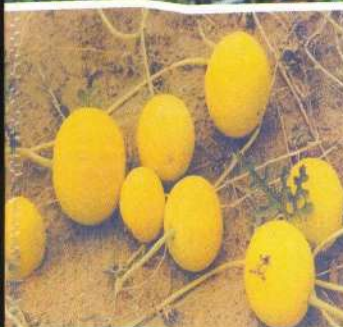


# All India Coordinated Research Network on Underutilized Crops

ANNUAL REPORT  
2010



National Bureau of Plant Genetic Resources  
Pusa Campus, New Delhi 110012

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

## **PROGRESS REPORT 2010**

**Compiled by**

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**Cover page photographs:**

**Top to bottom:** Grain amaranth, Rice bean, Perilla, Kankoda, Kalingada, Tumba and Jatropha

**Centre photograph :** Intercropping of Grain amaranth with chickpea

**Back cover photograph :** Seed production in Grain amaranth

# CONTENTS

	<b>Pages</b>
<b>I PREAMBLE</b>	<b>1-3</b>
<b>II PLANT BREEDING</b>	<b>4-95</b>
2.1 Hills	4-36
2.2 Plains	37-95
<b>III GERmplasm EVALUATION</b>	<b>96-324</b>
3.1 Hills	96-201
3.2 Plains	202-325
<b>IV AGRONOMY</b>	<b>326-348</b>
<b>V QUALITY ANALYSIS</b>	<b>349-381</b>
<b>VI VALUE ADDITION</b>	<b>382-385</b>
<b>VII CENTRE REPORT</b>	<b>386-390</b>
7.1 Hills	386
7.2 Plains	387-390
<b>VIII SUMMARY</b>	<b>391-408</b>
<b>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 of 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 plants 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 organised 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 17 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. About 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. M. Dutta, 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 Mr. Satya Prakash and Ms. Amita 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 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 2009-2010 in the plains and during *kharif* 2010 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 was conducted during kharif, 2010. 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 (IVT)**

In this trial, ten entries in IVT 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, IC042328 entry showed yield superiority over the check variety, Durga.

Significant differences were observed among the entries for seed yield at all the locations (Table 2). Seed yield level was high at Shimla (22.25 q/ha), moderate at Ranichauri (13.92 q/ha) and very low at Almora (5.84 q/ha) and Sangla (3.68 q/ha). Based on the average performance over locations, entry IC042328 was the highest yielder (19.74 q/ha) followed by check variety Annapurna (19.46 q/ha).

Average plant height of the entries (Table 3) was the highest at Shimla (256.23 cm) followed by at Ranichauri (164.62 cm). It was the lowest at Sangla (131.58 cm) centre. The plant height at Shimla ranged from 203.92 cm to 315.77 cm and at Sangla from 120.33 cm to 152.10 cm. Based on average performance over four locations the entry PRA-2010-1 had highest plant height (208.48 cm).

Flowering time showed considerable variation among locations as well as the entries. The mean flowering time was shortest (72.19 days) at Sangla while it was longest (83.15 days) at Shimla (Table 4). The variation in flowering time among the entries was wider at Shimla (67.67 – 91.33 days). The check Durga showed consistency for early flowering over the locations and ranked first (60.33 days) based on the overall performance.

The average maturity period of the entries over the locations was 141.33 days (Table 5). The check, Durga was the earliest in maturity (126.08 days). The average maturity period was the minimum at Almora (123.31 days) while, it was the longest at Shimla (149.38 days).

The length of inflorescence (Table 6) of the entries was the highest at Shimla (69.09 cm) followed by at Almora (54.11 cm). Inflorescence length was lowest (29.81 cm) at Sangla. Based on the average over four locations, the entry, IC035542 had the longest inflorescence (56.80 cm).

Number of fingers per inflorescence (Table 7) was the highest at Almora (83.74) followed by at Shimla centre (71.27). Based on the average over the locations the entry PRA-2010-1 had the highest number of fingers (67.48) followed by IC032190 (63.73).

Test weight (Table 8) expressed in terms of weight of 10 ml seed recorded at four centres showed that it was the highest at Almora (7.28 g) and very low at Sangla (6.72 g). The variation among the entries was relatively low. Based on the average over four locations the entry, IC032190 (8.87 g) 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)**

A combined trial of Initial Varietal Trial (4 entries) and Advanced Varietal Trial-I (2 entries) with four checks was conducted at four locations viz. Shimla, Ranichauri, Almora and Sangla. 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 IC109728 was found superior in yield to the best check variety, PRB-1.

Data on grain yield have been presented in Table 10. Significant differences were observed among the entries with respect to grain yield at all the locations. Seed yields at Shimla (5.72 q/ha) and Almora (3.67 q/ha) were comparatively low. Highest seed yield was recorded at Ranichauri (6.55 q/ha) followed by at Sangla (6.42 q/ha).

Average plant height (Table 11) was recorded to be the highest at Shimla (130.67 cm) followed by at Ranichauri (116.05 cm). The check, PRB-1 was the tallest (124.31 cm) entry.

Flowering time varied from 24.00 to 46.00 days at Almora, from 41.33 to 53.00 days at Shimla, 42.33 to 85.33 days at Ranichauri and at 48.67 to 67.67 days at Sangla centre (Table 12). Mean flowering time was the earliest at Almora (41.48 days) followed by at Shimla (48.90 days).

Maturity period (Table 13) also showed similar trend as that of flowering time. Average maturity period was the earliest at Almora (78.82 days) followed by at Shimla (97.27 days). On the basis of average over four locations the check variety VL-7 was earliest in maturity (78.50 days).

The average test weight was recorded to be higher at Shimla (3.34 g) than at other centres (Table 14). On the basis of average over four locations VL-7 possessed the highest (3.38 g) and entry IC109549 the lowest (2.41 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.

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

The IVT and AVT-I & II comprising 13 entries and three checks was conducted at six locations. Results have been received from all the 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 all the locations (Table 16). Yield level at Palampur centre was the highest with an average yield of 30.07 q/ha while it was the lowest at Shillong (5.85 q/ha) and Almora (8.76 q/ha) centres because of poor seed setting and high rainfall at respective centres. The yield levels at Bhowali (18.82 q/ha) and

Ranichauri (13.82 q/ha) centres were moderate. On the basis of average over six locations the entry RBHP-43 (18.46 q/ha) was the highest yielder followed by the entry VRB-3 (18.06 q/ha).

Plant height (Table 17) was maximum at Shimla with an average height of 253.46 cm, while it was the lowest at Shillong (69.24 cm) centre. On the basis of average over six locations JRS-4 showed the highest plant height (166.27 cm). The entries PRR 2007-2 (70.53 cm) and IC563940 (128.65 cm) were the shortest entries in terms of plant height.

Flowering time was minimum at Shillong (60.02 days) and maximum at Shimla (94.10 days) showing more than 34 days difference between the two centres (Table 18). On the basis of average over six locations PRR-2007-2 (61.11 days) and PRR-2008-2 (68.56 days) were recorded to be earliest in flowering.

Maturity period was shortest at Palampur (114.75 days) and it was longest (193.57 days) at Bhowali (Table 19). There was a difference of about 79 days in maturity between Bhowali and Palampur centres. Based on the average over six locations, PRR 2007-2 and PRR-2008-1 were earliest in maturity (123.56 days and 123.80 days, respectively).

The mean 100-seed weight was the highest at Palampur (8.23 g) centre and lowest at Bhowali (6.93 g) centre (Table 20). On the basis of average over six locations, IC563940 had the largest seed weight (13.29 g) followed by JR-S-4 (8.27 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 was proposed to be conducted at Palampur and Ranichauri and results have been received from both the centres.

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

The Initial Varietal Trial (IVT) comprising ten entries alongwith two checks was conducted at two locations. 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. Mean seed yield levels were quite low at Ranichauri (4.49 q/ha) (Table 22). The seed yield was the highest in the entry, ISV-10-2 (50.31 q/ha) followed by the check variety, Vikrant (51.01 q/ha).

Plant height (Table 23) was maximum at Palampur with an average height of 64.94 cm, while it was the lowest at Ranichauri (58.52 cm) centre. On the basis of average over two locations HB-604 showed the highest plant height (69.16 cm). The entries HB-645 and HB-642 were the shortest in terms of plant height.

Flowering time was minimum at Ranichauri (44.55 days) and maximum at Palampur (79.52 days) showing about 35 days difference between the two centres (Table 24). On the basis of average over two locations HB-611 (59.13 days) and HB-604 (60.09 days) were recorded to be earliest in flowering.

Maturity period was shortest at Ranichauri (97.58 days) and longest (155.88 days) at Palampur (Table 25). There was a difference of more than 58 days in maturity between Ranichauri and Palampur centres. Based on the average over two locations, HB-611 and HB-613 were earliest in maturity (122.75 days and 124.17 days, respectively).

Significant variations were observed among the entries with respect to pod yield at both the locations (Table 26). Pod yield at Palampur centre was the highest with an average yield of 97.22 q/ha while it was the lowest at Ranichauri (4.49 q/ha) centre because of poor fertility and high rainfall at the centre. On the basis of average over two locations, the entry ISV-10-2 (55.31 q/ha) was the highest yielder followed by the check variety Vikrant (51.01 q/ha).

The mean 100-seed weight was the highest at Palampur (27.28 g) centre and lowest at Ranichauri (25.43 g) centre (Table 27). On the basis of average over two locations, the check variety Vikrant had the largest seed weight (28.28 g) and followed by the entry HB-617 (27.00 g).

**Table 1. Performance of grain amaranth entries in Initial Varietal Trial (IVT) during Kharif 2010 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 10ml seed (g)	Mean seed yield over locations (q/ha)			Per cent increase/decrease over check		
				Mean	Location	Rank	Annapurna	Durga	PRA-3
1	IC032190	144.33	8.87	16.85	2	11	-13.43	-11.61	-8.19
2	IC035463	144.17	8.41	16.21	2	13	-16.73	-14.98	-11.69
3	IC035468	130.42	8.40	19.20	2	6	-1.34	0.73	4.62
4	IC035520-1	147.67	8.38	17.37	2	10	-10.73	-8.86	-5.33
5	IC035542	145.75	8.39	16.45	2	12	-15.47	-13.69	-10.35
6	IC042328	148.00	8.29	19.74	2	4	1.46	3.59	7.59
7	IC107197	136.42	8.05	18.92	2	8	-2.77	-0.73	3.11
8	PRA-2010-1	143.44	7.68	23.71	2	1	21.84	24.40	29.21
9	PRA-2010-2	140.56	6.80	20.68	2	3	6.25	8.48	12.68
10	PRA-2010-3	145.56	7.19	20.86	2	2	7.18	9.43	13.66
11	Annapurna (c)	139.50	8.15	19.46	2	5	-	2.12	6.07
12	IC-35407 (Durga) (c)	126.08	8.26	19.06	2	7	-2.04	-	3.89
13	PRA-3 (c)	145.42	8.31	18.35	2	9	-5.72	-3.74	-
<b>Mean</b>		<b>141.33</b>	<b>8.09</b>	<b>18.99</b>					



**Table 2. Grain yield (q/ha) in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora*	Ranichauri	Sangla*	Shimla	Mean	Rank	Location	Frequency
1	IC032190	1.10	12.61	-	21.08	16.85	11	2	0/2
2	IC035463	2.20	13.53	1.00	18.88	16.21	13	2	0/2
3	IC035468	18.50	12.06	7.39	<b>26.34</b>	19.20	6	2	1/2
4	IC035520-1	1.20	14.10	0.39	20.64	17.37	10	2	0/2
5	IC035542	2.63	14.86	1.19	18.04	16.45	12	2	0/2
6	IC042328	3.50	10.96	6.58	<b>28.53</b>	19.74	4	2	1/2
7	IC107197	2.53	14.50	4.25	23.34	18.92	8	2	0/2
8	PRA-2010-1	4.00	-	3.50	23.71	23.71	1	2	0/2
9	PRA-2010-2	4.93	-	2.86	20.68	20.68	3	2	0/2
10	PRA-2010-3	3.17	-	1.92	20.86	20.86	2	2	0/2
11	Annapurna (c)	10.23	15.55	3.81	23.38	19.46	5	2	
12	IC-35407 (Durga) (c)	<b>20.07</b>	13.50	<b>6.94</b>	<b>24.62</b>	19.06	7	2	
13	PRA-3 (c)	1.80	<b>17.54</b>	4.33	19.16	18.35	9	2	
	<b>Mean</b>	<b>5.84</b>	<b>13.92</b>	<b>3.68</b>	<b>22.25</b>	<b>18.99</b>			
	<b>CD (0.05)</b>	<b>1.04</b>	<b>1.24</b>	<b>1.80</b>	<b>0.12</b>				
	<b>CV (%) Error</b>	<b>10.64</b>	<b>5.18</b>	<b>28.98</b>	<b>0.33</b>				

\* Data from Almora and Sangla not included in the overall mean due to poor yield

**Table 3. Plant height (cm) in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
1	IC032190	145.33	168.27	-	<b>289.70</b>	201.10	3
2	IC035463	155.33	140.47	130.53	<b>252.22</b>	169.64	11
3	IC035468	<b>198.67</b>	168.27	120.33	224.47	177.93	7
4	IC035520-1	156.67	164.27	121.13	<b>249.87</b>	172.98	9
5	IC035542	152.33	175.33	115.43	<b>282.80</b>	181.47	6
6	IC042328	134.00	176.80	<b>152.10</b>	<b>268.78</b>	182.92	5
7	IC107197	165.67	172.20	132.13	233.21	175.80	8
8	PRA-2010-1	171.67	-	138.00	<b>315.77</b>	208.48	1
9	PRA-2010-2	188.67	-	141.00	<b>288.26</b>	205.97	2
10	PRA-2010-3	189.00	-	<b>145.68</b>	<b>254.72</b>	196.46	4
11	Annapurna (c)	143.67	<b>173.27</b>	127.23	<b>239.63</b>	170.95	10
12	IC-35407 (Durga) (c)	<b>179.33</b>	154.80	124.53	203.92	165.65	12
13	PRA-3 (c)	132.33	152.53	<b>130.90</b>	227.68	160.86	13
	<b>Mean</b>	<b>162.51</b>	<b>164.62</b>	<b>131.58</b>	<b>256.23</b>	<b>182.33</b>	
	<b>CD (0.05)</b>	<b>15.20</b>	-	<b>12.44</b>	<b>3.09</b>		
	<b>CV (%) Error</b>	<b>5.56</b>	-	<b>5.59</b>	<b>0.72</b>		

**Table 4. Days to 50% flowering in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
1	IC032190	87.00	79.67	-	91.33	86.00	13
2	IC035463	76.67	74.67	75.67	82.33	77.33	5
3	IC035468	58.00	58.00	68.67	77.33	65.50	2
4	IC035520-1	85.67	79.67	77.00	91.00	83.33	12
5	IC035542	83.00	84.67	75.33	70.33	78.33	7
6	IC042328	78.00	84.67	72.00	82.33	79.25	8
7	IC107197	76.33	64.67	69.33	81.67	73.00	3
8	PRA-2010-1	76.33	-	73.33	85.33	78.33	6
9	PRA-2010-2	79.00	-	72.33	91.00	80.78	10
10	PRA-2010-3	76.33	-	73.67	90.00	80.00	9
11	Annapurna (c)	78.00	69.67	73.67	82.67	76.00	4
12	IC-35407 (Durga) (c)	<b>59.33</b>	<b>50.33</b>	<b>64.00</b>	<b>67.67</b>	60.33	1
13	PRA-3 (c)	83.67	84.67	71.33	88.00	81.92	11
	<b>Mean</b>	<b>76.72</b>	<b>73.07</b>	<b>72.19</b>	<b>83.15</b>	<b>76.93</b>	
	<b>CD (0.05)</b>	<b>2.10</b>	-	<b>3.12</b>	<b>1.26</b>		
	<b>CV (%) Error</b>	<b>1.63</b>	-	<b>2.56</b>	<b>0.90</b>		

**Table 5. Days to maturity in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
1	IC032190	137.00	144.67	-	151.33	144.33	8	3	0/3
2	IC035463	137.67	139.67	151.33	148.00	144.17	7	4	0/4
3	IC035468	92.00	127.00	152.00	150.67	130.42	2	4	0/4
4	IC035520-1	138.67	144.67	154.33	153.00	147.67	12	4	0/4
5	IC035542	123.67	149.67	157.00	152.67	145.75	11	4	0/4
6	IC042328	137.67	149.67	155.00	149.67	148.00	13	4	0/4
7	IC107197	114.33	129.67	152.00	149.67	136.42	3	4	0/4
8	PRA-2010-1	124.33	-	154.33	151.67	143.44	6	3	0/3
9	PRA-2010-2	119.67	-	153.00	149.00	140.56	5	3	0/3
10	PRA-2010-3	131.67	-	153.00	152.00	145.56	10	3	0/3
11	Annapurna (c)	125.00	134.67	155.00	143.33	139.50	4	4	
12	IC-35407 (Durga) (c)	<b>93.00</b>	<b>120.33</b>	<b>148.67</b>	<b>142.33</b>	126.08	1	4	
13	PRA-3 (c)	128.33	149.67	155.00	148.67	145.42	9	4	
	<b>Mean</b>	<b>123.31</b>	<b>138.97</b>	<b>153.39</b>	<b>149.38</b>	<b>141.33</b>			
	<b>CD (0.05)</b>	<b>2.18</b>	-	<b>1.73</b>	<b>1.56</b>				
	<b>CV (%) Error</b>	<b>1.05</b>	-	<b>0.67</b>	<b>0.62</b>				

**Table 6. Inflorescence length (cm) in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
1	IC032190	51.53	45.73	-	45.80	47.69	12
2	IC035463	48.30	46.26	27.22	69.38	47.79	11
3	IC035468	<b>63.40</b>	51.00	26.13	69.87	52.60	5
4	IC035520-1	54.63	52.40	29.31	61.73	49.52	8
5	IC035542	52.67	54.13	<b>36.78</b>	<b>83.63</b>	56.80	1
6	IC042328	52.20	49.23	31.78	62.82	49.01	9
7	IC107197	57.53	52.93	35.22	71.62	54.33	4
8	PRA-2010-1	55.53	-	27.56	<b>84.17</b>	55.75	2
9	PRA-2010-2	59.20	-	30.78	<b>75.02</b>	55.00	3
10	PRA-2010-3	50.77	-	31.22	<b>75.08</b>	52.36	6
11	Annapurna (c)	<b>56.63</b>	<b>49.53</b>	28.10	<b>70.68</b>	51.24	7
12	IC-35407 (Durga) (c)	52.87	43.00	23.00	62.08	45.24	13
13	PRA-3 (c)	48.10	46.20	<b>30.66</b>	66.35	47.83	10
	<b>Mean</b>	<b>54.11</b>	<b>49.04</b>	<b>29.81</b>	<b>69.09</b>	<b>51.16</b>	
	<b>CD (0.05)</b>	<b>6.11</b>	-	<b>5.61</b>	<b>2.37</b>		
	<b>CV (%) Error</b>	<b>6.71</b>	-	<b>11.13</b>	<b>2.04</b>		

**Table 7. No. of fingers per inflorescence in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
1	IC032190	78.67	35.20	-	77.33	63.73	2
2	IC035463	71.33	37.40	23.22	81.00	53.24	9
3	IC035468	<b>102.67</b>	36.33	17.44	71.67	57.03	5
4	IC035520-1	82.33	35.80	24.00	74.33	54.12	8
5	IC035542	85.67	41.06	13.22	60.67	50.15	11
6	IC042328	79.00	38.73	27.00	64.33	52.27	10
7	IC107197	85.00	38.33	24.11	80.33	56.94	6
8	PRA-2010-1	88.67	-	26.78	<b>87.00</b>	67.48	1
9	PRA-2010-2	82.67	-	22.11	75.17	59.98	3
10	PRA-2010-3	78.67	-	20.11	78.33	59.04	4
11	Annapurna (c)	86.00	37.47	22.45	<b>80.83</b>	56.69	7
12	IC-35407 (Durga) (c)	<b>89.67</b>	<b>43.00</b>	<b>25.44</b>	35.50	48.40	12
13	PRA-3 (c)	78.33	26.20	18.00	60.00	45.63	13
	<b>Mean</b>	<b>83.74</b>	<b>36.95</b>	<b>21.99</b>	<b>71.27</b>	<b>55.75</b>	
	<b>CD (0.05)</b>	<b>8.39</b>	-	<b>6.00</b>	<b>2.66</b>		
	<b>CV (%) Error</b>	<b>5.96</b>	-	<b>16.13</b>	<b>2.22</b>		

**Table 8. Seed weight (g/10ml) in Initial Varietal Trial (IVT) on grain amaranth: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
1	IC032190	7.33	12.02	-	7.26	8.87	1
2	IC035463	7.33	12.00	7.33	6.96	8.41	2
3	IC035468	7.50	12.00	6.67	7.45	8.40	3
4	IC035520-1	7.33	12.16	6.33	<b>7.68</b>	8.38	5
5	IC035542	7.33	11.98	6.33	<b>7.93</b>	8.39	4
6	IC042328	7.33	12.18	6.67	6.96	8.29	7
7	IC107197	7.67	12.17	6.33	6.02	8.05	10
8	PRA-2010-1	7.33	-	7.67	<b>8.05</b>	7.68	11
9	PRA-2010-2	6.67	-	6.67	7.08	6.80	13
10	PRA-2010-3	7.33	-	7.00	7.23	7.19	12
11	Annapurna (c)	6.83	12.08	<b>7.00</b>	6.70	8.15	9
12	IC-35407 (Durga) (c)	<b>7.33</b>	<b>12.11</b>	6.33	7.25	8.26	8
13	PRA-3 (c)	<b>7.33</b>	12.09	6.33	<b>7.50</b>	8.31	6
	<b>Mean</b>	<b>7.28</b>	<b>12.08</b>	<b>6.72</b>	<b>7.24</b>	<b>8.09</b>	
	<b>CD (0.05)</b>	<b>1.13</b>	-	<b>1.06</b>	<b>0.02</b>		
	<b>CV (%) Error</b>	<b>9.24</b>	-	<b>9.31</b>	<b>0.18</b>		

**Table 9. Performance of buckwheat entries in Initial and Advanced Varietal Trials ( IVT & AVT) during Kharif 2010 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 100 seed (g)	Mean seed yield over locations (q/ha)			Per cent increase/decrease over check			
				Mean	Location	Rank	Himpriya	PRB-1	Shimla B-1	VL-7
<b>IVT</b>										
1	IC109314	98.92	2.85	4.52	4	9	-22.80	-22.93	-18.49	0.98
2	IC109728	100.58	2.43	6.67	4	1	13.87	13.67	20.23	48.94
3	IC109729	99.50	2.76	6.01	4	3	2.49	2.31	8.21	34.06
4	Sangla B-118	100.83	2.96	4.77	4	8	-18.66	-18.80	-14.12	6.39
<b>AVT-I</b>										
5	IC109549	101.12	2.41	6.50	4	2	10.98	10.79	17.18	45.16
6	Sangla B-126	99.42	3.00	5.67	4	6	-3.31	-3.48	2.09	26.47
7	Himpriya (c)	111.25	2.42	5.86	4	5	-	-0.09	5.67	30.90
8	PRB-1 (c)	97.42	2.49	5.87	4	4	0.10	-	5.70	30.94
9	Shimla B-1 (c)	84.75	2.60	5.55	4	7	-5.24	-5.40	-	23.95
10	VL-7 (c)	78.50	3.38	4.48	4	10	-23.57	-23.70	-19.30	-
<b>Mean</b>		<b>97.23</b>	<b>2.73</b>	<b>5.59</b>						



**Table 10. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	IC109314	1.67	5.67	8.06	2.71	4.52	9	4	0/4
2	IC109728	5.00	6.50	5.79	<b>9.40</b>	6.67	1	4	1/4
3	IC109729	3.00	6.75	7.96	6.31	6.01	3	4	0/4
4	Sangla B-118	2.67	7.14	6.34	2.92	4.77	8	4	0/4
<b>AVT-I</b>									
5	IC109549	5.33	5.78	6.30	8.60	6.50	2	4	0/4
6	Sangla B-126	0.78	5.54	<b>10.97</b>	5.37	5.67	6	4	1/4
7	Himpriya (c)	2.96	8.08	6.44	5.98	5.86	5	4	
8	PRB-1 (c)	3.19	<b>8.45</b>	3.43	<b>8.40</b>	5.87	4	4	
9	Shimla B-1 (c)	4.26	6.48	<b>6.81</b>	4.66	5.55	7	4	
10	VL-7 (c)	<b>7.85</b>	5.13	2.13	2.80	4.48	10	4	
<b>Mean</b>		<b>3.67</b>	<b>6.55</b>	<b>6.42</b>	<b>5.72</b>	<b>5.59</b>			
<b>CD (0.05)</b>		-	<b>0.94</b>	<b>3.33</b>	<b>0.93</b>				
<b>CV (%) Error</b>		-	<b>8.35</b>	<b>30.23</b>	<b>9.52</b>				

**Table 11. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC109314	90.00	107.97	103.73	119.84	105.39	6
2	IC109728	83.00	114.47	93.93	139.92	107.83	4
3	IC109729	91.00	112.80	107.47	121.50	108.19	3
4	Sangla B-118	83.00	108.13	106.67	100.35	99.54	9
<b>AVT-I</b>							
5	IC109549	78.00	111.00	97.20	142.58	107.20	5
6	Sangla B-126	82.50	105.73	103.20	123.87	103.82	7
7	Himpriya (c)	<b>84.33</b>	103.47	<b>108.53</b>	113.72	102.51	8
8	PRB-1 (c)	73.00	135.00	104.13	<b>185.12</b>	124.31	1
9	Shimla B-1 (c)	76.33	<b>142.10</b>	69.47	169.85	114.44	2
10	VL-7 (c)	55.00	119.80	67.67	89.98	83.11	10
<b>Mean</b>		<b>79.62</b>	<b>116.05</b>	<b>96.20</b>	<b>130.67</b>	<b>105.63</b>	
<b>CD (0.05)</b>		-	-	<b>16.70</b>	<b>1.28</b>		
<b>CV (%) Error</b>		-	-	<b>10.13</b>	<b>0.57</b>		

**Table 12. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC109314	45.00	74.67	64.00	49.00	58.17	6
2	IC109728	44.00	68.00	64.67	47.33	56.00	4
3	IC109729	46.00	69.00	63.00	50.00	57.00	5
4	Sangla B-118	47.00	72.67	64.67	51.00	58.83	8
<b>AVT-I</b>							
5	IC109549	44.50	77.33	63.67	51.67	59.29	9
6	Sangla B-126	45.00	72.33	65.00	53.00	58.83	7
7	Himpriya (c)	45.33	85.33	67.67	53.00	62.83	10
8	PRB-1 (c)	34.00	72.33	66.33	49.33	55.50	3
9	Shimla B-1 (c)	40.00	47.33	52.33	43.33	45.75	2
10	VL-7 (c)	<b>24.00</b>	<b>42.33</b>	<b>48.67</b>	<b>41.33</b>	39.08	1
<b>Mean</b>		<b>41.48</b>	<b>68.13</b>	<b>62.00</b>	<b>48.90</b>	<b>55.13</b>	
<b>CD (0.05)</b>		-	-	<b>1.67</b>	<b>1.30</b>		
<b>CV (%) Error</b>		-	-	<b>1.57</b>	<b>1.55</b>		

**Table 13. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>									
1	IC109314	79.00	119.67	101.00	96.00	98.92	4	4	0/4
2	IC109728	83.00	113.00	101.67	104.67	100.58	7	4	0/4
3	IC109729	83.00	114.67	101.33	99.00	99.50	6	4	0/4
4	Sangla B-118	87.00	117.67	100.67	98.00	100.83	8	4	0/4
<b>AVT-I</b>									
5	IC109549	81.50	122.33	101.33	99.33	101.12	9	4	0/4
6	Sangla B-126	86.00	117.33	99.33	95.00	99.42	5	4	0/4
7	Himpriya (c)	84.33	130.33	124.00	106.33	111.25	10	4	
8	PRB-1 (c)	73.00	117.33	101.00	98.33	97.42	3	4	
9	Shimla B-1 (c)	76.33	92.33	84.00	<b>86.33</b>	84.75	2	4	
10	VL-7 (c)	<b>55.00</b>	<b>87.33</b>	<b>82.00</b>	89.67	78.50	1	4	
	<b>Mean</b>	<b>78.82</b>	<b>113.20</b>	<b>99.63</b>	<b>97.27</b>	<b>97.23</b>			
	<b>CD (0.05)</b>	-	-	<b>2.45</b>	<b>1.25</b>				
	<b>CV (%) Error</b>	-	-	<b>1.44</b>	<b>0.75</b>				

**Table 14. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on buckwheat: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
<b>IVT</b>							
1	IC109314	1.90	3.11	2.83	3.54	2.85	4
2	IC109728	1.64	3.20	2.17	2.71	2.43	8
3	IC109729	1.80	3.03	2.83	3.37	2.76	5
4	Sangla B-118	1.98	3.06	3.17	3.63	2.96	3
<b>AVT-I</b>							
5	IC109549	1.49	3.14	1.83	3.17	2.41	10
6	Sangla B-126	2.13	3.20	3.17	3.51	3.00	2
7	Himpriya (c)	1.90	2.96	1.83	3.00	2.42	9
8	PRB-1 (c)	1.92	2.96	2.00	3.10	2.49	7
9	Shimla B-1 (c)	1.81	3.02	2.83	2.75	2.60	6
10	VL-7 (c)	<b>2.77</b>	<b>3.14</b>	<b>3.00</b>	<b>4.61</b>	3.38	1
<b>Mean</b>		<b>1.93</b>	<b>3.08</b>	<b>2.57</b>	<b>3.34</b>	<b>2.73</b>	
<b>CD (0.05)</b>		-	-	<b>0.71</b>	<b>0.22</b>		
<b>CV (%) Error</b>		-	-	<b>16.21</b>	<b>3.91</b>		

**Table 15. Performance of rice bean entries in Initial and Advanced Varietal Trials ( IVT & AVT) during Kharif 2010 (Hills)**

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 100 seed (g)	Mean seed yield over locations (q/ha)			Per cent increase/ decrease over check		
				Mean	Location	Rank	PRR-1	PRR-2	RBL-6
<b>IVT</b>									
1	IC563940	137.80	13.29	15.06	5	8	-14.27	-10.87	7.59
2	IC141077	131.93	6.93	15.09	5	7	-14.09	-10.68	7.82
3	RBL-460	145.53	7.22	15.64	6	6	-10.98	-7.45	11.72
4	RBHP-43	143.06	7.52	18.46	6	1	5.04	9.21	31.83
5	JR-S-1	160.33	7.70	7.41	2	12	-57.85	-56.18	-47.10
6	JR-S-2	156.67	7.22	4.35	2	15	-75.23	-74.24	-68.91
7	JR-S-3	163.33	7.33	3.67	2	16	-79.12	-78.30	-73.80
8	JR-S-4	155.50	8.27	5.60	2	14	-68.14	-66.88	-60.01
<b>AVT-I</b>									
9	VRB-3	135.22	7.39	18.06	6	2	2.78	6.86	28.99
<b>AVT-II</b>									
10	PRR-2008-1	123.80	7.16	12.80	6	11	-27.14	-24.25	-8.56
11	PRR-2008-2	132.86	6.75	13.94	6	10	-20.66	-17.52	-0.43
12	PRR-2007-1	124.93	7.65	16.47	5	5	-6.26	-2.55	17.64
13	PRR-2007-2	123.56	6.80	7.02	6	13	-60.06	-58.48	-49.87
14	PRR-1 (c)	132.08	6.93	17.57	4	3	-	3.94	25.47
15	PRR-2 (c)	140.17	7.47	16.90	6	4	-3.83	-	20.69
16	RBL-6 (c)	146.61	7.01	14.00	6	9	-20.33	-17.17	-
<b>Mean</b>		<b>140.84</b>	<b>7.66</b>	<b>12.63</b>					

**Table 16. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>											
1	IC563940	10.11	-	34.35	12.27	5.19	<b>13.40</b>	15.06	8	5	1/5
2	IC141077	7.44	-	36.48	11.05	5.32	<b>15.17</b>	15.09	7	5	1/5
3	RBL-460	9.22	21.35	28.33	11.03	8.01	<b>15.90</b>	15.64	6	6	1/6
4	RBHP-43	7.85	28.50	37.96	11.57	7.31	<b>17.54</b>	18.46	1	6	1/6
5	JR-S-1	-	-	-	-	8.10	6.71	7.41	12	2	0/2
6	JR-S-2	-	-	-	-	5.97	2.73	4.35	15	2	0/2
7	JR-S-3	-	-	-	-	5.56	1.78	3.67	16	2	0/2
8	JR-S-4	-	-	-	-	8.01	3.19	5.60	14	2	0/2
<b>AVT-I</b>											
9	VRB-3	12.26	23.47	33.24	11.74	6.62	<b>21.03</b>	18.06	2	6	1/6
<b>AVT-II</b>											
10	PRR-2008-1	7.04	10.00	23.52	14.33	4.12	<b>17.80</b>	12.80	11	6	1/6
11	PRR-2008-2	8.07	9.10	30.09	14.08	4.77	<b>17.53</b>	13.94	10	6	1/6
12	PRR-2007-1	8.78	-	<b>39.81</b>	14.89	4.54	<b>14.33</b>	16.47	5	5	1/5
13	PRR-2007-2	5.48	5.50	6.03	16.02	1.57	7.49	7.02	13	6	0/6
14	PRR-1 (c)	8.63	-	<b>32.87</b>	<b>19.15</b>	-	<b>9.62</b>	17.57	3	4	
15	PRR-2 (c)	6.67	<b>36.20</b>	30.74	14.64	<b>7.13</b>	6.01	16.90	4	6	
16	RBL-6 (c)	<b>13.59</b>	16.47	27.41	15.13	5.56	5.84	14.00	9	6	
<b>Mean</b>		<b>8.76</b>	<b>18.82</b>	<b>30.07</b>	<b>13.82</b>	<b>5.85</b>	<b>11.00</b>	<b>12.63</b>			
<b>CD (0.05)</b>		<b>1.45</b>	-	<b>5.78</b>	<b>1.87</b>	<b>3.12</b>	<b>0.40</b>				
<b>CV (%) Error</b>		<b>9.77</b>	-	<b>11.37</b>	<b>8.00</b>	<b>31.88</b>	<b>2.35</b>				

**Table 17. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank
<b>IVT</b>									
1	IC563940	129.33	-	116.67	102.47	57.33	237.45	128.65	15
2	IC141077	158.33	-	114.33	130.77	56.80	237.05	139.46	14
3	RBL-460	165.33	219.45	112.67	111.13	62.40	<b>284.98</b>	159.33	4
4	RBHP-43	151.67	188.30	119.33	135.13	64.53	247.92	151.15	8
5	JR-S-1	-	-	119.33	120.80	<b>99.93</b>	252.02	148.02	10
6	JR-S-2	-	-	<b>127.00</b>	124.20	<b>102.93</b>	<b>288.14</b>	160.57	3
7	JR-S-3	-	-	<b>128.00</b>	156.67	<b>86.53</b>	<b>279.57</b>	162.69	2
8	JR-S-4	-	-	120.33	145.93	<b>111.07</b>	<b>287.75</b>	166.27	1
<b>AVT-I</b>									
9	VRB-3	154.00	172.67	110.33	157.33	70.07	273.08	156.25	6
<b>AVT-II</b>									
10	PRR-2008-1	156.00	125.00	111.00	114.80	74.33	<b>286.25</b>	144.56	11
11	PRR-2008-2	148.33	174.15	112.33	131.27	45.00	250.68	143.63	12
12	PRR-2007-1	168.00	-	117.33	89.27	73.00	<b>296.67</b>	148.85	9
13	PRR-2007-2	98.67	80.00	92.33	45.00	30.20	76.97	70.53	16
14	PRR-1 (c)	155.67	-	110.00	<b>125.13</b>	-	244.92	158.93	5
15	PRR-2 (c)	144.33	190.00	107.33	119.53	<b>58.47</b>	241.37	143.51	13
16	RBL-6 (c)	<b>161.33</b>	<b>212.87</b>	<b>119.67</b>	119.73	46.00	<b>270.55</b>	155.02	7
<b>Mean</b>		<b>149.25</b>	<b>170.30</b>	<b>114.88</b>	<b>120.57</b>	<b>69.24</b>	<b>253.46</b>	<b>146.09</b>	
<b>CD (0.05)</b>		<b>13.85</b>	-	<b>3.03</b>	-	<b>20.69</b>	<b>3.46</b>		
<b>CV (%) Error</b>		<b>5.49</b>	-	<b>1.59</b>	-	<b>17.85</b>	<b>0.86</b>		



**Table 18. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank
<b>IVT</b>									
1	IC563940	94.33	-	86.00	99.00	56.67	98.67	86.93	12
2	IC141077	79.00	-	72.33	92.67	53.67	<b>90.00</b>	77.53	6
3	RBL-460	83.00	88.50	80.33	99.67	54.67	<b>90.33</b>	82.75	10
4	RBHP-43	81.00	83.50	72.33	90.33	52.00	<b>92.67</b>	78.64	7
5	JR-S-1	-	-	107.67	-	81.33	107.00	98.67	14
6	JR-S-2	-	-	109.33	-	82.33	111.33	101.00	15
7	JR-S-3	-	-	109.00	-	84.67	96.00	96.56	13
8	JR-S-4	-	140.00	97.33	-	80.33	104.67	105.58	16
<b>AVT-I</b>									
9	VRB-3	<b>72.33</b>	77.00	71.00	86.67	49.33	97.33	75.61	5
<b>AVT-II</b>									
10	PRR-2008-1	79.33	72.00	<b>59.67</b>	82.00	49.00	<b>84.67</b>	71.11	3
11	PRR-2008-2	<b>58.67</b>	71.00	<b>69.00</b>	80.67	48.33	<b>83.67</b>	68.56	2
12	PRR-2007-1	86.67	-	<b>63.00</b>	83.67	51.67	<b>75.00</b>	72.00	4
13	PRR-2007-2	<b>55.33</b>	62.00	<b>52.33</b>	77.00	47.67	<b>72.33</b>	61.11	1
14	PRR-1 (c)	78.33	-	71.67	<b>86.00</b>	-	106.00	85.50	11
15	PRR-2 (c)	<b>76.67</b>	<b>82.00</b>	<b>71.33</b>	88.33	59.00	<b>96.33</b>	78.94	8
16	RBL-6 (c)	80.00	100.00	72.33	90.33	<b>49.67</b>	99.67	82.00	9
<b>Mean</b>		<b>77.06</b>	<b>86.22</b>	<b>79.04</b>	<b>88.03</b>	<b>60.02</b>	<b>94.10</b>	<b>82.66</b>	
<b>CD (0.05)</b>		<b>2.51</b>	-	<b>1.33</b>	-	<b>6.26</b>	<b>2.20</b>		
<b>CV (%) Error</b>		<b>1.93</b>	-	<b>1.01</b>	-	<b>6.23</b>	<b>1.46</b>		

**Table 19. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2010 (Hills)**

S.No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank	Location	Frequency
<b>IVT</b>											
1	IC563940	140.00	-	122.67	162.67	104.67	159.00	137.80	8	5	0/5
2	IC141077	<b>116.00</b>	-	117.33	158.33	105.00	163.00	131.93	4	5	1/5
3	RBL-460	135.00	197.50	<b>114.33</b>	162.67	111.33	152.33	145.53	11	6	1/6
4	RBHP-43	125.33	200.00	<b>112.67</b>	155.33	115.33	149.67	143.06	10	6	1/6
5	JR-S-1	-	-	-	-	141.67	179.00	160.33	15	2	0/2
6	JR-S-2	-	-	-	-	142.33	171.00	156.67	14	2	0/2
7	JR-S-3	-	-	-	-	158.33	168.33	163.33	16	2	0/2
8	JR-S-4	-	-	-	-	139.33	171.67	155.50	13	2	0/2
<b>AVT-I</b>											
9	VRB-3	<b>116.00</b>	183.33	<b>113.67</b>	151.67	105.33	141.33	135.22	7	6	2/6
<b>AVT-II</b>											
10	PRR-2008-1	<b>114.67</b>	-	<b>113.33</b>	147.33	100.67	143.00	123.80	2	5	2/5
11	PRR-2008-2	<b>108.67</b>	177.50	<b>113.67</b>	145.67	109.33	142.33	132.86	6	6	2/6
12	PRR-2007-1	136.67	-	<b>114.33</b>	148.67	<b>98.67</b>	<b>126.33</b>	124.93	3	5	3/5
13	PRR-2007-2	<b>94.00</b>	190.00	<b>93.33</b>	142.00	100.00	<b>122.00</b>	123.56	1	6	3/6
14	PRR-1 (c)	<b>125.33</b>	-	<b>116.67</b>	<b>151.00</b>	-	<b>135.33</b>	132.08	5	4	
15	PRR-2 (c)	126.67	<b>200.00</b>	117.33	153.33	<b>104.00</b>	139.67	140.17	9	6	
16	RBL-6 (c)	137.67	206.67	127.67	155.67	111.33	140.67	146.61	12	6	
	<b>Mean</b>	<b>123.00</b>	<b>193.57</b>	<b>114.75</b>	<b>152.86</b>	<b>116.49</b>	<b>150.29</b>	<b>140.84</b>			
	<b>CD (0.05)</b>	<b>2.66</b>	-	<b>1.51</b>	-	<b>13.67</b>	<b>2.14</b>				
	<b>CV (%) Error</b>	<b>1.28</b>	-	<b>0.78</b>	-	<b>7.01</b>	<b>0.90</b>				

**Table 20. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on rice bean: Kharif 2010 (Hills)**

S. No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank
<b>IVT</b>									
1	IC563940	<b>12.98</b>	-	<b>16.00</b>	8.23	<b>12.80</b>	<b>16.44</b>	13.29	1
2	IC141077	5.91	-	7.57	8.00	5.93	<b>7.26</b>	6.93	13
3	RBL-460	6.33	7.47	7.70	8.12	6.16	<b>7.56</b>	7.22	9
4	RBHP-43	7.45	7.85	8.00	8.18	6.27	<b>7.34</b>	7.52	5
5	JR-S-1	-	-	-	-	7.80	<b>7.60</b>	7.70	3
6	JR-S-2	-	-	-	-	6.38	<b>8.06</b>	7.22	10
7	JR-S-3	-	-	-	-	7.86	6.79	7.33	8
8	JR-S-4	-	-	-	-	<b>10.02</b>	6.53	8.27	2
<b>AVT-I</b>									
9	VRB-3	6.48	6.90	8.10	8.10	6.28	<b>8.48</b>	7.39	7
<b>AVT-II</b>									
10	PRR-2008-1	6.43	6.83	7.73	8.21	5.88	<b>7.90</b>	7.16	11
11	PRR-2008-2	5.84	6.56	7.37	8.19	6.02	6.50	6.75	16
12	PRR-2007-1	<b>7.72</b>	-	<b>8.37</b>	7.60	6.30	<b>8.26</b>	7.65	4
13	PRR-2007-2	4.46	4.84	6.03	8.16	5.31	<b>11.97</b>	6.80	15
14	PRR-1 (c)	5.79	-	6.97	8.24	-	<b>6.71</b>	6.93	14
15	PRR-2 (c)	6.24	<b>7.57</b>	<b>7.57</b>	8.17	<b>8.62</b>	6.64	7.47	6
16	RBL-6 (c)	<b>6.76</b>	7.42	7.30	<b>8.29</b>	5.74	6.52	7.01	12
	<b>Mean</b>	<b>6.87</b>	<b>6.93</b>	<b>8.23</b>	<b>8.12</b>	<b>7.16</b>	<b>8.16</b>	<b>7.66</b>	
	<b>CD (0.05)</b>	<b>0.69</b>	-	<b>0.70</b>	-	<b>0.81</b>	<b>0.30</b>		
	<b>CV (%) Error</b>	<b>5.94</b>	-	<b>5.05</b>	-	<b>6.77</b>	<b>2.31</b>		

**Table 21. Performance of faba bean entries in Initial Varietal Trial (IVT) during rabi 2009-10 (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	
1	HB-603	128.42	25.00	50.47	2	4	-1.05
2	HB-604	124.84	25.65	45.66	2	8	-10.49
3	HB-608	126.42	26.58	45.33	2	9	-11.13
4	HB-611	122.75	26.15	47.41	2	6	-7.06
5	HB-613	124.17	24.00	46.19	2	7	-9.45
6	HB-617	126.50	27.00	43.38	2	10	-14.96
7	HB-642	128.25	26.90	42.85	2	11	-16.01
8	HB-645	127.92	25.98	50.88	2	3	-0.26
9	HB-649	126.75	25.13	48.25	2	5	-5.41
10	ISV-10-2	128.59	26.90	55.31	2	1	8.44
11	Vikrant (c)	129.84	28.28	51.01	2	2	-
<b>Mean</b>		<b>126.77</b>	<b>26.14</b>	<b>50.03</b>			

**Table 22. Grain yield (q/ha) in Initial Varietal Trial (IVT) on faba bean: Rabi 2009-10 (Hills)**

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank	Location	Frequency
1	HB-603	96.53	4.42	50.47	4	2	0/2
2	HB-604	87.50	3.82	45.66	8	2	0/2
3	HB-608	86.11	4.56	45.33	9	2	0/2
4	HB-611	90.97	3.85	47.41	6	2	0/2
5	HB-613	87.50	4.88	46.19	7	2	0/2
6	HB-617	81.94	4.82	43.38	10	2	0/2
7	HB-642	81.94	3.75	42.85	11	2	0/2
8	HB-645	97.22	4.53	50.88	3	2	0/2
9	HB-649	91.67	4.84	48.25	5	2	0/2
10	ISV-10-2	105.56	5.07	55.31	1	2	0/2
11	Vikrant (c)	<b>97.22</b>	<b>4.80</b>	51.01	2	2	
	<b>Mean</b>	<b>91.28</b>	<b>4.49</b>	<b>47.89</b>			
	<b>CD (0.05)</b>	<b>31.73</b>	<b>0.91</b>				
	<b>CV (%) Error</b>	<b>16.06</b>	<b>11.88</b>				

**Table 23. Plant height (cm) in Initial Varietal Trial (IVT) on faba bean: Rabi 2009-10 (Hills)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Palampur</b>	<b>Ranichauri</b>	<b>Mean</b>	<b>Rank</b>
1	HB-603	65.50	60.07	62.79	8
2	HB-604	68.65	69.67	69.16	1
3	HB-608	60.05	51.33	55.69	9
4	HB-611	67.60	59.33	63.47	5
5	HB-613	62.05	67.80	64.93	4
6	HB-617	62.60	67.40	65.00	3
7	HB-642	60.35	50.73	55.54	10
8	HB-645	62.20	41.73	51.97	11
9	HB-649	67.55	58.67	63.11	6
10	ISV-10-2	69.95	62.33	66.14	2
11	Vikrant (c)	<b>71.30</b>	<b>54.67</b>	62.99	7
	<b>Mean</b>	<b>64.94</b>	<b>58.52</b>	<b>61.89</b>	
	<b>CD (0.05)</b>	<b>2.25</b>	-		
	<b>CV (%) Error</b>	<b>2.50</b>	-		

**Table 24. Days to 50% flowering in Initial Varietal Trial (IVT) on faba bean: Rabi 2009-10 (Hills)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Palampur</b>	<b>Ranichauri</b>	<b>Mean</b>	<b>Rank</b>
1	HB-603	<b>77.00</b>	47.33	62.17	7
2	HB-604	77.50	42.67	60.09	2
3	HB-608	80.25	43.33	61.79	6
4	HB-611	80.25	38.00	59.13	1
5	HB-613	81.50	40.33	60.92	4
6	HB-617	81.00	44.00	62.50	9
7	HB-642	79.75	43.00	61.38	5
8	HB-645	77.75	47.00	62.38	8
9	HB-649	77.50	44.00	60.75	3
10	ISV-10-2	81.50	50.67	66.09	11
11	Vikrant (c)	<b>78.75</b>	<b>49.67</b>	64.21	10
	<b>Mean</b>	<b>79.52</b>	<b>44.55</b>	<b>61.94</b>	
	<b>CD (0.05)</b>	<b>1.41</b>	-		
	<b>CV (%) Error</b>	<b>1.28</b>	-		

**Table 25. Days to maturity in Initial Varietal Trial (IVT) on faba bean: Rabi 2009-10 (Hills)**

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank	Location	Frequency
1	HB-603	157.50	99.33	128.42	9	2	0/2
2	HB-604	155.00	94.67	124.84	3	2	0/2
3	HB-608	154.50	98.33	126.42	4	2	0/2
4	HB-611	157.50	88.00	122.75	1	2	0/2
5	HB-613	157.00	91.33	124.17	2	2	0/2
6	HB-617	154.00	99.00	126.50	5	2	0/2
7	HB-642	157.50	99.00	128.25	8	2	0/2
8	HB-645	155.50	100.33	127.92	7	2	0/2
9	HB-649	155.50	98.00	126.75	6	2	0/2
10	ISV-10-2	153.50	103.67	128.59	10	2	0/2
11	Vikrant (c)	158.00	<b>101.67</b>	129.84	11	2	
	<b>Mean</b>	<b>155.88</b>	<b>97.58</b>	<b>126.77</b>			
	<b>CD (0.05)</b>	<b>1.77</b>	-				
	<b>CV (%) Error</b>	<b>0.52</b>	-				



**Table 26. Pod yield (q/ha) in Initial Varietal Trial (IVT) on faba bean: Rabi 2009-10 (Hills)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Palampur</b>	<b>Ranichauri</b>	<b>Mean</b>	<b>Rank</b>
1	HB-603	96.53	4.42	50.47	4
2	HB-604	87.50	3.82	45.66	8
3	HB-608	86.11	4.56	45.33	9
4	HB-611	90.97	3.85	47.41	6
5	HB-613	87.50	4.88	46.19	7
6	HB-617	81.94	4.82	43.38	10
7	HB-642	81.94	3.75	42.85	11
8	HB-645	97.22	4.53	50.88	3
9	HB-649	91.67	4.84	48.25	5
10	ISV-10-2	105.56	5.07	55.31	1
11	Vikrant (c)	<b>97.22</b>	<b>4.80</b>	51.01	2
	<b>Mean</b>	<b>89.81</b>	<b>4.49</b>	<b>47.89</b>	
	<b>CD (0.05)</b>	<b>31.73</b>	<b>0.91</b>		
	<b>CV (%) Error</b>	<b>16.06</b>	<b>11.88</b>		

**Table 27. 100 seed weight (g) in Initial Varietal Trial (IVT) on faba bean: Rabi 2009-10 (Hills)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Palampur</b>	<b>Ranichauri</b>	<b>Mean</b>	<b>Rank</b>
1	HB-603	25.60	24.40	25.00	10
2	HB-604	26.90	24.40	25.65	8
3	HB-608	26.45	26.70	26.58	5
4	HB-611	27.90	24.40	26.15	6
5	HB-613	27.30	20.70	24.00	11
6	HB-617	28.50	25.50	27.00	2
7	HB-642	26.40	27.40	26.90	3
8	HB-645	27.75	24.20	25.98	7
9	HB-649	26.05	24.20	25.13	9
10	ISV-10-2	25.90	27.90	26.90	3
11	Vikrant (c)	26.65	<b>29.90</b>	28.28	1
	<b>Mean</b>	<b>27.28</b>	<b>25.43</b>	<b>26.14</b>	
	<b>CD (0.05)</b>	<b>3.19</b>	-		
	<b>CV (%) Error</b>	<b>5.31</b>	-		

## 2.2 PLAINS

The Varietal Trials and Germplasm Evaluation Programmes were constituted in grain amaranth, ricebean, faba bean, kalingada, and *Jatropha*. Most of the experiments were conducted during the Kharif 2010 season. However, in grain amaranth and faba bean, experiments were conducted during *rabi* 2009-2010 season, at most of the centres except for Bangalore and Muttupalayam where grain amaranth trials were conducted during *kharif*, 2010.

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

In grain amaranth the Initial Varietal Trial and the Advanced Varietal Trial were conducted during *Rabi* 2009-10 at nine locations and *Kharif* 2009 at three locations.

The summary of performance of the entries are given in Table 28a. Based on the overall performance of *Rabi* 2009-10 and *Kharif* 2010, following entries were found superior for different traits.

S. No.	Traits	IVT		AVT-I & II	
		Top Entry	Best check	Top Entry	Best check
1.	Grain yield (q/ha)	RMA-38 (12.16 q/ha)	Suvarna (11.84 q/ha)	BGA-5 (12.28 q/ha)	Survana (11.67 q/ha)
2.	Plant height (cm)	RMA-37 (149.81 cm)	GA-2 (155.86 cm)	RMA-22 (160.00 cm)	GA-2 (151.50 cm)
3.	Days to flowering	SKNA-717 (49.22 days)	BGA-2 (56.89 days)	IC415331 (45.32 days)	GA-2 (55.67 days)
4.	Days to maturity	PRA-2 (101.73 days)	BGA-2 (106.60 days)	IC515448 (101.16 days)	BGA-2 (107.69 days)
5.	Inflorescence length (cm)	SKNA-707 (66.15 cm)	GA-2 (67.23 cm)	RMA-22 (61.44 cm)	GA-2 (60.76 cm)
6.	Seed weight (g/10 ml)	RGA-2 (7.86 g/10ml)	BGA-2 (7.77 g/10ml)	IC415282 (7.89 g/10ml)	BGA-2 (7.73 g/10ml)

#### 2.2.1.1 Initial Varietal Trial (IVT) : Rabi 2009-10

The trial comprising 18 entries including four checks was conducted at nine locations. Results have been received from all the centres. The summary of performance of the entries *vis-a-vis* the checks has been presented in Table 28b.

Significant differences were observed among the entries for grain yield at all the centres (Table 29). Grain yield levels were high at S.K. Nagar (19.45 q/ha) followed by at Mandor (18.84 q/ha) and Bhubaneswar (11.65 q/ha) centres. The overall average performance showed that among IVT entries, RMA-38 (11.58 q/ha) was the highest yielder against the best check GA-1 (10.16 q/ha).

Plant height (Table 30) was the highest at Rahuri (133.53 cm) and the lowest at Ambikapur (63.23 cm). On the basis of average performance over the locations, check variety GA-1 (127.82 cm) had the highest plant height, whereas MGA-3 had the lowest (79.18 cm).

Flowering time was earliest at S.K. Nagar (44.25 days) followed by at Mandor (44.45 days) and Bhubaneswar (46.04 days); while it was late at Ranchi (90.31 days) and Hisar (85.13 days) centres (Table 31). On the basis of average over locations SKNA-717 flowered earliest in 54.60 days.

Maturity period (Table 32) was earliest at Bhubaneswar (85.06 days) followed by at S.K. Nagar (90.71 days). MGA-4 (123.21 days) was the earliest maturing line.

Inflorescence length (Table 33) of the entries was the highest at S.K. Nagar (76.87 cm). Based on the average over the locations GA-1 (58.81 cm) had the longest inflorescence.

Test weight (Table 34) as measured by the weight of 10 ml seed showed maximum mean value at S.K. Nagar (8.42 g) and minimum at Delhi (5.86 g). Based on the average over the locations RGA-2 had the highest seed weight (7.68 g).

#### **2.2.1.2 Advanced Varietal Trial (AVT-I & II) – Rabi 2009-10**

The summary of performance of both Rabi (2009-10) and Kharif (2010) has been presented in Table 35a. In this trial, thirteen AVT-I entries and five AVT-II entries along with four checks were tested at nine locations. The results have been received from eight centres. The performance of the entries as compared to the checks has been given in Table 35b. Based on the overall mean

performance in respect of grain yield over eight locations, SKNA-502 entry showed grain yield (11.26 q/ha) superiority over the best check variety, GA-1 (9.03 q/ha).

Significant differences were observed among the entries for grain yield at Ambikapur, Bhubaneswar, Hisar, Rahuri and Faizabad (Table 36). Grain yield level was high at Mandor (19.38 q/ha) and S.K. Nagar (17.81 q/ha) and moderate at Bhubaneswar (12.74 q/ha). Based on the average performance over locations the entry SKNA-502 was the highest yielder (11.20 q/ha) followed by SKNA-501 (10.96 q/ha).

Average plant height of the entries (Table 37) was the highest at S.K. Nagar (136.37 cm) followed by Delhi (127.11 cm). It was the lowest at Hisar (70.75 cm) centre. Based on average performance over eight locations the check, GA-2 had the highest plant height (125.93 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 (41.48 days) at Mandor, S.K. Nagar (44.68 days) and Bhubaneswar (48.08 days) while it was the longest at Hisar (87.64 days) and Ranchi (85.20 days) centres (Table 38). The entry IC415331 showed consistence for early flowering over the locations and ranked first (47.63 days) based on the overall performance.

The average maturity period of the entries over all the locations was 131.76 days (Table 39). The entry, IC515448 was earliest in maturity (125.98 days) followed by IC415387 (125.98 days). The average maturity period was the minimum at S.K. Nagar (88.30 days) and Bhubaneswar (88.47 days), while, it was the longest at Delhi (156.21 days).

The length of inflorescence (Table 40) of the entries was the highest at S.K. Nagar (77.37 cm) followed by at Mandor (56.74 cm). Inflorescence length was the lowest (28.70 cm) at Ranchi. Based on the average over six locations, the check GA-2 had the longest inflorescence (56.12 cm).

Test weight (Table 41) expressed in terms of weight of 10 ml seed recorded at six centres showed that it was the highest at S.K. Nagar (8.37 g)

and low to moderate at Delhi (5.92 g). The variation among the entries was relatively low. Based on the average over six locations, the entry IC415282 (7.57 g) showed the highest test weight.

### **2.2.1.3 Initial Varietal Trial (IVT) : Kharif - 2010**

In this trial 18 entries, including four checks, were tested at three locations, while data were received from two locations Bangalore and Mettupalayam. The performance of the entries as compared to the checks has been summarized in Table 28c.

Significant differences were observed among the entries for grain yield at both the centres Bangalore (13.19 q/ha) and Mettupalayam (9.91 q/ha) (Table 29). MGA-4 (14.58 q/ha) was the highest yielding entry based on both locations.

Average plant height of the entries was significance differed at both the locations (Table 30). Based on two locations check GA-2 had the highest plant height (185.63 cm).

Flowering time showed about 15 days variation between two locations (Table 31). The entry RGA-2 (43.50 days) showed early flowering consistently at both the locations.

Maturity period also showed opposite trend as that of flowering time. The average maturity period of the entries over two locations was 84.00 days (Table 32). The entry, RGA-2 was the earliest in maturity (79.50 days). The average maturity period was slightly higher at Bangalore (86.88 days) as compared to that observed at Mettupalayam (81.12 days).

The length of inflorescence (Table 33) of the entries was the highest at Mettupalayam (67.20 cm) and lowest at Bangalore (58.99 cm). Based on the average over two locations, the entry SKNA-707 had the longest inflorescence (75.67 cm).

Test weight (Table 34) expressed in terms of weight of 10 ml seed recorded at two centres showed that it was higher at Bangalore(8.68 g) and low

at Mettupalayam (7.54 g) centre. Based on both the locations no entry had high test weight as compared to the check variety BGA-2 (8.58 g).

#### **2.2.1.4 Advanced Varietal Trial (AVT-I & II) : Kharif - 2010**

The trial comprising 22 entries including four checks was proposed to be conducted at three locations and data have been received from two centres. The summary of performance of the entries has been presented in Table 35c.

Significant differences were observed among the entries for grain yield at both the centres (Table 36). Seed yield levels were low at Mettupalayam (8.60 q/ha) and high at Bangalore (12.36 q/ha). The check variety BGA-5 (15.31 q/ha) was the highest yielder.

Plant height was the highest at Mettupalayam (202.24 cm) and lowest at Bangalore (130.88 cm) centre (Table 37). On the basis of average over the locations RMA-22 (205.75 cm) had the highest plant height whereas IC415331 had the lowest (134.36 cm).

Flowering time was the earliest at Bangalore (44.28 days) and delayed at Mettupalayam (52.62 days) centre (Table 38). On the basis of average over the locations IC515448 (42.83 days) was earliest in flowering.

Maturity period was the earliest at Mettupalayam (76.94 days) and delayed at Bangalore (87.88 days) centre (Table 39). IC415243 (76.17 days) was the earliest maturing line based on two locations.

The length of inflorescence (Table 40) of the entries was the highest at Mettupalayam (70.66 cm) and lowest at Bangalore (49.14 cm). Based on the average over two locations, the entry BGA-11 had the longest inflorescence (69.88 cm).

Test weight (Table 41) as measured by the weight of 10 ml seed was highest at Bangalore (8.82 g) and Mettupalayam (7.57 g). Based on two locations BGA-15 had the highest seed weight (8.46 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 2010)**

The Initial Varietal Trial comprising 11 entries along with four checks was conducted at nine locations in the plains. Results have been received from all the locations. Summary of performance of these entries has been indicated in Table 42.

The average seed yield ranged from 5.17 q/ha at Faizabad to 13.51 q/ha at Bhubaneswar (Table 43). Significant differences were observed among the entries for seed yield. On the basis of average performance over eight locations the check variety LRB-482 (11.28 q/ha) was the highest yielder.

Plant height showed extreme variation ranging from 37.19 cm at Bangalore to 168.79 cm at Ambikapur centre (Table 44). Based on the average performance over the locations the check RBL-50 had the maximum plant height (108.68 cm).

Flowering time was the earliest at Bhubaneswar (45.09 days) which was closely followed by at Bangalore (45.15 days) and Mettupalayam (48.64 days), while it was the longest at Delhi (80.20 days) centre (Table 45). Based on the average over locations LRB-524 (58.39 days) had the earliest flowering.

Maturity period showed wide variation among the locations but not among the entries. The earliest maturity was observed at Bangalore (81.00 days), while it was late at Hisar (159.30 days) centre (Table 46). On the basis of average over the locations LRB-524 (108.40 days) was the earliest in maturity.

Weight of 100 seeds ranged from 4.61 to 7.47 g at various centres showing lowest weight at Delhi (4.61 g) centre (Table 47). Based on the average over locations LRB-482 (6.20 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 ten entries including one check was conducted at six locations. Results have been received from all the centres. The summary of performance of the entries has been presented in Table 48.

Significant differences were observed among the entries for seed yield at all the locations but difference from the best check was significant at four centres (Table 49). The average over the locations showed that seed yield was the highest in the entry, NDF-9 (21.29 q/ha) followed by HB-119 (20.39 q/ha).

Plant height was the highest at Hisar (99.59 cm) followed by at Ranchi (91.03 cm) centre (Table 50). Moderate plant height was observed at Ambikapur (73.31 cm), Delhi (73.23 cm) and Faizabad (76.98 cm) and lowest at Ludhiana (58.08) centres. Based on the average over the locations the entry, HB-119 (84.33 cm) showed the highest plant height.

Flowering time ranged from 62.45 days at Hisar to 80.13 days at Ludhiana centre (Table 51). Based on the average over the locations NDF-9 (66.87 days) was the earliest flowering line.

Maturity period varied among the locations with mean maturity period ranging from 128.90 days at Delhi to 165.13 days at Hisar centre (Table 52). On the basis of overall mean, DFB-9-2 (144.19 days) had the earliest maturity.

Mean seed weight was the highest at Ranchi (27.26 g) and the lowest at Delhi (21.92 g) centre (Table 53). Based on the average over locations the entry, HB (M)-1 (26.39 g) had the boldest seed.

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

In this trial, fifteen AVT-I & II entries along with one check were tested at six locations. The results were received from all the centres. The performance of

the entries as compared to the checks has been given in Table 54. Based on the overall mean performance in respect of grain yield over six locations, NDF-4 (22.21 q/ha) entry showed grain yield superiority over the best check variety, Vikrant (20.08 q/ha).

Significant differences over the check variety were observed among the entries for seed yield at three locations (Table 55). Seed yield level was high at Hisar (40.20 q/ha) and moderate at Ranchi (21.42 q/ha) and Delhi (20.73 q/ha) while, it was considerably low at Ambikapur (11.48 q/ha). Based on the average performance over locations the entry NDF-4 was the highest yielder (22.21 q/ha) followed closely by HB-608 (21.53 q/ha).

Average plant height of the entries (Table 56) was the highest at Ambikapur (94.84 cm) followed by at Ranchi (87.03 cm). It was the lowest at Ludhiana (61.79 cm) centre. Based on average performance over six locations HB-064 had the highest plant height (83.73 cm).

Flowering time showed considerable variation among the locations. The mean flowering time was the shortest (57.70 days) at Ranchi, while it was the longest (80.25 days) at Ludhiana (Table 57). The entry HB-611 showed consistency for early flowering over the locations and ranked first (64.67 days) based on the overall performance.

The average maturity period of the entries over all the locations was 143.54 days (Table 58). The entry, HB-611 was the earliest in maturity (142.19 days) followed closely by HB-603 (142.25 days). The average maturity period was the minimum at Delhi (128.40 days) while, it was the longest at Hisar (165.28 days).

Test weight (Table 59) recorded at five centres showed that it was the highest at Ranchi (26.72 g) and lowest at Delhi (21.87 g). The variation among the entries was significant at three locations. Based on the average over five locations, the entry HB-062 (26.31 g) and IGSV-10 (26.15 g) showed the highest test weight.

## **2.2.4 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 2010 at two locations. Data have been received from both the locations.

### **2.2.4.1 Initial Varietal Trial**

The Initial Varietal Trial consisting of 9 entries including check was planned to be conducted at two locations. Results have been received from both the centres. The summary of performance of the entries has been given in Table 60.

Seed yield levels were highest at S.K. Nagar (3.86 q/ha) and lowest at Mandor (1.60 q/ha) (Table 61). Based on two locations data the entry, SKNK-903 was the highest yielder (3.98 q/ha).

Fruit yield was the highest at S.K. Nagar (110.97 q/ha) and lowest at Mandor (66.40 q/ha) centre (Table 61). Based on the average MGPK-32 (120.18 q/ha) was the highest fruit yielder.

Number of fruits per plant showed high variation at S.K. Nagar (2.50 – 10.87) and less variation at Mandor (3.33 – 10.40) centres (Table 62). Highest number of fruits was observed at S.K. Nagar (8.41) and less at Mandor (7.55) centre. Based on average over locations average fruit number was the highest in SKNK-903 (10.35).

Fruit diameter showed considerable variation at both the centres (Table 62). The fruit diameter was recorded highest at S.K. Nagar (10.95 cm) and lowest at Mandor (9.72 cm). The entry SKNK-902 had the largest fruit diameter (10.63 cm).

Test weight (Table 62) recorded at two centres showed that it was the highest at S.K. Nagar (7.04 g) and low at Mandor (4.37 g). Based on the average over two locations, the entry SKNK-901 (6.28 g) and SKNK-903 (6.17 g) showed the highest test weight.

#### **2.2.4.2 Advanced Varietal Trial (AVI-I & II)**

The advanced Varietal Trial consisting of 7 entries including check was planned to be conducted at two locations. Results have been received from both the centres. The summary of performance of the entries has been given in Table 63.

Seed yield levels were highest at S.K. Nagar (4.66 q/ha) and lowest at Mandor (2.06 q/ha) (Table 64). Based on two locations data the entry, SKNK-805 was the highest yielder (3.84 q/ha).

Fruit yield was the highest at S.K. Nagar (113.44 q/ha) and lowest at Mandor (76.22 q/ha) centre (Table 64). Based on the average SKNK-806 (112.13 q/ha) was the highest fruit yielder.

Highest number of fruits (Table 65) was observed at S.K. Nagar (8.96) and less at Mandor (8.09) centre. Based on average over locations average fruit number was the highest in SKNK-805 (9.66).

Fruit diameter showed considerable variation at both the centres (Table 65). The fruit diameter was recorded highest at S.K. Nagar (10.92 cm) and lowest at Mandor (10.05 cm). The entry SKNK-806 had the largest fruit diameter (10.84 cm).

Test weight (Table 65) recorded at two centres showed that it was the highest at S.K. Nagar (7.19 g) and low at Mandor (4.90 g). Based on the average over two locations, the entry SKNK-711 (6.48 g) and SKNK-806 (6.20 g) showed the highest test weight.

#### **2.2.5 JATROPHA (*Jatropha* spp.)**

The Advanced Varietal Trial was planned to be continued at seven locations where the plant is widely adapted. The results have been received from two locations only.

### **2.2.5.1 Advanced Varietal Trial (AVT-II)**

The results of the trial with eleven entries were received from two centres. The summary of performance of the entries has been given in Table 66.

The seed yield recorded at two locations has been presented in Table 67. Seed yield was higher at Bhubaneswar (20.52 q/ha) centre as compared to Hisar centre (9.34 q/ha). Variety JH-1 (18.75 q/ha) was found at par to the check variety, Chhatrapati (18.75 q/ha).

Fruit yield was the highest at Hisar centre (72.01 q/ha) and low at Bhubaneswar (33.98 q/ha) centre (Table 68). Based on average JH-1 (83.62 q/ha) was the highest fruit yielder.

Plant height was high at Hisar (452.93 cm) and low at Bhubaneswar (248.68 cm) centre (Table 69). The check variety Chhatrapati had the highest plant height (408.69 cm) based on the average over the locations.

Number of branches per plant (Table 70) was the highest at Bhubaneswar (44.76) followed by at Hisar (21.34). Based on the average over the locations, the check Chattrapati had the highest number of branches (40.19).

100 seed weight (Table 71) recorded at two locations showed that it was similar at both the centres, Bhubaneswar (51.69 g) and Hisar (52.25 g). Based on the average over two locations, entry JH-1 had the boldest seed (56.30 g).

