.70	55.10	490.50
80	JH-80	305.00	42.00	10.00	155.00	465.00	3.00	1.73	55.50	290.00
81	JH-81	233.50	43.50	15.00	203.00	606.00	3.00	1.75	55.60	300.50
82	JH-82	247.90	76.80	10.00	155.00	461.00	3.00	1.78	60.60	270.50
83	JH-83	366.00	63.90	11.00	185.00	550.00	3.00	1.76	58.50	310.50
84	JH-84	260.50	52.00	10.00	220.00	650.00	3.00	1.79	60.50	400.50
85	JH-85	289.00	49.30	15.00	275.00	805.00	3.00	1.80	56.50	415.00
86	JH-86	240.50	71.30	8.00	129.00	380.00	3.00	1.76	56.90	225.50
87	JH-87	213.50	46.50	9.00	155.00	462.00	3.00	1.80	55.50	230.50
88	JH-88	270.50	45.70	11.00	118.00	351.00	3.00	1.75	58.30	210.50
89	JH-89	301.50	51.30	13.00	175.00	520.00	3.00	1.73	55.60	255.00
90	JH-90	277.00	47.90	13.00	191.00	570.00	3.00	1.72	55.10	310.50
91	JH-91	266.90	53.70	10.00	135.00	400.00	3.00	1.77	55.90	205.00
92	JH-92	265.00	76.50	17.00	220.00	650.00	3.00	1.70	57.50	635.00
93	JH-93	273.50	66.00	20.00	280.00	830.00	3.00	1.76	55.20	415.00
94	JH-94	260.00	38.10	7.00	95.00	285.00	3.00	1.81	55.30	160.00
95	JH-95	350.00	42.30	12.00	213.00	625.00	3.00	1.74	56.50	335.00
96	JH-96	305.50	46.30	10.00	150.00	430.00	3.00	1.78	55.50	215.00
97	JH-97	249.50	54.70	9.00	88.00	254.00	3.00	1.71	58.30	155.50

S. No.	Accession No.	Plant height (cm)	Girth at base (cm)	Branches/plant	Pods/plant	No. of seed per plant	No. of seed per ball	100 seed weight (g)	Seed size (cm)	Seed yield/plant (g)
98	JH-98	305.00	48.90	13.00	186.00	555.00	3.00	1.80	55.90	290.60
99	JH-99	241.50	58.30	10.00	175.00	510.00	3.00	1.72	59.50	300.50
100	JH-100	285.50	65.00	15.00	245.00	805.00	3.00	1.72	57.50	450.50
101	JH-101	245.00	57.80	9.00	150.00	443.00	3.00	1.80	56.00	245.00
102	JH-102	313.50	53.00	22.00	295.00	875.00	3.00	1.84	56.90	458.50
103	JH-103	290.00	78.10	7.00	99.00	285.00	3.00	1.75	56.50	165.00
104	JH-104	272.50	61.00	9.00	85.00	246.00	3.00	1.75	56.80	150.50
105	JH-105	261.50	57.50	11.00	220.00	650.00	3.00	1.71	55.60	370.50
106	JH-106	255.60	63.50	25.00	315.00	633.00	3.00	1.75	55.40	350.00
107	JH-107	310.50	60.50	20.00	191.00	565.00	3.00	1.70	54.50	305.00
108	JH-108	313.90	44.10	13.00	170.00	500.00	3.00	1.75	55.30	265.00
109	JH-109	305.40	43.90	30.00	330.00	980.00	3.00	1.71	55.50	505.50
110	JH-110	285.00	41.00	14.00	183.00	535.00	3.00	1.80	57.50	301.50
111	JH-111	260.50	50.50	15.00	195.00	575.00	3.00	1.70	55.50	340.50
112	JH-112	277.10	54.30	20.00	255.00	745.00	3.00	1.78	55.50	390.50
113	JH-113	265.60	68.90	11.00	155.00	455.00	3.00	1.65	55.90	315.50
114	JH-114	261.50	36.20	10.00	105.00	305.00	3.00	1.79	55.30	165.50
115	JH-115	275.90	50.70	9.00	175.00	520.00	3.00	1.77	55.80	295.50
116	JH-116	315.10	55.30	8.00	137.00	405.00	3.00	1.75	59.30	250.50
117	JH-117	295.50	56.90	17.00	205.00	603.00	3.00	1.68	57.50	330.00
118	JH-118	215.00	51.80	15.00	216.00	640.00	3.00	1.71	54.80	350.00
119	JH-119	240.50	45.20	9.00	105.00	315.00	3.00	1.65	54.50	175.00
120	JH-120	275.10	67.50	14.00	255.00	725.00	3.00	1.71	53.20	360.00
121	JH-121	310.50	57.50	19.00	240.00	720.00	3.00	1.77	56.50	380.50
122	JH-122	350.00	44.10	11.00	157.00	469.00	3.00	1.81	55.50	230.50
123	JH-123	360.50	45.10	15.00	195.00	579.00	3.00	1.76	55.00	305.00
124	JH-124	315.50	48.90	10.00	180.00	540.00	3.00	1.75	56.50	295.00
125	JH-125	285.40	38.40	15.00	225.00	671.00	3.00	1.84	56.50	365.00
126	JH-126	261.50	35.90	9.00	95.00	280.00	3.00	1.79	54.50	140.50
127	JH-127	285.40	43.50	15.00	219.00	657.00	3.00	1.70	55.50	310.50
128	JH-128	290.70	50.80	10.00	200.00	600.00	3.00	1.81	56.50	300.50
129	JH-129	315.50	57.90	12.00	255.00	750.00	3.00	1.73	57.50	410.50
130	JH-130	320.10	70.30	14.00	291.00	880.00	3.00	1.83	56.50	440.40
131	JH-131	311.50	40.70	8.00	143.00	420.00	3.00	1.74	57.50	305.70
132	JH-132	340.50	57.90	17.00	190.00	570.00	3.00	1.81	55.40	325.60
133	JH-133	345.00	85.20	20.00	285.00	835.00	3.00	1.73	55.50	430.50
134	JH-134	255.00	60.80	10.00	91.00	265.00	3.00	1.71	56.00	144.00
135	JH-135	230.50	38.90	10.00	90.00	270.00	3.00	1.75	58.50	150.50
136	JH-136	340.50	53.80	8.00	80.00	230.00	3.00	1.75	57.50	170.50
137	JH-137	255.30	35.50	10.00	199.00	590.00	3.00	1.80	55.50	300.50
138	JH-138	281.40	75.30	8.00	85.00	248.00	3.00	1.75	55.00	150.00
139	JH-139	273.50	54.50	17.00	295.00	875.00	3.00	1.78	56.50	455.50
140	JH-140	335.50	53.90	11.00	190.00	570.00	3.00	1.70	57.50	300.50
141	JH-141	310.00	56.50	12.00	210.00	600.00	3.00	1.83	57.90	325.50
142	JH-142	271.50	55.00	15.00	305.00	610.00	3.00	1.82	55.00	310.50
143	JH-143	356.50	53.90	9.00	115.00	333.00	3.00	1.76	55.50	165.50
144	JH-144	315.50	47.80	9.00	130.00	380.00	3.00	1.68	54.50	205.50
145	JH-145	340.00	39.50	8.00	100.00	300.00	3.00	1.77	54.00	160.50
146	JH-146	230.50	38.20	10.00	145.00	425.00	3.00	1.79	55.50	210.50
147	JH-147	217.50	58.30	8.00	105.00	300.00	3.00	1.71	55.60	150.50
148	JH-148	242.50	46.60	7.00	90.00	260.00	3.00	1.79	53.50	115.50

S. No.	Accession No.	Plant height (cm)	Girth at base (cm)	Branches/plant	Pods/plant	No. of seed per plant	No. of seed per ball	100 seed weight (g)	Seed size (cm)	Seed yield/plant (g)
149	JH-149	282.50	49.90	17.00	195.00	575.00	3.00	1.73	55.00	310.00
150	JH-150	250.00	44.90	14.00	190.00	550.00	3.00	1.82	55.60	275.00
151	SKNA-1	305.00	47.90	9.00	106.00	315.00	3.00	1.66	55.50	165.00
152	ISJ-1	215.50	46.70	9.00	99.00	285.00	3.00	1.63	53.10	135.10
153	Urlikanchan	311.50	35.80	10.00	135.00	400.00	3.00	1.65	52.50	205.40
154	SKN (Big)	270.90	43.60	11.00	145.00	425.00	3.00	1.69	53.20	215.00
155	Hansraj	251.40	38.90	7.00	99.00	285.00	3.00	1.65	48.50	100.90
156	Phule J-1	250.00	47.50	11.00	139.00	395.00	3.00	1.71	55.00	215.00
157	TNMC-7	317.50	44.90	9.00	105.00	315.00	3.00	1.66	54.50	145.30
158	TNMC-25	240.50	35.40	10.00	131.00	385.00	3.00	1.70	49.50	175.50
<b>Mean for check variety</b>										
	<b>Chhattarpati (C)</b>	<b>512.50</b>	<b>47.90</b>	<b>17.00</b>	<b>155.00</b>	<b>452.00</b>	<b>3.00</b>	<b>1.65</b>	<b>52.50</b>	<b>240.90</b>
	<b>Minimum</b>	<b>213.50</b>	<b>33.80</b>	<b>6.00</b>	<b>79.00</b>	<b>230.00</b>	<b>3.00</b>	<b>1.63</b>	<b>48.50</b>	<b>100.90</b>
	<b>Maximum</b>	<b>520.50</b>	<b>100.10</b>	<b>30.00</b>	<b>425.00</b>	<b>1260.00</b>	<b>3.00</b>	<b>1.86</b>	<b>63.90</b>	<b>730.50</b>
	<b>Mean</b>	<b>333.29</b>	<b>58.10</b>	<b>12.21</b>	<b>179.99</b>	<b>523.96</b>	<b>3.00</b>	<b>1.75</b>	<b>55.54</b>	<b>287.57</b>
	<b>CV(%) Phenotypic</b>	<b>20.24</b>	<b>23.80</b>	<b>31.97</b>	<b>37.59</b>	<b>37.38</b>	<b>0.00</b>	<b>2.74</b>	<b>3.63</b>	<b>37.82</b>



**Table 117. Promising lines in Simarouba germplasm for various characters at different locations (Plains)**

S.No.	Characters	Range	Promising lines
<b>Mandor (Accessions 5)</b>			
1.	Stem girth (cm)	59.00-78.00	Plant No. 3, Plant No. 1, Plant No. 4, Plant No. 2, Plant No. 5 (> 58.00 cm)
2.	Seed yield per plant (kg)	0.50-4.80	Plant No. 4, Plant No. 1, Plant No. 5, Plant No. 2, Plant No. 3 (> 0.49 kg)
3.	100 seed weight (g)	74.30-106.80	Plant No. 1, Plant No. 4, Plant No. 3, Plant No. 2, Plant No. 5 (> 74.10)
<b>Rahuri – Male Paradise tree (Accessions 18)</b>			
1.	Flowering span (days)	33.00-44.00	PS-2003-22, PS-2003-24, PS-2003-65, PS-2003-9, PS-2003-37, PS-2003-60 (< 36.00 days)
2.	Plant height (m)	4.00-6.80	PS-2003-12, PS-2003-15, PS-2003-10, PS-2003-24, PS-2003-6, PS-2003-58 (> 6.10 m)
3.	Trunk girth (cm)	33.00-78.00	PS-2003-58, PS-2003-18, PS-2003-15, PS-2003-24, PS-2003-12, PS-2003-6 (> 66.50 cm)
4.	Primary branches per plant	2.00-4.00	PS-2003-10, PS-2003-12, PS-2003-22, PS-2003-40, PS-2003-6, PS-2003-9, PS-2003-11, PS-2003-15, PS-2003-24, PS-2003-37, PS-2003-56, PS-2003-60 (> 2.00)
<b>Rahuri – Female Paradise tree (Accessions 36)</b>			
1.	Days to maturity	69.00-95.00	PS-2003-35, PS-2003-39, PS-2003-51, PS-2003-52, PS-2003-19, PS-2003-62 (< 74.00 days)
2.	Plant height (m)	3.20-6.70	PS-2003-7, PS-2003-29, PS-2003-4, PS-2003-5, PS-2003-3, PS-2003-23 (> 6.30 m)
3.	Seed Yield (kg/tree)	0.21-7.64	PS-2003-45, PS-2003-20, PS-2003-4, PS-2003-13, PS-2003-59, PS-2003-46, PS-2003-63 (> 4.60 kg/tree)
4.	Primary branches per plant	2.00-6.00	PS-2003-54, PS-2003-35, PS-2003-48, PS-2003-49, PS-2003-61, PS-2003-1, PS-2003-3, PS-2003-4, PS-2003-16, PS-2003-20, PS-2003-21, PS-2003-28, PS-2003-42, PS-2003-45, PS-2003-47, PS-2003-52, PS-2003-57, PS-2003-66 (> 3.00)
5.	Trunk girth (cm)	24.20-90.70	PS-2003-3, PS-2003-26, PS-2003-29, PS-2003-27, PS-2003-8, PS-2003-7 (> 80.15 cm)

<b>S.No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>
6.	No. of drupelets per plant	15.00-63.00	PS-2003-62, PS-2003-45, PS-2003-59, PS-2003-63, PS-2003-46, PS-2003-41, PS-2003-20 (> 47.00)
7.	No. of fruits per drupelets	5.00-112.00	PS-2003-1, PS-2003-13, PS-2003-48, PS-2003-7, PS-2003-4, PS-2003-47, PS-2003-45 (> 87.00)
8.	100 mature fruit weight (g)	336.70-625.20	PS-2003-17, PS-2003-5, PS-2003-20, PS-2003-29, PS-2003-3, PS-2003-27 (> 590.15 g)
9.	100 dry seed weight (g)	110.00-196.00	PS-2003-29, PS-2003-27, PS-2003-42, PS-2003-39, PS-2003-21, PS-2003-20 (> 174.00 g)
<b>S.K. Nagar – Female Paradise tree (Accessions 19)</b>			
1.	Seed yield per plant (kg)	0.70-3.00	Plant No. L10P7, Plant No. L8P9, Plant No. L12P13, Plant No. L13P11, Plant No. L11P2, Plant No. L11P7, Plant No. L13P5, Plant No. L14P9 (>1.38 kg)

**Table 118 . Evaluation of germplasm lines in Simarouba at Mandor : Kharif 2012**

<b>Plant No.</b>	<b>Stem girth (cm)</b>	<b>Seed yield per plant (kg)</b>	<b>100 seed weight (g)</b>
1	76	1.60	106.80
2	68	0.70	79.70
3	78	0.50	88.20
4	74	4.80	98.90
5	59	1.00	74.30
<b>Minimum</b>	<b>59.00</b>	<b>0.50</b>	<b>74.30</b>
<b>Maximum</b>	<b>78.00</b>	<b>4.80</b>	<b>106.80</b>
<b>Mean</b>	<b>71.00</b>	<b>1.72</b>	<b>89.58</b>

**Table 119 a. Evaluation of germplasm lines of male paradise tree (Simarouba) at Rahuri : Kharif 2012**

<b>S.No.</b>	<b>Genotypes</b>	<b>Date of flower initiation</b>	<b>Days to flowering span</b>	<b>Plant height (m)</b>	<b>Trunk girth (cm)</b>	<b>No. of primary branches</b>
1	PS-2003-2	18/01/2012	38.00	4.60	53.50	2.00
2	PS-2003-6	22/1/2012	43.00	6.30	66.60	3.00
3	PS-2003-9	41092.00	35.00	4.00	33.00	3.00
4	PS-2003-10	41153.00	40.00	6.60	66.00	4.00
5	PS-2003-11	13/2/2012	38.00	5.00	43.50	3.00
6	PS-2003-12	41244.00	36.00	6.80	66.80	4.00
7	PS-2003-15	40969.00	42.00	6.80	76.30	3.00
8	PS-2003-18	15/2/2012	38.00	6.10	76.80	2.00
9	PS-2003-22	15/1/2012	33.00	5.30	55.00	4.00
10	PS-2003-24	41031.00	33.00	6.40	75.40	3.00
11	PS-2003-37	41154.00	35.00	6.10	64.80	3.00
12	PS-2003-40	21/2/2012	36.00	5.40	66.10	4.00
13	PS-2003-44	23/1/2012	42.00	4.50	54.00	2.00
14	PS-2003-53	41183.00	44.00	5.60	55.20	2.00
15	PS-2003-56	25/12/2011	37.00	4.30	43.30	3.00
16	PS-2003-58	20/12/2011	40.00	6.20	78.00	2.00
17	PS-2003-60	24/1/2012	35.00	4.50	44.60	3.00
18	PS-2003-65	21/1/2012	33.00	4.40	54.70	2.00
	<b>Minimum</b>		<b>33.00</b>	<b>4.00</b>	<b>33.00</b>	<b>2.00</b>
	<b>Maximum</b>		<b>44.00</b>	<b>6.80</b>	<b>78.00</b>	<b>4.00</b>
	<b>Mean</b>		<b>37.67</b>	<b>5.49</b>	<b>59.64</b>	<b>2.89</b>
	<b>CV(%) Phenotypic</b>		<b>9.33</b>	<b>17.25</b>	<b>22.14</b>	<b>26.25</b>

**Table 119 b. Evaluation of germplasm lines of female paradise tree (Simarouba) at Rahuri : Kharif 2012**

<b>S.No.</b>	<b>Genotypes</b>	<b>Flowering initiation date</b>	<b>Maturity date</b>	<b>Days to maturity</b>	<b>Plant height (m)</b>	<b>Seed yield (kg/tree)</b>	<b>No. of primary branches</b>	<b>Trunk girth (cm)</b>	<b>No. of drupelets/plant</b>	<b>No. of fruits/ drupelets</b>	<b>100 mature fruit weight (g)</b>	<b>100 dry seed weight (g)</b>
1	PS-2003-1	20/12/2011	25/3/2012	95.00	4.50	4.56	4.00	45.80	35.00	112.00	460.20	120.00
2	PS-2003-3	24/12/2011	24/3/2012	90.00	6.40	1.78	4.00	90.70	44.00	26.00	598.50	158.00
3	PS-2003-4	26/12/2011	20/3/2012	84.00	6.50	6.10	4.00	46.00	44.00	95.00	495.00	146.00
4	PS-2003-5	2/1/2012	4/4/2012	92.00	6.50	1.56	3.00	68.00	18.00	60.00	610.50	150.00
5	PS-2003-7	1/2/2012	30/4/2012	89.00	6.70	4.35	3.00	80.20	29.00	99.00	410.30	156.00
6	PS-2003-8	15/02/2012	3/5/2012	78.00	5.80	3.78	3.00	81.20	27.00	85.00	506.00	167.00
7	PS-2003-13	5/2/2012	26/4/2012	81.00	5.20	5.65	2.00	61.20	37.00	100.00	480.00	156.00
8	PS-2003-16	2/2/2012	16/4/2012	74.00	6.10	0.70	4.00	70.20	19.00	26.00	530.00	128.00
9	PS-2003-17	25/01/2012	19/4/2012	84.00	6.30	3.13	3.00	70.80	35.00	67.00	625.20	143.00
10	PS-2003-19	8/2/2012	20/4/2012	72.00	5.00	1.60	2.00	50.10	34.00	33.00	420.50	139.00
11	PS-2003-20	3/1/2012	30/3/2012	87.00	5.10	7.11	4.00	68.70	48.00	85.00	609.60	175.00
12	PS-2003-21	15/2/2012	29/4/2012	74.00	5.40	4.20	4.00	62.10	42.00	56.00	500.30	176.00
13	PS-2003-23	3/2/2012	6/5/2012	93.00	6.40	1.80	2.00	71.60	24.00	46.00	565.20	169.00
14	PS-2003-26	29/01/2012	22/4/2012	83.00	5.30	1.79	3.00	84.50	39.00	29.00	568.30	164.00
15	PS-2003-27	3/2/2012	20/4/2012	77.00	6.00	0.30	2.00	82.40	19.00	8.00	590.20	182.00
16	PS-2003-28	3/2/2012	20/4/2012	77.00	6.30	1.80	4.00	59.20	45.00	25.00	520.00	156.00
17	PS-2003-29	22/2/2012	6/5/2012	74.00	6.70	0.61	2.00	83.20	30.00	9.00	602.00	196.00
18	PS-2003-35	19/2/2012	28/4/2012	69.00	5.10	0.21	5.00	36.10	26.00	5.00	508.20	143.00
19	PS-2003-39	12/2/2012	21/4/2012	69.00	6.30	0.44	3.00	62.40	27.00	9.00	526.30	178.00
20	PS-2003-41	20/2/2012	5/5/2012	75.00	6.10	3.70	3.00	61.70	49.00	60.00	367.50	123.00
21	PS-2003-42	20/2/2012	6/5/2012	76.00	4.60	0.38	4.00	58.40	20.00	10.00	504.00	180.00
22	PS-2003-45	9/1/2012	4/4/2012	85.00	5.80	7.64	4.00	71.20	62.00	88.00	410.00	138.00
23	PS-2003-46	7/1/2012	3/4/2012	86.00	4.00	4.70	2.00	64.70	51.00	83.00	423.00	110.00
24	PS-2003-47	5/1/2012	29/3/2012	74.00	5.30	3.52	4.00	46.80	27.00	91.00	495.10	146.00

S.No.	Genotypes	Flowering initiation date	Maturity date	Days to maturity	Plant height (m)	Seed yield (kg/tree)	No. of primary branches	Trunk girth (cm)	No. of drupelets/plant	No. of fruits/drupelets	100 mature fruit weight (g)	100 dry seed weight (g)
25	PS-2003-48	15/1/2012	9/4/2012	84.00	5.20	4.51	5.00	47.20	37.00	100.00	356.30	123.00
26	PS-2003-49	28/1/2012	25/4/2012	87.00	4.80	2.32	5.00	46.80	36.00	63.00	360.00	114.00
27	PS-2003-51	16/2/2012	25/4/2012	69.00	4.30	0.72	3.00	35.00	15.00	36.00	398.20	129.00
28	PS-2003-52	15/2/2012	6/5/2012	71.00	5.00	1.24	4.00	58.30	16.00	45.00	380.00	130.00
29	PS-2003-54	12/2/2012	1/5/2012	78.00	4.30	0.80	6.00	26.20	35.00	15.00	381.00	135.00
30	PS-2003-57	13/2/2012	28/4/2012	75.00	4.40	2.35	4.00	36.00	45.00	42.00	336.70	129.00
31	PS-2003-59	28/1/2012	12/4/2012	74.00	5.90	4.91	3.00	45.90	60.00	53.00	580.20	152.00
32	PS-2003-61	2/2/2012	28/4/2012	76.00	3.20	0.33	5.00	24.20	32.00	6.00	350.10	131.00
33	PS-2003-62	5/2/2012	18/4/2012	73.00	5.20	3.83	3.00	45.50	63.00	50.00	398.00	126.00
34	PS-2003-63	20/1/2012	15/4/2012	85.00	4.70	4.62	3.00	57.20	55.00	55.00	545.30	151.00
35	PS-2003-66	5/2/2012	20/4/2012	75.00	4.70	2.60	4.00	57.30	34.00	60.00	400.20	127.00
36	PS-2003-67	28/2/2012	12/5/2012	74.00	4.60	0.70	2.00	56.40	19.00	26.00	420.50	134.00
	<b>Minimum</b>			<b>69.00</b>	<b>3.20</b>	<b>0.21</b>	<b>2.00</b>	<b>24.20</b>	<b>15.00</b>	<b>5.00</b>	<b>336.70</b>	<b>110.00</b>
	<b>Maximum</b>			<b>95.00</b>	<b>6.70</b>	<b>7.64</b>	<b>6.00</b>	<b>90.70</b>	<b>63.00</b>	<b>112.00</b>	<b>625.20</b>	<b>196.00</b>
	<b>Mean</b>			<b>79.42</b>	<b>5.38</b>	<b>2.79</b>	<b>3.47</b>	<b>58.70</b>	<b>35.50</b>	<b>51.61</b>	<b>478.68</b>	<b>146.67</b>
	<b>CV(%) Phenotypic</b>			<b>9.17</b>	<b>16.15</b>	<b>73.98</b>	<b>29.60</b>	<b>28.34</b>	<b>37.17</b>	<b>62.11</b>	<b>18.49</b>	<b>14.63</b>

**Table 120. Evaluation of germplasm lines in of female paradise tree (Simarouba) at S. K. Nagar : Kharif 2012**

<b>S.No</b>	<b>Plant No.</b>	<b>Location of Plantation</b>	<b>Age of the plant (Year)</b>	<b>Seed yield per plant (kg)</b>
1	L1P9	D-21 Plot	6.90	1.05
2	L2P4	D-21 Plot	6.90	1.05
3	L5P9	D-21 Plot	6.90	0.88
4	L8P3	D-21 Plot	6.90	1.05
5	L8P9	D-21 Plot	6.90	2.50
6	L10P7	D-21 Plot	6.90	3.00
7	L11P2	D-21 Plot	6.90	1.70
8	L11P4	D-21 Plot	6.90	1.38
9	L11P7	D-21 Plot	6.90	1.40
10	L11P18	D-21 Plot	6.90	0.70
11	L12P1	D-21 Plot	6.90	0.70
12	L12P9	D-21 Plot	6.90	1.05
13	L12P13	D-21 Plot	6.90	2.00
14	L13P5	D-21 Plot	6.90	1.40
15	L13P11	D-21 Plot	6.90	1.85
16	L13P12	D-21 Plot	6.90	1.23
17	L14P9	D-21 Plot	6.90	1.40
18	L15P4	D-21 Plot	6.90	1.00
19	L15P17	D-21 Plot	6.90	0.88
	<b>Minimum</b>			<b>0.70</b>
	<b>Maximum</b>			<b>3.00</b>
	<b>Mean</b>			<b>1.38</b>

**AGRONOMY**

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## IV. AGRONOMY

A total of thirteen agronomic experiments were formulated to be conducted at thirteen locations in 32 trials. These comprised of three studies on amaranth, one each on buckwheat, jatropha and kalingada, five on rice bean and two on underutilized crops in general. Out of these, results of thirteen experiments were received from nine locations in 23 trials, four experiments at six location(s) were taken up during rabi 2011-12 while four (out of thirty two) were not reported. Centre-wise details of experiments are presented in Table 120 and the findings are as follows:

### **Experiment 1 : Chemical weed control in grain amaranth**

The objective of this experiment was to work out chemical weed control practice for grain amaranth. This experiment was conducted at two centres each (Ranichauri and Bangalore) during kharif 2012 and S.K. Nagar, Bhubaneswar during Rabi 2011-12.

#### **Results :**

At Ranichauri (Table 122) and Bangalore (Table 123), weed free control resulted in maximum seed yield (1116.67 kg/ha and 1176.33 kg/ha) followed by two manual weeding 3 and 5 weeks after sowing (1080.55 kg/ha and 1012.00 kg/ha). Chemical weed control treatments resulted in significantly poor grain yield as compare to manual weeding.