**Table 28a. Overall performance of grain amaranth entries in Initial Varietal Trial (IVT): Rabi (2009-10) & Kharif (2010) - plains**

S. No.	Genotypes	Overall mean maturity duration (days)	Overall mean seed weight (g/10ml)	Overall mean grain yield over locations (q/ha)			Per cent increase/decrease over checks			
				Mean	Location	Rank	GA-1	GA-2	Suvarna	BGA-2
1	RGA-2	101.73	7.86	9.68	11	14	-4.73	0.10	-18.25	-8.60
2	RMA-37	111.56	7.70	11.28	11	8	11.04	16.67	-4.72	6.53
3	RMA-38	111.99	7.58	12.16	11	1	19.72	25.78	2.73	14.86
4	MGA-3	102.03	7.54	8.02	7	18	-21.06	-17.06	-32.26	-24.26
5	MGA-4	104.44	7.57	11.39	6	7	12.07	17.75	-3.83	7.52
6	BGA-18	108.36	7.44	12.06	11	2	18.73	24.75	1.88	13.91
7	BGA-19	108.18	7.72	11.54	11	6	13.56	19.31	-2.56	8.95
8	BGA-27	108.64	7.59	11.25	11	9	10.75	16.36	-4.97	6.25
9	RGAS-08-14	108.79	7.68	9.34	11	16	-8.05	-3.39	-21.09	-11.78
10	RGAS-08-17	109.55	7.73	11.87	11	3	16.85	22.77	0.27	12.11
11	RGAS-08-10	108.21	7.59	11.79	11	5	16.07	21.95	-0.40	11.35
12	SKNA-707	106.29	7.56	10.42	8	11	2.55	7.75	-12.00	-1.61
13	SKNA-717	105.10	7.76	9.71	9	13	-4.41	0.43	-17.98	-8.30
14	SKNA-719	106.24	7.63	8.75	8	17	-13.86	-9.50	-26.08	-17.36
15	GA-1 (C)	134.20	7.48	10.16	9	12	-	5.03	-14.22	-4.10
16	GA-2 (C)	107.69	7.73	9.67	11	15	-4.78	-	-18.29	-8.64
17	Suvarna (C)	107.58	7.69	11.84	11	4	16.58	22.49	-	11.85
18	BGA-2 (C)	106.60	7.77	10.59	11	10	4.25	9.53	-10.55	-
<b>Mean</b>		<b>108.73</b>	<b>7.65</b>	<b>10.64</b>						

**Table 28b. Performance of grain amaranth entries in Initial Varietal Trial (IVT) during Rabi (2009-10) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (q/ha)			Per cent increase/decrease over checks			
				Mean	Location	Rank	GA-1	GA-2	Suvarna	BGA-2
1	RGA-2	123.96	7.68	8.85	9	14	-12.91	-5.87	-8.50	11.16
2	RMA-37	132.78	7.23	10.51	9	6	3.42	11.78	8.66	32.01
3	RMA-38	133.48	7.04	11.58	9	1	13.96	23.18	19.74	45.46
4	MGA-3	124.05	6.97	6.19	5	18	-39.09	-34.16	-36.00	-22.25
5	MGA-4	123.21	7.14	8.19	4	16	-19.40	-12.88	-15.31	2.88
6	BGA-18	131.71	7.13	11.04	9	5	8.70	17.49	14.21	38.74
7	BGA-19	132.03	7.13	10.22	9	9	0.63	8.77	5.73	28.45
8	BGA-27	132.78	7.04	11.12	9	4	9.41	18.25	14.95	39.65
9	RGAS-08-14	133.08	7.09	10.35	9	7	1.89	10.12	7.05	30.05
10	RGAS-08-17	134.43	7.44	11.40	9	2	12.18	21.25	17.87	43.19
11	RGAS-08-10	131.43	7.32	11.33	9	3	11.50	20.51	17.15	42.31
12	SKNA-707	129.92	7.33	10.28	6	8	1.23	9.41	6.36	29.20
13	SKNA-717	127.86	7.26	9.57	7	12	-5.81	1.81	-1.04	20.22
14	SKNA-719	130.32	7.36	8.80	6	15	-13.41	-6.40	-9.02	10.53
15	GA-1 (C)	134.20	7.48	10.16	9	10	-	8.04	5.03	27.59
16	GA-2 (C)	131.39	7.27	9.40	9	13	-7.51	-	-2.82	18.05
17	Suvarna (C)	133.49	7.04	9.67	9	11	-4.77	2.93	-	21.55
18	BGA-2 (C)	132.04	6.96	7.96	9	17	-21.66	-15.33	-17.69	-
<b>Mean</b>		<b>130.67</b>	<b>7.22</b>	<b>9.81</b>						

**Table 28c. Performance of grain amaranth entries in Initial Varietal Trial (IVT) during Kharif (2010) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (q/ha)			Per cent increase/decrease over checks		
				Mean	Location	Rank	GA-2	Suvarna	BGA-2
1	RGA-2	79.50	8.03	10.51	2	12	5.63	-25.03	-20.50
2	RMA-37	90.33	8.18	12.06	2	9	21.16	-14.01	-8.81
3	RMA-38	90.50	8.12	12.75	2	6	28.12	-9.07	-3.57
4	MGA-3	80.00	8.10	9.85	2	15	-0.98	-29.72	-25.47
5	MGA-4	85.67	8.00	14.58	2	1	46.57	4.02	10.32
6	BGA-18	85.00	7.75	13.08	2	4	31.48	-6.69	-1.04
7	BGA-19	84.33	8.32	12.85	2	5	29.15	-8.34	-2.80
8	BGA-27	84.50	8.13	11.39	2	10	14.45	-18.78	-13.86
9	RGAS-08-14	84.50	8.26	8.33	2	17	-16.25	-40.56	-36.96
10	RGAS-08-17	84.67	8.02	12.35	2	7	24.08	-11.94	-6.61
11	RGAS-08-10	85.00	7.86	12.26	2	8	23.18	-12.58	-7.29
12	SKNA-707	82.67	7.79	10.55	2	11	6.07	-24.72	-20.17
13	SKNA-717	82.33	8.27	9.85	2	14	-0.97	-29.72	-25.47
14	SKNA-719	82.17	7.89	8.71	2	16	-12.51	-37.91	-34.15
15	GA-2 (C)	84.00	8.20	9.95	2	13	-	-29.01	-24.72
16	Suvarna (C)	81.67	8.34	14.02	2	2	40.85	-	6.01
17	BGA-2 (C)	81.17	8.58	13.22	2	3	32.90	-5.68	-
<b>Mean</b>		<b>84.00</b>	<b>8.11</b>	<b>11.55</b>					



**Table 29. Grain yield (q/ha) in Initial Varietal Trial (IVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10										Kharif 2010			Overall mean	Rank	Location	Frequency
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
1	RGA-2	2.92	10.68	5.78	4.03	<b>6.23</b>	13.21	12.48	<b>10.52</b>	13.78	8.85	12.82	8.20	10.51	9.68	14	11	2/11
2	RMA-37	2.76	10.21	4.76	3.12	3.80	23.75	16.63	5.94	23.61	10.51	14.30	9.81	12.06	11.28	8	11	0/11
3	RMA-38	2.40	10.47	<b>7.90</b>	3.37	<b>7.85</b>	22.36	17.48	6.41	25.97	11.58	15.59	9.91	12.75	12.16	1	11	2/11
4	MGA-3	1.88	-	7.01	2.70	-	-	12.17	-	7.19	6.19	11.81	7.90	9.85	8.02	18	7	0/7
5	MGA-4	-	-	<b>10.44</b>	4.27	-	-	11.60	-	6.46	8.19	<b>18.27</b>	10.89	14.58	11.39	7	6	2/6
6	BGA-18	2.14	<b>15.78</b>	6.52	3.53	4.83	20.23	17.51	6.94	21.91	11.04	14.89	11.27	13.08	12.06	2	11	1/11
7	BGA-19	2.92	<b>15.73</b>	5.18	3.08	4.75	18.30	14.97	6.72	20.36	10.22	14.06	11.64	12.85	11.54	6	11	1/11
8	BGA-27	2.97	<b>17.08</b>	<b>8.66</b>	4.07	<b>5.80</b>	20.14	13.42	6.03	21.88	11.12	14.87	7.90	11.39	11.25	9	11	3/11
9	RGAS-08-14	2.55	12.92	<b>8.20</b>	2.63	<b>6.73</b>	20.90	13.26	6.99	18.99	10.35	10.03	6.64	8.33	9.34	16	11	2/11
10	RGAS-08-17	2.97	10.52	3.45	3.38	<b>7.75</b>	22.59	16.56	6.92	28.44	11.40	14.38	10.32	12.35	11.87	3	11	1/11
11	RGAS-08-10	4.27	11.10	5.34	3.62	5.40	22.41	15.77	7.48	26.56	11.33	14.26	10.26	12.26	11.79	5	11	0/11
12	SKNA-707	-	-	2.92	3.03	3.50	16.74	15.03	-	20.49	10.28	12.69	8.42	10.55	10.42	11	8	0/8
13	SKNA-717	2.19	-	4.67	3.50	<b>5.70</b>	20.75	10.67	-	19.51	9.57	9.16	10.55	9.85	9.71	13	9	1/9
14	SKNA-719	-	-	4.91	2.52	1.95	8.87	15.39	-	19.15	8.80	6.67	10.74	8.71	8.75	17	8	0/8
15	GA-1 (C)	2.45	8.33	6.07	3.47	4.53	<b>21.61</b>	<b>16.63</b>	6.71	21.60	10.16	-	-	-	10.16	12	9	
16	GA-2 (C)	1.88	6.56	<b>6.75</b>	<b>4.22</b>	4.68	17.60	13.18	6.20	<b>23.51</b>	9.40	11.26	8.64	9.95	9.67	15	11	
17	Suvarna (C)	2.34	10.26	6.23	3.42	<b>4.70</b>	17.27	15.22	<b>7.99</b>	19.65	9.67	<b>15.01</b>	<b>13.02</b>	14.02	11.84	4	11	
18	BGA-2 (C)	<b>3.39</b>	<b>11.87</b>	4.00	3.77	3.43	14.77	13.63	5.69	11.08	7.96	14.14	12.31	13.22	10.59	10	11	
	<b>Mean</b>	<b>2.67</b>	<b>11.65</b>	<b>6.04</b>	<b>3.43</b>	<b>5.10</b>	<b>18.84</b>	<b>14.53</b>	<b>6.97</b>	<b>19.45</b>	<b>9.81</b>	<b>13.19</b>	<b>9.91</b>	<b>11.55</b>	<b>10.64</b>			
	<b>CD (0.05)</b>	<b>5.45</b>	<b>1.50</b>	<b>0.72</b>	<b>0.98</b>	<b>0.54</b>	<b>4.34</b>	<b>2.30</b>	<b>1.22</b>	<b>5.03</b>		<b>2.46</b>	<b>1.21</b>					
	<b>CV (%) Error</b>	<b>17.17</b>	<b>9.30</b>	<b>7.39</b>	<b>17.92</b>	<b>7.64</b>	<b>16.63</b>	<b>11.44</b>	<b>9.80</b>	<b>18.64</b>		<b>11.63</b>	<b>7.61</b>					

**Table 30. Plant height (cm) in Initial Varietal Trial (IVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10										Kharif 2010			Overall mean	Rank
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	RGA-2	36.10	61.70	<b>241.67</b>	102.70	<b>100.08</b>	65.25	93.30	66.20	73.45	93.38	85.67	182.60	134.13	113.76	17
2	RMA-37	67.10	104.60	118.60	103.60	73.15	124.85	<b>191.48</b>	103.20	148.15	114.97	122.87	<b>246.43</b>	184.65	149.81	2
3	RMA-38	61.20	107.80	130.77	106.67	84.60	105.55	161.26	93.57	167.40	113.20	134.13	193.00	163.57	138.38	6
4	MGA-3	42.08	-	103.60	99.40	-	-	77.08	-	73.75	79.18	117.73	185.20	151.47	115.32	16
5	MGA-4	-	-	106.10	101.63	-	-	74.86	-	70.58	88.29	121.20	183.53	152.37	120.33	14
6	BGA-18	63.30	107.85	144.80	106.07	99.68	103.50	127.30	83.93	148.85	109.48	137.67	226.60	182.13	145.80	4
7	BGA-19	61.20	105.00	141.04	108.80	90.48	102.10	146.00	97.00	123.55	108.35	138.33	191.60	164.97	136.66	9
8	BGA-27	61.90	<b>140.40</b>	127.73	106.47	83.73	98.65	148.28	102.80	139.30	112.14	132.00	188.23	160.12	136.13	10
9	RGAS-08-14	61.95	111.50	139.37	99.03	79.40	96.10	135.10	94.07	128.15	104.96	124.00	212.93	168.47	136.71	8
10	RGAS-08-17	62.25	105.65	146.53	126.00	99.23	86.90	134.36	84.93	145.85	110.19	138.60	148.07	143.33	126.76	13
11	RGAS-08-10	51.15	94.65	95.93	118.73	64.80	86.75	145.16	91.07	147.50	99.53	117.73	208.17	162.95	131.24	11
12	SKNA-707	-	-	122.09	115.53	72.90	111.75	174.49	-	81.45	113.03	114.80	229.00	171.90	142.47	5
13	SKNA-717	40.40	-	98.05	114.00	55.65	90.40	77.48	-	84.75	80.10	84.93	170.23	127.58	103.84	18
14	SKNA-719	-	-	128.10	113.53	63.65	75.85	127.66	-	78.05	97.81	125.13	148.53	136.83	117.32	15
15	GA-1 (C)	85.00	124.25	128.68	115.13	<b>93.73</b>	143.55	145.30	<b>129.00</b>	<b>185.75</b>	127.82	-	-	-	127.82	12
16	GA-2 (C)	78.15	<b>133.85</b>	138.10	121.07	58.93	137.80	<b>170.60</b>	111.87	184.50	126.10	<b>141.53</b>	<b>229.73</b>	185.63	155.86	1
17	Suvarna (C)	87.35	115.65	<b>142.51</b>	124.33	92.20	<b>157.45</b>	141.36	105.47	137.35	122.63	125.73	220.67	173.20	147.91	3
18	BGA-2 (C)	<b>89.35</b>	117.95	124.65	<b>125.80</b>	74.25	146.85	132.54	102.90	139.30	117.06	101.07	218.00	159.53	138.30	7
	<b>Mean</b>	<b>63.23</b>	<b>110.07</b>	<b>132.13</b>	<b>111.58</b>	<b>80.40</b>	<b>108.33</b>	<b>133.53</b>	<b>97.38</b>	<b>125.43</b>	<b>106.57</b>	<b>121.36</b>	<b>198.97</b>	<b>160.17</b>	<b>132.47</b>	
	<b>CD (0.05)</b>	-	<b>5.63</b>	<b>14.60</b>	<b>3.31</b>	<b>6.13</b>	<b>19.07</b>	<b>13.97</b>	<b>21.18</b>	<b>16.18</b>		<b>25.61</b>	<b>8.90</b>			
	<b>CV (%) Error</b>	-	<b>3.69</b>	<b>6.91</b>	<b>1.85</b>	<b>5.50</b>	<b>12.70</b>	<b>7.55</b>	<b>12.22</b>	<b>9.31</b>		<b>13.19</b>	<b>2.80</b>			

**Table 31. Days to flowering in Initial Varietal Trial (IVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10									Kharif 2010			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	RGA-2	<b>31.75</b>	48.33	70.33	84.75	<b>39.50</b>	67.75	<b>76.00</b>	<b>33.00</b>	56.43	<b>36.00</b>	51.00	43.50	49.96	2
2	RMA-37	<b>44.75</b>	46.67	<b>58.67</b>	86.25	44.75	64.00	96.00	48.75	61.23	55.67	55.67	55.67	58.45	15
3	RMA-38	<b>45.75</b>	49.67	<b>65.33</b>	88.25	43.75	64.50	95.00	48.00	62.53	53.00	57.67	55.33	58.93	16
4	MGA-3	-	47.00	69.33	-	-	67.75	-	51.50	58.90	<b>36.00</b>	57.00	46.50	52.70	4
5	MGA-4	-	61.00	68.67	-	-	62.75	-	52.00	61.10	47.33	54.00	50.67	55.89	10
6	BGA-18	<b>43.50</b>	54.67	72.33	77.00	<b>42.75</b>	65.00	<b>82.67</b>	41.50	59.93	45.00	55.00	50.00	54.96	6
7	BGA-19	<b>45.75</b>	48.67	68.33	77.50	<b>43.00</b>	66.75	<b>84.00</b>	41.50	59.44	47.33	54.33	50.83	55.14	7
8	BGA-27	46.75	51.33	67.67	92.00	45.25	65.50	92.00	46.25	63.34	45.00	54.33	49.67	56.51	11
9	RGAS-08-14	<b>44.75</b>	49.67	77.00	87.75	45.50	64.25	<b>87.00</b>	43.50	62.43	45.00	56.33	50.67	56.55	12
10	RGAS-08-17	<b>45.50</b>	53.33	70.33	84.75	44.25	70.75	89.33	43.25	62.69	45.00	52.00	48.50	55.59	9
11	RGAS-08-10	<b>44.00</b>	63.00	71.00	83.75	<b>43.25</b>	<b>59.50</b>	<b>87.33</b>	41.50	61.67	45.00	52.67	48.83	55.25	8
12	SKNA-707	-	55.33	67.67	84.50	<b>43.25</b>	64.25	-	47.75	60.46	<b>36.00</b>	54.00	45.00	52.73	5
13	SKNA-717	-	53.00	68.33	75.75	<b>40.75</b>	<b>52.75</b>	-	37.00	54.60	<b>36.00</b>	51.67	43.83	49.22	1
14	SKNA-719	-	55.00	69.33	85.00	<b>37.25</b>	63.50	-	47.25	59.56	<b>36.00</b>	52.00	44.00	51.78	3
15	GA-1 (C)	52.50	59.67	<b>69.67</b>	93.75	49.00	62.50	98.33	49.25	66.83	-	-	-	66.83	18
16	GA-2 (C)	53.75	50.00	72.00	<b>77.25</b>	<b>45.75</b>	<b>60.50</b>	<b>92.67</b>	48.50	62.55	<b>48.33</b>	56.67	52.50	57.53	14
17	Suvarna (C)	51.25	57.33	75.67	96.75	51.50	70.75	97.00	39.75	67.50	49.33	53.33	51.33	59.42	17
18	BGA-2 (C)	<b>48.50</b>	<b>49.67</b>	76.67	87.00	51.75	67.75	96.67	<b>36.25</b>	64.28	<b>48.33</b>	<b>50.67</b>	49.50	56.89	13
	<b>Mean</b>	<b>46.04</b>	<b>52.96</b>	<b>69.91</b>	<b>85.13</b>	<b>44.45</b>	<b>64.47</b>	<b>90.31</b>	<b>44.25</b>	<b>61.41</b>	<b>44.37</b>	<b>54.02</b>	<b>49.20</b>	<b>55.80</b>	
	<b>CD (0.05)</b>	<b>2.55</b>	<b>8.08</b>	<b>2.80</b>	<b>3.78</b>	<b>2.11</b>	<b>0.94</b>	<b>4.06</b>	<b>2.11</b>		<b>3.76</b>	<b>0.67</b>			
	<b>CV (%) Error</b>	<b>4.00</b>	<b>9.53</b>	<b>2.50</b>	<b>3.20</b>	<b>3.43</b>	<b>1.05</b>	<b>2.53</b>	<b>3.45</b>		<b>5.29</b>	<b>0.77</b>			

**Table 32. Days to maturity in Initial Varietal Trial (IVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10										Kharif 2010			Overall mean	Rank	Location	Frequency
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
1	RGA-2	118.00	<b>72.25</b>	156.33	125.33	184.75	<b>118.75</b>	120.25	<b>138.00</b>	82.00	123.96	<b>77.00</b>	82.00	79.50	101.73	1	11	4/11
2	RMA-37	155.00	83.00	156.67	124.00	181.50	127.00	113.25	161.33	93.25	132.78	97.67	83.00	90.33	111.56	16	11	0/11
3	RMA-38	154.00	86.75	157.67	130.67	<b>177.75</b>	127.25	115.00	162.00	90.25	133.48	98.00	83.00	90.50	111.99	17	11	1/11
4	MGA-3	125.00	-	155.00	121.00	-	-	118.50	-	100.75	124.05	<b>78.00</b>	82.00	80.00	102.03	2	7	1/7
5	MGA-4	-	-	154.00	123.33	-	-	118.00	-	97.50	123.21	89.33	82.00	85.67	104.44	3	6	0/6
6	BGA-18	153.00	82.25	160.00	127.33	<b>174.50</b>	<b>125.50</b>	116.75	<b>152.33</b>	93.75	131.71	87.00	83.00	85.00	108.36	12	11	3/11
7	BGA-19	152.00	82.25	158.00	129.67	<b>173.50</b>	126.75	117.50	153.33	95.25	132.03	86.67	82.00	84.33	108.18	10	11	1/11
8	BGA-27	155.00	82.00	158.67	125.00	<b>175.00</b>	127.50	119.75	158.33	93.75	132.78	86.00	83.00	84.50	108.64	13	11	1/11
9	RGAS-08-14	153.00	88.50	158.00	126.67	184.25	<b>125.50</b>	114.50	158.33	89.00	133.08	87.00	82.00	84.50	108.79	14	11	1/11
10	RGAS-08-17	150.00	88.50	158.00	127.00	188.00	127.25	120.00	159.33	91.75	134.43	87.33	82.00	84.67	109.55	15	11	0/11
11	RGAS-08-10	142.00	84.50	158.33	129.67	183.50	<b>125.75</b>	111.25	157.33	90.50	131.43	88.00	82.00	85.00	108.21	11	11	1/11
12	SKNA-707	-	-	159.33	<b>109.67</b>	188.75	128.50	111.25	-	82.00	129.92	83.33	82.00	82.67	106.29	6	8	1/8
13	SKNA-717	136.00	-	158.00	<b>112.00</b>	184.25	<b>125.75</b>	<b>100.25</b>	-	<b>78.75</b>	127.86	82.67	82.00	82.33	105.10	4	9	4/9
14	SKNA-719	-	-	157.67	<b>115.00</b>	184.75	126.25	<b>109.25</b>	-	89.00	130.32	82.33	82.00	82.17	106.24	5	8	2/8
15	GA-1 (C)	144.00	92.75	157.33	126.00	184.50	128.75	115.25	164.00	95.25	134.20	-	-	-	134.20	18	9	
16	GA-2 (C)	<b>141.00</b>	92.50	159.67	<b>118.67</b>	<b>182.25</b>	<b>128.00</b>	<b>111.75</b>	<b>156.67</b>	92.00	131.39	<b>85.00</b>	83.00	84.00	107.69	9	11	
17	Suvarna (C)	147.00	86.50	160.00	<b>118.67</b>	186.50	129.50	122.25	162.00	<b>89.00</b>	133.49	91.33	<b>72.00</b>	81.67	107.58	8	11	
18	BGA-2 (C)	144.00	<b>84.00</b>	<b>152.67</b>	124.00	<b>182.25</b>	130.75	118.00	163.67	<b>89.00</b>	132.04	90.33	<b>72.00</b>	81.17	106.60	7	11	
	<b>Mean</b>	<b>144.60</b>	<b>85.06</b>	<b>157.52</b>	<b>122.98</b>	<b>182.25</b>	<b>126.80</b>	<b>115.15</b>	<b>157.44</b>	<b>90.71</b>	<b>130.67</b>	<b>86.88</b>	<b>81.12</b>	<b>84.00</b>	<b>108.73</b>			
	<b>CD (0.05)</b>	-	<b>2.92</b>	<b>3.77</b>	<b>3.24</b>	<b>3.78</b>	<b>2.16</b>	<b>1.30</b>	<b>4.18</b>	<b>7.96</b>		<b>2.82</b>	-					
	<b>CV (%) Error</b>	-	<b>2.48</b>	<b>1.50</b>	<b>1.65</b>	<b>1.49</b>	<b>1.23</b>	<b>0.81</b>	<b>1.49</b>	<b>6.33</b>		<b>2.03</b>	-					

**Table 33. Inflorescence length (cm) in Initial Varietal Trial (IVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10								Kharif 2010			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	RGA-2	36.55	40.99	35.50	43.35	63.78	21.80	60.90	43.27	57.73	64.00	60.87	52.07	15
2	RMA-37	54.80	35.75	35.13	62.55	87.38	27.53	92.60	56.54	54.67	<b>87.10</b>	70.88	63.71	3
3	RMA-38	52.05	44.90	32.67	57.20	77.38	28.27	99.85	56.04	65.00	54.47	59.73	57.89	9
4	MGA-3	-	37.16	40.22	-	41.18	-	65.65	46.05	61.47	61.07	61.27	53.66	13
5	MGA-4	-	36.15	40.43	-	42.56	-	51.49	42.66	42.87	57.40	50.13	46.40	18
6	BGA-18	54.35	39.04	41.86	51.55	60.68	26.73	78.65	50.41	72.00	79.00	75.50	62.95	4
7	BGA-19	50.20	47.88	36.00	53.05	69.25	26.53	80.70	51.95	62.67	65.00	63.83	57.89	8
8	BGA-27	52.60	40.56	33.00	55.50	73.08	26.73	88.10	52.80	57.33	65.43	61.38	57.09	10
9	RGAS-08-14	55.85	45.80	39.60	51.55	67.95	28.17	81.45	52.91	61.07	73.67	67.37	60.14	6
10	RGAS-08-17	47.80	45.61	41.67	49.90	65.25	23.67	91.75	52.23	68.33	46.27	57.30	54.77	12
11	RGAS-08-10	45.20	36.61	46.67	50.80	70.70	27.53	87.60	52.16	66.27	74.37	70.32	61.24	5
12	SKNA-707	-	37.25	46.17	64.55	80.53	-	54.65	56.63	62.13	<b>89.20</b>	75.67	66.15	2
13	SKNA-717	-	39.36	47.67	47.20	37.65	-	48.85	44.15	55.73	68.30	62.02	53.08	14
14	SKNA-719	-	40.94	40.33	50.55	44.48	-	64.00	48.06	64.07	59.67	61.87	54.96	11
15	GA-1 (C)	<b>58.00</b>	41.81	38.92	66.80	64.38	31.73	<b>110.05</b>	58.81	-	-	-	58.81	7
16	GA-2 (C)	47.05	<b>42.89</b>	38.00	<b>67.80</b>	<b>82.00</b>	<b>32.17</b>	107.65	59.65	<b>69.67</b>	<b>79.97</b>	74.82	67.23	1
17	Suvarna (C)	45.90	41.26	<b>46.50</b>	51.95	46.15	25.17	59.20	45.16	40.40	57.87	49.13	47.15	17
18	BGA-2 (C)	46.10	40.57	45.08	50.20	49.15	26.33	60.45	45.41	41.40	59.60	50.50	47.96	16
	<b>Mean</b>	<b>49.73</b>	<b>40.81</b>	<b>40.30</b>	<b>54.66</b>	<b>62.42</b>	<b>27.11</b>	<b>76.87</b>	<b>50.83</b>	<b>58.99</b>	<b>67.20</b>	<b>63.09</b>	<b>56.84</b>	
	<b>CD (0.05)</b>	<b>4.70</b>	<b>8.72</b>	<b>4.27</b>	<b>6.92</b>	<b>8.60</b>	<b>3.97</b>	<b>7.89</b>		<b>14.79</b>	<b>2.50</b>			
	<b>CV (%) Error</b>	<b>6.82</b>	<b>13.36</b>	<b>6.62</b>	<b>9.13</b>	<b>9.94</b>	<b>8.24</b>	<b>7.41</b>		<b>15.66</b>	<b>2.33</b>			

**Table 34. Seed weight (g/10ml) in Initial Varietal Trial (IVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10								Kharif 2010			Overall mean	Rank
		Bhubaneswar	Delhi	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
1	RGA-2	7.53	6.02	6.33	7.27	7.32	<b>10.11</b>	9.18	7.68	8.86	7.20	8.03	7.86	1
2	RMA-37	7.68	5.67	6.78	7.41	7.65	7.23	8.16	7.23	8.96	7.40	8.18	7.70	7
3	RMA-38	7.57	5.63	5.73	7.48	7.78	6.85	8.22	7.04	8.64	7.60	8.12	7.58	13
4	MGA-3	-	5.82	-	-	6.98	-	8.11	6.97	8.53	7.67	8.10	7.54	16
5	MGA-4	-	5.79	-	-	7.50	-	8.13	7.14	8.50	7.50	8.00	7.57	14
6	BGA-18	8.06	6.19	6.80	7.44	7.12	6.10	8.19	7.13	7.94	7.57	7.75	7.44	18
7	BGA-19	7.98	5.98	6.60	7.43	7.35	6.29	8.28	7.13	8.88	7.77	8.32	7.72	6
8	BGA-27	8.02	5.99	6.25	<b>7.65</b>	7.67	5.58	8.14	7.04	8.23	<b>8.03</b>	8.13	7.59	12
9	RGAS-08-14	7.64	5.89	6.65	7.38	7.80	6.05	8.25	7.09	8.72	7.80	8.26	7.68	9
10	RGAS-08-17	7.67	6.06	6.38	7.55	7.88	7.56	9.00	7.44	9.00	7.03	8.02	7.73	5
11	RGAS-08-10	7.60	5.87	<b>7.25</b>	7.52	8.15	6.72	8.17	7.32	8.59	7.13	7.86	7.59	11
12	SKNA-707	-	5.83	6.98	7.43	8.13	-	8.29	7.33	8.38	7.20	7.79	7.56	15
13	SKNA-717	-	5.34	<b>7.58</b>	7.41	7.77	-	8.21	7.26	9.07	7.47	8.27	7.76	3
14	SKNA-719	-	6.00	<b>7.20</b>	7.31	7.80	-	8.50	7.36	8.22	7.57	7.89	7.63	10
15	GA-1 (C)	7.56	6.05	<b>6.80</b>	7.42	<b>8.86</b>	6.47	<b>9.24</b>	7.48	-	-	-	7.48	17
16	GA-2 (C)	7.54	<b>6.09</b>	6.10	<b>7.44</b>	8.30	<b>7.15</b>	8.26	7.27	8.74	7.67	8.20	7.73	4
17	Suvarna (C)	7.71	5.60	6.25	7.24	7.73	6.01	8.76	7.04	8.91	7.77	8.34	7.69	8
18	BGA-2 (C)	<b>8.01</b>	5.76	5.78	7.23	7.74	5.79	8.41	6.96	<b>9.33</b>	<b>7.83</b>	8.58	7.77	2
	<b>Mean</b>	<b>7.73</b>	<b>5.86</b>	<b>6.59</b>	<b>7.41</b>	<b>7.75</b>	<b>6.76</b>	<b>8.42</b>	<b>7.22</b>	<b>8.68</b>	<b>7.54</b>	<b>8.11</b>	<b>7.65</b>	
	<b>CD (0.05)</b>	<b>0.21</b>	<b>0.58</b>	<b>0.18</b>	<b>0.19</b>	<b>0.51</b>	<b>0.69</b>	<b>0.28</b>		<b>0.89</b>	<b>0.09</b>			
	<b>CV (%) Error</b>	<b>1.92</b>	<b>6.19</b>	<b>1.93</b>	<b>1.81</b>	<b>4.77</b>	<b>5.72</b>	<b>2.39</b>		<b>6.39</b>	<b>0.77</b>			

**Table 35a. Overall performance of grain amaranth entries in Advanced Varietal Trial (AVT) during: Rabi (2009-10) & Kharif (2010) - Plains**

S. No.	Genotypes	Overall mean maturity duration (days)	Overall mean seed weight (g/10ml)	Overall mean grain yield over locations (g/ha)			Per cent increase/decrease over checks			
				Mean	Location	Rank	GA-1	GA-2	Suvarna	BGA-2
<b>AVT-I</b>										
1	IC415243	76.17	8.22	7.82	2	22	-13.42	-17.70	-33.00	-31.36
2	IC415282	107.73	7.89	8.87	9	19	-1.81	-6.67	-24.02	-22.15
3	IC415331	105.31	7.73	10.51	8	9	16.37	10.61	-9.95	-7.74
4	IC415387	102.03	7.88	8.36	10	21	-7.41	-11.99	-28.36	-26.60
5	IC515448	101.16	7.73	10.70	10	8	18.47	12.61	-8.33	-6.08
6	BGA-6	106.92	7.45	9.63	10	12	6.63	1.35	-17.50	-15.47
7	BGA-7	107.33	7.36	9.66	10	11	6.98	1.69	-17.22	-15.18
8	BGA-10	105.58	7.78	9.09	10	17	0.64	-4.34	-22.13	-20.21
9	BGA-11	107.14	7.73	9.44	10	15	4.57	-0.60	-19.08	-17.09
10	BGA-12	108.34	7.47	10.85	10	5	20.13	14.18	-7.05	-4.76
11	BGA-15	106.27	7.84	9.72	10	10	7.69	2.37	-16.67	-14.62
12	RMA-22	111.23	7.65	8.44	10	20	-6.57	-11.19	-27.70	-25.93
13	RMA-30	108.09	7.57	10.79	10	6	19.45	13.54	-7.57	-5.30
<b>AVT-II</b>										
14	BGA-5	108.73	7.44	12.78	9	1	41.55	34.54	9.53	12.22
15	SKNA-501	104.64	7.78	11.06	10	4	22.53	16.46	-5.19	-2.86
16	SKNA-502	106.27	7.61	10.78	9	7	19.41	13.50	-7.61	-5.33
17	SKNA-503	110.14	7.54	9.55	10	13	5.75	0.51	-18.18	-16.16
18	SKNA-504	110.88	7.61	9.38	10	16	3.88	-1.26	-19.62	-17.64
19	GA-1 (C)	134.96	7.12	9.03	8	18	-	-5.00	-22.66	-20.76
20	GA-2 (C)	108.54	7.67	9.50	10	14	5.17	-	-18.62	-16.62
21	Suvarna (C)	109.20	7.69	11.67	10	2	29.24	22.85	-	2.46
22	BGA-2 (C)	107.69	7.73	11.39	10	3	26.10	19.86	-2.43	-
<b>Mean</b>		<b>107.01</b>	<b>7.66</b>	<b>9.95</b>						

**Table 35b. Performance of grain amaranth entries in Advanced Varietal Trial (AVT) during Rabi (2009-10) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (q/ha)			Per cent increase/decrease over checks			
				Mean	Location	Rank	GA-1	GA-2	Suvarna	BGA-2
<b>AVT-I</b>										
1	IC415243	-	-	-	-	-	-	-	-	-
2	IC415282	133.79	7.57	8.08	7	21	-10.54	-9.33	-2.32	-4.85
3	IC415331	130.44	7.45	8.80	6	17	-2.60	-1.29	6.35	3.59
4	IC415387	127.90	7.33	8.83	8	16	-2.24	-0.92	6.75	3.98
5	IC515448	125.98	7.12	9.19	8	12	1.80	3.17	11.15	8.27
6	BGA-6	129.18	7.01	10.48	8	5	16.09	17.66	26.76	23.48
7	BGA-7	130.17	7.05	9.14	8	13	1.27	2.63	10.57	7.71
8	BGA-10	130.66	7.36	10.13	8	7	12.20	13.71	22.51	19.34
9	BGA-11	129.44	7.12	9.78	8	10	8.26	9.72	18.21	15.14
10	BGA-12	131.84	6.85	10.83	8	4	19.90	21.51	30.92	27.52
11	BGA-15	130.03	7.22	10.10	8	8	11.81	13.31	22.08	18.92
12	RMA-22	132.79	7.06	9.91	8	9	9.70	11.18	19.78	16.68
13	RMA-30	135.68	7.08	8.36	8	19	-7.37	-6.12	1.14	-1.48
<b>AVT-II</b>										
14	BGA-5	136.47	6.67	10.26	7	6	13.58	15.11	24.02	20.81
15	SKNA-501	129.28	7.21	10.96	8	2	21.39	23.03	32.55	29.11
16	SKNA-502	127.54	7.16	11.26	7	1	24.73	26.41	36.19	32.66
17	SKNA-503	132.11	6.92	10.90	8	3	20.67	22.29	31.75	28.34
18	SKNA-504	131.76	7.15	9.38	8	11	3.92	5.32	13.48	10.53
19	GA-1 (C)	134.96	7.12	9.03	8	14	-	1.29	9.13	6.31
20	GA-2 (C)	134.58	7.22	8.91	8	15	-1.34	-	7.73	4.94
21	Suvarna (C)	137.47	6.97	8.27	8	20	-8.40	-7.17	-	-2.58
22	BGA-2 (C)	134.88	6.95	8.49	8	18	-5.94	-4.68	2.70	-
<b>Mean</b>		<b>131.76</b>	<b>7.12</b>	<b>9.58</b>						



**Table 35c. Performance of grain amaranth entries in Advanced Varietal Trial (AVT) during Kharif (2010) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (g/ha)			Per cent increase/decrease over checks		
				Mean	Location	Rank	GA-2	Suvarna	BGA-2
<b>AVT-I</b>									
1	IC415243	76.17	8.22	7.82	2	20	-22.44	-48.12	-45.25
2	IC415282	81.67	8.21	9.66	2	12	-4.22	-35.93	-32.39
3	IC415331	80.17	8.01	12.22	2	5	21.25	-18.90	-14.41
4	IC415387	76.17	8.43	7.89	2	19	-21.69	-47.62	-44.72
5	IC515448	76.33	8.35	12.20	2	6	21.06	-19.02	-14.54
6	BGA-6	84.67	7.89	8.77	2	16	-12.96	-41.78	-38.56
7	BGA-7	84.50	7.68	10.18	2	10	0.96	-32.47	-28.73
8	BGA-10	80.50	8.20	8.04	2	18	-20.21	-46.63	-43.67
9	BGA-11	84.83	8.34	9.11	2	15	-9.62	-39.55	-36.20
10	BGA-12	84.83	8.09	10.87	2	8	7.82	-27.88	-23.89
11	BGA-15	82.50	8.46	9.35	2	14	-7.21	-37.93	-34.50
12	RMA-22	89.67	8.24	6.97	2	21	-30.87	-53.76	-51.20
13	RMA-30	80.50	8.07	13.21	2	4	31.04	-12.35	-7.50
<b>AVT-II</b>									
14	BGA-5	81.00	8.21	15.31	2	1	51.85	1.57	7.19
15	SKNA-501	80.00	8.36	11.17	2	7	10.78	-25.90	-21.80
16	SKNA-502	85.00	8.07	10.30	2	9	2.20	-31.64	-27.86
17	SKNA-503	88.17	8.17	8.20	2	17	-18.63	-45.58	-42.57
18	SKNA-504	90.00	8.08	9.38	2	13	-6.98	-37.78	-34.34
19	GA-2 (C)	82.50	8.12	10.08	2	11	-	-33.08	-29.38
20	Suvarna (C)	80.92	8.40	15.07	2	2	49.50	-	5.53
21	BGA-2 (C)	80.50	8.51	14.28	2	3	41.67	-5.24	-
<b>Mean</b>		<b>82.41</b>	<b>8.19</b>	<b>10.48</b>					

**Table 36. Grain yield (q/ha) in Advanced Varietal Trial (AVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10									Kharif 2010			Overall mean	Rank	Location	Frequency
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean				
<b>AVT-I</b>																	
1	IC415243	-	-	-	-	-	-	-	-	-	8.77	6.87	7.82	7.82	22	2	0/2
2	IC415282	5.68	-	4.60	3.13	3.14	17.78	9.16	13.06	8.08	11.21	8.10	9.66	8.87	19	9	0/9
3	IC415331	1.77	-	12.31	4.10	3.05	13.37	-	18.18	8.80	18.04	6.40	12.22	10.51	9	8	0/8
4	IC415387	7.14	10.73	2.94	3.90	3.60	18.06	<b>10.34</b>	13.92	8.83	8.32	7.47	7.89	8.36	21	10	1/10
5	IC515448	7.14	12.29	9.38	2.85	<b>4.69</b>	17.13	7.73	12.33	9.19	18.01	6.40	12.20	10.70	8	10	1/10
6	BGA-6	6.56	14.38	8.11	3.90	2.90	20.88	8.92	18.23	10.48	9.51	8.03	8.77	9.63	12	10	0/10
7	BGA-7	5.21	12.71	1.56	2.00	3.49	18.03	9.02	21.15	9.14	14.05	6.30	10.18	9.66	11	10	0/10
8	BGA-10	5.52	17.14	5.23	3.51	3.63	19.93	8.16	17.93	10.13	8.85	7.23	8.04	9.09	17	10	0/10
9	BGA-11	5.78	12.66	6.71	2.40	3.95	18.44	8.90	19.38	9.78	9.42	8.80	9.11	9.44	15	10	0/10
10	BGA-12	6.09	15.76	7.08	2.01	4.08	22.95	7.84	20.80	10.83	13.34	8.40	10.87	10.85	5	10	0/10
11	BGA-15	6.88	15.05	8.96	2.27	<b>4.77</b>	16.93	7.20	18.72	10.10	8.57	10.13	9.35	9.72	10	10	1/10
12	RMA-22	5.16	11.25	7.13	3.03	3.55	23.73	8.14	17.26	9.91	6.50	7.43	6.97	8.44	20	10	0/10
13	RMA-30	4.64	11.28	3.70	2.47	<b>4.68</b>	16.49	7.83	15.83	8.36	17.62	8.80	13.21	10.79	6	10	1/10
<b>AVT-II</b>																	
14	BGA-5	3.91	17.60	-	3.26	3.94	18.37	8.86	15.85	10.26	<b>18.78</b>	11.83	15.31	12.78	1	9	1/9
15	SKNA-501	6.09	13.96	8.78	2.60	4.25	23.62	8.27	20.14	10.96	13.40	8.93	11.17	11.06	4	10	0/10
16	SKNA-502	4.53	14.06	7.27	2.83	4.34	22.12	-	23.69	11.26	10.60	10.00	10.30	10.78	7	9	0/9
17	SKNA-503	6.25	12.66	7.30	3.77	4.24	24.03	7.82	21.11	10.90	8.70	7.70	8.20	9.55	13	10	0/10
18	SKNA-504	6.09	12.19	3.91	2.38	2.38	21.13	7.83	19.17	9.38	12.35	6.40	9.38	9.38	16	10	0/10
19	GA-1 (C)	2.45	8.83	6.07	3.35	3.60	<b>22.97</b>	8.47	16.46	9.03	-	-	-	9.03	18	8	
20	GA-2 (C)	1.88	7.74	<b>6.75</b>	3.73	3.92	18.43	<b>8.92</b>	<b>19.91</b>	8.91	11.47	8.70	10.08	9.50	14	10	
21	Suvarna (C)	2.34	10.13	6.23	3.42	<b>4.15</b>	16.40	8.19	15.31	8.27	<b>16.27</b>	<b>13.87</b>	15.07	11.67	2	10	
22	BGA-2 (C)	<b>3.39</b>	<b>11.67</b>	4.00	<b>4.18</b>	3.95	16.20	8.91	15.64	8.49	15.66	12.90	14.28	11.39	3	10	
	<b>Mean</b>	<b>4.98</b>	<b>12.74</b>	<b>6.40</b>	<b>3.10</b>	<b>3.82</b>	<b>19.38</b>	<b>8.45</b>	<b>17.81</b>	<b>9.58</b>	<b>12.36</b>	<b>8.60</b>	<b>10.48</b>	<b>9.95</b>			
	<b>CD (0.05)</b>	<b>11.78</b>	<b>1.09</b>	<b>6.36</b>	<b>1.08</b>	<b>0.35</b>	<b>4.65</b>	<b>1.04</b>	<b>4.22</b>		<b>2.34</b>	<b>0.98</b>					
	<b>CV (%) Error</b>	<b>16.73</b>	<b>6.16</b>	<b>6.73</b>	<b>21.72</b>	<b>6.70</b>	<b>17.30</b>	<b>8.85</b>	<b>17.10</b>		<b>11.81</b>	<b>7.14</b>					

**Table 37. Plant height (cm) in Advanced Varietal Trial (AVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10									Kharif 2010			Overall mean	Rank
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
<b>AVT-I</b>															
1	IC415243	-	-	-	-	-	-	-	-	-	126.60	172.20	149.40	149.40	5
2	IC415282	59.00	-	116.51	116.67	59.40	83.98	81.63	74.40	84.51	122.00	169.03	145.52	115.01	21
3	IC415331	49.20	-	110.60	115.97	60.60	73.35	-	75.05	80.80	99.87	168.73	134.30	107.55	22
4	IC415387	56.15	83.00	138.50	113.00	64.50	101.80	83.95	77.30	89.77	106.47	178.53	142.50	116.14	20
5	IC515448	56.10	91.95	119.03	112.20	58.00	107.25	82.40	78.20	88.14	125.00	187.33	156.17	122.15	19
6	BGA-6	75.55	110.60	137.07	116.83	69.75	110.60	103.08	149.20	109.08	153.20	170.57	161.88	135.48	12
7	BGA-7	74.35	113.55	101.35	116.33	62.73	101.35	97.63	143.60	101.36	140.80	210.17	175.48	138.42	11
8	BGA-10	71.45	91.20	132.93	113.67	56.65	94.85	94.35	116.75	96.48	112.07	215.80	163.93	130.21	15
9	BGA-11	77.45	97.80	136.85	107.67	74.23	108.60	104.73	147.75	106.88	160.40	225.97	193.18	150.03	4
10	BGA-12	69.00	98.70	124.30	109.50	77.40	100.55	97.48	147.00	102.99	107.80	203.07	155.43	129.21	17
11	BGA-15	66.75	96.10	148.27	105.03	81.40	96.70	98.75	142.10	104.39	130.47	185.37	157.92	131.15	14
12	RMA-22	80.55	108.60	123.05	115.13	87.95	121.10	106.73	170.90	114.25	131.73	<b>279.77</b>	205.75	160.00	1
13	RMA-30	79.70	101.95	121.53	117.67	65.40	160.80	103.00	139.55	111.20	138.53	204.40	171.47	141.33	9
<b>AVT-II</b>															
14	BGA-5	71.30	112.55	147.00	111.13	65.90	157.85	101.78	139.10	113.33	132.40	205.47	168.93	141.13	10
15	SKNA-501	62.75	86.05	132.60	106.97	56.85	90.98	97.55	136.60	96.29	126.00	210.67	168.33	132.31	13
16	SKNA-502	64.05	101.40	103.25	112.13	62.15	94.05	-	145.85	97.56	129.00	194.20	161.60	129.58	16
17	SKNA-503	74.15	105.55	115.60	108.17	66.13	106.78	119.18	151.55	105.89	144.80	209.87	177.33	141.61	8
18	SKNA-504	68.10	99.90	126.90	117.67	67.63	120.20	108.50	161.60	108.81	162.33	222.27	192.30	150.56	3
19	GA-1 (C)	81.85	118.05	128.68	<b>121.13</b>	<b>97.20</b>	132.60	<b>125.10</b>	186.28	123.86	-	-	-	123.86	18
20	GA-2 (C)	79.95	<b>126.65</b>	138.10	115.50	91.06	150.45	117.28	<b>188.43</b>	125.93	<b>150.70</b>	203.43	177.07	151.50	2
21	Suvarna (C)	86.65	111.18	<b>142.51</b>	111.50	84.91	149.70	106.58	144.45	117.18	118.70	<b>224.73</b>	171.72	144.45	6
22	BGA-2 (C)	<b>90.60</b>	107.25	124.65	108.50	75.91	<b>162.70</b>	108.88	148.13	115.83	129.57	205.40	167.48	141.65	7
	<b>Mean</b>	<b>71.17</b>	<b>103.26</b>	<b>127.11</b>	<b>112.97</b>	<b>70.75</b>	<b>115.53</b>	<b>102.03</b>	<b>136.37</b>	<b>104.50</b>	<b>130.88</b>	<b>202.24</b>	<b>166.56</b>	<b>135.58</b>	
	<b>CD (0.05)</b>	-	<b>7.92</b>	<b>30.11</b>	<b>5.29</b>	<b>5.05</b>	<b>12.68</b>	<b>12.66</b>	<b>11.03</b>		<b>24.19</b>	<b>12.72</b>			
	<b>CV (%) Error</b>	-	<b>5.53</b>	<b>14.80</b>	<b>2.92</b>	<b>5.15</b>	<b>7.92</b>	<b>8.95</b>	<b>5.84</b>		<b>11.55</b>	<b>3.93</b>			

**Table 38. Days to 50% flowering in Advanced Varietal Trial (AVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10								Kharif 2010			Overall mean	Rank
		Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean		
<b>AVT-I</b>														
1	IC415243	-	-	-	-	-	-	-	-	<b>36.00</b>	<b>50.33</b>	43.17	43.17	1
2	IC415282	-	48.00	56.00	<b>82.75</b>	<b>29.25</b>	<b>79.00</b>	<b>32.50</b>	54.58	<b>37.00</b>	<b>49.33</b>	43.17	48.88	5
3	IC415331	-	47.67	<b>53.00</b>	<b>77.75</b>	<b>29.00</b>	-	<b>30.75</b>	47.63	<b>36.00</b>	<b>50.00</b>	43.00	45.32	2
4	IC415387	51.25	56.00	<b>51.00</b>	<b>77.75</b>	<b>31.50</b>	<b>79.00</b>	<b>31.75</b>	54.04	<b>36.00</b>	51.00	43.50	48.77	3
5	IC515448	52.50	47.67	56.67	<b>86.00</b>	<b>30.25</b>	<b>78.50</b>	<b>32.75</b>	54.90	<b>36.33</b>	<b>49.33</b>	42.83	48.87	4
6	BGA-6	<b>47.00</b>	47.67	55.33	94.75	43.00	<b>84.25</b>	<b>47.00</b>	59.86	45.67	52.67	49.17	54.51	13
7	BGA-7	<b>45.50</b>	59.67	<b>53.67</b>	91.00	<b>41.50</b>	<b>79.25</b>	<b>42.25</b>	58.98	45.00	52.00	48.50	53.74	12
8	BGA-10	<b>41.75</b>	49.00	<b>53.67</b>	88.00	42.25	<b>81.25</b>	<b>42.25</b>	56.88	45.00	54.33	49.67	53.27	11
9	BGA-11	<b>44.50</b>	49.00	55.67	<b>85.50</b>	<b>40.50</b>	<b>79.75</b>	<b>41.00</b>	56.56	45.67	53.00	49.33	52.95	8
10	BGA-12	<b>44.00</b>	57.00	<b>52.33</b>	<b>87.00</b>	<b>41.00</b>	<b>83.00</b>	<b>42.00</b>	58.05	45.00	51.67	48.33	53.19	9
11	BGA-15	<b>42.25</b>	57.83	60.33	<b>83.50</b>	<b>41.25</b>	<b>77.00</b>	<b>43.25</b>	57.92	40.67	52.00	46.33	52.13	7
12	RMA-22	50.75	47.33	59.67	87.75	43.00	88.75	<b>46.50</b>	60.54	53.33	56.67	55.00	57.77	19
13	RMA-30	54.00	57.67	61.00	92.75	44.50	90.25	53.75	64.85	45.00	51.67	48.33	56.59	16
<b>AVT-II</b>														
14	BGA-5	48.50	62.00	56.00	96.75	50.00	90.50	53.25	65.29	46.00	51.67	48.83	57.06	17
15	SKNA-501	<b>43.50</b>	50.67	55.00	<b>83.00</b>	<b>41.75</b>	<b>80.50</b>	<b>42.75</b>	56.74	45.67	53.67	49.67	53.20	10
16	SKNA-502	<b>42.75</b>	49.67	<b>54.00</b>	<b>83.00</b>	<b>41.50</b>	-	<b>41.75</b>	52.11	49.33	54.33	51.83	51.97	6
17	SKNA-503	<b>46.00</b>	47.00	<b>53.33</b>	<b>86.50</b>	44.50	<b>87.25</b>	<b>47.00</b>	58.80	52.33	54.67	53.50	56.15	15
18	SKNA-504	49.25	50.67	56.00	<b>83.25</b>	43.75	<b>84.00</b>	47.75	59.24	56.33	57.33	56.83	58.04	21
19	GA-1 (C)	53.50	59.67	<b>57.67</b>	95.13	46.75	97.00	51.63	65.90	-	-	-	65.90	22
20	GA-2 (C)	53.88	50.00	59.67	<b>90.63</b>	<b>44.00</b>	<b>91.00</b>	<b>49.00</b>	62.60	<b>42.50</b>	55.00	48.75	55.67	14
21	Suvarna (C)	52.75	57.33	62.67	93.13	50.50	95.00	60.25	67.38	45.50	<b>51.67</b>	48.58	57.98	20
22	BGA-2 (C)	<b>49.88</b>	<b>49.67</b>	58.33	94.63	51.25	93.50	59.25	65.21	45.50	52.67	49.08	57.15	18
	<b>Mean</b>	<b>48.08</b>	<b>52.44</b>	<b>56.24</b>	<b>87.64</b>	<b>41.48</b>	<b>85.20</b>	<b>44.68</b>	<b>58.95</b>	<b>44.28</b>	<b>52.62</b>	<b>48.45</b>	<b>53.74</b>	
	<b>CD (0.05)</b>	<b>1.65</b>	<b>11.98</b>	<b>2.88</b>	<b>3.58</b>	<b>2.15</b>	<b>3.28</b>	<b>1.58</b>		<b>2.86</b>	<b>0.93</b>			
	<b>CV (%) Error</b>	<b>2.48</b>	<b>14.28</b>	<b>3.20</b>	<b>2.95</b>	<b>3.75</b>	<b>2.78</b>	<b>2.55</b>		<b>4.03</b>	<b>1.11</b>			

**Table 39. Days to maturity in Advanced Varietal Trial (AVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10									Kharif 2010			Overall mean	Rank	Location	Frequency		
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean						
<b>AVT-I</b>																			
1	IC415243	-	-	-	-	-	-	-	-	-	-	-	<b>80.33</b>	72.00	76.17	76.17	1	2	1/2
2	IC415282	133.00	-	155.00	<b>115.00</b>	183.25	124.00	<b>144.00</b>	82.25	133.79	<b>81.00</b>	82.33	81.67	107.73	13	9	3/9		
3	IC415331	130.00	-	156.67	<b>116.00</b>	183.50	<b>119.00</b>	-	77.50	130.44	<b>80.00</b>	80.33	80.17	105.31	5	8	3/8		
4	IC415387	128.00	<b>84.00</b>	164.00	<b>117.67</b>	181.25	<b>122.25</b>	<b>145.75</b>	80.25	127.90	<b>80.00</b>	72.33	76.17	102.03	3	10	5/10		
5	IC515448	135.00	84.50	157.33	<b>112.00</b>	182.00	<b>121.50</b>	<b>139.50</b>	<b>76.00</b>	125.98	<b>80.33</b>	72.33	76.33	101.16	2	10	5/10		
6	BGA-6	150.00	88.50	<b>137.00</b>	<b>116.67</b>	<b>174.25</b>	127.00	155.75	84.25	129.18	89.67	79.67	84.67	106.92	9	10	3/10		
7	BGA-7	149.00	88.75	158.33	122.00	<b>174.50</b>	124.50	<b>141.50</b>	82.75	130.17	89.00	80.00	84.50	107.33	11	10	2/10		
8	BGA-10	142.00	88.50	160.67	129.33	<b>165.75</b>	125.75	<b>151.00</b>	82.25	130.66	89.00	72.00	80.50	105.58	6	10	2/10		
9	BGA-11	142.00	85.75	157.00	125.00	175.75	125.25	<b>137.75</b>	87.00	129.44	89.67	80.00	84.83	107.14	10	10	1/10		
10	BGA-12	146.00	86.50	156.00	128.00	176.00	<b>123.50</b>	154.50	84.25	131.84	89.00	80.67	84.83	108.34	15	10	1/10		
11	BGA-15	142.00	86.25	159.83	128.67	<b>174.25</b>	<b>121.75</b>	<b>143.75</b>	83.75	130.03	84.67	80.33	82.50	106.27	7	10	3/10		
12	RMA-22	148.00	88.00	156.00	126.33	<b>172.00</b>	127.25	155.75	89.00	132.79	97.33	82.00	89.67	111.23	21	10	1/10		
13	RMA-30	149.00	95.00	159.33	125.33	<b>172.75</b>	126.75	154.50	102.75	135.68	89.00	72.00	80.50	108.09	14	10	1/10		
<b>AVT-II</b>																			
14	BGA-5	149.00	97.50	156.00	126.00	176.25	131.00	156.75	99.25	136.47	89.00	73.00	81.00	108.73	17	10	0/10		
15	SKNA-501	139.00	90.25	156.00	122.00	<b>165.50</b>	124.50	<b>147.00</b>	90.00	129.28	88.33	71.67	80.00	104.64	4	10	2/10		
16	SKNA-502	145.00	84.25	153.00	125.00	<b>172.00</b>	123.75	-	89.75	127.54	90.33	79.67	85.00	106.27	8	9	1/9		
17	SKNA-503	148.00	85.00	153.67	127.00	<b>174.50</b>	127.50	<b>151.25</b>	90.00	132.11	96.00	80.33	88.17	110.14	19	10	2/10		
18	SKNA-504	139.00	88.25	155.00	125.33	176.00	128.25	<b>152.00</b>	90.25	131.76	99.67	80.33	90.00	110.88	20	10	1/10		
19	GA-1 (C)	144.00	91.50	157.33	125.00	184.00	130.25	162.00	<b>85.63</b>	134.96	-	-	-	134.96	22	8			
20	GA-2 (C)	<b>141.00</b>	91.88	159.67	<b>123.33</b>	<b>178.38</b>	<b>128.00</b>	160.75	93.63	134.58	<b>84.67</b>	80.33	82.50	108.54	16	10			
21	Suvarna (C)	147.00	90.00	160.00	124.67	181.88	131.25	161.00	104.00	137.47	89.50	72.33	80.92	109.20	18	10			
22	BGA-2 (C)	144.00	<b>86.50</b>	<b>152.67</b>	126.00	180.50	129.75	<b>159.75</b>	99.88	134.88	89.00	<b>72.00</b>	80.50	107.69	12	10			
	<b>Mean</b>	<b>142.38</b>	<b>88.47</b>	<b>156.21</b>	<b>123.16</b>	<b>176.39</b>	<b>125.85</b>	<b>151.28</b>	<b>88.30</b>	<b>131.76</b>	<b>87.88</b>	<b>76.94</b>	<b>82.41</b>	<b>107.01</b>					
	<b>CD (0.05)</b>	-	<b>2.38</b>	<b>11.72</b>	<b>2.94</b>	<b>3.04</b>	<b>4.44</b>	<b>6.74</b>	<b>8.87</b>		<b>2.31</b>	<b>0.71</b>							
	<b>CV (%) Error</b>	-	<b>1.94</b>	<b>4.69</b>	<b>1.49</b>	<b>1.24</b>	<b>2.54</b>	<b>3.22</b>	<b>7.25</b>		<b>1.64</b>	<b>0.57</b>							

**Table 40. Inflorescence length (cm) in Advanced Varietal Trial (AVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10							Kharif 2010			Overall mean	Rank	
		Bhubaneswar	Delhi	Faizabad	Mandor	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean			
<b>AVT-I</b>														
1	IC415243	-	-	-	-	-	-	-	54.27	70.20	62.23	62.23	1	
2	IC415282	-	42.07	37.20	55.35	27.00	63.70	45.06	55.13	63.83	59.48	52.27	18	
3	IC415331	-	40.47	38.47	52.15	-	64.85	48.99	45.00	67.87	56.43	52.71	17	
4	IC415387	41.25	44.80	37.00	64.60	29.98	64.65	47.05	51.87	73.93	62.90	54.97	12	
5	IC515448	39.20	41.23	38.47	60.00	30.08	65.80	45.80	51.00	73.60	62.30	54.05	13	
6	BGA-6	52.15	46.16	41.07	56.65	29.50	84.65	51.70	54.20	69.73	61.97	56.83	9	
7	BGA-7	<b>58.10</b>	43.95	40.33	56.35	29.70	78.65	51.18	53.67	76.73	65.20	58.19	6	
8	BGA-10	53.30	43.19	41.33	50.55	30.40	75.50	49.05	47.27	<b>82.07</b>	64.67	56.86	8	
9	BGA-11	50.40	44.97	37.00	57.80	30.70	83.10	50.66	54.47	<b>85.30</b>	69.88	60.27	4	
10	BGA-12	51.95	40.45	31.67	56.70	29.90	82.05	48.79	46.60	76.07	61.33	55.06	11	
11	BGA-15	49.10	47.07	34.00	56.00	28.10	84.25	49.75	47.73	67.37	57.55	53.65	15	
12	RMA-22	48.00	40.21	36.97	66.45	29.80	96.85	53.05	49.47	<b>90.20</b>	69.83	61.44	2	
13	RMA-30	36.30	42.84	41.00	52.50	27.20	58.85	43.12	38.33	55.67	47.00	45.06	21	
<b>AVT-II</b>														
14	BGA-5	40.05	35.86	46.33	49.55	24.80	56.00	42.10	42.13	51.00	46.57	44.33	22	
15	SKNA-501	42.50	46.16	37.17	52.40	28.45	79.30	47.66	47.93	<b>85.13</b>	66.53	57.10	7	
16	SKNA-502	52.50	38.06	36.30	50.95	-	85.95	52.75	44.93	64.17	54.55	53.65	16	
17	SKNA-503	50.25	42.64	36.47	58.35	30.45	86.10	50.71	53.27	72.07	62.67	56.69	10	
18	SKNA-504	45.75	44.67	36.47	57.65	29.08	83.70	49.55	58.60	75.97	67.28	58.42	5	
19	GA-1 (C)	47.94	41.81	39.13	62.70	28.75	103.03	53.89	-	-	-	53.89	14	
20	GA-2 (C)	<b>51.08</b>	<b>42.89</b>	41.00	<b>69.15</b>	<b>29.20</b>	<b>103.40</b>	56.12	<b>54.60</b>	<b>76.20</b>	65.40	60.76	3	
21	Suvarna (C)	40.98	41.26	46.33	51.20	26.40	60.33	44.42	39.03	54.60	46.82	45.62	20	
22	BGA-2 (C)	46.65	40.57	<b>47.00</b>	54.50	25.90	64.08	46.45	42.40	52.07	47.23	46.84	19	
	<b>Mean</b>	<b>47.23</b>	<b>42.44</b>	<b>39.08</b>	<b>56.74</b>	<b>28.70</b>	<b>77.37</b>	<b>48.94</b>	<b>49.14</b>	<b>70.66</b>	<b>59.90</b>	<b>54.59</b>		
	<b>CD (0.05)</b>	<b>4.30</b>	<b>6.82</b>	<b>2.82</b>	<b>8.69</b>	<b>3.77</b>	<b>6.71</b>		<b>9.23</b>	<b>5.84</b>				
	<b>CV (%) Error</b>	<b>6.57</b>	<b>10.04</b>	<b>4.51</b>	<b>11.05</b>	<b>9.47</b>	<b>6.26</b>		<b>11.74</b>	<b>5.16</b>				

**Table 41. Seed weight (g/10 ml) in Advanced Varietal Trial (AVT) on grain amaranth : 2009-10 (Plains)**

S. No.	Genotypes	Rabi 2009-10							Kharif 2010			Overall mean	Rank	
		Bhubaneswar	Delhi	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Bangalore	Mettupalayam	Mean			
<b>AVT-I</b>														
1	IC415243	-	-	-	-	-	-	-	9.17	7.27	8.22	8.22	1	
2	IC415282	-	5.82	7.35	7.77	<b>8.22</b>	8.70	7.57	8.98	7.43	8.21	7.89	2	
3	IC415331	-	6.01	7.45	7.52	-	<b>8.82</b>	7.45	8.48	7.53	8.01	7.73	10	
4	IC415387	7.52	5.76	7.63	7.49	7.14	8.43	7.33	9.19	7.67	8.43	7.88	3	
5	IC515448	7.66	6.02	6.63	7.48	6.60	8.32	7.12	8.87	7.83	8.35	7.73	7	
6	BGA-6	7.61	5.98	6.58	7.53	6.07	8.30	7.01	8.17	7.60	7.89	7.45	19	
7	BGA-7	7.65	5.32	6.70	7.57	6.86	8.19	7.05	7.79	7.57	7.68	7.36	21	
8	BGA-10	7.56	5.73	<b>8.45</b>	7.73	6.39	8.30	7.36	8.90	7.50	8.20	7.78	6	
9	BGA-11	7.63	6.17	6.48	7.43	6.67	8.34	7.12	9.28	7.40	8.34	7.73	9	
10	BGA-12	7.64	5.77	5.53	7.80	6.17	8.18	6.85	8.84	7.33	8.09	7.47	18	
11	BGA-15	7.57	6.14	7.58	7.52	6.37	8.18	7.22	9.39	7.53	8.46	7.84	4	
12	RMA-22	7.63	6.15	5.55	7.59	7.03	8.44	7.06	8.85	7.63	8.24	7.65	13	
13	RMA-30	7.59	5.84	6.28	7.25	7.07	8.43	7.08	8.67	7.47	8.07	7.57	16	
<b>AVT-II</b>														
14	BGA-5	7.54	5.96	5.30	7.29	5.94	8.00	6.67	8.85	7.57	8.21	7.44	20	
15	SKNA-501	7.74	6.11	6.68	7.48	6.51	8.73	7.21	9.32	7.40	8.36	7.78	5	
16	SKNA-502	7.59	5.84	6.50	7.38	-	8.47	7.16	8.51	7.63	8.07	7.61	14	
17	SKNA-503	7.70	5.94	5.58	7.47	6.64	8.19	6.92	8.74	7.60	8.17	7.54	17	
18	SKNA-504	7.63	6.25	6.35	7.41	6.88	8.39	7.15	8.59	7.57	8.08	7.61	15	
19	GA-1 (C)	7.66	6.05	6.09	7.55	7.11	8.28	7.12	-	-	-	7.12	22	
20	GA-2 (C)	7.69	<b>6.09</b>	<b>6.35</b>	<b>7.56</b>	7.04	<b>8.62</b>	7.22	8.54	7.70	8.12	7.67	12	
21	Suvarna (C)	7.63	5.60	6.04	7.09	<b>7.23</b>	8.24	6.97	9.04	7.77	8.40	7.69	11	
22	BGA-2 (C)	<b>7.90</b>	5.76	5.50	7.15	7.11	8.29	6.95	<b>9.16</b>	<b>7.87</b>	8.51	7.73	8	
<b>Mean</b>		<b>7.64</b>	<b>5.92</b>	<b>6.50</b>	<b>7.48</b>	<b>6.79</b>	<b>8.37</b>	<b>7.12</b>	<b>8.82</b>	<b>7.57</b>	<b>8.19</b>	<b>7.66</b>		
<b>CD (0.05)</b>		<b>0.16</b>	<b>0.59</b>	<b>1.47</b>	<b>0.27</b>	<b>0.54</b>	<b>0.18</b>		<b>0.86</b>	<b>0.10</b>				
<b>CV (%) Error</b>		<b>1.52</b>	<b>6.25</b>	<b>16.31</b>	<b>2.64</b>	<b>5.70</b>	<b>1.54</b>		<b>6.06</b>	<b>0.86</b>				

**Table 42. Performance of rice bean entries in Initial Varietal Trial (IVT) during Kharif, 2010 (Plains)**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Per cent increase/decrease over check			
				Mean	Location	Rank	RBL-1	RBL-6	RBL-35	RBL-50
1	BRBM-107	108.89	6.00	9.72	8	7	9.20	-8.91	4.84	-9.93
2	BRBM-108	110.97	5.80	8.62	8	11	-3.11	-19.19	-6.98	-20.08
3	BRBM-109	110.44	6.06	9.45	8	8	6.21	-11.41	1.97	-12.40
4	BRBM-110	110.23	6.12	9.81	8	6	10.19	-8.09	5.79	-9.11
5	LRB-482	110.43	6.20	11.28	8	1	26.75	5.72	21.69	4.55
6	LRB-524	108.40	5.88	10.97	8	2	23.23	2.78	18.31	1.64
7	RRB-11	110.09	6.13	10.45	8	5	17.36	-2.10	12.68	-3.19
8	RBL-1 (C)	112.36	5.97	8.90	8	10	-	-16.62	-4.03	-17.55
9	RBL-6 (C)	110.08	5.92	10.67	8	4	19.93	-	15.15	-1.07
10	RBL-35 (C)	109.12	5.97	9.27	8	9	4.20	-13.08	-	-14.05
11	RBL-50 (C)	110.83	5.89	10.79	8	3	21.20	1.10	16.37	-
<b>Mean</b>		<b>110.17</b>	<b>5.99</b>	<b>9.99</b>						



**Table 43. Seed yield (q/ha) in Initial Varietal Trial (IVT) on rice bean : Kharif 2010 (Plains)**

S. No.	Genotypes	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank	Location	Frequency
1	BRBM-107	9.17	<b>16.20</b>	14.39	5.29	6.87	9.72	8.32	7.79	9.72	7	8	1/8
2	BRBM-108	8.43	<b>15.62</b>	6.00	5.48	7.55	7.64	9.37	8.89	8.62	11	8	1/8
3	BRBM-109	8.32	<b>15.86</b>	11.35	4.33	7.45	9.95	10.00	8.37	9.45	8	8	1/8
4	BRBM-110	11.85	<b>16.62</b>	6.50	5.53	9.01	9.26	10.10	9.59	9.81	6	8	1/8
5	LRB-482	13.91	13.66	12.56	4.75	<b>10.93</b>	13.66	10.53	10.25	11.28	1	8	1/8
6	LRB-524	9.48	11.46	13.04	4.90	<b>11.98</b>	<b>18.98</b>	9.27	8.63	10.97	2	8	2/8
7	RRB-11	13.87	13.77	14.94	4.88	8.20	7.41	10.27	10.23	10.45	5	8	0/8
8	RBL-1 (C)	10.29	9.02	7.21	<b>5.50</b>	<b>7.68</b>	12.50	8.60	10.37	8.90	10	8	
9	RBL-6 (C)	<b>13.09</b>	<b>12.96</b>	9.90	5.29	7.29	<b>15.74</b>	10.00	<b>11.12</b>	10.67	4	8	
10	RBL-35 (C)	11.12	11.92	10.59	5.49	<b>7.68</b>	9.72	9.83	7.84	9.27	9	8	
11	RBL-50 (C)	11.25	11.47	<b>14.85</b>	5.46	7.29	14.81	<b>10.33</b>	10.82	10.79	3	8	
	<b>Mean</b>	<b>10.98</b>	<b>13.51</b>	<b>11.03</b>	<b>5.17</b>	<b>8.36</b>	<b>11.76</b>	<b>9.69</b>	<b>9.45</b>	<b>9.99</b>			
	<b>CD (0.05)</b>	<b>1.37</b>	<b>1.82</b>	<b>1.43</b>	<b>1.12</b>	<b>1.34</b>	<b>2.76</b>	<b>0.38</b>	<b>1.84</b>				
	<b>CV (%) Error</b>	<b>7.32</b>	<b>7.89</b>	<b>7.60</b>	<b>15.00</b>	<b>11.15</b>	<b>13.77</b>	<b>2.31</b>	<b>3.50</b>				

**Table 44. Plant height (cm) in Initial Varietal Trial (IVT) on rice bean : Kharif 2010 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Faizabad	Delhi	Hisar	Ludhiana	Metupalayam	Ranchi	Mean	Rank
1	BRBM-107	179.07	35.17	94.90	77.67	82.05	145.03	149.27	61.37	115.63	104.46	5
2	BRBM-108	167.60	36.83	90.80	75.47	94.98	113.03	146.13	66.67	136.10	103.07	9
3	BRBM-109	169.40	38.17	88.00	70.27	86.50	118.05	151.77	63.33	125.87	101.26	11
4	BRBM-110	176.60	34.17	93.93	80.93	89.38	127.50	172.70	65.00	108.50	105.41	4
5	LRB-482	167.93	34.10	89.03	77.83	91.25	<b>165.03</b>	150.50	67.67	120.53	107.10	2
6	LRB-524	170.13	39.00	85.83	71.87	94.75	130.83	142.83	67.00	126.23	103.16	8
7	RRB-11	167.13	40.00	93.03	91.53	101.00	105.03	138.87	71.00	124.80	103.60	7
8	RBL-1 (C)	165.07	38.12	93.67	63.40	95.33	146.08	137.20	73.33	121.43	103.74	6
9	RBL-6 (C)	165.00	35.17	94.83	<b>79.33</b>	98.25	147.10	<b>161.27</b>	63.00	110.67	106.07	3
10	RBL-35 (C)	163.60	<b>41.17</b>	<b>95.60</b>	77.27	99.23	131.28	133.47	<b>75.67</b>	104.53	102.42	10
11	RBL-50 (C)	<b>165.20</b>	37.17	92.37	70.00	<b>101.13</b>	<b>148.33</b>	155.63	74.67	<b>133.67</b>	108.68	1
	<b>Mean</b>	<b>168.79</b>	<b>37.19</b>	<b>92.00</b>	<b>75.96</b>	<b>93.98</b>	<b>134.30</b>	<b>149.06</b>	<b>68.06</b>	<b>120.72</b>	<b>104.45</b>	
	<b>CD (0.05)</b>	<b>18.26</b>	<b>2.20</b>	<b>6.29</b>	<b>19.55</b>	<b>4.64</b>	<b>7.08</b>	<b>25.55</b>	<b>2.65</b>	<b>17.17</b>		
	<b>CV (%) Error</b>	<b>6.34</b>	<b>3.47</b>	<b>4.01</b>	<b>15.08</b>	<b>3.42</b>	<b>3.66</b>	<b>10.04</b>	<b>2.28</b>	<b>9.16</b>		

**Table 45. Days to 50% flowering in Initial Varietal Trial (IVT) on rice bean : Kharif 2010 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
1	BRBM-107	74.00	<b>43.00</b>	<b>41.67</b>	80.67	64.75	<b>59.00</b>	57.67	49.00	78.33	60.90	4
2	BRBM-108	74.67	47.00	49.67	82.00	60.00	<b>59.00</b>	58.00	50.33	78.00	62.07	9
3	BRBM-109	71.00	44.00	49.33	80.00	71.75	<b>60.00</b>	58.67	48.33	76.33	62.16	10
4	BRBM-110	74.00	<b>37.00</b>	<b>40.00</b>	82.00	73.50	<b>59.75</b>	60.33	49.00	77.67	61.47	6
5	LRB-482	67.33	48.00	<b>40.67</b>	79.33	68.75	67.75	60.00	48.67	74.33	61.65	8
6	LRB-524	60.67	<b>43.00</b>	<b>42.67</b>	76.33	71.25	<b>54.25</b>	59.67	50.33	67.33	58.39	1
7	RRB-11	74.33	45.67	<b>41.00</b>	81.33	61.00	64.25	62.33	48.67	75.67	61.58	7
8	RBL-1 (C)	62.33	48.00	<b>45.67</b>	87.00	<b>53.25</b>	66.00	59.00	48.00	81.00	61.14	5
9	RBL-6 (C)	65.33	47.00	48.33	77.33	64.75	<b>64.50</b>	58.67	<b>45.00</b>	67.33	59.81	3
10	RBL-35 (C)	<b>59.67</b>	<b>45.00</b>	46.67	<b>76.50</b>	67.00	67.50	<b>57.33</b>	48.00	<b>60.67</b>	58.70	2
11	RBL-50 (C)	69.33	49.00	50.33	79.67	63.75	71.00	58.33	49.67	78.67	63.31	11
	<b>Mean</b>	<b>68.42</b>	<b>45.15</b>	<b>45.09</b>	<b>80.20</b>	<b>65.43</b>	<b>63.00</b>	<b>59.09</b>	<b>48.64</b>	<b>74.12</b>	<b>61.02</b>	
	<b>CD (0.05)</b>	<b>2.36</b>	<b>1.81</b>	<b>2.18</b>	<b>3.24</b>	<b>4.12</b>	<b>4.04</b>	<b>0.98</b>	<b>0.71</b>	<b>5.85</b>		
	<b>CV (%) Error</b>	<b>2.02</b>	<b>2.35</b>	<b>2.84</b>	<b>2.37</b>	<b>4.37</b>	<b>4.45</b>	<b>0.97</b>	<b>0.85</b>	<b>3.98</b>		

**Table 46. Days to maturity in Initial Varietal Trial (IVT) on rice bean : Kharif 2010 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Metupalayam	Ranchi	Mean	Rank	Location	Frequency
1	BRBM-107	109.67	78.00	<b>86.00</b>	116.67	115.25	<b>152.75</b>	115.67	87.00	119.00	108.89	2	9	2/9
2	BRBM-108	109.67	82.00	93.33	118.67	118.75	<b>154.00</b>	114.00	88.00	120.33	110.97	10	9	1/9
3	BRBM-109	109.67	80.00	92.00	118.33	116.75	<b>153.50</b>	115.33	87.33	121.00	110.44	8	9	1/9
4	BRBM-110	109.67	<b>74.00</b>	<b>86.67</b>	120.00	116.50	159.25	113.33	88.67	124.00	110.23	6	9	2/9
5	LRB-482	109.33	82.00	93.33	117.00	113.00	<b>157.50</b>	115.00	87.67	119.00	110.43	7	9	1/9
6	LRB-524	109.33	81.00	89.00	116.67	107.00	160.25	112.00	88.33	112.00	108.40	1	9	0/9
7	RRB-11	109.67	81.00	<b>86.67</b>	117.33	112.50	161.00	114.00	88.00	120.67	110.09	5	9	1/9
8	RBL-1 (C)	109.33	84.00	94.00	120.00	117.00	<b>162.25</b>	113.00	88.67	123.00	112.36	11	9	
9	RBL-6 (C)	109.33	84.00	93.00	116.67	110.75	164.00	114.67	88.67	<b>109.67</b>	110.08	4	9	
10	RBL-35 (C)	<b>109.00</b>	<b>81.00</b>	<b>91.33</b>	<b>116.17</b>	<b>108.75</b>	164.50	<b>111.67</b>	<b>87.67</b>	112.00	109.12	3	9	
11	RBL-50 (C)	<b>109.00</b>	84.00	95.00	117.00	109.25	163.25	112.33	88.33	119.33	110.83	9	9	
	<b>Mean</b>	<b>109.42</b>	<b>81.00</b>	<b>90.94</b>	<b>117.68</b>	<b>113.23</b>	<b>159.30</b>	<b>113.73</b>	<b>88.03</b>	<b>118.18</b>	<b>110.17</b>			
	<b>CD (0.05)</b>	<b>0.58</b>	<b>3.26</b>	<b>2.71</b>	<b>3.86</b>	<b>3.62</b>	<b>3.78</b>	<b>1.42</b>	<b>0.92</b>	<b>6.13</b>				
	<b>CV (%) Error</b>	<b>0.31</b>	<b>2.36</b>	<b>1.75</b>	<b>1.92</b>	<b>2.21</b>	<b>1.65</b>	<b>0.73</b>	<b>0.61</b>	<b>3.31</b>				