At Bhubaneswar (Table 124), weed free control recorded maximum seed yield (1357.00 kg/ha) followed by application of Oxyflurofen @50 g/ha pre-emergent + one hand weeding 5 WAS (Zargon) (1213.70 kg/ha).

At S.K.Nagar (Table 125), 9 treatments were applied for weed control, the maximum grain yield was also recorded in weed free field followed by application Fenoxaprop-p-ethyl 50 gm/ha pre emergence (Whip super) (947 kg/ha) and application of Quizilo top ethyl 50 gm/ha pre emergence (Turaga super) (823 kg/ha).

## **Experiment 2 : Organic farming in grain amaranth**

In order to develop cultivation practices for organic farming of grain amaranth, the crop of grain amaranth was subjected to twelve manurial treatments at Mettupalayam Bangalore, Ranichauri, Cooch Behar and Palampur during Kharif 2012 and S.K. Nagar during Rabi 2011-12. The experiment was laid out in RBD with three replications.

### **Results :**

The amaranth crop fertilized with 50 % RDF + vermi-compost @5 t/ha gave the highest grain yield ( $T_7$ ) at Palampur and Mettupalayam Centres. While the treatment 50 % RDF + FYM 10 t/ha gave highest grain yield ( 1287.00 q/ha) and at Ranicharui (1956.23 q/ha) (Table 126) and S.K. Nagar (1680.00 q/ha), RDF @ 100% gave a maximum yield (Table 127). Based on the average performance over locations, application of 100 % RDF gave maximum yield (1058.59 q/ha). While application of 50% RDF + Vermi-compost @5 t/ha or application of vermin-compost @10 t/ha also resulted in equally good yield of grain amaranth.

## **Experiment 3: Performance of amaranth varieties at different locations**

To identify amaranth varieties suitable for changing climate. This experiment was allotted to four centres in hills and two centres in plain during kharif 2012 and 9 centres in plain during Rabi 2012-13. Data have been received from three centres (Palampur, Mettupalayam and Bangalore).

In this trial, thirteen varieties were tested. The performance of the entries as compared to the mean has been given in Table 128. Based on the overall mean performance in respect of grain yield over three locations, the variety BGA-2 showed highest seed yield.

Significant differences were observed among the varieties for seed yield at all three locations (Table 128). Seed yield level was high at Mettupalayam and Bangalore (8.42 q/ha) and very low at Palampur (2.28 q/ha). Based on the overall mean performance in respect of grain yield over three locations, the variety BGA-2 showed highest seed yield.

Average plant height of the varieties (Table 128) was the highest at Mettupalayam (162.37cm) followed by at Bangalore (106.57 cm). It was the lowest at Palampur (101.14 cm) centre. Based on average performance over three locations the variety RMA-7 had highest plant height (150.61 cm).

The mean flowering time was shortest (48.74 days) at Mettupalayam while it was longest (60.31 days) at Palampur. The variety Anpurana showed consistency for early flowering over the locations and ranked first (44.33 days) based on the overall performance (Table 128).

The average maturity period of the varieties over the locations was 82.59 days. The variety, Annapurna was the earliest in maturity (73.84 days). The average maturity period was the minimum at Mettupalayam (71.92 days) while, it was the longest at Palampur (95.39 days) (Table 128).

Test weight expressed in terms of weight of 10 ml seed recorded at two centres. The variation among the varieties was relatively low. Based on the average over two locations the variety, BGA-2 (7.79 g) showed the highest test weight (Table 128).

#### **Experiment 4 : Effect of fertilizer doses on buckwheat genotypes**

Main objective of this experiment was to find out suitable genotypes for northern part of West Bengal and their fertilizer requirement. It was allotted to Cooch Behar centre, the results were not received.

#### **Experiment 5 : Performance of different rice bean genotypes**

To find out suitable rice bean genotypes for northern part of West Bengal, several genotypes namely, RBL-1, RBL-6, RBL-35, RBL-50, RRB-11, RRB-13 and Local check were grown in RBD with three replications at Cooch Behar

#### **Results :**

The maximum seed yield was observed in genotype RBL-6 (12.67 q/ha) followed by RBL-50 (10.95 q/ha). The maximum plant height (125.9 cm) was found in Local while the longest pod in RBL-6 (8.10 cm). The genotype RBL-35 had bold seeds (6.30 g) at Cooch Behar (Table 129).

### **Experiment 6 : Intercropping study in rice bean during kharif 2012**

This experiment was taken up at Cooch Behar with the objective to identify appropriate intercrop system for rice bean in different parts of the West Bengal. The experiment was laid out in Randomized Block Design with three replications. Centre-wise details of intercrop treatment are as follows:

Treatments	:	<b>For Cooch Behar</b>
		1. Rice bean sole
		2. Maize sole
		3. Niger sole
		4. Sesame sole
		5. Maize + rice bean (1:2)
		6. Niger + rice bean (1:2)
		7. Sesame + rice bean (1:2)
		8. Maize + rice bean (2:2)
		9. Niger + rice bean (2:2)
		10. Sesame + rice bean (2:2)

#### **Results :**

Crop failed due to severe rains immediately after sowing.

### **Experiment 7 : Fertilizer management in rice bean based intercrop**

To work out fertilizer requirements of rice bean based intercrop (rice bean + pigeonpea and rice bean + maize), five fertilizer doses were applied in split plot with three replications at Bhubaneswar and rice bean + maize and rice bean + grain amaranth at Ranichauri.

#### **Results :**

Highest yields of rice bean as well as the intercrops were obtained by applying 100% sole crop recommendations of the component crops and decreased with decrease in fertilizer dose (Table 130). Also, the grain yields of maize intercrop ( $I_1$ ) were higher than that of grain amaranth ( $I_2$ ) at all levels of fertilizer application at Ranichauri.

At Bhubaneswar, it was also of same trend that highest yields of rice bean as well as the intercrops were obtained by applying 100% sole crop recommendations of the component crops and decreased with decrease in fertilizer dose (Table 131). Also, the grain yields of maize intercrop ( $I_1$ ) were higher than that of pigeonpea ( $I_2$ ) at all levels of fertilizer application.

### **Experiment 8 : Organic manurial studies in rice bean**

With a view to standardize a suitable dose of organic fertilizer in combination with biofertilizer for rice bean, nine manurial treatments were given to rice bean in RBD with three replications at Palampur and Ranichauri. Details of treatments are given below:

Treatments	:	(i)	FYM @2.5 t/ha
		(ii)	FYM @5 t/ha
		(iii)	FYM @7.5 t/ha
		(iv)	VC @2.5 t/ha
		(v)	VC @5 t/ha
		(vi)	VC @7.5 t/ha
		(vii)	RDF @50% + VC @2.5 t/ha
		(viii)	100% RDF
		(ix)	Control

#### **Results :**

Application of 100% RDF recorded maximum seed yield of rice bean at both the locations Ranichauri (1125.00 kg/ha) and application of vermi-compost @ 5.0 t/ha gave highest yield (903.70 kg/ha) at Palampur (Table 132). Based on average performance of two locations, application of RDF @ 50% + vermi-compost @ 2.5 t/ha. gave maximum seed yield (9.2q/ha).

### **Experiment 9 : Chemical weed control in rice bean**

The objective of this experiment was to find out chemical weed control practice for rice bean. This experiment was allotted to three centres Bhubaneswar, Cooch Behar and Bangalore in kharif 2012. Data have been received only from two centre Bhubaneswar and Bangalore.

#### **Results :**

At Bhubaneswar (Table 133), the application of weed free control recorded maximum seed yield (1134.00 kg/ha) followed by application of oxyfluorfen @50 kg/ha (Zargon) as pre-emergent treatment (1085.60 kg/ha).

At Bangalore (Table 134), 12 treatments were applied for weed control, the maximum yield was recorded in weed free control field (1169.00 kg/ha)

followed by application of Pendimethalin (30% EC) 1kg ai/ha pre emergence + one weeding 5 WAS (1006.00 kg/ha).

### **Experiment 10 : Effect of planting geometry, fertilizer dose and plants/hill of kalingada under rainfed conditions**

This experiment was started at S.K. Nagar during 2010 to find out the spatial, manurial and plants/hill requirements of kalingada. The experiment was laid out in Factorial Randomized Block Design with three replications. The treatments comprised three levels of spacing viz. 3x1 m ( $S_1$ ), 3x1.5 m ( $S_2$ ) and 3x2 m ( $S_3$ ); two doses of fertilizer, namely,  $N_{20}P_{40}$  ( $F_1$ ) and  $N_{40}P_{80}$  ( $F_2$ ) and, two levels of plants/hill i.e. 1 and 2.

#### **Results :**

The perusal of results in Table 135 revealed that all the three factors affected the seed and green fruit yield of kalingada significantly. Maximum seed yield was obtained by growing the crop in 3x1.0m spacing ( $S_1$ ), applying fertilizer dose of  $N_{40}P_{80}$  and by maintaining two plants /hill. Interaction among the factors was also significant with  $S_1F_2P_2$  resulting in highest seed and  $S_1F_2P_1$  gave the maximum green fruit yield followed by those obtained under different treatments for seed ( $S_1F_2P_2$ ) and green fruit ( $S_3F_1P_1$ ) yields. Pulp ratio, on the other hand, was observed to be the highest under  $S_1F_2P_1$ .

### **Experiment 11 : Intercropping studies on underutilized crops with different tree crops**

This experiment was started at Mettupalayam and Rahuri during 2010 to find out suitable underutilized crops for different tree crops. Results were received from Mettupalayam centre only. Grain Amaranth intercropping resulted in the highest grain yield in both Pungam and Simarouba tree crop (Table 136)

### **Experiment 12 : Intercropping studies on underutilized crops in Jatropha**

This experiment was taken up at Hisar with the objective to find out suitable underutilized crops for intercropping in Jatropha in different parts of the country. The experiment was laid out in Randomized Block Design with three replications. The details of intercrop treatment are as follows:

Treatments : (i) Jatropha (Sole)  
(ii) Jatropha + Wheat  
(iii) Jatropha + Barley  
(iv) Jatropha + Gram  
(v) Jatropha + Mustard  
(vi) Jatropha + Faba bean

**Results :**

Intercropping of jatropha with gram resulted in the highest value of gross return in both grain production and bio-production. This intercropping also gave maximum jatropha equivalent yield (34.28 q/ha) at Hisar (Table 137).

**Experiment 13 : Intercropping studies in underutilized crops in apple orchards during Kharif 2012**

To find out suitable underutilized crops for inter cropping in apple orchards Sangla Valley, this experiment was conducted at Sangla with five intercrops, namely, French bean, buckwheat, amaranth, black cumin and chenopodium planted in Randomized Block Design with four replications. Recommended varieties and cultivation practices of sole crops were followed.

**Results :**

For underutilized crops Chenopodium variety PRC 9801 was observed to give highest yield (11.80 q/ha) followed by buckwheat (Table 138).

**Table 121. Centre-wise details of agronomic experiments allotted/conducted on different underutilized crops**

S. No.	Experiments	Mandor	Hisar	Rahuri	Bhubaneswar	S.K. Nagar	Cooch Behar	Bangalore	Mettupalayam	Palamapur	Sangla	Ranichauri	Shimla	Almora	Total
1	Chemical weed control in grain amaranth	1(0)			1(1)	1(1)		1(1)				1(1)			5(4)
2	Organic farming in grain amaranth					1(1)	1(0)	1(1)	1(1)	1(1)		1(1)			6(5)
3	Performance of amaranth varieties at different locations							1(1)	1(1)	1(1)		1(0)	1(0)	1(0)	6(3)
4	Effect of fertilizer doses on different of buckwheat genotypes						1(0)								1(1)
5	Chemical weed control in rice bean				1(1)		1(0)	1(1)							3(2)
6	Fertilizer management in rice bean based intercrops.				1(1)							1(1)			2(2)
7	Intercropping study of rice bean						1(0)								1(0)
8	Organic manurial studies in rice bean									1(1)		1(1)			2(2)
9	Performance of different rice bean genotypes						1(1)								1(1)
10	Intercropping studies on underutilized crops in Jatropha		1(1)												1(1)
11	Effect of plant geometry, fertilizer and plant/hill of kalingada					1(1)									1(1)
12	Intercropping studies on underutilized crops in Apple										1(1)				1(1)
13	Intercropping studies on underutilized intercrops with different tree crops			1(0)					1(1)						2(1)
	<b>No. of trial allotted</b>	<b>1(0)</b>	<b>1(1)</b>	<b>1(0)</b>	<b>3(3)</b>	<b>3(3)</b>	<b>5(1)</b>	<b>4(4)</b>	<b>3(3)</b>	<b>3(3)</b>	<b>1(1)</b>	<b>5(4)</b>	<b>1(0)</b>	<b>1(0)</b>	<b>32(23)</b>

( ) = conducted; Without ( ) = allotted



**Table 122. Chemical weed control in grain amaranth during Kharif 2012 at Ranichauri**

S. No.	Treatment	Grain yield mean (kg/ha)
T <sub>1</sub>	Weedy check	513.89
T <sub>2</sub>	Weed free	1116.67
T <sub>3</sub>	Phenoxy prop ethyl 50g/ha post emergent (3WAS)	608.33
T <sub>4</sub>	Clodinofof ethyl 50g/ha post emergent (3WAS)	591.67
T <sub>5</sub>	Oxyfluorfen 50g/ha pre-emergent	572.22
T <sub>6</sub>	Oxyfluorfen 50g/ha pre-emergent + one hand weeding (5WAS)	950.00
T <sub>7</sub>	Oxadirygl 50 g/ha post -emergent (3WAS)	541.67
T <sub>8</sub>	Two manual weeding 3 and 5 WAS	1080.55
T <sub>9</sub>	One manual weeding (30DAS)	805.56
	<b>Mean</b>	<b>753.40</b>
	<b>CD(0.05)</b>	<b>103.32</b>
	<b>CV(%) Error</b>	<b>7.92</b>

**Table 123. Chemical weed control in grain amaranth during Kharif 2012 at Bangalore**

S. No.	Treatments	Weed dry weight at harvest (g/m <sup>2</sup> )	Weed control efficiency (%)	Grain yield (kg/ha)
1	Weedy Check	12.63	-	398.33
2	Weed Free Control	0.71	100.00	1176.33
3	Phenoxyprop ethyl (9% EC) 50g ai/ha Post emergent (3 WAS)	7.93	60.82	706.33
4	(Coldino)Quizlofop-p- ethyl (5% EC) 50g ai/ha Post emergent (3 WAS)	7.30	66.21	794.67
5	Oxyflurofen (23.54 EC) 50 g ai/ha Pre emergent	7.30	65.21	680.67
6	Oxyflurofen (23.54 EC) 50 g ai/ha Pre emergent + one hand weeding at 5WAS	6.45	73.91	788.67
7	Oxadirygl (80% wp) 50g ai/ha post emergent (3 WAS)	10.06	36.74	435.00
8	Two manual weeding at 3rd & 5th WAS	4.92	84.79	1012.00
9	One manual weeding at 30 days after sowing	5.56	80.70	915.67
	<b>Mean</b>	<b>6.98</b>	<b>71.05</b>	<b>767.52</b>
	<b>CD(0.05)</b>	<b>1.44</b>	<b>11.80</b>	<b>140.81</b>
	<b>CV(%) Error</b>	<b>11.94</b>	<b>9.59</b>	<b>10.60</b>

**Table 124. Chemical weed control in grain amaranth at Bhubaneswar during Rabi 2011-12**

<b>S. No.</b>	<b>Treatment</b>	<b>Weed dry weight (g/m<sup>2</sup>)</b>	<b>WCE (weed control efficiency) (%)</b>	<b>Seed yield (kg/ha)</b>
T <sub>1</sub>	Weedy check	335.00	-	425.00
T <sub>2</sub>	Weed free control	2.50	99.25	1357.00
T <sub>3</sub>	Phenoxy prop ethyl @ 50g/ha (post emergent ) (3 WAS) (Whipsuper)	122.30	63.49	1090.30
T <sub>4</sub>	Quizilofop ethyl @ 50g/ha (post emergence) (3WAS) (Targasuper)	129.00	61.49	987.60
T <sub>5</sub>	Oxyglurofen @ 50 g/ha pre-emergent (Zargon)	82.70	75.31	1195.00
T <sub>6</sub>	Oxyflurofen @ 50 g/ha pre-emergent + one hand weeding 5 WAS (Zargon)	54.00	83.90	1213.70
T <sub>7</sub>	Oxadirygl @ 50 g/ha post-emergent (3 WAS) (Topstar)	106.70	68.14	1089.70
T <sub>8</sub>	Two manual weeding at 3 and 5 WAS	69.00	79.40	1043.00
T <sub>9</sub>	One manual weeding at 30 DAS	155.00	53.73	942.00
	<b>Mean</b>	<b>117.36</b>	<b>73.09</b>	<b>1038.14</b>
	<b>CD (0.05)</b>	<b>38.81</b>	<b>-</b>	<b>110.80</b>

**Table 125. Chemical weed control in grain amaranth at S.K. Nagar during Rabi 2011-12**

<b>S. No.</b>	<b>Treatment</b>	<b>Plant height (cm)</b>	<b>Inflorescence length (cm)</b>	<b>Grain yield (kg/ha)</b>	<b>Straw yield (kg/ha)</b>
1	Weed Check	177.00	82.00	688.00	5556.00
2	Weed Free	163.00	87.00	988.00	8025.00
3	Fenoxprop ethyl 50 gm / ha pre eme (Whip super )	158.00	85.00	947.00	8025.00
4	Quizilo top ethyl 50 gm / ha pre eme (Turaga super)	155.00	88.00	823.00	7612.00
5	Triflyralin 1 kg/ ha per eme	174.00	84.00	531.00	4115.00
6	Pendimethalin 1 kg/ ha pre eme (Tata panida )	181.00	76.00	700.00	6173.00
7	Oxyfluorfen 50 gm / ha post eme ( 3 WAS ) Oxygold	187.00	81.00	712.00	5556.00
8	Oxadirgy 50 gm / ha post eme ( 3 WAS )	190.00	82.00	700.00	4938.00
9	To manual weeding 3 & 5 WAS	176.00	79.00	947.00	7160.00

**Table 126. Organic farming in grain amaranth at different location during Kharif 2012**

S. No.	Treatments	Seed yield (kg/ha)				
		Bangalore	Matupalayam	Ranichauri	Palampur	Mean
T <sub>1</sub>	FYM @ 5 t/ha	648.67	850.00	1245.79	146.30	<b>722.69</b>
T <sub>2</sub>	FYM @ 7.5 t/ha	962.33	943.00	1346.80	162.96	<b>853.77</b>
T <sub>3</sub>	FYM @ 10 t/ha	985.33	947.00	1511.78	162.96	<b>901.77</b>
T <sub>4</sub>	Vermi-compost @ 5 t/ha	907.00	847.00	1397.31	125.93	<b>819.31</b>
T <sub>5</sub>	Vermi-compost @ 7.5 t/ha	1096.33	947.00	1478.12	144.44	<b>916.47</b>
T <sub>6</sub>	Vermi-compost @ 10 t/ha	1256.33	960.00	1626.26	166.67	<b>1002.32</b>
T <sub>7</sub>	RDF @ 50% + Vermi -compost 5 t/ha	926.00	1070.00	1824.92	203.70	<b>1006.16</b>
T <sub>8</sub>	RDF @100%	1224.00	843.00	1956.23	211.11	<b>1058.59</b>
T <sub>9</sub>	Control	475.67	427.00	1060.61	129.63	<b>523.23</b>
T <sub>10</sub>	RDF @ 50% + FYM @ 5 t/ha	855.67	-	-	-	<b>855.67</b>
T <sub>11</sub>	RDF @ 50% + FYM @ 7.5 t/ha	1178.33	-	-	-	<b>1178.33</b>
T <sub>12</sub>	RDF @ 50% + FYM 10 t/ha	1287.00	-	-	-	<b>1287.00</b>
	<b>Mean</b>	<b>983.56</b>	<b>870.44</b>	<b>1494.20</b>	<b>161.52</b>	<b>927.11</b>
	<b>CD(0.05)</b>	<b>177.24</b>	<b>0.22</b>	<b>184.37</b>	<b>26.30</b>	-
	<b>CV(%) Error</b>	<b>10.66</b>	<b>0.47</b>	<b>7.13</b>	<b>9.41</b>	-

**Table 127. Organic farming in grain amaranth at S.K. Nagar during Rabi 2011-12**

S. No.	Treatment	Plant height (cm)	Inflorescence length (cm)	Grain yield (kg/ha)	Straw yield (kg/ha)
1	RDF	170.00	83.00	1680.00	7985.00
2	FYM 8 ton / ha	177.00	80.00	1028.00	6644.00
3	Vermi-compost 2 ton / ha	185.00	82.00	1055.00	5902.00
4	Castor Cake 1 ton / ha	182.00	83.00	1623.00	8333.00
5	FYM 4 ton / ha+ VC 1 ton / ha	172.00	75.00	1148.00	6192.00
6	FYM 4 ton / ha+ CC 0.5 ton / ha	168.00	75.00	1382.00	6320.00

**Table 128. Performance of grain amaranth varieties at different locations during Kharif 2012**

S. No.	Genotypes	Days of 50% flowering			Days to maturity			Plant height (cm)				Grain yield (q/ha)				Seed volume weight (g)		
		Mettupalayam	Palampur	Mean	Mettupalayam	Palampur	Mean	Bangalore	Mettupalayam	Palampur	Mean	Mettupalayam	Bangalore	Palampur	Mean	Mettupalayam	Bangalore	Mean
1	Annapurna	39.33	49.33	<b>44.33</b>	56.67	91.00	<b>73.84</b>	55.60	108.13	52.50	<b>72.08</b>	8.43	4.80	1.19	<b>4.81</b>	7.40	7.33	<b>7.37</b>
2	BGA-2	50.00	-	<b>50.00</b>	67.67	-	<b>67.67</b>	139.67	150.83	-	<b>145.25</b>	9.67	11.93	-	<b>10.80</b>	7.57	8.00	<b>7.79</b>
3	Durga	53.00	47.67	<b>50.33</b>	71.33	83.33	<b>77.33</b>	133.67	178.80	127.33	<b>146.60</b>	9.00	11.37	3.59	<b>7.99</b>	7.70	7.50	<b>7.60</b>
4	GA-1	55.00	71.67	<b>63.33</b>	87.33	107.67	<b>97.50</b>	108.53	182.03	98.00	<b>129.52</b>	7.50	9.81	1.81	<b>6.37</b>	7.57	7.00	<b>7.29</b>
5	GA-2	51.00	68.33	<b>59.67</b>	87.67	95.00	<b>91.34</b>	109.87	177.27	94.60	<b>127.25</b>	7.33	10.27	1.67	<b>6.42</b>	7.47	7.33	<b>7.40</b>
6	GA-3	54.00	64.00	<b>59.00</b>	88.33	97.00	<b>92.67</b>	115.87	180.80	114.13	<b>136.93</b>	7.23	10.03	1.19	<b>6.15</b>	7.30	6.87	<b>7.08</b>
7	PRA-1	41.00	67.00	<b>54.00</b>	55.67	93.33	<b>74.50</b>	66.60	116.60	118.27	<b>100.49</b>	10.00	3.92	3.19	<b>5.70</b>	7.57	7.83	<b>7.70</b>
8	PRA-2	42.33	66.00	<b>54.17</b>	57.00	102.67	<b>79.83</b>	66.53	111.07	114.33	<b>97.31</b>	9.47	3.16	3.07	<b>5.23</b>	7.53	7.67	<b>7.60</b>
9	PRA-3	38.33	64.00	<b>51.17</b>	57.33	96.33	<b>76.83</b>	74.13	118.20	122.00	<b>104.78</b>	8.37	3.44	3.15	<b>4.99</b>	7.57	7.50	<b>7.54</b>
10	RMA-4	56.33	64.33	<b>60.33</b>	83.67	101.33	<b>92.50</b>	106.47	220.40	67.80	<b>131.56</b>	7.60	7.78	2.11	<b>5.83</b>	7.47	7.10	<b>7.29</b>
11	RMA-7	52.33	66.00	<b>59.17</b>	85.00	93.67	<b>89.33</b>	122.73	221.10	108.00	<b>150.61</b>	6.67	8.79	1.63	<b>5.70</b>	7.50	7.33	<b>7.42</b>
12	Suvarna	49.00	45.67	<b>47.33</b>	66.67	96.00	<b>81.34</b>	145.80	166.47	113.67	<b>141.98</b>	10.20	13.04	3.00	<b>8.75</b>	7.73	8.17	<b>7.95</b>
13	VL-44	52.00	49.67	<b>50.83</b>	70.67	87.33	<b>79.00</b>	140.00	179.13	83.00	<b>134.04</b>	8.00	11.15	1.78	<b>6.98</b>	7.47	8.00	<b>7.74</b>
	<b>Mean</b>	<b>48.74</b>	<b>60.31</b>	<b>54.13</b>	<b>71.92</b>	<b>95.39</b>	<b>82.59</b>	<b>106.57</b>	<b>162.37</b>	<b>101.14</b>	<b>124.49</b>	<b>8.42</b>	<b>8.42</b>	<b>2.28</b>	<b>6.59</b>	<b>7.53</b>	<b>7.51</b>	<b>7.52</b>
	<b>CD</b>	<b>0.56</b>	<b>1.37</b>	<b>-</b>	<b>0.69</b>	<b>1.95</b>	<b>-</b>	<b>16.28</b>	<b>24.73</b>	<b>4.11</b>	<b>-</b>	<b>2.57</b>	<b>2.10</b>	<b>0.40</b>	<b>-</b>	<b>0.17</b>	<b>0.47</b>	<b>-</b>
	<b>CV(%)</b>	<b>-</b>	<b>1.34</b>	<b>-</b>	<b>-</b>	<b>1.21</b>	<b>-</b>	<b>9.16</b>	<b>-</b>	<b>2.40</b>	<b>-</b>	<b>18.15</b>	<b>14.50</b>	<b>10.26</b>	<b>-</b>	<b>-</b>	<b>3.87</b>	<b>-</b>
	<b>Error</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>