**Table 47. 100 seed weight (g) in Initial Varietal Trial (IVT) on rice bean : Kharif 2010 (Plains)**

S. No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Delhi	Faizabad	Hisar	Ludhiana	Mettupalayam	Ranchi	Mean	Rank
1	BRBM-107	6.10	6.83	<b>5.67</b>	4.64	5.58	6.55	5.64	7.20	5.76	6.00	5
2	BRBM-108	5.73	5.55	5.49	4.40	5.40	6.65	6.10	7.40	5.47	5.80	11
3	BRBM-109	7.10	5.84	<b>5.95</b>	4.14	5.48	6.58	6.33	7.33	5.80	6.06	4
4	BRBM-110	6.53	6.51	5.25	4.75	5.30	6.68	6.19	7.53	6.30	6.12	3
5	LRB-482	7.37	6.81	5.05	4.61	4.88	<b>7.10</b>	5.83	7.63	6.55	6.20	1
6	LRB-524	6.93	5.69	4.99	4.30	4.93	<b>7.08</b>	5.53	7.37	6.12	5.88	10
7	RRB-11	7.17	5.97	<b>6.16</b>	4.68	5.28	6.68	6.13	7.43	5.68	6.13	2
8	RBL-1 (C)	6.43	5.50	<b>5.47</b>	<b>5.14</b>	5.30	<b>6.63</b>	<b>6.13</b>	<b>7.83</b>	5.33	5.97	6
9	RBL-6 (C)	5.80	6.07	5.26	4.81	5.43	6.43	5.99	7.47	6.04	5.92	8
10	RBL-35 (C)	<b>6.70</b>	5.75	5.13	4.64	<b>5.55</b>	6.40	6.03	7.57	5.96	5.97	7
11	RBL-50 (C)	5.63	<b>6.22</b>	4.89	4.62	5.38	6.60	5.88	7.37	<b>6.40</b>	5.89	9
	<b>Mean</b>	<b>6.50</b>	<b>6.07</b>	<b>5.39</b>	<b>4.61</b>	<b>5.32</b>	<b>6.67</b>	<b>5.98</b>	<b>7.47</b>	<b>5.95</b>	<b>5.99</b>	
	<b>CD (0.05)</b>	<b>0.95</b>	<b>1.09</b>	<b>0.15</b>	<b>0.64</b>	<b>0.37</b>	<b>0.14</b>	<b>0.39</b>	<b>0.08</b>	<b>0.24</b>		
	<b>CV (%) Error</b>	<b>8.59</b>	<b>10.51</b>	<b>1.60</b>	<b>8.17</b>	<b>4.84</b>	<b>1.47</b>	<b>3.83</b>	<b>0.62</b>	<b>0.59</b>		

**Table 48. Performance of faba bean entries in Initial Varietal Trial (IVT) during Rabi (2009-10) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Per cent increase/decrease over check
				Mean	Location	Rank	
1	NDF-9	147.67	24.77	21.29	5	1	15.22
2	HB (M)-1	145.03	26.39	20.23	6	3	9.48
3	HB-51	145.33	24.73	19.13	6	6	3.54
4	HB-82	146.57	25.41	19.96	6	5	8.02
5	HB-122	145.04	26.36	18.74	6	8	1.38
6	HB-119	145.24	24.94	20.39	6	2	10.33
7	HB-174	146.03	25.49	20.10	6	4	8.75
8	DFB-9-1	145.35	25.63	17.10	6	10	-7.46
9	DFB-9-2	144.19	26.06	18.74	6	7	1.42
10	Vikrant (c)	148.72	25.16	18.48	6	9	-
<b>Mean</b>		<b>145.92</b>	<b>25.49</b>	<b>19.42</b>			

**Table 49. Seed yield (q/ha) in Initial Varietal Trial (IVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
1	NDF-9	-	<b>23.43</b>	<b>16.54</b>	35.48	15.28	15.74	21.29	1	5	2/5
2	HB (M)-1	7.04	<b>24.91</b>	<b>16.28</b>	<b>47.53</b>	14.97	10.67	20.23	3	6	3/6
3	HB-51	8.54	17.21	<b>15.84</b>	<b>44.19</b>	15.51	13.52	19.13	6	6	2/6
4	HB-82	9.67	<b>22.96</b>	12.44	<b>42.46</b>	14.20	18.04	19.96	5	6	2/6
5	HB-122	10.50	<b>22.28</b>	11.64	37.67	12.81	17.52	18.74	8	6	1/6
6	HB-119	11.46	<b>26.29</b>	10.15	<b>45.48</b>	10.34	18.61	20.39	2	6	2/6
7	HB-174	10.50	<b>21.82</b>	10.41	<b>41.66</b>	<b>15.82</b>	20.37	20.10	4	6	3/6
8	DFB-9-1	9.46	13.80	12.43	34.16	14.51	18.26	17.10	10	6	0/6
9	DFB-9-2	<b>12.58</b>	16.93	11.99	35.62	13.04	22.30	18.74	7	6	1/6
10	Vikrant (c)	<b>10.25</b>	<b>17.90</b>	<b>13.30</b>	<b>36.87</b>	<b>14.20</b>	<b>18.35</b>	<b>18.48</b>	9	6	
	<b>Mean</b>	<b>10.00</b>	<b>20.75</b>	<b>13.10</b>	<b>40.11</b>	<b>14.07</b>	<b>17.34</b>	<b>19.42</b>			
	<b>CD (0.05)</b>	<b>1.31</b>	<b>2.10</b>	<b>1.92</b>	<b>2.29</b>	<b>1.50</b>	<b>4.92</b>				
	<b>CV (%) Error</b>	<b>9.00</b>	<b>5.91</b>	<b>10.12</b>	<b>3.94</b>	<b>6.21</b>	<b>16.56</b>				

**Table 50. Plant height (cm) in Initial Varietal Trial (IVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
1	NDF-9	-	72.27	74.25	103.98	<b>65.20</b>	83.67	79.87	5
2	HB (M)-1	66.90	81.87	78.25	112.15	<b>65.20</b>	98.20	83.76	2
3	HB-51	77.20	69.33	75.95	73.48	56.00	99.23	75.20	8
4	HB-82	75.50	77.07	76.10	90.90	56.00	99.27	79.14	7
5	HB-122	81.45	75.60	80.15	<b>117.30</b>	56.23	89.17	83.32	3
6	HB-119	81.20	81.80	79.25	115.98	58.20	89.53	84.33	1
7	HB-174	77.60	73.40	78.00	106.55	52.10	99.63	81.21	4
8	DFB-9-1	70.35	61.47	74.65	80.40	53.50	88.73	71.52	9
9	DFB-9-2	56.50	65.40	73.38	91.15	60.20	75.40	70.34	10
10	Vikrant (c)	<b>73.05</b>	<b>74.13</b>	<b>79.85</b>	<b>103.98</b>	<b>58.20</b>	<b>87.43</b>	<b>79.44</b>	6
	<b>Mean</b>	<b>73.31</b>	<b>73.23</b>	<b>76.98</b>	<b>99.59</b>	<b>58.08</b>	<b>91.03</b>	<b>78.81</b>	
	<b>CD (0.05)</b>	-	<b>20.66</b>	<b>2.30</b>	<b>12.09</b>	<b>5.66</b>	<b>14.20</b>		
	<b>CV (%) Error</b>	-	<b>16.45</b>	<b>2.06</b>	<b>8.37</b>	<b>5.68</b>	<b>9.10</b>		



**Table 51. Days to 50% flowering in Initial Varietal Trial (IVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
1	NDF-9	70.67	63.50	61.50	<b>79.00</b>	59.67	66.87	1
2	HB (M)-1	73.33	64.25	<b>56.00</b>	<b>78.33</b>	70.67	68.52	5
3	HB-51	73.67	63.50	57.25	<b>77.67</b>	69.33	68.28	4
4	HB-82	73.67	65.00	62.50	85.00	62.33	69.70	9
5	HB-122	73.67	<b>60.75</b>	63.25	<b>77.00</b>	64.00	67.73	2
6	HB-119	72.00	64.25	65.50	83.67	67.00	70.48	10
7	HB-174	73.33	61.50	64.75	<b>80.33</b>	66.00	69.18	8
8	DFB-9-1	67.33	64.75	65.50	<b>80.00</b>	63.67	68.25	3
9	DFB-9-2	70.00	68.00	66.50	<b>76.67</b>	63.33	68.90	7
10	Vikrant (c)	<b>69.67</b>	<b>65.00</b>	<b>61.75</b>	<b>83.67</b>	<b>63.33</b>	<b>68.68</b>	6
	<b>Mean</b>	<b>71.73</b>	<b>64.05</b>	<b>62.45</b>	<b>80.13</b>	<b>64.93</b>	<b>68.66</b>	
	<b>CD (0.05)</b>	<b>4.22</b>	<b>1.95</b>	<b>4.02</b>	<b>1.27</b>	<b>3.74</b>		
	<b>CV (%) Error</b>	<b>3.43</b>	<b>2.11</b>	<b>4.44</b>	<b>0.93</b>	<b>3.36</b>		

**Table 52. Days to maturity in Initial Varietal Trial (IVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
1	NDF-9	-	128.67	139.75	168.25	158.67	143.00	147.67	9	5	0/5
2	HB (M)-1	140.00	131.00	144.00	<b>151.50</b>	<b>158.00</b>	145.67	145.03	2	6	2/6
3	HB-51	138.00	129.67	145.75	<b>153.25</b>	<b>157.67</b>	147.67	145.33	5	6	2/6
4	HB-82	138.00	130.00	138.25	165.50	160.33	147.33	146.57	8	6	0/6
5	HB-122	138.00	130.33	<b>131.25</b>	168.00	<b>157.00</b>	145.67	145.04	3	6	2/6
6	HB-119	135.00	128.00	<b>132.50</b>	170.25	160.67	145.00	145.24	4	6	1/6
7	HB-174	139.00	127.33	142.50	165.00	158.67	143.67	146.03	7	6	0/6
8	DFB-9-1	138.00	<b>124.67</b>	138.00	168.75	159.67	143.00	145.35	6	6	1/6
9	DFB-9-2	134.00	129.00	141.25	168.25	158.00	<b>134.67</b>	144.19	1	6	1/6
10	Vikrant (c)	<b>140.00</b>	<b>130.33</b>	<b>143.50</b>	<b>172.50</b>	<b>160.67</b>	<b>145.33</b>	<b>148.72</b>	10	6	
	<b>Mean</b>	<b>137.78</b>	<b>128.90</b>	<b>139.68</b>	<b>165.13</b>	<b>158.93</b>	<b>144.10</b>	<b>145.92</b>			
	<b>CD (0.05)</b>	-	<b>3.32</b>	<b>2.80</b>	<b>3.39</b>	<b>0.79</b>	<b>2.33</b>				
	<b>CV (%) Error</b>	-	<b>1.50</b>	<b>1.38</b>	<b>1.42</b>	<b>0.29</b>	<b>0.94</b>				

**Table 53. 100 seed weight (g) in Initial Varietal Trial (IVT) on faba bean : Rabi (2009-10) - Plains**

<b>S. No.</b>	<b>Genotypes</b>	<b>Delhi</b>	<b>Faizabad</b>	<b>Hisar</b>	<b>Ranchi</b>	<b>Mean</b>	<b>Rank</b>
1	NDF-9	21.55	27.13	24.40	26.02	24.77	9
2	HB (M)-1	21.32	27.38	27.20	29.67	26.39	1
3	HB-51	20.05	25.38	24.85	28.65	24.73	10
4	HB-82	21.47	26.25	27.43	26.49	25.41	6
5	HB-122	22.79	27.25	28.00	27.39	26.36	2
6	HB-119	20.43	26.75	24.60	27.97	24.94	8
7	HB-174	23.42	27.00	25.50	26.03	25.49	5
8	DFB-9-1	19.36	25.73	26.48	30.95	25.63	4
9	DFB-9-2	27.29	25.35	29.55	22.05	26.06	3
10	Vikrant (c)	<b>21.53</b>	<b>26.98</b>	<b>24.78</b>	<b>27.34</b>	<b>25.16</b>	7
	<b>Mean</b>	<b>21.92</b>	<b>26.52</b>	<b>26.28</b>	<b>27.26</b>	<b>25.49</b>	
	<b>CD (0.05)</b>	<b>4.02</b>	<b>0.86</b>	<b>0.79</b>	<b>2.48</b>		
	<b>CV (%) Error</b>	<b>10.68</b>	<b>2.23</b>	<b>2.08</b>	<b>5.32</b>		

**Table 54. Performance of faba bean entries in Advanced Varietal Trial (AVT) during Rabi (2009-10) - Plains**

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Per cent increase/decrease over check	
				Mean	Location	Rank		
<b>AVT-I</b>								
1	EC117792	143.57	24.71	19.92	6	11	-0.81	
2	IC366272	145.86	25.26	21.44	6	4	6.77	
3	HB-062	142.64	26.31	19.30	6	15	-3.91	
4	HB-070	143.25	24.35	21.49	6	3	7.05	
5	HB-617	145.18	24.81	20.53	6	7	2.24	
6	HB-645	143.72	25.45	21.31	6	5	6.11	
7	HB-064	143.33	25.09	21.26	6	6	5.88	
<b>AVT-II</b>								
8	HB-603	142.25	24.66	20.12	6	8	0.21	
9	HB-604	143.06	25.21	20.12	6	9	0.18	
10	HB-608	142.69	25.50	21.53	6	2	7.22	
11	HB-611	142.19	24.97	19.75	6	14	-1.63	
12	HB-613	142.31	25.79	19.77	6	13	-1.53	
13	IGSV 10-2	143.68	26.15	19.91	6	12	-0.85	
14	NDF-1	145.03	24.95	19.00	5	16	-5.37	
15	NDF-4	143.75	25.34	22.21	5	1	10.59	
16	Vikrant (c)	144.14	25.11	20.08	6	10	-	
<b>Mean</b>		<b>143.54</b>	<b>25.23</b>	<b>20.48</b>				

**Table 55. Seed yield (q/ha) in Advanced Varietal Trial (AVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
<b>AVT-I</b>											
1	EC117792	11.11	<b>20.79</b>	12.60	36.98	15.12	22.90	19.92	11	6	1/6
2	IC366272	<b>13.31</b>	<b>29.49</b>	10.92	35.67	18.21	21.04	21.44	4	6	2/6
3	HB-062	6.67	<b>20.28</b>	14.82	<b>42.31</b>	10.03	21.67	19.30	15	6	2/6
4	HB-070	10.28	<b>23.75</b>	14.23	<b>42.89</b>	14.74	23.08	21.49	3	6	2/6
5	HB-617	12.64	<b>23.70</b>	11.08	<b>43.23</b>	10.34	22.19	20.53	7	6	2/6
6	HB-645	12.78	<b>22.30</b>	12.60	<b>43.75</b>	13.97	22.44	21.31	5	6	2/6
7	HB-064	11.86	<b>21.31</b>	12.48	<b>42.57</b>	16.44	22.90	21.26	6	6	2/6
<b>AVT-II</b>											
8	HB-603	<b>14.17</b>	18.88	12.02	<b>41.79</b>	13.73	20.14	20.12	8	6	2/6
9	HB-604	11.67	16.25	14.35	<b>44.53</b>	14.20	19.69	20.12	9	6	1/6
10	HB-608	12.50	<b>25.17</b>	12.83	<b>44.68</b>	13.58	20.42	21.53	2	6	2/6
11	HB-611	11.81	16.22	11.67	<b>43.23</b>	14.35	21.25	19.75	14	6	1/6
12	HB-613	10.89	16.66	14.93	<b>42.52</b>	12.42	21.21	19.77	13	6	1/6
13	IGSV 10-2	10.11	<b>25.38</b>	14.58	36.09	13.97	19.33	19.91	12	6	1/6
14	NDF-1	-	10.57	18.08	32.19	11.73	22.44	19.00	16	5	0/5
15	NDF-4	-	<b>22.97</b>	17.62	34.06	15.97	20.42	22.21	1	5	1/5
16	Vikrant (c)	<b>10.89</b>	<b>17.90</b>	<b>17.15</b>	<b>36.70</b>	<b>16.20</b>	<b>21.64</b>	<b>20.08</b>	10	6	
	<b>Mean</b>	<b>11.48</b>	<b>20.73</b>	<b>13.87</b>	<b>40.20</b>	<b>14.06</b>	<b>21.42</b>	<b>20.48</b>			
	<b>CD (0.05)</b>	<b>2.34</b>	<b>1.51</b>	<b>1.83</b>	<b>1.27</b>	<b>2.18</b>	<b>2.36</b>				
	<b>CV (%) Error</b>	<b>14.29</b>	<b>4.55</b>	<b>7.93</b>	<b>2.28</b>	<b>9.33</b>	<b>7.93</b>				

**Table 56. Plant height (cm) in Advanced Varietal Trial (AVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
<b>AVT-I</b>									
1	EC117792	81.75	75.80	<b>82.17</b>	90.25	55.20	83.70	78.14	11
2	IC366272	92.60	75.60	77.67	87.05	61.20	84.08	79.70	6
3	HB-062	94.45	75.67	78.67	88.15	<b>68.20</b>	<b>95.20</b>	83.39	2
4	HB-070	94.50	75.13	<b>82.00</b>	92.25	46.00	81.18	78.51	10
5	HB-617	95.55	68.73	<b>82.13</b>	87.10	53.10	<b>90.75</b>	79.56	7
6	HB-645	97.40	74.53	79.33	<b>94.50</b>	54.50	88.63	81.48	3
7	HB-064	96.25	76.33	77.87	<b>100.33</b>	65.00	86.60	83.73	1
<b>AVT-II</b>									
8	HB-603	95.00	61.40	75.87	71.25	61.20	90.15	75.81	14
9	HB-604	102.60	70.67	75.70	72.43	64.20	87.68	78.88	8
10	HB-608	101.30	76.07	81.33	77.13	65.30	85.00	81.02	5
11	HB-611	96.40	63.47	79.13	75.20	61.00	<b>91.15</b>	77.73	12
12	HB-613	98.70	68.73	80.47	80.10	<b>71.00</b>	87.65	81.11	4
13	IGSV 10-2	96.70	75.00	81.20	58.48	<b>75.20</b>	85.95	78.75	9
14	NDF-1	-	73.93	<b>82.33</b>	58.48	63.00	89.73	73.49	16
15	NDF-4	-	74.27	81.00	66.93	64.00	82.83	73.80	15
16	Vikrant (c)	<b>84.50</b>	<b>74.13</b>	<b>79.33</b>	<b>84.69</b>	<b>60.50</b>	<b>82.25</b>	<b>77.57</b>	13
	<b>Mean</b>	<b>94.84</b>	<b>72.47</b>	<b>79.76</b>	<b>80.27</b>	<b>61.79</b>	<b>87.03</b>	<b>78.92</b>	
	<b>CD (0.05)</b>	-	<b>12.44</b>	<b>2.59</b>	<b>8.27</b>	<b>7.09</b>	<b>7.98</b>		
	<b>CV (%) Error</b>	-	<b>10.72</b>	<b>1.95</b>	<b>7.44</b>	<b>6.89</b>	<b>6.62</b>		

**Table 57. Days to 50% flowering in Advanced Varietal Trial (AVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
<b>AVT-I</b>								
1	EC117792	74.67	<b>57.00</b>	75.50	83.67	61.50	70.47	16
2	IC366272	73.00	60.00	74.50	83.67	<b>55.00</b>	69.23	15
3	HB-062	72.00	<b>55.00</b>	66.75	<b>79.00</b>	<b>58.00</b>	66.15	7
4	HB-070	72.33	<b>58.00</b>	65.50	<b>79.67</b>	61.25	67.35	11
5	HB-617	72.67	60.00	63.50	<b>79.67</b>	<b>56.25</b>	66.42	8
6	HB-645	70.33	61.00	66.25	<b>79.67</b>	<b>58.50</b>	67.15	10
7	HB-064	74.67	60.33	63.25	<b>79.33</b>	60.75	67.67	13
<b>AVT-II</b>								
8	HB-603	71.33	<b>58.00</b>	62.00	<b>78.67</b>	<b>55.25</b>	65.05	3
9	HB-604	72.33	<b>56.00</b>	64.00	<b>79.00</b>	<b>57.25</b>	65.72	4
10	HB-608	71.33	61.00	63.75	<b>77.67</b>	<b>56.25</b>	66.00	6
11	HB-611	69.67	<b>53.33</b>	67.25	<b>78.33</b>	<b>54.75</b>	64.67	1
12	HB-613	70.67	<b>55.00</b>	64.00	<b>80.00</b>	<b>55.00</b>	64.93	2
13	IGSV 10-2	70.00	<b>55.33</b>	69.00	84.00	<b>58.50</b>	67.37	12
14	NDF-1	70.00	60.00	67.00	<b>78.67</b>	<b>58.50</b>	66.83	9
15	NDF-4	71.33	<b>55.00</b>	69.25	<b>79.33</b>	<b>54.75</b>	65.93	5
16	Vikrant (c)	<b>69.67</b>	<b>60.33</b>	<b>69.50</b>	<b>83.67</b>	<b>61.75</b>	<b>68.98</b>	14
	<b>Mean</b>	<b>71.63</b>	<b>57.83</b>	<b>66.94</b>	<b>80.25</b>	<b>57.70</b>	<b>66.87</b>	
	<b>CD (0.05)</b>	<b>4.09</b>	<b>1.79</b>	<b>3.09</b>	<b>0.99</b>	<b>3.02</b>		
	<b>CV (%) Error</b>	<b>3.57</b>	<b>1.85</b>	<b>3.33</b>	<b>0.74</b>	<b>3.78</b>		

**Table 58. Days to maturity in Advanced Varietal Trial (AVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
<b>AVT-I</b>											
1	EC117792	136.00	129.33	131.00	167.50	<b>159.33</b>	138.25	143.57	9	6	1/6
2	IC366272	138.00	129.67	132.00	175.50	<b>160.00</b>	140.00	145.86	16	6	1/6
3	HB-062	143.00	128.33	128.00	<b>156.75</b>	<b>158.00</b>	141.75	142.64	4	6	2/6
4	HB-070	142.00	127.00	131.00	<b>160.50</b>	<b>158.00</b>	141.00	143.25	7	6	2/6
5	HB-617	140.00	129.00	129.67	177.25	<b>158.67</b>	136.50	145.18	15	6	1/6
6	HB-645	138.00	128.00	126.00	171.75	160.33	138.25	143.72	11	6	0/6
7	HB-064	143.00	127.33	<b>125.00</b>	167.75	<b>156.67</b>	140.25	143.33	8	6	2/6
<b>AVT-II</b>											
8	HB-603	138.00	127.33	130.00	163.50	<b>156.67</b>	138.00	142.25	2	6	1/6
9	HB-604	141.00	130.33	132.67	<b>158.75</b>	<b>156.33</b>	139.25	143.06	6	6	2/6
10	HB-608	141.00	128.33	131.00	<b>160.50</b>	<b>156.33</b>	139.00	142.69	5	6	2/6
11	HB-611	138.00	127.67	136.00	<b>159.50</b>	<b>157.00</b>	<b>135.00</b>	142.19	1	6	3/6
12	HB-613	137.00	<b>126.33</b>	137.00	<b>156.50</b>	<b>159.00</b>	138.00	142.31	3	6	3/6
13	IGSV 10-2	139.00	128.67	<b>125.00</b>	168.75	160.67	140.00	143.68	10	6	1/6
14	NDF-1	-	128.67	131.00	166.00	<b>158.00</b>	141.50	145.03	14	5	1/5
15	NDF-4	-	128.00	128.33	166.50	<b>157.67</b>	138.25	143.75	12	5	1/5
16	Vikrant (c)	<b>139.00</b>	<b>130.33</b>	<b>127.00</b>	<b>167.50</b>	<b>161.00</b>	<b>140.00</b>	<b>144.14</b>	13	6	
	<b>Mean</b>	<b>139.50</b>	<b>128.40</b>	<b>130.04</b>	<b>165.28</b>	<b>158.35</b>	<b>139.06</b>	<b>143.54</b>			
	<b>CD (0.05)</b>		<b>3.83</b>	<b>1.89</b>	<b>4.63</b>	<b>0.83</b>	<b>3.00</b>				
	<b>CV (%) Error</b>		<b>1.86</b>	<b>0.87</b>	<b>2.02</b>	<b>0.31</b>	<b>1.56</b>				



**Table 59. 100 seed weight (g) in Advanced Varietal Trial (AVT) on faba bean : Rabi (2009-10) - Plains**

S. No.	Genotypes	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
<b>AVT-I</b>								
1	EC117792	20.71	26.40	22.98	27.30	26.15	24.71	14
2	IC366272	22.46	27.50	22.63	25.80	27.90	25.26	7
3	HB-062	24.14	24.60	<b>26.50</b>	<b>28.20</b>	28.12	26.31	1
4	HB-070	22.28	26.07	<b>25.20</b>	22.10	26.10	24.35	16
5	HB-617	20.79	26.00	<b>25.38</b>	25.90	26.01	24.81	13
6	HB-645	21.38	27.50	<b>26.70</b>	26.30	25.39	25.45	5
7	HB-064	20.96	<b>28.03</b>	24.95	25.20	26.29	25.09	10
<b>AVT-II</b>								
8	HB-603	22.15	25.50	<b>25.20</b>	24.90	25.56	24.66	15
9	HB-604	21.53	25.83	<b>26.05</b>	25.90	26.73	25.21	8
10	HB-608	21.73	25.50	<b>26.58</b>	26.30	27.42	25.50	4
11	HB-611	21.82	26.40	<b>26.65</b>	24.40	25.59	24.97	11
12	HB-613	20.77	<b>27.87</b>	<b>29.60</b>	23.20	27.51	25.79	3
13	IGSV 10-2	24.39	27.60	<b>25.30</b>	24.90	28.57	26.15	2
14	NDF-1	20.37	<b>28.60</b>	24.48	24.80	26.50	24.95	12
15	NDF-4	22.87	26.73	<b>25.33</b>	25.60	26.19	25.34	6
16	Vikrant (c)	<b>21.53</b>	<b>26.47</b>	<b>24.59</b>	<b>25.40</b>	<b>27.55</b>	<b>25.11</b>	9
	<b>Mean</b>	<b>21.87</b>	<b>26.66</b>	<b>25.51</b>	<b>25.39</b>	<b>26.72</b>	<b>25.23</b>	
	<b>CD (0.05)</b>	<b>3.53</b>	<b>1.22</b>	<b>0.39</b>	<b>2.04</b>	<b>2.25</b>		
	<b>CV (%) Error</b>	<b>10.09</b>	<b>2.76</b>	<b>1.10</b>	<b>4.81</b>	<b>6.07</b>		

**Table 60. Performance of kalingada entries in Initial Varietal Trial (IVT) during Kharif 2010 (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	
1	SKNK-901	8.80	3.48	2	3	-3.18
2	SKNK-902	8.67	3.46	2	4	-3.75
3	SKNK-903	10.35	3.98	2	1	10.80
4	MGPK-1	9.73	3.37	2	5	-6.02
5	MGPK-11	4.08	0.79	2	7	-78.13
6	MGPK-21	5.07	0.74	2	8	-79.47
7	MGPK-32	10.32	3.11	2	6	-13.39
8	MGPM-1	3.33	0.30	1	9	-91.75
9	GK-1 (C)	8.92	3.59	2	2	-
<b>Mean</b>		<b>7.70</b>	<b>2.53</b>			

**Table 61. Different characters of kalingada entries in Initial Varietal Trial (IVT) at various locations during Kharif 2010 (Plains)**

S. No.	Genotypes	Seed yield (q/ha)						Fruit yield (q/ha)					
		Mandor	S.K. Nagar	Mean	Rank	Location	Frequency	Mandor	S.K. Nagar	Mean	Rank	Location	Frequency
1	SKNK-901	<b>2.74</b>	4.21	3.48	3	2	1/2	<b>108.15</b>	115.55	111.85	2	2	1/2
2	SKNK-902	1.28	5.63	3.46	4	2	0/2	46.30	<b>167.78</b>	107.04	6	2	1/2
3	SKNK-903	2.39	5.57	3.98	1	2	0/2	76.85	<b>137.78</b>	107.31	3	2	1/2
4	MGPK-1	1.81	4.93	3.37	5	2	0/2	82.96	131.11	107.04	5	2	0/2
5	MGPK-11	1.15	0.42	0.79	7	2	0/2	54.63	15.56	35.09	8	2	0/2
6	MGPK-21	0.57	0.90	0.74	8	2	0/2	28.52	45.56	37.04	7	2	0/2
7	MGPK-32	2.35	3.87	3.11	6	2	0/2	89.26	<b>151.11</b>	120.18	1	2	1/2
8	MGPM-1	0.30	-	0.30	9	1	0/1	20.19	-	20.19	9	1	0/1
9	GK-1 (C)	1.85	5.33	3.59	2	2		90.74	123.33	107.04	4	2	
	<b>Mean</b>	<b>1.60</b>	<b>3.86</b>	<b>2.53</b>				<b>66.40</b>	<b>110.97</b>	<b>83.64</b>			
	<b>CD (0.05)</b>	<b>0.74</b>	<b>1.41</b>					<b>9.42</b>	<b>9.81</b>				
	<b>CV (%) Error</b>	<b>26.72</b>	<b>21.07</b>					<b>8.20</b>	<b>5.11</b>				

**Table 62. Different characters of kalingada entries in Initial Varietal Trial (IVT) at various locations during Kharif 2010 (Plains)**

S. No.	Genotypes	Fruit diameter (cm)				100-seed weight (g)				Number of fruits per plant			
		Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank
1	SKNK-901	10.28	10.79	10.53	4	4.74	7.82	6.28	1	9.43	8.16	8.80	5
2	SKNK-902	9.63	<b>11.63</b>	10.63	1	3.94	7.02	5.48	6	6.67	10.68	8.67	6
3	SKNK-903	8.83	10.74	9.79	8	5.26	7.08	6.17	2	10.33	10.38	10.35	1
4	MGPK-1	9.75	11.17	10.46	6	4.07	6.53	5.30	7	10.40	9.05	9.73	3
5	MGPK-11	10.36	10.72	10.54	3	3.36	6.01	4.69	8	5.67	2.50	4.08	8
6	MGPK-21	9.17	10.08	9.63	9	4.17	7.48	5.83	4	5.10	5.05	5.07	7
7	MGPK-32	9.33	<b>11.85</b>	10.59	2	4.62	6.81	5.72	5	9.77	10.87	10.32	2
8	MGPM-1	9.79	-	9.79	7	4.45	-	4.45	9	3.33	-	3.33	9
9	GK-1 (C)	10.38	10.60	10.49	5	4.72	7.55	6.14	3	7.23	10.61	8.92	4
	<b>Mean</b>	<b>9.72</b>	<b>10.95</b>	<b>10.27</b>		<b>4.37</b>	<b>7.04</b>	<b>5.56</b>		<b>7.55</b>	<b>8.41</b>	<b>7.70</b>	
	<b>CD (0.05)</b>	<b>1.23</b>	<b>0.79</b>			<b>0.88</b>	<b>0.57</b>			<b>4.24</b>	<b>3.23</b>		
	<b>CV (%) Error</b>	<b>7.31</b>	<b>7.25</b>			<b>11.65</b>	<b>4.70</b>			<b>32.44</b>	<b>22.16</b>		

**Table 63. Performance of kalingada entries in Advanced Varietal Trial (AVT) during Kharif 2010 (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	
<b>AVT-I</b>						
1	SKNK-802	8.41	3.69	2	3	15.03
2	SKNK-805	9.66	3.84	2	1	19.53
3	SKNK-806	8.46	3.80	2	2	18.26
4	SKNK-807	8.95	3.64	2	4	13.53
<b>AVT-II</b>						
5	SKNK-711	7.87	2.43	2	7	-24.31
6	SKNK-712	8.71	2.92	2	6	-9.08
7	GK-1 (C)	7.58	3.21	2	5	-
<b>Mean</b>		<b>8.52</b>	<b>3.36</b>			

**Table 64. Different characters of kalingada entries in Advanced Varietal Trial (AVT) at various locations during Kharif 2010 (Plains)**

S. No.	Genotypes	Seed yield (q/ha)						Fruit yield (q/ha)					
		Mandor	S.K. Nagar	Mean	Rank	Location	Frequency	Mandor	S.K. Nagar	Mean	Rank	Location	Frequency
<b>AVT-I</b>													
1	SKNK-802	2.48	4.90	3.69	3	2	0/2	79.63	114.07	96.85	4	2	0/2
2	SKNK-805	<b>2.89</b>	4.79	3.84	1	2	1/2	87.04	<b>125.18</b>	106.11	2	2	1/2
3	SKNK-806	1.81	<b>5.78</b>	3.80	2	2	1/2	80.56	<b>143.70</b>	112.13	1	2	1/2
4	SKNK-807	2.41	4.88	3.64	4	2	0/2	75.37	110.37	92.87	5	2	0/2
<b>AVT-II</b>													
5	SKNK-711	1.63	3.23	2.43	7	2	0/2	60.93	80.74	70.83	7	2	0/2
6	SKNK-712	1.33	4.50	2.92	6	2	0/2	59.26	112.59	85.93	6	2	0/2
7	GK-1 (C)	1.85	4.56	3.21	5	2		90.74	107.41	99.07	3	2	
	<b>Mean</b>	<b>2.06</b>	<b>4.66</b>	<b>3.36</b>				<b>76.22</b>	<b>113.44</b>	<b>94.83</b>			
	<b>CD (0.05)</b>	<b>1.01</b>	<b>1.10</b>					<b>8.46</b>	<b>7.76</b>				
	<b>CV (%) Error</b>	<b>27.64</b>	<b>13.24</b>					<b>6.24</b>	<b>3.85</b>				

**Table 65. Different characters of kalingada entries in Advanced Varietal Trial (AVT) at various locations during kharif 2010 (Plains)**

S. No.	Genotypes	Fruit diameter (cm)				100-seed weight (g)				Number of fruits per plant			
		Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank
<b>AVT-I</b>													
1	SKNK-802	10.36	10.53	10.44	4	4.79	7.22	6.00	5	8.73	8.09	8.41	5
2	SKNK-805	9.72	10.62	10.17	7	5.24	6.45	5.84	6	8.83	10.48	9.66	1
3	SKNK-806	10.55	11.13	10.84	1	5.18	7.21	6.20	2	7.90	9.02	8.46	4
4	SKNK-807	10.34	10.91	10.63	3	4.83	7.27	6.05	3	7.93	9.97	8.95	2
<b>AVT-II</b>													
5	SKNK-711	9.33	11.04	10.19	6	<b>5.58</b>	7.38	6.48	1	7.60	8.14	7.87	6
6	SKNK-712	9.69	11.08	10.39	5	3.95	7.47	5.71	7	8.37	9.06	8.71	3
7	GK-1 (C)	10.38	11.13	10.75	2	4.72	7.31	6.02	4	7.23	7.94	7.58	7
	<b>Mean</b>	<b>10.05</b>	<b>10.92</b>	<b>10.49</b>		<b>4.90</b>	<b>7.19</b>	<b>6.04</b>		<b>8.09</b>	<b>8.96</b>	<b>8.52</b>	
	<b>CD (0.05)</b>	<b>1.05</b>	<b>0.59</b>			<b>0.58</b>	<b>0.31</b>			<b>4.57</b>	<b>2.71</b>		
	<b>CV (%) Error</b>	<b>5.87</b>	<b>5.32</b>			<b>6.61</b>	<b>2.42</b>			<b>31.72</b>	<b>16.97</b>		

**Table 66. Performance of jatropha entries in Advanced Varietal Trial (AVT-II) during Kharif 2010 (Plains)**

S. No.	Genotypes	Age of plant (years)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Per cent increase / decrease over check
				Mean	Location	Rank	
1	Hansaraj	8	47.63	13.81	2	7	-26.33
2	ISJ-1	7	52.24	14.14	2	6	-24.59
3	JH-1	8	56.30	18.75	2	1	0.02
4	Phule-1	7	49.21	14.54	2	5	-22.44
5	S.K. Nagar (Big)	8	54.06	14.74	2	4	-21.36
6	SKNJ-4	7	50.13	13.44	2	8	-28.31
7	Urlikanchan	8	53.11	15.34	2	3	-18.18
8	TNMC-7	3	49.48	6.44	1	10	-65.63
9	TNMC-25	3	49.43	4.51	1	11	-75.97
10	JH-2	3	61.48	8.85	1	9	-52.80
11	Chhatrapati (C)	8	52.37	18.75	2	2	-
<b>Mean</b>			<b>52.31</b>	<b>13.03</b>			



**Table 67. Seed yield (q/ha) in Advanced Varietal Trial (AVT-II) on jatropha : Kharif 2010 (Plains)**

S. No.	Genotypes	Age of plant (years)	Bhubaneswar	Hisar	Mean	Rank	Location	Frequency
1	Hansaraj	8	18.83	8.79	13.81	7	2	0/2
2	ISJ-1	7	19.08	9.20	14.14	6	2	0/2
3	JH-1	8	20.25	<b>17.26</b>	18.75	1	2	1/2
4	Phule-1	7	22.17	6.92	14.54	5	2	0/2
5	S.K. Nagar (Big)	8	19.17	10.32	14.74	4	2	0/2
6	SKNJ-4	7	19.50	7.38	13.44	8	2	0/2
7	Urlikanchan	8	20.33	10.35	15.34	3	2	0/2
8	TNMC-7	3	-	6.44	6.44	10	1	0/1
9	TNMC-25	3	-	4.51	4.51	11	1	0/1
10	JH-2	3	-	8.85	8.85	9	1	0/1
11	Chhatrapati (C)	8	24.83	12.67	18.75	2	2	
	<b>Mean</b>		<b>20.52</b>	<b>9.34</b>	<b>13.03</b>			
	<b>CD (0.05)</b>		<b>2.32</b>	<b>0.91</b>				
	<b>CV (%) Error</b>		<b>6.44</b>	<b>6.76</b>				

**Table 68. Fruit yield (q/ha) in Advanced Varietal Trial (AVT-II) on jatropha : Kharif 2010 (Plains)**

S. No.	Genotypes	Age of plant (years)	Bhubaneswar	Hisar	Mean	Rank	Location	Frequency
1	Hansaraj	8	31.92	64.69	48.30	9	2	0/2
2	ISJ-1	7	28.08	76.74	52.41	4	2	0/2
3	JH-1	8	32.67	<b>134.58</b>	83.62	2	2	1/2
4	Phule-1	7	37.42	52.59	45.00	10	2	0/2
5	S.K. Nagar (Big)	8	32.75	68.19	50.47	5	2	0/2
6	SKNJ-4	7	32.75	64.85	48.80	8	2	0/2
7	Urlikanchan	8	34.08	66.53	50.31	6	2	0/2
8	TNMC-7	3	-	49.13	49.13	7	1	0/1
9	TNMC-25	3	-	36.16	36.16	11	1	0/1
10	JH-2	3	-	89.13	89.13	1	1	0/1
11	Chhatrapati (C)	8	42.17	89.53	65.85	3	2	
	<b>Mean</b>		<b>33.98</b>	<b>72.01</b>	<b>56.29</b>			
	<b>CD (0.05)</b>		<b>3.46</b>	<b>9.86</b>				
	<b>CV (%) Error</b>		<b>5.80</b>	<b>9.49</b>				

**Table 69. Plant height (cm) in Advanced Varietal Trial (AVT-II) on jatropha : Kharif 2010 (Plains)**

S. No.	Genotypes	Age of plant (years)	Bhubaneswar	Hisar	Mean	Rank
1	Hansaraj	8	246.27	493.30	369.78	5
2	ISJ-1	7	<b>269.60</b>	465.58	367.59	6
3	JH-1	8	246.67	563.00	404.83	2
4	Phule-1	7	242.33	435.90	339.12	9
5	S.K. Nagar (Big)	8	229.47	546.40	387.93	4
6	SKNJ-4	7	255.60	458.88	357.24	7
7	Urlikanchan	8	245.30	539.78	392.54	3
8	TNMC-7	3	-	265.60	265.60	11
9	TNMC-25	3	-	297.75	297.75	10
10	JH-2	3	-	352.85	352.85	8
11	Chhatrapati (C)	8	254.23	563.15	408.69	1
	<b>Mean</b>		<b>248.68</b>	<b>452.93</b>	<b>358.54</b>	
	<b>CD (0.05)</b>		<b>11.24</b>	<b>14.88</b>		
	<b>CV (%) Error</b>		<b>2.58</b>	<b>2.28</b>		

**Table 70. Number of primary branches per plant in Advanced Varietal Trial (AVT-II) on jatropha : Kharif 2010 (Plains)**

S. No.	Genotypes	Age of plant (years)	Bhubaneswar	Hisar	Mean	Rank
1	Hansaraj	8	44.07	24.00	34.03	4
2	ISJ-1	7	43.73	14.75	29.24	8
3	JH-1	8	42.07	<b>35.75</b>	38.91	2
4	Phule-1	7	43.33	15.50	29.42	7
5	S.K. Nagar (Big)	8	44.07	25.50	34.78	3
6	SKNJ-4	7	42.33	21.00	31.67	6
7	Urlikanchan	8	44.33	23.25	33.79	5
8	TNMC-7	3	-	13.00	13.00	11
9	TNMC-25	3	-	13.25	13.25	10
10	JH-2	3	-	22.50	22.50	9
11	Chhatrapati (C)	8	54.13	26.25	40.19	1
	<b>Mean</b>		<b>44.76</b>	<b>21.34</b>	<b>29.16</b>	
	<b>CD (0.05)</b>		<b>6.26</b>	<b>3.25</b>		
	<b>CV (%) Error</b>		<b>7.97</b>	<b>10.55</b>		

**Table 71. 100 seed weight (g) in Advanced Varietal Trial (AVT-II) on jatropha : Kharif 2010 (Plains)**

S. No.	Genotypes	Age of plant (years)	Bhubaneswar	Hisar	Mean	Rank
1	Hansaraj	8	44.50	50.75	47.63	11
2	ISJ-1	7	<b>58.71</b>	45.78	52.24	6
3	JH-1	8	50.23	<b>62.38</b>	56.30	2
4	Phule-1	7	<b>51.69</b>	46.73	49.21	10
5	S.K. Nagar (Big)	8	<b>53.21</b>	54.90	54.06	3
6	SKNJ-4	7	<b>54.19</b>	46.08	50.13	7
7	Urlikanchan	8	<b>53.71</b>	52.50	53.11	4
8	TNMC-7	3	-	49.48	49.48	8
9	TNMC-25	3	-	49.43	49.43	9
10	JH-2	3	-	<b>61.48</b>	61.48	1
11	Chhatrapati (C)	8	49.43	55.30	52.37	5
	<b>Mean</b>		<b>51.96</b>	<b>52.25</b>	<b>52.31</b>	
	<b>CD (0.05)</b>		<b>1.31</b>	<b>0.67</b>		
	<b>CV (%) Error</b>		<b>1.44</b>	<b>0.89</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, Palampur 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 have been presented in Table 72 and the range and means in Table 73.

At GBPUA&T, Ranichauri a set of 50 genotypes alongwith four checks were evaluated for 9 characters. The longest inflorescence (67.20 cm) was recorded in the genotype IC041983 followed by IC041995 (58.00 cm). Genotypes IC042294-2, IC042310-1 and IC042315 were earliest in flowering (45.00 days) and in maturity (145.00 days). The maximum plant height was observed in the entry IC041995 (196.67 cm) followed by IC041993 (193.50 cm). The genotype IC042336 was observed as the highest yielder with 27.34 g grain yield per plant followed by IC041987 (27.11 g).

A set of 50 genotypes and four checks were screened at NBPGR, Shimla for 10 quantitative and 12 qualitative characters (Table 74). Genotype IC042321 (61.00 days) was 2 days earlier to the check variety Durga (63.00 days) for days to 50% flowering. Maximum plant height (336.10 cm) was recorded in the IC042323. The longest inflorescence was recorded in the genotype, IC041983 (120.75 cm) followed by IC041279-5 (94.12 cm). The genotypes IC042323 (155.17 g) and IC042334 (140.96 g) 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 12 quantitative and 12 qualitative characters (Table 74) at Sangla. The check Durga (27.87 g/plant) was observed to be the highest grain yielder. The maximum plant height (197.00 cm) was observed in the genotype, IC042307 followed by IC042334 (193.00 cm). The longest inflorescence (80.00 cm) was recorded in the genotype IC042293-4 followed by IC042294-2 (70.00 cm). The entry IC042334 was the earliest in flowering (54.00 days) and no genotypes was earliest in maturity as compared to check variety Durga (96.00 days).

A set of 50 genotypes and four checks were screened at Sangla for 11 quantitative characters. The genotype IC042310-2 and IC042329 (60.00 days) was found superior to the check variety for days to 50% flowering. Maximum plant height (142.33 cm) was recorded in the genotype, IC042320. The genotype IC042282-1 (6.80 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 Sangla (2.88 g) and very high at Shimla (66.17 g). Based on average the genotype IC042323 (47.75 g) was the highest seed yielder followed by genotype IC042334 (46.55 g).

Plant height was the highest at Shimla (248.02 cm) and lowest at Sangla (108.02 cm) on the basis of average over the four locations, the entry IC042323 had the highest plant height (198.28 cm).

Flowering time showed considerable less variation among the locations and high variation among the accessions within a location. The mean flowering time was the lowest (70.18 days) at Sangla while it was the longest (76.77 days) at Shimla. The entry IC042310-2 showed consistency for early flowering over the locations and ranked first (58.33 days) based on the overall performance.

Maturity period was the earliest at Almora (116.53 days) followed by at Shimla (144.70 days). The entry IC042315 (132.25 days) was the earliest maturing line based on average over four locations.



The length of inflorescence of the accessions was the highest at Shimla (73.69 cm) followed by at Almora (50.63 cm). Inflorescence length was the lowest (25.23 cm) at Sangla. Based on the average over three locations, the entry IC041983 had the longest inflorescence (64.74 cm).

Test weight expressed in terms of weight of 10ml seed in g recorded at four centres showed that it was the highest at Ranichauri (12.10 g/10ml) and low at Sangla (6.02 g/10ml). Based on the average over four locations, the entry IC042291-7 (8.95 g/10ml) showed the highest test weight.

The length of petiole of the accessions was the highest at Shimla (13.61 cm) followed by at Almora (7.59 cm). Based on the average over three locations, the accession IC041998 had the longest petiole length (13.30 cm).

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

A set of 25 accessions was planned to be screened at four locations viz. NBPGR, Shimla; GBPUA&T, Ranichauri, CSK HPKV, Sangla and VPKAS, Almora along with four checks Himpriya, VL 7, PRB 1 and Shimla B-1. The results were received from three locations. The crop was damage by root rot at Almora centre. The list of promising accessions for all the characters have been presented in Table 75 and mean and range in Table 76.

A set of 25 genotypes and four checks Himpriya, VL-7, PRB 1 and Shimla B-1 were evaluated at GBPUA&T, Ranichauri for yield and its related characters. No entry was found superior to the check variety for days to flowering and maturity. The genotype IC109433 (6.22 g) was recorded higher seed yielder per plant followed by genotype IC037309 (6.01 g). Maximum plant height (134.40 cm) and number of branches (6.00) were recorded in the check variety Shimla B-1.

At NBPGR, Shimla a set of 25 accessions were evaluated for thirteen quantitative characters along with four national checks Himpriya, PRB 1, Shimla B-1 and VL-7. No entry was superior to the check variety in flowering and maturity. The same set of 25 accessions was also characterized for 10 qualitative traits (Table 77).

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. The entry

IC049666 was found superior to the check variety for flowering time (58.00 days) while the entry IC107291 was superior to the check variety in maturity (107.00 days). No entries were superior for seed yielder per plant as compared to check variety PRB-1 (2.20 g). Maximum plant height (166.67 cm) was recorded in the genotype IC042424 while maximum test weight (3.50 g) was observed in the genotypes IC107993, IC049671 and IC108519.

The performance of the accessions as compared to the checks over locations viz. 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 Shimla (19.04 g) but very low at Sangla (1.06 g). Based on the average over locations, the entry IC037309 was superior to the check variety (14.96 g).

Average plant height of the entries was the highest at Sangla (138.50 cm) followed by at Ranichauri (103.75 cm) and Shimla (102.05 cm). Based on average over three locations, no entry was taller than the check variety.

Flowering time varied from centre to centre but mean flowering time was the earliest at Shimla (54.17 days) followed by at Ranichauri (61.43 days). On the basis of average over three 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 Shimla (99.72 days) followed by at Ranichauri (100.79 days). On the basis of average over the locations, the entry IC037309 (94.00 days) was found superior to the best check variety.

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

Twenty five genotypes were planned for screening at four locations viz. NBPGR, Shimla; CSK HPKV, Sangla, VPKS, Almora and GBPUA&T, Ranichauri along with three local checks. Data were received from three centres because crop failed at Almora centre due to heavy rainfall. The list of promising lines for all the characters have been presented in Table 78 and mean and range in Table 79.

Twenty five genotypes along with two local checks were evaluated for 11 qualitative (Table 80) and eight quantitative characters at Shimla. Early

flowering (58.00 days) and maturity (102.00 days) were observed in the genotype EC507744. Highest inflorescence length (54.20 cm) was recorded in the genotype IC106340 followed by IC108088 (47.00 cm). The genotype IC107296 (25.40 g) was recorded as the top yielder while IC107585 was the tallest entry (244.10 cm).

A total of twenty five genotypes were evaluated for eight yield related characters at GBPUA&T, Ranichauri. No genotype was found superior to the local check varieties EC507741 for early flowering (54.00 days) and the genotype IC107854 for early maturity (118.00 days). Maximum plant height (97.00 cm) was found in the genotype IC108088 followed by IC107585 (89.40 cm). Highest seed yield per plant was recorded in the genotype IC108816 (3.87 g) followed by IC108088 (3.70 g).

Twenty five genotypes along with three local checks were evaluated for six quantitative characters at Sangla. No entry was superior to the check varieties in flowering but the genotype IC341695 was earliest in maturity (144.00 days). No genotypes were recorded as the top yielding line and plant height

The performance of accessions as compared to the checks over locations viz. Shimla, Sangla and Ranichauri has been summarized in the following paragraphs:

Significant difference was observed among the entries for seed yield per plant at three locations. Mean seed yield per plant was high at Shimla (11.54 g) but low at Ranichauri (2.90 g). Based on the average over locations, the genotype EC507742 (12.16 g) was superior in yield to check variety.

The average plant height of the entries was the highest at Shimla (171.54 cm) followed by at Sangla (110.16 cm). Based on the average over three locations, the entry IC108088 had the highest plant height (164.46 cm).

Flowering time varied widely at all centres but mean flowering time was the earliest at Ranichauri (65.04 days) followed by at Shimla (73.50 days). On the basis of average over three locations, no entry was found superior to the best check.

Maturity period also showed similar trend as that of flowering. Maturity period was the earliest at Shimla (120.91 days) followed by at Ranichauri (124.01 days). On the basis of average over three locations, the entry EC507744 (102.00 days) was found superior to the best check.

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

A set of fifty genotypes along with four standard checks viz. PRR 1, PRR 2, RBL 1 and RBL 6 were planned for evaluation in Augmented Design at six locations viz. VPKAS, Almora; NBPGR, Shimla; GBPUA&T, Ranichauri, CSK HPKV, Palampur; NBPGR RS, Bhowali and NBPGR RS, Shillong. The results have been received from all centres. The list of promising lines for all characters have been presented in Table 81 and mean and range in Table 82.

A total of 50 genotypes were evaluated for seven yield related characters at GBPUA&T, Ranichauri. No genotype was found superior to the check variety for seed yield. No. of pods was highest in the entry LRB-495 (24.25). The entry LRB-495 (78.00 days) was superior to the check varieties in flowering time and maturing line (131.00 days). Maximum plant height (181.40 cm) was found in the genotype LRB-456. Maximum pod length was recorded in LRB-322 (11.00 cm) followed by in LRB-311 (10.40 cm).

A total of 50 genotypes were screened for eleven major characters at CSK HPKV, Palampur and it was found that LRB-448 and LRB-449 were early flowering (70.00 days) as compared to check RBL-6 (75.00 days). Early maturity was observed (103.00 days) in genotypes LRB-480. Highest seed yield (q/ha) was recorded in the genotype LRB-311 (51.67 q/ha) followed by LRB-495 (47.78 q/ha).

A set of 50 genotypes were screened for qualitative (Table 83) and quantitative characters at NPBGR, Shimla. Early flowering was observed in the genotype LRB-448 (91.00 days) while early maturity in the genotype, LRB-475 (142.00 days). Longest pod (14.25 cm) was recorded in the genotype LRB-498 followed by LRB-322 (14.25 cm). Maximum 100 seed weight (8.64 g) was recorded with the genotype LRB-324 followed by LRB-475 (8.28 g). The highest no. of branches per plant (5.00) was observed in the genotype LRB-490 followed

by the check variety RBL-6 (4.50). The highest seed yield per plant (g) was recorded in LRB-482 (70.18 g) followed by check variety BRL-6 (69.67 g).

A set of 50 genotypes and four checks were screened for eight quantitative and qualitative characters (Table 83) at VPKAS, Almora. The check PRR-1 was observed to be early in flowering (66.00 days) while early maturity was found in genotype LRB-488 (111.00 days). The genotypes LRB-457 (30.80 g) and LRB-496 (27.60 g) were recorded to have high seed yield per plant. Longest pod was observed in the genotype LRB 477 (11.50 cm) followed by LRB-488 (11.00 cm). Maximum 100 seed weight was observed in the genotype LRB-493 (9.03 g) followed by LRB-474(8.14 g). The maximum plant height (198.00 cm) was found in the genotype LRB-457 followed by LRB-476 (167.00 cm).

A set of 50 genotypes and four checks were evaluated for eight yield contributing characters at NBPGR, Bhowali. The genotype LRB-480 was noted as early with 72.00 days flowering time while the LRB-488 was early maturing genotype (115.00 days). Longest pod was observed in the genotype LRB-322 (12.5 cm) followed by LRB-462 (12.30 cm). Maximum 100 seed weight was recorded (9.45 g) in the genotype LRB-474 followed by LRB-460 (8.94 g). Highest seed yield (q/ha) was observed in the check variety PRR-1 (35.75 q/ha) followed by LRB-488 (35.00 q/ha).

A set of 50 genotypes were screened for nine quantitative characters at NPBGR, Shimla. Early flowering was observed in the genotype LRB-477, LRB-481, LRB-484 and LRB-487 (55.00 days) while early maturity in the genotype, LRB-484 (105.00 days). Longest pod (10.98 cm) was recorded in the genotype LRB-496 followed by LRB-493 (10.64 cm). Maximum 100 seed weight (6.60 g) was recorded with the genotype LRB-476 followed by LRB-496 (6.56 g). The highest no. of branches per plant (3.40) was observed in the genotype LRB-493 and LRB-480 followed by the LRB-477 (3.00). The highest seed yield (q/ha) was recorded in LRB-496 (10.83 q/ha) followed by LRB-473 (10.69 q/ha).

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

Seed yield per ha level was highest at Palampur (35.52 q/ha) and very low at Shillong (4.76 q/ha). On the basis of average over three locations, no entry was superior to check variety PRR-1 (33.93 q/ha).

The mean flowering time was the earliest at Shillong (60.94 days) and delayed at Ranichauri (99.75 days). Based on the average over six locations, the entry LRB-487 was earliest in flowering as compared to the best check.

Maturity period showed wide variation among the locations. The earliest maturity was observed at Shillong (113.44 days) while it was late at Bhowali (194.68 days). On the basis of six locations, the entry LRB-488 (133.33 days) was superior to the best check.

Plant height showed extreme variation ranging from 66.32 cm to 238.81 cm. Plant height was the highest at Shimla (238.81 cm) followed by Bhowali (182.60 cm) centre. The lowest plant height was observed at Shillong (66.32 cm). Based on the average over six locations, the check variety PRR-1 (169.67 cm) was the tallest.

100 seed weight (g) recorded at five centres showed that it was the highest at Bhowali (7.61 g) and lowest at Shillong (5.77 g). Based on the average over five locations entry LRB-474 (7.86 g) showed the highest test weight.

Seed yield per plant recorded at four locations showed that it was highest at Shimla (46.21 g) and lowest at Palampur (5.87 g). Based on the average over four locations, the check variety RBL-6 (25.57 g) had the highest grain yield per plant.

Pod length (cm) showed considerable variation among the locations and ranged from 7.63 cm to 11.65 cm. On the basis of average over six locations, entry LRB-322 (11.13 cm) and LRB-324 (10.56 cm) showed the longest pod length.

No. of branches per plant recorded at five centres showed that it was the highest at Almora (3.71) and lowest at Shillong (1.98). Based on the average over locations, entry LRB-465 (3.88) 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; GBPUAT, 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 84 and the mean and range in Table 85.

At Ranichauri twenty five accessions including exotics were evaluated along with check HPU 51 and Totru Local for nine yield related characters. The entry EC000251 and EC340260 (44.00 days) were found superior to check varieties in flowering and maturity (112.00 days). IC030253 was found to be the highest seed yielder (5.60 g) followed by genotype EC000262 (5.00 g). The longest pod was observed in the genotypes EC290251 and EC000251 (8.80 cm) followed by EC015256 (8.60 cm). The maximum plant height (41.20 cm) was found in the genotype EC015256 followed by IC030270 (40.60 cm).

A total of 25 genotypes were evaluated along with checks HPU 51 and Totru Local in an Augmented Design at NBPGR, Shimla for qualitative and quantitative characters (Table 86). The tallest plant (98.20 cm) was found in the genotype EC015648. Early flowering (59.00 days) was recorded in the genotype, EC240251 whereas early maturity (95.00 days) was recorded in the genotype EC000377. Maximum number of pods per plant (32.00) was found in the EC015648. The entry EC000262 was observed as the highest seed yielder (26.03 g/plant).

At Palampur twenty five accessions were evaluated along with checks HPU 51 and Totru Local for twelve yield related characters. The entry EC000377, EC015256, EC340262 and EC340260 was recorded as early flowering (47.00 days) while EC030256 and EC024523 were early maturing (84.00 days). The EC034625 was found to be the highest seed yielder (45.70 q/ha) followed by genotype EC000251 (44.40 q/ha). The maximum plant height (102.00 cm) was found in the genotype EC000251 followed by EC015256 (101.30 cm).

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

Flowering time varied from 44.00 to 57.00 days at Ranichauri, from 46.67 to 70.33 days at Palampur and from 59.00 to 71.00 days at Shimla. Mean flowering time was the earliest at Ranichauri (50.02 days) followed by at Palampur (50.96 days). On the basis of average over three locations, the entry EC340260 was the earliest in flowering (51.44 days).

Average maturity period was the earliest at Palampur (94.25 days) and longest at Ranichauri (119.69 days). The genotype EC030256 (101.44 days) was superior to the check variety based on average over three locations.

Average plant height was recorded to be the highest at Palampur (94.28 cm) followed by at Shimla (58.73 cm) and Ranichauri (33.71 cm). Based on average over three locations, the EC015648 was the tallest (75.24 cm) entry.

Average seed yield per plant was recorded to be the highest at Shimla (14.19 g) and very low at Ranichauri (3.70 q/ha). Based on average over three locations, the entry EC000262 was the highest seed yielder (12.68 g).

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

Germplasm screening nursery consisting of 100 accessions supplied by CCS HAU, Hisar was planned to be evaluated at two locations viz. Ranichauri and Palampur. The results were received from both the centres (Rabi 2009-10). The list of promising genotypes has been presented in Table 87 and the mean and range in Table 88.

At Palampur, a set of 100 germplasm lines including three checks were evaluated in Rabi 2009-10 for eleven quantitative characters. The genotypes IC243594 (64.00 days) were early in flowering while EC343781 (135.00 days) was earliest in maturity. Maximum plant height (74.00 cm) was observed in the genotype EC024312 and EC354989 followed by HB-76 (73.00 cm). The entry EC001072 (36.50 g) was most superior for 100 seed weight as well as highest seed yield (20.28 q/ha).

At Ranichauri, a set of 98 germplasm lines including one check were evaluated in Rabi 2009-10 for seven quantitative characters. The genotype EC117727 (62.00 days) was earliest in flowering while in maturity the genotype EC117749 was the earliest (132.00 days). Maximum plant height (79.80 cm) was observed in the genotype EC117755, followed by EC343781 (78.20 cm). The entry EC029058 (30.00 g) had the highest 100 seed weight while the genotype EC117727 (19.20 g) had the highest seed yield per plant.

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



Mean flowering time was the earliest at Palampur (75.77 days) followed by at Ranichauri (81.14 days). On the basis of average over two locations, the entry IC329648 was the earliest in flowering (67.00 days).

Average maturity period was almost similar at Ranichauri (152.08 days) and Palampur (155.52 days). The genotype EC117727 (144.00 days) was superior to the check variety based on average over two locations.

Average plant height was recorded to be the highest at Ranichauri (69.00 cm) followed by at Palampur (64.73 cm). Based on average over two locations, the entry EC025085 was the tallest (73.30 cm).

Average 100 seed weight was recorded to be the highest at Palampur (31.48 g) and lowest at Ranichauri (24.31 g). Based on average over two locations, the entry IC322138 had the highest 100 seed weight (34.80 g).

### **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 have been presented in Table 89 and the mean and range in Table 90.

Nine yield related characters were recorded at NBPGR, Shillong. The highest seed yield per plant was found to be 30.20 g in the genotype IC089381. Highest no. of tillers per hill was found in the genotype IC340015 (11.70). The highest plant height was found in the genotype IC204184 (333.30 cm) followed by IC521339 (330.00 cm).

Seven yield related characters were recorded at GBPUA&T, Ranichauri. The highest seed yield per plant was found to be 7.37 g in the genotype IC089382. Highest no. of tillers per plant was found in the genotype IC204184 (4.00). The highest plant height was found in the check variety Mayeun (236.40 cm).

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

Mean flowering time was the earliest at Shillong (119.48 days) followed by at Ranichauri (167.26 days). On the basis of average over two locations, the entry IC540256 was the earliest in flowering (130.83 days).

Average plant height was recorded to be the highest at Shillong (289.31 cm) followed by at Ranichauri (178.19 cm). Based on average over two locations, the check variety Mayeun was the tallest (277.76 cm).

Average seed yield per plant was recorded to be the highest at Shillong (17.82 g) and lowest at Ranichauri (4.19 g). Based on average over two locations, the entry IC089381 had the highest seed yielder (17.07 g).

### **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 have been presented in Table 91 and the mean and range in Table 92.

Seven yield related characters were recorded at NBPGR, Shillong. The highest seed yield per plant was found to be 15.28 g in the genotype IC006444. Highest no. of primary branches was found in the genotype IC374494 (33.45). The highest plant height was found in the genotype IC419606 (186.15 cm) followed by IC006442 (185.66 cm).

Six yield related characters were recorded at GBPUA&T, Ranichauri. The highest seed yield per plant was found to be 5.28 g in the genotype IC374590. Highest no. of primary branches was found in the genotype IC416861 (6.00). The highest plant height was found in the genotype IC006440 (129.60 cm) followed by IC016443 (127.40 cm).

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

Mean flowering time was the earliest at Ranichauri (139.00 days) followed by at Shillong (155.12 days). On the basis of average over two locations, the entry IC211608 was the earliest in flowering (138.00 days).

Average maturity period was earliest at Shillong (188.75 days) and Ranichauri (193.57 days). The genotype IC204185 (178.67 days) was superior to the check variety based on average over two locations.

Average plant height was recorded to be the highest at Shillong (158.72 cm) followed by at Ranichauri (84.90 cm). Based on average over two locations, the entry IC369354 was the tallest (174.44 cm).

Average seed yield per plant was recorded to be the highest at Shillong (8.60 g) and lowest at Ranichauri (3.73 g). Based on average over two locations, the entry IC374609 had the highest seed yielder (12.84 g).