**Table 129. Performance of different rice bean genotypes during Kharif 2012 at Cooch Behar**

<b>S. No.</b>	<b>Genotype</b>	<b>Plant height (cm)</b>	<b>No. of primary branches per plant</b>	<b>Days to 50% flowering</b>	<b>Days to maturity</b>	<b>No. of pods per plant</b>	<b>Pod length (cm)</b>	<b>No. of seeds per pod</b>	<b>100 seed weight (g)</b>	<b>Seed yield (q/ha)</b>
1	RBL-1	65.90	3.00	67.00	123.00	41.90	6.70	5.40	5.50	9.35
2	RBL-6	78.20	4.00	70.00	121.00	57.10	8.10	8.80	7.10	12.67
3	RBL-35	68.10	4.00	69.00	127.00	43.90	7.60	5.30	6.30	10.26
4	RBL-50	67.70	3.00	68.00	126.00	55.20	7.50	6.50	6.10	10.95
5	RRB-11	80.40	4.00	71.00	125.00	48.10	7.50	6.80	5.90	9.94
6	RRB-13	86.50	3.00	70.00	128.00	54.40	7.90	5.90	5.50	10.23
7	Local	125.90	4.00	81.00	141.00	51.80	6.30	5.30	5.30	8.54
	<b>C.D. (0.05)</b>	<b>4.79</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>0.61</b>

**Table 130. Fertilizer management in rice bean based intercrops at Ranichauri during Kharif 2012**

S. No.	Notation	Treatments	Rice bean yield (kg/ha)	Intercrop yield (kg/ha)	Mean
1	I <sub>1</sub> F <sub>1</sub>	100 % RDF to main crop (ricebean) + 100 % RDF to intercrop (amaranth)	888.89	3311.11	<b>2100.00</b>
2	I <sub>1</sub> F <sub>2</sub>	75 % RDF to main crop (ricebean) + 50 % RDF to intercrop(amaranth)	694.44	3116.67	<b>1905.56</b>
3	I <sub>1</sub> F <sub>3</sub>	50 % RDF to main crop (ricebean) + 50 % RDF to intercrop(amaranth)	622.22	2700.00	<b>1661.11</b>
4	I <sub>1</sub> F <sub>4</sub>	50 % RDF to main crop(ricebean) + 25 % RDF to intercrop (amaranth)	544.44	2416.66	<b>1480.55</b>
5	I <sub>1</sub> F <sub>5</sub>	25 % RDF to main crop (ricebean) + 25 % RDF to intercrop (amaranth)	450.00	2227.78	<b>1338.89</b>
6	I <sub>2</sub> F <sub>1</sub>	100 % RDF to main crop (ricebean) + 100 % RDF to intercrop (maize)	1050.00	2016.67	<b>1533.33</b>
7	I <sub>2</sub> F <sub>2</sub>	75 % RDF to main crop (ricebean) + 50 % RDF to intercrop(maize)	877.78	1861.11	<b>1369.45</b>
8	I <sub>2</sub> F <sub>3</sub>	50 % RDF to main crop (ricebean) + 50 % RDF to intercrop(maize)	783.33	1533.33	<b>1158.33</b>
9	I <sub>2</sub> F <sub>4</sub>	50 % RDF to main crop(ricebean) + 25 % RDF to intercrop maize)	716.67	1477.78	<b>1097.22</b>
10	I <sub>2</sub> F <sub>5</sub>	25 % RDF to main crop (ricebean) + 25 % RDF to intercrop (maize)	611.11	1344.45	<b>977.78</b>
		<b>Mean of intercrop</b>			
		<b>IC 1</b>	<b>213.33</b>	<b>918.15</b>	<b>565.74</b>
		<b>IC 2</b>	<b>269.26</b>	<b>548.89</b>	<b>409.07</b>
		<b>Mean of Fertilizer</b>			
		<b>F 1</b>	<b>969.45</b>	<b>2663.89</b>	<b>1816.67</b>
		<b>F 2</b>	<b>786.11</b>	<b>2488.89</b>	<b>1637.50</b>
		<b>F 3</b>	<b>702.78</b>	<b>2116.67</b>	<b>1409.72</b>
		<b>F 4</b>	<b>630.56</b>	<b>1947.22</b>	<b>1288.89</b>
		<b>F 5</b>	<b>530.56</b>	<b>1786.11</b>	<b>1158.33</b>
		<b>CD (0.05)</b>			
		<b>Intercrop</b>	<b>245.67</b>	<b>115.95</b>	
		<b>Fertilizer</b>	<b>101.32</b>	<b>406.53</b>	
		<b>Intercrop * Fertilizer</b>	<b>143.28</b>	<b>574.91</b>	
		<b>CV (%) Error</b>	<b>11.43</b>	<b>15.09</b>	

**Table 131. Effect of fertilizer dose on rice bean based intercrops during Kharif 2012 at Bhubaneswar centre**

S. No.	Notation	Treatment	Rice bean yield (kg/ha)	Intercrop yield (kg/ha)	Mean	Rice bean equivalent yield (kg/ha)
1	I <sub>1</sub> F <sub>1</sub>	100 % RDF to main crop (ricebean) + 100 % RDF to intercrop (pigeonpea)	930.00	842.00	<b>886.00</b>	2897.50
2	I <sub>1</sub> F <sub>2</sub>	75 % RDF to main crop (ricebean) + 50 % RDF to intercrop(pigeonpea)	871.00	741.00	<b>806.00</b>	2794.00
3	I <sub>1</sub> F <sub>3</sub>	50 % RDF to main crop (ricebean) + 50 % RDF to intercrop(pigeonpea)	823.00	761.00	<b>792.00</b>	2776.00
4	I <sub>1</sub> F <sub>4</sub>	50 % RDF to main crop(ricebean) + 25 % RDF to intercrop (pigeonpea)	801.00	724.00	<b>762.50</b>	2659.00
5	I <sub>1</sub> F <sub>5</sub>	25 % RDF to main crop (ricebean) + 25 % RDF to intercrop (pigeonpea)	651.00	667.00	<b>659.00</b>	2364.00
6	I <sub>2</sub> F <sub>1</sub>	100 % RDF to main crop (ricebean) + 100 % RDF to intercrop (maize)	989.00	2005.00	<b>1497.00</b>	2560.00
7	I <sub>2</sub> F <sub>2</sub>	75 % RDF to main crop (ricebean) + 50 % RDF to intercrop(maize)	889.00	1705.00	<b>1297.00</b>	2225.00
8	I <sub>2</sub> F <sub>3</sub>	50 % RDF to main crop (ricebean) + 50 % RDF to intercrop (maize)	803.00	1681.00	<b>1242.00</b>	2120.00
9	I <sub>2</sub> F <sub>4</sub>	50 % RDF to main crop(ricebean) + 25 % RDF to intercrop maize)	768.00	1298.00	<b>1033.00</b>	1785.00
10	I <sub>2</sub> F <sub>5</sub>	25 % RDF to main crop (ricebean) + 25 % RDF to intercrop (maize)	623.00	1209.00	<b>916.00</b>	1570.00
		<b>Mean</b>	<b>814.80</b>	<b>1163.30</b>	<b>989.05</b>	
		<b>Mean of intercrop</b>				
		<b>IC 1</b>	<b>2698.10</b>	<b>747.00</b>	<b>781.10</b>	<b>2698.10</b>
		<b>IC 2</b>	<b>2052.00</b>	<b>1579.60</b>	<b>1197.00</b>	<b>2052.00</b>
		<b>Mean of Fertilizer</b>				
		<b>F 1</b>	<b>2728.75</b>	<b>1423.50</b>	<b>1191.50</b>	<b>2728.75</b>
		<b>F 2</b>	<b>2509.50</b>	<b>1223.00</b>	<b>1051.50</b>	<b>2509.50</b>
		<b>F 3</b>	<b>2448.00</b>	<b>1221.00</b>	<b>1017.00</b>	<b>2448.00</b>
		<b>F 4</b>	<b>2222.00</b>	<b>1011.00</b>	<b>897.75</b>	<b>2222.00</b>
		<b>F 5</b>	<b>1967.00</b>	<b>938.00</b>	<b>787.50</b>	<b>1967.00</b>
		<b>CD (0.05)</b>				
		<b>Intercrop</b>				<b>239.06</b>
		<b>Fertilizer</b>				<b>134.65</b>
		<b>Intercrop * Fertilizer</b>				<b>190.43</b>
		<b>CV (%) Error</b>				<b>4.63</b>



**Table 132. Organic manurial studies in rice bean during Kharif 2012**

S. No.	Treatment	Seed yield (kg/ha)		
		Ranichauri	Palampur	Mean
T <sub>1</sub>	FYM @ 2.5 t/ha	694.45	744.44	<b>719.45</b>
T <sub>2</sub>	FYM @ 5.0 t/ha	741.67	829.63	<b>785.65</b>
T <sub>3</sub>	FYM @ 7.5 t/ha	852.78	822.22	<b>837.50</b>
T <sub>4</sub>	Vermicompost @ 2.5 t/ha	791.67	811.11	<b>801.39</b>
T <sub>5</sub>	Vermicompost @ 5.0 t/ha	905.55	903.70	<b>904.63</b>
T <sub>6</sub>	Vermicompost @ 7.5 t/ha	1041.67	740.74	<b>891.20</b>
T <sub>7</sub>	RDF @ 50% + Vermicompost @ 2.5 t/ha	1097.22	748.15	<b>922.69</b>
T <sub>8</sub>	100% RDF	1125.00	600.00	<b>862.50</b>
T <sub>9</sub>	Control	477.78	422.22	<b>450.00</b>
	<b>Mean</b>	<b>858.64</b>	<b>735.80</b>	<b>797.22</b>
	<b>CD(0.05)</b>	<b>121.35</b>	<b>49.30</b>	
	<b>CV(%) Error</b>	<b>8.16</b>	<b>3.87</b>	

**Table 133. Chemical weed control in rice bean at Bhubaneswar during Kharif 2012**

S. No.	Treatment	Weed dry weight (g/m <sup>2</sup> )	WCE (weed control Efficiency) (%)	Seed yield (kg/ha)
T <sub>1</sub>	Weedy check	354.60	-	558.30
T <sub>2</sub>	Weed free control	1.70	99.52	1134.60
T <sub>3</sub>	Phenoxy prop ethyl @ 50g/ha (post emergent) (3 WAS) (Whipsuper)	127.00	64.18	786.70
T <sub>4</sub>	Quizilofop ethyl @ 50g/ha post emergent (3 WAS) (Targasuper)	178.00	49.80	769.30
T <sub>5</sub>	Oxyflurofen @ 50 g/ha pre-emergent (Zargon)	68.60	80.65	980.30
T <sub>6</sub>	Oxyflurofen @ 50 g/ha pre-emergent + one hand weeding at 5 WAS (Zargon)	47.80	86.52	1085.60
T <sub>7</sub>	Oxadirgyl @ 50 g/ha post-emergent (3 WAS) (Topstar)	139.70	60.60	943.30
T <sub>8</sub>	Pendimethalin (30% EC) @ 1 kg/ha pre-emergent (Kristop)	95.90	72.79	812.00
T <sub>9</sub>	Pendimethalin 1 kg/ha + one hand weeding at 5 WAS (Kristop)	89.30	74.81	933.30
T <sub>10</sub>	Two manual weeding 3 and 5 WAS	99.20	71.94	1005.60
T <sub>11</sub>	One manual weedings at 30 days after sowing	207.00	41.62	730.60
	<b>Mean</b>	<b>128.07</b>	<b>70.24</b>	<b>885.42</b>
	<b>CD (0.05)</b>	<b>35.50</b>	-	<b>212.50</b>

**Table 134. Chemical weed control in rice bean during Kharif 2012 at Bangalore**

S. No	Treatments	Weed dry weight at harvest (g/m <sup>2</sup> )	Weed control efficiency (%)	Grain yield (kg/ha)
1	Weedy Check	14.26	-	370.67
2	Weed Free Control	0.71	100.00	1169.00
3	Phenoxyprop ethyl (9% EC) 50g ai/ha Post emergent (3 WAS)	9.28	57.77	680.00
4	Quizlofop-p- ethyl (5% EC) 50g ai/ha Post emergent (3 WAS)	6.13	81.66	961.67
5	Oxyflurofen (23.54 EC) 50 g ai/ha Pre emergent	9.27	57.95	695.00
6	Oxyflurofen (23.54 EC) 50 g ai/ha Pre emergent + one hand weeding at 5WAS	7.76	70.56	890.67
7	Oxadirigyl (80% wp) 50g ai/ha post emergent (3 WAS)	12.31	25.61	619.00
8	Pendimethaline (30% EC) 1 kg ai/ha Pre emergent	7.39	73.01	794.67
9	Pendimethaline (30% EC) 1 kg ai/ha Pre emergent + one weeding at 5 WAS	5.84	83.48	1006.00
10	Two manual weeding at 3rd & 5th WAS	7.05	75.32	906.33
11	One manual weeding at 30 days after sowing	8.27	66.63	820.33
12	Alachlor (50% EC) at 1kg ai/ha Pre emergent	8.12	67.11	804.33
	<b>Mean</b>	<b>8.03</b>	<b>69.01</b>	<b>809.81</b>
	<b>CD(0.05)</b>	<b>1.29</b>	<b>9.25</b>	<b>124.10</b>
	<b>CV (%) Error</b>	<b>9.51</b>	<b>7.93</b>	<b>9.07</b>

**Table 135. Effect of plant geometry, fertilizer and plants/hill on kalingada under rainfed condition during Kharif 2012**

S. No.	Treatment	Seed yield (kg/ha)	Green fruit weight (kg/ha)	Pulp ratio
1	S1 F1 P1	29.00	1889.00	1.65
2	S1 F1 P2	26.00	1519.00	1.58
3	S1 F2 P1	25.00	2204.00	1.88
4	S1 F2 P2	36.00	2037.00	1.57
5	S2 F1 P1	24.00	1389.00	1.58
6	S2 F1 P2	21.00	1157.00	1.55
7	S2 F2 P1	24.00	1759.00	1.73

S. No.	Treatment	Seed yield (kg/ha)	Green fruit weight (kg/ha)	Pulp ratio
8	S2 F2 P2	28.00	1389.00	1.50
9	S3 F1 P1	26.00	1944.00	1.75
10	S3 F1 P2	24.00	1259.00	1.52
11	S3 F2 P1	32.00	1907.00	1.6
12	S3 F2 P2	26.00	1778.00	1.68
	<b>Mean</b>	<b>26.75</b>	<b>1685.92</b>	<b>1.63</b>
	<b>Mean of spacing</b>			
	S1	29.00	1912.25	1.67
	S2	24.25	1423.50	1.59
	S3	27.00	1722.00	1.64
	<b>Mean of fertilizer</b>			
	F1	25.00	1526.17	1.61
	F2	28.50	1845.67	1.66
	<b>Mean of plants/hill</b>			
	P1	26.67	1848.67	1.70
	P2	26.83	1523.17	1.57

**Table 136. Intercropping studies on underutilized crops with different tree crops at Mettupalayam during Kharif 2012**

S. No.	Genotypes	Days to 50 % flowering	Plant height (cm)	Days to maturity	Seed yield (q/ha)	Pest incidence (%)	Disease incidence (%)
1	Pungam (Karanj) +Grain Amaranth	64.50	157.75	114.75	<b>4.09</b>	13.50	13.50
2	Pungam (Karanj) +Rice Bean	62.50	46.75	95.75	2.06	13.50	15.50
3	Pungam (Karanj) +Cowpea	52.50	50.50	119.25	3.64	16.75	19.25
<b>A</b>	<b>Mean</b>	<b>59.83</b>	<b>85.00</b>	<b>109.92</b>	<b>3.26</b>	<b>14.58</b>	<b>16.08</b>
1	Simarouba +Grain Amaranth	65.50	138.00	121.00	<b>2.88</b>	19.00	16.50
2	Simarouba +Rice Bean	60.25	44.00	109.00	1.80	18.50	16.50
3	Simarouba +Cowpea	57.5	47.75	123.75	2.83	20.75	19.25
<b>B</b>	<b>Mean</b>	<b>61.08</b>	<b>76.58</b>	<b>117.92</b>	<b>2.5</b>	<b>19.42</b>	<b>17.42</b>

**Table 137. Effect of intercropping systems on yield and economics of different crops in Jatropha (Rabi 2011-12)**

S. No.	Treatment	Grain seed yield (q/ha)		By product yield (q/ha)		Gross Returns (Rs./ha) from grain/seed		Gross returns (Rs/ha) from by product		Total gross returns (Rs/ha)	Jatropha equivalent yield (q/ha)
		Main crop	Inter crop	Main crop	Inter crop	Main crop	Inter crop	Main crop	Inter Crop		
1	Jatropha (Sole)	14.50	-	-	-	21750.00	-	-	-	21750	14.50
2	Jatropha + Wheat	12.00	15.50	-	17.00	18000.00	19220.00	-	8500.00	45720	30.48
3	Jatropha + Barley	12.50	20.00	-	23.00	18750.00	21000.00	-	6900.00	46650	31.10
4	Jatropha + Gram	14.00	8.50	-	12.00	21000.00	20825.00	-	9600.00	51425	34.28
5	Jatropha + Raya	11.50	7.50	-	16.50	17250.00	21000.00	-	2475.00	40725	27.15
6	Jatropha + Bakla	14.50	12.00	-	20.00	21750.00	18000.00	-	4000.00	43750	29.17

**Grain /seed rate (Rs./q) :-** Jatropha :1500; Wheat :1240; Barley :1050; Gram: 2450; Raya: 2800; Bakla :1500

**By product rate (Rs./q) :-** Wheat :500; Barley :300; Gram :800; Raya :150; Bakla :200

**Table 138. Intercropping studies on underutilized crops in Apple at Sangla during 2012**

<b>S. No.</b>	<b>Genotypes</b>	<b>Seed yield (q/ha)</b>
1	Rajmash (Baspa)	5.67
2	Buckwheat (HimPriya)	8.75
3	Amaranthus (Annapurna)	6.09
4	Chenopodium (PRC9801)	11.80
5	Peas (Palam Priya)	3.83
<b>Mean</b>		<b>7.23</b>
<b>CD(0.05)</b>		<b>1.29</b>
<b>CV(%) Error</b>		<b>11.57</b>

# **QUALITY ANALYSIS**

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## V. QUALITY ANALYSIS

The seeds of promising genotypes evaluated in IVT, AVT and germplasm evaluation of the ten underutilized crops were planned for quality analysis at three centres viz. MPKV, Rahuri (Kalingada, Tumba & Kankoda); CSK HPKV, Palampur (Buckwheat, Chenopod and Adzuki bean) and CCS HAU, Hisar(Grain Amaranth Hills & Plain, Faba bean, Perilla & Rice bean). The quality analysis was done at two centres and seed was supplied by concerned centres of the entries same was not done at MPKV Rahuri Centre due to non availability of seed. The crop-wise details of quality traits are given below:

### 5.1 Grain amaranth

#### 5.1.1 IVT & AVT Kharif 2012 seed supply by Shimla Centre (Hills)

Thirteen genotypes along with three check varieties were analyzed for oil, protein, phenols, Ca, Fe and Zn content. Oil and protein content varied from 5.2 to 8.1 per cent, and 11.5 to 13.1 with an average value of 6.1 and 12.3 % respectively. Phenol content ranged from 0.055 to 0.072 with an average value of 0.064 per cent. Ca, Fe and Zn content ranged from 307 to 312, 7.8 to 12.5 and 5.2 to 7.1 with an average value of 309, 9.6 and 6.1 mg/100g respectively (Table-138) The promising genotypes were:

Genotypes	Oil (%)	Genotypes	Protein (%)	Genotypes	Phenol (%)
PRA-2010-1	6.1	PRA-2011-2	13.1	PRA-2010-2	0.055
IC042268	6.5	IC042328	12.9	PRA-2010-1	0.057
VL-101	6.3	PRA-2010-2	12.7	PRA-2011-2	0.058
VL-102	6.5	IC042008	12.5	IC042328	0.061
Annapurna (C)	8.1	PRA-3 (C)	12.8	Annapurna (C)	0.063

Genotypes	Ca (mg/100g)	Genotypes	Fe (mg/100g)	Genotypes	Zn (mg/100g)
VL-102	312	VL-101	12.5	VL-101	7.1
PRA-2011-2	311	VL-102	12.3	VL-102	6.8
PRA-2010-2	310	IC042271	10.4	PRA-2010-2	6.8
IC042271	309	IC038136	9.8	PRA-2010-1	6.4
Annapurna (C)	309	Durga (C)	9.9	Durga (C)	6.8

### 5.1.2 Germplasm, Kharif 2012 seed supply by Shimla Centre (Hills)

Fifty genotypes were analyzed for oil, protein, phenols, Ca, Fe and Zn content. Oil and Protein content varied from 5.3 to 8.3 per cent, and 10.9 to 13.8 with an average value of 7.0 and 12.4 % respectively. Phenol content ranged from 0.052 to 0.068 with an average value of 0.061 per cent. Ca, Fe and Zn content ranged from 306 to 319, 7.5 to 15.7 and 5.1 to 7.6 with an average value of 309, 10.6 and 5.8 mg/100g respectively (Table 139). The promising genotypes were:

Genotypes	Oil (%)	Genotypes	Protein (%)	Genotypes	Phenol (%)
IC038497	8.3	IC038423	13.8	IC038379	0.052
IC038525	8.2	IC038394	13.4	IC038384	0.053
IC038308	8.1	IC038492	13.2	IC038316	0.054
IC038379	8.1	IC038271	13.1	IC038374	0.054
IC038500	8.1	IC038316	13.1	IC038423	0.054
Annapurna (C)	8.1	PRA-3 (C)	12.8	Annapurna (C)	0.063

Genotypes	Ca (mg/100 g)	Genotypes	Fe (mg/100g)	Genotypes	Zn (mg/100g)
IC038394	319	IC038394	15.7	IC038394	7.6
IC038196	312	IC038456	13.7	IC038408	7.3
IC038376	312	IC038497	13.1	IC038129	7.1
IC038460	312	IC038451	12.8	IC038430	6.6
IC038488	312	IC038282	12.4	IC038386	6.4
Annapurna (C)	309	Durga (C)	9.9	Durga (C)	6.8

### 5.1.3 IVT, Rabi 2011-12 seed supply by Bhubaneswar Centre (Plain)

Eighteen genotypes along with three check varieties were analyzed for oil, protein, phenols, Ca, Fe and Zn content. Oil and protein content varied from 5.2 to 8.2 per cent, and 11.3 to 13.4 with an average value of 6.9 and 12.3 % respectively. Phenol content ranged from 0.051 to 0.063 with an average value of 0.057 per cent. Ca, Fe and Zn content ranged from 308 to 317, 7.9 to 17.2 and 5.7 to 7.5 with an average value of 312, 11.8 and 6.7 mg/100g respectively (Table 140). The promising genotypes were:



Genotypes	Oil (%)	Genotypes	Protein (%)	Genotypes	Phenol (%)
BGA-43	8.2	IC-35637	13.4	BGA-38	0.051
BGA-36	7.8	IC-35628	13.1	BGA-36	0.053
BGA-38	7.7	IC- 35606	12.9	MGA -10	0.055
RMA- 47	7.5	RMA- 49	12.9	KBGA-1	0.057
GA 2(C)	7.8	Suvarna (C)	12.2	BGA -2(C)	0.051

Genotypes	Ca (mg/100g)	Genotypes	Fe (mg/100g)	Genotypes	Zn (mg/100 g)
IC-35628	317	RGA-3	17.2	RMA- 46	7.5
IC-35637	315	KBGA-2	14.1	IC -35628	7.2
IC- 35606	314	KBGA-1	13.2	IC -35637	7.1
SKNA-0904	313	BGA-38	13.2	RGA-3	7.1
Suvarna (C)	315	BGA -2(C)	12.3	BGA -2(C)	7.5

#### 5.1.4 AVT-I, Rabi 2011-12 seed supply by Bhubaneswar Centre (Plain)

Ten genotypes along with three check varieties were analyzed for oil, protein, phenols, Ca, Fe and Zn content. Oil and protein content varied from 5.8 to 8.3 percent, and 11.2 to 13.2 with an average value of 7.1 and 11.9 % respectively. Phenol content ranged from 0.051 to 0.061 with an average value of 0.056 per cent. Ca, Fe and Zn content ranged from 308 to 315, 12.9 to 28.1 and 6.3 to 7.8 with an average value of 311, 16.7 and 7.2 mg/100g respectively (Table 141). The promising genotypes were:

Genotypes	Oil (%)	Genotypes	Protein (%)	Genotypes	Phenol (%)
RMA-38	8.1	BGA-27	12.2	RGAS-08-10	0.051
RMA-37	7.3	RMA-37	12.2	RGA-08-17	0.052
BGA-18	7.1	RGAS-08-10	11.8	RMA-37	0.052
BGA -2(C)	8.3	GA-2(C)	13.2	GA-2(C)	0.056

Genotypes	Ca (mg/100g)	Genotypes	Fe (mg/100g)	Genotypes	Zn (mg/100 g)
BGA-18	315	BGA-19	28.1	BGA-18	7.8
BGA-27	312	RMA-38	21.4	BGA-27	7.5
BGA-19	311	BGA-27	16.9	RGAS-08-10	7.5
GA-2(C)	314	GA-2(C)	14.1	BGA -2(C)	7.5

### 5.1.5 Germplasm, Rabi 2011-12 seed supply by Bhubaneswar Centre (Plain)

Fifty genotypes along with three check varieties were analyzed for oil, protein, phenols, Ca, Fe and Zn content. Oil and protein content varied from 5.7 to 8.3 per cent, and 11.3 to 13.4 with an average value of 6.8 and 12.3 % respectively. Phenol content ranged from 0.051 to 0.066 with an average value of 0.057 per cent. Ca, Fe and Zn content ranged from 308 to 318, 7.8 to 12.6 and 5.4 to 8.6 with an average value of 312, 9.6 and 6.6 mg/100g respectively (Table 142). The promising genotypes were:

Genotypes	Oil (%)	Genotypes	Protein (%)	Genotypes	Phenol (%)
IC95382-B	8.3	IC35404	13.4	IC35633	0.051
IC35713	8.1	IC35661	13.4	IC35665	0.051
IC35711	7.9	IC32193	13.2	IC35719	0.051
IC21803 A	7.8	IC95510	13.2	IC94661	0.051
IC35735	7.8	IC35642	13.1	IC32190	0.052
BGA -2(C)	8.3	GA-2(C)	13.2	GA-2(C)	0.056

Genotypes	Ca (mg/100g)	Genotypes	Fe (mg/100g)	Genotypes	Zn (mg/100 g)
IC95244	318	IC95382 B	12.6	IC95383	8.6
IC95389	316	IC95248	12.1	IC32195	7.7
IC95406	316	IC21803 A	11.7	IC120689	7.7
IC95556	316	IC35713	11.4	IC21803 A	7.5
IC21937	315	IC95391	11.4	IC95244	7.5
GA-2(C)	314	GA-2(C)	14.1	BGA -2(C)	7.5

## 5.2 Rice bean

### 5.2.1 IVT & AVT, Kharif 2012 seed supply by Shimla Centre (Hills)

Nine genotypes along with three standard check varieties from Shimla centre were analysed for protein, Tannin, Cooking time and Antioxidant activity in DPPH. Protein content varied from 18.8 to 20.4%, with an average value of 19.6%. Tannin content and cooking time varied from 577 to 608 (mg/100g) and 48 to 54 min. with an average value of 595 (mg/100g) and 51 min. respectively (Table 143). The per

cent Antioxidant activity in DPPH ranged from 57 to 69 with an average value of 62 per cent. The promising genotypes were:

<b>Genotypes</b>	<b>Protein (%)</b>	<b>Genotypes</b>	<b>Tannin (mg/100g)</b>
IC63980	20.4	IC63980	577
RBHP-8	20.1	IC141077	588
IC141077	19.8	RBHP-35	592
PRR-1 (C)	20.1	PRR-2	601

<b>Genotypes</b>	<b>Cooking time (min)</b>	<b>Genotypes</b>	<b>Antioxidant activity (%)</b>
RBHP-35	48	IC63980	69
IC141077	50	PRR-2011-1	65
PRR-2011-1	50	IC141077	64
PRR-1(C)	52	RBL-6(C)	62

### 5.2.2 IVT, Kharif 2012 seed supply by Bhubaneswar Centre (Plain)

Ten genotypes from Bhubaneswar centre were analysed for protein, Tannin, Cooking time and Antioxidant activity in DPPH. Protein content varied from 19.6 to 20.7%, with an average value of 20.0%. Tannin content and cooking time varied from 533 to 580 (mg/100g) and 44 to 53 min. with an average value of 566 (mg/100g) and 50 min. respectively (Table 144). The per cent Antioxidant activity in DPPH ranged from 45 to 53 with an average value of 48 per cent. The promising genotypes were:

<b>Genotypes</b>	<b>Protein (%)</b>	<b>Genotypes</b>	<b>Tannin (mg/100g)</b>
LRB-537	20.7	LRB-543	533
BRB-104	20.5	LRB-537	547
BRB-105	20.0	BRB-106	565
RBL 50 (C)	20.1	RBL 35 (C)	568

<b>Genotypes</b>	<b>Cooking time (min)</b>	<b>Genotypes</b>	<b>Antioxidant activity (%)</b>
BRBM-113	44	BRB-104	53
LRB-537	47	LRB-537	51
BRB-106	48	LRB-543	48
RBL 6 (C)	49	RBL 1 (C)	52

### 5.2.3 AVT-I, Kharif 2012 seed supply by Bhubaneswar Centre (Plain)

Nine genotypes from Bhubaneswar centre were analysed for protein, Tannin, Cooking time and Antioxidant activity in DPPH. Protein content varied from 19.4 to 21.0%, with an average value of 20.1%. Tannin content and cooking time varied from 538 to 577 (mg/100g) and 48 to 54 min. with an average value of 555 (mg/100g) and 51 min. respectively (Table 145). The per cent Antioxidant activity in DPPH ranged from 43 to 53 with an average value of 49 per cent. The promising genotypes were:

Genotypes	Protein (%)	Genotypes	Tannin (mg/100g)
BRB-102	21	LRB-535	538
LRB-526	20.1	RRB 13	541
RRB 13	20	BRBM-111	541
RBL 6 (C)	20.6	RBL 35 (C)	561

Genotypes	Cooking time (min)	Genotypes	Antioxidant activity (%)
BRB-102	48	LRB-526	48
LRB-526	51	BRB-102	46
RRB 13	52	BRBM-111	45
RBL 35 (C)	50	RBL 35 (C)	53

### 5.2.4 AVT-II, Kharif 2012 seed supply by Bhubaneswar Centre (Plain)

Seven genotypes along with three standard check varieties from Bhubaneswar centre were analysed for protein, Tannin, Cooking time and Antioxidant activity in DPPH. Protein content varied from 19.0 to 21.4%, with an average value of 20.2%. Tannin content and cooking time varied from 555 to 581 (mg/100g) and 50 to 54 min. with an average value of 571 (mg/100g) and 51 min. respectively (Table 146). The per cent Antioxidant activity in DPPH ranged from 50 to 54 with an average value of 52 per cent. The promising genotypes were:

Genotypes	Protein (%)	Genotypes	Tannin (mg/100g)
RRB 11	21.4	RRB 11	555
LRB-524	20.2	LRB-524	568
RBL 6 (C)	20.6	RBL 35 (C)	568

Genotypes	Cooking time (min)	Genotypes	Antioxidant activity (%)
RRB 11	50	LRB-524	54
LRB-524	51	RRB 11	52
RBL 1 (C)	51	RBL 35 (C)	53

### 5.2.5 Germplasm, Kharif 2012 seed supply by Bhubaneswar Centre (Plain)

Fifty genotypes from Bhubaneswar centre were analysed for protein, Tannin and Cooking time. Protein content varied from 18.2 to 21.3%, with an average value of 19.2 %. Tannin content and cooking time varied from 533 to 581(mg/100g) and 43 to 53 min. with an average value of 551 (mg/100g) and 49 min. respectively (Table 147). The promising genotypes were:

Genotypes	Protein (%)	Genotypes	Tannin (mg/100g)	Genotypes	Cooking time (min)
IC002074	21.3	IC018452	533	EC 098453	43
IC520892	20.4	IC002074	537	EC 018556	45
IC018183	20.3	EC078228	537	EC 097882	45
IC176563	20.3	EC181185	537	EC 098452	45
EC018171	20.2	IC016751	538	EC 018184	46
RBL-6 (C)	20.6	RBL-35 (C)	568	RBL-1 (C)	51

## 5.3 Fababean

### 5.3.1 IVT, Rabi 2011-12 seed supply by Hisar Centre (Plain)

Eleven genotypes from Hisar centre along with Check variety were analysed for protein, vicine-convicine, phenol content and pressure cooker cooking time. Protein content varied from 24.4 to 26.5%, vicine-convicine content varied from 0.77 to 0.98% with an average value of 25.1 and 0.82 % respectively (Table 148).

Phenol content varied from 0.23 to 0.26 % with an average value of 0.25%. Cooking time was in the range of 34-48 min. with an average value of 41 min. The promising genotypes having high protein content, low vicine-convicine, low phenol content and lower cooking time (min.) were:

<b>Genotypes</b>	<b>Protein (%)</b>	<b>Genotypes</b>	<b>Vicine-convicine(%)</b>
HB-185	26.5	HB-175	0.77
RFB-3	25.4	NDF-11	0.78
NDF-11	25.2	HB-176	0.78
Vikrant (C)	25.4	Vikrant (C)	0.82

<b>Genotypes</b>	<b>Pressure cooking Time(min)</b>	<b>Genotypes</b>	<b>Phenol(%)</b>
DFB-10-1	34	HB-175	0.23
NDF-11	35	HB-188	0.23
HB-188	37	NDF-11	0.24
Vikrant (C)	39	Vikrant (C)	0.25

### **5.3.2 AVT-I, Rabi 2011-12 seed supply by Hisar Centre (Plain)**

Eight genotypes from Hisar centre along with check variety were analysed for protein, vicine-convicine and phenol content. Protein content varied from 22.5 to 25.2 %, vicine-convicine content ranged from 0.76 to 0.88% with an average value of 24.4 and 0.81 % respectively (Table 149). Phenol content varied from 0.22 to 0.25 % with an average value of 0.24 %. The promising genotypes having high protein content, low vicine-convicine and low phenol content were

<b>Genotypes</b>	<b>Protein (%)</b>	<b>Genotypes</b>	<b>Vicine-convicine (%)</b>	<b>Genotypes</b>	<b>Phenol (%)</b>
HB-82	25.2	DFB-9-1	0.76	DFB-9-1	0.22
NDF-9	25.1	HB-51	0.77	NDF-9	0.23
HB-122	25.1	NDF-9	0.77	HB-51	0.23
Vikrant(C)	25.1	Vikrant(C)	0.83	Vikrant(C)	0.25

### 5.3.3 AVT-II, Rabi 2011-12 seed supply by Hisar Centre (Plain)

Six genotypes from Hisar centre along with check variety were analysed for protein, vicine-convicine and phenol content. Protein content varied from 22.3 to 25.1 %, vicine-convicine content range from 0.79 to 0.83% with an average value of 23.8 and 0.81 % respectively (Table 150). Phenol content varied from 0.23 to 0.25 % with an average value of 0.24 %. The promising genotypes having high protein content, low vicine-convicine and low phenol content were:

Genotypes	Protein (%)	Genotypes	Vicine-convicine (%)	Genotypes	Phenol (%)
HB-617	24.8	IC-366272	0.79	HB-645	0.23
HB-64	24.1	HB-70	0.80	IC-366272	0.24
HB-645	23.9	HB-645	0.80	HB-617	0.24
Vikrant (C)	25.1	Vikrant (C)	0.83	Vikrant (C)	0.25

### 5.3.4 SST, Rabi 2011-12 seed supply by Hisar Centre (Plain)

Twenty genotypes from Hisar centre along with check variety were analysed for protein, vicine-convicine, phenol content and cooking time. Protein content varied from 23.9 to 26.3%, vicine-convicine content varied from 0.76 to 0.97 % with an average value of 25.1 and 0.82 % respectively (Table 151). Phenol content varied from 0.23 to 0.27 % with an average value of 0.24%. The promising genotypes having high protein content, low vicine-convicine, low phenol content were:

Genotype	Protein (%)	Genotype	Vicine-convicine (%)	Genotype	Phenol (%)
HB-10-18	26.3	HB-10-17	0.76	HB-10-2	0.23
HB-10-5	26.1	HB-10-2	0.77	HB-10-3	0.23
HB-10-7	25.9	HB-10-8	0.77	HB-10-8	0.23
Vikrant (C)	25.1	Vikrant (C)	0.83	Vikrant (C)	0.25

### 5.3.5 Germplasm, Rabi 2011-12 seed supply by Hisar Centre (Plain)

Twenty one genotypes from Hisar centre along with check variety were analysed for protein, vicine-convicine and phenol content. Protein content varied from 23.2 to 26.2%, vicine-convicine content varied from 0.77 to 0.97% with an

average value of 24.8 and 0.86 % respectively (Table 152). Phenol content varied from 0.23 to 0.27 % with an average value of 0.25%. The promising genotypes having high protein content, low vicine-convicine and low phenol content were:

<b>Genotypes</b>	<b>Protein (%)</b>	<b>Genotypes</b>	<b>Vicine-convicine (%)</b>	<b>Genotypes</b>	<b>phenol(%)</b>
EC 327677	26.2	EC 253793	0.77	EC 253793	0.23
EC117739	26.1	EC 361499	0.78	EC 329681	0.23
EC327724	25.7	EC 329609	0.78	EC 361499	0.24
EC 329812	25.7	EC 329681	0.8	EC 329609	0.24
Vikrant(C)	25.1	Vikrant(C)	0.83	Vikrant(C)	0.25

## **5.4 Perilla**

### **5.4.1 Germplasm, Kharif 2012 seed supply by Shillong Centre (Hills)**

Ten genotypes from NBPGR Regional Station, Umaim, Shilong were evaluated for Oil (%), Protein (%) and Total Phenols (%) in the defatted seed cake. Oil ranged from 24.9-42.6(%), Protein ranged from 25.8-31.5 (%) and Phenol ranged from 0.60 to 0.85 (%) with a mean value of 34.6, 28.7 and 0.68 (%) respectively (Table 153). The promising genotypes were

<b>Genotypes</b>	<b>Oil (%)</b>	<b>Genotypes</b>	<b>Protein (%) in the defatted seed cake</b>	<b>Genotypes</b>	<b>Total Phenols (%) in the defatted seed cake</b>
IC-216268	42.6	IC-211608	31.5	IC-335408	0.60
IC-006447	40.9	IC-006447	31.1	IC-374494	0.60
IC-334313	38.4	IC-334313	30.8	IC-211608	0.60
IC-211608	37.9	IC-369449	29.4	IC-369449	0.62

## **5.5 Adzuki bean**

### **5.5.1 Germplasm, Kharif 2012 seed supply by Shimla Centre (Hills)**

The crude protein content in adzuki bean genotypes ranged from 16.62 (EC-340253 & EC-340259) to 25.37% (EC-340261). The range of variation *in vitro* protein digestibility content was observed from 70.50 (EC-340265) to 85.20%



(HPU-51). The range of variation in cooking time was observed from 47(EC-340251) to 60 (EC-340277) min. The average cooking time in adzuki bean genotypes was found to be 53.5 min.i.e. moderate quality (Table 154).

## **5.6 Buckwheat**

### **5.6.1 IVT, AVT & Germplasm, Kharif 2012 seed supply by Shimla Centre (Hills).**

The crude protein, total polyphenols, antioxidant activity in buckwheat genotypes ranged from 10.50 to 14.43%, 0.12 to 1.38 mg/100ml, 1.26 to 94.21% inhibitions, respectively. The genotype(s) IC-109728 (14.43%) & EC-058322 (14.43%) in crude protein, Himpriya (1.38mg /100ml) in total polyphenols, Sangla B-129 (94.21% inhibition) in antioxidant activity were found promising genotypes for individual quality parameters. Values in respect of total ash content varied from 2.5-4.7%. The highest ash content was observed in genotype EC-386667. The calcium, magnesium and potassium content in buckwheat genotypes ranged from 48.5 (IC-042426) to 99.7 (EC-218742) mg/100g, 137 (IC-204088) to 258.5 (EC-058322) mg/100g and 255 (IC-109729) to 591 (PRB-1) mg/100g, respectively (Table 155).

## **5.7 Chenopod**

### **5.7.1 Germplasm, Kharif 2012 seed supply by Shimla Centre (Hills).**

The minimum and maximum values for crude protein were observed 13.12 (IC-258382 & NIC-22504) to 17.5% (NIC-22516 & IC-328854) in that order. The average value for crude protein in chenopod genotypes was found to be 15.2%. The range of variation in ash content was observed from 2.9 (IC-258382) to 6.2 (NIC-22510) %. The calcium and iron content in chenopod genotypes ranged from 166 (IC-258253) to 249 (IC-329184, NIC-22508 & NIC-22503) mg/100g and 3.4 (IC-328877) to 13.3 (IC-258382) mg/100g, respectively (Table 156).

**Table-139. IVT & AVT Kharif 2012 of grain amaranth seed supply by Shimla Centre (Hills)**

S. No.	Genotypes	Oil (%)	Protein (%)	Phenol (%)	Ca (mg/100 g)	Fe (mg/100g)	Zn (mg/100g)
1	IC038136	5.2	12.2	0.068	308	9.8	5.3
2	IC042008	5.4	12.5	0.066	308	8.5	5.8
3	IC042268	6.5	11.9	0.071	307	9.4	5.7
4	IC042271	5.6	12.1	0.065	309	10.4	5.9
5	IC042328	5.4	12.9	0.061	309	8.9	5.9
6	VL-101	6.3	11.9	0.072	309	12.5	7.1
7	VL-102	6.5	11.7	0.071	312	12.3	6.8
8	PRA-2010-1	6.1	12.5	0.057	309	9.7	6.4
9	PRA-2010-2	5.6	12.7	0.055	310	9.0	6.8
10	PRA-2011-2	5.4	13.1	0.058	311	7.8	5.2
11	Annapurna	8.1	11.5	0.063	309	8.4	5.8
12	Durga	6.8	11.9	0.064	309	9.9	6.8
13	PRA-3	5.8	12.8	0.066	309	8.4	6.3
	<b>Mean</b>	<b>6.1</b>	<b>12.3</b>	<b>0.064</b>	<b>309</b>	<b>9.6</b>	<b>6.1</b>
	<b>Range</b>	<b>5.2-8.1</b>	<b>11.5-13.1</b>	<b>0.055-0.072</b>	<b>307-312</b>	<b>7.8-12.5</b>	<b>5.2-7.1</b>

**Table-140. Germplasm, Kharif 2012 of grain amaranth seed supply by Shimla Centre (Hills)**

S. No.	Genotypes	Oil (%)	Protein (%)	Phenol (%)	Ca (mg/100 g)	Fe (mg/100g)	Zn (mg/100g)
1	IC038129	7.8	12.3	0.064	308	9.7	7.1
2	IC038158	6.7	11.8	0.063	307	11.2	6.0
3	IC038164	6.3	12.7	0.065	311	10.1	5.8
4	IC038169	7.7	12.1	0.058	310	10.4	5.7
5	IC038192	6.6	11.8	0.064	307	10.8	5.3
6	IC038193	6.8	12.2	0.062	309	9.2	5.4
7	IC038196	7.1	12.6	0.060	312	8.4	6.2
8	IC038201	7.2	12.3	0.062	310	8.1	5.9
9	IC038256	6.8	12.6	0.061	311	7.5	6.2
10	IC038271	6.6	13.1	0.056	308	8.7	6.3
11	IC038281	7.2	12.3	0.055	308	9.2	5.8
12	IC038282	6.1	11.8	0.067	310	12.4	5.2
13	IC038289	7.1	12.7	0.063	307	11.2	5.4
14	IC038301	7.8	11.8	0.061	309	12.1	5.3
15	IC038308	8.1	12.5	0.055	307	11.7	6.3
16	IC038310	6.5	11.9	0.064	311	11.9	5.1
17	IC038316	7.8	13.1	0.054	306	12.2	5.9
18	IC038340	7.3	12.4	0.066	308	11.9	5.7
19	IC038371	7.2	12.7	0.058	309	10.4	5.4
20	IC038373	7.8	12.2	0.055	307	9.8	5.1
21	IC038374	7.6	12.7	0.054	307	8.7	5.5
22	IC038375	7.4	10.9	0.058	309	10.1	6.2
23	IC038376	6.8	12.6	0.061	312	9.3	5.8
24	IC038378	7.8	12.3	0.055	308	9.1	5.3
25	IC038379	8.1	12.9	0.052	307	8.8	5.2
26	IC038380	7.8	12.4	0.056	306	8.9	5.5
27	IC038384	7.5	12.4	0.053	308	10.1	6.3
28	IC038386	6.1	12.6	0.056	310	11.7	6.4
29	IC038394	7.4	13.4	0.063	319	15.7	7.6
30	IC038408	6.1	12.2	0.058	310	9.3	7.3
31	IC038423	5.3	13.8	0.054	309	9.2	5.8
32	IC038430	6.7	12.6	0.065	311	10.9	6.6
33	IC038451	5.5	12.8	0.068	307	12.8	6.3
34	IC038456	5.9	12.7	0.062	309	13.7	6.0
35	IC038460	6.6	12.9	0.065	312	10.8	5.7
36	IC038480	7.1	11.8	0.059	308	12.3	5.1
37	IC038487	6.1	11.8	0.063	308	11.4	5.2
38	IC038488	6.7	12.4	0.061	312	10.2	5.5
39	IC038492	6.1	13.2	0.065	311	9.3	5.8
40	IC038496	7.4	11.8	0.061	307	12.4	5.1
41	IC038497	8.3	11.8	0.058	306	13.1	5.3
42	IC038498	7.5	11.5	0.065	309	9.4	5.4
43	IC038500	8.1	11.3	0.066	312	8.3	5.2
44	IC038518	6.7	12.4	0.066	311	11.7	5.8
45	IC038520	6.2	11.6	0.058	308	10.8	5.3
46	IC038522	7.3	12.7	0.068	310	10.8	5.8
47	IC038525	8.2	12.2	0.064	307	9.7	5.4
48	IC038555	6.8	12.5	0.066	309	11.2	5.2
49	IC038556	6.6	12.7	0.063	308	12.1	5.7
50	IC038561	7.1	12.6	0.067	311	11.7	5.6
	<b>Mean</b>	<b>7.0</b>	<b>12.4</b>	<b>0.061</b>	<b>309</b>	<b>10.6</b>	<b>5.8</b>
	<b>Range</b>	<b>5.3-8.3</b>	<b>10.9-13.8</b>	<b>0.052-0.068</b>	<b>306-319</b>	<b>7.5-15.7</b>	<b>5.1-7.6</b>

**Table 141. IVT, Rabi 2011-12 of grain amaranth seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Oil (%)	Phenol (%)	Ca (mg/100g)	Fe (mg/100g)	Zn (mg/100 g)
1	MGA -10	11.9	6.2	0.055	312	11.4	6.3
2	MGA- 12	12.7	6.4	0.058	310	9.7	6.8
3	IC-35606	12.9	6.3	0.061	314	10.8	6.9
4	IC-35628	13.1	5.2	0.062	317	10.4	7.2
5	IC-35637	13.4	5.8	0.063	315	12.7	7.1
6	KBGA-1	12.2	6.7	0.057	310	13.2	6.5
7	KBGA-2	12.2	7.1	0.058	308	14.1	6.7
8	RGA-3	12.4	6.4	0.057	310	17.2	7.1
9	RMA- 46	12.7	7.4	0.061	312	12.5	7.5
10	RMA- 47	12.1	7.5	0.058	311	10.7	6.3
11	RMA- 49	12.9	6.8	0.057	310	11.3	6.7
12	SKNA-0904	12.8	6.8	0.057	313	12.5	6.8
13	BGA-36	11.4	7.8	0.053	312	10.2	5.9
14	BGA-38	11.7	7.7	0.051	309	13.2	5.7
15	BGA-43	11.3	8.2	0.056	310	11.7	6.2
16	GA 2(C)	11.6	7.8	0.055	313	10.1	7.2
17	Suvarna (C)	12.2	6.4	0.058	315	7.9	7.0
18	BGA -2(C)	11.9	7.2	0.051	314	12.3	7.5
	<b>Mean</b>	<b>12.3</b>	<b>6.9</b>	<b>0.057</b>	<b>312</b>	<b>11.8</b>	<b>6.7</b>
	<b>Range</b>	<b>11.3-13.4</b>	<b>5.2-8.2</b>	<b>0.051-0.063</b>	<b>308-317</b>	<b>7.9-17.2</b>	<b>5.7-7.5</b>

**Table 142. AVT-I, Rabi 2011-12 of grain amaranth seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Oil (%)	Phenol (%)	Ca (mg/100g)	Fe (mg/100g)	Zn (mg/100 g)
1	BGA-18	11.2	7.1	0.061	315	16.1	7.8
2	BGA-19	11.3	6.8	0.058	311	28.1	7.1
3	BGA-27	12.2	6.4	0.053	312	16.9	7.5
4	RGA-08-17	11.6	5.8	0.052	310	12.9	6.8
5	RGAS-08-10	11.8	5.9	0.051	308	16.9	7.5
6	RMA-37	12.2	7.3	0.052	310	13.9	7.5
7	RMA-38	11.8	8.1	0.057	311	21.4	6.4
8	GA-2(C)	13.2	7.4	0.056	314	14.1	6.3
9	Suvarna (C)	11.8	8.2	0.061	311	13.4	7.2
10	BGA -2(C)	11.6	8.3	0.058	310	13.6	7.5
	<b>Mean</b>	<b>11.9</b>	<b>7.1</b>	<b>0.056</b>	<b>311</b>	<b>16.7</b>	<b>7.2</b>
	<b>Range</b>	<b>11.2-13.2</b>	<b>5.8-8.3</b>	<b>0.051-0.061</b>	<b>308-315</b>	<b>12.9-28.1</b>	<b>6.3-7.8</b>

**Table 143. Germplasm, Rabi 2011-12 of grain amaranth seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Oil (%)	Phenol (%)	Ca (mg/100g)	Fe (mg/100g)	Zn (mg/100 g)
1	IC- 21803 A	12.3	7.8	0.058	312	11.7	7.5
2	IC- 21937	12.7	6.3	0.062	315	10.2	7.3
3	IC- 21938	12.5	6.7	0.061	311	8.7	6.4
4	IC- 32186	11.8	7.5	0.055	308	9.2	5.8
5	IC- 32190	11.7	7.3	0.052	313	10.5	5.7
6	IC- 32193	13.2	5.9	0.054	309	8.7	7.2
7	IC- 32195	12.8	5.8	0.062	311	8.9	7.7
8	IC- 35404	13.4	6.3	0.058	315	9.2	7.3
9	IC- 35415	12.7	5.8	0.056	312	11.1	6.4
10	IC- 35615	12.2	5.9	0.054	309	9.4	6.2
11	IC- 35633	11.8	6.8	0.051	309	7.8	5.8
12	IC- 35635	11.3	7.3	0.055	312	10.2	5.7
13	IC- 35638	12.4	7.1	0.058	310	11.1	6.4
14	IC- 35642	13.1	6.4	0.062	311	11.2	7.3
15	IC- 35651	12.8	7.4	0.063	312	9.4	7.1
16	IC- 35661	13.4	6.2	0.058	313	8.3	7.4
17	IC- 35665	12.2	6.8	0.051	310	9.2	5.8
18	IC- 35701	12.1	6.5	0.053	308	7.8	5.9
19	IC- 35702	11.8	7.2	0.061	310	8.1	5.5
20	IC- 35711	11.5	7.9	0.057	315	10.2	5.7
21	IC- 35713	11.7	8.1	0.054	312	11.4	5.9
22	IC- 35716	12.4	6.2	0.052	313	9.2	5.9
23	IC- 35717	12.8	5.8	0.058	311	8.4	6.5
24	IC- 35719	12.7	7.3	0.051	312	10.1	6.7
25	IC- 35735	11.3	7.8	0.058	308	8.5	5.4
26	IC- 35742	12.7	7.4	0.063	310	8.5	5.8
27	IC- 81698 B	11.8	7.8	0.055	311	11.3	6.3
28	IC- 94654	11.3	7.6	0.062	310	10.2	5.8
29	IC- 94661	12.1	7.1	0.051	312	8.7	5.6
30	IC- 95204	12.4	6.2	0.066	314	9.4	6.1
31	IC- 95244	12.4	6.3	0.058	318	8.7	7.5
32	IC- 95248	11.8	7.8	0.055	308	12.1	7.2
33	IC- 95251	12.1	7.3	0.056	312	8.4	6.4
34	IC- 95370	12.7	6.7	0.058	315	9.3	6.2
35	IC- 95382 B	11.4	8.3	0.052	311	12.6	6.7
36	IC- 95383	12.1	7.1	0.055	314	9.2	8.6
37	IC- 95389	11.8	6.8	0.057	316	8.7	6.1
38	IC- 95391	11.9	7.8	0.062	312	11.4	7.2
39	IC- 95406	12.7	6.2	0.061	316	9.5	7.3
40	IC- 95430	12.9	5.8	0.053	313	8.7	7.1
41	IC- 95498	11.5	5.9	0.063	310	9.2	6.8
42	IC- 95510	13.2	6.2	0.058	312	10.1	7.5
43	IC- 95516	12.8	5.7	0.063	310	9.2	6.4
44	IC- 95556	11.7	6.7	0.058	316	10.2	5.6
45	IC- 120621	12.1	6.1	0.055	313	9.4	7.4
46	IC- 120649	12.5	6.5	0.061	311	8.3	7.2
47	IC- 120668	11.8	7.3	0.053	310	8.6	6.7
48	IC- 120670	11.9	7.8	0.052	312	7.8	5.8
49	IC- 120689	12.4	5.8	0.056	311	10.9	7.7
50	IC- 432086	12.7	5.7	0.058	313	9.5	7.5
	<b>Mean</b>	<b>12.3</b>	<b>6.8</b>	<b>0.057</b>	<b>312</b>	<b>9.6</b>	<b>6.6</b>
	<b>Range</b>	<b>11.3-13.4</b>	<b>5.7-8.3</b>	<b>0.051-0.066</b>	<b>308-318</b>	<b>7.8-12.6</b>	<b>5.4-8.6</b>