**Table 72. Promising lines in grain amaranth germplasm for various characters at different locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Almora (Accessions 50)</b>				
1.	Days to 50% Flowering	54.00-98.00	IC042334, IC041998 (< 56.00 days)	IC-35407 (Durga) (56.33 days)
2.	Days to maturity	96.00-128.00	-	IC-35407 (Durga) (96.00 days)
3.	Plant height (cm)	70.00-197.00	IC042307, IC042334 (> 185.00 cm)	IC-35407 (Durga) (180.33 cm)
4.	Inflorescence length (cm)	30.00-80.00	IC042293-4, IC042294-2, IC042315, IC041994, IC042307 (> 60.00 cm)	IC-35407 (Durga) (58.33 cm)
5.	Leaf length (cm)	5.70-18.80	IC041998 (= 18.80 cm)	IC-35407 (Durga) (16.63 cm)
6.	Leaf width (cm)	2.80-10.60	IC041998 (= 10.60 cm)	IC-35407 (Durga) (10.50 cm)
7.	Petiole length (cm)	3.20-13.30	IC042307, IC042292-4 (> 11.00 cm)	IC-35407 (Durga) (10.77 cm)
8.	No. of fingers per inflorescence	39.00-115.00	IC042290-12, IC042323, IC042340, IC042307, IC041983, IC041994, IC042290-20, IC042315, IC042334, IC042328, IC041988, IC042294-2, IC042290-13 (> 92.00)	IC-35407 (Durga) (86.67)
9.	No. of plant harvested	1.00-12.00	IC042334, IC041998, IC041996, IC042323, IC041994, IC042315, IC042290-13, IC041997 (> 9.00)	IC-35407 (Durga) (8.33)
10.	Plot yield (g)	1.00-226.00	IC042334 (= 226.00 g)	IC-35407 (Durga) (176.00 g)
11.	Seed volume weight (g/10ml)	5.40-9.10	IC042334 (= 9.10 g/ 10ml)	IC-35407 (Durga) (8.80 g/10 ml)
12.	Seed yield per plant (g)	0.50-27.87	-	IC-35407 (Durga) (27.87 g)
<b>Ranichauri (Accessions 50)</b>				
1.	Days to 50% Flowering	45.00-90.00	IC042294-2, IC042310-1, IC042315, IC042310-2, IC042290-20, IC042309, IC042312-4 (< 55.00 days)	IC-035407 (Durga) (58.00 days)

2.	Days to maturity	145.00-189.00	IC042294-2, IC042310-1, IC042315, IC042290-20, IC042312-4, IC042279-5, IC041998 (< 152.00 days)	IC-035407 (Durga) (157.00 days)
3.	Plant height (cm)	60.17-196.67	IC041995, IC041993, IC042323, IC041985, IC041988, IC041983, IC041996, IC042319-1, IC041987, IC041989 (> 163.50 cm)	Annapurna (148.84 cm)
4.	Inflorescence length (cm)	23.83-67.20	IC041983, IC041995, IC041988, IC041984, IC041993, IC041996, IC042340, IC042311-6, IC042279-5, IC041998, IC042292-4, IC042282-1, IC042315-6 (> 44.00 cm)	PRA-3 (37.75 cm)
5.	Finger length (cm)	2.67-15.67	IC042337, IC041993, IC042323, IC041996 (> 13.00 cm)	Annapurna (11.00 cm)
6.	No. of finger per plant	19.17-83.33	IC042336, IC041984, IC041983, IC041988, IC042340, IC042307, IC042311-6, IC041999, IC041995, IC041993 (> 40.00)	PRA-3 (32.17)
7.	No. of leaves per plant	9.00-32.00	IC041996, IC041989, IC041983, IC042315-6, IC042279-5, IC041985, IC042315, IC042323 (> 26.00)	PRA-3 (24.75)
8.	Seed yield per plant (g)	11.98-27.34	IC042336, IC041987, IC042329, IC042323, IC042334, IC041983, IC042337, IC041989, IC041984, IC042328, IC042333 (> 24.00 g)	IC-035407 (Durga) (17.76 g)
9.	Seed volume weight (g/10 ml)	11.88-12.36	IC042291-7, IC042326, IC041993 (> 12.25 g/ 10ml)	PRA-3 (12.21 g/10 ml)
<b>Sangla (Accession 50)</b>				
1.	Days to 50% Flowering	60.00-79.00	IC042310-2, IC042329, IC042339, IC042279-5, IC042290-21, IC042291-7, IC042294-2, IC042310-1, IC042311-6 (< 65.00 days)	IC-035407 (Durga) (68.20 days)
2.	Days to maturity	142.00-162.00	IC042310-2, IC042339, IC042290-21, IC042310-1, IC042290-20, IC042315, IC042312-4, IC042307, IC042315-6, IC042291-7, IC042311-6, IC042290-12, IC042309, IC042336, IC042290-13, IC042340, IC042326, IC042328 (< 147.00 days)	IC-035407 (Durga) (148.80 days)
3.	Plant height (cm)	84.33-142.33	IC042320, IC042307, IC042322 (> 126.00 cm)	PRA-2 (124.73 cm)
4.	No. of branches per plant	3.67-10.67	IC042292-4, IC042309, IC042329, IC042315-1, IC041984 (> 8.00)	IC-035407 (Durga) (7.07)
5.	Leaf length (cm)	7.00-15.17	IC041983 (= 15.17 cm)	PRA-3 (14.00 cm)
6.	Leaf width (cm)	3.83-8.00	IC041987, IC041983 (> 7.50 cm)	PRA-3 (7.27 cm)
7.	Petiole length (cm)	3.67-9.83	IC041983, IC042320, IC041999 (> 9.00 cm)	PRA-2 (8.37 cm)

8.	Lateral spikelet length (cm)	8.00-23.33	IC042320, IC042279-5, IC042333, IC042312-4, IC042310-2, IC042291-7, IC042310-1, IC042327, IC042337, IC042315-6, IC042339, IC042290-21 (> 15.00 cm)	PRA-3 (10.17 cm)
9.	Inflorescence length (cm)	17.67-31.33	IC042307, IC041989 (> 30.00 cm)	PRA-2 (29.80 cm)
10.	Seed yield per plant (g)	0.80-6.80	IC042282-1, IC042310-1, IC042315, IC042279-5, IC042290-21, IC042290-20, IC042312-4, IC041999 (> 5.00)	Annapurna & IC-035407 (Durga) (3.00)
11.	Seed volume weight (g/10 ml)	4.30-7.50	IC042291-7, IC042310-1, IC042328, IC042309, IC042329, IC042290-13, IC042307, IC042315-6, IC041984, IC042339, IC042333, IC041996, IC041983, IC042337, IC041998 (> 6.70 g/ 10ml)	PRA-3 (6.40 g/10 ml)
<b>Shimla (Accession 50)</b>				
1.	Days to 50% Flowering	61.00-89.00	IC042321 (= 61.00 days)	IC-035407 (Durga) (63.00 days)
2.	Days to maturity	140.00-149.00	-	IC-035407 (Durga) (140.00 days)
3.	Plant height (cm)	199.20-336.10	IC042323, IC042315, IC042315-6, IC042310, IC042340, IC042324, IC042290-12, IC042327, IC041991 (> 280.00 cm)	PRA-2 (262.55 cm)
4.	Inflorescence length (cm)	50.25-120.75	IC041983, IC041279-5, IC042290-12, IC041998, IC041989 (> 88.00 cm)	Annapurna (80.55 cm)
5.	Leaf length (cm)	10.20-24.20	IC042307, IC041983 (> 23.00 cm)	IC-035407 (Durga) (22.70 cm)
6.	Petiole length (cm)	8.00-23.30	IC041998 (= 23.00 cm)	IC-035407 (Durga) (17.60 cm)
7.	Stem thickness (mm)	1.24-3.51	IC042323, IC042328, IC041983, IC041998, IC042326, IC42290-20, IC041989, IC041991, IC042292-4 (> 2.80 mm)	PRA-2 (2.57 mm)
8.	Lateral spikelet length (cm)	2.40-28.40	IC042315, IC041991, IC041992, IC042290-13, IC042291-7, IC042282-1, IC042339, IC042290-21, IC042315-1, IC041984 (> 18.00 cm)	PRA-3 (15.30 cm)
9.	Seed yield per plant (g)	47.89-155.17	IC042323, IC042334, IC042328, IC042333, IC042282-1, IC042320, IC041279-5, IC041995, IC041994 (> 115.00 g)	IC-035407 (Durga) (103.85 g)
10.	Seed volume weight (g/10 ml)	6.00-9.50	IC042334 (= 9.50 g/10 ml)	IC-035407(Durga) & PRA-2 (9.0 g/10ml)

<b>Best entries over locations</b>				
1.	Days to 50% Flowering	58.33-84.25	IC042310-2, IC041998 (< 61.38 days)	IC-35407 (Durga) (61.38 days)
2.	Days to maturity	132.25-153.25	IC042315, IC042310-1 (< 135.00 days)	IC-35407 (Durga) (135.45 days)
3.	Plant height (cm)	142.25-198.28	IC042323, IC042307, IC042319-1, IC042315, IC042340, IC041991 (> 180.00 cm)	PRA-2 (173.09 cm)
4.	Inflorescence length (cm)	40.48-64.74	IC041983, IC042340, IC042293-4, IC041989, IC042319-1 (> 55.00 cm)	PRA-2 (51.36 cm)
5.	Leaf length (cm)	10.51-18.02	IC041983, IC041998 (> 17.00 cm)	IC-35407 (Durga) (16.09 cm)
	Leaf width (cm)	4.44-8.55	IC041998, IC042294-2 (> 8.20 cm)	IC-35407 (Durga) (7.73 cm)
6.	Lateral spikelet length (cm)	6.87-20.54	IC042315, IC042291-7, IC041991, IC041992, IC042279-5, IC042282-1, IC042290-13, IC042339, IC042320, IC042337, IC042290-21, IC042323, IC042310-2 (> 15.20 cm)	PRA-3 (12.73 cm)
7.	Petiole length (cm)	6.99-13.30	IC041998, IC041983, IC042307 (> 11.70 cm)	IC-35407 (Durga) (11.53 cm)
8.	Seed volume weight (g/10 ml)	7.13-8.95	IC042291-7 (= 8.95 g/ 10ml)	IC-35407 (Durga) (8.94 g/10 ml)
9.	Seed yield per plant (g)	17.79-47.75	IC042323, IC042334, IC042328 (> 44.00 g)	IC-35407 (Durga) (38.12 g)

**Table 73. Multilocation evaluation of germplasm lines in grain amaranth at different locations- Hills (2010)**

S. No.	Accession No.	Days to 50% flowering					Days to maturity					Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
1	IC041983	88	90	70	89	<b>84.25</b>	126	173	156	145	<b>150.00</b>	15.50	15.17	23.40	<b>18.02</b>
2	IC041984	73	71	72	85	<b>75.25</b>	114	168	155	144	<b>145.25</b>	11.80	11.83	10.20	<b>11.28</b>
3	IC041985	73	77	70	85	<b>76.25</b>	118	170	156	145	<b>147.25</b>	12.00	10.33	18.40	<b>13.58</b>
4	IC041987	88	81	75	84	<b>82.00</b>	128	173	155	146	<b>150.50</b>	11.10	13.83	21.20	<b>15.38</b>
5	IC041988	75	77	77	88	<b>79.25</b>	120	170	155	145	<b>147.50</b>	13.60	11.17	21.70	<b>15.49</b>
6	IC041989	75	81	78	88	<b>80.50</b>	118	173	152	144	<b>146.75</b>	13.40	14.00	19.70	<b>15.70</b>
7	IC041991	71	66	72	79	<b>72.00</b>	112	168	153	145	<b>144.50</b>	12.30	12.00	20.20	<b>14.83</b>
8	IC041992	60	61	66	84	<b>67.75</b>	108	165	153	144	<b>142.50</b>	12.40	11.33	19.20	<b>14.31</b>
9	IC041993	75	77	78	88	<b>79.50</b>	119	160	155	145	<b>144.75</b>	11.70	13.67	16.60	<b>13.99</b>
10	IC041994	70	77	73	85	<b>76.25</b>	112	155	154	146	<b>141.75</b>	14.00	11.00	16.00	<b>13.67</b>
11	IC041995	77	77	78	85	<b>79.25</b>	123	160	150	145	<b>144.50</b>	13.40	10.50	22.10	<b>15.33</b>
12	IC041996	86	81	79	86	<b>83.00</b>	126	155	155	146	<b>145.50</b>	8.60	11.67	17.10	<b>12.46</b>
13	IC041997	75	77	70	80	<b>75.50</b>	124	173	150	146	<b>148.25</b>	13.30	13.33	19.10	<b>15.24</b>
14	IC041998	55	56	70	64	<b>61.25</b>	98	150	154	146	<b>137.00</b>	18.80	11.17	22.00	<b>17.32</b>
15	IC041999	74	72	70	80	<b>74.00</b>	112	160	154	144	<b>142.50</b>	12.30	13.67	20.10	<b>15.36</b>
16	IC042279-5	75	55	63	69	<b>65.50</b>	122	150	147	143	<b>140.50</b>	8.60	9.83	21.10	<b>13.18</b>
17	IC042282-1	69	58	66	71	<b>66.00</b>	123	160	147	144	<b>143.50</b>	13.50	11.00	20.80	<b>15.10</b>
18	IC042290-12	73	60	66	78	<b>69.25</b>	124	162	145	146	<b>144.25</b>	14.20	10.67	15.70	<b>13.52</b>
19	IC042290-13	74	62	70	80	<b>71.50</b>	123	165	145	145	<b>144.50</b>	13.50	10.33	16.50	<b>13.44</b>
20	IC042290-20	88	50	66	68	<b>68.00</b>	126	150	142	144	<b>140.50</b>	10.20	10.33	21.40	<b>13.98</b>
21	IC042290-21	67	55	63	68	<b>63.25</b>	106	152	142	141	<b>135.25</b>	6.50	11.50	16.70	<b>11.57</b>
22	IC042291-7	-	58	63	67	<b>62.67</b>	-	160	145	144	<b>149.67</b>	-	11.00	15.00	<b>13.00</b>



S. No.	Accession No.	Leaf width (cm)			Plant height (cm)					Inflorescence length (cm)				
		Almora	Sangla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
1	IC041983	7.70	7.67	<b>7.69</b>	148.00	179.50	118.33	260.80	<b>176.66</b>	46.00	67.20	25.00	120.75	<b>64.74</b>
2	IC041984	7.60	7.00	<b>7.30</b>	106.00	161.67	96.33	230.60	<b>148.65</b>	45.00	57.00	25.67	71.65	<b>49.83</b>
3	IC041985	6.50	6.83	<b>6.67</b>	110.00	187.67	87.33	240.70	<b>156.43</b>	43.00	29.83	20.00	77.45	<b>42.57</b>
4	IC041987	5.30	8.00	<b>6.65</b>	120.00	173.00	106.67	224.10	<b>155.94</b>	43.00	42.50	29.67	87.82	<b>50.75</b>
5	IC041988	7.50	6.33	<b>6.92</b>	142.00	181.83	105.67	220.60	<b>162.53</b>	52.00	57.00	28.00	77.75	<b>53.69</b>
6	IC041989	6.10	7.33	<b>6.72</b>	177.00	172.17	115.67	243.50	<b>177.09</b>	60.00	43.50	31.00	88.15	<b>55.66</b>
7	IC041991	9.20	6.83	<b>8.02</b>	177.00	163.50	106.67	281.60	<b>182.19</b>	56.00	41.66	30.00	66.25	<b>48.48</b>
8	IC041992	7.50	7.33	<b>7.42</b>	153.00	146.67	84.33	240.50	<b>156.13</b>	52.00	40.66	23.67	71.65	<b>47.00</b>
9	IC041993	6.00	6.83	<b>6.42</b>	157.00	193.50	108.33	226.80	<b>171.41</b>	57.00	53.83	19.67	74.85	<b>51.34</b>
10	IC041994	6.30	7.00	<b>6.65</b>	153.00	153.83	100.67	251.80	<b>164.83</b>	63.00	40.00	23.67	87.65	<b>53.58</b>
11	IC041995	6.50	6.83	<b>6.67</b>	135.00	196.67	104.33	246.50	<b>170.63</b>	45.00	58.00	25.67	82.25	<b>52.73</b>
12	IC041996	4.00	5.83	<b>4.92</b>	145.00	179.33	102.67	217.40	<b>161.10</b>	49.00	53.67	27.33	77.65	<b>51.91</b>
13	IC041997	7.00	6.17	<b>6.59</b>	120.00	151.33	116.67	240.90	<b>157.23</b>	35.00	34.00	26.00	67.25	<b>40.56</b>
14	IC041998	10.60	6.50	<b>8.55</b>	160.00	136.33	122.00	240.60	<b>164.73</b>	57.00	46.50	24.33	89.11	<b>54.24</b>
15	IC041999	5.90	5.83	<b>5.87</b>	141.00	151.33	116.33	270.10	<b>169.69</b>	37.00	39.17	19.33	82.24	<b>44.44</b>
16	IC042279-5	4.30	6.00	<b>5.15</b>	120.00	144.00	100.67	252.40	<b>154.27</b>	44.00	46.50	23.33	94.12	<b>51.99</b>
17	IC042282-1	5.70	6.00	<b>5.85</b>	128.00	142.17	116.67	228.20	<b>153.76</b>	45.00	46.17	26.67	74.20	<b>48.01</b>
18	IC042290-12	7.50	6.50	<b>7.00</b>	150.00	134.17	116.00	282.20	<b>170.59</b>	52.00	39.67	27.67	92.40	<b>52.94</b>
19	IC042290-13	6.40	5.33	<b>5.87</b>	136.00	137.33	117.67	265.40	<b>164.10</b>	50.00	36.33	25.33	50.25	<b>40.48</b>
20	IC042290-20	5.40	5.67	<b>5.54</b>	105.00	147.67	106.00	246.50	<b>151.29</b>	48.00	32.17	25.00	64.85	<b>42.51</b>
21	IC042290-21	2.80	6.83	<b>4.82</b>	70.00	138.50	118.30	242.20	<b>142.25</b>	30.00	32.67	24.33	87.75	<b>43.69</b>
22	IC042291-7	-	5.83	<b>5.83</b>	-	127.17	109.00	210.60	<b>148.92</b>	-	36.33	24.33	75.70	<b>45.45</b>

S. No.	Accession No.	Petiole length (cm)				Seed yield per plant (g)					Seed volume weight (g/10 ml)				
		Almora	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
1	IC041983	8.30	9.83	17.20	<b>11.78</b>	4.30	25.56	1.40	106.67	<b>34.48</b>	7.70	12.00	7.00	9.00	<b>8.93</b>
2	IC041984	6.10	7.83	11.20	<b>8.38</b>	6.00	24.68	2.20	71.58	<b>26.12</b>	8.10	11.99	7.00	7.00	<b>8.52</b>
3	IC041985	5.70	6.83	13.20	<b>8.58</b>	2.80	22.34	1.00	63.09	<b>22.31</b>	8.30	12.04	6.70	8.00	<b>8.76</b>
4	IC041987	5.70	8.83	13.80	<b>9.44</b>	2.30	27.11	1.00	57.47	<b>21.97</b>	7.60	12.09	6.00	7.00	<b>8.17</b>
5	IC041988	8.00	7.00	13.50	<b>9.50</b>	3.75	23.69	1.25	103.87	<b>33.14</b>	7.40	12.06	6.00	6.00	<b>7.87</b>
6	IC041989	7.50	7.83	13.00	<b>9.44</b>	8.80	24.69	1.00	91.13	<b>31.41</b>	6.50	11.99	5.00	8.00	<b>7.87</b>
7	IC041991	8.60	6.83	14.30	<b>9.91</b>	3.75	20.14	1.20	64.21	<b>22.33</b>	8.10	12.12	6.00	7.00	<b>8.31</b>
8	IC041992	7.30	7.17	11.70	<b>8.72</b>	2.40	21.12	2.00	64.95	<b>22.62</b>	7.10	12.26	5.00	7.00	<b>7.84</b>
9	IC041993	7.10	7.50	14.10	<b>9.57</b>	5.10	16.64	1.33	80.88	<b>25.99</b>	6.60	12.30	5.00	7.00	<b>7.73</b>
10	IC041994	7.00	7.00	9.00	<b>7.67</b>	8.20	11.98	2.11	115.35	<b>34.41</b>	6.90	12.04	6.00	8.00	<b>8.24</b>
11	IC041995	7.50	7.83	13.70	<b>9.68</b>	10.30	19.68	2.33	115.66	<b>36.99</b>	6.40	12.10	6.00	8.00	<b>8.13</b>
12	IC041996	6.00	5.67	13.20	<b>8.29</b>	3.80	17.87	1.63	51.60	<b>18.73</b>	7.50	12.04	7.00	7.00	<b>8.39</b>
13	IC041997	7.20	7.50	13.00	<b>9.23</b>	2.00	22.54	2.40	72.90	<b>24.96</b>	7.50	12.08	6.00	7.00	<b>8.15</b>
14	IC041998	9.60	7.00	23.30	<b>13.30</b>	10.80	20.96	0.80	110.84	<b>35.85</b>	8.10	12.07	7.00	7.00	<b>8.54</b>
15	IC041999	7.70	9.17	14.80	<b>10.56</b>	2.80	19.55	5.20	90.46	<b>29.50</b>	7.50	12.16	6.00	8.00	<b>8.42</b>
16	IC042279-5	5.80	7.33	16.00	<b>9.71</b>	1.50	15.65	6.20	116.71	<b>35.02</b>	5.50	12.26	6.00	8.00	<b>7.94</b>
17	IC042282-1	6.30	6.33	13.30	<b>8.64</b>	3.20	14.76	6.80	118.95	<b>35.93</b>	6.10	12.14	6.00	7.00	<b>7.81</b>
18	IC042290-12	8.10	6.83	15.00	<b>9.98</b>	5.60	13.56	3.40	49.74	<b>18.08</b>	6.60	12.02	6.00	7.00	<b>7.91</b>
19	IC042290-13	7.30	6.17	12.20	<b>8.56</b>	4.20	12.47	4.00	62.90	<b>20.89</b>	6.40	12.26	7.00	8.00	<b>8.42</b>
20	IC042290-20	4.50	6.33	15.60	<b>8.81</b>	1.00	16.87	5.40	47.89	<b>17.79</b>	8.40	12.01	6.00	7.00	<b>8.35</b>
21	IC042290-21	3.20	7.83	10.40	<b>7.14</b>	4.00	14.69	5.80	69.10	<b>23.40</b>	6.30	12.22	5.00	7.50	<b>7.76</b>
22	IC042291-7	-	7.17	9.00	<b>8.09</b>	-	14.86	5.00	65.08	<b>28.31</b>	-	12.36	7.50	7.00	<b>8.95</b>

S. No.	Accession No.	Lateral spikelet length (cm)			Almora			Ranichauri			Sangla	Shimla
		Sangla	Shimla	Mean	No. of fingers/ inflorescence	No. of plant harvested	Plot yield (g)	No. of finger/ plant	Finger length (cm)	No. of leaves per plant	No. of branches per plant	Stem thickness (mm)
1	IC041983	9.67	13.20	<b>11.44</b>	105	6	26	47.33	2.67	30.00	7.67	2.98
2	IC041984	10.00	18.10	<b>14.05</b>	76	3	18	50.83	9.00	23.50	8.67	2.43
3	IC041985	12.33	13.20	<b>12.77</b>	65	5	14	30.67	6.67	27.50	7.33	2.63
4	IC041987	10.00	15.30	<b>12.65</b>	82	6	14	36.83	7.67	22.83	6.00	2.66
5	IC041988	8.00	8.20	<b>8.10</b>	97	8	30	47.17	10.17	23.33	5.33	2.27
6	IC041989	9.67	11.30	<b>10.49</b>	87	8	70	33.67	4.33	31.50	5.33	2.89
7	IC041991	10.00	28.20	<b>19.10</b>	83	8	30	38.17	9.83	18.17	4.00	2.88
8	IC041992	12.33	25.30	<b>18.82</b>	92	9	22	29.33	10.83	19.83	8.00	2.26
9	IC041993	8.33	16.10	<b>12.22</b>	84	9	46	40.67	13.67	25.00	5.67	2.77
10	IC041994	10.33	14.20	<b>12.27</b>	100	10	82	32.33	8.16	25.00	4.67	2.26
11	IC041995	12.33	12.20	<b>12.27</b>	73	7	72	41.33	10.17	25.17	5.00	2.59
12	IC041996	9.33	15.10	<b>12.22</b>	65	12	46	38.50	13.67	32.00	7.33	2.58
13	IC041997	9.67	15.10	<b>12.39</b>	48	10	20	30.67	6.16	20.33	7.33	2.44
14	IC041998	11.33	10.10	<b>10.72</b>	68	12	130	32.33	5.33	21.83	7.33	2.94
15	IC041999	12.67	8.20	<b>10.44</b>	82	5	14	42.17	4.33	26.00	6.00	2.57
16	IC042279-5	19.67	16.20	<b>17.94</b>	62	4	6	38.83	9.00	27.83	7.67	2.64
17	IC042282-1	14.67	21.20	<b>17.94</b>	88	5	16	35.33	8.00	20.50	7.33	2.08
18	IC042290-12	13.67	14.40	<b>14.04</b>	115	5	28	23.50	7.33	14.67	8.00	2.76
19	IC042290-13	12.67	23.00	<b>17.84</b>	93	10	42	30.00	10.67	19.67	5.67	2.35
20	IC042290-20	15.00	12.20	<b>13.60</b>	99	1	1	27.33	7.67	18.33	8.00	2.90
21	IC042290-21	15.33	18.40	<b>16.87</b>	39	1	4	19.17	4.33	10.16	6.00	2.17
22	IC042291-7	17.00	22.00	<b>19.50</b>	-	-	-	25.67	4.83	13.67	8.00	1.62

S. No.	Accession No.	Days to 50% flowering					Days to maturity					Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
23	IC042292-4	75	66	72	71	<b>71.00</b>	111	168	150	145	<b>143.50</b>	11.60	12.00	19.70	<b>14.43</b>
24	IC042293-4	70	67	72	79	<b>72.00</b>	108	160	154	144	<b>141.50</b>	12.00	9.50	19.40	<b>13.63</b>
25	IC042294-2	88	45	63	69	<b>66.25</b>	123	145	153	146	<b>141.75</b>	11.40	11.67	14.50	<b>12.52</b>
26	IC042307	98	61	72	79	<b>77.50</b>	126	155	142	142	<b>141.25</b>	13.80	12.67	24.20	<b>16.89</b>
27	IC042309	71	50	66	67	<b>63.50</b>	106	160	145	141	<b>138.00</b>	5.70	8.00	21.40	<b>11.70</b>
28	IC042310-1	70	45	63	76	<b>63.50</b>	108	145	142	142	<b>134.25</b>	9.90	8.50	20.00	<b>12.80</b>
29	IC042310-2	-	48	60	67	<b>58.33</b>	-	155	142	143	<b>146.67</b>	-	8.83	19.70	<b>14.27</b>
30	IC042311-6	70	66	63	66	<b>66.25</b>	112	160	145	146	<b>140.75</b>	10.10	8.00	18.00	<b>12.03</b>
31	IC042312-4	-	50	68	68	<b>62.00</b>	-	150	142	145	<b>145.67</b>	-	8.83	22.10	<b>15.47</b>
32	IC042315	60	45	66	85	<b>64.00</b>	96	145	142	146	<b>132.25</b>	14.50	7.17	18.20	<b>13.29</b>
33	IC042315-1	86	86	70	79	<b>80.25</b>	126	173	152	146	<b>149.25</b>	12.90	8.83	18.50	<b>13.41</b>
34	IC042315-6	75	81	72	78	<b>76.50</b>	124	170	142	141	<b>144.25</b>	13.10	8.33	20.10	<b>13.84</b>
35	IC042319-1	69	71	-	70	<b>70.00</b>	122	173	-	146	<b>147.00</b>	10.60	-	10.60	<b>10.60</b>
36	IC042320	88	75	77	87	<b>81.75</b>	123	173	157	145	<b>149.50</b>	10.20	13.67	16.50	<b>13.46</b>
37	IC042321	61	75	65	61	<b>65.50</b>	106	173	147	142	<b>142.00</b>	12.90	8.33	19.50	<b>13.58</b>
38	IC042322	75	72	76	77	<b>75.00</b>	120	168	162	146	<b>149.00</b>	10.70	10.00	18.50	<b>13.07</b>
39	IC042323	72	86	73	79	<b>77.50</b>	118	173	147	143	<b>145.25</b>	13.20	7.50	21.20	<b>13.97</b>
40	IC042324	75	86	75	80	<b>79.00</b>	123	173	153	149	<b>149.50</b>	13.40	7.00	21.90	<b>14.10</b>
41	IC042326	74	86	72	71	<b>75.75</b>	116	170	145	145	<b>144.00</b>	11.90	7.33	12.30	<b>10.51</b>
42	IC042327	75	85	76	74	<b>77.50</b>	122	170	157	142	<b>147.75</b>	11.50	8.67	18.20	<b>12.79</b>
43	IC042328	86	86	73	85	<b>82.50</b>	123	168	145	143	<b>144.75</b>	14.70	8.83	21.80	<b>15.11</b>
44	IC042329	61	77	60	65	<b>65.75</b>	103	173	153	146	<b>143.75</b>	12.10	8.33	21.00	<b>13.81</b>
45	IC042333	87	86	75	79	<b>81.75</b>	123	168	153	145	<b>147.25</b>	16.20	10.00	19.50	<b>15.23</b>
46	IC042334	54	71	72	64	<b>65.25</b>	96	170	157	148	<b>142.75</b>	16.50	8.00	20.80	<b>15.10</b>
47	IC042336	71	86	66	79	<b>75.50</b>	118	185	145	147	<b>148.75</b>	11.20	8.00	19.00	<b>12.73</b>

S. No.	Accession No.	Leaf width (cm)			Plant height (cm)					Inflorescence length (cm)				
		Almora	Sangla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
23	IC042292-4	9.00	7.33	<b>8.17</b>	122.00	156.17	126.00	216.80	<b>155.24</b>	60.00	46.17	23.00	67.85	<b>49.26</b>
24	IC042293-4	8.60	5.50	<b>7.05</b>	170.00	60.17	113.33	252.10	<b>148.90</b>	80.00	40.00	30.00	74.60	<b>56.15</b>
25	IC042294-2	9.70	6.83	<b>8.27</b>	157.00	100.33	101.33	253.10	<b>152.94</b>	70.00	35.67	28.67	57.80	<b>48.04</b>
26	IC042307	10.40	6.00	<b>8.20</b>	197.00	142.50	129.00	271.20	<b>184.93</b>	61.00	42.83	31.33	69.75	<b>51.23</b>
27	IC042309	4.20	4.67	<b>4.44</b>	145.00	160.67	91.00	210.00	<b>151.67</b>	60.00	43.83	25.00	57.40	<b>46.56</b>
28	IC042310-1	5.40	4.83	<b>5.12</b>	130.00	150.50	97.67	286.30	<b>166.12</b>	47.00	38.00	29.00	60.40	<b>43.60</b>
29	IC042310-2	-	5.17	<b>5.17</b>	-	161.83	108.33	268.30	<b>179.49</b>	-	42.00	22.33	70.60	<b>44.98</b>
30	IC042311-6	5.80	4.83	<b>5.32</b>	132.00	147.83	107.00	223.80	<b>152.66</b>	49.00	48.50	25.33	65.80	<b>47.16</b>
31	IC042312-4	-	5.17	<b>5.17</b>	-	151.17	96.00	219.10	<b>155.42</b>	-	42.17	25.33	56.70	<b>41.40</b>
32	IC042315	8.20	4.67	<b>6.44</b>	185.00	162.67	91.00	300.10	<b>184.69</b>	68.00	32.67	17.67	87.25	<b>51.40</b>
33	IC042315-1	10.10	6.00	<b>8.05</b>	133.00	111.50	109.33	257.60	<b>152.86</b>	40.00	36.33	27.00	72.80	<b>44.03</b>
34	IC042315-6	6.50	5.50	<b>6.00</b>	144.00	162.33	110.33	286.70	<b>175.84</b>	48.00	45.17	22.67	52.60	<b>42.11</b>
35	IC042319-1	5.70	-	<b>5.70</b>	121.00	177.00	-	256.10	<b>184.70</b>	46.00	44.00	-	76.80	<b>55.60</b>
36	IC042320	7.20	7.50	<b>7.35</b>	135.00	147.33	142.33	265.80	<b>172.62</b>	46.00	39.83	30.00	69.80	<b>46.41</b>
37	IC042321	6.00	4.17	<b>5.09</b>	127.00	143.00	90.67	234.10	<b>148.69</b>	48.00	36.33	22.00	59.15	<b>41.37</b>
38	IC042322	5.50	5.50	<b>5.50</b>	157.00	147.33	127.67	216.20	<b>162.05</b>	39.00	36.50	20.67	71.80	<b>41.99</b>
39	IC042323	6.60	4.83	<b>5.72</b>	177.00	189.00	91.00	336.10	<b>198.28</b>	60.00	42.67	23.33	72.35	<b>49.59</b>
40	IC042324	7.20	4.67	<b>5.94</b>	155.00	147.67	98.00	282.40	<b>170.77</b>	47.00	23.83	23.00	69.70	<b>40.88</b>
41	IC042326	8.40	4.83	<b>6.62</b>	146.00	140.00	91.67	199.20	<b>144.22</b>	54.00	35.17	23.33	61.60	<b>43.53</b>
42	IC042327	6.70	5.17	<b>5.94</b>	133.00	139.83	87.33	282.10	<b>160.57</b>	41.00	27.83	25.67	71.50	<b>41.50</b>
43	IC042328	8.00	5.00	<b>6.50</b>	158.00	146.67	93.33	240.20	<b>159.55</b>	59.00	27.50	24.00	69.80	<b>45.08</b>
44	IC042329	7.80	3.83	<b>5.82</b>	140.00	103.33	116.67	240.10	<b>150.03</b>	44.00	26.33	22.00	70.25	<b>40.65</b>
45	IC042333	8.00	5.83	<b>6.92</b>	147.00	94.67	125.00	241.10	<b>151.94</b>	49.00	29.33	24.00	85.85	<b>47.05</b>
46	IC042334	9.70	4.67	<b>7.19</b>	193.00	135.67	102.67	210.60	<b>160.49</b>	54.00	38.67	23.00	58.00	<b>43.42</b>
47	IC042336	7.70	4.83	<b>6.27</b>	147.00	137.83	98.00	236.60	<b>154.86</b>	49.00	37.83	25.00	57.25	<b>42.27</b>

S. No.	Accession No.	Petiole length (cm)				Seed yield per plant (g)					Seed volume weight (g/10 ml)				
		Almora	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
23	IC042292-4	11.50	6.83	14.20	<b>10.84</b>	3.30	15.47	2.00	100.10	<b>30.22</b>	6.90	12.10	6.00	7.00	<b>8.00</b>
24	IC042293-4	10.70	5.17	11.20	<b>9.02</b>	10.40	18.33	4.60	54.24	<b>21.89</b>	7.10	12.14	5.00	7.20	<b>7.86</b>
25	IC042294-2	11.00	6.17	9.20	<b>8.79</b>	0.50	14.97	2.20	58.70	<b>19.09</b>	7.30	12.17	6.00	7.50	<b>8.24</b>
26	IC042307	13.30	6.83	15.10	<b>11.74</b>	-	16.93	3.60	85.00	<b>35.18</b>	-	12.21	7.00	7.00	<b>8.74</b>
27	IC042309	4.00	5.67	11.30	<b>6.99</b>	7.00	17.87	4.40	51.25	<b>20.13</b>	6.70	12.17	7.00	7.00	<b>8.22</b>
28	IC042310-1	4.80	6.83	12.60	<b>8.08</b>	2.00	15.94	6.40	53.90	<b>19.56</b>	7.10	12.07	7.00	7.00	<b>8.29</b>
29	IC042310-2	-	5.33	12.60	<b>8.97</b>	-	17.68	2.60	67.18	<b>29.15</b>	-	12.01	6.00	6.50	<b>8.17</b>
30	IC042311-6	6.50	6.00	13.10	<b>8.53</b>	2.70	16.97	2.00	67.03	<b>22.18</b>	6.90	12.09	6.00	6.50	<b>7.87</b>
31	IC042312-4	-	6.17	17.20	<b>11.69</b>	-	15.81	5.20	54.82	<b>25.28</b>	-	11.92	5.00	7.00	<b>7.97</b>
32	IC042315	9.00	5.33	14.30	<b>9.54</b>	5.60	17.45	6.40	97.73	<b>31.80</b>	7.10	11.96	6.00	7.00	<b>8.02</b>
33	IC042315-1	8.10	6.83	12.00	<b>8.98</b>	4.40	19.73	1.60	72.61	<b>24.59</b>	7.80	12.11	5.00	7.00	<b>7.98</b>
34	IC042315-6	6.90	6.33	14.60	<b>9.28</b>	6.00	18.64	2.22	111.13	<b>34.50</b>	5.50	12.25	7.00	6.00	<b>7.69</b>
35	IC042319-1	7.70	-	9.20	<b>8.45</b>	1.70	17.87	-	82.40	<b>33.99</b>	5.80	11.88	-	6.00	<b>7.89</b>
36	IC042320	7.90	9.17	11.00	<b>9.36</b>	2.60	15.28	1.00	117.37	<b>34.06</b>	7.00	12.13	5.00	7.00	<b>7.78</b>
37	IC042321	6.80	4.33	12.30	<b>7.81</b>	5.50	16.94	1.67	59.40	<b>20.88</b>	6.80	11.89	4.30	8.00	<b>7.75</b>
38	IC042322	6.70	7.17	12.70	<b>8.86</b>	5.70	22.74	1.67	82.40	<b>28.13</b>	8.50	12.08	6.00	6.00	<b>8.15</b>
39	IC042323	6.30	4.33	17.20	<b>9.28</b>	6.80	26.09	2.92	155.17	<b>47.75</b>	8.10	12.17	6.00	8.50	<b>8.69</b>
40	IC042324	5.60	4.67	15.40	<b>8.56</b>	8.60	19.69	2.00	85.80	<b>29.02</b>	7.60	12.26	5.00	8.00	<b>8.22</b>
41	IC042326	9.00	4.67	8.00	<b>7.22</b>	5.30	23.64	1.80	109.58	<b>35.08</b>	6.50	12.33	6.00	7.50	<b>8.08</b>
42	IC042327	8.70	6.00	15.00	<b>9.90</b>	4.30	21.22	1.20	88.91	<b>28.91</b>	6.50	12.14	5.00	7.00	<b>7.66</b>
43	IC042328	8.60	5.50	17.10	<b>10.40</b>	11.20	24.07	4.60	136.34	<b>44.05</b>	6.40	12.02	7.00	7.00	<b>8.11</b>
44	IC042329	7.60	4.33	14.30	<b>8.74</b>	1.30	26.45	4.20	97.59	<b>32.39</b>	7.80	12.18	7.00	7.00	<b>8.50</b>
45	IC042333	8.00	9.00	14.60	<b>10.53</b>	8.20	24.06	2.00	124.09	<b>39.59</b>	6.90	11.97	7.00	8.00	<b>8.47</b>
46	IC042334	9.50	6.33	17.00	<b>10.94</b>	18.80	25.65	0.80	140.96	<b>46.55</b>	9.10	12.22	4.30	9.50	<b>8.78</b>
47	IC042336	6.80	3.67	17.00	<b>9.16</b>	6.00	27.34	4.80	73.18	<b>27.83</b>	7.80	12.12	5.00	9.00	<b>8.48</b>

S. No.	Accession No.	Lateral spikelet length (cm)			Almora			Ranichauri			Sangla	Shimla
		Sangla	Shimla	Mean	No. of fingers/ inflorescence	No. of plant harvested	Plot yield (g)	No. of finger/ plant	Finger length (cm)	No. of leaves per plant	No. of branches per plant	Stem thickness (mm)
23	IC042292-4	10.00	13.00	<b>11.50</b>	88	6	20	31.17	7.00	15.83	10.67	2.82
24	IC042293-4	13.33	15.40	<b>14.37</b>	73	5	52	38.17	12.83	22.17	5.33	2.53
25	IC042294-2	14.00	16.10	<b>15.05</b>	96	2	1	25.50	7.00	17.33	6.33	2.04
26	IC042307	12.67	10.10	<b>11.39</b>	108	3	-	43.50	8.50	17.67	7.67	2.31
27	IC042309	14.33	9.20	<b>11.77</b>	87	2	14	32.67	9.83	15.00	10.67	2.56
28	IC042310-1	16.67	13.40	<b>15.04</b>	71	2	4	27.00	10.67	16.17	6.33	2.23
29	IC042310-2	17.67	13.00	<b>15.34</b>	-	-	-	31.33	8.50	22.33	7.00	2.41
30	IC042311-6	15.00	6.80	<b>10.90</b>	63	6	16	42.33	8.83	19.17	7.67	1.91
31	IC042312-4	17.67	5.50	<b>11.59</b>	-	-	-	39.33	8.50	19.17	6.67	1.89
32	IC042315	12.67	28.40	<b>20.54</b>	98	10	56	32.00	7.33	27.33	7.67	2.39
33	IC042315-1	11.33	18.10	<b>14.72</b>	71	9	40	34.17	9.00	18.17	9.00	1.24
34	IC042315-6	16.00	14.40	<b>15.20</b>	69	4	24	37.00	10.00	29.50	4.33	2.34
35	IC042319-1	-	7.90	<b>7.90</b>	63	6	10	31.00	6.50	23.00	-	-
36	IC042320	23.33	11.00	<b>17.17</b>	90	7	18	35.33	9.50	13.83	5.00	1.99
37	IC042321	11.67	11.60	<b>11.64</b>	91	4	22	32.00	9.17	16.33	7.00	1.76
38	IC042322	15.00	12.40	<b>13.70</b>	85	8	46	29.00	10.83	25.33	6.33	2.09
39	IC042323	15.00	16.20	<b>15.60</b>	110	10	68	39.50	13.67	27.17	6.67	3.51
40	IC042324	13.67	13.95	<b>13.81</b>	81	7	60	25.00	6.17	18.83	7.00	2.11
41	IC042326	14.67	2.70	<b>8.69</b>	75	8	42	25.50	8.83	21.83	6.00	2.91
42	IC042327	16.67	10.20	<b>13.44</b>	79	6	26	34.67	6.17	21.33	8.00	2.50
43	IC042328	12.00	9.10	<b>10.55</b>	97	5	56	37.17	7.33	11.17	7.00	3.16
44	IC042329	14.00	16.40	<b>15.20</b>	85	3	4	22.33	4.83	9.00	9.00	2.09
45	IC042333	18.00	8.20	<b>13.10</b>	92	9	74	26.83	7.33	18.50	5.33	2.50
46	IC042334	11.33	2.40	<b>6.87</b>	97	12	226	29.83	4.17	20.33	4.00	2.21
47	IC042336	11.33	11.20	<b>11.27</b>	85	7	12	83.33	9.83	21.50	3.67	2.51

S. No.	Accession No.	Days to 50% flowering					Days to maturity					Leaf length (cm)			
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Sangla	Shimla	Mean
48	IC042337	91	90	76	80	<b>84.25</b>	123	188	154	148	<b>153.25</b>	12.30	9.17	17.00	<b>12.82</b>
49	IC042339	69	77	62	66	<b>68.50</b>	108	175	142	146	<b>142.75</b>	13.70	7.67	18.70	<b>13.36</b>
50	IC042340	74	90	70	80	<b>78.50</b>	112	189	145	146	<b>148.00</b>	15.50	9.00	20.00	<b>14.83</b>
<b>Mean for check variety</b>															
	<b>Annapurna (C)</b>	87.00	81.50	74.40	79.00	<b>80.48</b>	122.33	180.00	154.20	145.00	<b>150.38</b>	11.07	11.90	18.15	<b>13.71</b>
	<b>IC-35407 (Durga) (C)</b>	56.33	58.00	68.20	63.00	<b>61.38</b>	96.00	157.00	148.80	140.00	<b>135.45</b>	16.63	8.93	22.70	<b>16.09</b>
	<b>PRA-2 (C)</b>	77.00	-	72.40	86.00	<b>78.47</b>	121.25	-	151.80	146.00	<b>139.68</b>	10.75	13.03	17.50	<b>13.76</b>
	<b>PRA-3 (C)</b>	88.00	82.00	74.80	85.50	<b>82.58</b>	125.25	179.50	154.60	146.00	<b>151.34</b>	11.18	14.00	17.80	<b>14.33</b>
	<b>Minimum</b>	<b>54.00</b>	<b>45.00</b>	<b>60.00</b>	<b>61.00</b>	<b>58.33</b>	<b>96.00</b>	<b>145.00</b>	<b>142.00</b>	<b>140.00</b>	<b>132.25</b>	<b>5.70</b>	<b>7.00</b>	<b>10.20</b>	<b>10.51</b>
	<b>Maximum</b>	<b>98.00</b>	<b>90.00</b>	<b>79.00</b>	<b>89.00</b>	<b>84.25</b>	<b>128.00</b>	<b>189.00</b>	<b>162.00</b>	<b>149.00</b>	<b>153.25</b>	<b>18.80</b>	<b>15.17</b>	<b>24.20</b>	<b>18.02</b>
	<b>Mean</b>	<b>74.79</b>	<b>70.75</b>	<b>70.18</b>	<b>76.77</b>	<b>72.97</b>	<b>116.53</b>	<b>165.35</b>	<b>149.86</b>	<b>144.70</b>	<b>144.40</b>	<b>12.39</b>	<b>10.40</b>	<b>18.94</b>	<b>13.94</b>
	<b>CD (0.05)</b>	-	-	<b>4.89</b>	-		-	-	<b>3.16</b>	-		-	<b>2.02</b>	-	
	<b>CV (%) Error</b>	-	-	<b>2.53</b>	-		-	-	<b>0.78</b>	-		-	<b>6.31</b>	-	
	<b>CV (%) Phen.</b>	<b>13.14</b>	<b>19.03</b>	<b>7.29</b>	<b>10.47</b>		<b>7.62</b>	<b>6.43</b>	<b>3.60</b>	<b>1.29</b>		<b>19.33</b>	<b>20.53</b>	<b>15.28</b>	



S. No.	Accession No.	Leaf width (cm)			Plant height (cm)					Inflorescence length (cm)				
		Almora	Sangla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
48	IC042337	7.10	6.17	<b>6.64</b>	170.00	148.83	111.33	238.80	<b>167.24</b>	54.00	42.33	28.33	81.65	<b>51.58</b>
49	IC042339	8.20	4.17	<b>6.19</b>	163.00	140.83	102.33	242.70	<b>162.22</b>	56.00	32.17	25.00	66.75	<b>44.98</b>
50	IC042340	7.90	5.50	<b>6.70</b>	172.00	162.83	114.33	284.65	<b>183.45</b>	60.00	53.17	29.33	84.70	<b>56.80</b>
<b>Mean for check variety</b>														
	<b>Annapurna (C)</b>	6.30	6.90	<b>6.60</b>	133.33	148.84	117.26	260.70	<b>165.03</b>	43.00	33.09	29.00	80.55	<b>46.41</b>
	<b>IC-35407 (Durga) (C)</b>	10.50	4.97	<b>7.73</b>	180.33	137.09	110.67	219.50	<b>161.90</b>	58.33	32.50	20.02	59.13	<b>42.49</b>
	<b>PRA-2 (C)</b>	6.30	6.70	<b>6.50</b>	132.00	-	124.73	262.55	<b>173.09</b>	45.25	-	29.80	79.03	<b>51.36</b>
	<b>PRA-3 (C)</b>	6.30	7.27	<b>6.78</b>	124.75	140.17	123.40	244.15	<b>158.12</b>	37.75	37.75	26.67	78.33	<b>45.12</b>
	<b>Minimum</b>	<b>2.80</b>	<b>3.83</b>	<b>4.44</b>	<b>70.00</b>	<b>60.17</b>	<b>84.33</b>	<b>199.20</b>	<b>142.25</b>	<b>30.00</b>	<b>23.83</b>	<b>17.67</b>	<b>50.25</b>	<b>40.48</b>
	<b>Maximum</b>	<b>10.60</b>	<b>8.00</b>	<b>8.55</b>	<b>197.00</b>	<b>196.67</b>	<b>142.33</b>	<b>336.10</b>	<b>198.28</b>	<b>80.00</b>	<b>67.20</b>	<b>31.33</b>	<b>120.75</b>	<b>64.74</b>
	<b>Mean</b>	<b>7.07</b>	<b>5.91</b>	<b>6.45</b>	<b>144.69</b>	<b>148.96</b>	<b>108.02</b>	<b>248.20</b>	<b>163.17</b>	<b>50.63</b>	<b>40.46</b>	<b>25.23</b>	<b>73.69</b>	<b>47.60</b>
	<b>CD (0.05)</b>	-	<b>0.96</b>		-	-	<b>18.96</b>	-		-	-	<b>8.01</b>	-	
	<b>CV (%) Error</b>	-	<b>5.55</b>		-	-	<b>5.97</b>	-		-	-	<b>11.38</b>	-	
	<b>CV (%) Phen.</b>	<b>24.22</b>	<b>17.36</b>		<b>16.82</b>	<b>16.71</b>	<b>11.59</b>	<b>10.70</b>		<b>18.57</b>	<b>21.64</b>	<b>12.81</b>	<b>17.01</b>	

S. No.	Accession No.	Petiole length (cm)				Seed yield per plant (g)					Seed volume weight (g/10 ml)				
		Almora	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
48	IC042337	9.80	5.33	12.10	<b>9.08</b>	18.70	24.77	1.00	92.84	<b>34.33</b>	6.80	12.00	7.00	9.00	<b>8.70</b>
49	IC042339	8.90	4.33	12.40	<b>8.54</b>	6.70	19.53	2.00	64.26	<b>23.12</b>	5.40	11.94	7.00	8.50	<b>8.21</b>
50	IC042340	8.70	5.17	15.10	<b>9.66</b>	20.00	18.49	3.80	110.65	<b>38.24</b>	6.10	12.01	5.00	8.00	<b>7.78</b>
<b>Mean for check variety</b>															
	<b>Annapurna (C)</b>	6.27	7.27	13.45	<b>8.99</b>	3.13	16.11	3.00	95.28	<b>29.38</b>	6.73	12.04	6.00	7.50	<b>8.07</b>
	<b>IC-35407 (Durga) (C)</b>	10.77	6.23	17.60	<b>11.53</b>	27.87	17.76	3.00	103.85	<b>38.12</b>	8.77	11.98	6.00	9.00	<b>8.94</b>
	<b>PRA-2 (C)</b>	7.00	8.37	12.65	<b>9.34</b>	5.27	-	2.32	87.28	<b>31.62</b>	6.58	-	5.80	9.00	<b>7.13</b>
	<b>PRA-3 (C)</b>	6.15	7.97	12.70	<b>8.94</b>	6.60	17.22	2.32	81.22	<b>26.84</b>	6.73	12.21	6.40	7.50	<b>8.21</b>
	<b>Minimum</b>	<b>3.20</b>	<b>3.67</b>	<b>8.00</b>	<b>6.99</b>	<b>0.50</b>	<b>11.98</b>	<b>0.80</b>	<b>47.89</b>	<b>17.79</b>	<b>5.40</b>	<b>11.88</b>	<b>4.30</b>	<b>6.00</b>	<b>7.13</b>
	<b>Maximum</b>	<b>13.30</b>	<b>9.83</b>	<b>23.30</b>	<b>13.30</b>	<b>27.87</b>	<b>27.34</b>	<b>6.80</b>	<b>155.17</b>	<b>47.75</b>	<b>9.10</b>	<b>12.36</b>	<b>7.50</b>	<b>9.50</b>	<b>8.95</b>
	<b>Mean</b>	<b>7.59</b>	<b>6.59</b>	<b>13.61</b>	<b>9.31</b>	<b>6.26</b>	<b>19.47</b>	<b>2.88</b>	<b>86.17</b>	<b>29.33</b>	<b>7.10</b>	<b>12.10</b>	<b>6.02</b>	<b>7.45</b>	<b>8.18</b>
	<b>CD (0.05)</b>	-	<b>2.73</b>	-		-	-	<b>2.46</b>	-		-	-	<b>1.86</b>	-	
	<b>CV (%) Error</b>	-	<b>13.68</b>	-		-	-	<b>34.71</b>	-		-	-	<b>11.49</b>	-	
	<b>CV (%) Phen.</b>	<b>25.29</b>	<b>21.06</b>	<b>19.60</b>		<b>84.99</b>	<b>20.84</b>	<b>59.36</b>	<b>30.16</b>		<b>11.95</b>	<b>0.94</b>	<b>13.57</b>	<b>11.17</b>	

S. No.	Accession No.	Lateral spikelet length (cm)			Almora			Ranichauri			Sangla	Shimla
		Sangla	Shimla	Mean	No. of fingers/ inflorescence	No. of plant harvested	Plot yield (g)	No. of finger/ plant	Finger length (cm)	No. of leaves per plant	No. of branches per plant	Stem thickness (mm)
48	IC042337	16.67	17.30	<b>16.99</b>	88	6	112	37.83	15.67	23.33	6.67	2.56
49	IC042339	16.00	19.20	<b>17.60</b>	89	6	40	39.33	7.67	21.33	4.50	1.77
50	IC042340	15.00	10.25	<b>12.63</b>	109	5	100	44.83	9.50	19.00	4.67	2.22
<b>Mean for check variety</b>												
	<b>Annapurna (C)</b>	9.60	14.15	<b>11.88</b>	56.33	5.67	18.67	30.09	11.00	22.09	5.54	2.42
	<b>IC-35407 (Durga) (C)</b>	10.07	3.85	<b>6.96</b>	86.67	8.33	176.00	29.00	8.59	19.58	7.07	2.24
	<b>PRA-2 (C)</b>	9.27	14.60	<b>11.93</b>	68.50	6.25	34.50	-	-	-	4.30	2.57
	<b>PRA-3 (C)</b>	10.17	15.30	<b>12.73</b>	63.75	7.00	42.00	32.17	7.84	24.75	5.47	2.46
	<b>Minimum</b>	<b>8.00</b>	<b>2.40</b>	<b>6.87</b>	<b>39.00</b>	<b>1.00</b>	<b>1.00</b>	<b>19.17</b>	<b>2.67</b>	<b>9.00</b>	<b>3.67</b>	<b>1.24</b>
	<b>Maximum</b>	<b>23.33</b>	<b>28.40</b>	<b>20.54</b>	<b>115.00</b>	<b>12.00</b>	<b>226.00</b>	<b>83.33</b>	<b>15.67</b>	<b>32.00</b>	<b>10.67</b>	<b>3.51</b>
	<b>Mean</b>	<b>13.18</b>	<b>13.75</b>	<b>13.42</b>	<b>82.71</b>	<b>6.46</b>	<b>42.90</b>	<b>34.92</b>	<b>8.44</b>	<b>21.04</b>	<b>6.58</b>	<b>2.41</b>
	<b>CD (0.05)</b>	<b>5.41</b>	-		-	-	-	-	-	-	<b>2.20</b>	-
	<b>CV (%) Error</b>	<b>20.72</b>	-		-	-	-	-	-	-	<b>14.76</b>	-
	<b>CV (%) Phen.</b>	<b>24.05</b>	<b>40.33</b>		<b>19.49</b>	<b>43.15</b>	<b>102.02</b>	<b>27.42</b>	<b>31.69</b>	<b>24.46</b>	<b>24.00</b>	<b>16.70</b>

**Table 74. Characterization of germplasm lines in grain amaranth at Sangla and Shimla - Hills (2010)**

S. No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Inflorescence colour		Inflorescence compactness		Stem colour		Stem surface		Inflorescence shape		Inflorescence spininess		Seed colour		Seed shattering	Seed transparency	
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Shimla	Shimla	
1	IC041983	2	3	1	1	5	5	4	11	5	5	2	2	2	2	4	4	3	4	2	1	3	2	
2	IC041984	2	3	2	1	10	5	9	9	3	5	5	4	2	2	4	4	4	4	3	1	3	2	
3	IC041985	2	3	1	1	5	5	4	6	3	5	2	4	2	2	4	4	3	4	2	1	3	2	
4	IC041987	3	3	1	1	8	5	6	9	7	5	99	5	2	2	4	4	3	4	2	1	3	2	
5	IC041988	3	3	1	1	8	5	6	9	7	5	99	5	2	2	4	4	3	4	3	1	3	2	
6	IC041989	2	3	1	1	5	5	4	11	7	5	2	2	2	2	4	4	4	4	2	1	3	2	
7	IC041991	2	3	1	1	8	5	6	9	5	5	99	5	2	2	4	4	3	4	3	1	3	2	
8	IC041992	1	3	2	1	8	5	6	9	3	5	99	5	2	2	4	4	2	4	2	1	3	2	
9	IC041993	2	3	1	1	5	5	4	11	5	5	2	2	2	2	4	4	4	4	2	1	3	2	
10	IC041994	2	3	1	1	8	5	6	9	3	5	99	5	2	2	4	4	3	4	3	1	3	2	
11	IC041995	2	3	1	1	5	5	4	11	5	5	2	2	2	2	4	4	3	4	3	1	3	2	
12	IC041996	2	3	1	1	5	5	4	11	5	5	2	2	2	2	4	4	3	4	2	1	3	2	
13	IC041997	2	3	2	1	8	5	7	11	5	5	99	5	2	2	4	4	4	4	3	1	3	2	
14	IC041998	3	3	1	1	5	5	4	2	5	5	2	2	2	2	2	4	3	4	2	1	7	2	
15	IC041999	2	3	2	1	5	5	4	11	3	5	2	2	2	2	4	4	3	4	3	1	3	2	
16	IC042279-5	2	3	2	1	5	5	4	5	3	5	2	2	2	2	4	4	4	4	2	1	3	2	
17	IC042282-1	2	3	2	1	5	5	4	5	3	5	2	2	2	2	4	4	4	4	2	1	3	2	
18	IC042290-12	2	3	1	1	8	5	7	6	7	5	99	4	2	2	4	4	3	4	2	1	3	2	
19	IC042290-13	2	3	2	1	8	5	6	9	7	5	99	5	2	2	4	4	4	4	2	1	3	2	
20	IC042290-20	2	3	2	1	5	5	4	2	3	5	2	2	2	2	4	4	3	4	2	1	3	2	
21	IC042290-21	2	3	2	1	5	5	4	2	7	5	2	2	2	2	2	4	4	4	4	2	1	3	2
22	IC042291-7	2	3	2	1	5	5	4	2	3	5	2	2	2	2	4	4	4	4	2	1	3	1	

S. No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Inflorescence colour		Inflorescence compactness		Stem colour		Stem surface		Inflorescence shape		Inflorescence spininess		Seed colour		Seed shattering	Seed transparency	
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Shimla	Shimla	
23	IC042292-4	2	3	1	1	8	5	6	6	5	5	99	2	2	2	2	4	4	4	4	2	1	3	1
24	IC042293-4	2	3	2	1	8	5	6	9	5	3	99	5	2	2	4	4	4	4	2	1	3	2	
25	IC042294-2	2	3	2	1	8	5	7	9	3	5	99	5	2	2	2	4	3	4	2	1	3	2	
26	IC042307	3	3	1	1	8	5	6	9	5	5	99	5	2	2	4	4	4	4	3	1	3	2	
27	IC042309	2	3	2	1	8	5	6	9	3	5	99	5	2	2	4	4	3	4	3	1	3	2	
28	IC042310-1	2	3	2	1	8	5	6	9	3	5	99	5	2	2	4	4	4	4	2	1	3	2	
29	IC042310-2	2	3	2	1	8	5	6	9	3	5	99	5	2	2	4	4	4	4	3	1	3	2	
30	IC042311-6	2	3	1	1	5	5	4	9	7	5	2	5	2	2	4	4	4	4	2	1	3	2	
31	IC042312-4	2	3	2	1	5	5	4	2	5	5	2	2	2	2	4	4	4	4	2	1	3	2	
32	IC042315	2	3	2	1	5	5	4	9	3	5	2	5	2	2	4	4	3	4	2	1	3	2	
33	IC042315-1	2	3	1	1	5	5	4	11	7	5	2	2	2	2	4	4	3	4	2	1	3	2	
34	IC042315-6	3	3	2	1	5	5	4	11	5	5	2	2	2	2	4	4	3	4	2	1	3	2	
35	IC042319-1		3		1		5		11		5		2		2		4		4		1	3	2	
36	IC042320	3	3	1	1	5	5	4	11	7	5	2	2	2	2	2	4	3	4	3	1	3	2	
37	IC042321	2	3	1	1	5	5	4	9	5	5	2	5	2	2	4	4	3	4	2	1	3	2	
38	IC042322	3	3	1	1	5	5	4	11	7	5	2	2	2	2	4	4	3	4	3	1	3	2	
39	IC042323	2	3	2	1	8	5	6	9	7	5	99	5	2	2	4	4	3	4	2	1	3	2	
40	IC042324	2	3	1	1	5	5	4	11	7	5	2	5	2	2	4	4	4	4	2	1	3	1	
41	IC042326	2	3	1	1	8	5	7	6	5	5	99	4	2	2	4	4	4	2	2	1	3	2	
42	IC042327	2	3	2	1	8	5	7	11	5	5	99	2	2	2	4	4	3	2	2	1	3	1	
43	IC042328	2	3	2	1	5	5	4	11	5	5	2	2	2	2	4	4	3	4	2	1	3	2	
44	IC042329	2	3	1	1	8	5	6	9	5	5	99	5	2	2	4	4	3	4	3	1	3	2	
45	IC042333	3	3	1	1	5	5	4	11	7	5	2	2	2	2	4	4	3	4	2	1	3	2	
46	IC042334	2	3	2	1	5	5	7	11	7	5	2	2	2	2	2	4	3	2	2	1	3	2	
47	IC042336	2	3	2	1	10	5	7	6	5	5	99	5	2	2	4	4	4	4	2	1	3	2	

S. No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Inflorescence colour		Inflorescence compactness		Stem colour		Stem surface		Inflorescence shape		Inflorescence spininess		Seed colour		Seed shattering	Seed transparency
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Shimla	Shimla
48	IC042337	2	3	2	1	5	5	10	11	7	5	2	2	2	2	2	4	3	4	2	1	3	2
49	IC042339	2	3	2	1	8	5	6	9	3	5	99	5	2	2	4	4	4	4	3	1	3	2
50	IC042340	3	3	1	1	8	5	6	9	5	5	99	5	2	2	4	4	4	4	2	1	3	2
<b>Mean for check variety</b>																							
	<b>Annapurna (C)</b>	3	3	1	1	5	5	4	11	7	5	2	2	2	2	4	4	2	2	2	1	3	2
	<b>IC-35407 (Durga)</b>	2	3	2	1	8	5	7	6	3	5	99	2	2	2	2	4	4	2	3	1	3	1
	<b>PRA-2 (C)</b>	2	3	1	1	5	5	4	11	3	5	2	2	2	2	4	4	3	4	2	1	3	1
	<b>PRA-3 (C)</b>	3	3	1	1	5	5	4	11	7	5	2	2	2	2	4	4	4	4	2	1	3	1
	<b>Minimum</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>1</b>	
	<b>Maximum</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>10</b>	<b>5</b>	<b>10</b>	<b>11</b>	<b>7</b>	<b>5</b>	<b>99</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>1</b>	<b>7</b>	<b>2</b>
	<b>Mode</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>4</b>	<b>11</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>3</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, 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; *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

**Table 75. Promising lines in buckwheat germplasm for various characters at different locations (Hills)**

S.No.	Characters	Range	Promising lines	Value of best check
<b>Ranichauri (Accessions 25)</b>				
1.	Days to 50% flowering	44.67-86.00	-	Shimla B-1 (44.67 days)
2.	Days to maturity	81.00-120.00	-	VL-7 (81.00 days)
3.	Plant height (cm)	76.40-134.40	-	Shimla B-1 (134.40 cm)
4.	No. of inflorescence per plant	9.40-17.20	-	VL-7 (17.20)
5.	No. of primary branches	3.00-6.00	-	Shimla B-1 (6.00)
6.	Seed yield per plant (g)	2.96-6.22	IC109433, IC037309, IC042418, IC042424, IC107291, IC036919, IC107608 (> 5.50 g)	VL-7 (5.18 g)
7.	100 seed weight (g)	2.99-3.41	IC108514, IC107993, IC108510, IC107994, IC037290, IC042418 (> 3.25 g)	Shimla B-1 (3.19 g)
<b>Sangla (Accessions 25)</b>				
1.	Days to 50% flowering	58.00-70.00	IC049666 (= 58 days)	Shimla B-1 (59.20 days)
2.	Days to maturity	107.00-145.00	IC107291, IC108516, IC049666, IC049676, IC042418, IC107608 (< 111.0 days)	Shimla B1 & PRB-1 (112.20 days)
3.	Plant height (cm)	101.67-166.67	IC042424, IC107994, IC107619, IC049666, IC108519, IC109433, IC049671 (> 150.00 cm)	PRB-1 (146.07 cm)
4.	Leaf length (cm)	3.00-10.00	IC042424 (= 10.00 cm)	PRB-1 & Himpriya (7.00 cm)
5.	Leaf width (cm)	2.00-12.00	IC042424 (= 12.00 cm)	Himpriya (9.40 cm)
6.	Petiole length (cm)	1.00-7.00	IC042424, IC108510 (= 7.00 cm)	Himpriya (4.80 cm)
7.	No. of primary branches	2.00-11.00	IC042424, IC107994, IC109316, IC049671 (> 6.00)	PRB-1 (4.00)
8.	No. of inflorescence per plant	5.00-63.00	IC049671, IC109211 (> 50.00)	PRB-1 (42.40)

9.	No. of seed per inflorescence	2.40-13.80	-	Shimla B1 (13.80)
10.	Seed yield per plant (g)	0.20-2.20	-	PRB-1 (2.20 g)
11.	100-seed weight(g)	2.00-3.50	IC107993, IC049671, IC049666, IC108519 (> 3.00 g)	PRB-1 (2.50 g)
<b>Shimla (Accessions 25)</b>				
1.	Days to 50% flowering	41.00-60.00	-	VL-7 (41.00 days)
2.	Days to maturity	85.00-110.00	-	VL-7 (85.00 days)
3.	Plant height (cm)	53.90-192.60	-	Shimla B-1 (192.60 cm)
4.	Leaf length (cm)	5.20-12.10	IC108514 (= 12.10 cm)	Himpriya (11.70 cm)
5.	Leaf width (cm)	4.90-14.70	IC109211, IC108514 (> 13.50 cm)	Shimla B-1 (13.20 cm)
6.	Petiole length (cm)	4.70-13.30	-	Himpriya (13.30 cm)
7.	No. of leaves per plant	11.50-19.00	IC108514, IC109316 (= 19.00)	Shimla B-1 (17.00)
8.	No. of primary branches	2.50-5.00	-	Himpriya (5.00)
9.	Length of cyme (cm)	1.30-8.20	-	Shimla B-1 (8.20 cm)
10.	No. of inflorescence per plant	9.50-35.00	IC037309 (= 35.00)	PRB-1 (31.50)
11.	No. of internodes	11.00-18.00	IC108514, IC109316, IC036919 (> 16.50)	Shimla B-1 (16.00)
12.	Seed yield per plant (g)	8.66-30.46	IC049671, IC107994, IC108514, IC108519 (> 26.50 g)	Himpriya (24.22 g)
13.	100 seed weight (g)	2.10-5.12	EC216635 (= 5.12 g)	VL-7 (4.60 g)
14.	No. of seeds per inflorescence	6.00-11.00	-	Sangla B-1 (11.00)



<b>Best entries over locations</b>				
1.	Days to 50% flowering	51.29-70.67	-	Shimla B-1 (51.29 days)
2.	Days to maturity	94.00-122.38	IC037309 (= 94.00 days)	Shimla B-1 (95.29 days)
3.	Plant height (cm)	92.52-154.22	-	Shimla B-1 (154.22 cm)
4.	Leaf length (cm)	4.80-9.35	-	Himpriya (9.35 cm)
5.	Leaf width (cm)	5.20-11.25	-	Himpriya (11.25 cm)
6.	Petiole length (cm)	3.10-9.05	-	Himpriya (9.05 cm)
7.	No. of primary branches	3.50-5.97	IC042424, IC109316, IC049671 (> 5.00)	PRB-1 (4.80)
8.	Seed yield per plant (g)	4.75-14.96	IC037309, IC049671, IC107994, IC108519 (> 10.50 g)	Himpriya (9.89 g)
9.	100 seed weight (g)	2.62-3.59	EC216635, IC107993, IC108519, IC049671, IC049666 (> 3.40 g)	VL-7 (3.29 g)
10.	No. of inflorescence per plant	11.40-34.43	IC049671 (= 34.43)	PRB-1 (29.21)
11.	No. of seeds per inflorescence	4.50-12.40	-	Shimla B-1 (12.40)

**Table 76. Multilocation evaluation of germplasm lines in buckwheat at different locations- Hills (2010)**

S. No.	Accession No.	Days to 50% flowering				Days to maturity				Plant height (cm)			
		Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
1	IC036919	86	64	57	<b>69.00</b>	120	131	98	<b>116.33</b>	91.67	133.33	96.70	<b>107.23</b>
2	IC037290	66	61	56	<b>61.00</b>	108	111	94	<b>104.33</b>	90.20	148.33	105.80	<b>114.78</b>
3	IC037309	45	68	56	<b>56.33</b>	85	-	103	<b>94.00</b>	105.40	115.00	167.20	<b>129.20</b>
4	IC042418	66	63	57	<b>62.00</b>	108	110	98	<b>105.33</b>	93.80	148.33	101.60	<b>114.58</b>
5	IC042424	86	70	56	<b>70.67</b>	120	145	92	<b>119.00</b>	76.40	166.67	94.20	<b>112.42</b>
6	IC049666	50	58	54	<b>54.00</b>	90	109	103	<b>100.67</b>	94.40	153.33	101.20	<b>116.31</b>
7	IC049671	66	61	53	<b>60.00</b>	107	111	103	<b>107.00</b>	101.00	151.67	96.80	<b>116.49</b>
8	IC049676	66	61	54	<b>60.33</b>	107	110	98	<b>105.00</b>	97.20	116.67	63.70	<b>92.52</b>
9	IC107291	55	61	60	<b>58.67</b>	95	107	94	<b>98.67</b>	103.00	145.67	68.10	<b>105.59</b>
10	IC107608	56	63	53	<b>57.33</b>	96	110	104	<b>103.33</b>	113.60	140.00	60.10	<b>104.57</b>
11	IC107619	66	68	54	<b>62.67</b>	108	131	95	<b>111.33</b>	97.20	158.33	67.40	<b>107.64</b>
12	IC107986	66	61	57	<b>61.33</b>	107	111	106	<b>108.00</b>	92.20	135.00	83.40	<b>103.53</b>
13	IC107988	62	68	54	<b>61.33</b>	100	131	108	<b>113.00</b>	103.60	133.33	60.40	<b>99.11</b>
14	IC107993	58	63	54	<b>58.33</b>	99	112	94	<b>101.67</b>	101.60	143.33	53.90	<b>99.61</b>
15	IC107994	66	68	56	<b>63.33</b>	105	131	110	<b>115.33</b>	120.40	160.00	103.20	<b>127.87</b>
16	IC108510	71	68	54	<b>64.33</b>	109	131	103	<b>114.33</b>	118.40	136.67	95.70	<b>116.92</b>
17	IC108514	75	66	56	<b>65.67</b>	111	130	104	<b>115.00</b>	116.60	126.67	118.70	<b>120.66</b>
18	IC108516	55	61	54	<b>56.67</b>	95	108	98	<b>100.33</b>	93.40	121.67	110.50	<b>108.52</b>
19	IC108519	58	64	52	<b>58.00</b>	99	112	104	<b>105.00</b>	88.60	153.33	90.30	<b>110.74</b>
20	IC109211	57	64	57	<b>59.33</b>	97	113	99	<b>103.00</b>	85.60	148.33	109.10	<b>114.34</b>
21	IC109316	58	61	56	<b>58.33</b>	99	113	100	<b>104.00</b>	90.40	146.67	109.00	<b>115.36</b>
22	IC109433	50	66	54	<b>56.67</b>	97	114	106	<b>105.67</b>	84.60	153.33	79.50	<b>105.81</b>

S. No.	Accession No.	No. of primary branches				No. of inflorescence per plant				Seed yield per plant (g)				100 seed weight (g)			
		Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
1	IC036919	3.80	6.00	4.50	<b>4.77</b>	14.20	8.00	12.00	<b>11.40</b>	5.68	0.80	24.46	<b>10.31</b>	3.21	2.50	2.20	<b>2.64</b>
2	IC037290	4.00	4.00	3.50	<b>3.83</b>	11.00	22.00	18.00	<b>17.00</b>	4.44	1.60	15.13	<b>7.06</b>	3.31	3.00	2.12	<b>2.81</b>
3	IC037309	3.40	6.00	3.50	<b>4.30</b>	10.60	15.00	35.00	<b>20.20</b>	6.01	-	23.91	<b>14.96</b>	3.11	-	2.42	<b>2.77</b>
4	IC042418	3.60	4.00	3.00	<b>3.53</b>	10.20	35.00	26.50	<b>23.90</b>	5.90	0.80	21.82	<b>9.51</b>	3.26	2.50	2.10	<b>2.62</b>
5	IC042424	4.40	11.00	2.50	<b>5.97</b>	11.40	31.00	12.00	<b>18.13</b>	5.78	0.80	14.22	<b>6.93</b>	3.01	2.50	3.20	<b>2.90</b>
6	IC049666	4.80	6.00	2.50	<b>4.43</b>	12.60	45.00	18.50	<b>25.37</b>	4.86	1.40	13.22	<b>6.49</b>	3.05	3.50	3.72	<b>3.42</b>
7	IC049671	4.80	7.00	4.00	<b>5.27</b>	13.80	63.00	26.50	<b>34.43</b>	4.50	1.60	30.46	<b>12.19</b>	3.21	3.50	3.62	<b>3.44</b>
8	IC049676	3.60	5.00	3.50	<b>4.03</b>	11.00	35.00	19.50	<b>21.83</b>	5.20	1.60	13.80	<b>6.87</b>	3.16	3.00	3.60	<b>3.25</b>
9	IC107291	4.40	4.00	3.50	<b>3.97</b>	13.80	27.00	22.50	<b>21.10</b>	5.74	0.80	14.83	<b>7.12</b>	3.21	2.00	3.42	<b>2.88</b>
10	IC107608	4.40	5.00	3.50	<b>4.30</b>	13.20	41.00	16.00	<b>23.40</b>	5.68	1.00	14.52	<b>7.07</b>	3.20	3.00	3.38	<b>3.19</b>
11	IC107619	3.60	6.00	3.50	<b>4.37</b>	9.40	49.00	17.00	<b>25.13</b>	5.19	0.60	21.03	<b>8.94</b>	3.01	2.00	3.70	<b>2.90</b>
12	IC107986	4.00	4.00	3.00	<b>3.67</b>	10.00	33.00	16.50	<b>19.83</b>	4.33	1.40	16.26	<b>7.33</b>	3.05	3.00	3.74	<b>3.26</b>
13	IC107988	4.40	5.00	3.00	<b>4.13</b>	10.80	20.00	13.00	<b>14.60</b>	4.51	0.60	26.34	<b>10.48</b>	2.99	2.00	3.80	<b>2.93</b>
14	IC107993	5.00	6.00	3.50	<b>4.83</b>	14.40	20.00	9.50	<b>14.63</b>	4.00	1.80	13.85	<b>6.55</b>	3.38	3.50	3.54	<b>3.47</b>
15	IC107994	3.80	7.00	3.50	<b>4.77</b>	10.80	38.00	15.00	<b>21.27</b>	3.44	0.80	29.04	<b>11.09</b>	3.31	2.00	3.86	<b>3.06</b>
16	IC108510	4.00	6.00	3.00	<b>4.33</b>	14.00	35.00	16.50	<b>21.83</b>	4.57	0.60	24.05	<b>9.74</b>	3.34	2.50	3.66	<b>3.17</b>
17	IC108514	6.00	2.00	4.00	<b>4.00</b>	10.80	18.00	19.00	<b>15.93</b>	3.17	0.40	27.67	<b>10.41</b>	3.41	2.00	3.66	<b>3.02</b>
18	IC108516	3.00	5.00	5.00	<b>4.33</b>	14.00	37.00	28.00	<b>26.33</b>	5.07	1.00	14.75	<b>6.94</b>	3.06	2.50	3.50	<b>3.02</b>
19	IC108519	5.60	3.00	4.00	<b>4.20</b>	13.50	32.00	21.00	<b>22.17</b>	3.62	1.20	26.90	<b>10.57</b>	3.11	3.50	3.78	<b>3.46</b>
20	IC109211	4.20	5.00	5.00	<b>4.73</b>	9.60	58.00	19.50	<b>29.03</b>	2.96	2.20	16.21	<b>7.12</b>	3.25	3.00	3.62	<b>3.29</b>
21	IC109316	4.20	7.00	5.00	<b>5.40</b>	15.00	25.00	25.00	<b>21.67</b>	5.06	1.60	19.31	<b>8.66</b>	3.19	3.00	3.88	<b>3.36</b>
22	IC109433	3.00	4.00	3.50	<b>3.50</b>	11.20	20.00	16.50	<b>15.90</b>	6.22	0.80	21.48	<b>9.50</b>	3.24	2.00	3.38	<b>2.87</b>

S. No.	Accession No.	Leaf length (cm)			Leaf width (cm)			Petiole length (cm)			No. of seed per inflorescence			Shimla		
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	No. of leaves per plant	No. of internodes	Length of cyme (cm)
1	IC036919	5.00	9.20	<b>7.10</b>	8.00	10.70	<b>9.35</b>	3.00	7.70	<b>5.35</b>	3	6	<b>4.50</b>	18.00	18.00	3.10
2	IC037290	3.00	10.50	<b>6.75</b>	5.00	11.00	<b>8.00</b>	2.00	9.10	<b>5.55</b>	11	6	<b>8.50</b>	16.00	15.50	3.80
3	IC037309	5.00	9.00	<b>7.00</b>	6.00	7.60	<b>6.80</b>	4.00	7.20	<b>5.60</b>	-	7	<b>7.00</b>	17.50	16.50	4.80
4	IC042418	4.00	9.80	<b>6.90</b>	6.00	9.60	<b>7.80</b>	3.00	10.30	<b>6.65</b>	7	8	<b>7.50</b>	14.50	13.50	4.00
5	IC042424	10.00	7.00	<b>8.50</b>	12.00	8.40	<b>10.20</b>	7.00	8.80	<b>7.90</b>	7	7	<b>7.00</b>	14.00	13.00	4.60
6	IC049666	7.00	5.90	<b>6.45</b>	7.00	6.70	<b>6.85</b>	5.00	5.20	<b>5.10</b>	10	8	<b>9.00</b>	14.50	13.50	3.80
7	IC049671	5.00	8.20	<b>6.60</b>	7.00	7.70	<b>7.35</b>	2.00	7.60	<b>4.80</b>	8	9	<b>8.50</b>	17.50	16.50	3.60
8	IC049676	5.00	5.20	<b>5.10</b>	6.00	4.90	<b>5.45</b>	2.00	4.70	<b>3.35</b>	12	7	<b>9.50</b>	14.50	13.50	3.10
9	IC107291	5.00	5.80	<b>5.40</b>	5.00	7.40	<b>6.20</b>	1.00	5.20	<b>3.10</b>	5	7	<b>6.00</b>	12.00	11.00	3.00
10	IC107608	4.00	5.60	<b>4.80</b>	4.00	6.40	<b>5.20</b>	3.00	5.20	<b>4.10</b>	5	8	<b>6.50</b>	13.00	12.00	3.70
11	IC107619	5.00	9.50	<b>7.25</b>	7.00	10.60	<b>8.80</b>	2.00	11.10	<b>6.55</b>	4	8	<b>6.00</b>	14.00	13.00	5.20
12	IC107986	5.00	8.10	<b>6.55</b>	7.00	10.30	<b>8.65</b>	2.00	5.50	<b>3.75</b>	6	7	<b>6.50</b>	14.50	13.50	6.30
13	IC107988	7.00	6.20	<b>6.60</b>	9.00	7.50	<b>8.25</b>	6.00	7.10	<b>6.55</b>	4	8	<b>6.00</b>	15.00	11.00	2.70
14	IC107993	5.00	5.70	<b>5.35</b>	6.00	8.40	<b>7.20</b>	2.00	6.60	<b>4.30</b>	4	7	<b>5.50</b>	15.50	14.50	3.10
15	IC107994	8.00	9.40	<b>8.70</b>	10.00	11.20	<b>10.60</b>	6.00	11.20	<b>8.60</b>	3	8	<b>5.50</b>	14.00	13.00	6.20
16	IC108510	8.00	7.20	<b>7.60</b>	10.00	8.90	<b>9.45</b>	7.00	9.00	<b>8.00</b>	7	7	<b>7.00</b>	15.00	14.00	3.10
17	IC108514	6.00	12.10	<b>9.05</b>	8.00	13.70	<b>10.85</b>	2.00	10.00	<b>6.00</b>	4	8	<b>6.00</b>	19.00	18.00	7.60
18	IC108516	5.00	11.10	<b>8.05</b>	7.00	11.40	<b>9.20</b>	2.00	13.10	<b>7.55</b>	9	6	<b>7.50</b>	16.00	15.50	4.30
19	IC108519	7.00	7.00	<b>7.00</b>	6.00	10.60	<b>8.30</b>	1.00	9.60	<b>5.30</b>	10	7	<b>8.50</b>	16.50	15.50	4.10
20	IC109211	7.00	10.50	<b>8.75</b>	7.00	14.70	<b>10.85</b>	3.00	11.50	<b>7.25</b>	12	8	<b>10.00</b>	15.00	14.00	2.70
21	IC109316	7.00	7.70	<b>7.35</b>	8.00	9.60	<b>8.80</b>	2.00	7.20	<b>4.60</b>	5	6	<b>5.50</b>	19.00	18.00	4.20
22	IC109433	6.00	7.70	<b>6.85</b>	7.00	10.10	<b>8.55</b>	4.00	9.20	<b>6.60</b>	4	8	<b>6.00</b>	14.00	13.00	2.80