**Table 144. IVT & AVT Kharif 2012 of rice bean seed supply by Shimla Centre (Hills)**

S. No.	Genotypes	Protein (%)	Tannin (mg/100)	Cooking time (min)	Antioxidant activity (%)
1	IC141077	19.8	588	50	64
2	IC63980	20.4	577	53	69
3	RBL-6 (C)	18.8	604	54	62
4	PRR-1(C)	20.1	608	52	58
5	PRR-2(C)	19.2	601	53	57
6	RBHP-35	19.8	592	48	58
7	PRR-2011-1	18.9	600	50	65
8	LRB-460	19.7	592	52	60
9	RBHP-8	20.1	594	51	62
	<b>Mean</b>	<b>19.6</b>	<b>595</b>	<b>51</b>	<b>62</b>
	<b>Range</b>	<b>18.8-20.4</b>	<b>577-608</b>	<b>48-54</b>	<b>57-69</b>

**Table 145. IVT, Kharif 2012 of rice bean seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Tannin (mg/100g)	Cooking time (min)	Antioxidant activity (%)
1	LRB-537	20.7	547	47	51
2	LRB-543	19.8	533	49	48
3	BRB-104	20.5	578	51	53
4	BRB-105	20.0	573	52	47
5	BRB-106	19.7	565	48	45
6	BRBM-113	19.7	568	44	46
7	RBL 1 (C)	19.8	572	51	52
8	RBL 6 (C)	19.9	577	49	49
9	RBL 35 (C)	19.6	568	52	45
10	RBL 50 (C)	20.1	580	53	48
	<b>Mean</b>	<b>20.0</b>	<b>566</b>	<b>50</b>	<b>48</b>
	<b>Range</b>	<b>19.6-20.7</b>	<b>533-580</b>	<b>44-53</b>	<b>45-53</b>

**Table 146. AVT-I, Kharif 2012 of rice bean seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Tannin (mg/100g)	Cooking time(min)	Antioxidant activity (%)
1	RRB 13	20.0	541	52	51
2	LRB-526	20.1	543	51	48
3	LRB-535	19.4	538	54	43
4	BRBM-111	19.9	541	53	45
5	BRB-102	21.0	565	48	46
6	RBL 1 (C)	20.1	577	51	52
7	RBL 6 (C)	20.6	565	52	50
8	RBL 35 (C)	19.7	561	50	53
9	RBL 50 (C)	20.4	563	52	51
	<b>Mean</b>	<b>20.1</b>	<b>555</b>	<b>51</b>	<b>49</b>
	<b>Range</b>	<b>19.4-21</b>	<b>538-577</b>	<b>48-54</b>	<b>43-53</b>

**Table 147. AVT-II, Kharif 2012 of rice bean seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Tannin (mg/100g)	Cooking time (min)	Antioxidant activity (%)
1	LRB-482	19.0	571	54	51
2	LRB-524	20.2	568	51	54
3	RRB 11	21.4	555	50	52
4	RBL 1 (C)	20.1	581	51	52
5	RBL 6 (C)	20.6	578	52	50
6	RBL 35 (C)	19.7	568	50	53
7	RBL 50 (C)	20.4	573	52	51
	<b>Mean</b>	<b>20.2</b>	<b>571</b>	<b>51</b>	<b>59</b>
	<b>Range</b>	<b>19.0-21.4</b>	<b>555-581</b>	<b>50-54</b>	<b>50-54</b>

**Table 148. Germplasm, Kharif 2012 of rice bean seed supply by Bhubaneswar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Tannin (mg/100g)	Cooking time (min.)
1	IC 002074	21.3	537	51
2	IC 0025687	19.4	541	50
3	IC 002909	19.7	545	47
4	IC 007537-C	19.5	565	48
5	IC 008565-3	20.1	578	48
6	IC 011723	18.6	548	52
7	IC 015640	18.7	545	53
8	IC 016342	19.4	553	51
9	IC 016751	19.8	538	48
10	IC 016767	20.1	541	52
11	IC 018183	20.3	547	48
12	IC 018452	18.3	533	51
13	IC 018563	19.1	538	53
14	IC 019336	18.4	578	52
15	IC 019781-2	18.7	577	53
16	IC 026973	19.2	568	51
17	IC 176563	20.3	555	50
18	IC 248733	20.1	581	51
19	IC 520892	20.4	575	48
20	IC 521049	19.7	571	53
21	IC 521061	19.6	575	52
22	IC 521068	18.5	562	52
23	IC 521081	18.7	561	53
24	IC 521144	18.3	565	52
25	IC 521148	19.2	571	52
26	EC 000262	19.7	544	50
27	EC 001843	18.8	541	48
28	EC 012416	18.3	538	47
29	EC 012436	18.9	547	51
30	EC 014075	19.1	542	50
31	EC 016136	19.3	553	48
32	EC 018171	20.2	552	47
34	EC 018184	19.8	548	46
35	EC 018222	18.7	539	50
36	EC 018260	18.2	545	51
37	EC 018556	19.3	541	45
38	EC 018556	19.4	542	47
39	EC 018771	19.7	547	48
40	EC 037226	18.5	557	51
41	EC 037228	18.4	551	50
42	EC 048452	19.1	541	51
43	EC 078228	19.3	537	49
44	EC 087898	19.3	539	47
45	EC 097882	19.7	545	45
46	EC 098452	18.2	548	45
47	EC 098453	18.7	551	43
48	EC 108887-A	19.1	550	46
49	EC 114076	18.3	538	47
50	EC 181185	18.5	537	48
	<b>Mean</b>	<b>19.2</b>	<b>551</b>	<b>49</b>
	<b>Range</b>	<b>18.2-21.3</b>	<b>533-581</b>	<b>43-53</b>



**Table 149. IVT, Rabi 2011-12 of Fababean seed supply by Hisar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Vicine-convicine (%)	Pressure cooking Time(min)	Phenol (%)
1	NDF-11	25.2	0.78	35	0.24
2	RFB-4	24.9	0.86	45	0.25
3	RFB-3	25.4	0.84	46	0.25
4	HB-175	24.4	0.77	44	0.23
5	HB-176	24.6	0.78	48	0.24
6	HB-182	25.2	0.82	43	0.25
7	HB-185	26.5	0.98	39	0.26
8	HB-188	25.2	0.78	37	0.23
9	DFB-10-3	24.5	0.78	40	0.24
10	DFB-10-1	24.9	0.84	34	0.26
11	Vikrant (C)	25.4	0.82	39	0.25
	<b>Mean</b>	<b>25.1</b>	<b>0.82</b>	<b>41</b>	<b>0.25</b>
	<b>Range</b>	<b>24.4-26.5</b>	<b>0.77-0.98</b>	<b>34-48</b>	<b>0.23-0.26</b>

**Table 150. AVT-I, Rabi 2011-12 of Fababean seed supply by Hisar Centre (Plain)**

S. No.	Genotypes	Protein (%)	Vicine - convicine (%)	Phenol (%)
1	NDF-9	25.1	0.77	0.23
2	DFB-9-1	22.5	0.76	0.22
3	HB(M)-1	24.1	0.88	0.24
4	HB-51	24.5	0.77	0.23
5	HB-82	25.2	0.85	0.24
6	HB-122	25.1	0.88	0.25
7	HB-119	23.4	0.78	0.24
8	HB-174	24.4	0.81	0.25
9	Vikrant(C)	25.1	0.83	0.25
	<b>Mean</b>	<b>24.4</b>	<b>0.81</b>	<b>0.24</b>
	<b>Range</b>	<b>22.5-25.2</b>	<b>0.76-0.88</b>	<b>0.22-0.25</b>

**Table 151. AVT-II, Rabi 2011-12 of Fababean seed supply by Hisar Centre (Plain)**

S. No.	Genotype	Protein (%)	Vicine - convicine (%)	Phenol (%)
1	IC-366272	22.3	0.79	0.24
2	HB-70	22.8	0.80	0.25
3	HB-617	24.8	0.81	0.24
4	HB-645	23.9	0.80	0.23
5	HB-64	24.1	0.81	0.24
6	Vikrant (C)	25.1	0.83	0.25
	<b>Mean</b>	<b>23.8</b>	<b>0.81</b>	<b>0.24</b>
	<b>Range</b>	<b>22.3-25.1</b>	<b>0.79-0.83</b>	<b>0.23-0.25</b>

**Table 152. SST, Rabi 2011-12 of Fababean seed supply by Hisar Centre (Plain)**

S. No.	Genotype	Protein (%)	Vicine- convicine (%)	Phenol (%)
1	HB-10-1	25.4	0.84	0.26
2	HB-10-2	23.9	0.77	0.23
3	HB-10-3	25.7	0.81	0.23
4	HB-10-4	25.2	0.81	0.26
5	HB-10-5	26.1	0.83	0.25
6	HB-10-6	24.7	0.8	0.24
7	HB-10-7	25.9	0.84	0.26
8	HB-10-8	24.2	0.77	0.23
9	HB-10-9	25.1	0.79	0.23
10	HB-10-10	25.8	0.87	0.24
11	HB-10-11	25.2	0.78	0.24
12	HB-10-12	24.2	0.81	0.25
13	HB-10-13	25.1	0.78	0.23
14	HB-10-14	25.8	0.97	0.27
15	HB-10-15	24.9	0.82	0.25
16	HB-10-16	25.1	0.78	0.24
17	HB-10-17	24.2	0.76	0.23
18	HB-10-18	26.3	0.88	0.26
19	HB-10-19	24.7	0.78	0.24
20	Vikrant (C)	25.1	0.83	0.25
	<b>Mean</b>	<b>25.1</b>	<b>0.82</b>	<b>0.24</b>
	<b>Range</b>	<b>23.9-26.3</b>	<b>0.76-0.97</b>	<b>0.23-0.27</b>

**Table 132. Germplasm, Rabi 2011-12 of Fababean seed supply by Hisar Centre (Plain)**

S. No.	Genotype	Protein (%)	Vicine- convicine (%)	Phenol (%)
1	EC 243641	24.3	0.82	0.25
2	EC 247679	25.4	0.88	0.26
3	EC 287710	25.1	0.85	0.25
4	EC 327677	26.2	0.91	0.26
5	EC327724	25.7	0.91	0.25
6	EC117739	26.1	0.97	0.26
7	EC 361499	23.4	0.78	0.24
8	EC 34399	23.7	0.81	0.25
9	EC 253793	23.2	0.77	0.23
10	EC 329609	24.8	0.78	0.24
11	EC 329812	25.7	0.88	0.26
12	EC 331564	24.2	0.82	0.25
13	EC 329681	23.8	0.80	0.23
14	EC 267648	24.1	0.88	0.25
15	EC 267640	25.2	0.92	0.27
16	EC 243756	25.1	0.92	0.26
17	EC 117705	24.8	0.87	0.26
18	EC 29085	24.5	0.85	0.25
19	EC 117726	24.7	0.86	0.25
20	EC 323588	25.2	0.89	0.24
21	Vikrant (C)	25.1	0.83	0.25
	<b>Mean</b>	<b>24.8</b>	<b>0.86</b>	<b>0.25</b>
	<b>Range</b>	<b>23.2-26.2</b>	<b>0.77-0.97</b>	<b>0.23-0.27</b>

**Table 154. Germplasm, Kharif 2012 of perilla seed supply by Shillong Centre (Hills)**

S. No.	Genotypes	Oil (%)	Protein (%) in the defatted seed cake	Total Phenols (%) in the defatted seed cake
1	IC-416861	24.9	26.6	0.69
2	IC-204185	30.2	26.9	0.71
3	IC-369449	35.5	29.4	0.62
4	IC-006447	40.9	31.1	0.85
5	IC-335408	25.5	28.9	0.60
6	IC-374494	36.0	25.8	0.60
7	IC-374609	34.0	26.8	0.71
8	IC-334313	38.4	30.8	0.69
9	IC-211608	37.9	31.5	0.60
10	IC-216268	42.6	28.7	0.69
	<b>Mean</b>	<b>34.6</b>	<b>28.7</b>	<b>0.68</b>
	<b>Range</b>	<b>24.9-42.6</b>	<b>25.8-31.5</b>	<b>0.60-0.85</b>

**Table 155. Germplasm, Kharif 2012 of Adzuki bean seed supply by Shimla Centre (Hills)**

S. No.	Genotypes	Crude Protein (%)	<i>In vitro</i> protein digestibility (%)	Cooking Time (min)	Cooking Quality
1	EC-340251	19.25	82.21	47	over cooked
2	EC-340252	18.37	83.34	50	over cooked
3	EC-340253	16.62	78.94	57	semi-moderate cooked
4	EC-340256	17.50	74.90	50	over cooked
5	EC-340257	20.12	76.02	52	moderate cooked
6	EC-340259	16.62	72.32	54	moderate cooked
7	EC-340261	25.37	77.57	55	moderate cooked
8	EC-340263	20.12	78.30	52	moderate cooked
9	EC-340264	21.87	80.01	51	moderate cooked
10	EC-340265	17.50	70.45	51	moderate cooked
11	EC-340266	24.50	80.32	58	semi-moderate cooked
12	EC-340268	20.12	79.56	54	moderate cooked
13	EC-340269	22.75	76.92	58	semi-moderate cooked
14	EC-340270	21.00	73.81	53	moderate cooked
15	EC-340272	19.25	79.53	48	over cooked
16	EC-340273	23.62	74.02	56	semi-moderate cooked
17	EC-340274	20.12	78.83	52	moderate cooked
18	EC-340275	21.00	79.20	57	semi-moderate cooked
19	EC-340276	24.50	81.15	57	semi-moderate cooked
20	EC-340277	18.37	71.42	60	semi-moderate cooked
21	EC-340278	22.75	73.51	49	over cooked
22	EC-340279	24.50	72.35	56	semi-moderate cooked
23	EC-340280	21.87	78.45	53	moderate cooked
24	EC-340281	19.25	80.63	50	over cooked
25	EC-340283	22.75	73.60	58	semi-moderate cooked
26	HPU 51(C)	23.62	85.20	55	moderate cooked
27	Totru Local(C)	22.75	83.31	52	moderate cooked
	<b>Minimum</b>	<b>16.62</b>	<b>85.20</b>	<b>47</b>	
	<b>Maximum</b>	<b>25.37</b>	<b>70.45</b>	<b>60</b>	
	<b>Mean</b>	<b>19.25</b>	<b>77.77</b>	<b>53.5</b>	

**Table 156. IVT, AVT & Germplasm, Kharif 2012 of Buckwheat seed supply by Shimla Centre (Hills).**

S. No.	Genotypes	Crude protein (%)	Total polyphenols (mg/100 ml)	Antioxidant Activity (% Inhibition)	Ash (%)	Calcium (mg/100g)	Magnesium (mg/100g)	Potassium (mg/100g)
<b>IVT &amp; AVT</b>								
1	IC-017371	14.0	0.31	40.20	2.9	90.5	183	497
2	IC-042426	13.1	0.68	90.80	3.3	48.5	209	370
3	IC-274425	13.1	0.52	85.86	3.6	77.0	204	417
4	Sangla B-118	13.1	0.46	92.04	3.3	79.4	159	423
5	Sangla B-129	14.0	0.13	94.21	3.8	72.9	160	394
6	Sangla B-214	13.1	0.48	93.02	3.7	64.6	152	381
7	Sangla B-5	12.2	0.73	93.70	3.6	66.5	161	393
<b>Germplasm</b>								
1	EC-018864	14.0	0.26	1.26	3.9	98.4	181	437
2	EC-058322	14.4	0.20	28.57	3.1	65.0	258	499
3	EC-125397	13.1	0.21	21.01	4.0	90.3	201	503
4	EC-125935	11.4	0.28	90.00	4.3	84.0	138	485
5	EC-125937	10.5	0.43	37.14	2.8	98.0	204	406
6	EC-216631	13.1	0.30	33.86	3.1	68.5	225	503
7	EC-218742	11.4	0.13	4.59	3.1	99.7	201	428
8	EC-272442	10.5	0.36	27.29	2.9	79.8	216	487
9	EC-323730	12.7	0.14	-	3.7	82.1	151	541
10	EC-386667	14.0	0.12	6.88	4.7	82.0	214	488
11	IC-015393	11.4	0.70	93.04	3.2	76.5	188	343
12	IC-018870-1	12.7	0.24	28.84	2.6	85.9	205	513
13	IC-107631	12.7	0.22	27.10	3.3	86.4	200	437
14	IC-108497	12.2	1.05	90.57	3.7	72.8	182	579
15	IC-109314	13.1	0.62	92.32	4.1	72.3	236	486
16	IC-109728	14.4	0.65	75.21	3.1	84.3	183	444
17	IC-109729	13.1	0.15	18.17	4.4	53.2	184	255
18	IC-202226	13.1	0.28	3.36	3.3	88.3	190	459
19	IC-202264	13.1	0.45	67.23	3.1	69.3	167	318
20	IC-202268	14.0	0.38	76.85	3.5	90.0	225	479
21	IC-202279	11.4	0.24	44.80	4.3	63.0	202	428
22	IC-202286	14.0	0.37	81.13	3.3	53.5	194	494
23	IC-202288	12.2	0.12	65.55	4.3	72.6	213	472
24	IC-202293	14.0	0.42	92.13	3.5	70.9	175	458
25	IC-204079	12.2	0.42	89.35	3.0	88.4	187	473
26	IC-204085	12.2	0.18	27.43	3.7	76.5	197	408
27	IC-204086	13.1	0.73	92.50	3.4	78.4	204	418
28	IC-204088	12.7	0.39	80.56	2.5	91.5	137	535
29	IC-204089	11.4	0.26	23.04	3.6	83.8	190	519
<b>Mean for checks</b>								
1	Himpriya	14.0	1.38	92.14	4.5	81.4	214	506
2	PRB-1	12.7	0.54	54.71	4.6	92.3	196	591
3	SHIMLA B-1	12.7	1.25	92.00	3.0	59.3	166	346
4	VL-7	12.2	0.19	21.14	3.4	95.6	175	536
	<b>Minimum</b>	<b>10.5</b>	<b>0.12</b>	<b>1.26</b>	<b>2.5</b>	<b>48.5</b>	<b>137</b>	<b>255</b>
	<b>Maximum</b>	<b>14.4</b>	<b>1.38</b>	<b>94.21</b>	<b>4.7</b>	<b>99.7</b>	<b>258</b>	<b>591</b>
	<b>Mean</b>	<b>12.5</b>	<b>0.42</b>	<b>54.71</b>	<b>3.4</b>	<b>78.3</b>	<b>191</b>	<b>454</b>

**Table 157. Germplasm, Kharif 2012 of chenopod seed supply by Shimla Centre (Hills).**

<b>S. No.</b>	<b>Genotypes</b>	<b>Protein (%)</b>	<b>Ash (%)</b>	<b>Calcium (mg/100g)</b>	<b>Iron(mg/100g)</b>
1	NIC-022504	13.2	5.6	230	6.2
2	NIC-022508	14.8	3.8	249	5.9
3	NIC-022509	14.0	4.9	248	5.5
4	NIC-022510	16.6	6.2	235	6.4
5	NIC-022511	15.7	6.0	243	7.3
6	NIC-022512	14.7	4.6	244	5.3
7	NIC-022513	14.8	5.0	247	4.0
8	NIC-022516	17.5	5.2	246	6.0
9	NIC-022519	14.8	5.3	248	5.1
10	NIC-022520	14.0	5.3	246	5.4
11	NIC-022533	15.7	5.9	202	3.6
12	IC-107515	15.7	4.8	217	3.7
13	IC-109480	14.8	4.9	232	4.6
14	IC-109734	15.7	5.0	246	5.8
15	IC-109739	16.6	5.1	248	3.9
16	IC-258235	14.8	4.2	240	13.3
17	IC-258253	14.0	4.8	166	7.4
18	IC-258382	13.2	2.9	246	5.4
19	IC-313278	15.7	5.1	241	5.1
20	IC-328854	17.5	4.9	243	7.8
21	IC-328877	16.6	4.5	248	3.4
22	IC-328878	16.6	5.3	235	4.5
23	IC-329184	15.7	3.1	249	5.5
24	IC-329185	14.0	5.8	225	4.5
25	EC-507741	14.0	5.4	242	4.9
26	NIC-022503	14.0	5.9	249	6.5
27	PRC-9801	16.6	5.4	247	5.3
	<b>Minimum</b>	<b>13.2</b>	<b>2.9</b>	<b>166</b>	<b>3.4</b>
	<b>Maximum</b>	<b>17.5</b>	<b>6.2</b>	<b>249</b>	<b>13.3</b>
	<b>Mean</b>	<b>15.2</b>	<b>4.9</b>	<b>237.48</b>	<b>5.6</b>

**VALUE ADDITION**

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## **VI. VALUE ADDITION**

### **6.1 Introduction**

Underutilized or neglected crop are often indigenous ancient crop species which are still used at some level within the local, national or even international communities, but have the potential to contribute further to the mix of food sources than they currently do. Many underutilized species have multiple uses and do not belong to any one specific category of crops. Underutilized species offer untapped potentials to contribute to fight malnutrition. Many underutilized species are nutritionally rich and adapted to low input agriculture. They complement significantly the diet based on few staple crops by providing important vitamins and minerals.

Neglected or underutilized crops have the potential to play a number of roles in the improvement of food security that include being: (i) part of a focused effort to help the poor for subsistence and income (ii) a way to reduce the risk of over-reliance on very limited numbers of major crops; (iii) a contribution to food quality; and (iv) a way to preserve and celebrate cultural and dietary diversity. Hence, emphasis should thus be given to utilize those species having comparative advantages in providing better food, being affordable by the poor and more available both in time and space. Buckwheat, amaranth and rice bean are among the potential crops which have high nutritional and medicinal value can be utilized for products development

Buckwheat is the most important crop of the mountain regions both for grain and greens. It occupies about 90% of cultivated lands in the higher Himalayas with a solid stand. It is a short duration crop (2-3 months) and fits well in the high Himalayas where a crop's growing season is of limited period because of early winter and snow fall. It is highly nutritive, unlike cereals which are deficient in lysine, one of the essential amino acids for human health. Buckwheat is a multipurpose crop. Buckwheat grains contain a variety of nutrients, the main compounds being: proteins, polysaccharides, dietary fiber, lipids, rutin, polyphenols, micro- and macroelements. Most of the buckwheat grain utilized as food for humans is marketed in the form of flour. The flour is generally dark colored due to presence of hull fragments not removed during the milling process. Buckwheat flour is used primarily for making buckwheat griddle

cakes, and is more commonly marketed in the form of pancake mixes than as pure buckwheat flour. These prepared mixes may contain buckwheat mixed with wheat, corn, rice, or oat flours and a leavening agent. Buckwheat flour is never produced from Tartary buckwheat because of a bitter taste that makes it undesirable as human food.

Amaranth greens and grain have been used in a wide variety of food. Amaranth grain, mostly rolled or popped can be used in muesli and in granola bars. Grain can also be germinated for sprouts, malted for beer production, fermented or can serve as a starchy material in spirit production. The seed of grain amaranth is a rich source of iron, calcium, magnesium and zinc as well as vitamin riboflavin and ascorbic acid, niacin, thiamine and other microelements.

Rice bean is most often served as a *dal*, either soaked overnight and boiled with a few spices, or cooked in a pressure cooker. Apart from various recipes for *dal* soups and sauces, pulses are also used in a number of other ways, whole, cooked or roasted, as flour, or ground to make various deep fried dishes or snacks. Some recipes are specific to particular pulses, but many are open to substitution. The consumption of green pods as a vegetable has been recorded but is not widespread, although the indeterminate growth habit of many varieties is beneficial in providing a steady supply of green pods over long periods of the year. The raw protein content of rice bean is lower than that of most pulses, although there is considerable variation. However, the amino acid composition is reported to be well balanced for human consumption by several authors. As in other pulses, an important problem is that rice bean contains various antinutrients notably phytic acid or phytate, polyphenols and fibers that reduce micronutrient uptake, in particular iron and zinc.

Attempts have been made to evaluate the product development potential of buckwheat, Rice bean and amaranth. Effect of packaging materials and storage conditions on the nutritional and sensory attributes of the supplemented products was assessed. The extruded products prepared by using buckwheat, rice bean and amaranth were evaluated for specific quality characteristics. Following type of samples were used for value addition studies:

- |                  |   |         |
|------------------|---|---------|
| <b>Buckwheat</b> | : | Ogla    |
| <b>Amaranth</b>  | : | Suvarna |
| <b>Rice bean</b> | : | Mixture |



For the value addition studies this year bulk samples of buckwheat (*ogala*) and Suvarna variety of amaranth were procured from University Research Station, Sangla and mixture of rice bean was procured from the Department of Organic Agriculture, CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur.

## **6.2 Technical plan of work:**

The research activities pertaining to the nutritional quality and value addition were carried out under following sub-heads:

- Formulations/ Methodologies for preparation of value added products.
- Determination of shelf life of selected underutilized based food products in relation to packaging material and storage intervals
- Preparation and evaluation of underutilized crop based extruded snack products with better nutritional profile.
- Organization of trainings for farmers/entrepreneurs of tribal areas of District Lahual and Spiti, Kinnaur and Chamba.
- Establishment of marketing linkages and entrepreneurship development.

## **6.3 Results**

### **6.3.1 Formulations/ Methodologies for preparation of value added products.**

During this year methodology for formulation of *cake, mathri and pinni* were standardized. Attempts were made to standardize methodology for preparation of *cake* by replacing 25 per cent buckwheat and amaranth flour in place of refined wheat flour. Popped amaranth flour was used in equal proportions with whole wheat flour for preparation of amaranth *pinni*. Amaranth based *mathri* was also prepared by using 35 per cent amaranth in place of refined wheat flour

#### **6.3.1.1 Formulation of Cake**

##### **(a) Methodology for preparation of eggless cake from buckwheat**

**Ingredients :** Buckwheat flour- 125 g, refined flour- 375 g, milkmaid- 800g, butter- 200g, coke- 350 ml, baking powder- 1 tsp, sodium bicarbonate: ½ tsp, cocoa powder- 2 tsp.

##### **Methodology:**

- Sieve the buckwheat flour and wheat flour.
- Mix the cocoa powder and baking powder and sodium bicarbonate powder with flour.