S. No.	Accession No.	Days to 50% flowering				Days to maturity				Plant height (cm)			
		Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
23	IC109438	45	61	55	<b>53.67</b>	87	114	103	<b>101.33</b>	98.00	133.33	99.20	<b>110.18</b>
24	IC109458	50	70	55	<b>58.33</b>	92	145	104	<b>113.67</b>	123.60	127.50	100.40	<b>117.17</b>
25	EC216635	45	68	54	<b>55.67</b>	82	145	100	<b>109.00</b>	130.40	101.67	120.70	<b>117.59</b>
<b>Mean for check variety</b>													
	<b>Himpriya (C)</b>	84.00	68.40	59.00	<b>70.47</b>	119.33	143.80	104.00	<b>122.38</b>	117.13	131.67	111.40	<b>120.07</b>
	<b>PRB-1 (C)</b>	74.67	62.80	43.00	<b>60.16</b>	114.00	112.20	94.00	<b>106.73</b>	116.73	146.07	168.30	<b>143.70</b>
	<b>Shimla B-1 (C)</b>	44.67	59.20	50.00	<b>51.29</b>	85.67	112.20	88.00	<b>95.29</b>	134.40	135.67	192.60	<b>154.22</b>
	<b>VL-7 (C)</b>	54.00	68.00	41.00	<b>54.33</b>	81.00	124.20	85.00	<b>96.73</b>	129.10	105.00	130.30	<b>121.47</b>
	<b>Minimum</b>	<b>44.67</b>	<b>58.00</b>	<b>41.00</b>	<b>51.29</b>	<b>81.00</b>	<b>107.00</b>	<b>85.00</b>	<b>94.00</b>	<b>76.40</b>	<b>101.67</b>	<b>53.90</b>	<b>92.52</b>
	<b>Maximum</b>	<b>86.00</b>	<b>70.00</b>	<b>60.00</b>	<b>70.67</b>	<b>120.00</b>	<b>145.00</b>	<b>110.00</b>	<b>122.38</b>	<b>134.40</b>	<b>166.67</b>	<b>192.60</b>	<b>154.22</b>
	<b>Mean</b>	<b>61.43</b>	<b>64.32</b>	<b>54.17</b>	<b>59.97</b>	<b>100.79</b>	<b>120.62</b>	<b>99.72</b>	<b>106.74</b>	<b>103.75</b>	<b>138.50</b>	<b>102.05</b>	<b>114.77</b>
	<b>CD (0.05)</b>	-	<b>7.21</b>	-		-	<b>8.47</b>	-		-	<b>40.49</b>	-	
	<b>CV (%) Error</b>	-	<b>4.25</b>	-		-	<b>2.62</b>	-		-	<b>11.90</b>	-	
	<b>CV (%) Phen.</b>	<b>19.51</b>	<b>5.45</b>	<b>7.27</b>		<b>11.02</b>	<b>10.76</b>	<b>5.93</b>		<b>14.72</b>	<b>11.56</b>	<b>31.72</b>	

S. No.	Accession No.	No. of primary branches				No. of inflorescence per plant				Seed yield per plant (g)				100 seed weight (g)			
		Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
23	IC109438	4.20	2.00	5.00	<b>3.73</b>	11.20	12.00	27.50	<b>16.90</b>	5.14	0.80	18.30	<b>8.08</b>	3.17	2.50	3.92	<b>3.20</b>
24	IC109458	4.80	4.00	4.50	<b>4.43</b>	13.40	18.00	11.50	<b>14.30</b>	3.95	0.60	14.84	<b>6.46</b>	3.02	2.50	3.06	<b>2.86</b>
25	EC216635	3.80	-	3.50	<b>3.65</b>	16.60	5.00	26.50	<b>16.03</b>	3.75	0.20	16.11	<b>6.69</b>	3.14	2.50	5.12	<b>3.59</b>
<b>Mean for check variety</b>																	
	<b>Himpriya (C)</b>	5.33	3.20	5.00	<b>4.51</b>	14.47	13.60	22.50	<b>16.86</b>	4.78	0.68	24.22	<b>9.89</b>	3.11	2.10	3.84	<b>3.02</b>
	<b>PRB-1 (C)</b>	5.40	4.00	5.00	<b>4.80</b>	13.73	42.40	31.50	<b>29.21</b>	3.71	2.20	11.44	<b>5.78</b>	3.15	2.50	2.82	<b>2.82</b>
	<b>Shimla B-1 (C)</b>	6.00	3.40	4.50	<b>4.63</b>	16.13	23.60	28.50	<b>22.74</b>	4.34	1.24	15.29	<b>6.96</b>	3.19	2.40	2.39	<b>2.66</b>
	<b>VL-7 (C)</b>	5.30	2.60	3.00	<b>3.63</b>	17.20	13.60	13.50	<b>14.77</b>	5.18	0.42	8.66	<b>4.75</b>	3.17	2.10	4.60	<b>3.29</b>
	<b>Minimum</b>	<b>3.00</b>	<b>2.00</b>	<b>2.50</b>	<b>3.50</b>	<b>9.40</b>	<b>5.00</b>	<b>9.50</b>	<b>11.40</b>	<b>2.96</b>	<b>0.20</b>	<b>8.66</b>	<b>4.75</b>	<b>2.99</b>	<b>2.00</b>	<b>2.10</b>	<b>2.62</b>
	<b>Maximum</b>	<b>6.00</b>	<b>11.00</b>	<b>5.00</b>	<b>5.97</b>	<b>17.20</b>	<b>63.00</b>	<b>35.00</b>	<b>34.43</b>	<b>6.22</b>	<b>2.20</b>	<b>30.46</b>	<b>14.96</b>	<b>3.41</b>	<b>3.50</b>	<b>5.12</b>	<b>3.59</b>
	<b>Mean</b>	<b>4.37</b>	<b>4.90</b>	<b>3.81</b>	<b>4.35</b>	<b>12.69</b>	<b>28.80</b>	<b>20.16</b>	<b>20.55</b>	<b>4.72</b>	<b>1.06</b>	<b>19.04</b>	<b>8.43</b>	<b>3.17</b>	<b>2.61</b>	<b>3.44</b>	<b>3.08</b>
	<b>CD (0.05)</b>	-	<b>2.68</b>	-		-	<b>32.42</b>	-		-	<b>1.58</b>	-		-	<b>1.18</b>	-	
	<b>CV (%) Error</b>	-	<b>30.93</b>	-		-	<b>53.00</b>	-		-	<b>52.86</b>	-		-	<b>19.76</b>	-	
	<b>CV (%) Phen.</b>	<b>18.63</b>	<b>38.14</b>	<b>20.87</b>		<b>17.00</b>	<b>50.05</b>	<b>32.62</b>		<b>18.93</b>	<b>50.46</b>	<b>30.56</b>		<b>3.55</b>	<b>19.48</b>	<b>20.15</b>	

S. No.	Accession No.	Leaf length (cm)			Leaf width (cm)			Petiole length (cm)			No. of seed per inflorescence			Shimla		
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	Sangla	Shimla	Mean	No. of leaves per plant	No. of internodes	Length of cyme (cm)
23	IC109438	3.00	8.40	<b>5.70</b>	2.00	10.00	<b>6.00</b>	1.00	8.30	<b>4.65</b>	8	7	<b>7.50</b>	17.00	16.00	7.40
24	IC109458	7.00	8.60	<b>7.80</b>	7.00	10.60	<b>8.80</b>	3.00	10.00	<b>6.50</b>	7	7	<b>7.00</b>	12.00	11.50	3.30
25	EC216635	6.00	11.00	<b>8.50</b>	7.00	10.70	<b>8.85</b>	3.00	8.00	<b>5.50</b>	3	6	<b>4.50</b>	11.50	11.00	4.20
<b>Mean for check variety</b>																
	<b>Himpriya (C)</b>	7.00	11.70	<b>9.35</b>	9.40	13.10	<b>11.25</b>	4.80	13.30	<b>9.05</b>	3.40	7.00	<b>5.20</b>	15.00	14.00	4.00
	<b>PRB-1 (C)</b>	7.00	8.90	<b>7.95</b>	8.20	9.50	<b>8.85</b>	3.20	13.00	<b>8.10</b>	7.60	7.00	<b>7.30</b>	17.00	16.00	5.70
	<b>Shimla B-1 (C)</b>	4.60	8.30	<b>6.45</b>	5.20	13.20	<b>9.20</b>	3.00	7.70	<b>5.35</b>	13.80	11.00	<b>12.40</b>	17.00	16.00	8.20
	<b>VL-7 (C)</b>	4.60	9.80	<b>7.20</b>	3.80	9.50	<b>6.65</b>	2.40	6.10	<b>4.25</b>	2.40	8.00	<b>5.20</b>	12.00	11.00	1.30
	<b>Minimum</b>	<b>3.00</b>	<b>5.20</b>	<b>4.80</b>	<b>2.00</b>	<b>4.90</b>	<b>5.20</b>	<b>1.00</b>	<b>4.70</b>	<b>3.10</b>	<b>2.40</b>	<b>6.00</b>	<b>4.50</b>	<b>11.50</b>	<b>11.00</b>	<b>1.30</b>
	<b>Maximum</b>	<b>10.00</b>	<b>12.10</b>	<b>9.35</b>	<b>12.00</b>	<b>14.70</b>	<b>11.25</b>	<b>7.00</b>	<b>13.30</b>	<b>9.05</b>	<b>13.80</b>	<b>11.00</b>	<b>12.40</b>	<b>19.00</b>	<b>18.00</b>	<b>8.20</b>
	<b>Mean</b>	<b>5.80</b>	<b>8.45</b>	<b>7.13</b>	<b>6.92</b>	<b>9.79</b>	<b>8.36</b>	<b>3.15</b>	<b>8.57</b>	<b>5.86</b>	<b>6.61</b>	<b>7.38</b>	<b>7.00</b>	<b>15.19</b>	<b>14.19</b>	<b>4.27</b>
	<b>CD (0.05)</b>	<b>3.69</b>	-		<b>5.18</b>	-		<b>4.88</b>	-		<b>10.46</b>	-		-	-	-
	<b>CV (%) Error</b>	<b>24.23</b>	-		<b>29.70</b>	-		<b>55.51</b>	-		<b>58.62</b>	-		-	-	-
	<b>CV (%) Phen.</b>	<b>27.21</b>	<b>22.86</b>		<b>29.61</b>	<b>23.00</b>		<b>53.62</b>	<b>28.81</b>		<b>48.04</b>	<b>9.54</b>		<b>13.47</b>	<b>15.17</b>	<b>37.75</b>

**Table 77. Characterization of germplasm lines in buckwheat at Sangla and Shimla - Hills (2010)**

S. No.	Accession No.	Early plant vigour		Plant growth habit		Flower colour		Leaf colour		Leaf margin colour		Leaf blade shape		Stem colour		Seed colour		Shimla	
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Seed shattering	Seed shape
1	IC036919	3	3	5	1	1	1	1	3	7	5	4	2	7	7	5	5	5	2
2	IC037290	2	3	3	1	1	1	1	3	7	5	3	2	99	5	5	3	5	2
3	IC037309	2	3	7	1	5	1	1	3	7	5	4	2	7	7	-	5	5	1
4	IC042418	2	3	5	1	3	1	1	3	3	5	4	2	3	3	5	3	5	1
5	IC042424	3	3	7	1	3	1	1	3	3	5	4	2	99	3	3	5	5	2
6	IC049666	3	3	7	1	3	1	1	3	3	5	3	2	99	5	5	5	5	2
7	IC049671	2	3	7	1	3	1	1	3	7	5	3	2	99	3	3	5	5	2
8	IC049676	2	3	7	1	3	1	1	3	3	5	3	2	3	3	3	3	5	2
9	IC107291	2	3	3	1	3	1	1	3	3	5	3	2	3	3	3	3	5	2
10	IC107608	2	3	3	1	3	1	1	3	3	5	3	2	3	5	5	3	5	2
11	IC107619	3	3	5	1	1	1	1	3	7	5	3	2	7	3	3	5	5	2
12	IC107986	2	3	5	1	1	1	1	3	3	5	4	2	3	3	3	3	5	2
13	IC107988	2	3	5	1	1	1	1	3	7	5	4	2	7	3	3	5	5	2
14	IC107993	3	3	3	1	3	1	1	3	3	5	3	2	7	3	5	3	5	2
15	IC107994	3	3	7	1	1	1	1	3	3	5	4	2	99	3	5	5	5	2
16	IC108510	3	3	7	1	3	1	1	3	3	5	4	2	99	5	5	3	5	2
17	IC108514	3	3	3	1	1	1	1	3	7	5	4	2	7	5	3	3	5	2
18	IC108516	2	3	3	1	3	1	1	3	7	5	4	2	99	3	3	3	5	2
19	IC108519	3	3	5	1	3	1	1	3	3	5	3	2	3	3	3	3	5	2
20	IC109211	3	3	7	1	3	1	1	3	3	5	3	2	3	3	3	3	5	2
21	IC109316	3	3	3	1	3	1	1	3	3	5	4	2	7	3	5	5	5	2
22	IC109433	3	3	3	1	3	1	1	3	3	5	4	2	3	3	5	3	5	2
23	IC109438	3	3	3	1	3	1	1	3	3	5	3	2	3	3	3	5	5	2



S. No.	Accession No.	Early plant vigour		Plant growth habit		Flower colour		Leaf colour		Leaf margin colour		Leaf blade shape		Stem colour		Seed colour		Shimla	
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Seed shattering	Seed shape
24	IC109458	2	3	3	1	3	1	1	3	3	5	4	2	7	3	5	5	5	2
25	EC216635	2	3	3	1	1	1	1	3	3	5	4	3	7	7	9	7	5	2
<b>Mean for check variety</b>																			
<b>Himpriya (C)</b>		3	3	3	1	1	1	1	3	7	5	3	2	7	7	3	3	5	2
<b>PRB-1 (C)</b>		2	3	5	1	3	5	1	3	3	5	3	2	3	7	3	5	5	1
<b>Shimla B-1 (C)</b>		3	3	3	1	3	1	1	3	7	5	4	2	3	3	5	3	7	1
<b>VL-7 (C)</b>		2	3	5	1	5	1	1	3	7	5	4	3	7	7	7	7	5	1
<b>Minimum</b>		<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>1</b>
<b>Maximum</b>		<b>3</b>	<b>3</b>	<b>7</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>1</b>	<b>3</b>	<b>7</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>99</b>	<b>7</b>	<b>9</b>	<b>7</b>	<b>7</b>	<b>2</b>
<b>Mode</b>		<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>4</b>	<b>2</b>	<b>7</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>5</b>	<b>2</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 78. Promising lines in chenopodium 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	54.00-75.00	-	EC-507741 (54.00 days)
2.	Days to maturity	118.00-131.00	IC107854, IC108816, IC108087 (< 120.0 days)	EC-507741 (123.00 days)
3.	Plant height (cm)	40.60-97.00	IC108088, IC107585, IC107296, IC274533, IC108087, IC415403, IC108818, IC106340 (> 74.00 cm)	PRC-9801 (64.87 cm)
4.	No. of leaves per plant	8.40-24.60	IC341695, IC108818, NC-58231, IC341701, IC107585, IC107263, IC274533 (> 16.00)	EC-507741 (13.20)
5.	Inflorescence length (cm)	9.40-20.60	IC108087, IC108088, IC107296, NC-58231 (> 18.00 cm)	PRC-9801 (17.23 cm)
6.	No. of finger per plant	5.40-16.40	IC108816, IC106340, IC108087, IC341705 (> 15.00)	PRC-9801 (13.33)
7.	100 seed weight (g)	5.45-6.89	IC107263 (= 6.89 g)	EC-507741 (6.80 g)
8.	Seed yield per plant (g)	2.08-3.87	IC108816, IC108088, IC107854, IC106340, IC447573, IC341708, IC415403, IC341705, IC107585 (> 3.00)	NIC-22503 (2.54 g)
<b>Sangla (Accession 25)</b>				
1.	Days to 50% flowering	63.00-89.00	EC507740, EC507742 (= 63.0 days)	EC-507741 (63.50 days)
2.	Days to maturity	144.00-160.00	IC341695, IC108816, IC108088, IC108518, IC341708, IC341705 (< 152.0 days)	NIC-22503 & PRC-9801 (158.00 days)
3.	Leaf length (cm)	3.00-10.83	IC274533, IC107263, IC107185 (> 10.00 cm)	PRC-9801 (9.42 cm)
4.	Leaf width (cm)	1.33-6.33	IC107263, IC107535 (= 6.33 cm)	PRC-9801 (6.09 cm)
5.	Plant height (cm)	37.67-154.17	-	NIC-22503 (154.17 cm)
6.	Seed yield per plant (g)	0.60-8.00	-	PRC-9801 (8.00 g)

<b>Shimla (Accession 25)</b>				
1.	Days to 50% flowering	58.00-83.00	EC507744 (= 58.0 days)	EC-507741 (59.00 days)
2.	Days to maturity	102.00-139.00	EC507744, IC341695 (= 102.00 days)	EC-507741 (105.00 days)
3.	Plant height (cm)	94.10-244.10	IC107585, IC108088, IC341701, IC106340, IC107296, IC415403, NC58231, IC108087, IC274533, IC107185, IC107535, IC469275, IC329494 (> 180.00 cm)	NIC-22503 (159.53 cm)
4.	Leaf length (cm)	3.40-15.00	IC341701, IC107585, IC107296, NC58231, IC329494, IC108088, IC108816 (> 10.00 cm)	PRC-9801 (8.35 cm)
5.	Leaf width (cm)	1.60-11.10	IC107296, IC341701 (> 10.00 cm)	PRC-9801 (9.05 cm)
6.	Inflorescence length (cm)	25.20-54.20	IC106340, IC108088, IC107296, IC415403, IC107585, IC107185, IC107535, NC58231 (> 37.00 cm)	NIC-22503 (34.90 cm)
7.	100 seed weight (g)	5.00-14.50	IC341695 (= 14.50 g)	EC-507741 (13.30 g)
8.	Seed yield per plant (g)	3.75-25.40	IC107296, IC107585, IC107535, IC106340, NC58231 (> 13.00 g)	NIC-22503 (11.85 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	58.83-80.00	-	EC-507741 (58.83 days)
2.	Days to maturity	102.00-140.33	EC507744, EC507740, EC507748 (< 110.0 days)	EC-507741 (114.00 days)
3.	Plant height (cm)	72.70-164.46	IC108088, IC107296, IC274533, IC341701, IC415403, IC329494, IC107185, NC-58231 (> 130.00 cm)	NIC-22503 (125.93 cm)
4.	Inflorescence length (cm)	19.13-35.70	EC507742, EC507748, IC108088, IC106340, IC107296, EC507744, NC-58231, IC107585 (> 27.50 cm)	NIC-22503 (25.28 cm)
5.	Seed yield per plant (g)	3.69-12.16	EC507742, EC507740, IC107296, EC507744, IC107585 (> 8.50 g)	PRC-9801 (7.30 g)
6.	100 seed weight (g)	5.54-12.50	EC507748, EC507742, IC341695 (> 10.50 g)	EC-507741 (10.05 g)
7.	Leaf length (cm)	3.35-11.75	IC341701, IC107296, IC329494, IC107263, IC107185 (> 10.00 cm)	PRC-9801 (8.88 cm)
8.	Leaf width (cm)	1.47-7.89	IC107296 (= 7.89 cm)	PRC-9801 (7.57 cm)

**Table 79. Multilocation evaluation of germplasm lines in chenopodium at different locations- Hills (2010)**

S. No.	Accession No.	Days to 50% flowering				Days to maturity				Plant height (cm)			
		Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
1	IC106340	67	70	80	<b>72.33</b>	125	158	119	<b>134.00</b>	74.60	94.33	213.70	<b>127.54</b>
2	IC107185	62	80	71	<b>71.00</b>	122	160	128	<b>136.67</b>	59.00	144.00	191.60	<b>131.53</b>
3	IC107263	67	89	82	<b>79.33</b>	126	160	127	<b>137.67</b>	53.60	132.33	173.20	<b>119.71</b>
4	IC107296	64	75	81	<b>73.33</b>	123	158	139	<b>140.00</b>	88.60	125.67	210.40	<b>141.56</b>
5	IC107535	65	89	82	<b>78.67</b>	123	158	127	<b>136.00</b>	66.20	116.33	188.30	<b>123.61</b>
6	IC107585	70	79	81	<b>76.67</b>	127	153	124	<b>134.67</b>	89.40	37.67	244.10	<b>123.72</b>
7	IC107854	54	79	72	<b>68.33</b>	118	153	124	<b>131.67</b>	53.60	138.67	158.00	<b>116.76</b>
8	IC108087	57	89	71	<b>72.33</b>	119	158	119	<b>132.00</b>	79.20	108.75	200.10	<b>129.35</b>
9	IC108088	65	72	81	<b>72.67</b>	123	151	120	<b>131.33</b>	97.00	153.67	242.70	<b>164.46</b>
10	IC108816	54	72	69	<b>65.00</b>	118	150	124	<b>130.67</b>	61.60	139.67	170.10	<b>123.79</b>
11	IC108818	60	69	73	<b>67.33</b>	120	151	118	<b>129.67</b>	78.00	124.33	180.00	<b>127.44</b>
12	IC274533	65	82	71	<b>72.67</b>	123	160	127	<b>136.67</b>	81.00	149.33	193.80	<b>141.38</b>
13	IC329494	70	80	81	<b>77.00</b>	127	157	119	<b>134.33</b>	74.00	137.00	184.30	<b>131.77</b>
14	IC341695	66	70	62	<b>66.00</b>	124	144	102	<b>123.33</b>	66.20	88.67	150.10	<b>101.66</b>
15	IC341701	72	84	83	<b>79.67</b>	129	158	134	<b>140.33</b>	48.60	129.00	233.40	<b>137.00</b>
16	IC341705	65	79	83	<b>75.67</b>	123	151	119	<b>131.00</b>	40.60	102.00	128.70	<b>90.43</b>
17	IC341708	62	74	73	<b>69.67</b>	121	151	119	<b>130.33</b>	65.60	108.67	159.20	<b>111.16</b>
18	IC415403	75	76	82	<b>77.67</b>	130	158	128	<b>138.67</b>	78.80	117.00	203.60	<b>133.13</b>
19	IC447573	70	73	74	<b>72.33</b>	127	152	118	<b>132.33</b>	63.20	98.33	161.60	<b>107.71</b>
20	IC469275	65	81	76	<b>74.00</b>	123	158	128	<b>136.33</b>	73.40	112.33	187.30	<b>124.34</b>
21	NC-58231	75	82	83	<b>80.00</b>	131	156	127	<b>138.00</b>	66.60	125.67	201.40	<b>131.22</b>
22	EC507740	-	63	60	<b>61.50</b>	-	-	108	<b>108.00</b>	-	60.67	94.10	<b>77.39</b>

S. No.	Accession No.	Inflorescence length (cm)			100 seed weight (g)			Seed yield per plant (g)			
		Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
1	IC106340	11.80	54.20	<b>33.00</b>	6.00	10.00	<b>8.00</b>	3.54	3.00	18.88	<b>8.47</b>
2	IC107185	14.60	39.80	<b>27.20</b>	6.12	8.00	<b>7.06</b>	2.59	4.00	9.09	<b>5.23</b>
3	IC107263	15.60	36.20	<b>25.90</b>	6.89	6.00	<b>6.45</b>	2.47	4.00	4.60	<b>3.69</b>
4	IC107296	18.60	45.20	<b>31.90</b>	6.78	6.00	<b>6.39</b>	2.14	4.20	25.40	<b>10.58</b>
5	IC107535	15.60	38.20	<b>26.90</b>	5.45	8.00	<b>6.73</b>	2.08	0.60	20.68	<b>7.79</b>
6	IC107585	14.00	41.30	<b>27.65</b>	6.02	7.00	<b>6.51</b>	3.11	2.00	20.71	<b>8.61</b>
7	IC107854	12.80	36.60	<b>24.70</b>	5.95	6.00	<b>5.98</b>	3.64	3.40	12.00	<b>6.35</b>
8	IC108087	20.60	34.20	<b>27.40</b>	6.01	7.00	<b>6.51</b>	2.85	1.20	11.40	<b>5.15</b>
9	IC108088	19.40	47.00	<b>33.20</b>	6.15	8.00	<b>7.08</b>	3.70	0.80	12.41	<b>5.64</b>
10	IC108816	17.80	32.10	<b>24.95</b>	6.74	10.00	<b>8.37</b>	3.87	6.40	12.14	<b>7.47</b>
11	IC108818	16.20	31.00	<b>23.60</b>	5.99	6.00	<b>6.00</b>	2.49	2.40	12.44	<b>5.78</b>
12	IC274533	16.20	36.40	<b>26.30</b>	5.98	8.00	<b>6.99</b>	2.54	3.40	7.14	<b>4.36</b>
13	IC329494	11.60	32.30	<b>21.95</b>	6.34	10.00	<b>8.17</b>	2.68	2.00	10.78	<b>5.15</b>
14	IC341695	12.40	32.10	<b>22.25</b>	6.60	14.50	<b>10.55</b>	2.97	3.00	12.05	<b>6.01</b>
15	IC341701	9.40	37.00	<b>23.20</b>	6.00	7.50	<b>6.75</b>	2.93	2.60	10.00	<b>5.18</b>
16	IC341705	11.40	33.10	<b>22.25</b>	6.09	7.00	<b>6.55</b>	3.12	4.40	6.52	<b>4.68</b>
17	IC341708	11.40	34.20	<b>22.80</b>	6.07	5.00	<b>5.54</b>	3.25	2.80	7.46	<b>4.50</b>
18	IC415403	12.80	41.70	<b>27.25</b>	6.00	10.00	<b>8.00</b>	3.13	1.40	10.15	<b>4.89</b>
19	IC447573	14.00	32.30	<b>23.15</b>	6.08	8.00	<b>7.04</b>	3.43	3.60	10.16	<b>5.73</b>
20	IC469275	12.00	35.10	<b>23.55</b>	6.17	5.50	<b>5.84</b>	2.99	7.00	7.18	<b>5.72</b>
21	NC-58231	18.40	37.20	<b>27.80</b>	6.03	11.00	<b>8.52</b>	-	3.00	13.94	<b>8.47</b>
22	EC507740	-	25.20	<b>25.20</b>	-	10.50	<b>10.50</b>	-	-	11.72	<b>11.72</b>

S. No.	Accession No.	Leaf length (cm)			Leaf width (cm)			Ranichauri	
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	No. of leaves per plant	No. of finger per plant
1	IC106340	3.67	8.60	<b>6.14</b>	1.50	4.20	<b>2.85</b>	15.00	16.40
2	IC107185	10.50	9.90	<b>10.20</b>	5.67	9.00	<b>7.34</b>	15.00	12.40
3	IC107263	10.67	9.80	<b>10.24</b>	6.33	7.00	<b>6.67</b>	17.00	10.00
4	IC107296	9.83	12.00	<b>10.92</b>	4.67	11.10	<b>7.89</b>	8.60	14.80
5	IC107535	9.17	9.10	<b>9.14</b>	6.33	8.40	<b>7.37</b>	10.40	15.00
6	IC107585	6.83	12.20	<b>9.52</b>	3.50	7.00	<b>5.25</b>	17.00	12.20
7	IC107854	5.00	6.40	<b>5.70</b>	2.50	4.10	<b>3.30</b>	16.00	9.02
8	IC108087	6.88	9.90	<b>8.39</b>	4.25	8.10	<b>6.18</b>	10.80	15.80
9	IC108088	7.33	10.30	<b>8.82</b>	3.33	7.20	<b>5.27</b>	10.80	10.00
10	IC108816	7.83	10.20	<b>9.02</b>	4.17	7.20	<b>5.69</b>	15.80	16.40
11	IC108818	5.00	6.60	<b>5.80</b>	2.00	3.00	<b>2.50</b>	21.60	12.80
12	IC274533	10.83	6.90	<b>8.87</b>	5.00	4.60	<b>4.80</b>	16.60	10.00
13	IC329494	9.67	11.00	<b>10.34</b>	5.00	7.60	<b>6.30</b>	15.60	10.80
14	IC341695	-	6.80	<b>6.80</b>	-	4.60	<b>4.60</b>	24.60	14.80
15	IC341701	8.50	15.00	<b>11.75</b>	4.67	10.30	<b>7.49</b>	18.20	8.60
16	IC341705	7.50	6.60	<b>7.05</b>	4.80	5.70	<b>5.25</b>	11.40	15.80
17	IC341708	4.33	6.80	<b>5.57</b>	1.50	4.00	<b>2.75</b>	8.40	10.80
18	IC415403	8.50	9.70	<b>9.10</b>	3.33	5.00	<b>4.17</b>	13.60	9.00
19	IC447573	6.67	8.20	<b>7.44</b>	2.00	6.00	<b>4.00</b>	11.60	7.80
20	IC469275	7.88	6.70	<b>7.29</b>	2.67	4.50	<b>3.59</b>	8.80	9.40
21	NC-58231	6.33	11.40	<b>8.87</b>	2.67	7.90	<b>5.29</b>	20.40	14.40
22	EC507740	3.83	3.40	<b>3.62</b>	2.50	2.70	<b>2.60</b>	-	-

S. No.	Accession No.	Days to 50% flowering				Days to maturity				Plant height (cm)			
		Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
23	EC507742	-	63	61	<b>62.00</b>	-	-	110	<b>110.00</b>	-	61.67	111.20	<b>86.44</b>
24	EC507744	-	64	58	<b>61.00</b>	-	-	102	<b>102.00</b>	-	86.00	106.20	<b>96.10</b>
25	EC507748	-	64	60	<b>62.00</b>	-	-	108	<b>108.00</b>	-	49.33	111.20	<b>80.27</b>
<b>Mean for check variety</b>													
	<b>EC-507741 (C)</b>	54.00	63.50	59.00	<b>58.83</b>	123.00	-	105.00	<b>114.00</b>	53.60	54.50	110.00	<b>72.70</b>
	<b>NIC-22503 (C)</b>	72.33	82.50	74.00	<b>76.28</b>	128.33	158.00	132.50	<b>139.61</b>	64.10	154.17	159.53	<b>125.93</b>
	<b>PRC-9801 (C)</b>	64.67	89.00	75.00	<b>76.22</b>	123.00	158.00	130.00	<b>137.00</b>	64.87	134.84	135.25	<b>111.65</b>
	<b>Minimum</b>	<b>54.00</b>	<b>63.00</b>	<b>58.00</b>	<b>58.83</b>	<b>118.00</b>	<b>144.00</b>	<b>102.00</b>	<b>102.00</b>	<b>40.60</b>	<b>37.67</b>	<b>94.10</b>	<b>72.70</b>
	<b>Maximum</b>	<b>75.00</b>	<b>89.00</b>	<b>83.00</b>	<b>80.00</b>	<b>131.00</b>	<b>160.00</b>	<b>139.00</b>	<b>140.33</b>	<b>97.00</b>	<b>154.17</b>	<b>244.10</b>	<b>164.46</b>
	<b>Mean</b>	<b>65.04</b>	<b>76.18</b>	<b>73.50</b>	<b>71.41</b>	<b>124.01</b>	<b>155.26</b>	<b>120.91</b>	<b>129.80</b>	<b>68.39</b>	<b>110.16</b>	<b>171.54</b>	<b>117.49</b>
	<b>CV (%) Phen.</b>	<b>9.39</b>	<b>10.97</b>	<b>11.44</b>		<b>2.89</b>	<b>2.70</b>	<b>7.96</b>		<b>19.93</b>	<b>30.00</b>	<b>24.42</b>	

S. No.	Accession No.	Inflorescence length (cm)			100 seed weight (g)			Seed yield per plant (g)			
		Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Ranichauri	Sangla	Shimla	Mean
23	EC507742	-	35.70	<b>35.70</b>	-	11.20	<b>11.20</b>	-	-	12.16	<b>12.16</b>
24	EC507744	-	29.00	<b>29.00</b>	-	10.50	<b>10.50</b>	-	-	9.68	<b>9.68</b>
25	EC507748	-	34.60	<b>34.60</b>	-	12.50	<b>12.50</b>	-	-	3.75	<b>3.75</b>
<b>Mean for check variety</b>											
	<b>EC-507741 (C)</b>	9.60	28.65	<b>19.13</b>	6.80	13.30	<b>10.05</b>	2.15	-	7.38	<b>4.76</b>
	<b>NIC-22503 (C)</b>	15.67	34.90	<b>25.28</b>	6.05	6.00	<b>6.02</b>	2.54	7.20	11.85	<b>7.20</b>
	<b>PRC-9801 (C)</b>	17.23	31.80	<b>24.52</b>	6.11	5.50	<b>5.80</b>	2.38	8.00	11.52	<b>7.30</b>
	<b>Minimum</b>	<b>9.40</b>	<b>25.20</b>	<b>19.13</b>	<b>5.45</b>	<b>5.00</b>	<b>5.54</b>	<b>2.08</b>	<b>0.60</b>	<b>3.75</b>	<b>3.69</b>
	<b>Maximum</b>	<b>20.60</b>	<b>54.20</b>	<b>35.70</b>	<b>6.89</b>	<b>14.50</b>	<b>12.50</b>	<b>3.87</b>	<b>8.00</b>	<b>25.40</b>	<b>12.16</b>
	<b>Mean</b>	<b>14.55</b>	<b>35.97</b>	<b>26.44</b>	<b>6.18</b>	<b>8.50</b>	<b>7.70</b>	<b>2.90</b>	<b>3.50</b>	<b>11.54</b>	<b>6.64</b>
	<b>CV (%) Phen.</b>	<b>21.41</b>	<b>16.57</b>		<b>5.50</b>	<b>30.04</b>		<b>17.96</b>	<b>57.73</b>	<b>42.34</b>	



S. No.	Accession No.	Leaf length (cm)			Leaf width (cm)			Ranichauri	
		Sangla	Shimla	Mean	Sangla	Shimla	Mean	No. of leaves per plant	No. of finger per plant
23	EC507742	-	3.80	<b>3.80</b>	-	1.90	<b>1.90</b>	-	-
24	EC507744	3.00	3.70	<b>3.35</b>	1.33	1.60	<b>1.47</b>	-	-
25	EC507748	-	7.60	<b>7.60</b>	-	4.00	<b>4.00</b>	-	-
<b>Mean for check variety</b>									
	<b>EC-507741 (C)</b>	-	4.65	<b>4.65</b>	-	2.40	<b>2.40</b>	13.20	5.40
	<b>NIC-22503 (C)</b>	9.33	7.60	<b>8.47</b>	5.50	6.35	<b>5.93</b>	9.92	13.28
	<b>PRC-9801 (C)</b>	9.42	8.35	<b>8.88</b>	6.09	9.05	<b>7.57</b>	11.80	13.33
	<b>Minimum</b>	<b>3.00</b>	<b>3.40</b>	<b>3.35</b>	<b>1.33</b>	<b>1.60</b>	<b>1.47</b>	<b>8.40</b>	<b>5.40</b>
	<b>Maximum</b>	<b>10.83</b>	<b>15.00</b>	<b>11.75</b>	<b>6.33</b>	<b>11.10</b>	<b>7.89</b>	<b>24.60</b>	<b>16.40</b>
	<b>Mean</b>	<b>7.44</b>	<b>8.33</b>	<b>7.76</b>	<b>3.80</b>	<b>5.88</b>	<b>4.80</b>	<b>14.25</b>	<b>12.01</b>
	<b>CV (%) Phen.</b>	<b>31.48</b>	<b>33.20</b>		<b>42.37</b>	<b>43.31</b>		<b>29.96</b>	<b>25.43</b>

**Table 80. Characterization of germplasm lines in chenopodium at Sangla and Shimla - Hills (2010)**

S. No.	Accession No.	Early plant vigour		Plant growth habit		Inflorescence colour		Inflorescence shape		Stem branching		Stem colour		Leaf colour		Leaf tip		Leaf shape		Seed colour		Flower clusters
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla
1	IC106340	2	3	3	1	3	1	2	1	2	2	99	3	1	1	1	1	99	7	3	3	3
2	IC107185	2	3	1	1	3	3	2	1	3	1	3	2	3	1	1	2	8	1	4	3	7
3	IC107263	2	3	1	1	3	1	2	1	2	1	3	2	3	1	1	2	8	1	4	4	7
4	IC107296	2	3	1	1	3	3	2	1	2	2	99	1	1	1	2	2	7	1	4	4	7
5	IC107535	2	3	1	1	3	1	2	1	1	1	3	2	3	1	1	2	8	1	4	4	7
6	IC107585	2	3	3	1	2	3	2	1	3	1	99	1	1	1	2	2	7	1	4	4	3
7	IC107854	2	3	1	1	3	1	2	1	2	2	99	1	1	1	1	1	7	6	4	4	7
8	IC108087	2	3	1	1	3	3	2	1	1	1	99	1	1	1	1	2	7	1	4	4	3
9	IC108088	2	3	1	1	3	3	2	1	3	2	99	1	1	1	1	1	7	6	4	4	3
10	IC108816	2	3	1	1	3	3	2	1	2	1	4	3	1	1	1	2	7	6	2	4	3
11	IC108818	2	3	1	1	3	1	2	1	3	3	99	3	1	1	1	1	7	6	4	4	3
12	IC274533	2	3	1	1	3	1	2	1	3	1	3	2	3	1	1	2	8	1	4	4	3
13	IC329494	2	3	1	1	3	1	2	1	2	1	99	1	1	1	1	1	7	6	4	3	7
14	IC341695	2	3	1	1	1	1	2	1	2	1	5	1	1	1	1	1	7	6	3	4	3
15	IC341701	2	3	1	1	3	3	2	1	2	2	99	3	1	1	1	2	7	1	4	3	7
16	IC341705	2	3	1	1	3	3	2	1	1	1	5	3	1	1	1	2	7	6	2	3	7
17	IC341708	2	3	1	1	3	1	2	1	3	1	5	3	1	1	1	1	7	6	2	3	3
18	IC415403	2	3	1	1	3	3	2	4	1	1	99	5	1	1	1	1	7	6	2	3	3
19	IC447573	2	3	1	1	1	1	2	1	2	1	5	1	1	1	1	1	7	6	4	4	3
20	IC469275	2	3	1	1	3	3	2	4	2	2	99	3	1	1	1	2	7	1	4	4	7
21	NC-58231	2	3	1	1	1	1	2	1	2	1	5	3	1	1	1	2	8	6	3	3	7
22	EC507740	2	3	1	1	1	3	2	1	1	1	4	1	1	1	1	1	7	5	-	1	7

S. No.	Accession No.	Early plant vigour		Plant growth habit		Inflorescence colour		Inflorescence shape		Stem branching		Stem colour		Leaf colour		Leaf tip		Leaf shape		Seed colour		Flower clusters
		Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla	Shimla	Sangla
23	EC507742	2	3	1	1	1	3	2	1	1	1	4	1	1	1	1	1	7	5	-	1	7
24	EC507744	2	3	1	1	99	1	2	1	1	2	1	1	1	1	1	1	99	5	-	1	3
25	EC507748	2	3	1	1	99	1	2	1	1	2	5	1	1	1	1	1	7	5	-	1	7
<b>Mean for check variety</b>																						
	<b>EC-507741 (C)</b>	2	3	1	1	1	1	2	1	1	2	4	1	1	1	1	1	7	5	-	1	3
	<b>NIC-22503 (C)</b>	2	3	1	1	1	3	2	1	1	2	99	1	1	1	1	1	7	5	4	4	3
	<b>PRC-9801 (C)</b>	2	3	1	1	3	3	3	3	1	1	3	1	1	1	2	1	8	1	4	4	3
	<b>Minimum</b>	<b>2</b>	<b>3</b>	<b>1</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>1</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>
	<b>Maximum</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>99</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>99</b>	<b>5</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>99</b>	<b>7</b>	<b>4</b>	<b>4</b>	<b>7</b>
	<b>Mode</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>99</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>7</b>	<b>6</b>	<b>4</b>	<b>4</b>	<b>3</b>

**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 or orientation):* 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 81. 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 50)</b>				
1.	Days to 50% flowering	66.00-91.00	-	PRR-1 & PRR-2 (66.00 days)
2.	Days to maturity	111.00-137.00	LRB-488 (= 111.0 days)	PRR-1 & PRR-2 (113.00 days)
3.	Plant height (cm)	95.00-198.00	LRB-457, LRB-476 (> 166.00 cm)	RBL-1 (160.25 cm)
4.	No. of Primary branches	3.00-5.00	LRB-489, LRB-446, LRB-324 (= 5.00)	RBL-6 (4.00)
5.	Pod length (cm)	7.90-11.5	LRB-477, LRB-488, LRB-457, LRB-322, LRB-461, LRB-465, LRB-458 (> 10.00 cm)	RBL-1 (9.40 cm)
6.	No. of seed per pod	7.00-12.00	LRB-448, LRB-477, LRB-488, LRB-457, LRB-322, LRB-456, LRB-482, LRB-462, LRB-447 (> 9.00)	RBL-1 (9.00)
7.	Seed yield per plant (g)	4.00-30.80	LRB-457, LRB-496, LRB-449, LRB-490, LRB-456, LRB-498, LRB-491 (> 20.00 g)	RBL-1 (17.20 g)
8.	100 seed weight (g)	4.04-9.03	LRB-493, LRB-474, LRB-477, LRB-476, LRB-492 (> 7.50 g)	RBL-6 (6.88 g)
<b>Bhowali (Accession 50)</b>				
1.	Days to 50% flowering	72.00-115.00	LRB-480, LRB-492, LRB-311, LRB-325, LRB-457, LRB-490 (< 78.0 days)	RBL-1 (84.00 days)
2.	Days to 80% maturity	115.00-220.00	LRB-488 (= 115.0 days)	RBL-1 (184.00 days)
3.	No. of primary branches	3.00-7.00	LRB-464, LRB-465 (= 7.00)	PRR-2 (6.00)
4.	Plant height (cm)	88.30-277.83	LRB-475 (= 277.83 cm)	PRR-1 (251.38 cm)
5.	Pod length (cm)	1.50-12.50	LRB-322, LRB-462, LRB-324, LRB-447, LRB-473, LRB-319, LRB-475, LRB-487, LRB-495 (> 11.00 cm)	RBL-6 (10.68 cm)
6.	No. of pods per plant	67.00-544.00	LRB-475 (= 544.00)	PRR-1 (432.00)
7.	100 seed weight (g)	5.86-9.45	LRB-474, LRB-460, LRB-475, LRB-461, LRB-459, LRB-471, LRB-488 (> 8.50 g)	RBL-6 (7.92 g)

8.	Seed yield (q/ha)	5.00-35.75	-	PRR-1 (35.75)
<b>Palampur (Accessions 50)</b>				
1.	Days to 50% flowering	70.00-87.00	LRB-448, LRB-449, LRB-452 (< 72.00 days)	RBL-6 (75.20 days)
2.	Days to maturity	103.00-141.00	LRB-480, LRB-311 (< 118.00 days)	PRR-1 (120.00 days)
3.	Plant height (cm)	93.00-119.20	LRB-322, LRB-457, LRB-496, LRB-311, LRB-489, LRB-455, LRB-319 (> 116.00 cm)	PRR-2 (110.40 cm)
4.	Pod length (cm)	9.00-11.0	LRB-496, LRB-491, LRB-329, LRB-456, LRB-322, LRB-458, LRB-470 (> 10.50 cm)	RBL-1 (10.20 cm)
5.	No. of primary branches	1.80-3.20	LRB-484, LRB-311, LRB-465, LRB-456 (> 2.80)	RBL-1 (2.76)
6.	No. of pods per plant	13.20-22.60	LRB-448, LRB-479, LRB-474, LRB-446, LRB-325, LRB-492 (> 19.00)	PRR-2 (17.48)
7.	Pod weight per plant (g) – Obs.	6.13-11.17	LRB-448, LRB-479, LRB-329, LRB-447, LRB-476 (> 9.50 g)	PRR-1 (9.09 g)
8.	Pod weight per plant (g) – Adj.	5.75-10.53	LRB-448, LRB-474, LRB-465, LRB-479, LRB-475 (> 10.00 g)	PRR-1 (9.09 g)
9.	Seed yield per plant (g)	4.09-8.11	LRB-448, LRB-472, LRB-479, LRB-329, LRB-474, LRB-447, LRB-452 (> 7.00 g)	PRR-1 (6.43 g)
10.	100 seed weight (g)	6.00-8.90	LRB-490, LRB-492, LRB-493, LRB-495 (> 8.00 g)	PRR-2 (7.48 g)
11.	Seed yield(q/ha)	21.67-51.67	LRB-311, LRB-496, LRB-473, LRB-480, LRB-322, LRB-477, LRB-447, LRB-496, LRB-488, LRB-476, LRB-461, LRB-452 (> 40.00 q/ha)	RBL-6 (35.44 q/ha)
<b>Ranichauri (Accessions 50)</b>				
1.	Days to 50% flowering	78.00-112.00	LRB-459, LRB-487 (< 81.0 days)	PRR-1 (81.50 days)
2.	Days to maturity	131.00-171.00	LRB-459 (= 131.0 days)	PRR-1 (135.00 days)
3.	Plant height(cm)	103.00-181.40	LRB-456, LRB-446, LRB-447, LRB-460, LRB-319, LRB-455, LRB-324, LRB-461, LRB-457, LRB-448 (> 150.00 cm)	RBL-6 (127.20 cm)
4.	No. of seed per pod	4.20-8.80	LRB-447, LRB-460, LRB-311, LRB-456, LRB-324, LRB-461, LRB-452, LRB-449, LRB-446 (> 7.00)	RBL-1 (5.40)
5.	Pod length (cm)	5.80-11.00	LRB-322, LRB-311, LRB-447, LRB-319, LRB-324, LRB-456, LRB-455, LRB-452 (> 9.00 cm)	RBL-1 (7.40 cm)

6.	No. of pods per plant	11.80-24.25	LRB-495, LRB-473, LRB-324, LRB-325, LRB-498, LRB-449 (> 22.00)	PRR-1 (20.10)
7.	Seed yield per plant (g)	7.21-13.10	-	PRR-2 (13.10 g)
<b>Shillong (Accession 50)</b>				
1.	Days to 50% flowering	55.00-65.00	LRB-477, LRB-481, LRB-484, LRB-487, LRB-447, LRB-448, LRB-455 (< 59.0 days)	-
2.	Days to 80% maturity	105.00-117.00	LRB-484, LRB-483, LRB-482 (< 108.0 days)	-
3.	Plant height (cm)	37.40-105.40	LRB-496, LRB-493, LRB-490, LRB-479, LRB-492, LRB-481, LRB-497, LRB-480, LRB-498, LRB-495 (> 80.00 cm)	-
4.	Pod length (cm)	6.50-10.98	LRB-496, LRB-493, LRB-456, LRB-487, LRB-483, LRB-495, LRB-311, LRB-480, LRB-475 (> 9.40 cm)	-
5.	Stem thickness (mm)	3.00-9.40	LRB-496, LRB-489, LRB-493, LRB-449, LRB-481, LRB-488, LRB-482, LRB-492 (> 8.00 mm)	-
6.	No. of primary branches	0.60-3.40	LRB-493, LRB-480, LRB-477, LRB-484, LRB-498, LRB-496, LRB-473, LRB-475, LRB-489, LRB-462 (> 2.40)	-
7.	No. of seed per pod	5.00-9.60	LRB-496, LRB-487, LRB-471, LRB-493, LRB-482, LRB-464, LRB-449, LRB-481, LRB-490 (> 8.00)	-
8.	100 seed weight (g)	4.76-6.60	LRB-476, LRB-496, LRB-324, LRB-457, LRB-479, LRB-466, LRB-474, LRB-495, LRB-473, LRB-493, LRB-458, LRB-311, LRB-492, LRB-459 (> 6.00 g)	-
9.	Seed yield (q/ha)	0.07-10.83	LRB-496, LRB-473, LRB-476, LRB-480, LRB-490, LRB-481, LRB-489, LRB-472 (> 6.50 q/ha)	-
<b>Shimla (Accession 50)</b>				
1.	Days to 50% flowering	91.00-103.00	LRB-448, LRB-495 (= 91.0 days)	PRR-1 (91.50 days)
2.	Days to 80% maturity	142.00-176.00	LRB-475, LRB-479 (< 144.0 days)	PRR-1 (144.00 days)
3.	Plant height (cm)	196.85-306.25	LRB-495 (=306.25 cm)	PRR-2 (287.75 cm)
4.	Pod length (cm)	8.40-14.25	LRB-498, LRB-322, LRB-496, LRB-472, LRB-467, LRB-482, LRB-465, LRB-325, LRB-460, LRB-490, LRB-491, LRB-484, LRB-475 (> 12.50 cm)	PRR-2 (11.51 cm)
5.	No. of Primary branches	2.50-5.00	LRB-490 (=5.00)	RBL-6 (4.50)

6.	Stem thickness (mm)	4.05-8.34	LRB-457, LRB-449, LRB-324, LRB-455, LRB-460, LRB-456, LRB-466, LRB-459, LRB-311, LRB-487, LRB-484 (> 7.00 mm)	RBL-1 (5.71 mm)
7.	No. of seed per pod	4.50-10.50	LRB-458, LRB-322, LRB-319, LRB-325, LRB-460, LRB-324, LRB-462, LRB-311, LRB-452, LRB-449, LRB-461 (> 8.50)	RBL-6 & PRR-1 (6.50)
8.	100 seed weight (g)	5.80-8.64	LRB-324, LRB-475, LRB-457, LRB-473, LRB-456, LRB-480, LRB-474, LRB-476, LRB-455, LRB-460, LRB-482, LRB-322, LRB-478, LRB-477, LRB-468, LRB-470, LRB-496 (> 7.00 g)	RBL-6 & PRR-1 (6.63 g)
9.	Seed yield per plant (g)	22.14-70.18	LRB-482 (= 70.18 g)	RBL-6 (69.67 g)
<b>Best entries over location</b>				
1.	Days to 50% flowering	78.67-91.33	LRB-487, LRB-455, LRB-492, LRB-495 (< 80.50 days)	PRR-2 (81.53 days)
2.	Days to 80% maturity	133.33-152.17	LRB-488, LRB-498, LRB-474, LRB-471 (< 142.00 days)	PRR-1 (143.95 days)
3.	Plant height (cm)	114.33-169.67	-	PRR-1 (169.67 cm)
4.	Pod length (cm)	8.46-11.13	LRB-322, LRB-324, LRB-456, LRB-311, LRB-475, LRB-496, LRB-458, LRB-462, LRB-455 (> 10.00 cm)	RBL-6 (9.43 cm)
5.	No. of Primary branches	2.70-3.88	LRB-465 (= 3.88)	PRR-2 (3.87)
6.	Stem thickness (mm)	3.75-8.53	LRB-449, LRB-455, LRB-489, LRB-493, LRB-481, LRB-496, LRB-487, LRB-464, LRB-460, LRB-461, LRB-478, LRB-488, LRB-477, LRB-492, LRB-482, LRB-459, LRB-498, LRB-468, LRB-484 (> 6.50 mm)	RBL-1 (5.71 mm)
7.	No. of pods per plant	31.87-194.13	LRB-475 (= 194.13)	PRR-1 (156.51)
8.	No. of seed per pod	6.13-8.58	LRB-456, LRB-449, LRB-462, LRB-311, LRB-461, LRB-458, LRB-322, LRB-324, LRB-457, LRB-448, LRB-460, LRB-447, LRB-452, LRB-329 (> 8.00)	RBL-1 (6.80)
9.	100 seed weight (g)	5.79-7.86	LRB-474, LRB-476, LRB-493 (> 7.40 g)	RBL-6 (7.21 g)
10.	Seed yield per plant (g)	12.11-25.57	-	RBL-6 (25.57 g)
11.	Seed yield (q/ha)	12.15-33.93	-	PRR-1 (33.93 q/ha)

**Table 82. Multilocation evaluation of germplasm lines in rice bean at different locations- Hills (2010)**

S. No.	Genotypes	Days to flowering							Days to 80% maturity						
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean
1	LRB-311	78	77	80	108	59	97	<b>83.17</b>	120	190	117	168	116	169	<b>146.67</b>
2	LRB-319	78	105	81	105	60	100	<b>88.17</b>	123	185	121	165	116	173	<b>147.17</b>
3	LRB-322	78	115	81	87	65	98	<b>87.33</b>	125	200	129	140	116	173	<b>147.17</b>
4	LRB-324	71	115	82	108	59	93	<b>88.00</b>	117	200	131	167	116	171	<b>150.33</b>
5	LRB-329	69	77	80	110	59	95	<b>81.67</b>	115	200	122	169	116	166	<b>148.00</b>
6	LRB-446	71	105	77	112	59	96	<b>86.67</b>	119	205	128	171	116	163	<b>150.33</b>
7	LRB-447	71	115	76	105	57	93	<b>86.17</b>	120	200	122	165	116	165	<b>148.00</b>
8	LRB-448	67	105	70	97	57	91	<b>81.17</b>	116	220	127	151	116	165	<b>149.17</b>
9	LRB-449	78	105	70	103	61	92	<b>84.83</b>	123	210	129	164	116	167	<b>151.50</b>
10	LRB-452	78	110	71	97	65	93	<b>85.67</b>	126	200	128	150	116	166	<b>147.67</b>
11	LRB-455	76	87	81	83	57	93	<b>79.50</b>	132	195	126	138	116	166	<b>145.50</b>
12	LRB-456	71	105	80	108	63	95	<b>87.00</b>	117	200	141	167	116	163	<b>150.67</b>
13	LRB-457	78	77	81	105	63	97	<b>83.50</b>	132	190	132	166	117	169	<b>151.00</b>
14	LRB-458	91	105	83	103	63	103	<b>91.33</b>	136	190	126	164	117	169	<b>150.33</b>
15	LRB-459	71	105	81	78	61	96	<b>82.00</b>	129	195	129	131	117	164	<b>144.17</b>
16	LRB-460	90	110	83	92	65	101	<b>90.17</b>	136	195	131	149	117	167	<b>149.17</b>
17	LRB-461	90	97	83	108	65	103	<b>91.00</b>	136	195	120	167	117	166	<b>150.17</b>
18	LRB-462	76	97	82	106	65	96	<b>87.00</b>	123	195	121	165	117	163	<b>147.33</b>
19	LRB-463	73	97	77	108	65	102	<b>87.00</b>	136	195	128	167	117	164	<b>151.17</b>
20	LRB-464	91	97	84	97	65	97	<b>88.50</b>	136	200	128	151	117	165	<b>149.50</b>
21	LRB-465	71	97	83	105	63	93	<b>85.33</b>	132	195	130	165	117	166	<b>150.83</b>
22	LRB-466	78	97	80	87	65	97	<b>84.00</b>	136	195	129	140	117	166	<b>147.17</b>
23	LRB-467	76	97	80	110	60	95	<b>86.33</b>	134	195	128	168	117	154	<b>149.33</b>
24	LRB-468	80	97	83	87	63	101	<b>85.17</b>	124	195	131	140	117	156	<b>143.83</b>
25	LRB-470	78	105	83	97	61	96	<b>86.67</b>	125	195	122	150	117	157	<b>144.33</b>
26	LRB-471	72	97	82	83	59	94	<b>81.17</b>	123	195	127	138	117	148	<b>141.33</b>
27	LRB-472	76	97	82	108	61	95	<b>86.50</b>	126	195	132	165	117	150	<b>147.50</b>
28	LRB-473	71	87	81	105	61	96	<b>83.50</b>	126	195	129	163	117	146	<b>146.00</b>
29	LRB-474	71	87	79	87	61	99	<b>80.67</b>	121	195	127	140	117	148	<b>141.33</b>
30	LRB-475	78	97	83	91	65	97	<b>85.17</b>	128	195	131	148	117	142	<b>143.50</b>



S. No.	Genotypes	Plant height (cm)							No. of branches per plant					
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Almora	Bhowali	Palampur	Shillong	Shimla	Mean
1	LRB-311	152.00	153.00	117.60	139.60	50.80	198.75	<b>135.29</b>	4.00	5.00	3.00	1.40	4.50	<b>3.58</b>
2	LRB-319	107.00	150.00	116.20	170.00	49.00	247.82	<b>140.00</b>	4.00	3.00	2.80	1.20	3.50	<b>2.90</b>
3	LRB-322	115.00	200.00	119.20	139.20	69.40	242.65	<b>147.58</b>	4.00	4.00	2.80	2.00	3.00	<b>3.16</b>
4	LRB-324	117.00	208.00	98.60	166.00	60.00	246.75	<b>149.39</b>	5.00	4.00	2.40	0.80	3.50	<b>3.14</b>
5	LRB-329	120.00	88.30	101.60	131.00	48.20	196.85	<b>114.33</b>	4.00	3.00	2.20	2.20	4.50	<b>3.18</b>
6	LRB-446	137.00	163.30	109.00	181.40	42.60	222.15	<b>142.58</b>	5.00	3.00	2.80	1.00	4.00	<b>3.16</b>
7	LRB-447	148.00	175.00	104.60	178.60	57.40	248.05	<b>151.94</b>	4.00	4.00	2.20	1.00	3.50	<b>2.94</b>
8	LRB-448	143.00	218.30	115.20	158.40	51.60	221.65	<b>151.36</b>	4.00	4.00	2.20	1.00	2.50	<b>2.74</b>
9	LRB-449	132.00	165.00	102.40	135.40	66.60	252.60	<b>142.33</b>	3.00	4.00	2.40	1.60	4.00	<b>3.00</b>
10	LRB-452	155.00	185.00	112.00	139.80	55.80	228.25	<b>145.98</b>	4.00	4.00	2.80	0.80	3.50	<b>3.02</b>
11	LRB-455	160.00	153.30	117.00	169.50	52.60	232.75	<b>147.53</b>	4.00	4.00	2.20	0.80	4.00	<b>3.00</b>
12	LRB-456	139.00	151.60	105.00	181.40	49.00	237.85	<b>143.98</b>	4.00	4.00	3.00	1.00	4.00	<b>3.20</b>
13	LRB-457	198.00	145.00	119.00	160.80	64.40	238.65	<b>154.31</b>	4.00	4.00	2.00	2.20	4.00	<b>3.24</b>
14	LRB-458	132.00	211.60	115.00	135.20	80.00	240.15	<b>152.33</b>	4.00	4.00	2.80	2.40	3.50	<b>3.34</b>
15	LRB-459	132.00	129.30	113.00	148.20	53.00	268.05	<b>140.59</b>	4.00	6.00	2.80	1.00	3.00	<b>3.36</b>
16	LRB-460	148.00	191.60	109.00	174.60	64.20	244.85	<b>155.38</b>	4.00	6.00	1.80	1.40	4.00	<b>3.44</b>
17	LRB-461	143.00	158.30	99.00	164.60	57.40	239.65	<b>143.66</b>	3.00	5.00	2.20	2.40	3.50	<b>3.22</b>
18	LRB-462	129.00	135.00	107.00	117.20	68.20	239.40	<b>132.63</b>	4.00	5.00	2.60	2.60	3.00	<b>3.44</b>
19	LRB-463	127.00	141.60	109.00	123.20	77.00	254.80	<b>138.77</b>	4.00	6.00	2.20	2.00	4.00	<b>3.64</b>
20	LRB-464	160.00	170.30	100.00	118.00	37.40	251.20	<b>139.48</b>	4.00	7.00	2.00	1.80	3.50	<b>3.66</b>
21	LRB-465	158.00	151.60	106.00	122.40	63.00	236.75	<b>139.63</b>	4.00	7.00	3.00	2.40	3.00	<b>3.88</b>
22	LRB-466	95.00	153.00	108.00	119.80	74.40	283.15	<b>138.89</b>	3.00	6.00	2.40	0.60	4.25	<b>3.25</b>
23	LRB-467	145.00	185.00	116.00	122.40	66.80	239.65	<b>145.81</b>	3.00	4.00	2.60	1.40	2.50	<b>2.70</b>
24	LRB-468	138.00	166.30	94.00	130.00	66.80	241.00	<b>139.35</b>	3.00	6.00	1.80	1.80	3.50	<b>3.22</b>
25	LRB-470	143.00	146.00	106.00	115.20	45.60	217.65	<b>128.91</b>	4.00	4.00	2.40	2.00	4.50	<b>3.38</b>
26	LRB-471	123.00	174.60	97.00	123.00	64.80	226.80	<b>134.87</b>	4.00	6.00	2.60	1.60	2.50	<b>3.34</b>
27	LRB-472	153.00	120.60	114.00	122.40	70.80	241.00	<b>136.97</b>	4.00	5.00	2.80	2.40	3.50	<b>3.54</b>
28	LRB-473	147.00	209.00	98.00	118.60	70.20	228.25	<b>145.18</b>	4.00	5.00	2.60	2.80	4.50	<b>3.78</b>
29	LRB-474	153.00	211.60	110.00	113.80	70.00	247.35	<b>150.96</b>	4.00	3.00	2.80	2.00	3.50	<b>3.06</b>
30	LRB-475	143.00	277.83	103.00	134.00	45.80	271.45	<b>162.51</b>	4.00	4.00	2.00	2.80	4.50	<b>3.46</b>

S. No.	Genotypes	Pod length (cm)							No. of pods per plant				Seed yield per plant (g)				
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Bhowali	Palampur	Ranichauri	Mean	Almora	Palampur	Ranichauri	Shimla	Mean
1	LRB-311	9.80	10.30	9.80	10.40	9.50	11.60	<b>10.23</b>	153.00	16.60	18.00	<b>62.53</b>	5.20	5.53	8.26	46.76	<b>16.44</b>
2	LRB-319	9.10	11.40	9.00	10.20	8.50	10.40	<b>9.77</b>	422.00	16.60	20.80	<b>153.13</b>	10.00	5.82	7.64	46.70	<b>17.54</b>
3	LRB-322	10.40	12.50	10.60	11.00	8.06	14.20	<b>11.13</b>	372.00	16.80	21.60	<b>136.80</b>	9.60	6.39	9.67	44.61	<b>17.57</b>
4	LRB-324	9.50	11.90	10.80	10.00	8.78	12.40	<b>10.56</b>	310.00	18.20	23.80	<b>117.33</b>	18.80	7.58	8.94	43.01	<b>19.58</b>
5	LRB-329	9.50	10.30	9.20	8.80	8.68	12.80	<b>9.88</b>	320.00	19.60	23.20	<b>120.93</b>	11.20	6.89	7.21	38.02	<b>15.83</b>
6	LRB-446	9.60	10.90	10.00	8.00	6.50	11.65	<b>9.44</b>	328.00	19.80	20.20	<b>122.67</b>	14.00	6.73	8.31	37.45	<b>16.62</b>
7	LRB-447	8.90	11.80	9.30	10.20	9.00	9.70	<b>9.82</b>	90.00	18.60	19.80	<b>42.80</b>	11.60	7.08	10.54	33.84	<b>15.77</b>
8	LRB-448	8.10	11.00	9.60	7.20	8.14	12.25	<b>9.38</b>	200.00	22.60	15.00	<b>79.20</b>	7.60	8.11	11.87	39.13	<b>16.68</b>
9	LRB-449	8.60	10.50	9.50	7.20	9.30	11.02	<b>9.35</b>	343.00	18.20	22.20	<b>127.80</b>	26.40	6.93	9.63	39.25	<b>20.55</b>
10	LRB-452	9.60	10.10	9.60	9.20	7.60	11.40	<b>9.58</b>	68.00	18.40	20.40	<b>35.60</b>	16.00	7.01	10.36	34.02	<b>16.85</b>
11	LRB-455	9.00	10.20	9.90	9.40	9.40	12.40	<b>10.05</b>	120.00	16.00	20.40	<b>52.13</b>	13.20	5.19	10.87	34.68	<b>15.99</b>
12	LRB-456	9.80	11.00	10.60	9.80	9.98	10.60	<b>10.30</b>	200.00	16.60	13.00	<b>76.53</b>	23.60	6.78	9.99	49.69	<b>22.52</b>
13	LRB-457	10.90	1.50	10.00	8.80	9.36	10.20	<b>8.46</b>	173.00	16.20	18.60	<b>69.27</b>	30.80	4.92	10.17	39.91	<b>21.45</b>
14	LRB-458	10.10	10.50	10.60	8.80	8.96	11.70	<b>10.11</b>	398.00	16.40	11.80	<b>142.07</b>	16.40	6.42	12.69	25.58	<b>15.27</b>
15	LRB-459	9.10	10.80	10.20	8.60	9.22	10.60	<b>9.75</b>	138.00	15.40	14.20	<b>55.87</b>	7.60	5.05	11.43	36.69	<b>15.19</b>
16	LRB-460	9.20	10.90	9.60	8.80	7.86	12.70	<b>9.84</b>	96.00	14.80	20.60	<b>43.80</b>	12.80	5.19	11.32	37.10	<b>16.60</b>
17	LRB-461	10.20	10.50	9.70	8.00	8.44	10.40	<b>9.54</b>	330.00	18.40	19.60	<b>122.67</b>	10.80	4.96	9.87	31.38	<b>14.25</b>
18	LRB-462	9.10	12.30	9.60	8.80	8.50	12.25	<b>10.09</b>	301.00	18.40	18.20	<b>112.53</b>	8.80	6.53	9.34	26.36	<b>12.76</b>
19	LRB-463	9.10	10.60	9.80	8.40	8.96	9.60	<b>9.41</b>	233.00	17.60	22.00	<b>90.87</b>	10.80	6.53	8.61	37.76	<b>15.93</b>
20	LRB-464	9.30	9.50	9.60	8.60	8.92	12.40	<b>9.72</b>	252.00	15.20	17.20	<b>94.80</b>	6.00	4.48	8.29	33.12	<b>12.97</b>
21	LRB-465	10.10	10.90	9.30	8.20	7.60	12.85	<b>9.83</b>	296.00	19.00	15.60	<b>110.20</b>	6.00	6.41	9.01	37.95	<b>14.84</b>
22	LRB-466	8.20	10.80	9.10	7.20	8.86	11.10	<b>9.21</b>	341.00	14.60	18.80	<b>124.80</b>	4.00	4.17	8.09	61.30	<b>19.39</b>
23	LRB-467	8.20	9.25	9.70	8.60	8.50	13.10	<b>9.56</b>	261.00	14.60	18.00	<b>97.87</b>	5.60	4.84	8.11	55.94	<b>18.62</b>
24	LRB-468	8.50	10.80	10.00	7.00	8.24	11.10	<b>9.27</b>	397.00	14.80	16.80	<b>142.87</b>	10.40	4.09	11.05	36.52	<b>15.52</b>
25	LRB-470	9.30	9.90	10.60	7.40	8.04	11.95	<b>9.53</b>	92.00	17.20	18.00	<b>42.40</b>	9.20	5.89	11.80	36.72	<b>15.90</b>
26	LRB-471	9.10	10.90	9.60	7.00	9.02	8.40	<b>9.00</b>	397.00	16.60	19.20	<b>144.27</b>	14.00	5.61	10.64	48.02	<b>19.57</b>
27	LRB-472	8.50	8.90	10.10	6.40	9.06	13.15	<b>9.35</b>	135.00	18.20	18.20	<b>57.13</b>	9.20	7.74	9.36	22.14	<b>12.11</b>
28	LRB-473	7.90	11.50	9.80	6.40	8.36	11.10	<b>9.18</b>	157.00	14.60	24.20	<b>65.27</b>	8.00	4.94	11.30	53.17	<b>19.35</b>
29	LRB-474	8.70	10.00	9.60	6.80	9.30	12.20	<b>9.43</b>	313.00	20.00	19.00	<b>117.33</b>	10.40	7.15	10.70	57.00	<b>21.31</b>
30	LRB-475	8.90	11.10	10.10	9.00	9.44	12.60	<b>10.19</b>	544.00	18.60	19.80	<b>194.13</b>	12.00	5.97	11.74	49.61	<b>19.83</b>

S. No.	Genotypes	100 seed weight (g)						Seed yield (q/ha)				No. of seed per pod				
		Almora	Bhowali	Palampur	Shillong	Shimla	Mean	Bhowali	Palampur	Shillong	Mean	Almora	Ranichauri	Shillong	Shimla	Mean
1	LRB-311	5.29	7.12	6.80	6.04	6.62	<b>6.37</b>	13.00	51.67	2.08	<b>22.25</b>	9.00	8.20	7.20	9.50	<b>8.48</b>
2	LRB-319	4.89	8.13	7.30	5.51	6.56	<b>6.48</b>	32.00	38.89	2.78	<b>24.56</b>	9.00	5.60	6.40	10.00	<b>7.75</b>
3	LRB-322	5.79	7.54	6.10	5.54	7.20	<b>6.43</b>	23.00	45.00	1.81	<b>23.27</b>	10.00	6.20	7.20	10.00	<b>8.35</b>
4	LRB-324	6.92	7.51	7.20	6.52	8.64	<b>7.36</b>	32.00	36.11	5.00	<b>24.37</b>	9.00	8.00	6.80	9.50	<b>8.33</b>
5	LRB-329	4.94	7.63	6.40	5.52	6.20	<b>6.14</b>	12.00	21.67	2.78	<b>12.15</b>	9.00	7.00	6.60	9.50	<b>8.03</b>
6	LRB-446	6.11	6.95	6.60	5.23	6.14	<b>6.21</b>	32.00	36.11	1.39	<b>23.17</b>	9.00	7.20	5.00	8.50	<b>7.43</b>
7	LRB-447	6.03	7.23	6.80	5.19	6.66	<b>6.38</b>	18.00	44.44	1.39	<b>21.28</b>	10.00	8.80	5.00	8.50	<b>8.08</b>
8	LRB-448	6.62	6.92	6.90	5.69	6.58	<b>6.54</b>	22.00	37.22	2.78	<b>20.67</b>	12.00	6.20	6.40	8.50	<b>8.28</b>
9	LRB-449	6.38	7.04	7.00	5.37	6.42	<b>6.44</b>	26.00	38.89	3.06	<b>22.65</b>	9.00	7.40	8.20	9.50	<b>8.53</b>
10	LRB-452	6.74	7.45	6.70	5.48	6.74	<b>6.62</b>	14.00	40.56	1.39	<b>18.65</b>	9.00	7.60	6.20	9.50	<b>8.08</b>
11	LRB-455	6.23	7.04	6.80	5.46	7.48	<b>6.60</b>	16.00	29.44	4.31	<b>16.58</b>	8.00	7.00	7.80	8.50	<b>7.83</b>
12	LRB-456	6.89	6.28	6.70	5.99	7.78	<b>6.73</b>	22.00	36.11	5.00	<b>21.04</b>	10.00	8.00	7.80	8.50	<b>8.58</b>
13	LRB-457	7.43	7.60	7.50	6.36	8.06	<b>7.39</b>	13.00	33.89	3.33	<b>16.74</b>	10.00	7.00	7.80	8.50	<b>8.33</b>
14	LRB-458	7.06	6.68	7.60	6.04	6.64	<b>6.80</b>	18.00	38.33	4.44	<b>20.26</b>	9.00	6.40	7.60	10.50	<b>8.38</b>
15	LRB-459	6.96	8.66	7.70	6.01	6.60	<b>7.19</b>	18.00	36.11	1.94	<b>18.69</b>	7.00	6.60	7.40	8.50	<b>7.38</b>
16	LRB-460	7.43	8.94	7.40	5.79	7.44	<b>7.40</b>	8.00	39.44	2.78	<b>16.74</b>	8.00	8.40	6.60	9.50	<b>8.13</b>
17	LRB-461	5.57	8.73	7.00	4.76	6.82	<b>6.58</b>	22.00	40.56	4.17	<b>22.24</b>	9.00	7.60	7.60	9.50	<b>8.43</b>
18	LRB-462	5.36	5.86	6.10	5.85	5.80	<b>5.79</b>	15.00	27.78	3.06	<b>15.28</b>	10.00	6.60	7.80	9.50	<b>8.48</b>
19	LRB-463	5.29	7.23	6.90	4.90	6.30	<b>6.12</b>	12.00	32.22	2.08	<b>15.44</b>	9.00	6.60	7.80	6.50	<b>7.48</b>
20	LRB-464	6.31	7.36	7.10	5.13	6.52	<b>6.48</b>	19.00	28.89	4.72	<b>17.54</b>	9.00	6.60	8.40	7.50	<b>7.88</b>
21	LRB-465	4.90	7.65	6.30	5.91	6.76	<b>6.30</b>	12.00	25.56	6.39	<b>14.65</b>	9.00	5.80	5.20	6.50	<b>6.63</b>
22	LRB-466	4.04	8.45	7.90	6.28	6.92	<b>6.72</b>	30.00	30.56	2.50	<b>21.02</b>	8.00	5.20	6.80	8.50	<b>7.13</b>
23	LRB-467	5.53	8.16	7.30	5.09	6.48	<b>6.51</b>	12.00	25.56	3.75	<b>13.77</b>	8.00	6.00	7.20	7.00	<b>7.05</b>
24	LRB-468	6.54	8.13	6.30	5.80	7.06	<b>6.77</b>	30.00	40.00	5.00	<b>25.00</b>	9.00	5.40	7.20	6.50	<b>7.03</b>
25	LRB-470	7.15	8.50	7.50	5.60	7.04	<b>7.16</b>	13.00	35.00	2.22	<b>16.74</b>	8.00	5.20	6.80	6.00	<b>6.50</b>
26	LRB-471	5.87	8.61	6.00	5.67	6.64	<b>6.56</b>	14.00	32.22	5.56	<b>17.26</b>	9.00	5.40	8.60	7.00	<b>7.50</b>
27	LRB-472	6.17	6.51	7.10	5.86	6.26	<b>6.38</b>	9.00	38.89	6.53	<b>18.14</b>	9.00	4.60	7.20	7.00	<b>6.95</b>
28	LRB-473	7.00	7.35	7.60	6.10	8.00	<b>7.21</b>	19.00	46.67	10.69	<b>25.45</b>	8.00	4.80	7.00	6.00	<b>6.45</b>
29	LRB-474	8.14	9.45	7.90	6.20	7.60	<b>7.86</b>	14.00	28.33	3.47	<b>15.27</b>	7.00	5.60	8.00	6.50	<b>6.78</b>
30	LRB-475	6.54	8.87	7.40	5.91	8.28	<b>7.40</b>	28.00	35.00	6.11	<b>23.04</b>	8.00	7.00	7.40	5.50	<b>6.98</b>

S. No.	Genotypes	Stem thickness (mm)			Pod weight per plant
		Shillong	Shimla	Mean	Palampur
1	LRB-311	3.80	7.18	<b>5.49</b>	7.65
2	LRB-319	4.40	5.96	<b>5.18</b>	8.04
3	LRB-322	4.40	5.25	<b>4.83</b>	8.93
4	LRB-324	4.20	8.17	<b>6.19</b>	9.84
5	LRB-329	3.60	6.42	<b>5.01</b>	9.24
6	LRB-446	5.00	4.66	<b>4.83</b>	9.34
7	LRB-447	3.00	4.49	<b>3.75</b>	9.64
8	LRB-448	6.60	5.43	<b>6.02</b>	11.17
9	LRB-449	8.80	8.26	<b>8.53</b>	9.41
10	LRB-452	4.20	4.26	<b>4.23</b>	9.22
11	LRB-455	8.00	7.96	<b>7.98</b>	8.06
12	LRB-456	4.20	7.66	<b>5.93</b>	8.27
13	LRB-457	4.20	8.34	<b>6.27</b>	6.13
14	LRB-458	5.00	5.53	<b>5.27</b>	8.65
15	LRB-459	5.60	7.54	<b>6.57</b>	7.78
16	LRB-460	6.00	7.91	<b>6.96</b>	7.99
17	LRB-461	7.00	6.87	<b>6.94</b>	9.32
18	LRB-462	5.00	5.28	<b>5.14</b>	8.98
19	LRB-463	6.80	4.94	<b>5.87</b>	9.28
20	LRB-464	7.20	6.96	<b>7.08</b>	7.38
21	LRB-465	6.80	5.14	<b>5.97</b>	9.37
22	LRB-466	3.80	7.63	<b>5.72</b>	6.72
23	LRB-467	3.80	5.52	<b>4.66</b>	7.03
24	LRB-468	6.40	6.67	<b>6.54</b>	7.09
25	LRB-470	5.20	4.27	<b>4.74</b>	8.51
26	LRB-471	3.80	5.34	<b>4.57</b>	8.27
27	LRB-472	7.80	4.05	<b>5.93</b>	9.04
28	LRB-473	6.20	6.45	<b>6.33</b>	7.74
29	LRB-474	6.50	5.59	<b>6.05</b>	9.50
30	LRB-475	3.00	5.08	<b>4.04</b>	9.15