- Cream the butter and add condensed milk to make a fluffy batter of this material.
- To this batter add slowly the mixture of composite flour and beat in one direction.
- When the mixture gets tightened add coke slowly and it mix properly.
- Smear the cake dish with a little amount of fat and sprinkle the flour on it.
- Now add a batter in a cake dish.
- Bake in preheated oven at 180<sup>0</sup> F till done.

**(b) Methodology for preparation of eggless cake from amaranth cake:**

**Ingredients:** Amaranth flour:125 g, refined wheat flour: 375 g, milkmaid: 800 g, butter 200 g, coke 300 ml, baking powder: 1 tsp, sodium bicarbonate: ½ tsp, cocoa powder: 1 tsp.

**Method:**

- Sieve the amaranth flour and wheat flour.
- Mix the cocoa powder and baking powder and sodium bicarbonate powder with flour.
- Cream the butter and add condensed milk to make a fluffy batter.
- To this batter add slowly the mixture of composite flour and beat in one direction.
- When the mixture gets tightened add coke slowly and it mix properly.
- Smear the cake dish with a little amount of fat and sprinkle the flour on it.
- Bake in preheated oven at 180<sup>0</sup> F till done.

**6.3.1.2 Formulation of pinni:**

**(a) Methodology for preparation of amaranth pinni:**

**Ingredients:** Wheat flour: 200g, popped amaranth flour: 200g, sugar: 200g, Popped lotus seed: 60g, clarified butter (*desi ghee*): 325g, almonds: 35g, cashew nut: 30g, Raisins: 30g, coconut: 60g, edible gums: 9.92g

**Method**

- Sieve the wheat flour.
- Melt *desi ghee* in a cauldron and fry edible gum in it. Powder the fried edible gum and keep it aside.
- In the remaining ghee add wheat flour.
- Cook on low heat with continuous stirring till the flour turns golden brown and then add popped amaranth flour.

- Roast the mixture till it gives a nice aroma and then add powdered sugar and powdered gum.
- Remove from fire and add finely chopped dry fruits, grated coconut and mix well.
- Mold with hands in to spherical shaped *pinni*.

### **(b) Methodology for preparation of rice bean *pinni***

Rice bean *pinni* was prepared using varying proportions of rice bean (i.e. 25, 50, 75 and 100 percent) as per the standardized recipe and the samples were packed in two packaging materials i.e. aluminum pouches sealed with foot sealer and poly pet jars lids air tight and stored at room temperatures for 6 months and analyzed fresh and after 30, 60 and 90 days of storage for nutritional and sensory characteristics.

### **Nutritional profile of rice bean *pinni* as affected by packaging material and storage conditions**

The protein content of un-supplemented fresh *pinni* also increased from 15.06 to 18.44 per cent in *pinni* prepared with 100 per cent rice bean flour. With storage there was a declining trend in crude protein content in *pinni* prepared with varying levels of rice bean flour. In *pinnis* stored in polypet jars the crude protein content of freshly prepared *pinnis* with pure wheat flour, 25, 50 75 and 100 per cent rice bean flour declined from 15.06, 16.13, 16.82, 17.56 and 18.44 per cent to 14.31, 14.94, 15.69, 16.19 and 17.56 per cent respectively. Irrespective of the level of supplementation and storage intervals, there were slight differences in the crude protein contents of samples stored in both the packaging materials. Similarly, the fat content of fresh *pinni* was 39.12 in un-supplemented *pinni* and it increased as the level of rice bean supplementation increased in the *pinni* and was maximum i.e. 42.28 per cent in *pinni* prepared with 100 per cent rice bean flour. During storage there was a slight decrease in the fat content from 39.12 to 37.96 per cent in 100 per cent wheat flour *pinni* and it decreased from 42.28 to 39.76 per cent in 100 per cent rice bean *pinni* packed in polypet jars. There was almost negligible difference in the fat content of *pinnis* stored in different packaging materials i.e. polypet jars and aluminum laminated pouches and the values in all the levels and packaging materials and storage intervals ranged between 39.12 to 42.28 per cent. Irrespective of the packaging materials and storage intervals the fat content in *pinnis* increased as

the level of rice bean flour supplementation increased whereas, with storage also the fat content in both the packaging materials and in all the levels of rice bean supplementation the fat content followed a declining trend. Almost similar trends were observed for ash and crude fibre contents of samples stored in aluminum laminated pouches and poly pet jars. Irrespective of the packaging materials, with different levels of supplementation there was an increasing trend in ash content and decreasing trend in crude fibre content. But with storage intervals there was decreasing trend in ash content.

The effect of storage on the sugars i.e. total, reducing and non reducing , energy content and peroxide value of rice bean supplemented *pinni* stored in polypet jars and aluminum laminated pouches. As is evident from the data the reducing sugars varied between 2.37 to 2.95 in all the blends of rice bean pinni. Irrespective of the storage intervals and rice bean blends, there was almost no difference in the reducing sugars in the samples stored in both the packaging materials. Almost similar trends were observed for non- reducing and total sugars. Irrespective of the packaging materials and storage intervals, the total and non reducing sugars in all the blends of rice bean pinni varied between 3.95 to 6.01 and 1.57 to 3.57 respectively. The energy values of rice bean pinni varied between 98.08 to 276.71. There was slight variation in the calorific value of pinnis and the reason in variation of energy content could be presence of nuts which are rich in calories. The dry fruits viz. almonds, cashew nuts, raisins, coconut were chopped finely and added in the pinni. While shaping the pinni there is every possibility that in amount of dry fruits included in each pinni are different and this avriation in amount of dry fruits could have caused variation in calorific value of the pinnis. Variation in energy content during storage could also be due to this reason.

Peroxide Value is one of the most widely used tests for oxidative rancidity in oils and fats, peroxide value is a measure of the concentration of peroxides and hydro peroxides formed in the initial stages of lipid oxidation. *Pinni* is fat rich product so determination of peroxide value in this will help to assess the shelf life and acceptability of product. The peroxide value of samples increased with storage and was comparatively less in samples stored in aluminum laminated pouches as compared to samples stored in polypet jars.

## **Sensory profile of rice bean *pinni* as affected by packaging material and storage conditions**

The prepared products were evaluated for organoleptic acceptability by a panel of ten judges on nine point hedonic scale and the effect of supplementation of Rice bean on the sensory acceptability of *pinni* was assessed. The scores of various sensory attributes viz. colour, flavor, taste, texture, overall acceptability decreased with increased in level of supplementation but were within the acceptable range (Table -3). The score of color decreased from 8.06 to 7.07 with increase in supplementation level from 25 to 100 per cent. The scores for flavor also decreased from 8.35 to 6.78 as the level of supplementation increased. Similarly, the scores of taste and texture decreased from 8.28 to 6.86 and 8.57 to 6.85 respectively. Although, the overall acceptability scores also decreased from 8.32 to 6.89 with an increase in supplementation level yet the values ranged between liked slightly to liked very much. With the storage the scores of various sensory attributes varies in both aluminum pouches and poly pet jars. The best acceptable *pinni* was 100 per cent wheat flour and 25 per cent rice bean flour *pinni*. Packaging materials had a slight effect on the sensory scores of the different products. Irrespective of the packaging materials, with the level of supplementation and storage the sensory scores for all the attributes viz. colour, flavor, taste, texture and overall all acceptability decreased considerably but ranged within the acceptable limits i.e. 'liked very much' to 'Neither liked nor disliked'

### **6.3.1.3 Formulation of *mathri*:**

#### **(a) Methodology for preparation of amaranth *mathri*:**

**Ingredients:** Popped amaranth flour: 234g, maida: 546g, hydrogenated fat: 273g, salt: 7.8g, black pepper: 15.6g, fenugreek leaves: 10g

#### **Methods:**

- Sieve refined wheat flour and mix with popped amaranth flour.
- Add salt and other ingredients and add melted hydrogenated fat in it and mix thoroughly so that the fat gets absorbed in the flour without forming any lumps.
- Knead into stiff dough using water and let it rest for 15 to 20 minutes by covering with damp muslin cloth.
- Heat the oil in cauldron.

- And make the small bowls and slightly press and fry slowly on low heat till golden brown in colour.

**(a) Methodology for preparation buckwheat *mathri***

Buckwheat *mathri* was prepared using varying proportions of buckwheat (i.e.15,30,45 per cent) as per the standardized recipe and the samples were packed in aluminum pouches and stored at room temperatures for 2 months and analyzed fresh and after 15, 30, 45 and 60 days of storage for nutritional and sensory characteristics

**Nutritional profile of buckwheat *mathri* as affected by packaging material and storage conditions**

Scrutiny of data of reveal that the fat content increased as the level of buckwheat flour supplementation increased in *mathri* and was 42.61 per cent in control *mathri* and increased to 45.28, 46.56 and 49.36 per cent in *mathri* prepared with 15, 30 and 45 per cent buckwheat flour supplementation respectively. Irrespective of the blending proportions, the fat content in all the samples decreased with increase in storage period. The values for fat in fresh control sample decreased from 42.61 to 41.82 per cent after 60 days of storage. The corresponding values for samples supplemented with 15, 30 and 45 per cent buckwheat flour were 45.28 to 39.68, 46.56 to 39.78 and 49.36 to 39.80 per cent respectively. Almost similar trends were observed for protein content which increased with increase in level of buckwheat flour supplementation and decreased with increase in storage periods. The ash content of *mathri* varied between 0.95 to 1.80 per cent in different blends. Irrespective of the blends the ash content increased with increase in storage.

As is evident from the data of the reducing sugars increased as the level of supplementation of buckwheat increased and the reducing sugar content was maximum (5.19 per cent) in *mathri* prepared by using 45 parts of buckwheat flour whereas, with storage the reducing sugar content decreased in all the blends. In fresh control samples the reducing sugar content of 4.99 per cent decreased to 3.79 per cent after 60 days of storage. Similarly the corresponding values for *mathri* prepared with 15, 30 and 45 per cent level of supplementation were 5.05 to 3.79, 5.12 to 3.73 and 5.19 to 3.41 per cent respectively. Similar trends were observed for the total and non reducing sugars which also followed an increasing pattern with increase in level of buckwheat flour supplementation

and decreasing pattern with increase in storage period. The mineral profile of the prepared products is being assessed and the study is under progress.

### **Sensory profile of buckwheat *mathri* as affected by packaging material and storage conditions evaluated on nine point hedonic scale**

The prepared products were evaluated for organoleptic acceptability by a panel of ten judges on nine point hedonic scale to assess the effect of supplementation of buckwheat on the sensory acceptability of *Mathri*. The scores of various sensory attributes viz. colour, flavor, taste, texture, overall acceptability decreased with increase in level of supplementation but the values ranged between liked slightly to like very much. The score of colour decreased from 7.74 percent to 7.21 per cent with the increase of supplementation, the score of flavor decreased from 7.76 to 6.88 per cent with the increase of supplementation level, score of taste decreased from 7.76 to 6.88 per cent with the increase of supplementation. Similarly, the texture and overall acceptability scores also decreased from 7.58 to 6.60 and 7.69 to 6.79 with the increase in supplementation level in freshly prepared *mathri*. With the storage the scores of various sensory attributes declined slightly but ranged between liked very much and liked moderately to liked slightly.

#### **6.3.2 Methodology for preparation of extruded products**

Methodology for preparation of extruded snacks and extruded breakfast cereals was standardized using co- rotating intermeshing twin screw extruder having 400 mm useful length and 2.5mm screw diameter which was equipped with a single screw volumetric feeder. Barrel temperature was set at 25,100,100 and 150°C for 1<sup>st</sup>, 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> zones, respectively. The screw speed was maintained at 500 rpm. Moisture content of the samples was adjusted to 15 per cent. Feeder speed was set to feed @ 20 kg/h the die was fitted with one circular insert having 3 mm diameter. Composite flours using different proportions (00:100, 20: 80, 40:60 and 60:40 per cent) flour of underutilized crops viz. buckwheat, amaranth and rice bean and rice flour were used for preparation of extruded snacks. The resultant product was allowed to cool and packed in polythene bags and /or poly pet jars for further analysis.

**Quality evaluation of the extruded snacks:** The prepared products were evaluated for specific mechanical energy, expansion ratio, bulk density, water absorption index (WAI) and water solubility index (WSI). Organoleptic

acceptability of the prepared products was evaluated on nine point hedonic scale.

Among the various under-utilized crops used maximum expansion was noticed in buckwheat based extruded snacks, followed by rice bean and amaranth. The results also show that buckwheat based snacks had even more expansion when compared with control sample. With an increase in level of buckwheat supplementation in the extruded snacks, the expansion ratio did not affect. The values for SME of snacks prepared with amaranth flour were lowest in comparison to those prepared by using buckwheat and rice bean flour in different proportions. The water absorption index of all the supplemented snacks ranged between 4.86 to 7.84 g/g. It was observed that as the level of supplementation of buckwheat, rice bean and amaranth flour increased in extruded snacks the values for SME decreased correspondingly. The water absorption index also ranged between 0.01 to 0.25 per cent in all the samples.

Sensory attributes of the supplemented extruded snacks represents that the colour scores for all the blends were almost similar . However, the scores for taste up to the 40 per cent level of supplementation of buckwheat flour were in the range of "liked very much". The texture and flavour scores were almost similar. On a whole the overall acceptability of the supplemented products was acceptable up to the level of 40:60 and thereafter the scores decreased considerably. Similarly in case of rice bean supplemented snacks the scores for all the parameters decreased slightly as the level of rice bean increased. The scores for all the blends were in the acceptable range. On a whole the product had good acceptability in terms of colour, taste, texture and flavour. In case of amaranth supplemented extruded snacks the scores for blends 20:80, 40:60 and 60:40 were almost in a same range when compared with pure rice flour snack.

### **6.3.3 Organization of trainings for farmers/entrepreneurs of tribal areas of District Lahual and Spiti, Kinnaur and Chamba**

This activity could not be accomplished due to scarcity of the funds. The activity planned was subject to the availability of separate funds for conducting trainings.



#### **6.3.4 Establishment of marketing linkages and entrepreneurship development**

Attempts have been made to popularize and commercialize value added products of rice bean, amaranth and buckwheat products by establishing linkages with local bakeries and sweet shops for production of biscuits, *mathri*, *pinni* and *sewian* at mass scale. Participation of ladies groups through *Mahila mandals* for preparation and popularization of these value added products has been done. Two groups of ladies have been given training for preparation of selected value added products for nutritional security of their family. The art of costing and packaging is also taught to them as such ventures can also supplement their family income. The acceptable quality products standardized and evaluated in the laboratory are prepared and sent/being sent to the accredited laboratory FICCI, New Delhi for analysis of specific nutrients as per the market requirements of food labeling. This venture involves lot of funds and due to paucity of funds the analysis is limited to a few products only.

# **CENTRE REPORT**

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## VII. CENTRE REPORT

### 7.1 HILLS

#### 7.1.1 HPKV, Palampur

**Hybridization programme of rice bean :** Eight Fresh crosses were attempted among the local genotypes of H.P. namely RBHP-44(A), RBHP-43, RBHP-36, RBHP-38, RBHP-39, RBHP-53, RBHP-35, RBHP-36, RBHP-101 and RBHP-102 with early maturing genotype PRR-2007-2 during 2012 and F<sub>1</sub> seed was harvested.

**F<sub>2</sub> plant evaluation:** Eight back crosses in their F<sub>2</sub> generation were evaluated in the field along with the check during Kharif 2012 and BC<sub>1</sub> and F<sub>2</sub> seed was harvested.

**F<sub>3</sub> plant evaluation:** F<sub>3</sub> generation of eight crosses was evaluated in the field for yield and related traits.

**Hybridization programme of amaranth:** F<sub>1</sub> crosses involving Durga with the local genotypes of H.P. as well as other promising genotypes like IC-415448, PRA-3, Annapurna, PRA-2, VL-44, IC-519522 and IC-422795 were planted for advancement of generation and F<sub>2</sub> seed was harvested. Fresh crosses were also attempted among these genotypes.

F<sub>3</sub> seed of the crosses involving IC-415448, PRA-3, Annapurna, PRA-2, VL-44, Durga, IC-519522 and IC-422795 was evaluated under field conditions

**Hybridization programme of buckwheat:** The F<sub>1</sub> seed harvested last season was planted for multiplication whereas fresh crosses were attempted involving local lines of buckwheat and Shimla-B-1, Sangla-B-1, VL-7, Himpriya

**Local collections :** Different local germplasm lines/landraces of underutilized crops were collected and evaluated under field conditions during the Kharif season.

Crop	No. of Lines	Place of collection
Amaranth	5	Distt. Mandi, Sirmaur & Shimla of H.P.
Fababean	6	Disstt. Kangra of H.P.

**Seed Multiplication :** Seed of different varieties of underutilized crops was produced on the experimental farm of Deptt. of Organic Agriculture, CSKHPKV, Palampur during the reporting period.

S. No.	Crop	Varieties	Quantity (Kg)
1.	Amaranth	Durga	9.0
2.	Rice bean	RBHP-43	50
3.	Rice bean	PRR-1	40
4.	Rice bean	BRS-1	20
5.	Rice bean	PRRS-2	30
6.	Adzuki bean	Local Totru	10
7.	Adzuki bean	HPU-51	40
8.	Fababean	HPFB-1	10
9.	Fababean	Vikrant	20
10.	Fababean	HPFB-2	14

**Field Level Demonstrations:** Twenty one farmers field level demonstrations were conducted on Fababean and rice bean in different parts of Himachal Pradesh.

#### 7.1.2 UUHF, Ranichauri

**Seed Multiplication :** Seed of different varieties of underutilized crops was produced on the experimental farm at Ranichauri Campus and sub-Research Station Gaja during Kharif 2012.

S. No.	Crop	Varieties	Quantity (Kg)
1.	Amaranth	PRA-1	5.0
2.	Amaranth	PRA-2	4.5
3.	Amaranth	PRA-3	170
4.	Amaranth	Durga	3
5.	Amaranth	Annapurna	4.5
6.	Amaranth	Suvarna	2.5
7.	Buckwheat	PRB-1	5
8.	Buckwheat	VL-7	2
9.	Rice bean	PRR-1	5
10.	Rice bean	PRR-2	6.5

**Field Level Demonstrations:** Two hundred fifteen farmers field level demonstrations were conducted on rice bean (61), grain amaranth (97) and buckwheat (47) in different parts of Uttrakhand.

## 7.2 PLAINS

### 7.2.1 UAS, Bangalore

**Breeding material :** 50 individual plant of grain amaranth selections were made from the trial material which will be evaluated during Kharif 2013 and eight crosses of rice bean were attempted and the percentage of success was very poor. In addition intra specific hybridization between green gram as a female parents and rice bean as male parents was done in two batches using five green gram varieties and five rice bean varieties during the Kharif 2012.

#### Seed Production :

S. No.	Crop	Name of the variety	Qty. of seeds produced (Kg)
1.	Grain amaranth	Suvarna	345
2.	Grain amaranth	KBGA -1	10
3.	Rice bean	KBR-1	8
4.	Winged bean	KHWP-1	4

### 7.2.2 NDUAT, Faizabad

**Hybridization programme of Fababean:** Twenty one crosses (line x tester) were made during Rabi season 2011-12. F<sub>1</sub> crosses will be grown in Rabi 2011-12. **Line** – PRT 7, PRT 12 and Vikrant; **Tester** – IC331540, EC243696, EC331587, EC117749, EC117755, EC117795, EC117727, EC243764, EC329003, EC329812, HB18, EC117748, EC243782, EC117744 and IC348948.

**F<sub>2</sub> generation:** Vikrant x EC243860 and PRT-12x EC 324677 have been found better than the check variety Vikrant, P R T 7 and P R T 12.

**Front Line Demonstrations on Fababean :** Various field level demonstrations were conducted at 9 farmers field on Fababean in different villages of Faizabad.

### 7.2.3 SKRAU, Mandor

**Seed Multiplication :** Seed of different varieties of grain amaranth crop was produced on the experimental farm at SKRAU, Mandor during the Rabi 2011-12.

S. No.	Crop	Varieties	Quantity (Kg)
1.	Amaranth	RMA-4	5.0
2.	Amaranth	RMA-7	20
3.	Amaranth	GA-2	5

#### 7.2.4 OUAT, Bhubaneswar

**Seed Production:** During Rabi, 2011–12, Twenty five Kg of BGA -2 (Kapilasa) seeds was produced.

#### 7.2.5 CCS HAU, Hisar

**Hybridization programme of Fababean:** Sixty two (62) fresh crosses were attempted during Rabi 2011-2012. The parents used were selected on the basis of higher seed yield, bold seededness, tolerant to insect-pests and diseases, seed and pod shattering at maturity etc.

**Hybridization programme of rice bean :** Thirteen (30) fresh crosses were attempted during kharif 2012. The parents used were selected on the basis of higher seed yield, bold seededness, tolerant to insect-pests and diseases, seed and pod shattering at maturity etc. The seeds of individual cross were kept separately for evaluation their true hybridness against their respective parents during kharif 2012-13.

#### Seed multiplication (2011-12)

The following seed multiplication of various genotypes were carried out to meet out the ongoing demands.

S. No.	Crop	Genotype	Seed quantities (Kg)
A	Bakla	Vikrant	300
		Various entries	175
B	Ricebean	RBL-1	5
		RBL-6	3
		RBL-35	5
		RBL-50	5
C	Jatropha	JH-1	10

#### 7.2.6 BAU, Ranchi

**Hybridization in rice bean:** 4 fresh hybridization have been attempted with an objective to get some more variability with respect to days to maturity and various yield attributing characters using the parents – RBL-1, RRB-13, LRB-543, LRB-537.

**Hybridization in winged bean:** 2 fresh hybridization have been attempted with an objective to get some more variability with respect to days to maturity

and various yield attributing characters using the parents – Ambika 11-3, IC-150118, AKWB-1 and RWB-2.

**Demonstration in farmers’ field:** 7 front line demonstrations in rice bean have been conducted at Masmano and Nagra village of Mandar block in Ranchi with the collaboration Rice-Fallow project running in the village. The varieties used for demonstration were RBL-1 and RBL-50. Recommended inputs were also given to the farmers along with seeds. Overall performance of these varieties in farmers’ field was good compared to their local cultivars. The average yield ranged from 10-13 q/ha in rice bean. Seven demonstrations on Fababean were also conducted in *Rabi* season in the same Villages mainly for vegetable purpose. Vikrant variety was used for demonstration. The green pod yield ranged from 21-25 q/ha. They sold it in the market @ Rs. 40 per kg in early months of production.

**Station trials:** In station trials, 8 entries of rice bean were evaluated along with standard checks. The entries were selected from other trials which performed better and evaluated for their performance. RRB 14, RRB 15 and RRB-16 were performed at par with the checks used in terms of yield. In Fababean, 8 entries have been evaluated in the station trials. Vikrant was the top yielder followed by RFB-8, In grain amaranth, RGA-8 and RGA-9 has been promoted for IVT trials from station trial (seed yield 26.8 g/plant).

#### **Seed production of underutilized crops**

<b>Crops</b>	<b>Variety</b>	<b>Quantity produced (Kg)</b>	<b>Remarks</b>
Fababean	Vikrant	58	Seeds were used for demonstration and sale
Rice bean	RBL-1	54	Seeds were used for demonstration and multiplication

#### **7.2.7 MPKV, Rahuri**

**Seed Multiplication :** Seed of different varieties of grain amaranth and simarouba crop was produced on the experimental farm at MPKV, Rahuri during the Rabi 2011-12 and Kharif 2012.

<b>S. No.</b>	<b>Crop</b>	<b>Varieties</b>	<b>Quantity (Kg)</b>
1.	Amaranth		28
2.	Simarouba		40

# **SUMMARY**

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## VIII. SUMMARY

A total of 158 experiments were allotted during 2012 which included germplasm evaluation (56), breeding (58), agronomic (32) and quality aspects (12). These were allotted at twenty locations in different agro-climatic zones of the country. Out of these, 125 trials were carried out. A summary of research achievements is given below:

### 8.1 Plant breeding

Fifty eight varietal trials, 16 in hills and 42 in plains, were conducted on eight underutilized crops in order to identify improved varieties of various underutilized crops. Details of trials, entries, number of locations and highest yielding entries are given below in Table 158.

**Table 158. Best genotypes in different trials conducted at multilocation during 2012**

Crop		Entries	Locations	Top yielder	Yield (q/ha)	Best check yield (q/ha)
<b>HILLS</b>						
Amaranth	IVT	7	4	IC042008	16.54	Durga (18.68)
	AVT-I	1	4	IC038136	15.43	
	AVT-II	3	4	IC042328	17.99	
Buckwheat	IVT	5	4	Sangla-B-129	13.41	Himpriya (13.06)
	AVT-I	2	4	Sangla-B-5	11.91	
	AVT-II	4	4	IC109728	13.27	
Fababean	IVT	5	1	HB-188	30.69	Vikrant (20.42)
	AVT-I	4	1	HPFB-645	33.33	
Rice bean	IVT	6	5	IC395028	20.79	RBL-6 (18.65)
	AVT-I	2	5	RBHP-35	17.53	
	AVT-II	4	5	RBHP-43	19.99	
<b>PLAINS</b>						
Amaranth (Rabi 2011-12 & Kharif 2012)	IVT	18	9	BGA-36	12.01	BGA-2 (10.62)
	AVT-I	7	9	BGA-19	11.51	BGA-2 (10.28)
Amaranth (Rabi 2011-12)	IVT	18	7	BGA-36	13.18	BGA-2 (9.87)
	AVT-I	7	7	BGA-19	12.27	GA-2 (9.53)
Amaranth (Kharif 2012)	IVT	18	2	KBGA-1	12.25	Suvarna (12.46)
	AVT-I	5	2	RMA-38	11.50	Suvarna (12.06)

Rice bean	IVT	7	9	RBHP-38	20.29	RBL-1 (12.45)
	AVT -I	5	6	BRB-102	11.6	RBL-1 (12.08)
	AVT-II	3	6	LRB-482	14.19	
Fababean	IVT	8	5	HB-185	23.99	Vikrant (22.73)
	AVT-I	8	5	HB-82	25.59	Vikrant (22.93)
	AVT-II	5	5	HB-645	25.25	
Winged bean	IVT	1	3	RWB-2	7.83	AKWB-1 (12.04)
	AVT-I	4	3	Ambika WB 11-3	12.15	
Kankoda	IVT	6	1	Ambika-12-3 (Wadarafnagar)	28.42	Indira kankoda (18.92)
Kallingda	IVT	5	3	MGPK-10-2	1.92	GK-1 (1.33)
	AVT-I	3	3	SKNK-1001	1.45	
	AVT-II	2	3	MGPK-1	1.97	
Tumba	IVT	9	1	MGPT-12	0.44	RMT-59 (0.25)

Based on the three years data, the best genotype in each crop with respect to yield has been identified and indicated in Table 159.