S. No.	Genotypes	Days to flowering							Days to 80% maturity						
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean
31	LRB-476	83	87	83	105	63	93	<b>85.67</b>	130	190	129	163	116	168	<b>149.33</b>
32	LRB-477	71	97	81	102	55	92	<b>83.00</b>	123	210	125	160	109	174	<b>150.17</b>
33	LRB-478	70	87	82	103	61	95	<b>83.00</b>	136	195	125	161	109	173	<b>149.83</b>
34	LRB-479	91	87	83	108	61	97	<b>87.83</b>	137	195	124	165	109	143	<b>145.50</b>
35	LRB-480	71	72	87	110	63	98	<b>83.50</b>	130	187	103	166	109	168	<b>143.83</b>
36	LRB-481	78	87	83	108	55	93	<b>84.00</b>	123	195	129	165	109	166	<b>147.83</b>
37	LRB-482	71	87	83	83	63	96	<b>80.50</b>	126	210	125	138	105	171	<b>145.83</b>
38	LRB-483	78	97	83	108	60	98	<b>87.33</b>	128	190	122	165	105	173	<b>147.17</b>
39	LRB-484	71	87	76	110	55	94	<b>82.17</b>	126	210	130	166	105	176	<b>152.17</b>
40	LRB-487	75	87	82	80	55	93	<b>78.67</b>	123	187	125	138	109	175	<b>142.83</b>
41	LRB-488	78	97	79	108	59	92	<b>85.50</b>	111	115	132	164	108	170	<b>133.33</b>
42	LRB-489	78	97	83	112	59	97	<b>87.67</b>	129	195	121	167	108	172	<b>148.67</b>
43	LRB-490	71	77	80	110	63	93	<b>82.33</b>	126	190	125	167	108	170	<b>147.67</b>
44	LRB-491	71	97	82	112	61	95	<b>86.33</b>	129	195	129	168	108	168	<b>149.50</b>
45	LRB-492	71	72	79	105	59	92	<b>79.67</b>	128	185	126	163	108	165	<b>145.83</b>
46	LRB-493	71	87	78	102	59	94	<b>81.83</b>	125	190	127	160	108	160	<b>145.00</b>
47	LRB-495	68	97	80	87	59	91	<b>80.33</b>	121	195	124	140	117	157	<b>142.33</b>
48	LRB-496	71	97	81	108	63	93	<b>85.50</b>	123	190	128	164	108	162	<b>145.83</b>
49	LRB-497	71	97	79	110	61	97	<b>85.83</b>	121	190	126	168	108	160	<b>145.50</b>
50	LRB-498	71	97	81	83	61	95	<b>81.33</b>	129	190	131	136	108	146	<b>140.00</b>
<b>Mean for check variety</b>															
<b>PRR-1 (C)</b>		66.00	91.25	80.00	81.50	-	91.50	<b>82.05</b>	113.00	207.75	120.00	135.00	-	144.00	<b>143.95</b>
<b>PRR-2 (C)</b>		66.00	84.25	79.40	85.00	-	93.00	<b>81.53</b>	113.00	212.25	126.60	138.00	-	147.50	<b>147.47</b>
<b>RBL-1 (C)</b>		71.00	84.00	78.40	96.00	-	94.50	<b>84.78</b>	130.00	184.00	125.20	151.50	-	146.50	<b>147.44</b>
<b>RBL-6 (C)</b>		70.50	90.25	75.20	90.00	-	93.50	<b>83.89</b>	125.75	194.75	127.20	143.50	-	150.00	<b>148.24</b>
<b>Minimum</b>		<b>66.00</b>	<b>72.00</b>	<b>70.00</b>	<b>78.00</b>	<b>55.00</b>	<b>91.00</b>	<b>78.67</b>	<b>111.00</b>	<b>115.00</b>	<b>103.00</b>	<b>131.00</b>	<b>105.00</b>	<b>142.00</b>	<b>133.33</b>
<b>Maximum</b>		<b>91.00</b>	<b>115.00</b>	<b>87.00</b>	<b>112.00</b>	<b>65.00</b>	<b>103.00</b>	<b>91.33</b>	<b>137.00</b>	<b>220.00</b>	<b>141.00</b>	<b>171.00</b>	<b>117.00</b>	<b>176.00</b>	<b>152.17</b>
<b>Mean</b>		<b>75.01</b>	<b>94.51</b>	<b>80.31</b>	<b>99.75</b>	<b>60.94</b>	<b>95.45</b>	<b>84.60</b>	<b>125.88</b>	<b>194.68</b>	<b>126.43</b>	<b>156.37</b>	<b>113.44</b>	<b>162.44</b>	<b>146.95</b>
<b>CD (0.05)</b>		-	-	<b>3.83</b>	-	-	-		-	-	<b>2.47</b>	-	-	-	
<b>CV (%) Error</b>		-	-	<b>1.83</b>	-	-	-		-	-	<b>0.74</b>	-	-	-	
<b>CV (%) Phen.</b>		<b>8.43</b>	<b>11.11</b>	<b>4.11</b>	<b>10.42</b>	<b>4.80</b>	<b>3.13</b>		<b>5.24</b>	<b>6.82</b>	<b>4.09</b>	<b>7.79</b>	<b>3.83</b>	<b>5.81</b>	

S. No.	Genotypes	Plant height (cm)							No. of branches per plant					
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Almora	Bhowali	Palampur	Shillong	Shimla	Mean
31	LRB-476	167.00	188.30	107.00	113.80	67.20	217.45	<b>143.46</b>	3.00	5.00	2.30	2.40	3.00	<b>3.14</b>
32	LRB-477	155.00	191.60	114.00	106.00	48.60	217.85	<b>138.84</b>	3.00	5.00	2.20	3.00	3.50	<b>3.34</b>
33	LRB-478	132.00	181.60	101.00	113.80	74.40	233.75	<b>139.43</b>	3.00	5.00	2.00	1.80	4.00	<b>3.16</b>
34	LRB-479	155.00	160.00	107.00	123.60	86.80	259.65	<b>148.68</b>	3.00	4.00	2.40	1.80	2.50	<b>2.74</b>
35	LRB-480	160.00	202.30	105.00	116.00	81.60	247.85	<b>152.13</b>	4.00	5.00	2.20	3.40	3.50	<b>3.62</b>
36	LRB-481	130.00	195.00	99.00	104.20	83.20	272.65	<b>147.34</b>	3.00	5.00	2.20	2.00	4.50	<b>3.34</b>
37	LRB-482	135.00	186.60	107.00	104.60	72.80	231.45	<b>139.58</b>	4.00	5.00	2.80	1.80	3.50	<b>3.42</b>
38	LRB-483	147.00	171.60	93.00	118.40	64.40	201.15	<b>132.59</b>	3.00	4.00	2.00	2.40	2.55	<b>2.79</b>
39	LRB-484	145.00	246.00	102.00	103.00	60.60	221.75	<b>146.39</b>	4.00	5.00	3.20	2.80	3.55	<b>3.71</b>
40	LRB-487	140.00	190.60	99.00	116.60	62.80	235.15	<b>140.69</b>	3.00	4.00	2.40	2.40	4.00	<b>3.16</b>
41	LRB-488	158.00		108.00	107.00	66.80	241.75	<b>136.31</b>	3.00	6.00	2.60	2.00	4.50	<b>3.62</b>
42	LRB-489	157.00	115.00	117.00	112.20	77.80	249.85	<b>138.14</b>	5.00	4.00	2.40	2.60	4.00	<b>3.60</b>
43	LRB-490	153.00	203.30	100.00	112.20	89.60	238.05	<b>149.36</b>	3.00	4.00	1.80	2.40	5.00	<b>3.24</b>
44	LRB-491	159.00	233.60	102.00	113.60	62.80	218.15	<b>148.19</b>	3.00	4.00	2.60	2.00	4.50	<b>3.22</b>
45	LRB-492	137.00	193.30	104.00	107.60	83.20	219.85	<b>140.83</b>	4.00	4.00	2.60	2.40	3.55	<b>3.31</b>
46	LRB-493	138.00	221.00	109.00	105.80	90.80	207.05	<b>145.28</b>	4.00	5.00	2.20	3.40	4.50	<b>3.82</b>
47	LRB-495	122.00	240.00	102.00	123.20	80.80	306.25	<b>162.38</b>	4.00	5.00	2.00	2.20	3.05	<b>3.25</b>
48	LRB-496	153.00	221.60	118.00	118.40	105.40	227.90	<b>157.38</b>	3.00	6.00	2.00	2.80	4.50	<b>3.66</b>
49	LRB-497	158.00	213.00	108.00	115.40	83.00	257.80	<b>155.87</b>	3.00	6.00	2.80	2.20	3.05	<b>3.41</b>
50	LRB-498	142.00	196.60	112.00	116.00	80.80	228.15	<b>145.93</b>	4.00	4.00	2.60	2.80	3.00	<b>3.28</b>
<b>Mean for check variety</b>														
	<b>PRR-1 (C)</b>	133.25	251.38	102.36	117.50	-	243.85	<b>169.67</b>	3.75	5.00	2.28	-	3.50	<b>3.63</b>
	<b>PRR-2 (C)</b>	132.25	191.60	110.40	114.30	-	287.75	<b>167.26</b>	3.25	6.00	2.24	-	4.00	<b>3.87</b>
	<b>RBL-1 (C)</b>	160.25	181.15	103.72	123.70	-	208.85	<b>155.53</b>	3.50	5.00	2.76	-	3.50	<b>3.69</b>
	<b>RBL-6 (C)</b>	139.50	213.58	103.76	127.20	-	235.80	<b>163.97</b>	4.00	4.75	2.08	-	4.50	<b>3.83</b>
	<b>Minimum</b>	<b>95.00</b>	<b>88.30</b>	<b>93.00</b>	<b>103.00</b>	<b>37.40</b>	<b>196.85</b>	<b>114.33</b>	<b>3.00</b>	<b>3.00</b>	<b>1.80</b>	<b>0.60</b>	<b>2.50</b>	<b>2.70</b>
	<b>Maximum</b>	<b>198.00</b>	<b>277.83</b>	<b>119.20</b>	<b>181.40</b>	<b>105.40</b>	<b>306.25</b>	<b>169.67</b>	<b>5.00</b>	<b>7.00</b>	<b>3.20</b>	<b>3.40</b>	<b>5.00</b>	<b>3.88</b>
	<b>Mean</b>	<b>142.60</b>	<b>182.60</b>	<b>106.96</b>	<b>129.40</b>	<b>66.32</b>	<b>238.81</b>	<b>145.51</b>	<b>3.71</b>	<b>4.72</b>	<b>2.42</b>	<b>1.98</b>	<b>3.69</b>	<b>3.33</b>
	<b>CD (0.05)</b>	-	-	<b>16.78</b>	-	-	-	-	-	-	<b>0.88</b>	-	-	-
	<b>CV (%) Error</b>	-	-	<b>5.98</b>	-	-	-	-	-	-	<b>14.13</b>	-	-	-
	<b>CV (%) Phen.</b>	<b>11.74</b>	<b>20.05</b>	<b>6.29</b>	<b>17.20</b>	<b>21.50</b>	<b>8.98</b>	-	<b>14.99</b>	<b>20.74</b>	<b>14.44</b>	<b>35.30</b>	<b>17.29</b>	-

S. No.	Genotypes	Pod length (cm)							No. of pods per plant				Seed yield per plant (g)				
		Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Bhowali	Palampur	Ranichauri	Mean	Almora	Palampur	Ranichauri	Shimla	Mean
31	LRB-476	9.80	10.20	9.60	7.20	9.10	10.85	<b>9.46</b>	196.00	18.40	18.60	<b>77.67</b>	10.80	6.75	10.87	38.73	<b>16.79</b>
32	LRB-477	11.50	9.60	9.90	6.80	8.42	12.10	<b>9.72</b>	206.00	16.00	14.40	<b>78.80</b>	15.20	5.54	10.65	49.03	<b>20.11</b>
33	LRB-478	9.30	10.10	9.90	7.40	8.12	12.50	<b>9.55</b>	173.00	17.40	20.60	<b>70.33</b>	11.60	5.65	9.11	57.08	<b>20.86</b>
34	LRB-479	9.70	9.70	9.70	5.80	8.74	9.70	<b>8.89</b>	214.00	20.80	16.20	<b>83.67</b>	12.00	7.59	8.69	46.42	<b>18.68</b>
35	LRB-480	9.80	9.90	9.20	6.00	9.44	11.70	<b>9.34</b>	129.00	16.60	18.40	<b>54.67</b>	20.00	5.32	9.17	42.74	<b>19.31</b>
36	LRB-481	9.30	9.90	9.80	6.60	8.80	11.10	<b>9.25</b>	172.00	14.60	17.80	<b>68.13</b>	17.60	4.64	9.61	64.37	<b>24.06</b>
37	LRB-482	9.10	10.00	10.40	6.20	9.40	12.90	<b>9.67</b>	189.00	13.20	14.20	<b>72.13</b>	12.00	5.35	9.38	70.18	<b>24.23</b>
38	LRB-483	9.50	9.70	9.90	6.40	9.70	10.40	<b>9.27</b>	304.00	15.20	13.20	<b>110.80</b>	17.20	5.09	9.35	51.75	<b>20.85</b>
39	LRB-484	7.90	11.00	9.90	6.00	8.80	12.60	<b>9.37</b>	303.00	16.00	14.40	<b>111.13</b>	19.60	4.99	9.46	48.18	<b>20.56</b>
40	LRB-487	8.80	11.10	9.60	8.00	9.76	11.95	<b>9.87</b>	132.00	15.00	19.00	<b>55.33</b>	9.60	4.98	8.57	55.04	<b>19.55</b>
41	LRB-488	11.00	9.50	9.90	6.20	8.58	10.40	<b>9.26</b>	300.00	16.80	16.60	<b>111.13</b>	14.80	5.77	9.34	48.10	<b>19.50</b>
42	LRB-489	8.60	8.50	10.10	6.00	9.08	11.10	<b>8.90</b>	67.00	15.60	13.00	<b>31.87</b>	20.00	4.73	8.04	58.31	<b>22.77</b>
43	LRB-490	9.20	10.20	9.90	5.80	9.40	12.70	<b>9.53</b>	202.00	17.60	14.40	<b>78.00</b>	26.00	6.31	10.02	58.54	<b>25.22</b>
44	LRB-491	9.80	9.50	11.00	6.20	9.14	12.65	<b>9.72</b>	274.00	16.80	13.40	<b>101.40</b>	20.40	6.45	10.80	39.42	<b>19.27</b>
45	LRB-492	9.70	10.70	9.50	6.60	9.10	11.45	<b>9.51</b>	242.00	19.20	15.20	<b>92.13</b>	14.40	6.46	10.06	52.10	<b>20.76</b>
46	LRB-493	9.00	10.80	9.70	6.80	10.64	11.60	<b>9.76</b>	271.00	16.20	11.80	<b>99.67</b>	18.40	5.20	10.77	59.58	<b>23.49</b>
47	LRB-495	9.70	11.10	9.60	6.40	9.64	12.40	<b>9.81</b>	270.00	17.40	24.25	<b>103.88</b>	16.40	4.99	9.36	44.07	<b>18.71</b>
48	LRB-496	9.60	9.90	10.20	6.80	10.98	13.60	<b>10.18</b>	361.00	17.80	15.80	<b>131.53</b>	27.60	6.19	9.48	56.72	<b>25.00</b>
49	LRB-497	9.40	10.00	11.00	7.00	8.28	11.05	<b>9.46</b>	414.00	15.60	20.60	<b>150.07</b>	17.60	4.49	8.61	64.12	<b>23.71</b>
50	LRB-498	9.80	9.00	9.50	6.40	8.48	14.25	<b>9.57</b>	215.00	16.60	23.20	<b>84.93</b>	22.40	5.62	7.21	55.96	<b>22.80</b>
<b>Mean for check variety</b>																	
<b>PRR-1 (C)</b>		8.40	9.70	9.66	6.70	-	10.75	<b>9.04</b>	432.00	17.44	20.10	<b>156.51</b>	12.00	6.43	12.63	44.55	<b>18.90</b>
<b>PRR-2 (C)</b>		8.25	9.65	9.74	6.60	-	11.51	<b>9.15</b>	255.25	17.48	17.30	<b>96.68</b>	7.60	5.70	13.10	62.55	<b>22.24</b>
<b>RBL-1 (C)</b>		9.40	8.85	10.20	7.40	-	11.25	<b>9.42</b>	168.25	16.92	19.50	<b>68.22</b>	17.20	5.71	9.93	44.87	<b>19.43</b>
<b>RBL-6 (C)</b>		9.35	10.68	9.80	6.50	-	10.83	<b>9.43</b>	146.00	16.80	18.80	<b>60.53</b>	15.85	5.95	10.83	69.67	<b>25.57</b>
<b>Minimum</b>		<b>7.90</b>	<b>1.50</b>	<b>9.00</b>	<b>5.80</b>	<b>6.50</b>	<b>8.40</b>	<b>8.46</b>	<b>67.00</b>	<b>13.20</b>	<b>11.80</b>	<b>31.87</b>	<b>4.00</b>	<b>4.09</b>	<b>7.21</b>	<b>22.14</b>	<b>12.11</b>
<b>Maximum</b>		<b>11.5</b>	<b>12.50</b>	<b>11.0</b>	<b>11.00</b>	<b>10.98</b>	<b>14.25</b>	<b>11.13</b>	<b>544.00</b>	<b>22.60</b>	<b>24.25</b>	<b>194.13</b>	<b>30.80</b>	<b>8.11</b>	<b>13.10</b>	<b>70.18</b>	<b>25.57</b>
<b>Mean</b>		<b>9.30</b>	<b>10.22</b>	<b>9.86</b>	<b>7.63</b>	<b>8.87</b>	<b>11.65</b>	<b>9.59</b>	<b>248.44</b>	<b>17.04</b>	<b>18.13</b>	<b>94.53</b>	<b>14.00</b>	<b>5.87</b>	<b>9.85</b>	<b>46.21</b>	<b>18.98</b>
<b>CD (0.05)</b>		-	-	<b>0.90</b>	-	-	-	-	-	<b>5.13</b>	-	-	-	<b>2.41</b>	-	-	-
<b>CV (%) Error</b>		-	-	<b>3.42</b>	-	-	-	-	-	<b>11.19</b>	-	-	-	<b>15.19</b>	-	-	-
<b>CV (%) Phen.</b>		<b>8.00</b>	<b>14.40</b>	<b>4.54</b>	<b>17.97</b>	<b>8.56</b>	<b>10.06</b>	-	<b>43.15</b>	<b>10.43</b>	<b>17.78</b>	-	<b>43.19</b>	<b>16.35</b>	<b>13.93</b>	<b>24.25</b>	-

S. No.	Genotypes	100 seed weight (g)						Seed yield (q/ha)				No. of seed per pod				
		Almora	Bhowali	Palampur	Shillong	Shimla	Mean	Bhowali	Palampur	Shillong	Mean	Almora	Ranichauri	Shillong	Shimla	Mean
31	LRB-476	8.03	8.44	7.70	6.60	7.54	<b>7.66</b>	20.00	41.11	8.33	<b>23.15</b>	9.00	5.60	7.80	6.50	<b>7.23</b>
32	LRB-477	8.03	8.36	7.60	5.80	7.08	<b>7.37</b>	18.00	44.44	2.92	<b>21.79</b>	10.00	5.00	6.40	5.50	<b>6.73</b>
33	LRB-478	4.91	6.60	6.90	5.43	7.14	<b>6.20</b>	16.00	33.89	5.28	<b>18.39</b>	9.00	5.40	6.80	7.00	<b>7.05</b>
34	LRB-479	6.21	8.36	7.80	6.31	6.46	<b>7.03</b>	15.00	38.89	5.42	<b>19.77</b>	9.00	4.20	6.00	6.50	<b>6.43</b>
35	LRB-480	6.71	7.77	6.90	5.53	7.78	<b>6.94</b>	13.00	46.67	8.06	<b>22.57</b>	9.00	4.20	7.20	7.00	<b>6.85</b>
36	LRB-481	6.23	6.73	6.80	5.73	6.54	<b>6.41</b>	19.00	31.67	7.08	<b>19.25</b>	9.00	5.20	8.20	5.50	<b>6.98</b>
37	LRB-482	6.45	7.66	6.90	5.93	7.30	<b>6.85</b>	26.00	38.89	6.39	<b>23.76</b>	10.00	4.60	8.40	6.50	<b>7.38</b>
38	LRB-483	7.18	8.44	6.90	5.76	6.94	<b>7.04</b>	32.00	30.00	2.78	<b>21.59</b>	9.00	5.20	7.80	7.00	<b>7.25</b>
39	LRB-484	6.71	7.70	6.70	5.91	7.00	<b>6.80</b>	30.00	38.89	2.64	<b>23.84</b>	9.00	4.40	7.00	6.00	<b>6.60</b>
40	LRB-487	7.25	8.20	7.70	5.74	6.56	<b>7.09</b>	24.00	22.22	4.58	<b>16.94</b>	7.00	6.20	8.60	7.10	<b>7.23</b>
41	LRB-488	6.84	8.58	7.20	5.46	6.52	<b>6.92</b>	35.00	41.67	6.11	<b>27.59</b>	10.00	4.40	7.20	7.00	<b>7.15</b>
42	LRB-489	5.57	7.47	6.30	5.61	5.86	<b>6.16</b>	5.00	31.11	6.94	<b>14.35</b>	8.00	4.60	8.00	6.55	<b>6.79</b>
43	LRB-490	7.26	7.61	8.90	5.96	7.00	<b>7.35</b>	18.00	35.00	7.64	<b>20.21</b>	9.00	4.20	8.20	6.50	<b>6.98</b>
44	LRB-491	6.37	7.32	7.90	5.97	6.76	<b>6.86</b>	18.00	28.89	5.83	<b>17.57</b>	9.00	4.80	7.00	5.50	<b>6.58</b>
45	LRB-492	7.90	7.60	8.70	6.02	6.68	<b>7.38</b>	30.00	25.00	0.07	<b>18.36</b>	9.00	4.60	7.60	4.50	<b>6.43</b>
46	LRB-493	9.03	8.14	8.20	6.05	6.84	<b>7.65</b>	20.00	31.67	4.86	<b>18.84</b>	8.00	5.40	8.40	7.00	<b>7.20</b>
47	LRB-495	6.72	7.91	8.20	6.15	6.72	<b>7.14</b>	10.00	30.56	6.39	<b>15.65</b>	8.00	4.40	7.40	5.50	<b>6.33</b>
48	LRB-496	6.68	6.61	7.20	6.56	7.02	<b>6.81</b>	16.00	41.67	10.83	<b>22.83</b>	9.00	4.80	9.60	6.50	<b>7.48</b>
49	LRB-497	6.40	6.85	7.70	5.51	6.74	<b>6.64</b>	20.00	47.78	2.78	<b>23.52</b>	9.00	5.20	5.80	4.50	<b>6.13</b>
50	LRB-498	6.96	7.92	7.20	5.74	6.72	<b>6.91</b>	6.00	30.00	5.56	<b>13.85</b>	8.00	4.60	6.40	6.50	<b>6.38</b>
<b>Mean for check variety</b>																
	<b>PRR-1 (C)</b>	6.34	6.76	6.80	-	6.63	<b>6.63</b>	35.75	32.11	-	<b>33.93</b>	8.50	4.90	-	6.50	<b>6.63</b>
	<b>PRR-2 (C)</b>	6.05	6.11	7.48	-	6.58	<b>6.55</b>	16.75	35.11	-	<b>25.93</b>	8.50	4.70	-	6.00	<b>6.40</b>
	<b>RBL-1 (C)</b>	6.31	6.04	7.44	-	6.60	<b>6.60</b>	9.00	34.22	-	<b>21.61</b>	9.00	5.40	-	6.00	<b>6.80</b>
	<b>RBL-6 (C)</b>	6.88	7.92	7.40	-	6.63	<b>7.21</b>	14.50	35.44	-	<b>24.97</b>	8.25	5.00	-	6.50	<b>6.58</b>
	<b>Minimum</b>	<b>4.04</b>	<b>5.86</b>	<b>6.00</b>	<b>4.76</b>	<b>5.80</b>	<b>5.79</b>	<b>5.00</b>	<b>21.67</b>	<b>0.07</b>	<b>12.15</b>	<b>7.00</b>	<b>4.20</b>	<b>5.00</b>	<b>4.50</b>	<b>6.13</b>
	<b>Maximum</b>	<b>9.03</b>	<b>9.45</b>	<b>8.90</b>	<b>6.60</b>	<b>8.64</b>	<b>7.86</b>	<b>35.75</b>	<b>51.67</b>	<b>10.83</b>	<b>33.93</b>	<b>12.00</b>	<b>8.80</b>	<b>9.60</b>	<b>10.50</b>	<b>8.58</b>
	<b>Mean</b>	<b>6.47</b>	<b>7.61</b>	<b>7.19</b>	<b>5.77</b>	<b>6.89</b>	<b>6.80</b>	<b>19.17</b>	<b>35.52</b>	<b>4.46</b>	<b>20.26</b>	<b>8.86</b>	<b>5.83</b>	<b>7.26</b>	<b>7.34</b>	<b>7.31</b>
	<b>CD (0.05)</b>	-	-	<b>0.92</b>	-	-		-	<b>13.29</b>	-		-	-	-	-	
	<b>CV (%) Error</b>	-	-	<b>4.71</b>	-	-		-	<b>14.54</b>	-		-	-	-	-	
	<b>CV (%) Phen.</b>	<b>14.45</b>	<b>10.67</b>	<b>8.62</b>	<b>7.00</b>	<b>8.31</b>		<b>40.65</b>	<b>18.54</b>	<b>52.54</b>		<b>9.80</b>	<b>21.21</b>	<b>12.96</b>	<b>20.88</b>	



S. No.	Genotypes	Stem thickness (mm)			Pod weight per plant
		Shillong	Shimla	Mean	Palampur
31	LRB-476	5.40	4.85	<b>5.13</b>	9.63
32	LRB-477	7.80	5.70	<b>6.75</b>	7.53
33	LRB-478	7.60	6.06	<b>6.83</b>	8.39
34	LRB-479	6.20	5.56	<b>5.88</b>	10.19
35	LRB-480	6.80	4.87	<b>5.84</b>	8.63
36	LRB-481	8.80	5.91	<b>7.36</b>	7.39
37	LRB-482	8.20	4.95	<b>6.58</b>	8.28
38	LRB-483	7.00	4.74	<b>5.87</b>	7.46
39	LRB-484	6.00	7.01	<b>6.51</b>	8.11
40	LRB-487	7.20	7.07	<b>7.14</b>	7.45
41	LRB-488	8.80	4.82	<b>6.81</b>	8.61
42	LRB-489	9.20	6.42	<b>7.81</b>	7.09
43	LRB-490	6.80	5.30	<b>6.05</b>	9.05
44	LRB-491	8.00	4.52	<b>6.26</b>	9.11
45	LRB-492	8.20	5.28	<b>6.74</b>	8.45
46	LRB-493	9.00	6.09	<b>7.55</b>	8.01
47	LRB-495	7.60	5.26	<b>6.43</b>	7.54
48	LRB-496	9.40	5.13	<b>7.27</b>	8.61
49	LRB-497	7.00	5.41	<b>6.21</b>	7.16
50	LRB-498	7.60	5.52	<b>6.56</b>	7.66
<b>Mean for check variety</b>					
	<b>PRR-1 (C)</b>	-	4.89	<b>4.89</b>	9.09
	<b>PRR-2 (C)</b>	-	4.64	<b>4.64</b>	8.74
	<b>RBL-1 (C)</b>	-	5.71	<b>5.71</b>	7.66
	<b>RBL-6 (C)</b>	-	5.67	<b>5.67</b>	8.52
	<b>Minimum</b>	<b>3.00</b>	<b>4.05</b>	<b>3.75</b>	<b>6.13</b>
	<b>Maximum</b>	<b>9.40</b>	<b>8.34</b>	<b>8.53</b>	<b>11.17</b>
	<b>Mean</b>	<b>6.26</b>	<b>5.86</b>	<b>6.02</b>	<b>8.43</b>
	<b>CD (0.05)</b>	-	-	-	<b>1.67</b>
	<b>CV (%) Error</b>	-	-	-	<b>7.36</b>
	<b>CV (%) Phen.</b>	<b>28.65</b>	<b>19.64</b>	-	<b>11.49</b>

**Table 83. Characterization of germplasm lines in rice bean at different locations - Hills (2010)**

S. No.	Genotypes	Early plant vigour						Plant growth habit					Flower colour					Flowering behavior			Leaflet shape				
		Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode
1	LRB-311	3	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
2	LRB-319	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
3	LRB-322	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
4	LRB-324	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
5	LRB-329	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
6	LRB-446	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
7	LRB-447	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
8	LRB-448	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
9	LRB-449	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
10	LRB-452	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
11	LRB-455	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
12	LRB-456	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
13	LRB-457	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
14	LRB-458	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
15	LRB-459	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
16	LRB-460	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
17	LRB-461	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
18	LRB-462	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
19	LRB-463	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
20	LRB-464	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
21	LRB-465	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
22	LRB-466	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
23	LRB-467	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2

S. No.	Genotypes	Leaflet size					Pod shattering					Pod colour					Seed shape				Plant habit		Seed color	Biotic stress susceptibility	
		Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Palampur	Shillong	Shimla	Mode	Almora	Shimla	Palampur	Palampur	Shillong
1	LRB-311	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	99	1	1
2	LRB-319	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
3	LRB-322	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
4	LRB-324	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
5	LRB-329	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
6	LRB-446	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
7	LRB-447	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
8	LRB-448	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
9	LRB-449	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
10	LRB-452	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
11	LRB-455	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
12	LRB-456	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
13	LRB-457	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
14	LRB-458	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
15	LRB-459	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
16	LRB-460	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
17	LRB-461	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
18	LRB-462	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
19	LRB-463	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
20	LRB-464	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
21	LRB-465	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
22	LRB-466	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
23	LRB-467	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1

S. No.	Genotypes	Early plant vigour						Plant growth habit					Flower colour					Flowering behavior			Leaflet shape				
		Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode
24	LRB-468	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
25	LRB-470	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
26	LRB-471	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
27	LRB-472	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
28	LRB-473	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
29	LRB-474	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
30	LRB-475	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
31	LRB-476	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
32	LRB-477	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
33	LRB-478	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
34	LRB-479	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
35	LRB-480	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
36	LRB-481	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
37	LRB-482	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
38	LRB-483	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
39	LRB-484	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
40	LRB-487	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
41	LRB-488	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
42	LRB-489	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
43	LRB-490	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
44	LRB-491	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
45	LRB-492	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
46	LRB-493	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
47	LRB-495	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
48	LRB-496	2	2	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
49	LRB-497	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2

S. No.	Genotypes	Leaflet size					Pod shattering					Pod colour					Seed shape				Plant habit		Seed color	Biotic stress susceptibility	
		Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Palampur	Shillong	Shimla	Mode	Almora	Shimla	Palampur	Palampur	Shillong
24	LRB-468	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
25	LRB-470	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
26	LRB-471	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
27	LRB-472	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
28	LRB-473	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
29	LRB-474	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
30	LRB-475	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
31	LRB-476	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
32	LRB-477	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
33	LRB-478	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
34	LRB-479	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
35	LRB-480	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
36	LRB-481	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
37	LRB-482	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
38	LRB-483	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
39	LRB-484	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
40	LRB-487	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
41	LRB-488	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
42	LRB-489	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
43	LRB-490	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
44	LRB-491	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
45	LRB-492	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
46	LRB-493	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
47	LRB-495	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
48	LRB-496	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
49	LRB-497	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1

S. No.	Genotypes	Early plant vigour						Plant growth habit					Flower colour					Flowering behavior			Leaflet shape				
		Almora	Bhowali	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode
50	LRB-498	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
<b>Mean for check variety</b>																									
	<b>PRR-1 (C)</b>	2	2	3	-	3	2	2	2	-	2	2	3	3	-	3	3	-	1	1	2	2	-	2	2
	<b>PRR-2 (C)</b>	2	2	3	-	3	2	2	2	-	2	2	3	3	-	3	3	-	1	1	2	2	-	2	2
	<b>RBL-1 (C)</b>	2	3	3	-	3	3	2	2	-	2	2	3	3	-	3	3	-	1	1	2	2	-	2	2
	<b>RBL-6 (C)</b>	2	3	3	-	3	3	2	2	-	2	2	3	3	-	3	3	-	1	1	2	2	-	2	2
	<b>Minimum</b>	2	2	3	3	3	2	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
	<b>Maximum</b>	3	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	2	2	2	2	2
	<b>Mode</b>	2	3	3	3	3	3	2	2	3	2	2	3	3	3	3	3	1	1	1	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.	Genotypes	Leaflet size					Pod shattering					Pod colour					Seed shape				Plant habit		Seed color	Biotic stress susceptibility	
		Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Almora	Palampur	Shillong	Shimla	Mode	Palampur	Shillong	Shimla	Mode	Almora	Shimla	Palampur	Palampur	Shillong
50	LRB-498	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
<b>Mean for check variety</b>																									
	<b>PRR-1 (C)</b>	5	5	-	5	5	1	1	-	1	1	2	1	-	2	2	1	-	1	1	2	3	4	1	-
	<b>PRR-2 (C)</b>	5	5	-	5	5	1	1	-	1	1	2	1	-	2	2	1	-	1	1	2	3	1	1	-
	<b>RBL-1 (C)</b>	5	5	-	5	5	1	1	-	1	1	2	1	-	2	2	1	-	1	1	2	3	1	1	-
	<b>RBL-6 (C)</b>	5	5	-	7	5	1	1	-	1	1	2	1	-	2	2	1	-	1	1	2	3	1	1	-
	<b>Minimum</b>	5	5	5	5	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1
	<b>Maximum</b>	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	99	1	1
	<b>Mode</b>	5	5	5	7	5	1	1	0	1	1	2	1	3	2	2	1	1	1	1	2	3	1	1	1

**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

**Table 84. Promising lines in adzuki bean germplasm for various characters at different locations (Hills)**

S.No.	Characters	Range	Promising lines	Value of best check
<b>Palampur (Accession 25)</b>				
1.	Days to 50% flowering	46.67-70.33	EC000377, EC015256, EC340262 (< 47.0 days)	Totru Local (48.00 days)
2.	Days to maturity	84.33-117.67	EC030256, EC024523, EC034625, IC030253, IC341948, EC340249, EC340262 (< 86.0 days)	HPU-51 (87.00 days)
3.	Plant height (cm)	87.67-102.00	EC000251, EC015256, EC340260, EC018151, EC290652, IC341948, EC024523, IC030270, EC290251 (> 96.00 cm)	HPU-51 (93.00 cm)
4.	No. of primary branches per plant	1.87-2.53	IC341939, EC034625, EC030256 (> 2.30)	HPU-51 (2.07)
5.	Pod length (cm)	7.10-10.10	-	HPU-51 (10.10 cm)
6.	No. of pods per plant	12.73-17.07	-	HPU-51 (17.07)
7.	Pod weight per plant (g)	4.48-10.91	EC340246, EC240251 (> 10.0 g)	HPU-51 (9.77 g)
8.	No. of pods per cluster	1.91-2.39	EC015648, EC024523, EC340249, EC340258, EC290652 (> 2.25)	HPU-51 (2.05)
9.	Cluster per plant	5.77-8.28	EC000377, EC034625, IC030270 (> 8.00)	Totru Local (7.56)
10.	Seed yield per plant (g)	3.05-8.24	EC340246, IC341946, IC030270, EC240251, EC340258 (> 7.50 g)	HPU-51 (6.99 g)
11.	Seed yield (q/ha)	12.59-45.74	EC034625, EC000251, IC030253 (> 38.00 q/ha)	Totru Local (34.26 q/ha)
12.	100 seed weight (g)	4.73-14.23	EC000251, EC024523, EC030253 (> 11.00 g)	HPU-51 (10.77 g)
<b>Ranichauri (Accession 25)</b>				
1.	Days to 50% flowering	44.00-57.00	EC000251, EC340260 (< 45.0 days)	HPU-51 (45.00 days)
2.	Days to maturity	112.00-129.00	EC000251, EC340260 (< 114.0 days)	HPU-51 (115.33 days)
3.	Plant height (cm)	23.80-41.20	EC015256, IC030270, EC000377, EC024523, EC015648 (> 38.00 cm)	HPU-51 (35.47 cm)



4.	Pod length (cm)	3.80-8.80	EC290251, EC000251, EC015256, EC018151, EC340258, IC030270, EC000377 (> 8.00 cm)	Totru Local (7.27 cm)
5.	No. of pods per plant	2.20-5.40	EC000251, EC290652 (> 4.80)	Totru Local (4.80)
6.	No. of seeds per pod	1.80-6.40	EC340260, IC030270, EC024523 (> 5.00)	Totru Local (4.73)
7.	No. of leaves per plant	14.00-27.60	EC240251, EC015256, EC000377, IC030270, EC340258, EC015648, EC000262, EC024523 (> 22.00)	HPU-51 (17.00)
8.	100 seed weight (g)	11.02-11.77	IC341946, EC290251, EC340246, EC240251, EC290652 (> 11.60 g)	Totru Local (11.48 g)
9.	Seed yield per plant (g)	2.44-5.55	IC030253, EC000262, EC340255, EC340249, EC034625 (> 4.50 g)	HPU-51 (4.14 g)
<b>Shimla (Accession 25)</b>				
1.	Days to 50% flowering	59.00-71.00	EC240251, IC030253, EC034625, EC057959, EC340249 (< 62.0 days)	Totru Local (65.00 days)
2.	Days to maturity	95.00-116.00	EC000377 (95.0 days)	Totru Local (102.0 days)
3.	Plant height (cm)	32.00-98.20	EC015648, EC340246, EC000262, EC290652 (> 75.00 cm)	Totru Local (68.80 cm)
4.	No. of primary branches	1.00-4.00	EC015648, EC018151, EC000251, EC000262, EC024523, EC057959, EC340255 (> 2.00)	HPU-51 & Totru Local (2.00)
5.	No. of cluster per plant	5.00-14.00	-	Totru Local (14.00)
6.	No. of pod per cluster	1.50-3.50	EC000377, EC034625, EC340260, EC015256 (> 2.50)	Totru Local (2.00)
7.	No. of pod per plant	10.00-32.00	EC015648, EC018151, EC000262 (> 22.50)	Totru Local (22.00)
8.	No. of seed per pod	4.50-7.50	-	HPU-51 (7.50)
9.	100 seed weight(g)	3.94-12.74	EC000262, EC015256 (> 12.00 g)	HPU-51 (10.30 g)
10.	Seed yield per plant (g)	6.72-26.03	EC000262, EC030256, EC015648 (> 20.00 g)	HPU-51 (17.08 g)
<b>Best entries over location</b>				
1.	Days to 50% flowering	51.44-61.78	EC340260, EC340262 (< 53.00 days)	Totru Local (53.56 days)

2.	Days to maturity	101.44-119.22	EC030256, EC000377 (< 102.0 days)	HPU-51 (103.11 days)
3.	Plant height (cm)	54.17-75.24	EC015648, EC340246, EC018151, EC000262, EC290652, IC030270 (> 65.00 cm)	Totru Local (63.07 cm)
4.	No. of primary branches	1.43-3.10	EC015648, EC018151, EC340255, EC057959, EC000251 (> 2.50)	HPU-51 (2.03)
5.	Pod length (cm)	6.32-8.92	EC290251, EC000251, EC018151, EC340258, EC015256, EC000377, IC030270 (> 8.50 cm)	HPU-51 (8.35 cm)
6.	No. of pods per plant	8.50-16.69	EC015648, EC018151, EC000262 (> 15.00)	Totru Local (13.29)
7.	No. of cluster per plant	5.79-10.78	-	Totru Local (10.78)
8.	No. of pod per cluster	1.88-2.80	EC000377, EC015256, EC034625, EC340260, EC015648, EC000251, EC340255, EC024523, EC340249, EC290652, EC057959, EC290251 (> 2.10)	HPU-51 (2.03)
9.	No. of seeds per pod	3.90-6.85	IC030270, EC024523, EC000377 (> 6.00)	Totru Local (5.87)
10.	Seed yield per plant (g)	4.92-12.68	EC000262, EC030256, EC034625 (> 10.00 g)	HPU-51 (9.40 g)
11.	100 seed weight (g)	8.50-11.62	EC000251, EC000262, EC015256 (> 11.00 g)	HPU-51 (10.75 g)

**Table 85. Multilocation evaluation of germplasm lines in adzuki bean at different locations- Hills (2010)**

S. No.	Accession No.	Days to 50% flowering				Days to maturity				No. of primary branches			Plant height (cm)			
		Palampur	Ranichauri	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean
1	EC000251	51.67	44	68	<b>54.56</b>	99.33	112	103	<b>104.78</b>	2.13	3.00	<b>2.57</b>	102.00	34.00	46.30	<b>60.77</b>
2	EC000262	54.33	49	69	<b>57.44</b>	98.00	117	105	<b>106.67</b>	2.00	3.00	<b>2.50</b>	88.00	37.40	83.50	<b>69.63</b>
3	EC000377	46.67	54	66	<b>55.56</b>	86.33	123	95	<b>101.44</b>	2.07	2.00	<b>2.03</b>	94.00	39.20	48.60	<b>60.60</b>
4	EC015256	46.67	49	69	<b>54.89</b>	86.00	118	105	<b>103.00</b>	2.13	1.00	<b>1.57</b>	101.33	41.20	46.80	<b>63.11</b>
5	EC015648	51.67	54	68	<b>57.89</b>	113.33	124	107	<b>114.78</b>	2.20	4.00	<b>3.10</b>	89.33	38.20	98.20	<b>75.24</b>
6	EC018151	49.00	49	70	<b>56.00</b>	110.67	118	108	<b>112.22</b>	1.93	4.00	<b>2.97</b>	99.33	37.20	74.10	<b>70.21</b>
7	EC024523	50.33	54	65	<b>56.44</b>	84.33	123	103	<b>103.44</b>	1.87	3.00	<b>2.43</b>	97.33	38.40	50.70	<b>62.14</b>
8	EC030256	49.67	48	63	<b>53.56</b>	84.33	116	104	<b>101.44</b>	2.33	2.00	<b>2.17</b>	91.67	30.20	57.60	<b>59.82</b>
9	EC034625	47.67	52	61	<b>53.56</b>	84.67	122	105	<b>103.89</b>	2.40	2.00	<b>2.20</b>	90.33	30.00	60.60	<b>60.31</b>
10	EC057959	51.00	47	61	<b>53.00</b>	86.00	116	104	<b>102.00</b>	2.20	3.00	<b>2.60</b>	94.00	32.60	66.20	<b>64.27</b>
11	EC240251	51.00	49	59	<b>53.00</b>	86.33	118	102	<b>102.11</b>	2.00	1.00	<b>1.50</b>	95.33	33.20	47.00	<b>58.51</b>
12	EC290251	52.00	54	65	<b>57.00</b>	90.33	124	106	<b>106.78</b>	2.00	2.00	<b>2.00</b>	96.33	37.50	39.40	<b>57.74</b>
13	EC290652	51.67	47	63	<b>53.89</b>	113.00	116	103	<b>110.67</b>	2.27	2.00	<b>2.13</b>	98.00	33.20	76.20	<b>69.13</b>
14	EC340246	52.33	46	71	<b>56.44</b>	108.67	116	106	<b>110.22</b>	2.00	2.00	<b>2.00</b>	94.33	31.20	94.70	<b>73.41</b>
15	EC340249	50.33	53	61	<b>54.78</b>	85.33	123	102	<b>103.44</b>	2.27	2.00	<b>2.13</b>	87.67	24.00	53.80	<b>55.16</b>
16	EC340255	52.33	52	62	<b>55.44</b>	94.33	123	105	<b>107.44</b>	2.27	3.00	<b>2.63</b>	91.67	33.80	55.10	<b>60.19</b>
17	EC340258	53.00	57	67	<b>59.00</b>	95.67	128	109	<b>110.89</b>	2.20	2.00	<b>2.10</b>	95.33	35.80	60.80	<b>63.98</b>
18	EC340260	47.33	44	63	<b>51.44</b>	93.67	113	103	<b>103.22</b>	1.87	1.00	<b>1.43</b>	100.33	24.20	42.40	<b>55.64</b>
19	EC340262	46.67	47	65	<b>52.89</b>	85.67	116	109	<b>103.56</b>	1.87	2.00	<b>1.93</b>	92.00	23.80	46.70	<b>54.17</b>
20	IC030253	50.67	52	59	<b>53.89</b>	84.67	123	104	<b>103.89</b>	1.93	1.00	<b>1.47</b>	93.67	32.20	43.70	<b>56.52</b>

S. No.	Accession No.	Pod length (cm)			No. of pods per plant				Seed yield per plant (g)				No. of cluster per plant		
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Shimla	Mean
1	EC000251	9.00	8.80	<b>8.90</b>	14.00	5.40	22.50	<b>13.97</b>	5.89	3.33	12.07	<b>7.10</b>	6.84	8.00	<b>7.42</b>
2	EC000262	9.40	7.40	<b>8.40</b>	14.67	3.40	27.00	<b>15.02</b>	7.06	4.95	26.03	<b>12.68</b>	6.74	9.00	<b>7.87</b>
3	EC000377	9.10	8.20	<b>8.65</b>	14.07	4.40	18.00	<b>12.16</b>	5.82	4.49	13.07	<b>7.79</b>	8.28	6.00	<b>7.14</b>
4	EC015256	8.73	8.60	<b>8.67</b>	14.27	4.60	16.00	<b>11.62</b>	6.73	4.14	16.70	<b>9.19</b>	7.10	5.00	<b>6.05</b>
5	EC015648	9.17	7.40	<b>8.28</b>	14.27	3.80	32.00	<b>16.69</b>	6.28	2.65	20.15	<b>9.69</b>	6.02	13.00	<b>9.51</b>
6	EC018151	9.27	8.40	<b>8.83</b>	14.40	4.40	27.00	<b>15.27</b>	7.04	2.44	15.02	<b>8.17</b>	6.06	14.00	<b>10.03</b>
7	EC024523	8.97	6.20	<b>7.58</b>	14.13	3.40	22.00	<b>13.18</b>	5.54	3.21	16.82	<b>8.52</b>	7.15	11.00	<b>9.07</b>
8	EC030256	9.13	5.60	<b>7.37</b>	14.93	4.60	18.00	<b>12.51</b>	6.54	3.66	23.57	<b>11.26</b>	7.02	9.00	<b>8.01</b>
9	EC034625	9.00	7.80	<b>8.40</b>	14.60	3.60	18.50	<b>12.23</b>	6.68	4.52	19.58	<b>10.26</b>	8.19	7.00	<b>7.60</b>
10	EC057959	8.40	6.00	<b>7.20</b>	14.60	2.60	17.50	<b>11.57</b>	7.38	3.53	16.03	<b>8.98</b>	6.62	9.00	<b>7.81</b>
11	EC240251	9.00	6.80	<b>7.90</b>	16.33	3.40	14.00	<b>11.24</b>	7.79	2.58	12.33	<b>7.57</b>	6.29	7.00	<b>6.65</b>
12	EC290251	9.03	8.80	<b>8.92</b>	14.73	3.80	12.00	<b>10.18</b>	6.29	2.67	9.05	<b>6.00</b>	6.87	6.00	<b>6.43</b>
13	EC290652	8.20	8.00	<b>8.10</b>	13.33	5.00	21.50	<b>13.28</b>	6.22	2.47	10.33	<b>6.34</b>	5.94	11.00	<b>8.47</b>
14	EC340246	9.07	6.80	<b>7.93</b>	15.93	2.80	18.00	<b>12.24</b>	8.24	3.45	14.65	<b>8.78</b>	7.08	9.00	<b>8.04</b>
15	EC340249	7.97	7.40	<b>7.68</b>	12.93	4.00	21.50	<b>12.81</b>	6.39	4.58	16.92	<b>9.30</b>	5.77	11.00	<b>8.39</b>
16	EC340255	7.10	5.80	<b>6.45</b>	14.80	4.00	14.00	<b>10.93</b>	7.04	4.69	15.35	<b>9.03</b>	6.67	11.00	<b>8.84</b>
17	EC340258	9.13	8.40	<b>8.77</b>	14.87	3.60	15.00	<b>11.16</b>	7.77	3.97	9.35	<b>7.03</b>	6.52	14.00	<b>10.26</b>
18	EC340260	7.77	7.80	<b>7.78</b>	13.47	3.40	15.00	<b>10.62</b>	7.59	3.75	17.95	<b>9.76</b>	7.94	6.00	<b>6.97</b>
19	EC340262	9.07	7.00	<b>8.03</b>	12.73	3.00	13.00	<b>9.58</b>	6.89	4.14	15.75	<b>8.93</b>	6.53	6.00	<b>6.26</b>
20	IC030253	8.93	6.20	<b>7.57</b>	13.53	4.40	12.00	<b>9.98</b>	6.27	5.55	9.73	<b>7.18</b>	6.79	6.00	<b>6.39</b>

S. No.	Accession No.	No. of pod per cluster			100-seed weight (g)				No. of seeds per pod			Palampur		Ranichauri
		Palampur	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Pod weight per plant (g)	Seed yield (q/ha)	No. of leaves per plant
1	EC000251	2.04	2.50	<b>2.27</b>	14.23	11.58	9.04	<b>11.62</b>	3.40	6.50	<b>4.95</b>	8.67	44.44	19.40
2	EC000262	2.18	2.00	<b>2.09</b>	10.30	11.25	12.74	<b>11.43</b>	3.40	7.00	<b>5.20</b>	9.65	25.19	23.40
3	EC000377	2.11	3.50	<b>2.80</b>	8.27	11.34	8.22	<b>9.28</b>	4.60	7.50	<b>6.05</b>	8.15	29.44	25.00
4	EC015256	2.00	3.00	<b>2.50</b>	10.60	11.02	12.28	<b>11.30</b>	4.80	6.50	<b>5.65</b>	8.97	27.41	26.80
5	EC015648	2.39	2.50	<b>2.44</b>	9.43	11.21	8.60	<b>9.75</b>	4.20	7.50	<b>5.85</b>	8.83	22.96	23.40
6	EC018151	2.18	2.00	<b>2.09</b>	8.97	11.25	6.06	<b>8.76</b>	3.40	7.00	<b>5.20</b>	8.87	24.44	15.80
7	EC024523	2.31	2.00	<b>2.15</b>	11.67	11.11	8.58	<b>10.45</b>	6.00	6.50	<b>6.25</b>	7.47	29.44	23.20
8	EC030256	2.09	2.00	<b>2.05</b>	9.67	11.36	8.10	<b>9.71</b>	3.20	7.50	<b>5.35</b>	8.81	29.07	17.00
9	EC034625	1.97	3.00	<b>2.49</b>	9.90	11.56	8.54	<b>10.00</b>	4.40	5.50	<b>4.95</b>	8.93	45.74	22.00
10	EC057959	2.25	2.00	<b>2.13</b>	9.60	11.26	8.72	<b>9.86</b>	4.20	7.50	<b>5.85</b>	9.89	23.70	22.00
11	EC240251	2.04	2.00	<b>2.02</b>	9.30	11.64	8.06	<b>9.67</b>	4.40	6.50	<b>5.45</b>	10.53	27.96	27.60
12	EC290251	2.24	2.00	<b>2.12</b>	10.27	11.74	8.76	<b>10.26</b>	4.20	5.50	<b>4.85</b>	8.90	27.96	20.00
13	EC290652	2.26	2.00	<b>2.13</b>	9.63	11.62	8.00	<b>9.75</b>	3.20	6.50	<b>4.85</b>	7.83	28.33	14.40
14	EC340246	2.15	2.00	<b>2.07</b>	10.87	11.72	8.10	<b>10.23</b>	1.80	6.00	<b>3.90</b>	10.91	30.93	14.00
15	EC340249	2.27	2.00	<b>2.13</b>	6.80	11.36	8.68	<b>8.95</b>	3.40	5.50	<b>4.45</b>	8.17	25.93	16.20
16	EC340255	1.95	2.50	<b>2.22</b>	9.30	11.31	8.04	<b>9.55</b>	3.80	7.50	<b>5.65</b>	9.08	12.59	18.40
17	EC340258	2.26	1.50	<b>1.88</b>	7.37	11.53	10.06	<b>9.65</b>	5.00	5.50	<b>5.25</b>	9.85	37.04	23.40
18	EC340260	1.97	3.00	<b>2.49</b>	10.10	11.24	7.12	<b>9.49</b>	6.40	5.00	<b>5.70</b>	8.78	23.52	20.60
19	EC340262	2.06	2.00	<b>2.03</b>	9.07	11.59	6.48	<b>9.05</b>	3.60	7.00	<b>5.30</b>	8.88	29.63	19.60
20	IC030253	2.11	2.00	<b>2.06</b>	11.07	11.31	8.68	<b>10.35</b>	4.20	4.50	<b>4.35</b>	8.33	38.89	16.40

S. No.	Accession No.	Days to 50% flowering				Days to maturity				No. of primary branches			Plant height (cm)			
		Palampur	Ranichauri	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean
21	IC030270	52.33	57	66	<b>58.44</b>	115.67	129	113	<b>119.22</b>	2.00	1.00	<b>1.50</b>	96.67	40.60	60.20	<b>65.82</b>
22	IC341939	70.33	47	68	<b>61.78</b>	117.67	117	116	<b>116.89</b>	2.53	1.00	<b>1.77</b>	90.33	33.60	63.80	<b>62.58</b>
23	IC341942	48.67	49	63	<b>53.56</b>	87.67	119	107	<b>104.56</b>	2.00	2.00	<b>2.00</b>	92.00	35.80	48.40	<b>58.73</b>
24	IC341946	52.33	55	68	<b>58.44</b>	86.00	126	109	<b>107.00</b>	2.07	1.00	<b>1.53</b>	94.00	34.00	59.70	<b>62.57</b>
25	IC341948	48.67	49	67	<b>54.89</b>	85.33	119	108	<b>104.11</b>	2.00	2.00	<b>2.00</b>	98.00	32.80	32.00	<b>54.27</b>
<b>Mean for check variety</b>																
<b>HPU-51 (C)</b>		49.67	45.00	67.00	<b>53.89</b>	87.00	115.33	107.00	<b>103.11</b>	2.07	2.00	<b>2.03</b>	93.00	35.47	60.40	<b>62.96</b>
<b>Totru Local (C)</b>		48.00	47.67	65.00	<b>53.56</b>	94.67	117.33	102.00	<b>104.67</b>	1.93	2.00	<b>1.97</b>	89.67	30.73	68.80	<b>63.07</b>
<b>Minimum</b>		<b>46.67</b>	<b>44.00</b>	<b>59.00</b>	<b>51.44</b>	<b>84.33</b>	<b>112.00</b>	<b>95.00</b>	<b>101.44</b>	<b>1.87</b>	<b>1.00</b>	<b>1.43</b>	<b>87.67</b>	<b>23.80</b>	<b>32.00</b>	<b>54.17</b>
<b>Maximum</b>		<b>70.33</b>	<b>57.00</b>	<b>71.00</b>	<b>61.78</b>	<b>117.67</b>	<b>129.00</b>	<b>116.00</b>	<b>119.22</b>	<b>2.53</b>	<b>4.00</b>	<b>3.10</b>	<b>102.00</b>	<b>41.20</b>	<b>98.20</b>	<b>75.24</b>
<b>Mean</b>		<b>50.96</b>	<b>50.02</b>	<b>65.15</b>	<b>55.38</b>	<b>94.25</b>	<b>119.69</b>	<b>105.56</b>	<b>106.50</b>	<b>2.09</b>	<b>2.00</b>	<b>2.08</b>	<b>94.28</b>	<b>33.71</b>	<b>58.73</b>	<b>62.24</b>
<b>CD (0.05)</b>		<b>1.33</b>	-	-		<b>1.37</b>	-	-		<b>0.40</b>	-	-	<b>2.89</b>	-	-	
<b>CV (%) Error</b>		<b>1.63</b>	-	-		<b>0.91</b>	-	-		<b>11.86</b>	-	-	<b>1.92</b>	-	-	
<b>CV (%) Phen.</b>		<b>8.67</b>	<b>7.57</b>	<b>5.10</b>		<b>11.95</b>	<b>3.71</b>	<b>3.73</b>		<b>8.20</b>			<b>4.20</b>	<b>13.73</b>	<b>27.28</b>	

S. No.	Accession No.	Pod length (cm)			No. of pods per plant				Seed yield per plant (g)				No. of cluster per plant		
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Palampur	Shimla	Mean
21	IC030270	8.90	8.20	<b>8.55</b>	15.60	4.80	14.00	<b>11.47</b>	7.85	3.64	14.25	<b>8.58</b>	8.02	7.00	<b>7.51</b>
22	IC341939	8.93	6.60	<b>7.77</b>	14.73	3.00	10.00	<b>9.24</b>	6.77	2.58	6.72	<b>5.36</b>	7.89	5.00	<b>6.45</b>
23	IC341942	9.33	7.60	<b>8.47</b>	15.87	4.40	20.00	<b>13.42</b>	6.61	2.57	12.85	<b>7.34</b>	6.51	10.00	<b>8.25</b>
24	IC341946	9.17	5.80	<b>7.48</b>	16.07	3.80	10.00	<b>9.96</b>	8.09	3.97	7.02	<b>6.36</b>	7.91	5.00	<b>6.46</b>
25	IC341948	8.83	3.80	<b>6.32</b>	12.80	2.20	10.50	<b>8.50</b>	5.38	4.41	9.62	<b>6.47</b>	6.58	5.00	<b>5.79</b>
<b>Mean for check variety</b>															
	<b>HPU-51 (C)</b>	10.10	6.60	<b>8.35</b>	17.07	2.80	17.00	<b>12.29</b>	6.99	4.14	17.08	<b>9.40</b>	7.21	9.00	<b>8.11</b>
	<b>Totru Local (C)</b>	8.50	7.27	<b>7.88</b>	13.07	4.80	22.00	<b>13.29</b>	3.05	3.87	7.85	<b>4.92</b>	7.56	14.00	<b>10.78</b>
	<b>Minimum</b>	<b>7.10</b>	<b>3.80</b>	<b>6.32</b>	<b>12.73</b>	<b>2.20</b>	<b>10.00</b>	<b>8.50</b>	<b>3.05</b>	<b>2.44</b>	<b>6.72</b>	<b>4.92</b>	<b>5.77</b>	<b>5.00</b>	<b>5.79</b>
	<b>Maximum</b>	<b>10.10</b>	<b>8.80</b>	<b>8.92</b>	<b>17.07</b>	<b>5.40</b>	<b>32.00</b>	<b>16.69</b>	<b>8.24</b>	<b>5.55</b>	<b>26.03</b>	<b>12.68</b>	<b>8.28</b>	<b>14.00</b>	<b>10.78</b>
	<b>Mean</b>	<b>8.86</b>	<b>7.16</b>	<b>8.01</b>	<b>14.51</b>	<b>3.83</b>	<b>17.70</b>	<b>12.01</b>	<b>6.67</b>	<b>3.70</b>	<b>14.29</b>	<b>8.22</b>	<b>6.97</b>	<b>8.63</b>	<b>7.80</b>
	<b>CD (0.05)</b>	<b>0.71</b>	-		<b>1.73</b>	-	-		<b>1.26</b>	-	-		<b>1.00</b>	-	
	<b>CV (%) Error</b>	<b>4.98</b>	-		<b>7.45</b>	-	-		<b>11.76</b>	-	-		<b>9.01</b>	-	
	<b>CV (%) Phen.</b>	<b>6.53</b>	<b>16.47</b>		<b>7.73</b>	<b>20.98</b>	<b>31.12</b>		<b>15.66</b>	<b>22.98</b>	<b>33.83</b>		<b>10.24</b>	<b>34.19</b>	

S. No.	Accession No.	No. of pod per cluster			100-seed weight (g)				No. of seeds per pod			Palampur		Ranichauri
		Palampur	Shimla	Mean	Palampur	Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Pod weight per plant (g)	Seed yield (q/ha)	No. of leaves per plant
21	IC030270	1.98	2.00	<b>1.99</b>	10.60	11.32	6.68	<b>9.53</b>	6.20	7.50	<b>6.85</b>	9.95	36.85	23.40
22	IC341939	1.91	2.00	<b>1.95</b>	9.70	11.54	9.78	<b>10.34</b>	4.40	6.50	<b>5.45</b>	8.87	32.41	20.80
23	IC341942	2.08	2.00	<b>2.04</b>	9.33	11.15	9.63	<b>10.04</b>	3.40	5.55	<b>4.48</b>	8.85	30.19	18.20
24	IC341946	2.07	2.00	<b>2.03</b>	9.30	11.77	8.16	<b>9.74</b>	3.40	5.50	<b>4.45</b>	9.64	22.22	21.60
25	IC341948	2.18	2.00	<b>2.09</b>	4.73	11.41	11.60	<b>9.25</b>	2.00	6.50	<b>4.25</b>	7.18	34.07	19.00
<b>Mean for check variety</b>														
	<b>HPU-51 (C)</b>	2.05	2.00	<b>2.03</b>	10.77	11.19	10.30	<b>10.75</b>	2.27	7.50	<b>4.88</b>	9.77	30.00	17.00
	<b>Totru Local (C)</b>	1.95	2.00	<b>1.98</b>	10.07	11.48	3.94	<b>8.50</b>	4.73	7.00	<b>5.87</b>	4.48	34.26	16.80
	<b>Minimum</b>	<b>1.91</b>	<b>1.50</b>	<b>1.88</b>	<b>4.73</b>	<b>11.02</b>	<b>3.94</b>	<b>8.50</b>	<b>1.80</b>	<b>4.50</b>	<b>3.90</b>	<b>4.48</b>	<b>12.59</b>	<b>14.00</b>
	<b>Maximum</b>	<b>2.39</b>	<b>3.50</b>	<b>2.80</b>	<b>14.23</b>	<b>11.77</b>	<b>12.74</b>	<b>11.62</b>	<b>6.40</b>	<b>7.50</b>	<b>6.85</b>	<b>10.91</b>	<b>45.74</b>	<b>27.60</b>
	<b>Mean</b>	<b>2.11</b>	<b>2.20</b>	<b>2.16</b>	<b>9.66</b>	<b>11.40</b>	<b>8.63</b>	<b>9.90</b>	<b>4.00</b>	<b>6.46</b>	<b>5.23</b>	<b>8.82</b>	<b>29.80</b>	<b>20.20</b>
	<b>CD (0.05)</b>	<b>0.44</b>	-		<b>1.20</b>	-	-		-	-		<b>1.23</b>	<b>3.68</b>	-
	<b>CV (%) Error</b>	<b>13.05</b>	-		<b>7.75</b>	-	-		-	-		<b>8.69</b>	<b>7.73</b>	-
	<b>CV (%) Phen.</b>	<b>5.99</b>	<b>20.16</b>		<b>17.41</b>	<b>1.79</b>	<b>21.29</b>		<b>28.28</b>	<b>13.69</b>		<b>13.82</b>	<b>23.33</b>	<b>18.00</b>



**Table 86. Characterization of germplasm lines in adzuki bean at Palampur and Shimla - Hills (2010)**

S. No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Leaf surface		Leaflet shape		Flower colour		Stem color		Stem surface		Pod angle		Pod surface		Seed coat colour		Plant habit
		Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Shimla
		1	EC000251	2	3	1	1	3	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	1
2	EC000262	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	99	2
3	EC000377	2	3	1	1	2	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	3	2
4	EC015256	2	3	1	1	2	2	2	2	1	1	1	2	3	3	2	2	2	1	1	1	3	4	2
5	EC015648	2	3	1	1	2	2	2	2	1	1	1	2	3	3	2	2	2	1	1	1	3	3	2
6	EC018151	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	99	2
7	EC024523	2	3	1	1	1	2	2	2	1	1	1	2	3	3	2	2	2	1	1	1	3	4	2
8	EC030256	2	3	1	1	2	2	2	2	1	1	1	2	3	3	2	2	2	1	1	1	3	4	2
9	EC034625	2	3	1	1	1	2	2	2	1	1	1	2	3	3	2	2	2	1	1	1	3	4	2
10	EC057959	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	4	2
11	EC240251	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	4	2
12	EC290251	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	4	2
13	EC290652	2	3	1	1	2	2	2	2	1	1	1	2	3	3	2	2	2	1	1	1	3	2	2
14	EC340246	2	3	1	1	1	2	2	2	2	1	2	2	3	3	2	2	2	1	1	1	3	4	2
15	EC340249	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	1	4	2
16	EC340255	2	3	1	1	2	2	2	2	2	1	2	2	3	3	2	2	2	1	1	1	3	4	2
17	EC340258	2	3	1	1	2	2	2	2	2	1	1	2	3	3	2	2	2	1	1	1	3	4	2
18	EC340260	2	3	1	1	1	2	2	2	2	1	1	2	3	3	2	2	2	1	1	1	1	4	2
19	EC340262	2	3	1	1	2	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	99	2
20	IC030253	2	3	1	1	2	2	2	2	2	1	1	2	3	3	2	2	2	1	1	1	3	4	2

S. No.	Accession No.	Early plant vigour		Plant growth habit		Leaf colour		Leaf surface		Leaflet shape		Flower colour		Stem color		Stem surface		Pod angle		Pod surface		Seed coat colour		Plant habit
		Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Palampur	Shimla	Shimla
21	IC030270	2	3	1	1	1	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	99	2
22	IC341939	2	3	1	1	2	2	2	2	1	1	2	2	3	3	2	2	2	5	1	1	3	4	2
23	IC341942	2	3	1	1	2	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	1	4	2
24	IC341946	2	3	1	1	3	2	2	2	1	1	3	2	3	3	2	2	2	5	1	1	3	4	2
25	IC341948	2	3	1	1	3	2	2	2	1	1	3	2	3	3	2	2	2	5	1	1	3	4	2
<b>Mean for check variety</b>																								
<b>HPU-51 (C)</b>		2	3	1	1	2	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	3	4	2
<b>Totru Local (C)</b>		2	3	1	1	2	2	2	2	1	1	2	2	3	3	2	2	2	1	1	1	1	99	2
<b>Minimum</b>		<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>
<b>Maximum</b>		<b>2</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>99</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>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>4</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 87. Promising lines in faba bean germplasm (Rabi 2009-10) for various characters at different locations (Hills)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Palampur (Accession 97)</b>				
1.	Days to 50% Flowering	64.00-82.00	IC-243594 (= 64.0 days)	HPFB-1 (64.90 days)
2.	Days to maturity	135.00-160.00	EC-343781, EC-117755 (< 153.0 days)	HB-649 (154.20 days)
3.	Plant height (cm)	50.00-74.00	EC-024312, EC-354989, HB-76, EC-001072, EC-117724, HB-10, EC-025085, EC-117842 (> 50.00 cm)	Vikrant (65.70 cm)
4.	No. of primary branches	1.60-3.00	EC-243755, HB-18, IC-322138, EC-243794, HB-15 (> 2.40)	Vikrant (C) 2.16
5.	Pod length (cm)	3.40-5.04	IC-117784, EC-29058, HB-16, EC-001072, HB-18, EC-243793, EC-107842, HB-77 (> 4.80 cm)	HB-649 (4.70 cm)
6.	Pod width (mm)	0.74-0.90	EC-025085, EC-029058, EC-243596, EC-007818, EC-117726, EC-351999, EC-003279, EC-005873, EC-361494, EC-361482, IC-374710, EC-243761, EC-243608, IC-329692, HB-10, EC-343808, EC-343781 (> 0.86 mm)	HPFB-1 & HB-649 (0.82 mm)
7.	No. of seeds per pod	3.97-4.82	HB-44, EC-243624, EC-117727, EC-354685, EC-243781, EC-343781, EC-243588, EC-243443, IC-243784, EC-243764, EC-117739, EC-243036 (> 4.50)	HB-649 (4.23)
8.	Pods per node - Obs.	1.40-2.40	EC-243608, EC-361482, EC-243808, EC-361497, EC-001072, EC-243524A, EC-351999, EC-005873, HB-44 (> 2.20)	Vikrant (2.00)
9.	Pods per node - Adj.	1.17-2.48	EC-361497, EC-243524A, EC-001072, EC-005873, EC-243608, EC-117726, EC-117727, EC-117744, EC-117748, IC-247649, IC-322138, IC-329648, IC-329692 (> 2.30)	Vikrant (2.00)
10.	100-seed weight(g)	23.90-36.50	EC-001072, EC-354985, EC-243641, EC-117727, EC-117743, EC-243588 (> 35.00 g)	HPFB-1 (33.33 g)
11.	Seed yield (q/ha) - Obs.	5.56-20.28	EC-001072, EC-117748, IC-374710, EC-361497, EC-243608, EC-343808, EC-025085, EC-351999 (> 17.00 q/ha)	HPFB-1 (12.19 q/ha)
12.	Seed yield (q/ha) - Adj.	2.16-21.88	IC-374710, EC-117748, EC-361497, EC-001072, EC-025085, IC-247649, EC-243608, IC-329692, EC-243524A, EC-117726, EC-117749, EC-007818, EC-117795, EC-361494 (> 16.00 q/ha)	HPFB-1 (12.19 q/ha)

<b>Ranichauri (Accession 97)</b>				
1.	Days to 50% flowering	62.00-93.00	EC-117727, EC-117739, EC-117744, EC-010845, EC-117726, EC-343691, IC-117720 (< 72.00 days)	Vikrant (75.60 days)
2.	Days to maturity	132.00-164.00	EC-117739, EC-117727, EC-010845, EC-343691, IC-117720, EC-117726, HB-5, EC-007818, EC-025085, EC-107842, EC-117705, EC-243764, IC-327692 (< 143.00 days)	Vikrant (146.60 days)
3.	Plant height (cm)	59.00-79.80	EC-117755, EC-343781, EC-117705, EC-117743, EC-007818, EC-117739, EC-117749, EC-025085, EC-343808, EC-003279 (> 75.00 cm)	Vikrant (70.90 cm)
4.	Pod length (cm)	2.00-6.00	IC-374710, IC-117720, EC-354951, EC-243709, EC-117795, IC-243784, EC-374735, EC-343808, EC-117743 (> 4.50 cm)	Vikrant (3.86 cm)
5.	No of seed per pod	1.00-2.50	EC-005864, EC-117748, EC-117744, EC-117724, EC-107842, EC-117795, EC-117755, EC-108906, EC-007818 (> 2.00)	Vikrant (1.67)
6.	100 seed weight (g)	16.70-30.00	EC-029058, EC-025192, EC-374735, HB-44, IC-117720, EC-243781, EC-117749, EC-351999, EC-010719, IC-243594, EC-354989 (> 27.50 g)	Vikrant (23.12 g)
7.	Seed yield per plant (g)	4.65-19.20	EC-117727, EC-354985, EC-354951, EC-343781, EC-117743, EC-107842, EC-117724, EC-343808, HB-16, EC-374735, HB-17, HB-20, HB-44, HB-77, EC-361494, HB-50 (> 11.00 g)	Vikrant (9.67 g)
<b>Best entries over location</b>				
1.	Days to 50% flowering	64.90-87.50	IC-329648, IC-322102, IC-329680, EC-010845, EC-117744, EC-117727, EC-117743, EC-025085, EC-108906, EC-117739, IC-117720 (< 72.00 days)	Vikrant (75.90 days)
2.	Days to maturity	144.00-161.00	EC-117727, EC-117739, EC-343691, EC-010845, EC-343781, EC-117726, IC-329692, EC-117705 (< 148.00 days)	Vikrant (150.95 days)
3.	Plant height (cm)	54.00-73.30	EC-025085, EC-117739, EC-354685, HB-10, EC-354989, EC-003279, EC-243524A, EC-354985, EC-117755, EC-024312, EC-354951, EC-117724, EC-243808, EC-117743 (> 70.00 cm)	Vikrant (68.30 cm)
4.	Pod length (cm)	2.97-5.20	IC-374710, IC-117784, EC-354951, HB-18, EC-243709, EC-374735, EC-117795, IC-117720, HB-10 (> 4.75 cm)	Vikrant (4.15 cm)
5.	100-seed weight (g)	21.70-34.80	IC-322138, HB-31, HB-10, HB-57, EC-005873, IC-276939, IC-247649, IC-329680, IC-322102, HB-23, HB-18, EC-351999, EC-001072, EC-243820, EC-029058, EC-243781, EC-374735 (> 30.50 g)	Vikrant (26.45 g)
6.	No. of seed per pod	1.75-4.82	EC-243624, IC-322138, IC-117784, HB-23, IC-329680, HB-57, IC-322102, HB-10, IC-247649, IC-276939, IC-329648 (> 4.00)	Vikrant (2.93)

**Table 88. Multilocation evaluation of germplasm lines in faba bean (Rabi 2009-10) at Palampur & Ranichauri - Hills (2010)**