**Table 159. List of promising genotypes based on three years data**

Crop	Variety	Seed yield (q/ha)	Maturity (days)	Increase/decrease in yield over check (%) - Best check
<b>HILL</b>				
Grain Amaranth	PRA-2010-1	19.97	141.22	5.05
Buckwheat	IC109728	10.93	101.12	13.61
Rice bean	RBHP-43	18.45	132.69	8.41
<b>PLAIN</b>				
Faba bean	HB-064	22.48	147.26	10.96
Rice bean	LRB-482	12.20	110.92	9.51
Kalingda	SKNK-0903	3.12	96.21	13.77

## 8.2 Germplasm evaluation

About 873 accessions in different crops, some of them tested at more than one location, were evaluated at twenty locations during 2012. Crop-wise number of accessions, locations and promising accessions have been given in Table 160.

**Table 160. Performance of germplasm accessions in different crops**

Location	Top 5 Accessions (Yield)	Top 5 Accessions (Days to maturity)
<b>HILLS</b>		
<b>Amaranth (50 Accessions)</b>		
Almora	IC038373, IC038488 (>44.39 g) <b>IC35407 (Durga) (40.40 g/plant)</b>  <b>IC35407 (Durga) (39.30 q/ha)</b>	IC038378, IC038301, IC038373 (<95.00 days) <b>IC35407 (Durga) (95.60 days)</b>
Ranichauri	IC038129, IC038371, IC038378, IC038192, IC038271 (>15.95 q/ha) <b>PRA-2 (15.89 q/ha)</b>	IC038164, IC038158, IC038289, IC038193, IC038271 (<116.00 days) <b>IC-035407 (Durga) (137.50 days)</b>
Sangla	IIC038496, IC038525, IC038196, IC038451, IC038375 (>24.70 g/plant) <b>PRA-3 (18.60 g/plant)</b>	<b>IC35407 (Durga) (138.80 days)</b>
Shimla	IC038129, IC038192, IC038378, IC038376, IC038256 (>90.00 g/plant) <b>PRA-2 (66.87 g/plant)</b>	IC038373, IC038340, IC038193, IC038525 (<130.00 days) <b>IC35407(Durga) 130.00 (days)</b>
<b>Based on average over locations</b>	IC038373, IC038129, IC038378, IC038192, IC038256 (>39.42 g/plant) <b>PRA-2 (29.83 g/plant)</b>  <b>IC35407 (Durga) (26.57 q/ha)</b>	IC038373, IC038193 (<122.00 days) <b>IC35407 (Durga) (122.10 days)</b>
<b>Buckwheat (25 Accessions)</b>		
Almora	IC202279, IC204085, EC018864, IC204079, IC107631 (>6.38 g/plant) <b>PRB-1 (4.20 g/plant)</b>	<b>VL-7 (51.60 days)</b>
Ranichauri	<b>Shimla-B1 (17.04 q/ha)</b>	IC340361, IC340325, IC421601, IC363948, IC422849 (<87.00 days)  <b>VL-7 (91.67 days)</b>
Sangla	IC204088, IC204086 (> 4.45 g/plant) <b>Shimla-B-1 (4.46 g/plant)</b>	<b>Shimla-B-1 (86.60 days)</b>
Shimla	IC521299, IC340325, IC107631, EC272442, IC324244 (>6.20g/plant) <b>Shimla-B-1 (4.28 g/plant)</b>	IC363973, IC521297, IC421601, IC521299 (<=92.00 days) <b>Shimla-B-1 (92.00 days)</b>

<b>Based on average over locations</b>	IC521299, IC340325, IC324244, IC521297, IC363973 (>5.50 g/plant) <b>Shimla-B1 (3.94 g/plant)</b>	<b>VL-7 (84.67 days)</b>
<b>Chenopodium ( 25 Accessions)</b>		
Sangla	IC258382, NIC-22504 (>14.00 g/plant) <b>NIC-22503 (12.00 g/plant)</b>	<b>EC507741 (133.50 days)</b>
Shimla	IC109737, IC328877, IC258382, IC313278, NIC-22511 (25.30 g/plant) <b>PRC-9801 (22.13 g/plant)</b>	NIC-22512, IC258235 (<124.00 days) <b>EC507741 (124.00 days)</b>
<b>Based on average over locations</b>	IC258382, IC109734, IC328877, NIC-22504 (>17.92 g/plant) <b>PRC-9801 (16.57 g/plant)</b>	NIC-22512 (=127.50 days) <b>EC507741 (128.75 days)</b>
<b>Rice bean (25 Accessions)</b>		
Almora	IC421875, IC419489, IC421926, IC524549 (>7.95 g) <b>PRR-2 (7.56 g/plant)</b>	<b>PRR-2 (96.60 days)</b>
Bhowali	<b>LRB-460 (14.17 q/ha)</b>	<b>PRR-2 (123.00 days)</b>
Palampur	IC369282, IC005240, IC394201, IC419518, IC421875 (>=6.67 q/ha) <b>PRR-1 &amp; RBL-1 (6.24 q/ha)</b>	IC419602 (=126.00 days) <b>PRR-2 &amp; RBL-1 (127.60 days)</b>
Ranichauri	IC369282, IC524522, IC524082, IC538878, IC421926 (>12.40 q/ha) <b>RBL 1 (11.85 q/ha)</b>	<b>PRR 1 (125.33 days)</b>
Shillong	IC524074, IC524522, IC524549, IC419518, IC538870 (>188.50 g/plant) <b>PRR-1 (86.50 g/plant)</b>	IC524068, IC524522, IC137189, IC243512, IC369282 (>113.00 days) <b>PRR-1 &amp; PRR-2 &amp; RBL-1 &amp; RBL-6 (112.00 days)</b>
Shimla	<b>RBL-1 (54.45 g/plant)</b>	<b>PRR-2 (138.00 days)</b>
<b>Based on average over locations</b>	IC524074, IC524522, IC524549, IC538870, IC419518(>57.50 g/plant) <b>RBL-1 (38.37 g/plant)</b>  <b>LRB-460 (14.17 q/ha)</b>	<b>PRR-2 (121.42 days)</b>
<b>Adzuki bean(25 Accessions)</b>		
Palampur	EC340253, EC340279, EC340256, EC340266 (>32.00 q/ha) <b>HPU-51 (27.31 q/ha)</b>	EC340263, EC340273, EC340276, EC340283 (<111.00 days) <b>HPU-51 (111.33 days)</b>

Ranichauri	-	-
Shimla	EC340263, EC340272, EC340268, EC340274, EC340257 (>22.10 g/plant) <b>HPU-51 (19.18 g/plant)</b>	<b>HPU-51 (101.00 days)</b>
<b>Based on average over locations</b>	-	EC340276, EC340281, EC340265, EC340277, EC340261(<115.00 days) <b>Totru local (111.83 days)</b>
<b>Fababean (100 Accessions)</b>		
Palampur	EC276939, EC354686, EC329667, EC329605, IC243036 (> 5.95 g/plant) <b>HPFB-1 (4.63 g)</b>	EC329691, EC318948, EC329428, EC329605, HB-32 (<153.00 days) <b>HPFB-1 (157.29 days)</b>
<b>Job's tear (25 Accessions)</b>		
Ranichauri	-	-
Shillong	IC417053, IC540236, IC334314, IC089393, IC374506 (>18.20 g/plant) <b>Pollin (13.65 g/plant)</b>  IC540267, IC001274, IC416868, IC089389, IC540236 (>17.85 q/ha) <b>Pollin (15.75 q/ha)</b>	IC374506, IC360791 (< 145.00 days) <b>Pollin (145.00 days)</b>
<b>Based on average over locations</b>	-	-
<b>Perilla (25 Accessions)</b>		
Ranichauri	IC003942, IC374609, IC374494, IC416861, IC526701 (>3.68 q/ha) <b>BDS-1650 (2.35 q/ha)</b>	IC521284, IC369449, IC006447, IC211608, IC526701 (<157.00 days) <b>BDS-1650 (162.80 days)</b>
Shillong	IC526660, IC374609, IC335408, IC521286, IC216268 (>17.55 g) <b>Shillong (16.86 g)</b>  IC526660 (=9.63q/ha) <b>Jaintia (9.35 q/ha)</b>	IC521284, IC419598 (< 170.00 days) <b>Jaintia(169.67 days)</b>
<b>Based on average over locations</b>	<b>Jaintia (9.35 q/ha)</b>	IC526701, IC369449 (<163.00 days) <b>BDS-1650 (162.80 days)</b>

<b>PLAINS</b>		
<b>Amaranth (Rabi)</b>		
Bhubaneswar <b>(50 Accession)</b>	IC120621, IC035651, IC035716 (>10.18 g/plant) <b>BGA-2 (C)910.00 g/plant)</b>  IC120621, IC035651 ,IC035716 (>17.48 (q/ha) <b>BGA-2 (16.92 q/ha)</b>	IC035651, IC081698-B, IC094654, IC120670, IC035635 (<83.00 days) <b>BGA-2 (89.00 days)</b>
Delhi <b>(100 Accession)</b>	SKGPA-66, SKGPA-74, SKGPA-91 (>39.98 g) <b>GA-1 (27.08 g)</b>  IC035404, IC035635, IC035661, IC032195, IC021937 (>10.74 q/ha) <b>Suvarna (5.71 q/ha)</b>	SKGPA-101, IC120621, IC35404, IC35702, SKGPA-106(<=155.00 days) <b>GA-1 (163.00 days)</b>
Faizabad <b>(56 Accession)</b>	IC095498, SKGPA-67, IC032190, IC035638, IC035651 (>=15.00 g/plant) <b>Suvarna (13.82 g/plant)</b>	IC035665, IC035716, IC035719, IC035615, IC035642 (<108.00 days) <b>GA-2(112.57 days)</b>
Mandor <b>(100 Accession)</b>	SKGPA-68, IC095382B, IC035711, IC035404, IC032193 (>24.00 g/plant) <b>Suvarna (16.27 g/plant)</b>	SKGPA-68, IC035615, SKGPA-66, SKGPA-65, SKGPA-62 (<131.00 days) <b>GA 1 (138.27 days)</b>
Rahuri <b>(100 Accession)</b>	IC094654, SKGPA-67, IC095430, SKGPA-68, IC095382-B (>29.70 g/plant) <b>BGA-2 (15.64 g)</b>	SKGPA-77, SKGPA-79, IC120689, SKGPA-78, SKGPA-68 (<121.00 days) <b>Suvarna (123.00 days)</b>
Ranchi <b>(100 Accession)</b>	IC094661, SKGPA-106, IC035713, IC035735, IC120689 (>30.35 g/plant) <b>GA-2 (9.12 g)</b>	IC035661, SKGPA-79, SKGPA-101, SKGPA-69, IC035642 (<129.00 days) <b>GA-2 &amp; Suvarna (160.00 days)</b>
S.K.Nagar <b>(100 Accession)</b>	SKGPA-73, SKGPA-61, SKGPA-69, IC035711, IC095516 (>27.96 g/plant) <b>GA-2 (19.78 g)</b>	IC120649, SKGPA-73, SKGPA-110, IC032195, IC035404 (<120.00 days) <b>GA-2 (123.40 days)</b>
<b>Based on average over locations</b>	SKGPA-68, SKGPA-91, SKGPA-74, SKGPA-86, SKGPA-72 (>21.60 g/plant) <b>GA-1 (14.97 g/plant)</b>  IC035651, IC035635, IC035716, IC035713, IC035415 (>11.75 q/ha) <b>BGA-2 (11.06 q/ha)</b>	SKGPA-95, IC120670, IC095516, IC081698-B, IC120649 (<126.00 days) <b>GA-1 (127.34 days)</b>
<b>Amaranth (Kharif) (100 Accession)</b>		
Bangalore	SKGPA-77, SKGPA-69, KBGA-2, KBGA-3, MGA-4 (>37.00g/plant) BGA-2 (35.80 g/plant)	IC095382-B, SKGPA-83, SKGPA-92, SKGPA-103, IC035635 (<74.00 days) <b>KBGA-1 (86.20 days)</b>

Mettupalayam	SKGPA-65, SKGPA-74, SKGPA-71, IC035642, SKGPA-64 (>20.00 g/plant) <b>Suvarna (19.15 g/plant)</b>	SKGPA-103, SKGPA-102, IC035635, SKGPA-100, SKGPA-104 (<66.00 days) <b>Annapurna (73.75 days)</b>
<b>Based on average over locations</b>	KBGA-2, SKGPA-77, KBGA-3, MGA-4, IC035370 (>32.00 g/plant) <b>Suvarna (26.53 g)</b>	SKGPA-103, SKGPA-102, IC035635, SKGPA-83, IC035642 (<74.00 days) <b>Annapurna (73.75 days )</b>
<b>Rice bean</b>		
Bangalore <b>(52 Accessions)</b>	IC018183, IC018452, EC018563, IC016767, EC018260 (>11.50g/plant) <b>RBL-50 (9.25 g/plant)</b>	IC520892, EC018563, IC018183, EC018184, EC018556 (<77.00 days) <b>RBL-1 (76.60 days)</b>
Bhubaneswar <b>(50 Accessions)</b>	IC016342, IC019781-2, IC521148 (>7.90 q/ha) <b>RBL-6 (5.83 q/ha)</b>	IC002074, EC000262, IC0025687, EC018556, EC078228 (<98.00 days) <b>RBL-35 (97.20 days)</b>
Delhi <b>(50 Accessions)</b>	EC012436, IC016767, EC048452, EC016136, EC108887-A (>22.60 g/plant) <b>RBL-50 (14.71 g/plant)</b>  EC018222, EC018563, EC048452, IC016767, EC018260 (<8.32 q/ha) <b>RBL-6 (4.73 q/ha)</b>	IC016751, EC018563, IC007537-C, EC037226, EC098453 (<93.00 days) <b>RBL-35 (105.00 days)</b>
Mettupalayam <b>(50 Accessions)</b>	IC521081, EC098452, EC098453 ,IC520892 (> 7.98 g/plant) <b>RBL-6 (7.93 g/plant)</b>	EC000262, EC012416, EC016136, EC018171, EC018181 (=82.00 days) <b>RBL-35 &amp; RBL-50 (82.00 days)</b>
Ludhiana <b>(50 Accessions)</b>	EC114076, IC521144, EC016136, IC248733, EC018260 (>9.58 q/ha) <b>RBL-35 (5.96 q/ha)</b>	EC018563, EC078228, EC000262, EC018556, EC087989, EC098453 (<86.00 days) <b>RBL-35 (95.20 days)</b>
Rahuri <b>(50 Accessions)</b>	EC018563, IC019781-2, IC026973, EC037226, IC176563 (> 32.20 g/plant) <b>RBL-35 (20.52 g/plant)</b>	IC002074, IC002909, EC018171, IC007537-C, IC011723 (<95.00 days) <b>RBL-6 (97.40 days)</b>
<b>Based on average over locations</b>	IC016767, EC012436, EC018563, EC108887-A, IC026973 (>17.90 g/plant) <b>RBL-50 (12.39 g/plant)</b>  EC114076, IC521144, IC016767, EC018260, EC048452 (>6.85 q/ha) <b>RBL-6 (5.48 q/ha)</b>	EC018563, IC016751, EC018556, IC007537-C, EC018171 (<90.00 days) <b>RBL-35 (92.83 days)</b>

<b>Fababean (50 Accessions)</b>		
Delhi	HB-21, HB-10, HB-17, HB-1, HB-6 (> 124.98 g/plant) <b>EC591665 (84.60 g/plant)</b>  EC243626, EC243584, EC329750, EC243764, HB-10 (>35.60 q/ha) <b>PRT-12 (29.44 q/ha)</b>	HB-70, EC329605, HB-10, HB-56, HB-60 (<145.00 days) <b>PRT-12 (147.43 days)</b>
Faizabad	IC361485, EC318948, EC329662, EC117749, EC248945 (30.00 g/plant) <b>Vikrant (22.79 g/plant)</b>	EC243764, EC329691, HB-10, HB-28, HB-30 (=140.00 days) <b>Vikrant (146.86 days)</b>
Hisar	HB-17, HB-10, EC243584, HB-28, EC243626 (>36.00 g/plant) <b>Vikrant (25.40 g/plant)</b>	HB-48, EC351999, EC329728, HB-16, HB-21 (<145.00 days) <b>Vikrant (154.00 days)</b>
<b>Based on average over locations</b>	<b>EC591665 (84.60 g/plant)</b>	HB-28, HB-56, EC351999, EC329750, HB-30 (<146.00 days) <b>PRT-12 (147.36 days)</b>
<b>Winged bean (100 Accessions)</b>		
Akola	-	IC178279, IC251022, IC038956, IC038955-B, IC038956-1 (<150.00 days) <b>AKWB-1 (151.80 days)</b>
Ranchi	<b>AKWB-1 (14.60 q/ha)</b>	IC038821-2, IC178332, IC026940-A-2, IC038821-B, IC038956-1 (<148.00 days) <b>AKWB-1 (150.00 days)</b>
<b>Based on average over locations</b>	-	IC178279, IC251022, IC038956-1, IC038955-B, IC038956 (<149.00 days) <b>AKWB-1 (150.90 days)</b>
<b>Kalingada (20 Accessions)</b>		
Jaisalmer	SKGPK-22, SKGPK-33 (>146.68 Fruit yield q/ha) <b>GK-1 (121.30 Fruit yield q/ha)</b>  SKGPK-22, SKGPK-34, SKGPK-32, SKGPK-33, SKGPK-21 (>5.78 seed yield q/ha) <b>GK-1 (5.00 Seed yield q/ha)</b>	-
Mandor	SKGPK-25, SKGPK-27 (>68.10 Fruit yield q/ha) <b>GK 1 (47.04 Fruit yield q/ha)</b>  SKGPK-26, SKGPK-27, SKGPK-34 (>1.07 Seed yield q/ha) <b>GK 1 (1.80 Seed yield q/ha)</b>	SKGPK-23, SKGPK-21, SKGPK-25, SKGPK-22, SKGPK-31 (<79.00 days) <b>GK 1 (80.67 days)</b>



S.K. Nagar	SKGPK-29 (=35.83 Fruit yield q/ha) <b>GK-1 (32.50 Fruit yield q/ha)</b>  SKGPK-34, SKGPK-29, MGPK-10-2, SKGPK-33 (> 0.39 Seed yield q/ha) <b>GK-1 (0.39 Seed yield q/ha)</b>	SKGPK-24, SKGPK-35, SKGPK-21, SKGPK-29, MGPK-10-2 (<42.00 days) <b>GK-1 (78.50 days)</b>
<b>Based on average over locations</b>	SKGPK-34 (> 67.06) <b>GK-1 (66.95 Fruit yield q/ha)</b>  SKGPK-34, SKGPK-22, SKGPK-32, SKGPK-21, SKGPK-33 (>2.20 Seed yield q/ha) <b>GK-1 (2.06 Seed yield q/ha)</b>	SKGPK-21, SKGPK-23, MGPK-10-2, SKGPK-35, SKGPK-25 (<78.00 days) <b>GK-1 (79.58 days)</b>
<b>Kankoda (10 Accessions)</b>		
Rahuri	RMFG-39, RMFG-37, RMFG-52, RMFG-59, RMFG-45 (> 0.06kg /plant)	-
<b>Tumba (25 Accessions)</b>		
Mandor	IC281126, IC262408, IC281193, IC281176, IC281208, IC370485, IC281234, IC373493, IC370514, IC373496 (> <b>72.00 Seed yield (q/ha)</b> )  IC281174, IC370485, IC373506, IC262408, IC281209, IC373493, IC281208, IC373496, IC281126, IC281190 (> <b>2050 g Fruit yield (q/ha)</b> )	-
<b>Jatropha (158 Accessions)</b>		
Hisar	JH-1, JH-40, JH-92, JH-2, JH-60 (> 505.50 g/plant) <b>Chhattarpati 240.90 g/plant)</b>	-
<b>Simarouba</b>		
Mandor <b>(5 Accessions)</b>	Plant No. 4, Plant No. 1, Plant No. 5, Plant No. 2, Plant No. 3 <b>(&gt; 0.49 kg)</b>	-
Rahuri – Female Paradise tree <b>(36 Accession)</b>	PS-2003-45, PS-2003-20, PS-2003-4, PS-2003-13, PS-2003-59 (> <b>4.90 g/plant)</b>	PS-2003-35, PS-2003-39, PS-2003-51, PS-2003-52, PS-2003-19 <b>(&lt;73.00 days)</b>
S.K. Nagar <b>(19 Accession)</b>	Plant No. L10P7, Plant No. L8P9, Plant No. L12P13, Plant No. L13P11, Plant No. L11P2 <b>(&gt;1.60 kg/plant)</b>	

### 8.3 Quality

The seeds of promising genotypes evaluated in IVT, AVT and germplasm evaluation of the ten underutilized crops from three locations were planned for quality analysis. The crop-wise details of quality traits are given below:

Crops	Best genotypes
<b>HILLS</b>	
<b>Grain amaranth (Seed supply by Shimla centre) Kharif (2012)</b>	
IVT & AVT	Protein (PRA-2011-2:13.1%, <b>PRA-3 : 12.8%</b> ) Oil (IC042268 & VL-102:6.50%, <b>Annapurna : 8.1%</b> ) Phenols (PRA-2010-2: 0.055%, <b>Annapurna: 0.063%</b> ) Ca (VL-102: 312 mg/100g, <b>Annapurna: 309 mg/100g</b> ) Fe ( VL-101:12.5 mg/100g, <b>Durga: 9.9 mg/100g</b> ) Zn ( VL-101:7.1 mg/100g, <b>Durga: 6.8 mg/100g</b> )
Germplasm	Protein (IC038423:13.80%, <b>PRA-3: 12.80%</b> ) Oil (IC038497: 8.30%, <b>Annapurna: 8.10%</b> ) Phenols (IC038379: 0.052%, <b>Annapurna: 0.063%</b> ) Ca (IC038394: 319 mg/100g, <b>Annapurna: 309 mg/100g</b> ) Fe ( IC038394:15.70 mg/100g, <b>Durga: 9.9 mg/100g</b> ) Zn ( IC038394:7.6 mg/100g, <b>Durga: 6.8 mg/100g</b> )
<b>Rice bean (Seed supply by Shimla centre) (Kharif 2012)</b>	
IVT & AVT	Protein (IC63980: 20.4%, <b>PRR-1: 20.1%</b> ) Tannin (IC63980: 577 mg/100g, <b>PRR-2: 301 mg/100g</b> ) Cooking time (RBHP-35: 48 min., <b>PRR-1: 52 min.</b> ) Antioxidant activity (IC63980: 69%, <b>RBL-6: 62%</b> )
<b>Perilla (Seed supply by Shillong centre) (Kharif 2012)</b>	
Germplasm	Protein (IC211608: 31.5%) Oil (IC216268:42.6%) Phenols (IC335408: 0.60 mg/100g)
<b>Adzuki bean(Seed supply by Shimla centre) (Kharif 2011)</b>	
Germplasm	Crude Protein (EC340261: 25.37%, <b>HPU-51: 23.65%</b> ) Cooking time (EC340251: 47 min., <b>Toturu Local: 52 min.</b> )
<b>Buckwheat (Seed supply by Shimla centre) (Kharif 2011)</b>	
AV-I, AVT-II & Germplasm	Crude Protein (EC058322: 14.4%, <b>Himpriya: 14.4%</b> ) Ash (EC386667: 4.7%, <b>PRB-1: 4.6 %</b> ) Polyphenols(EC386667: 0.12 mg/100ml, <b>VL-7: 0.19 mg/100ml</b> ) Ca (EC218742: 99.7 mg/100g, <b>VL-7: 95.6 mg/100g</b> ) Antioxidant activity (EC018864 : 1.26 %, <b>VL-7: 21.14%</b> ) Magnesium (IC058322: 258 mg/100g, <b>Himpriya: 214 mg/100g</b> ) Potassium ( <b>PRB-1: 591 mg/100g</b> )
<b>Chenopod (Seed supply by Shimla centre) (Kharif 2011)</b>	
Germplasm	Protein (NIC-022516: 17.5%) Ash (NIC-022510: 6.2%) Ca (NIC022503: 249 mg/100g) Iron (NIC-022503: 6.5 mg/100g)

<b>PLAIN</b>	
<b>Grain amaranth (Seed supply by Bhubaneswar centre) Rabi 2011-12</b>	
IVT	Protein (IC-35637:13.4%, <b>Suvarna : 12.2%</b> ) Oil (BGA-43:8.2%, <b>GA 2: 7.8%</b> ) Phenols (BGA-38: 0.051%, <b>BGA -2: 0.051%</b> ) Ca (IC-35628: 317 mg/100g, <b>Suvarna: 315 mg/100g</b> ) Fe ( RGA-3:17.2 mg/100g, <b>BGA -2: 12.3 mg/100g</b> ) Zn ( RMA- 46:7.5 mg/100g, <b>BGA -2: 7.5 mg/100g</b> )
AVT	Protein (BGA-27 :12.2%, <b>GA-2: 13.2%</b> ) Oil (RMA-38: 8.1 %, <b>BGA-2 : 8.3%</b> ) Phenols (RGAS-08-10: 0.051%, <b>GA-2: 0.056%</b> ) Ca (BGA-18: 315 mg/100g, <b>GA-2: 314 mg/100g</b> ) Fe ( BGA-19:28.1 mg/100g, <b>GA-2: 14.1 mg/100g</b> ) Zn ( BGA-18:7.8 mg/100g, <b>BGA -2: 7.5 mg/100g</b> )
Germplasm	Protein (IC- 35404:13.4%, <b>GA-2: 13.2%</b> ) Oil (IC- 95382-B:8.3%, <b>BGA -2 : 8.3%</b> ) Phenols (IC- 35633: 0.051%, <b>GA-2: 0.056%</b> ) Ca (IC- 95244: 318 mg/100g, <b>GA-2: 314 mg/100g</b> ) Fe ( IC- 95382 B:12.6 mg/100g, <b>GA-2: 14.1mg/100g</b> ) Zn ( IC- 95383:8.6 mg/100g, <b>BGA -2: 7.5mg/100g</b> )
<b>Rice bean (Seed supply by Bhubaneswar centre) (Kharif 2012)</b>	
IVT	Protein (LRB-537: 20.7%, <b>RBL-50: 20.1%</b> ) Tannin (LRB-543: 533 mg/100g, <b>RBL-50: 568 mg/100g</b> ) Cooking time (BRBM-113: 44 min., <b>RBL-6: 48 min.</b> ) Antioxidant activity (BRB-104: 53%, <b>RBL-1: 52%</b> )
AVT-I	Protein (BRB-102: 21%, <b>RBL-6: 20.6%</b> ) Tannin (LRB-535: 538 mg/100g, <b>RBL-35: 561 mg/100g</b> ) Cooking time (BRB-102: 48 min., <b>RBL-35: 50 min.</b> ) Antioxidant activity (LRB-526: 48%, <b>RBL-35: 53%</b> )
AVT-II	Protein (RRB-11: 21.4%, <b>RBL-6: 20.6%</b> ) Tannin (RRB-11: 555 mg/100g, <b>RBL-35: 568 mg/100g</b> ) Cooking time (RRB-11: 50 min., <b>RBL-35: 51 min.</b> ) Antioxidant activity (LRB-524: 54%, <b>RBL-35: 53%</b> )
Germplasm	Protein (IC002074: 21.3%, <b>RBL-6: 20.6%</b> ) Tannin (IC018452: 533 mg/100g, <b>RBL-35: 568 mg/100g</b> ) Cooking time (EC098453: 43 min., <b>RBL-1: 51 min.</b> )
<b>Fababean (Seed supply by Hisar centre) (Rabi-2011-12)</b>	
IVT	Protein (HB-185:26.5%, <b>Vikrant: 25.4%</b> ) Vicine-convicine (HB-175: 0.77%, <b>Vikrant: 0.82%</b> ) Phenol (HB-175: 0.23%, <b>Vikrant: 0.25</b> ) Cooking time (DFB-10-1: 34 min., <b>Vikrant: 39 min.</b> )
AVT-I	Protein (HB-82: 25.2%, <b>Vikrant: 25.1%</b> ) Vicine-convicine (DFB-9-1: 0.76%, <b>Vikrant: 0.83%</b> ) Phenol (DFB-9-1: 0.22%, <b>Vikrant: 0.25</b> )
AVT-II	Protein (HB-617: 24.8%, <b>Vikrant: 25.1%</b> ) Vicine-convicine (IC366272: 0.79%, <b>Vikrant: 0.83%</b> ) Phenol (HB-645: 0.23%, <b>Vikrant: 0.25</b> )

SST	Protein (HB-10-18: 26.3%, <b>Vikrant: 25.1%</b> ) Vicine-convicine (HB-10-17: 0.76%, <b>Vikrant: 0.83%</b> ) Phenol (HB-10-2: 0.23%, <b>Vikrant: 0.25</b> )
Germplasm	Protein (EC327677: 26.2%, <b>Vikrant: 25.1%</b> ) Vicine-convicine (EC253793: 0.77%, <b>Vikrant: 0.83%</b> ) Phenol (EC253793: 0.23%, <b>Vikrant: 0.25</b> )
<b>Chenopod (Seed supply by Shimla centre) (Kharif 2011)</b>	
Germplasm	Crude protein (NIC-22516: 17.5%, <b>PRC-9801: 16.2%</b> ) Ca (NIC-22508: 352 mg/100g, <b>PRC-9801: 316 mg/100g</b> ) Iron (IC-328854: 14.7 mg/100g, <b>PRC-9801: 13.6 mg/100g</b> ) Zn (NIC-22516: 3.5 mg/100g, <b>PRC-9801: 2.2 mg/100g</b> )
<b>PLAIN</b>	
<b>Grain amaranth (Seed supply by Akola centre) Kharif (2011)</b>	
IVT	Protein (IC035482:12.20%) Oil (IC035532: 7.3%) Phenols (IC035482: 0.054%) Antioxidant activity DPPH (IC035370: 26.8%)
Germplasm	Protein (IC035496:13.20%) Oil (IC035495: 7.1%) Phenols (IC035495: 0.052%) Antioxidant activity DPPH (IC035483: 26.4%)
<b>Grain amaranth (Seed supply by S. K. Nagar centre) (Rabi 2010-11)</b>	
IVT	Protein (SKNA-08090 : 12.6%, <b>GA-2: 12.4%</b> ) Oil (SKNA-0813: 7.9%, <b>GA-2: 6.8%</b> ) Phenols (SKNA-0813: 0.053%, <b>GA-2: 0.057%</b> ) Antioxidant activity DPPH (SKNA-0809: 24.6%, <b>GA-2: 25.6%</b> )
Germplasm	Protein (SKGPA-60:14.1%, <b>GA-2: 12.4%</b> ) Oil (SKGPA-6 & SKGPA-34: 8.4%, <b>GA-1: 7.9%</b> ) Phenols (SKGPA-8 & SKGPA-17: 0.046%, <b>GA-1: 0.052%</b> )
<b>Rice bean (Seed supply by Hisar centre) (Kharif 2011)</b>	
SST	Protein (HRB-9-1: 19.8%) Tannin (HRB-9-2: 552 mg/100g) Cooking time (HRB-9-1: 49 min.) Antioxidant activity (HRB-9-6: 48%)
FYT	Protein (HRB-438: 20.1%) Tannin (HRB-3: 562 mg/100g) Cooking time (VRB-3: 48 min., <b>PRR-1: 52 min.</b> )
PRT	Protein (HRB-10-5: 19.7%, <b>RBL-35: 19.2%</b> ) Tannin (HRB-10-5: 572 mg/100g, <b>RBL-35: 574 mg/100g</b> ) Cooking time (HRB-10-5: 48 min., <b>RBL-35: 50 min.</b> )
<b>Fababean (Seed supply by Hisar centre) (Rabi-2010-11)</b>	
Germplasm	Protein (IC243808:26.4%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-70: 0.79%, <b>Vikrant: 0.84%</b> ) Phenol (IC361498: 0.24%, <b>Vikrant: 0.26</b> ) Cooking time (IC329083: 70 min., <b>Vikrant: 72 min.</b> )

IVT	Protein (NDF-10:24.9%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-184: 0.76%, <b>Vikrant: 0.84%</b> ) Phenol (HB-122: 0.24%, <b>Vikrant: 0.26</b> ) Cooking time (HB-184: 71 min., <b>Vikrant: 72 min.</b> )
AVT-I & AVT-II	Protein (HB-40:25.8%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-65: 0.76%, <b>Vikrant: 0.84%</b> ) Phenol (HB-73: 0.23%, <b>Vikrant: 0.26</b> ) Cooking time (HB-502: 72 min., <b>Vikrant: 72 min.</b> )
LST	Protein (HB-313:25.4%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-82: 0.76%, <b>Vikrant: 0.84%</b> ) Phenol (HB-82: 0.21%, <b>Vikrant: 0.26</b> ) Cooking time (HB-310: 72 min., <b>Vikrant: 72 min.</b> )
SST	Protein (SST-18:26.3%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (SST-8: 0.72%, <b>Vikrant: 0.84%</b> ) Phenol (SST-8: 0.22%, <b>Vikrant: 0.26</b> ) Cooking time (SST-18: 72 min., <b>Vikrant: 72 min.</b> )
PRT	Protein (HB-10-18:26.3%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-10-8: 0.72%, <b>Vikrant: 0.84%</b> ) Phenol (HB-10-17: 0.21%, <b>Vikrant: 0.26</b> ) Cooking time (HB-10-14: 71 min., <b>Vikrant: 72 min.</b> )
FYT-I	Protein (HB-206:26.3%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-122: 0.74%, <b>Vikrant: 0.84%</b> ) Phenol (HB-197: 0.22%, <b>Vikrant: 0.26</b> ) Cooking time (HB-194: 72 min., <b>Vikrant: 72 min.</b> )
FYT-II	Protein (HB-185:26.2%, <b>Vikrant: 25.5%</b> ) Vicine-convicine (HB-175: 0.75%, <b>Vikrant: 0.84%</b> ) Phenol (HB-62: 0.22%, <b>Vikrant: 0.26</b> ) Cooking time (HB-185: 72 min., <b>Vikrant: 72 min.</b> )

#### 8.4 VALUE ADDITION

The extruded products prepared by using buckwheat, Rice bean and amaranth were evaluated for specific quality characteristics. Following type of samples were used for value addition studies:

<b>Buckwheat</b>	:	Ogla
<b>Amaranths</b>	:	Suvarna
<b>Rice bean</b>	:	Mixture

Standardization of different recipes using the following ingredient for value addition was taken as under:

### **Amaranth value added products**

- **Eggless cake:** Amaranth flour:125 g, refined wheat flour: 375 g, milkmaid: 800 g, butter 200 g, coke 300 ml, baking powder: 1 tsp, sodium bicarbonate: ½ tsp, cocoa powder: 1 tsp.
- **Pinni:** Wheat flour: 200g, popped amarants flour: 200g, sugar: 200g, popped lotus seed: 60g, clarified butter (*desi ghee*): 325g, almonds: 35g, cashew nut: 30g, Raisins: 30g, coconut: 60g, edible gums: 9.92g
- **Mathri:** Popped amaranth flour: 234g, maida: 546g, hydrogenated fat: 273g, salt: 7.8g, black pepper: 15.6g, fenugreek leaves: 10g

### **Buckwheat value added products**

- **Eggless cake:** Buckwheat flour- 125 g, refined flour- 375 g, milkmaid- 800g, butter- 200g, coke- 350 ml, baking powder- 1 tsp, sodium bicarbonate: ½ tsp, cocoa powder- 2 tsp.
- **Mathri :** Buckwheat *mathri* was prepared using varying proportions of buckwheat (i.e.15,30,45 per cent) as per the standardized recipe and the samples were packed in aluminum pouches and stored at room temperatures for 2 months and analyzed fresh and after 15, 30, 45 and 60 days of storage for nutritional and sensory characteristics

### **Rice bean value added products**

- **Pinni:** Rice bean *pinni* was prepared using varying proportions of Rice bean

## **8.5 AGRONOMY**

A total of thirteen agronomic experiments were formulated to be conducted at thirteen locations in 32 trials. These comprised of three studies on amaranth, one each on buckwheat, jatropha and kalingada, five on rice bean and two on underutilized crops in general during Rabi 2011-12 and Kharif 2012. Out of 32 trials allotted, results of 23 were received. Salient findings are as follows:

<b>S. No.</b>	<b>Experiment</b>	<b>Findings</b>
1.	Chemical weed control in grain amaranth	Weed free control resulted in maximum seed yield.
2.	Organic farming in grain amaranth	Based on the average performance over locations, application of 100 % RDF gave maximum yield (1058.59 q/ha).
3.	Performance of amaranth varieties at different locations	Based on the overall mean performance in respect of grain yield over three locations, the variety BGA-2 showed highest seed yield.
4.	Chemical weed control in rice bean	The maximum seed yield was observed in genotype RBL-6 (12.67 q/ha) followed by RBL-50 (10.95 q/ha).
5.	Intercropping study of rice bean	Grain yields of maize intercrop ( $I_1$ ) were higher than that of grain amaranth ( $I_2$ ) at all levels of fertilizer application at Ranichauri and grain yields of maize intercrop ( $I_1$ ) were higher than that of pigeonpea ( $I_2$ ) at all levels of fertilizer application at Bhubaneswar.
6.	Organic manurial studies in rice bean	Based on average performance of two locations, application of RDF @ 50% + vermi-compost @ 2.5 t/ha. gave maximum seed yield (9.2q/ha).
7.	Performance of different rice bean genotypes	weed free control recorded maximum seed yield.
8.	Intercropping studies on underutilized crops in Jatropha	Maximum seed yield was obtained by growing the crop in 3x1.0m spacing (S1), applying fertilizer dose of $N_{40}P_{80}$ and by maintaining two plants /hill.
9.	Effect of plant geometry, fertilizer and plant/hill of kalingada	Grain amaranth intercropping resulted in the highest grain yield in both Pungam and Simarouba tree crop.
10.	Intercropping studies on underutilized crops in Apple	Intercropping of jatropha with gram resulted in the highest value of gross return in both grain production and bio-production.
11.	Intercropping studies on underutilized intercrops with different tree crops	For underutilized crops Chenopodium variety PRC 9801 was observed to give highest yield (11.80 q/ha) followed by buckwheat.

# ANNEXURES

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### Mean seed yield (q/ha) of Grain amaranth varieties tested for the last three years :Hill

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Annapurna	Durga	PRA 3
1	IC042328	19.74	1/2	20.06	1/4	17.99	0/4	19.17	2/10	II	8.66	0.80	5.72
2	PRA-2010-1	23.71	0/2	20.52	0/4	17.56	0/4	19.97	0/10	I	13.23	<b>5.05</b>	10.17
3	PRA-2010-2	20.68	0/2	19.66	0/4	16.46	0/4	18.58	0/10		5.35	-2.27	2.50
4	Annapurna (C)	19.46	2	18.89	4	15.48	4	17.64	10		-	-7.23	-2.71
5	Durga (C)	19.06	2	19.33	4	18.68	4	19.01	10	III	7.79	-	4.88
7	PRA 3 (C)	18.35	2	20.51	4	15.64	4	18.13	10		2.78	-4.65	-

### Mean maturity days of Grain amaranth varieties tested for the last three years :Hill

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Annapurna	Durga	PRA 3
1	IC042328	148.00	0/4	145.25	0/4	132.42	0/2	143.78	0/10		11.80	16.74	0.40
2	PRA-2010-1	143.44	0/3	143.00	0/4	134.33	0/2	141.22	0/9	III	9.80	14.66	-1.39
3	PRA-2010-2	140.56	0/3	149.42	0/4	135.17	0/2	143.30	0/9		11.42	16.35	0.07
4	Annapurna (C)	139.50	4	114.50	4	131.83	4	128.61	12	II	-	4.42	-10.19
5	Durga (C)	126.08	4	124.33	4	119.08	4	123.16	12	I	-4.23	-	-13.99
7	PRA 3 (C)	145.42	4	148.28	4	135.92	4	143.21	12		11.35	16.27	-

### Mean seed yield (q/ha) of Buckwheat varieties tested for the last three years :Hill

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Himpriya	PRB-1	Shimla-B-1	VL-7
1	IC109314	4.52	0/4	9.62	1/3	11.48	1/4	8.44	2/11		-12.27	22.16	12.88	50.46
2	IC109728	6.67	1/4	13.50	2/3	13.27	0/4	10.93	3/11	I	<b>13.61</b>	58.20	46.18	94.86
3	IC109729	6.01	0/4	11.70	1/3	12.02	0/4	9.75	1/11	III	1.28	41.03	30.31	73.70
4	Sangla-B-118	4.77	0/4	14.58	1/3	12.14	2/4	10.12	3/11	II	5.21	46.51	35.38	80.46
5	Himpriya (C)	5.86	4	10.06	3	13.06	4	9.62	11		-	39.25	28.67	71.51
6	PRB-1 (C)	5.87	4	4.45	3	9.80	4	6.91	11		-28.19	-	-7.60	23.17
7	Shimla-B-1 (C)	5.55	4	8.40	3	8.72	4	7.48	11		-22.28	8.22	-	33.30
8	VL-7 (C)	4.48	4	2.63	3	8.98	4	5.61	11		-41.70	-18.81	-24.98	-

### Mean maturity days of Buckwheat varieties tested for the last three years :Hill

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Himpriya	PRB-1	Shimla-B-1	VL-7
1	IC109314	98.92	0/4	109.89	0/3	95.63	0/4	100.71	0/11		-11.45	0.77	18.02	27.51
2	IC109728	100.58	0/4	106.78	0/3	97.42	0/4	101.12	0/11		-11.10	1.18	18.50	28.03
3	IC109729	99.50	0/4	107.33	0/3	98.79	0/4	101.38	0/11		-10.87	1.44	18.80	28.35
4	Sangla-B-118	100.83	0/4	110.67	0/3	99.00	0/4	102.85	0/11		-9.58	2.91	20.52	30.21
5	Himpriya (C)	111.25	4	127.11	3	106.21	4	113.74	11		-	13.81	33.29	44.01
6	PRB-1 (C)	97.42	4	102.67	3	100.42	4	99.94	11	III	-12.13	-	17.12	26.53
7	Shimla-B-1 (C)	84.75	4	88.56	3	83.50	4	85.33	11	II	-24.98	-14.62	-	8.04
8	VL-7 (C)	78.50	4	86.11	3	74.13	4	78.98	11	I	-30.56	-20.97	-7.44	-

### Mean seed yield (q/ha) of Rice Bean varieties tested for the last three years :Hill

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	PRR-1	PRR-2	RBL-6
1	IC141070	15.09	1/5	16.80	1/6	15.54	0/5	15.87	2/16		-6.76	-6.12	-5.46
2	IC563940	15.06	1/5	16.95	0/6	18.56	1/5	16.86	2/16		-0.95	-0.27	0.43
3	LRB-460	15.64	1/6	16.80	0/6	17.68	0/5	16.65	1/17		-2.19	-1.52	-0.83
4	RBHP-43	18.46	1/6	17.17	1/6	19.99	2/5	18.45	4/17	I	<b>8.41</b>	9.15	9.92
5	PRR-1 (C)	17.57	4	16.10	6	17.69	5	17.02	15	II	-	0.68	1.39
6	PRR-2 (C)	16.90	6	17.32	6	16.42	5	16.91	17	III	-0.68	-	0.71
7	RBL-6 (C)	14.00	6	18.03	6	18.65	5	16.79	17		-1.38	-0.70	-

### Mean maturity days of Rice Bean varieties tested for the last three years :Hill

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	PRR-1	PRR-2	RBL-6
1	IC141070	131.93	1/5	131.11	0/6	124.33	0/5	129.25	1/16	II	1.50	-1.51	-4.96
2	IC563940	137.80	0/5	133.94	0/6	125.20	1/5	132.42	1/16		3.99	0.90	-2.64
3	LRB-460	145.53	1/6	135.56	0/6	125.53	0/5	136.13	1/17		6.91	3.73	0.10
4	RBHP-43	143.06	1/6	131.22	0/6	122.00	2/5	132.69	3/17		4.21	1.11	-2.44
5	PRR-1 (C)	132.08	4	127.00	6	123.93	5	127.33	15	I	-	-2.97	-6.37
6	PRR-2 (C)	140.17	6	128.49	6	123.80	5	131.23	17	III	3.06	-	-3.51
7	RBL-6 (C)	146.61	6	132.28	6	127.73	5	136.00	17		6.81	3.63	-

**Mean seed yield (q/ha) of Rice bean varieties tested for the last three years :Plain**

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	RBL-1	RBL-6	RBL-35	RBL-50
1	LRB-482	11.28	1/8	11.74	1/10	14.19	2/6	12.20	4/24	I	16.42	11.28	17.88	9.51
2	LRB-524	10.97	2/8	11.45	1/10	11.75	1/6	11.36	4/24	II	8.44	3.65	9.80	2.01
3	RRB-11	10.45	0/8	10.72	0/10	11.10	0/6	10.72	0/24		2.34	-2.18	3.62	-3.73
4	RBL-1 (C)	8.90	8	10.78	10	12.08	6	10.48	24		-	-4.42	1.25	-5.93
5	RBL-6 (C)	10.67	8	10.63	10	11.91	6	10.96	24		4.63	-	5.94	-1.58
6	RBL-35 (C)	9.27	8	10.68	10	11.24	6	10.35	24		-1.24	-5.60	-	-7.10
7	RBL-50 (C)	10.79	8	11.00	10	11.84	6	11.14	24	III	6.31	1.61	7.64	-

### Mean maturity days of Rice bean varieties tested for the last three years :Plain

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	RBL-1	RBL-6	RBL-35	RBL-50
1	LRB-482	110.43	1/9	110.76	2/10	111.59	0/9	110.92	3/28	III	-1.26	-0.02	0.51	-0.64
2	LRB-524	108.40	0/9	108.67	2/10	109.48	0/9	108.84	2/28	I	-3.11	-1.90	-1.38	-2.50
3	RRB-11	110.09	1/9	112.29	0/10	112.22	0/9	111.56	1/28		-0.69	0.55	1.09	-0.07
4	RBL-1 (C)	112.36	9	112.29	10	112.35	9	112.33	28		-	1.25	1.79	0.62
5	RBL-6 (C)	110.08	9	110.78	10	112.00	9	110.95	28		-1.23	-	0.53	-0.62
6	RBL-35 (C)	109.12	9	110.14	10	111.85	9	110.36	28	II	-1.75	-0.53	-	-1.14
7	RBL-50 (C)	110.83	9	110.83	10	113.35	9	111.64	28		-0.62	0.63	1.16	-



**Mean seed yield (q/ha) of Fababean varieties tested for the last three years :Plain**

S. No.	Genotypes	2007-08		2009-10		2011-12		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Vikrant
1	HB-064	-	-	21.26	2/6	23.94	1/5	22.48	3/11	I	10.96
2	HB-070	18.67	2/5	21.49	2/6	23.45	2/5	21.22	6/16	II	4.75
3	HB-617	16.90	0/5	20.53	2/6	22.61	1/5	20.04	3/16		-1.06
4	HB-645	16.83	0/5	21.31	2/6	25.25	1/5	21.14	3/16	III	4.35
5	IC366272	16.53	0/5	21.44	2/6	21.12	0/5	19.80	2/16		-2.24
6	Vikrant (C)	17.80	5	20.08	6	22.93	5	20.26	16		-

### Mean maturity days of Fababean varieties tested for the last three years :Plain

S. No.	Genotypes	2007-08		2009-10		2011-12		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Vikrant
1	HB-064	-	-	143.33	2/6	151.98	2/5	147.26	4/11		0.72
2	HB-070	140.56	0/6	143.25	2/6	149.88	2/5	144.25	4/17	I	-1.34
3	HB-617	142.82	1/6	145.18	1/6	152.15	1/5				
4	HB-645	139.97	1/6	143.72	0/6	155.05	0/5	145.73	1/17	II	-0.33
5	IC366272	143.13	0/6	145.86	1/6	152.60	1/5	146.88	2/17		0.46
6	Vikrant (C)	143.06	6	144.14	6	152.47	5	146.21	17	III	-

**Mean seed yield (q/ha) of Kalingada varieties tested for the last three years :Plain**

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	GK-1
1	MGPK-1	3.37	0/2	3.60	0/3	1.97	2/3	2.93	2/8	II	6.90
2	SKNK-0903	3.98	0/2	4.16	2/3	1.50	1/3	3.12	3/8	I	13.77
3	GK-1 (C)	3.59	2	3.58	3	1.33	3	2.74	8	III	-

**Mean Fruit yield (q/ha) of Kalingada varieties tested for the last three years :Plain**

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	GK-1
1	MGPK-1	107.04	1/2	109.54	0/3	65.30	1/3	92.33	2/8	II	1.71
2	SKNK-0903	107.31	0/2	119.64	0/3	65.38	1/3	96.21	1/8	I	5.99
3	GK-1 (C)	107.04	2	115.99	3	54.72	3	90.78	8	III	-

### Mean maturity days of Kalingada varieties tested for the last three years :Plain

S. No.	Genotypes	2010		2011		2012		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	GK-1
1	MGPK-1	-	-	103.50	0/2	79.00	0/2	91.25	0/4	III	0.14
2	SKNK-0903	-	-	99.83	1/2	78.00	0/2	88.92	1/4	I	-2.42
3	GK-1 (C)	-	-	102.58	2	79.67	2	91.12	4	II	-

## Number of trials/activities allotted and conducted at various centers AICRP on Underutilized Crops :2012

S. No	Name of Centre	Allotted					Conducted					
		Breeding	Germplasm	Agronomy	Quality	Total	Breeding	Germplasm	Agronomy	Quality	Total	Percentage
<b>(A) Hill</b>												
1	Almora	3	3	1		7	3	3	0		6	85.71
2	Bhowali	1	1			2	1	1	0		2	100.00
3	Palampur	2	3	3	3	11	2	3	3	3	11	100.00
4	Ranichauri	4	8	5		17	2	6	4		12	70.59
5	Sangla	2	3	1		6	2	3	1		6	100.00
6	Shillong	1	3			4	1	3	0		4	100.00
7	Shimla	3	5	1		9	3	5	0		8	88.89
8	Cooch Behar	0	0	5		5	0	0	1		1	20.00
<b>Total (A)</b>		<b>16</b>	<b>26</b>	<b>16</b>	<b>3</b>	<b>61</b>	<b>14</b>	<b>24</b>	<b>9</b>	<b>3</b>	<b>50</b>	<b>81.97</b>
<b>(B) Plain</b>												
1	Ambikapur	5	1			6	2	0	0		2	33.33
2	Bangalore	2	2	4		8	2	2	4		8	100.00
3	Bhubaneswar	2	2	3		7	2	2	3		7	100.00
4	Delhi	3	3			6	3	3	0		6	100.00
5	Faizabad	4	2			6	3	2	0		5	83.33
6	Hisar	2	2	1	6	11	2	1	1	6	10	90.91
7	Ludhiana	3	2			5	2	1	0		3	60.00
8	Mandor	3	3	1		7	3	3	0		6	85.71
9	Mattupalayam	2	2	3		7	2	2	3		7	100.00
10	Rahuri	3	2	1	3	9	2	2	0	0	4	44.44
11	Ranchi	4	2			6	4	2	0		6	100.00
12	S.K. Nagar	4	3	3		10	2	2	3		7	70.00
13	Cooch Behar	2	0			2	0	0	0		0	0.00
14	Akola	1	2			3	1	1	0		2	66.67
15	Jaisalmer	2	2			4	1	1	0		2	50.00
<b>Total (B)</b>		<b>42</b>	<b>30</b>	<b>16</b>	<b>9</b>	<b>97</b>	<b>31</b>	<b>24</b>	<b>14</b>	<b>6</b>	<b>75</b>	<b>77.32</b>
<b>Grand Total (A+B)</b>		<b>58</b>	<b>56</b>	<b>32</b>	<b>12</b>	<b>158</b>	<b>45</b>	<b>48</b>	<b>23</b>	<b>9</b>	<b>125</b>	<b>79.11</b>
<b>Percentage of trials conducted</b>							<b>77.59</b>	<b>85.71</b>	<b>71.88</b>	<b>75.00</b>	<b>79.11</b>	

## **List of Underutilized Crops Identified for Research Work**

### **I. FOOD CROPS**

#### **A. PSEUDOCEREALS**

Grain amaranth (*Amaranthus* spp.)  
Buckwheat (*Fagopyrum* spp.)  
Chenopodium (*Chenopodium* spp.)  
Job's tear (*Coix lacryma-jobi*)

#### **B. FOOD LEGUMES/ PULSES**

Rice bean (*Vigna umbellata*)  
Adzuki bean (*Vigna angularis*)  
Faba bean (*Vicia faba*)  
Winged bean (*Psophocarpus tetragonolobus*)

#### **C. OILSEEDS**

Perilla (*Perilla frutescens*)  
Paradise tree (*Simarouba glauca*)

#### **D. VEGETABLES**

Kankoda (*Momordica dioica*)  
Winged bean (*Psophocarpus tetragonolobus*)

### **II. FODDER CROPS**

Amaranth (*Amaranthus* spp.)  
Salt bush (*Atriplex* spp.)  
Fodder tree species

### **III. ENERGY, HYDROCARBON AND INDUSTRIAL PLANTS**

Jojoba (*Simmondsia chinensis*)  
Guayule (*Parthenium argentatum*)  
Jatropha (*Jatropha curcas*)  
Tumba (*Citrullus colocynthis*)  
Paradise Tree (*Siimarouba glauca*)  
Perilla (*Perilla frutescens*)

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