S. No.	Genotypes	Days to 50% flowering			Days to maturity			Plant height (cm)			Pod length (cm)		
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean
1	HB-1	82	72	<b>77.00</b>	157	144	<b>150.50</b>	68.00	66.00	<b>67.00</b>	4.80	4.00	<b>4.40</b>
2	HB-5	76	72	<b>74.00</b>	155	142	<b>148.50</b>	70.00	63.00	<b>66.50</b>	4.30	2.50	<b>3.40</b>
3	HB-10	78	-	<b>78.00</b>	157	-	<b>157.00</b>	72.00	-	<b>72.00</b>	4.80	-	<b>4.80</b>
4	HB-15	77	82	<b>79.50</b>	155	155	<b>155.00</b>	61.00	69.60	<b>65.30</b>	4.60	3.00	<b>3.80</b>
5	HB-16	76	77	<b>76.50</b>	158	148	<b>153.00</b>	64.00	68.00	<b>66.00</b>	4.96	2.67	<b>3.82</b>
6	HB-17	67	82	<b>74.50</b>	155	155	<b>155.00</b>	70.00	62.25	<b>66.13</b>	3.69	2.25	<b>2.97</b>
7	HB-18	80	-	<b>80.00</b>	157	-	<b>157.00</b>	57.00	-	<b>57.00</b>	4.93	-	<b>4.93</b>
8	HB-20	77	82	<b>79.50</b>	155	154	<b>154.50</b>	62.00	68.50	<b>65.25</b>	4.29	2.25	<b>3.27</b>
9	HB-23	78	-	<b>78.00</b>	154	-	<b>154.00</b>	54.00	-	<b>54.00</b>	4.50	-	<b>4.50</b>
10	HB-31	78	-	<b>78.00</b>	157	-	<b>157.00</b>	66.00	-	<b>66.00</b>	4.40	-	<b>4.40</b>
11	HB-37	76	93	<b>84.50</b>	154	163	<b>158.50</b>	65.00	66.00	<b>65.50</b>	3.90	3.50	<b>3.70</b>
12	HB-44	78	88	<b>83.00</b>	153	158	<b>155.50</b>	67.00	65.67	<b>66.34</b>	4.00	2.50	<b>3.25</b>
13	HB-50	69	82	<b>75.50</b>	154	152	<b>153.00</b>	69.00	65.30	<b>67.15</b>	3.90	4.00	<b>3.95</b>
14	HB-57	78	-	<b>78.00</b>	156	-	<b>156.00</b>	69.00	-	<b>69.00</b>	4.30	-	<b>4.30</b>
15	HB-76	68	82	<b>75.00</b>	154	154	<b>154.00</b>	73.00	62.50	<b>67.75</b>	4.76	3.00	<b>3.88</b>
16	HB-77	77	88	<b>82.50</b>	154	158	<b>156.00</b>	58.00	67.33	<b>62.67</b>	4.90	3.25	<b>4.08</b>
17	EC-001072	80	77	<b>78.50</b>	155	147	<b>151.00</b>	73.00	59.00	<b>66.00</b>	4.96	3.50	<b>4.23</b>
18	EC-003279	71	77	<b>74.00</b>	159	147	<b>153.00</b>	68.00	75.20	<b>71.60</b>	4.60	2.67	<b>3.64</b>
19	EC-005864	72	77	<b>74.50</b>	155	147	<b>151.00</b>	60.00	73.00	<b>66.50</b>	4.50	3.40	<b>3.95</b>
20	EC-005873	77	-	<b>77.00</b>	153	-	<b>153.00</b>	67.00	-	<b>67.00</b>	4.60	-	<b>4.60</b>
21	EC-007818	72	72	<b>72.00</b>	159	142	<b>150.50</b>	57.00	77.50	<b>67.25</b>	4.64	2.50	<b>3.57</b>
22	EC-010845	72	67	<b>69.50</b>	154	137	<b>145.50</b>	56.00	63.80	<b>59.90</b>	3.60	3.20	<b>3.40</b>
23	EC-010719	80	82	<b>81.00</b>	157	152	<b>154.50</b>	61.00	65.40	<b>63.20</b>	4.60	3.25	<b>3.93</b>
24	EC-024312	80	88	<b>84.00</b>	154	158	<b>156.00</b>	74.00	68.50	<b>71.25</b>	4.80	3.00	<b>3.90</b>
25	EC-025085	70	72	<b>71.00</b>	156	142	<b>149.00</b>	71.00	75.60	<b>73.30</b>	4.50	2.00	<b>3.25</b>
26	EC-025192	78	88	<b>83.00</b>	158	158	<b>158.00</b>	70.00	67.80	<b>68.90</b>	4.20	4.00	<b>4.10</b>
27	EC-029058	71	82	<b>76.50</b>	154	153	<b>153.50</b>	64.00	68.70	<b>66.35</b>	4.96	2.50	<b>3.73</b>
28	EC-032976	80	77	<b>78.50</b>	155	148	<b>151.50</b>	50.00	65.80	<b>57.90</b>	4.50	3.00	<b>3.75</b>
29	EC-107842	76	72	<b>74.00</b>	158	142	<b>150.00</b>	65.00	68.00	<b>66.50</b>	4.93	3.25	<b>4.09</b>
30	EC-108906	65	77	<b>71.00</b>	154	147	<b>150.50</b>	68.00	71.40	<b>69.70</b>	4.70	3.80	<b>4.25</b>

S. No.	Genotypes	No. of seed per pod			100-seed weight (g)			Palampur				Ranichauri
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Primary Branches per plant	Pod width (mm)	Pods per node	Seed yield (q/ha)	Seed yield per plant (g)
1	HB-1	4.06	2.00	<b>3.03</b>	32.50	27.30	<b>29.90</b>	2.00	0.82	2.20	14.44	10.12
2	HB-5	4.26	2.00	<b>3.13</b>	32.00	27.40	<b>29.70</b>	2.00	0.77	1.80	8.89	8.40
3	HB-10	4.31	-	<b>4.31</b>	33.00	-	<b>33.00</b>	2.40	0.87	2.20	11.11	-
4	HB-15	4.06	2.00	<b>3.03</b>	28.10	24.40	<b>26.25</b>	2.60	0.82	1.80	10.00	8.23
5	HB-16	4.47	1.75	<b>3.11</b>	28.90	26.50	<b>27.70</b>	2.00	0.86	2.00	11.67	11.75
6	HB-17	4.37	1.20	<b>2.79</b>	28.10	22.60	<b>25.35</b>	2.00	0.81	1.80	15.00	11.49
7	HB-18	3.97	-	<b>3.97</b>	31.30	-	<b>31.30</b>	2.80	0.82	1.80	11.11	-
8	HB-20	4.26	1.40	<b>2.83</b>	31.30	23.40	<b>27.35</b>	2.20	0.86	1.80	11.67	11.45
9	HB-23	4.33	-	<b>4.33</b>	31.30	-	<b>31.30</b>	2.20	0.78	2.00	10.28	-
10	HB-31	3.97	-	<b>3.97</b>	33.20	-	<b>33.20</b>	2.00	0.77	2.00	6.94	-
11	HB-37	4.48	1.75	<b>3.12</b>	26.70	26.60	<b>26.65</b>	2.00	0.81	2.20	11.11	9.30
12	HB-44	4.82	1.40	<b>3.11</b>	29.30	28.70	<b>29.00</b>	2.00	0.86	2.20	14.72	11.40
13	HB-50	4.34	2.00	<b>3.17</b>	30.80	24.40	<b>27.60</b>	2.00	0.84	2.20	13.33	11.35
14	HB-57	4.33	-	<b>4.33</b>	32.40	-	<b>32.40</b>	2.00	0.78	2.00	7.22	-
15	HB-76	4.26	1.00	<b>2.63</b>	32.40	26.70	<b>29.55</b>	2.00	0.84	2.20	14.44	10.30
16	HB-77	3.97	2.00	<b>2.99</b>	33.70	24.40	<b>29.05</b>	2.40	0.74	2.00	11.11	11.40
17	EC-001072	4.33	1.20	<b>2.77</b>	36.50	25.30	<b>30.90</b>	1.80	0.82	2.40	20.28	7.82
18	EC-003279	4.48	1.45	<b>2.97</b>	34.50	22.30	<b>28.40</b>	2.00	0.88	2.20	15.00	9.67
19	EC-005864	4.14	2.50	<b>3.32</b>	28.40	24.60	<b>26.50</b>	2.00	0.78	2.00	7.78	10.29
20	EC-005873	3.97	-	<b>3.97</b>	32.40	-	<b>32.40</b>	2.00	0.88	2.40	14.72	-
21	EC-007818	4.16	2.10	<b>3.13</b>	34.50	24.40	<b>29.45</b>	2.00	0.88	2.00	15.00	8.29
22	EC-010845	4.26	2.00	<b>3.13</b>	31.80	22.20	<b>27.00</b>	2.00	0.86	2.00	13.33	8.74
23	EC-010719	4.14	2.00	<b>3.07</b>	27.40	28.20	<b>27.80</b>	2.00	0.86	1.80	11.67	5.40
24	EC-024312	4.33	2.00	<b>3.17</b>	32.20	19.40	<b>25.80</b>	2.20	0.78	1.80	10.28	9.04
25	EC-025085	4.16	2.00	<b>3.08</b>	27.90	25.40	<b>26.65</b>	2.00	0.90	2.20	17.78	9.47
26	EC-025192	4.16	1.50	<b>2.83</b>	27.80	29.20	<b>28.50</b>	2.20	0.82	2.00	10.00	7.20
27	EC-029058	4.33	1.50	<b>2.92</b>	31.30	30.00	<b>30.65</b>	2.00	0.88	2.00	11.67	8.56
28	EC-032976	4.26	1.20	<b>2.73</b>	30.70	24.40	<b>27.55</b>	2.20	0.78	1.80	6.94	8.17
29	EC-107842	4.38	2.20	<b>3.29</b>	31.80	24.30	<b>28.05</b>	2.00	0.78	2.00	9.17	14.53
30	EC-108906	4.26	2.10	<b>3.18</b>	33.90	20.70	<b>27.30</b>	2.00	0.82	2.20	12.22	5.23

S. No.	Genotypes	Days to 50% flowering			Days to maturity			Plant height (cm)			Pod length (cm)		
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean
31	EC-117705	76	72	<b>74.00</b>	154	142	<b>148.00</b>	59.00	79.00	<b>69.00</b>	4.64	3.33	<b>3.99</b>
32	EC-117724	76	82	<b>79.00</b>	156	154	<b>155.00</b>	72.00	69.67	<b>70.84</b>	4.40	3.67	<b>4.04</b>
33	EC-117726	79	67	<b>73.00</b>	153	140	<b>146.50</b>	69.00	69.40	<b>69.20</b>	4.60	2.80	<b>3.70</b>
34	EC-117727	78	62	<b>70.00</b>	155	133	<b>144.00</b>	66.00	68.80	<b>67.40</b>	4.50	3.80	<b>4.15</b>
35	EC-117739	80	62	<b>71.00</b>	158	132	<b>145.00</b>	70.00	76.00	<b>73.00</b>	4.80	2.00	<b>3.40</b>
36	EC-117741	68	82	<b>75.00</b>	153	150	<b>151.50</b>	68.00	71.80	<b>69.90</b>	4.40	4.00	<b>4.20</b>
37	EC-117743	69	72	<b>70.50</b>	160	147	<b>153.50</b>	62.00	78.20	<b>70.10</b>	4.40	4.60	<b>4.50</b>
38	EC-117744	77	62	<b>69.50</b>	154	146	<b>150.00</b>	68.00	70.60	<b>69.30</b>	3.90	4.20	<b>4.05</b>
39	EC-117748	76	82	<b>79.00</b>	160	154	<b>157.00</b>	53.00	71.40	<b>62.20</b>	4.64	4.20	<b>4.42</b>
40	EC-117749	77	72	<b>74.50</b>	153	144	<b>148.50</b>	57.00	76.00	<b>66.50</b>	3.40	3.20	<b>3.30</b>
41	EC-117755	71	82	<b>76.50</b>	152	152	<b>152.00</b>	63.00	79.80	<b>71.40</b>	3.70	3.80	<b>3.75</b>
42	EC-117758	76	87	<b>81.50</b>	158	157	<b>157.50</b>	66.00	73.20	<b>69.60</b>	4.50	3.60	<b>4.05</b>
43	EC-117765	78	82	<b>80.00</b>	158	154	<b>156.00</b>	62.00	65.80	<b>63.90</b>	4.80	3.00	<b>3.90</b>
44	EC-117792	68	88	<b>78.00</b>	157	158	<b>157.50</b>	63.00	63.20	<b>63.10</b>	4.70	3.20	<b>3.95</b>
45	EC-117795	69	83	<b>76.00</b>	159	163	<b>161.00</b>	63.00	68.00	<b>65.50</b>	4.67	5.00	<b>4.84</b>
46	EC-117842	80	88	<b>84.00</b>	156	158	<b>157.00</b>	71.00	63.25	<b>67.13</b>	4.60	3.50	<b>4.05</b>
47	EC-243036	77	77	<b>77.00</b>	155	150	<b>152.50</b>	66.00	65.20	<b>65.60</b>	4.50	3.80	<b>4.15</b>
48	EC-243443	72	82	<b>77.00</b>	159	152	<b>155.50</b>	62.00	68.60	<b>65.30</b>	4.00	3.75	<b>3.88</b>
49	EC-243524A	78	82	<b>80.00</b>	154	154	<b>154.00</b>	69.00	74.00	<b>71.50</b>	4.80	2.00	<b>3.40</b>
50	EC-243529	78	93	<b>85.50</b>	153	164	<b>158.50</b>	62.00	67.50	<b>64.75</b>	4.80	3.50	<b>4.15</b>
51	EC-243584	80	88	<b>84.00</b>	156	157	<b>156.50</b>	66.00	64.00	<b>65.00</b>	4.20	3.50	<b>3.85</b>
52	EC-243588	79	82	<b>80.50</b>	155	153	<b>154.00</b>	68.00	65.75	<b>66.88</b>	4.40	2.40	<b>3.40</b>
53	EC-243596	76	93	<b>84.50</b>	156	163	<b>159.50</b>	69.00	67.40	<b>68.20</b>	4.70	4.20	<b>4.45</b>
54	EC-243608	81	93	<b>87.00</b>	157	164	<b>160.50</b>	67.00	64.20	<b>65.60</b>	4.20	2.80	<b>3.50</b>
55	EC-243624	81	-	<b>81.00</b>	158	-	<b>158.00</b>	61.00	-	<b>61.00</b>	4.60	-	<b>4.60</b>
56	EC-243626	76	88	<b>82.00</b>	156	157	<b>156.50</b>	70.00	63.00	<b>66.50</b>	4.71	3.40	<b>4.06</b>
57	EC-243641	80	82	<b>81.00</b>	157	153	<b>155.00</b>	63.00	64.00	<b>63.50</b>	4.60	2.00	<b>3.30</b>
58	EC-243709	80	88	<b>84.00</b>	158	158	<b>158.00</b>	66.00	69.00	<b>67.50</b>	4.80	5.00	<b>4.90</b>
59	EC-243755	68	88	<b>78.00</b>	154	157	<b>155.50</b>	64.00	66.40	<b>65.20</b>	3.90	3.20	<b>3.55</b>
60	EC-243756	82	77	<b>79.50</b>	159	150	<b>154.50</b>	58.00	67.20	<b>62.60</b>	4.50	3.33	<b>3.92</b>
61	EC-243761	79	82	<b>80.50</b>	154	152	<b>153.00</b>	59.00	74.40	<b>66.70</b>	4.40	2.50	<b>3.45</b>
62	EC-243764	80	72	<b>76.00</b>	156	142	<b>149.00</b>	65.00	69.00	<b>67.00</b>	4.50	3.80	<b>4.15</b>
63	EC-243781	81	77	<b>79.00</b>	157	150	<b>153.50</b>	60.00	67.40	<b>63.70</b>	4.60	2.67	<b>3.64</b>

S. No.	Genotypes	No. of seed per pod			100-seed weight (g)			Palampur				Ranichauri
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Primary Branches per plant	Pod width (mm)	Pods per node	Seed yield (q/ha)	Seed yield per plant (g)
31	EC-117705	4.34	1.20	<b>2.77</b>	27.40	19.40	<b>23.40</b>	2.40	0.82	1.80	11.11	4.65
32	EC-117724	4.26	2.20	<b>3.23</b>	30.50	20.30	<b>25.40</b>	2.00	0.82	2.00	11.11	13.70
33	EC-117726	4.47	2.00	<b>3.24</b>	32.40	27.40	<b>29.90</b>	2.40	0.88	2.20	15.28	10.97
34	EC-117727	4.82	1.40	<b>3.11</b>	35.70	22.40	<b>29.05</b>	2.00	0.82	2.20	13.89	19.20
35	EC-117739	4.54	1.30	<b>2.92</b>	28.60	23.40	<b>26.00</b>	2.00	0.78	1.80	6.11	9.45
36	EC-117741	4.23	1.20	<b>2.72</b>	30.50	22.40	<b>26.45</b>	1.80	0.78	1.80	6.11	7.27
37	EC-117743	4.19	1.40	<b>2.80</b>	35.70	20.30	<b>28.00</b>	2.00	0.82	1.80	10.00	16.12
38	EC-117744	4.14	2.20	<b>3.17</b>	30.10	27.20	<b>28.65</b>	2.00	0.82	2.20	12.78	9.82
39	EC-117748	4.34	2.30	<b>3.32</b>	33.40	26.30	<b>29.85</b>	2.40	0.86	2.20	20.00	10.81
40	EC-117749	4.06	2.00	<b>3.03</b>	25.80	28.40	<b>27.10</b>	2.00	0.86	2.00	15.00	9.79
41	EC-117755	4.47	2.10	<b>3.29</b>	32.40	17.30	<b>24.85</b>	1.60	0.86	2.20	13.61	8.83
42	EC-117758	4.37	1.40	<b>2.89</b>	26.70	16.70	<b>21.70</b>	2.00	0.83	1.80	7.78	9.14
43	EC-117765	3.97	1.40	<b>2.69</b>	33.80	20.80	<b>27.30</b>	1.80	0.86	1.60	12.22	7.89
44	EC-117792	4.35	1.20	<b>2.78</b>	28.20	24.40	<b>26.30</b>	2.40	0.78	2.00	11.11	9.52
45	EC-117795	4.31	2.10	<b>3.21</b>	33.20	23.40	<b>28.30</b>	2.20	0.82	1.80	15.00	10.20
46	EC-117842	4.47	1.50	<b>2.99</b>	30.80	22.20	<b>26.50</b>	2.00	0.82	1.80	11.11	7.52
47	EC-243036	4.54	1.60	<b>3.07</b>	31.00	20.30	<b>25.65</b>	1.80	0.78	2.00	10.00	9.45
48	EC-243443	4.62	1.70	<b>3.16</b>	31.50	24.50	<b>28.00</b>	1.60	0.78	1.80	5.56	9.40
49	EC-243524A	4.26	1.40	<b>2.83</b>	32.20	22.60	<b>27.40</b>	1.60	0.82	2.40	15.56	9.42
50	EC-243529	4.31	1.30	<b>2.81</b>	34.90	24.70	<b>29.80</b>	2.00	0.84	2.20	10.00	9.72
51	EC-243584	3.97	1.25	<b>2.61</b>	33.00	20.60	<b>26.80</b>	2.20	0.82	2.20	14.17	9.50
52	EC-243588	4.62	2.00	<b>3.31</b>	35.60	24.70	<b>30.15</b>	1.80	0.78	1.80	7.78	8.52
53	EC-243596	4.26	2.00	<b>3.13</b>	32.50	22.70	<b>27.60</b>	2.20	0.88	2.20	16.67	9.41
54	EC-243608	4.47	1.35	<b>2.91</b>	30.60	25.40	<b>28.00</b>	2.20	0.88	2.40	18.89	8.34
55	EC-243624	4.82	-	<b>4.82</b>	29.50	-	<b>29.50</b>	1.80	0.82	2.00	13.06	-
56	EC-243626	4.33	1.20	<b>2.77</b>	31.40	24.30	<b>27.85</b>	1.80	0.78	1.80	8.89	7.16
57	EC-243641	4.33	1.40	<b>2.87</b>	35.80	22.70	<b>29.25</b>	2.00	0.82	2.00	12.22	9.45
58	EC-243709	4.48	1.25	<b>2.87</b>	30.90	19.20	<b>25.05</b>	2.20	0.82	1.80	11.11	7.99
59	EC-243755	4.33	1.60	<b>2.97</b>	32.90	19.30	<b>26.10</b>	3.00	0.85	2.00	13.61	10.11
60	EC-243756	4.39	1.80	<b>3.10</b>	32.60	24.70	<b>28.65</b>	2.20	0.78	1.80	7.50	7.55
61	EC-243761	4.06	1.70	<b>2.88</b>	29.90	26.30	<b>28.10</b>	1.80	0.88	2.00	16.67	9.93
62	EC-243764	4.54	2.00	<b>3.27</b>	32.60	27.50	<b>30.05</b>	1.80	0.82	2.00	12.22	8.53
63	EC-243781	4.82	1.10	<b>2.96</b>	32.50	28.70	<b>30.60</b>	2.00	0.78	2.00	7.22	9.00



S. No.	Genotypes	Days to 50% flowering			Days to maturity			Plant height (cm)			Pod length (cm)		
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean
64	EC-243782	78	93	<b>85.50</b>	157	164	<b>160.50</b>	68.00	62.00	<b>65.00</b>	4.50	4.40	<b>4.45</b>
65	EC-243786	77	88	<b>82.50</b>	155	158	<b>156.50</b>	64.00	69.60	<b>66.80</b>	4.70	4.20	<b>4.45</b>
66	EC-243793	78	77	<b>77.50</b>	153	151	<b>152.00</b>	63.00	67.20	<b>65.10</b>	4.93	3.60	<b>4.27</b>
67	EC-243794	82	88	<b>85.00</b>	156	158	<b>157.00</b>	67.00	66.20	<b>66.60</b>	4.70	2.33	<b>3.52</b>
68	EC-243808	80	82	<b>81.00</b>	157	152	<b>154.50</b>	67.00	73.80	<b>70.40</b>	4.80	2.80	<b>3.80</b>
69	EC-243820	69	93	<b>81.00</b>	154	163	<b>158.50</b>	60.00	70.50	<b>65.25</b>	4.50	2.50	<b>3.50</b>
70	EC-331564	67	82	<b>74.50</b>	154	154	<b>154.00</b>	61.00	72.40	<b>66.70</b>	4.80	3.00	<b>3.90</b>
71	EC-343691	80	67	<b>73.50</b>	153	137	<b>145.00</b>	68.00	62.40	<b>65.20</b>	4.70	3.40	<b>4.05</b>
72	EC-343781	70	88	<b>79.00</b>	135	157	<b>146.00</b>	60.00	79.20	<b>69.60</b>	4.00	3.80	<b>3.90</b>
73	EC-343808	78	82	<b>80.00</b>	157	152	<b>154.50</b>	64.00	75.60	<b>69.80</b>	4.64	4.80	<b>4.72</b>
74	EC-351999	67	88	<b>77.50</b>	153	157	<b>155.00</b>	63.00	71.40	<b>67.20</b>	4.60	4.00	<b>4.30</b>
75	EC-354685	78	72	<b>75.00</b>	158	143	<b>150.50</b>	70.00	74.80	<b>72.40</b>	4.40	3.80	<b>4.10</b>
76	EC-354951	77	88	<b>82.50</b>	154	158	<b>156.00</b>	68.00	73.80	<b>70.90</b>	4.79	5.20	<b>5.00</b>
77	EC-354985	82	93	<b>87.50</b>	154	163	<b>158.50</b>	68.00	75.00	<b>71.50</b>	4.50	3.33	<b>3.92</b>
78	EC-354989	77	82	<b>79.50</b>	155	152	<b>153.50</b>	74.00	69.80	<b>71.90</b>	4.50	3.60	<b>4.05</b>
79	EC-361429	81	93	<b>87.00</b>	154	163	<b>158.50</b>	56.00	72.40	<b>64.20</b>	3.90	4.00	<b>3.95</b>
80	EC-361482	80	88	<b>84.00</b>	158	158	<b>158.00</b>	62.00	73.40	<b>67.70</b>	4.60	4.20	<b>4.40</b>
81	EC-361494	80	93	<b>86.50</b>	153	164	<b>158.50</b>	65.00	71.60	<b>68.30</b>	4.60	4.00	<b>4.30</b>
82	EC-361497	78	88	<b>83.00</b>	158	158	<b>158.00</b>	62.00	62.20	<b>62.10</b>	4.36	3.75	<b>4.06</b>
83	EC-367914	78	77	<b>77.50</b>	157	147	<b>152.00</b>	65.00	69.20	<b>67.10</b>	4.70	-	<b>4.70</b>
84	EC-374731	78	82	<b>80.00</b>	157	153	<b>155.00</b>	52.00	68.20	<b>60.10</b>	4.50	3.75	<b>4.13</b>
85	EC-374735	74	93	<b>83.50</b>	155	163	<b>159.00</b>	62.00	65.00	<b>63.50</b>	4.80	5.00	<b>4.90</b>
86	IC-374710	82	77	<b>79.50</b>	155	147	<b>151.00</b>	67.00	62.00	<b>64.50</b>	4.40	6.00	<b>5.20</b>
87	IC-117720	76	67	<b>71.50</b>	158	139	<b>148.50</b>	65.00	64.25	<b>64.63</b>	4.40	5.25	<b>4.83</b>
88	IC-117784	76	-	<b>76.00</b>	157	-	<b>157.00</b>	66.00	-	<b>66.00</b>	5.04	-	<b>5.04</b>
89	IC-243594	64	88	<b>76.00</b>	157	158	<b>157.50</b>	65.00	69.80	<b>67.40</b>	4.80	4.40	<b>4.60</b>
90	IC-243784	80	82	<b>81.00</b>	154	154	<b>154.00</b>	63.00	67.00	<b>65.00</b>	4.50	5.00	<b>4.75</b>
91	IC-247649	77	-	<b>77.00</b>	153	-	<b>153.00</b>	62.00	-	<b>62.00</b>	4.10	-	<b>4.10</b>
92	IC-276939	76	-	<b>76.00</b>	158	-	<b>158.00</b>	70.00	-	<b>70.00</b>	3.90	-	<b>3.90</b>
93	IC-322102	68	-	<b>68.00</b>	158	-	<b>158.00</b>	66.00	-	<b>66.00</b>	4.00	-	<b>4.00</b>
94	IC-322138	76	-	<b>76.00</b>	156	-	<b>156.00</b>	70.00	-	<b>70.00</b>	4.60	-	<b>4.60</b>
95	IC-329648	67	-	<b>67.00</b>	158	-	<b>158.00</b>	68.00	-	<b>68.00</b>	4.10	-	<b>4.10</b>
96	IC-329680	68	-	<b>68.00</b>	157	-	<b>157.00</b>	70.00	-	<b>70.00</b>	4.40	-	<b>4.40</b>

S. No.	Genotypes	No. of seed per pod			100-seed weight (g)			Palampur				Ranichauri
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Primary Branches per plant	Pod width (mm)	Pods per node	Seed yield (q/ha)	Seed yield per plant (g)
64	EC-243782	4.33	1.20	<b>2.77</b>	31.60	17.60	<b>24.60</b>	1.80	0.80	1.80	7.22	7.49
65	EC-243786	4.33	1.70	<b>3.02</b>	30.20	22.30	<b>26.25</b>	1.80	0.78	1.80	8.89	9.88
66	EC-243793	4.16	1.60	<b>2.88</b>	31.90	22.40	<b>27.15</b>	2.20	0.81	2.20	12.78	8.47
67	EC-243794	4.39	1.30	<b>2.85</b>	32.40	27.50	<b>29.95</b>	2.60	0.82	2.20	10.00	8.47
68	EC-243808	4.36	1.20	<b>2.78</b>	33.20	26.30	<b>29.75</b>	2.00	0.81	2.40	11.67	7.59
69	EC-243820	4.33	1.30	<b>2.82</b>	34.70	26.60	<b>30.65</b>	2.00	0.86	2.00	10.00	8.25
70	EC-331564	3.97	1.33	<b>2.65</b>	29.60	27.30	<b>28.45</b>	2.00	0.82	2.20	11.67	10.55
71	EC-343691	4.14	1.30	<b>2.72</b>	31.10	26.40	<b>28.75</b>	2.20	0.80	1.80	11.11	9.84
72	EC-343781	4.62	2.00	<b>3.31</b>	30.40	24.30	<b>27.35</b>	2.00	0.87	2.00	11.67	17.65
73	EC-343808	4.37	2.00	<b>3.19</b>	32.80	21.10	<b>26.95</b>	2.00	0.87	2.20	17.78	12.42
74	EC-351999	4.16	1.22	<b>2.69</b>	34.00	28.40	<b>31.20</b>	2.20	0.88	2.40	17.22	8.97
75	EC-354685	4.82	1.75	<b>3.29</b>	34.20	23.40	<b>28.80</b>	2.00	0.82	2.20	11.67	9.62
76	EC-354951	4.24	1.60	<b>2.92</b>	27.20	22.70	<b>24.95</b>	2.20	0.78	1.40	10.00	18.47
77	EC-354985	4.39	1.22	<b>2.81</b>	36.20	24.60	<b>30.40</b>	1.80	0.82	2.20	16.67	19.07
78	EC-354989	4.31	1.20	<b>2.76</b>	32.90	27.70	<b>30.30</b>	1.60	0.82	1.80	6.11	7.04
79	EC-361429	4.06	1.45	<b>2.76</b>	33.80	22.20	<b>28.00</b>	2.04	0.82	2.00	15.56	9.38
80	EC-361482	4.37	1.30	<b>2.84</b>	31.40	24.10	<b>27.75</b>	2.00	0.88	2.40	14.44	8.26
81	EC-361494	4.19	1.40	<b>2.80</b>	32.90	24.20	<b>28.55</b>	2.00	0.88	2.20	13.89	11.40
82	EC-361497	4.36	1.20	<b>2.78</b>	31.20	27.40	<b>29.30</b>	2.00	0.80	2.40	18.89	9.20
83	EC-367914	3.97	-	<b>3.97</b>	29.40	-	<b>29.40</b>	1.80	0.78	1.80	6.11	-
84	EC-374731	4.33	2.00	<b>3.17</b>	29.30	26.50	<b>27.90</b>	2.40	0.78	1.80	7.78	7.86
85	EC-374735	4.14	1.60	<b>2.87</b>	32.50	28.70	<b>30.60</b>	2.20	0.78	1.80	8.33	11.71
86	IC-374710	4.06	1.20	<b>2.63</b>	31.00	22.40	<b>26.70</b>	1.80	0.88	2.20	19.44	9.75
87	IC-117720	4.16	1.25	<b>2.71</b>	30.80	28.70	<b>29.75</b>	2.20	0.78	1.80	7.22	8.75
88	IC-117784	4.39	-	<b>4.39</b>	23.90	-	<b>23.90</b>	2.00	0.77	2.00	10.00	-
89	IC-243594	-	1.75	<b>1.75</b>	31.60	27.70	<b>29.65</b>	2.20	0.77	1.80	6.11	7.56
90	IC-243784	4.56	1.40	<b>2.98</b>	28.50	24.70	<b>26.60</b>	2.00	0.86	2.00	7.50	7.60
91	IC-247649	4.26	-	<b>4.26</b>	31.70	-	<b>31.70</b>	1.80	0.86	2.20	15.56	-
92	IC-276939	4.19	-	<b>4.19</b>	32.20	-	<b>32.20</b>	2.20	0.78	1.80	7.78	-
93	IC-322102	4.33	-	<b>4.33</b>	31.40	-	<b>31.40</b>	2.00	0.78	1.80	10.00	-
94	IC-322138	4.47	-	<b>4.47</b>	34.80	-	<b>34.80</b>	2.60	0.82	2.20	12.78	-
95	IC-329648	4.16	-	<b>4.16</b>	30.20	-	<b>30.20</b>	2.00	0.81	2.20	12.50	-
96	IC-329680	4.33	-	<b>4.33</b>	31.40	-	<b>31.40</b>	1.80	0.81	1.80	11.67	-

S. No.	Genotypes	Days to 50% flowering			Days to maturity			Plant height (cm)			Pod length (cm)		
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean
97	IC-329692	79	72	<b>75.50</b>	153	142	<b>147.50</b>	60.00	71.50	<b>65.75</b>	4.00	4.50	<b>4.25</b>
	<b>Mean for check variety</b>												
	<b>HB-649 (C)</b>	73.20	-	<b>73.20</b>	154.20	-	<b>154.20</b>	64.60	-	<b>64.60</b>	4.70	-	<b>4.70</b>
	<b>HPFB-1 (C)</b>	64.90	-	<b>64.90</b>	155.10	-	<b>155.10</b>	65.20	-	<b>65.20</b>	4.53	-	<b>4.53</b>
	<b>Vikrant (C)</b>	76.20	75.60	<b>75.90</b>	155.30	146.60	<b>150.95</b>	65.70	70.90	<b>68.30</b>	4.45	3.86	<b>4.15</b>
	<b>Minimum</b>	<b>64.00</b>	<b>62.00</b>	<b>64.90</b>	<b>135.00</b>	<b>132.00</b>	<b>144.00</b>	<b>50.00</b>	<b>59.00</b>	<b>54.00</b>	<b>3.40</b>	<b>2.00</b>	<b>2.97</b>
	<b>Maximum</b>	<b>82.00</b>	<b>93.00</b>	<b>87.50</b>	<b>160.00</b>	<b>164.00</b>	<b>161.00</b>	<b>74.00</b>	<b>79.80</b>	<b>73.30</b>	<b>5.04</b>	<b>6.00</b>	<b>5.20</b>
	<b>Mean</b>	<b>75.77</b>	<b>81.14</b>	<b>77.95</b>	<b>155.52</b>	<b>152.08</b>	<b>154.12</b>	<b>64.73</b>	<b>69.00</b>	<b>66.58</b>	<b>4.48</b>	<b>3.51</b>	<b>4.08</b>
	<b>CD (0.05)</b>	<b>5.75</b>	-		<b>2.48</b>	-		<b>8.86</b>	-		<b>1.06</b>	-	
	<b>CV (%) Error</b>	<b>3.17</b>	-		<b>0.63</b>	-		<b>5.35</b>	-		<b>9.16</b>	-	
	<b>CV (%) Phen.</b>	<b>6.17</b>	<b>9.91</b>		<b>1.82</b>	<b>5.01</b>		<b>7.57</b>	<b>6.73</b>		<b>7.44</b>	<b>24.04</b>	

S. No.	Genotypes	No. of seed per pod			100-seed weight (g)			Palampur				Ranichauri
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Primary Branches per plant	Pod width (mm)	Pods per node	Seed yield (q/ha)	Seed yield per plant (g)
97	IC-329692	4.33	1.40	<b>2.87</b>	33.80	26.30	<b>30.05</b>	2.00	0.88	2.20	14.17	9.22
<b>Mean for check variety</b>												
	<b>HB-649 (C)</b>	4.23	-	<b>4.23</b>	29.68	-	<b>29.68</b>	2.08	0.82	1.94	11.64	-
	<b>HPFB-1 (C)</b>	4.22	-	<b>4.22</b>	33.33	-	<b>33.33</b>	2.08	0.82	1.96	12.19	-
	<b>Vikrant (C)</b>	4.20	1.67	<b>2.93</b>	29.79	23.12	<b>26.45</b>	2.16	0.81	2.00	9.81	9.67
	<b>Minimum</b>	<b>3.97</b>	<b>1.00</b>	<b>1.75</b>	<b>23.90</b>	<b>16.70</b>	<b>21.70</b>	<b>1.60</b>	<b>0.74</b>	<b>1.40</b>	<b>5.56</b>	<b>4.65</b>
	<b>Maximum</b>	<b>4.82</b>	<b>2.50</b>	<b>4.82</b>	<b>36.50</b>	<b>30.00</b>	<b>34.80</b>	<b>3.00</b>	<b>0.90</b>	<b>2.40</b>	<b>20.28</b>	<b>19.20</b>
	<b>Mean</b>	<b>4.31</b>	<b>1.61</b>	<b>3.17</b>	<b>31.48</b>	<b>24.31</b>	<b>28.48</b>	<b>2.06</b>	<b>0.82</b>	<b>2.02</b>	<b>11.80</b>	<b>9.76</b>
	<b>CD (0.05)</b>	<b>0.37</b>	-		<b>8.79</b>	-		<b>0.49</b>	<b>0.10</b>	<b>0.45</b>	<b>8.51</b>	-
	<b>CV (%) Error</b>	<b>3.46</b>	-		<b>11.17</b>	-		<b>9.21</b>	<b>4.69</b>	<b>9.03</b>	<b>29.85</b>	-
	<b>CV (%) Phen.</b>	<b>4.58</b>	<b>22.42</b>		<b>7.66</b>	<b>12.31</b>		<b>11.55</b>	<b>4.52</b>	<b>10.25</b>	<b>29.39</b>	<b>27.58</b>

**Table 89. 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.	Days to 50% flowering	148.00-178.00	IC089382, IC540256, IC521338, IC416897 (< 163.00 days)	Pollin (165.00 days)
2.	Days to maturity	190.00-217.00	IC089382, IC540256, IC521338, IC416897, IC089387 (< 203.00 days)	Pollin (205.00 days)
3.	Plant height (cm)	113.60-236.40	-	Mayeun (236.4 cm)
4.	No. of tillers per plant	1.00-4.00	IC204184 (= 4.00)	Mayeun (3.40)
5.	Fresh forage yield (q/ha)	30.00-340.00	IC012637 (= 340.00 q/ha)	Pollin (300.00 q/ha)
6.	Dry forage yield (q/ha)	8.33-123.33	IC012637 (= 123.00 q/ha)	Pollin (103.33 q/ha)
7.	Seed yield per plant (g)	2.54-7.37	IC089382 (= 7.37 g)	Pollin (6.87 g)
<b>Shillong (Accession 25)</b>				
1.	Days to 50% flowering	111.67-124.67	IC540256, IC540181, IC006645 (< 116.00 days)	Mayeun (118.67 days)
2.	Plant height (cm)	244.44-333.33	IC204184, IC521339 (> 328.00 cm)	Mayeun (319.11 cm)
3.	Leaf length (cm)	75.41-95.95	IC521341 (= 95.95 cm)	Pollin (92.07 cm)
4.	Leaf width (cm)	4.58-5.69	IC521341, IC089392 (> 5.60 cm)	Pollin (5.54 cm)
5.	No. of tillers per plant	1.35-3.83	-	Mayeun (3.83)
6.	No. of nodes per tillers	8.44-11.67	IC340015 (= 11.67)	Mayeun (11.56)
7.	100 seed weight (g)	7.22-10.60	-	Mayeun (10.60 g)

8.	Seed yield (q/ha)	2.35-6.71	IC089391, IC089387, IC012703 (> 6.00 q/ha)	Mayeun (5.67 q/ha)
9.	Seed yield per plant (g)	11.25-30.19	IC089381 (= 30.19 g)	Mayeun (27.65 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	130.83-151.00	IC540256, IC089382, IC006645, IC521338, IC521341, IC540244, IC540181, IC089387, IC416897 (< 142.00 days)	Mayeun (144.33 days)
2.	Plant height (cm)	185.84-277.76	-	Mayeun (277.76 cm)
3.	No. of tillers per plant	1.31-3.61	-	Mayeun (3.61)
4.	Seed yield per plant (g)	7.75-17.05	IC089381 (= 17.05 g)	Mayeun (16.87 g)

**Table 90. Evaluation of germplasm line in job's tear (coix) at Ranichauri and Shillong - Hills (2010)**

S. No.	Accession No.	Days to 50% flowering			Plant height (cm)			No. of tillers per plant			Seed yield per plant (g)		
		Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean
1	IC089382	148.00	118.33	<b>133.17</b>	113.80	257.88	<b>185.84</b>	3.00	1.78	<b>2.39</b>	7.37	13.78	<b>10.58</b>
2	IC540256	150.00	111.67	<b>130.83</b>	142.00	286.67	<b>214.33</b>	1.00	1.63	<b>1.31</b>	2.54	21.61	<b>12.07</b>
3	IC521339	163.00	121.33	<b>142.17</b>	150.40	330.00	<b>240.20</b>	2.20	1.90	<b>2.05</b>	3.67	20.53	<b>12.10</b>
4	IC521343	168.00	124.00	<b>146.00</b>	151.20	297.22	<b>224.21</b>	2.60	1.60	<b>2.10</b>	4.51	16.14	<b>10.33</b>
5	IC521341	163.00	118.67	<b>140.83</b>	160.00	276.11	<b>218.06</b>	2.40	1.80	<b>2.10</b>	3.44	17.17	<b>10.30</b>
6	IC521338	158.00	121.67	<b>139.83</b>	134.40	307.45	<b>220.92</b>	1.80	3.10	<b>2.45</b>	3.67	22.06	<b>12.86</b>
7	IC540279	168.00	123.67	<b>145.83</b>	153.80	312.22	<b>233.01</b>	2.40	2.06	<b>2.23</b>	3.69	21.56	<b>12.63</b>
8	IC540244	163.00	118.67	<b>140.83</b>	157.00	266.67	<b>211.83</b>	2.20	2.81	<b>2.51</b>	3.81	16.09	<b>9.95</b>
9	IC540181	168.00	114.33	<b>141.17</b>	113.60	301.11	<b>207.36</b>	2.30	3.38	<b>2.84</b>	3.78	13.19	<b>8.49</b>
10	IC540173	173.00	119.33	<b>146.17</b>	184.20	282.22	<b>233.21</b>	2.40	2.21	<b>2.30</b>	2.98	16.02	<b>9.50</b>
11	IC540266	178.00	120.00	<b>149.00</b>	136.80	289.11	<b>212.96</b>	2.20	3.70	<b>2.95</b>	3.59	12.66	<b>8.12</b>
12	IC540222	173.00	118.00	<b>145.50</b>	169.40	288.89	<b>229.14</b>	2.80	3.10	<b>2.95</b>	3.29	12.59	<b>7.94</b>
13	IC089392	178.00	124.00	<b>151.00</b>	186.00	268.89	<b>227.44</b>	2.40	2.77	<b>2.58</b>	3.13	12.93	<b>8.03</b>
14	IC089384	173.00	118.67	<b>145.83</b>	212.60	292.22	<b>252.41</b>	3.00	3.52	<b>3.26</b>	4.25	11.25	<b>7.75</b>
15	IC089387	163.00	119.33	<b>141.17</b>	184.40	269.44	<b>226.92</b>	3.20	1.67	<b>2.43</b>	4.01	25.03	<b>14.52</b>
16	IC089381	168.00	121.67	<b>144.83</b>	199.00	291.11	<b>245.06</b>	2.40	2.54	<b>2.47</b>	3.90	30.19	<b>17.05</b>
17	IC089383	173.00	123.33	<b>148.17</b>	188.60	264.60	<b>226.60</b>	1.80	3.41	<b>2.60</b>	3.64	14.71	<b>9.18</b>
18	IC089391	170.00	119.67	<b>144.83</b>	231.00	292.22	<b>261.61</b>	3.40	2.36	<b>2.88</b>	3.91	26.19	<b>15.05</b>
19	IC204184	173.00	117.67	<b>145.33</b>	221.60	333.33	<b>277.47</b>	4.00	2.19	<b>3.09</b>	3.49	13.37	<b>8.43</b>
20	IC012637	178.00	119.33	<b>148.67</b>	213.60	304.44	<b>259.02</b>	3.00	2.16	<b>2.58</b>	3.67	16.05	<b>9.86</b>
21	IC012639	168.00	118.67	<b>143.33</b>	193.40	271.54	<b>232.47</b>	2.80	2.31	<b>2.55</b>	4.28	17.90	<b>11.09</b>
22	IC012703	173.00	116.00	<b>144.50</b>	177.80	288.89	<b>233.34</b>	2.40	3.56	<b>2.98</b>	4.40	19.12	<b>11.76</b>

S. No.	Accession No.	Shillong					Ranichauri		
		Yield (q/ha)	Leaf length (cm)	Leaf width (cm)	No. of nodes per tillers	100 seed weight (g)	Days to maturity	Fresh forage yield (q/ha)	Dry forage yield (q/ha)
1	IC089382	3.00	87.30	5.27	10.00	8.37	190.00	220.00	73.33
2	IC540256	2.35	85.00	5.14	10.11	8.77	192.00	30.00	8.33
3	IC521339	5.02	89.67	5.27	11.00	9.04	203.00	60.00	16.67
4	IC521343	3.49	87.45	4.82	10.89	7.79	208.00	126.67	40.00
5	IC521341	2.75	95.95	5.69	9.67	8.34	203.00	110.00	26.67
6	IC521338	5.91	85.67	5.59	10.67	8.83	195.00	100.00	23.33
7	IC540279	5.55	86.25	4.92	10.00	7.79	208.00	60.00	16.67
8	IC540244	2.75	86.53	4.81	9.78	8.83	203.00	100.00	23.33
9	IC540181	4.54	87.80	4.76	9.78	7.79	208.00	116.67	30.00
10	IC540173	4.75	86.19	4.58	10.33	7.54	214.00	153.33	50.00
11	IC540266	3.20	75.41	5.15	10.56	7.71	217.00	60.00	16.67
12	IC540222	3.87	88.35	4.70	11.44	7.99	212.00	180.00	55.00
13	IC089392	5.18	89.02	5.64	9.44	9.25	217.00	233.33	86.67
14	IC089384	4.46	83.75	5.31	10.00	7.47	212.00	128.33	33.33
15	IC089387	6.49	88.00	5.38	8.44	8.54	202.00	213.33	60.00
16	IC089381	3.96	83.63	4.90	9.89	8.55	207.00	128.33	33.33
17	IC089383	4.05	84.35	5.24	9.78	7.80	214.00	140.00	36.67
18	IC089391	6.71	87.73	5.15	10.22	8.75	210.00	230.00	70.00
19	IC204184	4.86	86.40	4.89	10.44	7.89	212.00	293.33	103.33
20	IC012637	4.72	77.07	4.96	11.11	7.99	216.00	340.00	123.33
21	IC012639	3.75	89.27	5.13	10.22	8.22	208.00	300.00	103.33
22	IC012703	6.44	81.81	5.49	9.56	7.72	212.00	200.00	63.33



S. No.	Accession No.	Days to 50% flowering			Plant height (cm)			No. of tillers per plant			Seed yield per plant (g)		
		Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean
23	IC006645	163.00	115.00	<b>139.00</b>	185.00	244.44	<b>214.72</b>	1.40	1.36	<b>1.38</b>	3.64	14.56	<b>9.10</b>
24	IC340015	168.00	116.33	<b>142.17</b>	201.60	302.22	<b>251.91</b>	2.00	1.35	<b>1.67</b>	5.11	13.81	<b>9.46</b>
25	IC416897	160.00	123.33	<b>141.67</b>	217.40	276.67	<b>247.03</b>	1.80	1.89	<b>1.84</b>	6.47	15.16	<b>10.82</b>
<b>Mean for check variety</b>													
	<b>Pollin (C)</b>	165.00	124.67	<b>144.83</b>	196.00	296.78	<b>246.39</b>	2.80	3.72	<b>3.26</b>	6.87	19.91	<b>13.39</b>
	<b>Mayeun (C)</b>	170.00	118.67	<b>144.33</b>	236.40	319.11	<b>277.76</b>	3.40	3.83	<b>3.61</b>	6.09	27.65	<b>16.87</b>
	<b>Minimum</b>	<b>148.00</b>	<b>111.67</b>	<b>130.83</b>	<b>113.60</b>	<b>244.44</b>	<b>185.84</b>	<b>1.00</b>	<b>1.35</b>	<b>1.31</b>	<b>2.54</b>	<b>11.25</b>	<b>7.75</b>
	<b>Maximum</b>	<b>178.00</b>	<b>124.67</b>	<b>151.00</b>	<b>236.40</b>	<b>333.33</b>	<b>277.76</b>	<b>4.00</b>	<b>3.83</b>	<b>3.61</b>	<b>7.37</b>	<b>30.19</b>	<b>17.05</b>
	<b>Mean</b>	<b>167.26</b>	<b>119.48</b>	<b>143.37</b>	<b>178.19</b>	<b>289.31</b>	<b>233.75</b>	<b>2.49</b>	<b>2.51</b>	<b>2.50</b>	<b>4.19</b>	<b>17.82</b>	<b>11.01</b>
	<b>CD (0.05)</b>	-	<b>4.54</b>		-	<b>44.61</b>		-	<b>1.14</b>		-	<b>2.98</b>	
	<b>CV (%) Error</b>	-	<b>2.38</b>		-	<b>9.63</b>		-	<b>28.45</b>		-	<b>10.44</b>	
	<b>CV (%) Phen.</b>	<b>4.49</b>	<b>2.69</b>		<b>19.09</b>	<b>7.32</b>		<b>26.09</b>	<b>31.78</b>		<b>28.38</b>	<b>28.40</b>	

S. No.	Accession No.	Shillong					Ranichauri		
		Yield (q/ha)	Leaf length (cm)	Leaf width (cm)	No. of nodes per tillers	100 seed weight (g)	Days to maturity	Fresh forage yield (q/ha)	Dry forage yield (q/ha)
23	IC006645	3.99	83.66	5.21	11.11	7.63	203.00	60.00	16.67
24	IC340015	5.15	86.92	5.24	11.67	7.83	208.00	240.00	73.33
25	IC416897	5.85	91.94	5.47	10.89	7.22	200.00	130.00	33.33
<b>Mean for check variety</b>									
	<b>Pollin (C)</b>	4.06	92.07	5.54	11.11	9.45	205.00	300.00	103.33
	<b>Mayeun (C)</b>	5.67	86.53	5.47	11.56	10.60	210.00	240.00	73.33
	<b>Minimum</b>	<b>2.35</b>	<b>75.41</b>	<b>4.58</b>	<b>8.44</b>	<b>7.22</b>	<b>190.00</b>	<b>30.00</b>	<b>8.33</b>
	<b>Maximum</b>	<b>6.71</b>	<b>95.95</b>	<b>5.69</b>	<b>11.67</b>	<b>10.60</b>	<b>217.00</b>	<b>340.00</b>	<b>123.33</b>
	<b>Mean</b>	<b>4.54</b>	<b>86.43</b>	<b>5.17</b>	<b>10.36</b>	<b>8.29</b>	<b>207.00</b>	<b>166.42</b>	<b>51.60</b>
	<b>CD (0.05)</b>	<b>0.79</b>	<b>6.69</b>	<b>0.50</b>	<b>1.72</b>	<b>1.47</b>	-	-	-
	<b>CV (%) Error</b>	<b>10.89</b>	<b>4.83</b>	<b>6.06</b>	<b>10.39</b>	<b>11.07</b>	-	-	-
	<b>CV (%) Phen.</b>	<b>26.61</b>	<b>4.81</b>	<b>5.91</b>	<b>7.20</b>	<b>8.96</b>	<b>3.42</b>	<b>51.73</b>	<b>62.65</b>

**Table 91. 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 19)</b>				
1.	Days to 50% flowering	125.00-153.00	IC374593, IC003908, IC211608, IC369449, IC374590, IC419606 (< 131.00 days)	Jaintia (135.00 days)
2.	Days to maturity	181.00-206.00	IC374593, IC003908, IC211608, IC374590, IC419606 (< 186.00 days)	Jaintia (190.00 days)
3.	Plant height (cm)	37.60-129.60	IC006440, IC016443, IC003913, IC006441, IC006447, IC006444, IC006442, IC003908 (> 77.00 cm)	Jaintia (56.60 cm)
4.	No. of primary branches	1.80-6.00	IC416861, IC003908, IC374590, IC006440, IC369449 (> 3.20)	Jaintia (2.80)
5.	100 seed weight (g)	0.21-0.27	IC003913, IC374590, IC419564, IC216268 (> 0.25 g)	Jaintia (0.25 g)
6.	Seed yield per plant (g)	2.01-5.28	IC374590, IC374494, IC211608, IC416861, IC006447, IC334313, IC006442, IC369449, IC419477, IC016443 (> 4.00 g)	Jaintia (2.96 g)
<b>Shillong (Accession 25)</b>				
1.	Days to 50% flowering	142.67-173.33	IC006444, IC521284, IC211608, IC006447, IC204185, IC003908, IC416861, IC006441 (< 150.00 days)	Shillong Local (158.33 days)
2.	Days to maturity	175.67-209.00	IC369449, IC374494, IC006447, IC006444, IC204185, IC374590 (< 180.00 days)	Shillong Local (185.33 days)
3.	Plant height (cm)	128.59-186.15	IC419606, IC006442, IC419564, IC006447, IC016443 (> 175.00 cm)	Jaintia (173.56 cm)
4.	No. of primary branches	19.33-33.45	IC374494, IC419710, IC003913, IC416861, IC216268 (> 31.00)	Shillong Local (29.33)
5.	Leaf length (cm)	7.13-10.50	IC006446, IC416861, IC369354 (> 10.00 cm)	Shillong Local (9.75 cm)
6.	Leaf width (cm)	4.89-9.66	IC416861, IC211608, IC369354, IC374593, IC374590, IC006446, IC374609, IC419477, IC419606, IC369449, IC334313 (> 7.00 cm)	Jaintia (6.49 cm)
7.	Inflorescence length (cm)	5.44-9.83	IC006441, IC006447 (> 9.00 cm)	Shillong Local (8.37)
8.	No. of inflorescence per plant	83.62-209.99	IC521284 (= 209.99)	Jaintia (209.97)

9.	100 seed weight (g)	1.33-2.37	IC006441, IC006446 (> 2.10 g)	Jaintia (2.10 g)
10.	Seed yield (q/ha)	1.48-4.22	IC374593, IC006441, IC006444 (> 4.00 q/ha)	Jaintia (3.00 q/ha)
11.	Seed yield per plant (g)	2.69-15.28	IC006444, IC216268, IC006442, IC419564, IC374609, IC374593, IC003908, IC006447, IC003913, IC521284, IC369354, IC416861 (> 8.30 g)	Jaintia (5.23 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	138.00-173.33	IC211608, IC003908, IC369449, IC374590, IC419606, IC374593, IC006447, IC006444, IC003913 (< 145.00 days)	Shillong Local (149.17 days)
	Days to maturity	178.67-206.67	IC204185, IC369449, IC374590, IC374494, IC521284, IC374593, IC211608 (< 186.00 days)	Shillong Local (190.67 days)
2.	Plant height (cm)	86.47-174.44	IC369354, IC419710, IC204185, IC016443, IC006442, IC006447, IC521284, IC006441, IC003913, IC006444 (> 140.00 cm)	Jaintia (115.08 cm)
3.	No. of primary branches	10.67-33.00	IC419710, IC369354, IC374609, IC006446, IC521284, IC204185 (> 20.00)	Shillong Local (15.97)
4.	100 seed weight (g)	0.77-2.13	IC006446, IC419710, IC204185, IC374609 (> 1.60 g)	Jaintia (1.18 g)
5.	Seed yield per plant (g)	2.39-12.84	IC374609, IC006442, IC006444, IC521284, IC369354, IC216268, IC419564, IC374593, IC419710, IC006446 (> 7.00 g)	Jaintia (4.09 g)

**Table 92. Characterization and evaluation of germplasm line in Perilla at Ranichauri and Shillong - Hills (2010)**

S. No.	Accession No.	Qualitative characters				Quantitative characters								
		Shillong				Days to 50% flowering			Days to maturity			Plant height (cm)		
		Early plant vigour	Leaf colour	Flower colour	Leaf trichoms	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean
1	IC003908	3	4	1	1	130.00	147.33	<b>138.67</b>	185.00	191.67	<b>188.33</b>	100.80	146.47	<b>123.63</b>
2	IC003913	2	4	1	1	135.00	154.00	<b>144.50</b>	190.00	188.00	<b>189.00</b>	123.40	161.62	<b>142.51</b>
3	IC006440	3	4	1	1	140.00	161.00	<b>150.50</b>	196.00	196.33	<b>196.17</b>	129.60	141.18	<b>135.39</b>
4	IC006441	2	4	1	1	153.00	149.33	<b>151.17</b>	206.00	188.00	<b>197.00</b>	122.60	171.36	<b>146.98</b>
5	IC006442	3	4	1	1	150.00	154.00	<b>152.00</b>	202.00	191.67	<b>196.83</b>	114.40	185.66	<b>150.03</b>
6	IC006444	3	4	1	1	145.00	142.67	<b>143.83</b>	199.00	178.00	<b>188.50</b>	114.60	166.16	<b>140.38</b>
7	IC006446	1	4	1	1	-	168.67	<b>168.67</b>	-	206.67	<b>206.67</b>	-	134.46	<b>134.46</b>
8	IC006447	2	4	1	1	140.00	147.00	<b>143.50</b>	196.00	176.67	<b>186.33</b>	121.60	178.16	<b>149.88</b>
9	IC016443	3	4	1	1	145.00	157.00	<b>151.00</b>	199.00	191.33	<b>195.17</b>	127.40	175.65	<b>151.53</b>
10	IC204185	2	4	1	1	-	147.00	<b>147.00</b>	-	178.67	<b>178.67</b>	-	151.92	<b>151.92</b>
11	IC211608	3	4	1	1	130.00	146.00	<b>138.00</b>	185.00	186.33	<b>185.67</b>	71.60	162.30	<b>116.95</b>
12	IC216268	3	4	1	1	153.00	158.33	<b>155.67</b>	205.00	193.33	<b>199.17</b>	70.60	155.88	<b>113.24</b>
13	IC334313	1	4	1	1	135.00	160.33	<b>147.67</b>	189.00	187.67	<b>188.33</b>	56.60	145.87	<b>101.23</b>
14	IC369354	2	4	1	1	-	173.33	<b>173.33</b>	-	200.67	<b>200.67</b>	-	174.44	<b>174.44</b>
15	IC369449	2	4	1	1	130.00	153.00	<b>141.50</b>	186.00	175.67	<b>180.83</b>	66.40	157.55	<b>111.98</b>
16	IC374494	2	4	1	1	135.00	156.00	<b>145.50</b>	190.00	176.00	<b>183.00</b>	58.40	174.55	<b>116.48</b>
17	IC374590	1	4	1	1	130.00	155.67	<b>142.83</b>	185.00	179.00	<b>182.00</b>	76.40	150.54	<b>113.47</b>
18	IC374593	3	4	1	1	125.00	161.67	<b>143.33</b>	181.00	189.67	<b>185.33</b>	54.80	155.33	<b>105.06</b>
19	IC374609	3	4	1	1	-	156.00	<b>156.00</b>	-	189.33	<b>189.33</b>	-	128.59	<b>128.59</b>
20	IC416861	3	4	1	1	153.00	148.33	<b>150.67</b>	205.00	187.33	<b>196.17</b>	77.00	141.10	<b>109.05</b>
21	IC419477	1	4	1	1	145.00	160.33	<b>152.67</b>	199.00	194.00	<b>196.50</b>	63.00	145.81	<b>104.40</b>

S. No.	Accession No.	Quantitative characters													
		No. of primary branches			100 seed weight (g)			Seed yield per plant (g)			Shillong				
		Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Leaf length (cm)	Leaf width (cm)	Inflorescence length (cm)	No. of Inflorescence per plant	Yield (q/ha)
1	IC003908	3.80	28.11	<b>15.96</b>	0.21	1.80	<b>1.01</b>	3.39	9.93	<b>6.66</b>	7.84	6.29	6.56	177.71	3.07
2	IC003913	3.20	31.67	<b>17.43</b>	0.27	1.68	<b>0.98</b>	3.12	8.90	<b>6.01</b>	9.51	6.88	6.44	128.00	1.68
3	IC006440	3.40	21.67	<b>12.53</b>	0.23	2.03	<b>1.13</b>	2.01	8.30	<b>5.16</b>	9.13	7.00	6.95	124.70	2.04
4	IC006441	2.00	19.33	<b>10.67</b>	0.25	2.37	<b>1.31</b>	2.20	6.46	<b>4.33</b>	8.02	6.33	9.83	139.67	4.15
5	IC006442	2.40	25.33	<b>13.87</b>	0.23	1.57	<b>0.90</b>	4.63	13.97	<b>9.30</b>	8.87	6.79	7.29	142.47	3.65
6	IC006444	2.60	23.44	<b>13.02</b>	0.24	1.80	<b>1.02</b>	2.54	15.28	<b>8.91</b>	7.13	4.89	5.59	101.53	4.02
7	IC006446	-	27.25	<b>27.25</b>	-	2.13	<b>2.13</b>	-	7.01	<b>7.01</b>	10.50	7.66	6.39	83.62	1.66
8	IC006447	2.80	25.17	<b>13.98</b>	0.23	2.03	<b>1.13</b>	4.69	9.20	<b>6.95</b>	9.21	6.78	9.08	144.83	1.91
9	IC016443	3.20	28.61	<b>15.91</b>	0.24	1.59	<b>0.92</b>	4.34	7.97	<b>6.15</b>	7.98	6.73	6.58	154.15	2.56
10	IC204185	-	22.87	<b>22.87</b>	-	1.80	<b>1.80</b>	-	4.79	<b>4.79</b>	8.31	5.51	6.33	159.53	2.06
11	IC211608	2.80	22.33	<b>12.57</b>	0.22	1.93	<b>1.08</b>	5.12	8.15	<b>6.63</b>	9.27	9.56	8.85	85.04	2.35
12	IC216268	1.80	31.01	<b>16.41</b>	0.26	2.04	<b>1.15</b>	2.11	15.03	<b>8.57</b>	9.95	6.94	7.45	136.33	3.61
13	IC334313	2.00	30.67	<b>16.33</b>	0.24	1.83	<b>1.04</b>	4.66	4.26	<b>4.46</b>	9.59	7.01	8.11	167.33	1.58
14	IC369354	-	30.42	<b>30.42</b>	-	1.60	<b>1.60</b>	-	8.73	<b>8.73</b>	10.06	8.56	7.72	135.27	2.71
15	IC369449	3.40	27.31	<b>15.36</b>	0.25	1.97	<b>1.11</b>	4.53	7.25	<b>5.89</b>	9.29	7.11	8.68	175.74	1.81
16	IC374494	2.80	33.45	<b>18.12</b>	0.24	1.60	<b>0.92</b>	5.19	6.12	<b>5.66</b>	8.06	6.53	7.95	161.97	2.34
17	IC374590	3.60	29.64	<b>16.62</b>	0.26	2.00	<b>1.13</b>	5.28	5.78	<b>5.53</b>	9.36	7.67	7.89	91.55	3.01
18	IC374593	2.60	23.44	<b>13.02</b>	0.25	1.87	<b>1.06</b>	3.21	12.81	<b>8.01</b>	9.59	8.25	6.79	106.20	4.22
19	IC374609	-	27.32	<b>27.32</b>	-	1.67	<b>1.67</b>	-	12.84	<b>12.84</b>	9.94	7.44	7.65	134.35	3.84
20	IC416861	6.00	31.07	<b>18.53</b>	0.24	1.97	<b>1.10</b>	4.74	8.52	<b>6.63</b>	10.09	9.66	5.78	118.98	1.71
21	IC419477	3.20	25.33	<b>14.26</b>	0.25	1.58	<b>0.92</b>	4.48	6.01	<b>5.24</b>	9.67	7.44	6.84	138.04	3.76

S. No.	Accession No.	Qualitative characters				Quantitative characters								
		Shillong				Days to 50% flowering			Days to maturity			Plant height (cm)		
		Early plant vigour	Leaf colour	Flower colour	Leaf trichoms	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean
22	IC419564	3	4	1	1	140.00	155.67	<b>147.83</b>	196.00	187.33	<b>191.67</b>	73.60	182.56	<b>128.08</b>
23	IC419606	1	4	1	1	130.00	155.67	<b>142.83</b>	185.00	196.00	<b>190.50</b>	66.00	186.15	<b>126.08</b>
24	IC419710	3	4	1	1	-	152.67	<b>152.67</b>	-	187.67	<b>187.67</b>	-	154.75	<b>154.75</b>
25	IC521284	3	4	1	1	-	145.33	<b>145.33</b>	-	185.00	<b>185.00</b>	-	148.42	<b>148.42</b>
<b>Mean for check variety</b>														
	<b>Shillong Local (C)</b>	2	4	1	1	140.00	158.33	<b>149.17</b>	196.00	185.33	<b>190.67</b>	37.60	135.33	<b>86.47</b>
	<b>Jaintia (C)</b>	2	4	1	1	135.00	163.67	<b>149.33</b>	190.00	209.00	<b>199.50</b>	56.60	173.56	<b>115.08</b>
	<b>Minimum</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>125.00</b>	<b>142.67</b>	<b>138.00</b>	<b>181.00</b>	<b>175.67</b>	<b>178.67</b>	<b>37.60</b>	<b>128.59</b>	<b>86.47</b>
	<b>Maximum</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>153.00</b>	<b>173.33</b>	<b>173.33</b>	<b>206.00</b>	<b>209.00</b>	<b>206.67</b>	<b>129.60</b>	<b>186.15</b>	<b>174.44</b>
	<b>Mean</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>139.00</b>	<b>155.12</b>	<b>149.08</b>	<b>193.57</b>	<b>188.75</b>	<b>190.91</b>	<b>84.90</b>	<b>158.72</b>	<b>128.91</b>
	<b>CD (0.05)</b>					-	<b>7.78</b>		-	<b>4.68</b>		-	<b>16.51</b>	
	<b>CV (%) Error</b>					-	<b>3.13</b>		-	<b>1.55</b>		-	<b>6.50</b>	
	<b>CV (%) Phen.</b>					<b>6.20</b>	<b>4.67</b>		<b>3.95</b>	<b>4.51</b>		<b>34.67</b>	<b>10.39</b>	

S. No.	Accession No.	Quantitative characters													
		No. of primary branches			100 seed weight (g)			Seed yield per plant (g)			Shillong				
		Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Ranichauri	Shillong	Mean	Leaf length (cm)	Leaf width (cm)	Inflorescence length (cm)	No. of Inflorescence per plant	Yield (q/ha)
22	IC419564	2.40	27.39	<b>14.89</b>	0.26	1.70	<b>0.98</b>	3.20	13.26	<b>8.23</b>	9.47	6.48	8.27	168.49	2.23
23	IC419606	2.80	26.98	<b>14.89</b>	0.21	1.33	<b>0.77</b>	3.82	7.06	<b>5.44</b>	9.55	7.44	7.44	130.16	3.56
24	IC419710	-	33.00	<b>33.00</b>	-	2.03	<b>2.03</b>	-	7.78	<b>7.78</b>	9.14	5.99	6.05	129.23	2.79
25	IC521284	-	25.90	<b>25.90</b>	-	1.40	<b>1.40</b>	-	8.81	<b>8.81</b>	8.83	5.56	8.18	209.99	2.56
<b>Mean for check variety</b>															
	<b>Shillong Local (C)</b>	2.60	29.33	<b>15.97</b>	0.23	1.60	<b>0.92</b>	2.09	2.69	<b>2.39</b>	9.75	5.87	8.37	196.36	1.48
	<b>Jaintia (C)</b>	2.80	26.67	<b>14.73</b>	0.25	2.10	<b>1.18</b>	2.96	5.23	<b>4.09</b>	8.77	6.49	5.44	209.97	3.00
	<b>Minimum</b>	<b>1.80</b>	<b>19.33</b>	<b>10.67</b>	<b>0.21</b>	<b>1.33</b>	<b>0.77</b>	<b>2.01</b>	<b>2.69</b>	<b>2.39</b>	<b>7.13</b>	<b>4.89</b>	<b>5.44</b>	<b>83.62</b>	<b>1.48</b>
	<b>Maximum</b>	<b>6.00</b>	<b>33.45</b>	<b>33.00</b>	<b>0.27</b>	<b>2.37</b>	<b>2.13</b>	<b>5.28</b>	<b>15.28</b>	<b>12.84</b>	<b>10.50</b>	<b>9.66</b>	<b>9.83</b>	<b>209.99</b>	<b>4.22</b>
	<b>Mean</b>	<b>2.96</b>	<b>27.21</b>	<b>17.85</b>	<b>0.24</b>	<b>1.82</b>	<b>1.20</b>	<b>3.73</b>	<b>8.60</b>	<b>6.67</b>	<b>9.14</b>	<b>7.00</b>	<b>7.35</b>	<b>142.64</b>	<b>2.72</b>
	<b>CD (0.05)</b>	-	<b>4.59</b>		-	<b>0.36</b>		-	<b>2.19</b>		<b>0.75</b>	<b>0.90</b>	<b>1.02</b>	<b>22.05</b>	<b>0.96</b>
	<b>CV (%) Error</b>	-	<b>10.53</b>		-	<b>12.29</b>		-	<b>15.91</b>		<b>5.15</b>	<b>8.02</b>	<b>8.70</b>	<b>9.66</b>	<b>22.14</b>
	<b>CV (%) Phen.</b>	<b>29.48</b>	<b>13.18</b>		<b>6.68</b>	<b>13.41</b>		<b>30.18</b>	<b>38.68</b>		<b>8.83</b>	<b>15.85</b>	<b>15.29</b>	<b>23.98</b>	<b>32.27</b>



## **3.2 PLAINS**

Germplasm evaluation was planned to be conducted on grain amaranth, rice bean, faba bean, winged bean, kankoda, kalingada, 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 2009-10**

Germplasm screening nursery consisting of 95 lines was planned to be evaluated at nine locations. The results were received from all 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 93 and statistical parameters for all the characters of different locations have been presented in Table 94.

A set of 95 accessions and four checks were evaluated for thirteen quantitative and 13 qualitative characters (Table 95) at S.K. Nagar. Accession SKGPA-26 (18.00 g/plant) was observed highest yielder. The maximum plant height (146.04 cm) was observed in the check variety GA-1. The highest no. of branches was recorded in accession MGA-12 (5.00) followed by SKGPA-10 (4.40). The longest inflorescence (91.00 cm) was recorded in the accession SKGPA-26 followed by SKGPA-17 (90.00 cm). Accession SKGPA-19 (40.00 days) was earliest in flowering while BGA-32 was early in maturing (50.00 days).

A total of 95 accessions and four checks were also evaluated at OUA&T, Bhubaneswar for seven quantitative characters. Accession SKGPA-12, SKGPA-45, SKGPA-46 and SKGPA-57 (34.00 days) was earliest in flowering while SKGPA-43 was earliest in maturity (80.00 days). The longest panicle length was found in SKGPA-40 (54.60 cm) followed by SKGPA-51 (54.20 cm). The entry BGA-29 (7.99 g) followed by SKGPA-47 (7.98 g) had the highest test weight. The highest grain yield per plant was observed in BGA-27 (16.34 g). The highest seed yield was observed in accession BGA-27 (21.25 q/ha) followed by BGA-28 (20.83 q/ha).

A set of 95 genotypes and four checks were screened for six yield related attributes at RAU, Mandor. Accession SKGPA-46 (32.00 days) was found earlier to the check variety in flowering and SKGPA-43 (120.00 days) was earliest for maturity. The maximum height (184.40 cm) was found in the accession SKGPA-44 followed by SKGPA-22 (157.60 cm), and BGA-35 was found superior to the check for yield per plant (24.40 g). The highest test weight (7.76 g) was observed in the genotype BGA-27.

A set of 95 genotypes and four checks varieties were screened for six yield related attributes at NDUA&T, Faizabad. Accession SKGPA-9 (31.00 days) was found earlier to the check variety in flowering while SKGPA-17 was early in maturing (102.00 days). The maximum height (117.70 cm) was found in the accession SKGPA-46 followed by SKGPA-49 (115.00 cm). The SKGPA-11 was superior to the check for grain yield per plant (16.60 g). The highest inflorescence length (55.30 cm) was found in the accession BGA-39.

A set of 95 genotypes and four checks varieties were screened for five yield related attributes at IGKV, Ambikapur. Accession SKGPA-12, SKGPA-55 and SKGPA-58 (76.00 days) were found earlier to the check variety in flowering and SKGPA-58 (131.00 days) were earliest for maturity. The maximum height (70.50 cm) was found in the accession BGA-36. The highest inflorescence length (25.50 cm) was found in the genotypes BGA-34. The BGA-46 was superior to the check for seed yield (8.33 q/ha).

At Hisar, a set of 95 genotypes and four checks were evaluated for eight quantitative characters. The accession SKGPA-26 (102.00 cm) was found superior as compared to check variety Suvarna (86.00 cm) for plant height. SKGPA-24, SKGPA-25, SKGPA-37, SKGPA-40, BGA-27, BGA-29, BGA-35 and BGA-41 (58.00 days) were earliest in flowering and SKGPA-50 (151.00 days) were found superior to the check variety in maturity. The highest yield per plant (8.20 g) was observed in the accession SKGPA-29 followed by check variety Suvarna (6.35 g).

A total of 95 genotypes were also evaluated at Rahuri for eleven yield attributes. SKGPA-45 (58.00 days) was earliest in flowering and SKGPA-49 was found superior to check variety in maturity (94.00 days). Maximum plant height (165.01 cm) was observed in check variety GA-2 while highest seed yield (94.44

g/plant) was observed in genotype SKGPA-27. The highest inflorescence length (88.93 cm) was noted in the accession MGA-6.

At Ranchi, a set of 95 genotypes and four checks were evaluated for nine quantitative characters. The entry BGA-31 (159.00 cm) was superior as compared to check variety for plant height. SKGPA-55 (52.00 days) was earliest in flowering and SKGPA-13 (120.00 days) was found superior to the check variety in maturity. The highest yield per plant (542.00 g) was observed in the genotype BGA-34.

A total of 95 accessions and four checks were also evaluated at NBPGR, New Delhi for twelve quantitative characters. Accession SKGPA-45 (40.00 days) was earliest in flowering while BGA-45 was earliest in maturity (150.00 days). The longest inflorescence length was found in BGA-28 (65.12 cm) followed by MGA-12 (52.74 cm). The entry BGA-39 (7.54 g) followed by SKGPA-12 (7.07 g) had the highest test weight. The highest grain yield per plant was observed in BGA-35 (327.22 g). The highest seed yield was observed in accession BGA-38 (22.98 q/ha).

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 eight centres. Seed yield per plant (g) was low at Hisar (3.42 g) and very high at Ranchi (294.12 g). The genotype SKGPA-9 (99.32 g) was the highest seed yielder followed by genotype BGA-44 (88.45 g).

Plant height was the highest at Delhi (132.94 cm) and lowest at Ambikapur (56.06 cm) on the basis of average over the nine locations. The genotype SKGPA-59 had the highest plant height (136.27 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 (40.25 days) at Faizabad while it was the longest (91.56 days) at Ambikapur. The variety SKGPA-46 showed consistency for early flowering over the locations and ranked first (46.25 days) based on the overall performance.

Maturity period was the earliest at S.K. Nagar (87.66 days) followed by Bhubaneswar (89.75 days). The entry SKGPA-59 (111.67 days) was the earliest maturing line based on nine locations.

The length of inflorescence of the accessions was the highest at S.K. Nagar (58.90 cm) and lowest at Ambikapur (18.26 cm). Based on the average over seven locations, the check variety GA-2 had the longest inflorescence (54.65 cm).

Test weight expressed in terms of weight of g/10ml seed recorded at seven centres showed that it was the highest at Ranchi (8.52 g/10ml) and very low at Delhi (5.92 g/10ml). Based on the average over seven locations, The entry SKGPA-23 (7.53 g/10 ml) showed the highest test weight as compare to check variety GA-1 (7.31 g/10ml).

### **3.2.1.2 Kharif 2010**

Germplasm screening nursery consisting of 50 lines was planned to be evaluated at three locations. The results were received from only Bangalore centre. The crop was failed at both the locations Ludhiana and Mettupalayam. 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 50 accessions and five checks were evaluated for eleven quantitative and 9 qualitative characters (Table 97) at UAS, Bangalore. Accession SKGPA-59 (73.30 g/plant) was observed highest yielder. The maximum plant height (156.70 cm) was observed in the genotype SKGPA-4. The longest inflorescence (73.30 cm) was recorded in the accession SKGPA-14 followed by SKGPA-57 (67.70 cm). Accession SKGPA-41 (38.00 days) was earliest in flowering and maturity (70.00 days).

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

In rice bean 50 genotypes alongwith four checks supplied by PAU Ludhiana were planned to be evaluated at six locations viz. PAU Ludhiana; OUA&T Bhubaneshwar; UAS, Bangalore; NBPGR, New Delhi; MPKV, Rahuri and TNAU, Mettupalayam. The list of promising accessions for all characters has been

presented in Table 98 and statistical parameters for all the characters of different locations have been presented in Table 99. The qualitative characters were recorded at three locations Bangalore, Delhi and Rahuri (Table 100).

A total of 50 genotypes and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were screened for eleven characters in Augmented Design at OUA&T Bhubaneswar. Genotypes LRB-319, LRB-460, LRB-461 and LRB-493 flowered in 41.00 days early as compared to check variety RBL-35 (42.00 days). The accession LRB-484 (81.00 days) was superior to check variety RBL-35 (82.80 days) in maturity. The maximum plant height (97.40 cm) was observed in LRB-470 followed by LRB-449 (96.00 cm). The entry LRB-491 and LRB-322 (3.60) had the highest number of branches per plant, while entry LRB-449 (46.80) had the highest number of pods per plant. The entry LRB-474 (7.31 g) had the maximum 100 seed weight. The highest seed yield per plant (14.03 g) was recorded in the genotype LRB-491. The genotypes LRB-324 was the highest seed yielder (7.29 q/ha).

At Bangalore, a set of 50 genotypes and four checks were evaluated for five characters. The entry LRB-482 (7.65 g) had the maximum seed yield per plant. No entry was superior to check variety in flowering and maturity. The entry LRB-491 (7.82 g) had a bold seeded.

At Delhi, a set of 50 genotypes and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were evaluated in Augmented Design for 12 characters. No entry was significantly superior to check genotype for flowering while LRB-448 was found for early maturity (112.00 days) as compared to best check. Entry LRB-455 (10.30 cm) had longer pod than the check. The highest number of branches was recorded in the genotype LRB-461 (4.80). Maximum plant height (144.80 cm) was observed in the genotype LRB-446 followed by LRB-455 (133.80 cm). The entry LRB-487 (330.90 g) had the highest seed yield per plant. Highest seed (q/ha) was recorded in the genotypes LRB-487 (18.23 q/ha) followed by LRB-322 (16.94 q/ha). LRB-493 (6.03 g) had the highest 100 seed weight.

A set of 50 accessions and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were evaluated in Augmented Design for ten yield related attributes at PAU, Ludhiana. Entry LRB-475 (66.00 days) had flowered earlier than check variety and the entry LRB-490 (105.00 days) were observed early in maturity than

check variety. The maximum plant height (178.00 cm) was recorded in the genotype LRB-476 and LRB-467 followed by LRB-482 (165.00 cm). The entries LRB-474 (7.52 g) had the bold seeds, while LRB-462 (31.25 q/ha) was the top yielder genotype.

A set of 50 accessions and four checks were evaluated in Augmented Design for six characters at TNAU, Mettupalayam. The entry LRB-460 (46.00 days) was superior to check variety RBL-6 (49.00 days) in flowering. No entries was found superior to check varieties for seed yield per plant, plant height, no. of branches and maturity.

A total of 50 accessions and four checks were screened for ten characters in Augmented Design at MPKV Rahuri. Entry LRB-478 (58.00 days) was earliest in flowering and maturity (99.00 days). The maximum plant height (198.67 cm) was observed in LRB-483 followed by LRB-324 (187.67 cm). The genotype LRB-488 (9.00) had the highest number of seeds per pod. The longest pod (9.10 cm) was observed in the genotypes LRB-458. The top yielder genotype were LRB-488 (43.89 q/ha).

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

The mean flowering time was the earliest at Bangalore (40.76 days), while it was very late at Delhi (82.14 days). On the basis of average over six locations, the entry LRB-458 (53.80 days) was superior to the check varieties in flowering.

Maturity period was the earliest at Bangalore (78.83 days) and delayed at Delhi (117.23 days). There was a difference of about 39 days between Bangalore and Delhi. Based on the average over six locations entry LRB-447 (95.80 days) was the earliest in maturity.

Mean plant height was highest at Ludhiana (131.12 cm) and very low at Mettupalayam (62.76 cm). Based on the average over the five locations the entry LRB-473 (123.33 cm) was found superior to check variety.

The number of primary branches was highest at Ludhiana (6.72) followed by Mettupalayam (3.80). Based on the average over the five locations the entry LRB-482 (5.38) had the highest number of branches.

The grain yield per plant recorded at four locations showed that Delhi centre had the very highest seed yield per plant (80.50 g) followed by Mettupalayam (7.39 g). Based on average over the four locations, the entry LRB-488 (48.24 g) had the highest grain yield per plant.

The number of pods per plant was highest at Ludhiana (97.93) and very low at Mettupalayam (24.26). Based on data over the four locations the entry LRB-467 (103.77) had the highest number of pods per plant followed by LRB-472 (93.77).

The number of seeds per pod recorded at four locations revealed that it was highest at Delhi (8.02) followed by Ludhiana (7.94). LRB-496 (8.04) 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 Delhi (8.97 cm) followed by Ludhiana (8.89 cm). Based on the average over four locations the entry LRB-493 (9.22 cm) had the longest pod length.

100 seed weight was observed at five locations. It showed that highest seed weight was at Bangalore (6.46 g) followed by Ludhiana (6.39 g). Based on average over five locations, the entry LRB-474 (6.40 g) was superior to check variety.

### **3.2.3 Faba bean (*Vicia faba*)**

Germplasm screening nursery was to be 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 have been presented in Table 101 and statistical parameters for all the characters of different locations have been presented in Table 102.

At CCS HAU, Hisar, a set of 100 including checks were evaluated for eleven quantitative characters. The genotype EC117739 (54.00 days) were earlier in flowering while HB-50 (140.00 days) for maturity. Maximum plant height (110.30 cm) was observed in the genotype HB-20 followed by EC117744 (92.70 cm). The entry HB-17 (17.00) had the highest number of cluster per plant while HB-50 had the number of pods per plant (68.00). The longest pod

(6.80 cm) was recorded in EC243608. The entry HB-10 (34.50 g) had the highest 100 seed weight while the genotype IC374710 (76.40 g) had the highest seed yield per plant.

A total of 100 genotypes including three checks were evaluated in Augmented Design at NBPGR, New Delhi for twelve quantitative and five qualitative characters. Early flowering was observed (65.0 days) in the genotype EC117765 and IC322138 whereas early maturity was observed (122.0 days) in the genotype HB-20. Highest pods per plant (64.00) was observed in the genotype EC024312 and EC343781. Maximum plant height (100.40 cm) was recorded in the genotype EC032976. The entry EC117727 (7.20) had the highest number of branches per plant, while entry HB-31 had the highest number of seeds per pod (4.10). The maximum seed yield (47.94 q/ha) was produced by the genotype EC029058.

At Faizabad, a set of 100 including checks were evaluated for seven quantitative characters. The genotype EC243524-A and IC243770 (58.00 days) was earlier in flowering, while EC243584 (117.0 days) was earlier in maturity. Maximum plant height (148.60 cm) was observed in the genotype IC243594. The entry EC243624 (6.00) had the highest number of branches per plant. The genotype IC243770 (35.06 g) had the highest 100 seed weight while the genotype EC361499 (35.00 g/plant) had the highest seed yield.

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

The mean flowering time was the earliest at Hisar (66.51 days), while it was late at Delhi (71.80 days) and Faizabad (70.02). On the basis of average over three locations, the entry EC243524-A (62.00 days) was superior to the check varieties in flowering.

Maturity period was the earliest at Delhi (129.39 days) and delayed at Faizabad (159.26 days). There was a difference of about 30 days between Faizabad and Delhi. Based on the average over three locations entry EC243584 (124.00 days) was the earliest in maturity.



Mean plant height was highest at Faizabad (114.62 cm) and very low at Hisar (69.05 cm). Based on the average over the locations the entry EC117792 (107.20 cm) was found superior to check variety.

The number of primary branches was highest at Hisar (5.45) followed by Delhi (4.15). Based on the average over the three locations the entry HB-20 (6.00) 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 (89.32 g) followed by Hisar (30.21 g). Based on average over the three locations, the entry EC343781 (92.89 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 (3.42) followed by Hisar (3.24). EC361494 (4.07) 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 Hisar (29.72 g) followed by Faizabad (28.34 g). Based on average over three locations, the entry IC247649 (30.82 g) was superior to check variety.

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

Germplasm screening nursery was to be evaluated at two locations at Akola and Ranchi. List of promising genotypes of the centre has been presented in Table 103 and statistical parameters for all the characters of different locations have been presented in Table 104.

At NBPGR RS, Akola, a set of 102 accessions were evaluated with one check AKWB-1 in eight quantitative and 12 qualitative characters. The seven genotypes were observed superior for flowering (34.00 days). Maximum pod length (21.50 cm) was observed in the genotype EC118345 while the genotype IC034861 (31.00 g/plant) had the highest seed yield.

A set of 102 genotype alongwith one check were evaluated at BAU, Ranchi for eight characters. Early flowering (72.0 days) was observed in genotype

IC017004-1 while EC038825-2 was early maturing (159.00 days). The longest pod (19.00 cm) was recorded in the genotypes EC038825P-3.

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

The mean flowering time was similar at both the centres at Akola (97.99 days) and Ranchi (98.77 days). On the basis of average over two locations, the entry IC095222 (79.00 days) was superior to the check varieties in flowering.

The number of seeds per pod recorded at two locations revealed that it was almost same at both the centres at Almora (10.32) and Ranchi (10.42). EC038823 (14.50) 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 almost similar at both the locations at Akola (28.45 g) and Ranchi (28.93. g). Based on average over two locations, the entry IC041979-1 (34.85 g) was superior to check variety.

### **3.2.5 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 105 and 106, respectively. The early in first picking was observed in the genotype RMFG-16 (82.00 days). The genotype RMFG-39 had the highest fruit yield per plant (1.53 kg) while the genotype RMFG-37 had the highest single fruit weight (24.10 g).

### **3.2.6 Kalingada**

Germplasm screening nursery consisting of 20 genotypes supplied by GAU, S.K. Nagar was to be evaluated at two locations viz. GAU, S.K. Nagar and SKRAU, Mandor. The data were received from all the centres. The check used was GK-1. The list of promising entries have been presented in Table 107 and statistical parameters for all the characters of different locations have been presented in Table 108.

A total of 20 genotypes with one check were evaluated at SKRAU, Mandor for six characters. The seed yield (q/ha) was recorded in genotype SKGPK-20 (2.61 q/ha) followed by SKGPK-15 (2.44 q/ha). The entry SKGPK-20 had the highest number of fruit per plant (11.50). The entry SKGPK-6 (10.59 cm) had the highest fruit diameter. The 100 seed weight (g) was recorded highest in the genotype SKGPK-14 (6.55 g).

At GAU, S.K. Nagar, a set of 20 genotypes with one check were evaluated for eleven characters. The test weight (g) was highest in the genotype SKGPK-13 (7.60 g) followed by SKGPK-2 (7.50 g). Large fruit length (23.30 cm) was recorded in the genotype SKGPK-13, while the seed yield was highest in the genotype SKGPK-5 (7.20 q/ha) and highest fruit yield was recorded in genotype SKGPK-10 (198.33 q/ha).

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

Seed yield levels were highest at S.K. Nagar (5.17 q/ha) and lowest at Mandor (1.62 q/ha). Based on two locations the entry, SKGPK-9 was the highest yielder (4.48 q/ha).

Fruit yield was the highest at S.K. Nagar centre (138.03 q/ha) and lowest at Mandor (52.12 q/ha) centre. Based on average SKGPK-12 (127.08 q/ha) was the highest fruit yielder.

Test weight was recorded at two centres showed that it was the highest at S.K. Nagar (7.02 g) and low at Mandor (1.72 g). Based on the average over two locations, the entry SKGPK-17 (6.80 g) showed the highest test weight.

### **3.2.7 Tumba**

Germplasm consisting of 14 accessions including check were plan to evaluated at two locations at SKRAU, Mandor and GAU, S.K. Nagar centres. The data was received from only one centre at SKRAU, Mandor. The list of promising genotypes for all the characters and data have been presented in Tables 109 and 110, respectively.

The entry MGPT-21 (17.60 kg/ha) had the highest seed yield followed by RMT-408 (13.60 kg/ha). The maximum number of fruit per plant was recorded in

the genotypes MGPT-17 (2.80). The entry MGPT-17 (411.10 kg/ha) had the highest fruit yield. Maximum single fruit weight (g) was observed in the genotype MGPT-21 (168.00 g). The highest diameter of fruit was recorded in the genotype MGPT-21 (6.40 cm). The entries RMT-407 (2.92 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 evaluated. The list of promising genotypes for various characters for various locations has been presented in Table 111.

A set of 159 genotypes including check was evaluated at Hisar. Statistical parameters for all the characters have been presented in Table 112. The maximum plant height (485.60 cm) was recorded in the check variety Chhatrapati. The entry JH-109 (36.00) had the highest number of branches. The highest seed yield per plant was 1663.00 g in genotype JH-103 and longest seed size (1.89 cm) in genotype JH-38.

### **3.2.9 Simarouba**

Simarouba genotypes were planned for maintaining the germplasm at three centre. The list of promising genotypes for all the characters has been presented in Table 113.

A set of female 36 genotypes alongwith 18 male genotypes were maintained at MPKV Rahuri. The maximum seed yield per plant was observed in genotype PS-2003-45 (7.96 kg) and genotype PS-2003-29 (195.00 g) had the highest test weight (Tables 114a and 114b).

A set of 5 genotypes was maintained at SKRAU, Mandor. The Plant No. 3 (70.00 cm) had the highest stem girth. The maximum seed yield per plant was observed in Plant No. 1 (2.70 kg). The highest test weight 93.80 g was observed in Plant No. 4 (Table 115).

A set of female 19 genotypes alongwith 8 male genotypes were maintained at GAU, S.K. Nagar. The maximum seed yield per plant was observed in genotype Plant No. L10P7 (8.15 kg) and genotype Plant No. L15P4 (4.40 m) had the highest plant height (Tables 116a and 116b).

**Table 93. Promising lines in grain amaranth germplasm (Rabi, 2009-10) for various characters at different locations (Plains)**

S.No.	Characters	Range	Promising lines	Value of best check
<b>Ambikapur (Accessions 64)</b>				
1.	Days to 50% flowering	76.00-102.00	SKGPA-12, SKGPA-55, SKGPA-58, SKGPA-49, SKGPA-10, SKGPA-35, SKGPA-15, BGA-45, BGA-32, BGA-44, BGA-46 (< 88.00 days)	Suvarna (95.00 days)
2.	Days to maturity	131.00-159.00	SKGPA-58, SKGPA-55, BGA-45, SKGPA-12, BGA-44, BGA-46, SKGPA-35, SKGPA-10 (< 146.00 days)	Suvarna (152.00 days)
3.	Plant height (cm)	35.00-70.50	BGA-36, SKGPA-8 (> 68.00 cm)	GA-1 (68.00 cm)
4.	Inflorescence length (cm)	10.50-25.50	BGA-34, BGA-35, SKGPA-25, BGA-47, SKGPA-18, SKGPA-20, BGA-50, BGA-31, SKGPA-21, SKGPA-34, SKGPA-19 (> 22.00 cm)	GA-1 (18.50 cm)
5.	Seed yield (q/ha)	0.56-8.33	BGA-46, BGA-27 (> 5.80 q/ha)	Suvarna (5.56 q/ha)
<b>Bhubaneswar (Accessions 85)</b>				
1.	Days to 50% flowering	34.00-55.80	SKGPA-12, SKGPA-45, SKGPA-46, SKGPA-57, SKGPA-9, SKGPA-49, SKGPA-50, SKGPA-51, SKGPA-52, SKGPA-53, SKGPA-54, SKGPA-43, SKGPA-55, SKGPA-56, SKGPA-42, SKGPA-1, SKGPA-41, SKGPA-58, SKGPA-21, SKGPA-47, BGA-29 (< 45.00 days)	BGA-2 (50.00 days)
2.	Days to maturity	80.00-97.00	SKGPA-43, SKGPA-9, SKGPA-49, SKGPA-51, SKGPA-53, SKGPA-57, SKGPA-50, SKGPA-54, BGA-32, SKGPA-52, SKGPA-42, SKGPA-55, SKGPA-56, SKGPA-41, SKGPA-58 (< 86.00 days)	BGA-2 (90.20 days)
3.	Plant height (cm)	56.80-133.34	-	GA-1 (133.34 cm)
4.	Inflorescence length (cm)	30.20-54.60	SKGPA-40, SKGPA-51 (> 54.00 cm)	GA-1 (51.56 cm)
5.	Seed yield per plant (g)	4.28-16.34	BGA-27, BGA-28, BGA-34, BGA-31, SKGPA-54, BGA-44, SKGPA-52, BGA-29 (> 13.00 g)	BGA-2 (11.87 g)
6.	Seed weight (g/10 ml)	7.41-7.99	BGA-29, SKGPA-47, BGA-51, SKGPA-29 (> 7.97 g/10 ml)	BGA-2 (7.97 g/10 ml)
7.	Seed yield (q/ha)	8.33-21.25	BGA-27, BGA-28, BGA-31, BGA-29, BGA-34, SKGPA-54, SKGPA-47, SKGPA-52, SKGPA-13, SKGPA-40 (> 18.00 q/ha)	BGA-2 (15.96 q/ha)

<b>Delhi (Accessions 89)</b>				
1.	Days to 50% flowering	40.00-91.00	SKGPA-45, SKGPA-56, SKGPA-57, SKGPA-46, SKGPA-52, SKGPA-10, SKGPA-50, SKGPA-51, SKGPA-49, SKGPA-55, SKGPA-12, SKGPA-42, MGA-12, SKGPA-16, SKGPA-18, SKGPA-58 (< 48.00 days)	GA-2 (52.75 days)
2.	Days to maturity	150.00-168.00	BGA-45, SKGPA-10, SKGPA-46, SKGPA-58, MGA-12, BGA-33, BGA-49, BGA-51, SKGPA-12, SKGPA-18, SKGPA-19, SKGPA-51, SKGPA-55, BGA-47, BGA-48, SKGPA-2, SKGPA-9, SKGPA-16, SKGPA-17, SKGPA-23, SKGPA-30, SKGPA-31, SKGPA-36, SKGPA-37, SKGPA-45, SKGPA-49, SKGPA-50, SKGPA-52 (< 153.00 days)	GA-2 (157.00 days)
3.	Plant height (cm)	54.33-169.12	SKGPA-4, BGA-43 (> 164.50 cm)	Suvarna (164.00 cm)
4.	Inflorescence length (cm)	27.90-65.12	BGA-28, MGA-12, SKGPA-14, SKGPA-23 (> 50.00 cm)	GA-2 (48.97 cm)
5.	Petiole length (cm)	6.47-16.18	SKGPA-31 (> 15.48 cm)	Suvarna (15.48 cm)
6.	Leaf length (cm)	16.50-35.38	SKGPA-8, SKGPA-7 (> 34.70 cm)	Suvarna (34.39 cm)
7.	Lateral spikelet length (cm)	5.94-25.50	MGA-12, SKGPA-50, SKGPA-51, SKGPA-45, SKGPA-52 (> 18.00 cm)	GA-2 (14.87 cm)
8.	No. of primary branches per plant	0.40-8.60	SKGPA-10, SKGPA-12, SKGPA-1, SKGPA-9, MGA-6, MGA-12, SKGPA-27, SKGPA-19, SKGPA-51, MGA-7, MGA-13, SKGPA-21, SKGPA-44, SKGPA-45, SKGPA-46, MGA-5, BGA-45, SKGPA-32, SKGPA-43, SKGPA-50 (> 3.50)	GA-2 (1.10)
9.	Stem thickness (mm)	5.76-24.90	MGA-7, MGA-9, MGA-5 (> 23.50 mm)	BGA-2 (22.08 mm)
10.	Seed yield per plant (g)	8.77-327.22	BGA-35, BGA-38, BGA-30, BGA-42, BGA-32, SKGPA-25, BGA-34, BGA-41, BGA-33, SKGPA-14, SKGPA-35, SKGPA-21, BGA-27 (> 142.00 g)	BGA-2 (96.62 g)
11.	Seed weight (g/10 ml)	4.52-7.54	BGA-39, SKGPA-12, SKGPA-16, SKGPA-25, BGA-32, BGA-35, SKGPA-15, SKGPA-7, SKGPA-44, BGA-27, BGA-34, SKGPA-42, SKGPA-11, SKGPA-41, BGA-28, SKGPA-36 (> 6.50 g/10 ml)	Suvarna (6.19 g/10 ml)
12.	Seed yield (q/ha)	0.46-22.98	BGA-38, BGA-33, BGA-32, BGA-31, BGA-39, BGA-40, BGA-51, BGA-35, BGA-27, BGA-28, BGA-34, BGA-41, BGA-42, SKGPA-18, BGA-37 (> 11.00 q/ha)	GA-2 (6.72 q/ha)
<b>Faizabad (Accessions 90)</b>				
1.	Days to 50% flowering	31.00-49.00	SKGPA-9, SKGPA-17, SKGPA-1, SKGPA-20, SKGPA-14, SKGPA-21, SKGPA-35, SKGPA-46, BGA-33, BGA-37 (< 36.00 days)	GA-2 (42.00 days)

2.	Days to maturity	102.00-134.00	SKGPA-17, SKGPA-20, SKGPA-14, SKGPA-21, SKGPA-35, SKGPA-46, BGA-33, BGA-37, SKGPA-18, SKGPA-34 (< 107.00 days)	GA-2 (114.00 days)
3.	Plant height (cm)	61.00-117.60	SKGPA-46, SKGPA-49, SKGPA-36, SKGPA-20, SKGPA-22, SKGPA-48, SKGPA-21, SKGPA-47, SKGPA-38, BGA-46 (> 100.00 cm)	Suvarna (95.13 cm)
4.	Inflorescence length (cm)	23.80-55.30	BGA-39, MGA-9, MGA-10, MGA-8, BGA-41, BGA-43, BGA-42 (> 45.00 cm)	GA-1 (39.00 cm)
5.	No. of primary branches per plant	5.00-16.00	SKGPA-9, SKGPA-16, MGA-7, SKGPA-37, SKGPA-50 (> 12.50)	BGA-2 (12.20)
6.	Seed yield per plant (g)	6.70-16.60	SKGPA-11, SKGPA-5, SKGPA-10, SKGPA-20 (> 15.00 g)	GA-2 (14.90 g)
<b>Hisar (Accessions 93)</b>				
1.	Days to 50% flowering	58.00-88.00	SKGPA-24, SKGPA-26, SKGPA-37, SKGPA-40, BGA-27, BGA-29, BGA-35, BGA-41, SKGPA-7, SKGPA-31, SKGPA-36, SKGPA-41, SKGPA-48, BGA-40 (< 60.00 days)	GA-1 (70.00 days)
2.	Days to maturity	151.00-183.00	SKGPA-50, SKGPA-26, SKGPA-31, SKGPA-46, SKGPA-45, SKGPA-43, SKGPA-42, SKGPA-49, SKGPA-38, SKGPA-56, MGA-12 (< 155.00 days)	BGA-2 (165.00 days)
3.	Plant height (cm)	37.50-102.00	SKGPA-26, SKGPA-22, SKGPA-57, SKGPA-25, MGA-9 (> 91.00 cm)	Suvarna (86.00 cm)
4.	No. of primary branches per plant	1.00-8.00	SKGPA-28, SKGPA-26, SKGPA-22, SKGPA-25, SKGPA-27, SKGPA-31 (> 5.00)	BGA-2 (5.00)
5.	Lateral spikelet length (cm)	19.50-60.50	SKGPA-22, SKGPA-26, BGA-38, SKGPA-58, SKGPA-2, MGA-9, BGA-28, SKGPA-57, BGA-46, SKGPA-4, SKGPA-25, SKGPA-6, BGA-42, SKGPA-23, SKGPA-5 (> 45.00 cm)	Suvarna (41.35 cm)
6.	Seed yield per plant (g)	1.20-8.20	SKGPA-29 (> 6.35 g)	Suvarna (6.35 g)
7.	Seed weight (g/10 ml)	4.80-7.50	SKGPA-14, SKGPA-12, SKGPA-26, SKGPA-25, SKGPA-17, SKGPA-27, SKGPA-15, BGA-49, BGA-45, SKGPA-28, SKGPA-22, BGA-46, BGA-44, BGA-29 (> 6.50 g/10 ml)	GA-2 (6.15 g/10 ml)
8.	Seed yield per line (g)	20.50-150.50	SKGPA-29, SKGPA-15, SKGPA-16 (> 130.00 g)	Suvarna (112.75 g)
<b>Mandor (Accessions 81)</b>				
1.	Days to 50% flowering	32.00-53.00	SKGPA-46, SKGPA-58, SKGPA-43, SKGPA-50, SKGPA-56, SKGPA-51, SKGPA-45, SKGPA-55, SKGPA-49, SKGPA-57, SKGPA-52, SKGPA-12, SKGPA-41, SKGPA-9, SKGPA-18, SKGPA-42, SKGPA-31, SKGPA-1, SKGPA-19, BGA-49, SKGPA-48, SKGPA-38, BGA-40, SKGPA-15, SKGPA-20 (< 44.00 days)	GA-2 (47.33 days)

2.	Days to 50% flowering – Adj.	31.98-54.23	SKGPA-46, SKGPA-58, SKGPA-50, SKGPA-43, SKGPA-51, SKGPA-56, SKGPA-45, SKGPA-49, SKGPA-55, SKGPA-57, SKGPA-12, SKGPA-52, SKGPA-41, SKGPA-18, SKGPA-19, SKGPA-9, SKGPA-42, SKGPA-20, SKGPA-31, BGA-40, SKGPA-15, SKGPA-23, SKGPA-24, SKGPA-48, BGA-49 (< 43.00 days)	GA-2 (47.33 days)
3.	Days to maturity	120.00-134.00	SKGPA-43, SKGPA-45, SKGPA-50, SKGPA-49, SKGPA-9, SKGPA-18, SKGPA-1, BGA-42, SKGPA-12, SKGPA-42, SKGPA-48, BGA-44, SKGPA-16, BGA-45, BGA-41 (< 123.00 days)	GA-2 (126.44 days)
4.	Plant height (cm)	57.80-184.40	SKGPA-44, SKGPA-22, SKGPA-4, SKGPA-11, SKGPA-9, SKGPA-2 (> 150.00 cm)	GA-1 (136.18 cm)
5.	Plant height (cm) – Adj.	45.75-193.30	SKGPA-44, SKGPA-22, SKGPA-11, SKGPA-33 (> 142.00 cm)	GA-1 (136.18 cm)
6.	Inflorescence length (cm)	33.20-77.40	SKGPA-44, BGA-27 (> 65.00 cm)	GA-1 (63.87 cm)
7.	Seed yield per plant (g)	2.00-24.40	BGA-35, BGA-39, BGA-33, BGA-30 (> 22.00 g)	GA-1 (20.11 g)
8.	Seed weight (g/10 ml)	6.59-7.76	BGA-27, BGA-39, SKGPA-47, BGA-43, SKGPA-42, SKGPA-45, BGA-51, SKGPA-56, BGA-38, SKGPA-49, SKGPA-58, SKGPA-29, BGA-29, SKGPA-1, SKGPA-22, SKGPA-32, BGA-48, SKGPA-50 (> 7.60 g/10 ml)	GA-2 (7.38 g/10 ml)
<b>Rahuri (Accessions 87)</b>				
1.	Days to 50% flowering	58.00-78.00	SKGPA-45, SKGPA-23, SKGPA-42, SKGPA-49, SKGPA-43, SKGPA-24, SKGPA-34, SKGPA-31, SKGPA-18, SKGPA-46, SKGPA-4, SKGPA-55, SKGPA-44, SKGPA-51, BGA-39 (< 63.00 days)	GA-1 & GA-2 (71.00 days)
2.	Days to maturity	94.00-120.00	SKGPA-49, SKGPA-42, SKGPA-46, SKGPA-5, SKGPA-43, SKGPA-18, SKGPA-47, SKGPA-48, SKGPA-15, SKGPA-19, SKGPA-45, SKGPA-24, SKGPA-4, SKGPA-13, SKGPA-20, SKGPA-23, SKGPA-44, SKGPA-51, SKGPA-50, SKGPA-14, SKGPA-41, SKGPA-17 (< 101.00 days)	Suvarna (112.00 days)
3.	Plant height (cm)	46.00-165.01	-	GA-2 (165.01 cm)
4.	Inflorescence length (cm)	26.66-75.33	MGA-6, BGA-27, BGA-45 (> 68.00 cm)	GA-2 (65.11 cm)
5.	Leaf length (cm)	14.33-32.00	MGA-6, MGA-14, BGA-27, SKGPA-34 (> 30.00 cm)	GA-2 (29.09 cm)
6.	Leaf width (cm)	3.00-11.40	SKGPA-4, MGA-7, SKGPA-21, SKGPA-13, MGA-9, SKGPA-33, SKGPA-8, SKGPA-6, SKGPA-23, SKGPA-5, SKGPA-28, SKGPA-14, SKGPA-3, MGA-6, SKGPA-34 (> 8.00 cm)	GA-2 (7.14 cm)
7.	Petiole length (cm)	5.00-15.40	SKGPA-1, MGA-6, SKGPA-21, MGA-14, MGA-5, SKGPA-4, SKGPA-2, SKGPA-33, SKGPA-34, SKGPA-28, SKGPA-47 (> 11.00 cm)	GA-2 (10.54 cm)



8.	Stem thickness (mm)	7.00-22.00	SKGPA-1, MGA-7 (> 19.00 mm)	GA-1 (19.00 mm)
9.	Lateral spikelet length (cm)	6.75-35.75	SKGPA-52, BGA-51, MGA-14, BGA-42 (> 29.00 cm)	GA-2 (26.68 cm)
10.	Seed yield per plant (g)	20.09-94.44	SKGPA-27, SKGPA-41, SKGPA-43, SKGPA-47, SKGPA-48, SKGPA-1, BGA-44, BGA-38, SKGPA-34, BGA-51, SKGPA-28, SKGPA-21, SKGPA-52, BGA-28, SKGPA-50, BGA-32, SKGPA-23, SKGPA-10, SKGPA-31, SKGPA-20, BGA-43, BGA-42, BGA-29 (> 40.00 g)	GA-1 (31.92 g)
11.	Seed weight (g/10 ml)	3.41-9.09	SKGPA-23, BGA-29 (> 9.00 g/10 ml)	GA-1 (8.96 g/10 ml)
<b>Ranchi (Accessions 81)</b>				
1.	Days to 50% flowering	52.00-88.00	SKGPA-55, SKGPA-57, SKGPA-46, SKGPA-45, SKGPA-52, SKGPA-50, SKGPA-43, SKGPA-56, SKGPA-20, SKGPA-27, SKGPA-28, SKGPA-49, SKGPA-58, SKGPA-12, SKGPA-21, SKGPA-51 (< 62.00 days)	GA-1 (80.50 days)
2.	Days to maturity	120.00-160.00	SKGPA-13, SKGPA-45, SKGPA-43, SKGPA-46, SKGPA-49, SKGPA-17, SKGPA-50, SKGPA-52, SKGPA-9, SKGPA-48, SKGPA-47, SKGPA-51, SKGPA-10, SKGPA-12, SKGPA-24, SKGPA-56 (< 140.00 days)	GA-2 (154.83 days)
3.	Plant height (cm)	48.70-159.00	BGA-31 (= 159.00 cm)	GA-1 (104.85 cm)
4.	Leaf length (cm)	6.60-12.60	-	GA-1 (12.60 cm)
5.	Lateral spikelet length (cm)	21.92-40.60	SKGPA-44, SKGPA-20, SKGPA-26, SKGPA-42 (> 36.00 cm)	GA-2 (31.17 cm)
6.	Petiole length (cm)	4.30-9.60	SKGPA-7 (= 9.60 cm)	GA-1 (7.80 cm)
7.	No. of primary branches per plant	1.60-8.60	BGA-50 (= 8.60)	GA-1 (7.52)
8.	No. of primary branches per plant - Adj.	1.64-8.82	BGA-50, BGA-51, SKGPA-41, BGA-45 (> 7.80)	GA-1 (7.52)
9.	Seed yield per plant (g)	142.00-542.00	BGA-34, BGA-29, BGA-44, SKGPA-25, BGA-42, SKGPA-27, SKGPA-57, SKGPA-18, BGA-51, BGA-49, BGA-45, SKGPA-26, SKGPA-20, SKGPA-19 (> 400.00 g)	Suvarna (202.50 g)
10.	Seed weight (g/10 ml)	6.08-10.26	SKGPA-52, SKGPA-49, SKGPA-9, SKGPA-45, SKGPA-10, SKGPA-47, SKGPA-42, SKGPA-55, SKGPA-15, SKGPA-41, SKGPA-57, SKGPA-44, SKGPA-18, SKGPA-13, SKGPA-58, SKGPA-48, BGA-45, SKGPA-22, BGA-47, BGA-38, BGA-49, SKGPA-21, SKGPA-37 (> 9.50 g/ 10ml)	GA-2 (7.37 g/10 ml)

<b>S.K. Nagar (Accessions 91)</b>				
1.	Days to 50% flowering	40.00-55.00	SKGPA-19, MGA-7, MGA-5, MGA-11, SKGPA-21, SKGPA-25, SKGPA-40, SKGPA-42, SKGPA-43, SKGPA-45, SKGPA-46, SKGPA-49, SKGPA-51, SKGPA-55, SKGPA-56, SKGPA-12, SKGPA-18, SKGPA-24, SKGPA-38, SKGPA-50, SKGPA-57 (< 44.00 days)	GA-1 (50.20 days)
2.	Days to maturity	50.00-98.50	BGA-32, BGA-33, SKGPA-7, SKGPA-41, SKGPA-25, SKGPA-42, SKGPA-43, SKGPA-19, SKGPA-26, SKGPA-29, SKGPA-33, SKGPA-36, SKGPA-39, SKGPA-56, SKGPA-58 (< 85.00 days)	GA-1 (93.20 days)
3.	Days to maturity – Adj.	48.88-98.50	BGA-32, BGA-33, SKGPA-7, SKGPA-25, SKGPA-26, SKGPA-29, MGA-7, BGA-29, SKGPA-56, SKGPA-58, SKGPA-21, SKGPA-24, SKGPA-27, SKGPA-28, SKGPA-41, MGA-5, MGA-12, SKGPA-19, BGA-30 (< 85.00 days)	GA-1 (93.20 days)
4.	Plant height (cm)	55.00-146.04	-	GA-1 (146.04 cm)
5.	Inflorescence length (cm)	29.00-91.00	SKGPA-26, SKGPA-17, SKGPA-18, SKGPA-25, SKGPA-19, SKGPA-28, SKGPA-27, BGA-34, BGA-35 (> 78.00 cm)	GA-1 (73.42 cm)
6.	Inflorescence length (cm) – Adj.	21.61-87.61	BGA-34, BGA-35, SKGPA-26, SKGPA-31, SKGPA-32 (> 78.00 cm)	GA-1 (73.42 cm)
7.	No. of primary branches per plant	0.20-5.00	MGA-12, SKGPA-10, SKGPA-41 (> 4.00)	-
8.	Leaf length (cm)	4.82-16.14	SKGPA-22 (= 16.14 cm)	Suvarna (12.80 cm)
9.	Petiole length (cm)	2.60-10.80	SKGPA-7, MGA-9, SKGPA-2 (> 9.00 cm)	Suvarna (8.75 cm)
10.	Stem thickness (mm)	1.66-8.10	SKGPA-13, SKGPA-41, SKGPA-42 (> 6.00 mm)	BGA-2 (4.17 mm)
11.	Lateral spikelet length (cm)	8.88-29.80	SKGPA-42, BGA-34 (> 29.00 cm)	GA-1 (20.76 cm)
12.	Seed weight (g/10 ml)	6.68-8.71	SKGPA-3, SKGPA-58, SKGPA-54, SKGPA-4 (> 8.60)	GA-1 (8.40 g/10 ml)
13.	Seed yield per plant (g)	3.00-18.00	SKGPA-26, SKGPA-17, SKGPA-50, BGA-48, SKGPA-48, SKGPA-28 (> 16.00 g)	GA-1 (14.52 g)
14.	Straw weight per plant (g)	75.20-450.50	SKGPA-50, SKGPA-48, SKGPA-17, SKGPA-29, SKGPA-44, BGA-38 (> 385.00 g)	GA-2 (345.93 g)
15.	Straw weight per plant (g) – Adj.	47.25-561.88	SKGPA-50 (= 561.88 g)	GA-2 (345.93 g)

<b>Best entries over locations</b>				
1.	Days to 50% flowering	46.25-77.67	SKGPA-46, SKGPA-57, SKGPA-59, SKGPA-45, SKGPA-43, SKGPA-51, SKGPA-60, SKGPA-50, SKGPA-52, SKGPA-9, SKGPA-56, SKGPA-41, SKGPA-42, SKGPA-48, SKGPA-58, MGA-12, SKGPA-55 (< 53.00 days)	GA-2 (58.86 days)
2.	Days to maturity	111.67-147.33	SKGPA-59, SKGPA-60, SKGPA-43, SKGPA-46, SKGPA-42, SKGPA-50, SKGPA-51, SKGPA-54, SKGPA-56, SKGPA-45, SKGPA-41, SKGPA-48, SKGPA-52, SKGPA-53, BGA-45, SKGPA-47, SKGPA-49 (< 121.00 days)	GA-2 (127.65 days)
3.	Plant height (cm)	68.76-136.27	SKGPA-59 (= 136.27 cm)	GA-2 (123.28 cm)
4.	Inflorescence length (cm)	35.01-54.65	-	GA-2 (54.65 cm)
5.	No. of primary branches per plant	3.30-8.50	MGA-8, SKGPA-27 (> 7.50)	Suvarna (7.24)
6.	Leaf length (cm)	12.35-32.59	MGA-6, MGA-14, MGA-13, MGA-9, MGA-7, MGA-11 (> 22.00 cm)	GA-2 (20.23 cm)
7.	Petiole length (cm)	5.87-12.87	MGA-6, MGA-9, SKGPA-33, MGA-13, SKGPA-8, SKGPA-60, SKGPA-59, SKGPA-7 (> 9.75 cm)	Suvarna (9.02 cm)
8.	Stem thickness (mm)	6.70-19.80	MGA-6, MGA-7, MGA-9 (> 15.00 mm)	GA-1 (13.18 mm)
9.	Lateral spikelet length (cm)	12.50-41.00	MGA-8, MGA-10, BGA-51, SKGPA-26, BGA-45, BGA-42, SKGPA-22, SKGPA-57, BGA-34, BGA-38, SKGPA-58 (> 28.00 cm)	GA-2 (26.23 cm)
10.	Seed yield per plant (g)	6.55-99.32	SKGPA-9, BGA-44, SKGPA-16, SKGPA-57, BGA-34, SKGPA-18, BGA-29, SKGPA-27, BGA-51, SKGPA-20, SKGPA-25, SKGPA-15, BGA-45, SKGPA-48, SKGPA-40, SKGPA-50, BGA-42, SKGPA-8, SKGPA-6, SKGPA-14, SKGPA-17, SKGPA-26, SKGPA-28, BGA-49, SKGPA-12, SKGPA-19 (> 65.00 g)	GA-1 (48.24 g)
11.	Seed weight (g/10 ml)	4.90-8.04	BGA-51, BGA-44, BGA-45, SKGPA-15, SKGPA-9, SKGPA-58, SKGPA-47, BGA-49, BGA-47, BGA-32, BGA-50, SKGPA-12, SKGPA-45, BGA-29, BGA-33, SKGPA-22, SKGPA-49, SKGPA-42, BGA-43, SKGPA-21, BGA-28, BGA-35, SKGPA-32 (> 7.60 g/10 ml)	GA-1 (7.31 g/10 ml)
12.	Seed yield (q/ha)	0.76-15.42	SKGPA-9, SKGPA-40, SKGPA-12, SKGPA-13, SKGPA-43, SKGPA-6, SKGPA-39 (> 11.50 q/ha)	BGA-2 (10.61 q/ha)

**Table 94. Multilocation evaluation of germplasm lines in grain amaranth at Ambikapur, Bhubaneswar, Delhi, Faizabad Hisar, Mandor, Rahuri, Ranchi and S.K. Nagar : Rabi 2009-10 (Plains)**

S. No.	Accession No.	Days to 50% flowering										Leaf length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
1	MGA-5	-	-	69	42	67	-	75	83	42	<b>63.00</b>	31.77	25.33	9.60	8.00	<b>18.67</b>
2	MGA-6	-	-	91	40	62	-	75	-	-	<b>67.00</b>	28.50	36.67	-	-	<b>32.59</b>
3	MGA-7	-	-	70	42	67	-	76	-	41	<b>59.20</b>	27.94	29.33	-	10.60	<b>22.62</b>
4	MGA-8	-	-	-	41	65	-	-	-	-	<b>53.00</b>	-	-	-	-	<b>-</b>
5	MGA-9	-	-	69	38	69	-	75	-	44	<b>59.00</b>	31.40	25.30	-	12.02	<b>22.91</b>
6	MGA-10	-	-	-	39	88	-	-	-	-	<b>63.50</b>	-	-	-	-	<b>-</b>
7	MGA-11	-	-	64	40	83	-	76	-	42	<b>61.00</b>	25.65	27.60	-	14.50	<b>22.58</b>
8	MGA-12	-	-	46	42	78	-	-	-	45	<b>52.75</b>	21.06	-	-	4.82	<b>12.94</b>
9	MGA-13	-	-	66	38	76	-	-	-	-	<b>60.00</b>	25.26	-	-	-	<b>25.26</b>
10	MGA-14	-	-	83	-	73	-	77	-	-	<b>77.67</b>	17.17	34.40	-	-	<b>25.78</b>
11	SKGPA-1	100	41	51	34	72	42	73	83	51	<b>60.78</b>	26.16	28.60	9.60	9.78	<b>18.54</b>
12	SKGPA-2	98	53	50	40	67	49	74	85	53	<b>63.22</b>	27.02	27.80	9.30	13.40	<b>19.38</b>
13	SKGPA-3	93	53	50	40	69	52	75	82	53	<b>63.00</b>	26.26	26.80	12.60	10.60	<b>19.07</b>
14	SKGPA-4	100	53	59	42	69	53	62	86	51	<b>63.89</b>	29.66	28.20	10.00	13.90	<b>20.44</b>
15	SKGPA-5	98	51	58	45	61	53	63	86	51	<b>62.89</b>	30.28	27.00	10.60	10.40	<b>19.57</b>
16	SKGPA-6	95	53	51	46	67	52	71	80	50	<b>62.78</b>	29.24	16.30	10.30	11.00	<b>16.71</b>
17	SKGPA-7	99	53	51	38	59	53	70	88	48	<b>62.11</b>	32.00	14.33	9.60	13.20	<b>17.28</b>
18	SKGPA-8	97	49	48	41	63	52	72	79	51	<b>61.33</b>	31.08	27.33	9.00	14.90	<b>20.58</b>
19	SKGPA-9	-	36	60	31	65	40	66	69	44	<b>51.38</b>	30.98	18.66	8.40	7.90	<b>16.49</b>
20	SKGPA-10	84	49	50	40	66	52	63	68	45	<b>57.44</b>	25.70	20.80	8.30	7.70	<b>15.63</b>
21	SKGPA-11	102	53	61	42	69	51	71	75	55	<b>64.33</b>	27.60	18.33	10.00	11.60	<b>16.88</b>
22	SKGPA-12	76	34	49	45	72	37	64	61	43	<b>53.44</b>	25.70	23.20	8.30	5.84	<b>15.76</b>
23	SKGPA-13	95	49	61	43	72	53	63	79	53	<b>63.11</b>	30.70	26.33	10.30	13.50	<b>20.21</b>
24	SKGPA-14	93	47	56	35	63	44	63	72	45	<b>57.56</b>	31.40	16.66	8.00	9.90	<b>16.49</b>
25	SKGPA-15	85	49	51	40	65	43	63	62	45	<b>55.89</b>	28.96	14.66	8.90	9.30	<b>15.46</b>
26	SKGPA-16	88	47	51	38	61	45	74	66	44	<b>57.11</b>	27.20	18.66	9.60	7.00	<b>15.62</b>

S. No.	Accession No.	Days to maturity										Petiole length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
1	MGA-5	-	-	168	112	168	-	118	156	90	<b>135.33</b>	11.93	12.66	6.30	4.00	<b>8.72</b>
2	MGA-6	-	-	153	110	168	-	117	-	-	<b>137.00</b>	11.40	14.33	-	-	<b>12.87</b>
3	MGA-7	-	-	166	112	165	-	119	-	89	<b>130.20</b>	10.58	10.66	-	4.00	<b>8.41</b>
4	MGA-8	-	-	-	111	168	-	-	-	-	<b>139.50</b>	-	-	-	-	-
5	MGA-9	-	-	165	108	171	-	118	-	92	<b>130.80</b>	11.58	11.00	-	9.58	<b>10.72</b>
6	MGA-10	-	-	-	109	164	-	-	-	-	<b>136.50</b>	-	-	-	-	-
7	MGA-11	-	-	164	110	165	-	119	-	91	<b>129.80</b>	10.60	10.80	-	7.00	<b>9.47</b>
8	MGA-12	-	-	151	112	154	-	-	-	90	<b>126.75</b>	8.60	-	-	3.30	<b>5.95</b>
9	MGA-13	-	-	153	108	164	-	-	-	-	<b>141.67</b>	10.44	-	-	-	<b>10.44</b>
10	MGA-14	-	-	160	-	164	-	118	-	-	<b>147.33</b>	6.47	13.00	-	-	<b>9.73</b>
11	SKGPA-1	157	86	155	134	169	121	119	156	98	<b>132.78</b>	9.88	15.40	6.30	5.82	<b>9.35</b>
12	SKGPA-2	155	94	159	110	165	132	118	155	94	<b>131.33</b>	9.52	12.40	6.60	9.20	<b>9.43</b>
13	SKGPA-3	152	92	167	110	165	131	117	159	91	<b>131.56</b>	10.94	11.00	9.30	7.50	<b>9.69</b>
14	SKGPA-4	156	92	160	112	171	133	98	160	95	<b>130.78</b>	10.75	12.60	5.60	8.90	<b>9.46</b>
15	SKGPA-5	155	90	161	115	159	128	95	159	92	<b>128.22</b>	11.18	10.40	9.00	8.10	<b>9.67</b>
16	SKGPA-6	153	94	159	116	163	129	110	157	89	<b>130.00</b>	12.38	8.33	7.60	7.90	<b>9.05</b>
17	SKGPA-7	155	95	151	108	163	133	111	155	81	<b>128.00</b>	12.16	6.83	9.60	10.80	<b>9.85</b>
18	SKGPA-8	154	90	153	111	170	134	110	153	95	<b>130.00</b>	13.50	10.66	7.60	8.30	<b>10.02</b>
19	SKGPA-9	-	81	161	111	166	121	103	136	89	<b>121.00</b>	12.20	7.00	7.70	3.70	<b>7.65</b>
20	SKGPA-10	144	88	160	110	164	134	105	138	89	<b>125.78</b>	8.82	9.40	7.50	4.70	<b>7.61</b>
21	SKGPA-11	159	94	160	112	171	134	112	160	90	<b>132.44</b>	10.34	6.00	8.00	8.10	<b>8.11</b>
22	SKGPA-12	136	87	159	115	175	122	110	139	88	<b>125.67</b>	9.20	9.00	8.10	4.16	<b>7.62</b>
23	SKGPA-13	152	90	157	113	169	133	98	120	91	<b>124.78</b>	12.12	9.33	8.60	5.40	<b>8.86</b>
24	SKGPA-14	149	88	153	105	171	127	99	147	87	<b>125.11</b>	12.58	6.33	6.00	5.30	<b>7.55</b>
25	SKGPA-15	146	92	156	110	165	125	97	144	88	<b>124.78</b>	11.12	5.33	8.30	5.50	<b>7.56</b>
26	SKGPA-16	149	90	157	108	158	122	119	149	89	<b>126.78</b>	10.20	7.00	5.00	4.00	<b>6.55</b>

S. No.	Accession No.	Plant height (cm)										Stem thickness (mm)			
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean
1	MGA-5	-	-	135.33	76.80	58.50	-	123.66	99.50	127.50	<b>103.55</b>	23.90	11.00	6.00	<b>13.63</b>
2	MGA-6	-	-	102.00	92.67	65.00	-	158.66	-	-	<b>104.58</b>	21.60	18.00	-	<b>19.80</b>
3	MGA-7	-	-	129.20	80.10	55.30	-	107.33	-	116.00	<b>97.59</b>	24.90	22.00	5.30	<b>17.40</b>
4	MGA-8	-	-	-	92.67	73.50	-	-	-	-	<b>83.09</b>	-	-	-	-
5	MGA-9	-	-	135.20	80.10	91.50	-	101.00	-	106.00	<b>102.76</b>	24.18	15.00	6.00	<b>15.06</b>
6	MGA-10	-	-	-	80.90	75.20	-	-	-	-	<b>78.05</b>	-	-	-	-
7	MGA-11	-	-	113.00	90.10	63.20	-	112.40	-	95.00	<b>94.74</b>	15.20	12.00	5.00	<b>10.73</b>
8	MGA-12	-	-	92.20	82.30	40.00	-	-	-	64.00	<b>69.63</b>	12.36	-	2.78	<b>7.57</b>
9	MGA-13	-	-	81.60	86.00	76.50	-	-	-	-	<b>81.37</b>	10.46	-	-	<b>10.46</b>
10	MGA-14	-	-	54.33	-	77.20	-	132.65	-	-	<b>88.06</b>	10.17	14.00	-	<b>12.08</b>
11	SKGPA-1	60.00	81.00	133.40	77.60	63.30	73.60	126.40	99.50	130.00	<b>93.87</b>	14.14	22.00	3.20	<b>13.11</b>
12	SKGPA-2	57.50	109.80	132.80	85.00	71.00	150.80	139.40	96.30	141.20	<b>109.31</b>	16.28	14.00	5.00	<b>11.76</b>
13	SKGPA-3	68.00	118.00	128.60	90.50	59.00	149.20	134.60	100.60	122.40	<b>107.88</b>	11.64	13.00	4.10	<b>9.58</b>
14	SKGPA-4	60.00	128.80	133.60	100.00	76.30	157.60	143.80	104.00	116.20	<b>113.37</b>	15.04	19.00	3.74	<b>12.59</b>
15	SKGPA-5	56.00	105.00	134.80	80.50	75.50	146.20	123.20	90.40	110.00	<b>102.40</b>	17.80	18.00	3.38	<b>13.06</b>
16	SKGPA-6	60.00	111.40	141.00	79.60	84.50	140.80	110.66	83.90	113.40	<b>102.81</b>	15.80	12.00	3.28	<b>10.36</b>
17	SKGPA-7	63.00	81.20	142.60	61.00	64.50	142.80	117.66	95.50	124.00	<b>99.14</b>	17.88	13.00	3.76	<b>11.55</b>
18	SKGPA-8	69.00	84.20	143.80	75.00	70.50	138.00	103.33	97.30	122.00	<b>100.35</b>	17.42	8.00	5.00	<b>10.14</b>
19	SKGPA-9	-	66.40	140.80	78.00	60.20	154.60	80.33	71.10	75.00	<b>90.80</b>	16.52	13.00	2.40	<b>10.64</b>
20	SKGPA-10	41.50	111.20	144.00	80.00	37.50	135.80	105.23	76.40	92.00	<b>91.51</b>	15.54	7.00	2.50	<b>8.35</b>
21	SKGPA-11	52.00	119.20	154.60	85.30	70.50	157.40	113.00	96.00	127.00	<b>108.33</b>	13.22	12.00	3.50	<b>9.57</b>
22	SKGPA-12	49.00	78.00	143.40	86.40	74.00	60.20	114.50	64.70	92.00	<b>84.69</b>	14.60	9.00	1.68	<b>8.43</b>
23	SKGPA-13	59.50	126.20	131.60	76.30	75.50	138.80	119.00	88.00	129.00	<b>104.88</b>	14.26	12.00	8.10	<b>11.45</b>
24	SKGPA-14	51.00	109.20	138.60	90.40	67.50	77.00	88.33	62.80	120.00	<b>89.43</b>	14.35	12.00	4.60	<b>10.32</b>
25	SKGPA-15	51.00	101.40	145.00	75.40	74.00	76.80	115.33	83.60	108.00	<b>92.28</b>	18.74	17.00	3.80	<b>13.18</b>
26	SKGPA-16	56.00	84.80	152.60	90.00	78.00	83.00	116.33	70.30	107.00	<b>93.11</b>	16.78	12.00	3.00	<b>10.59</b>

S. No.	Accession No.	Lateral spikelet length (cm)						Inflorescence length (cm)							
		Delhi	Hisar	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	S.K. Nagar	Mean
1	MGA-5	11.27	32.00	21.00	25.60	15.00	<b>20.97</b>	-	-	43.27	42.00	-	63.20	50.50	<b>49.74</b>
2	MGA-6	8.80	38.50	23.33	-	-	<b>23.54</b>	-	-	34.50	35.20	-	88.93	-	<b>52.88</b>
3	MGA-7	11.20	30.40	14.33	-	18.00	<b>18.48</b>	-	-	45.70	40.30	-	36.00	48.20	<b>42.55</b>
4	MGA-8	-	41.00	-	-	-	<b>41.00</b>	-	-	-	50.20	-	-	-	<b>50.20</b>
5	MGA-9	11.72	48.50	21.00	-	23.60	<b>26.21</b>	-	-	46.32	54.40	-	38.70	58.00	<b>49.36</b>
6	MGA-10	-	37.50	-	-	-	<b>37.50</b>	-	-	-	51.50	-	-	-	<b>51.50</b>
7	MGA-11	11.60	30.20	24.60	-	15.00	<b>20.35</b>	-	-	38.50	44.10	-	42.50	35.00	<b>40.03</b>
8	MGA-12	25.50	25.00	-	-	26.00	<b>25.50</b>	-	-	52.74	38.80	-	-	43.00	<b>44.85</b>
9	MGA-13	14.48	34.00	-	-	-	<b>24.24</b>	-	-	31.86	42.20	-	-	-	<b>37.03</b>
10	MGA-14	17.47	30.40	30.00	-	-	<b>25.96</b>	-	-	28.17	-	-	50.80	-	<b>39.48</b>
11	SKGPA-1	13.80	35.50	24.80	25.60	12.40	<b>22.42</b>	17.00	40.60	46.74	34.30	42.60	50.80	48.00	<b>40.01</b>
12	SKGPA-2	13.10	50.20	14.00	32.60	17.10	<b>25.40</b>	11.50	36.00	65.12	36.00	52.20	48.20	57.00	<b>43.72</b>
13	SKGPA-3	12.30	37.00	12.40	32.00	14.90	<b>21.72</b>	14.50	41.40	41.64	37.30	49.00	40.20	51.60	<b>39.38</b>
14	SKGPA-4	8.96	47.50	14.80	28.60	14.76	<b>22.92</b>	14.00	40.80	43.38	42.30	54.00	43.00	42.00	<b>39.93</b>
15	SKGPA-5	13.52	45.50	14.80	27.30	8.88	<b>22.00</b>	17.50	34.80	43.02	38.30	51.60	39.20	48.00	<b>38.92</b>
16	SKGPA-6	12.44	46.50	16.00	26.00	13.90	<b>22.97</b>	17.00	37.20	45.20	35.00	46.80	41.00	43.60	<b>37.97</b>
17	SKGPA-7	14.32	35.00	17.40	32.00	16.60	<b>23.06</b>	21.00	30.20	43.76	39.30	52.80	34.66	50.60	<b>38.90</b>
18	SKGPA-8	12.30	42.00	13.00	29.30	23.60	<b>24.04</b>	17.50	31.60	46.22	36.00	52.40	32.00	58.00	<b>39.10</b>
19	SKGPA-9	14.00	33.50	17.80	30.60	23.60	<b>23.90</b>	-	39.60	39.12	36.00	58.20	49.33	66.00	<b>48.04</b>
20	SKGPA-10	14.80	24.50	18.60	33.60	25.20	<b>23.34</b>	17.50	39.80	45.02	36.50	63.80	44.00	76.00	<b>46.09</b>
21	SKGPA-11	9.50	45.00	20.66	27.00	12.90	<b>23.01</b>	15.50	37.20	42.94	34.00	49.80	54.00	49.00	<b>40.35</b>
22	SKGPA-12	14.72	38.50	24.20	26.00	22.60	<b>25.20</b>	20.50	39.20	39.34	34.60	41.20	55.00	74.00	<b>43.41</b>
23	SKGPA-13	12.72	40.50	11.66	25.00	15.70	<b>21.12</b>	16.50	40.40	43.34	42.60	48.60	41.66	55.00	<b>41.16</b>
24	SKGPA-14	13.26	41.50	7.33	25.60	20.60	<b>21.66</b>	19.50	40.00	49.36	36.30	41.80	37.00	67.00	<b>41.57</b>
25	SKGPA-15	14.10	39.50	19.00	29.60	18.20	<b>24.08</b>	16.00	39.20	45.82	33.60	42.80	56.66	75.00	<b>44.15</b>
26	SKGPA-16	12.82	40.50	18.66	29.30	24.90	<b>25.24</b>	20.50	35.60	49.04	42.00	45.80	54.66	75.00	<b>46.09</b>

S. No.	Accession No.	No. of primary branches per plant						Seed yield per plant (g)								
		Delhi	Faizabad	Hisar	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
1	MGA-5	3.67	10.00	4.00	5.30	-	<b>5.74</b>	-	27.81	12.00	4.90	-	31.15	195.00	3.00	<b>45.64</b>
2	MGA-6	5.00	9.00	4.00	-	-	<b>6.00</b>	-	20.43	10.00	3.70	-	29.42	-	-	<b>15.89</b>
3	MGA-7	4.00	13.00	3.00	-	0.60	<b>5.15</b>	-	27.22	12.00	3.20	-	33.67	-	8.00	<b>16.82</b>
4	MGA-8	-	12.00	5.00	-	-	<b>8.50</b>	-	-	9.00	4.10	-	-	-	-	<b>6.55</b>
5	MGA-9	2.60	11.00	5.00	-	0.20	<b>4.70</b>	-	57.89	10.00	3.20	-	27.66	-	9.00	<b>21.55</b>
6	MGA-10	-	12.00	3.00	-	-	<b>7.50</b>	-	-	11.00	4.00	-	-	-	-	<b>7.50</b>
7	MGA-11	3.00	10.00	5.00	-	-	<b>6.00</b>	-	11.51	11.50	4.50	-	22.22	-	-	<b>12.43</b>
8	MGA-12	4.80	9.00	3.00	-	5.00	<b>5.45</b>	-	9.17	14.00	1.50	-	-	-	-	<b>8.22</b>
9	MGA-13	4.00	12.00	3.00	-	-	<b>6.33</b>	-	25.89	13.50	1.20	-	-	-	-	<b>13.53</b>
10	MGA-14	2.67	-	5.00	-	-	<b>3.83</b>	-	32.40	-	3.50	-	27.86	-	-	<b>21.25</b>
11	SKGPA-1	1.20	10.00	2.00	5.30	-	<b>4.63</b>	6.80	143.30	10.65	2.50	8.00	56.73	195.00	5.00	<b>53.50</b>
12	SKGPA-2	0.60	8.00	2.00	4.30	-	<b>3.73</b>	7.24	78.83	10.40	2.70	11.20	21.25	162.00	9.00	<b>37.83</b>
13	SKGPA-3	2.40	9.00	2.00	3.60	-	<b>4.25</b>	5.46	142.00	12.80	4.10	7.60	26.47	174.00	7.00	<b>47.43</b>
14	SKGPA-4	1.20	11.00	4.00	2.00	-	<b>4.55</b>	7.82	236.45	11.20	3.80	6.00	33.04	188.00	5.00	<b>61.41</b>
15	SKGPA-5	1.00	11.00	3.00	2.60	-	<b>4.40</b>	8.04	135.33	16.30	2.10	13.60	25.68	200.00	6.00	<b>50.88</b>
16	SKGPA-6	0.40	10.00	2.00	3.00	-	<b>3.85</b>	8.82	206.74	15.00	4.50	6.40	25.03	270.00	6.00	<b>67.81</b>
17	SKGPA-7	1.80	8.00	4.00	3.60	-	<b>4.35</b>	5.44	170.00	9.60	2.50	10.40	22.82	202.00	6.60	<b>53.67</b>
18	SKGPA-8	-	12.00	4.00	1.60	-	<b>5.87</b>	10.26	186.11	13.00	1.50	10.40	31.53	280.00	11.00	<b>67.98</b>
19	SKGPA-9	1.20	16.00	3.00	4.30	3.80	<b>5.66</b>	10.40	327.22	14.60	1.20	8.80	35.37	390.00	7.00	<b>99.32</b>
20	SKGPA-10	1.80	11.00	3.00	4.60	4.40	<b>4.96</b>	10.24	130.97	15.60	1.50	13.60	45.61	142.00	9.00	<b>46.07</b>
21	SKGPA-11	-	9.00	4.00	3.00	-	<b>5.33</b>	9.72	16.65	16.60	1.70	12.80	22.03	320.00	8.00	<b>50.94</b>
22	SKGPA-12	2.20	10.00	3.00	5.00	2.20	<b>4.48</b>	7.40	276.19	14.60	1.80	5.60	26.23	179.00	9.60	<b>65.05</b>
23	SKGPA-13	-	8.00	4.00	3.30	-	<b>5.10</b>	11.22	132.84	13.20	1.90	10.40	24.58	293.00	11.40	<b>62.32</b>
24	SKGPA-14	-	7.00	5.00	3.30	-	<b>5.10</b>	9.32	116.13	10.50	4.50	4.80	29.40	350.00	10.50	<b>66.89</b>
25	SKGPA-15	-	6.00	4.00	4.30	-	<b>4.77</b>	8.42	175.65	11.00	5.50	8.00	36.60	326.00	14.00	<b>73.15</b>
26	SKGPA-16	0.60	13.00	3.00	5.30	3.00	<b>4.98</b>	7.46	214.61	12.30	6.00	21.60	39.32	390.00	15.00	<b>88.29</b>



S. No.	Accession No.	Seed volume weight (g/10ml)								Seed yield (q/ha)				Straw weight per plant(g)	Seed yield per line (g)	Leaf width (cm)
		Bhubaneswar	Delhi	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Mean	S.K. Nagar	Hisar	Rahuri
1	MGA-5	-	4.52	5.10	-	8.42	7.52	7.98	<b>6.71</b>	-	-	-	-	75.20	82.50	7.33
2	MGA-6	-	5.54	5.40	-	8.71	-	-	<b>6.55</b>	-	-	-	-	-	70.20	8.20
3	MGA-7	-	5.35	5.50	-	8.04	-	7.09	<b>6.50</b>	-	-	-	-	198.50	60.20	11.00
4	MGA-8	-	-	5.20	-	-	-	-	<b>5.20</b>	-	-	-	-	-	81.00	-
5	MGA-9	-	4.71	5.70	-	7.67	-	7.29	<b>6.34</b>	-	-	1.77	<b>1.77</b>	201.20	50.50	10.30
6	MGA-10	-	-	4.90	-	-	-	-	<b>4.90</b>	-	-	-	-	-	55.50	-
7	MGA-11	-	4.53	5.40	-	7.80	-	7.09	<b>6.21</b>	-	-	-	-	100.20	80.50	5.80
8	MGA-12	-	4.86	4.90	-	-	-	8.22	<b>5.99</b>	-	-	0.76	<b>0.76</b>	125.30	30.50	-
9	MGA-13	-	5.61	4.80	-	-	-	-	<b>5.21</b>	-	-	-	-	-	25.00	-
10	MGA-14	-	5.83	4.70	-	7.79	-	-	<b>6.11</b>	-	-	-	-	-	55.20	6.30
11	SKGPA-1	7.43	6.66	5.40	7.65	7.68	7.52	8.18	<b>7.22</b>	1.67	9.17	12.98	<b>7.94</b>	160.00	50.00	3.40
12	SKGPA-2	7.58	6.54	5.60	7.26	8.27	7.61	7.98	<b>7.26</b>	1.11	11.88	12.96	<b>8.65</b>	175.00	50.50	6.80
13	SKGPA-3	7.69	6.19	6.00	7.38	7.95	7.20	8.71	<b>7.30</b>	2.22	8.54	10.08	<b>6.95</b>	140.00	75.30	8.90
14	SKGPA-4	7.81	6.13	6.20	7.54	8.11	7.21	8.68	<b>7.38</b>	1.11	12.08	10.02	<b>7.74</b>	102.00	70.20	11.40
15	SKGPA-5	7.56	6.44	5.30	7.21	7.39	7.20	7.91	<b>7.00</b>	1.11	12.92	17.78	<b>10.60</b>	105.00	40.00	9.00
16	SKGPA-6	7.63	7.00	6.30	6.77	7.60	7.18	8.51	<b>7.28</b>	1.00	14.58	19.39	<b>11.66</b>	201.00	75.50	9.66
17	SKGPA-7	7.82	6.07	5.60	6.97	8.00	7.42	8.28	<b>7.17</b>	1.67	10.00	21.88	<b>11.18</b>	207.00	50.50	6.66
18	SKGPA-8	7.73	6.66	5.30	6.61	7.79	7.26	8.58	<b>7.13</b>	1.11	17.29	12.69	<b>10.36</b>	350.20	25.50	9.83
19	SKGPA-9	7.63	6.94	5.40	7.28	8.46	10.16	8.37	<b>7.75</b>	-	16.88	13.96	<b>15.42</b>	230.50	20.50	6.00
20	SKGPA-10	7.45	6.39	5.30	6.59	8.49	10.10	8.57	<b>7.56</b>	1.94	16.46	-	<b>9.20</b>	250.40	28.00	6.26
21	SKGPA-11	7.46	6.04	6.00	7.06	7.52	7.00	6.68	<b>6.82</b>	2.22	15.42	11.53	<b>9.72</b>	240.50	30.20	3.80
22	SKGPA-12	7.65	6.48	7.40	7.56	7.92	8.79	7.98	<b>7.68</b>	2.78	11.67	22.98	<b>12.47</b>	200.50	25.10	7.30
23	SKGPA-13	7.72	7.54	5.40	7.06	7.39	9.82	8.09	<b>7.57</b>	1.67	18.33	16.88	<b>12.29</b>	302.00	30.50	10.33
24	SKGPA-14	7.41	6.35	7.50	7.18	6.67	8.34	8.01	<b>7.35</b>	0.83	15.63	16.19	<b>10.88</b>	308.50	100.50	9.00
25	SKGPA-15	7.68	5.94	6.80	7.56	8.44	10.00	7.91	<b>7.76</b>	1.67	15.00	12.57	<b>9.75</b>	335.20	140.40	4.00
26	SKGPA-16	7.72	6.50	6.40	7.38	8.18	8.40	8.33	<b>7.56</b>	3.06	11.46	12.50	<b>9.01</b>	285.20	130.70	5.30

S. No.	Accession No.	Days to 50% flowering										Leaf length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
27	SKGPA-17	93	47	49	32	73	46	68	70	45	<b>58.11</b>	27.78	17.66	7.70	9.70	<b>15.71</b>
28	SKGPA-18	88	48	48	36	66	41	62	73	43	<b>56.11</b>	27.62	21.00	8.00	9.10	<b>16.43</b>
29	SKGPA-19	91	47	48	37	76	42	63	67	40	<b>56.78</b>	29.06	20.33	9.30	11.10	<b>17.45</b>
30	SKGPA-20	88	47	48	34	87	43	65	59	45	<b>57.33</b>	31.26	20.66	7.50	9.60	<b>17.26</b>
31	SKGPA-21	88	42	48	35	83	45	68	61	42	<b>56.89</b>	26.86	28.33	11.00	10.50	<b>19.17</b>
32	SKGPA-22	-	53	48	40	61	53	69	72	44	<b>55.00</b>	26.86	20.66	6.60	16.14	<b>17.57</b>
33	SKGPA-23	95	49	48	41	83	44	59	73	45	<b>59.67</b>	27.42	27.66	8.90	8.30	<b>18.07</b>
34	SKGPA-24	90	53	51	42	58	44	60	74	43	<b>57.22</b>	28.74	26.66	9.30	9.80	<b>18.63</b>
35	SKGPA-25	92	46	51	43	85	45	67	73	42	<b>60.44</b>	27.96	25.33	8.40	10.50	<b>18.05</b>
36	SKGPA-26	90	46	66	44	58	45	68	76	45	<b>59.78</b>	32.98	21.33	9.00	12.60	<b>18.98</b>
37	SKGPA-27	88	46	64	43	85	46	69	59	44	<b>60.44</b>	32.08	18.33	8.30	10.40	<b>17.28</b>
38	SKGPA-28	88	46	67	42	63	47	68	60	45	<b>58.44</b>	28.96	24.66	8.40	11.00	<b>18.26</b>
39	SKGPA-29	92	47	63	37	60	46	71	76	44	<b>59.56</b>	29.58	22.66	7.30	8.60	<b>17.04</b>
40	SKGPA-30	95	49	61	38	61	45	67	77	45	<b>59.78</b>	32.94	19.66	7.60	8.40	<b>17.15</b>
41	SKGPA-31	90	49	63	42	59	42	62	75	48	<b>58.89</b>	30.90	19.33	9.60	6.40	<b>16.56</b>
42	SKGPA-32	95	48	61	38	64	44	63	74	47	<b>59.33</b>	34.78	16.00	8.30	8.40	<b>16.87</b>
43	SKGPA-33	98	54	61	37	66	52	65	80	53	<b>62.89</b>	35.38	30.00	11.30	10.30	<b>21.75</b>
44	SKGPA-34	93	49	51	36	64	45	62	76	45	<b>57.89</b>	25.00	30.66	11.00	7.60	<b>18.57</b>
45	SKGPA-35	84	49	43	35	60	44	72	77	45	<b>56.56</b>	30.20	26.66	12.60	6.70	<b>19.04</b>
46	SKGPA-36	92	49	62	41	59	45	63	78	48	<b>59.67</b>	32.44	22.66	10.00	9.30	<b>18.60</b>
47	SKGPA-37	92	51	45	43	58	46	64	73	45	<b>57.44</b>	28.76	23.00	10.00	10.40	<b>18.04</b>
48	SKGPA-38	88	49	61	42	77	43	75	74	43	<b>61.33</b>	28.90	23.66	8.30	11.20	<b>18.02</b>
49	SKGPA-39	-	49	48	38	67	45	74	75	45	<b>55.13</b>	29.60	23.00	9.30	12.40	<b>18.58</b>
50	SKGPA-40	-	49	51	37	58	44	70	73	42	<b>53.00</b>	27.80	22.66	8.30	5.50	<b>16.07</b>
51	SKGPA-41	-	41	46	38	59	39	68	81	44	<b>52.00</b>	27.68	16.00	9.00	7.80	<b>15.12</b>
52	SKGPA-42	-	40	60	40	73	41	59	62	42	<b>52.13</b>	28.14	17.75	6.60	6.60	<b>14.77</b>
53	SKGPA-43	-	38	47	41	72	33	60	58	42	<b>48.88</b>	28.56	20.50	7.80	7.80	<b>16.17</b>
54	SKGPA-44	-	55	48	42	78	53	62	81	45	<b>58.00</b>	31.34	21.80	11.00	10.00	<b>18.54</b>
55	SKGPA-45	-	34	51	43	69	35	58	55	42	<b>48.38</b>	30.76	16.66	7.70	7.40	<b>15.63</b>

S. No.	Accession No.	Days to maturity										Petiole length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
27	SKGPA-17	150	90	157	102	157	126	99	134	85	<b>122.22</b>	11.18	5.66	7.50	7.50	<b>7.96</b>
28	SKGPA-18	146	92	155	106	155	121	96	151	89	<b>123.44</b>	12.12	7.33	4.60	4.90	<b>7.24</b>
29	SKGPA-19	148	89	150	107	170	123	97	152	84	<b>124.44</b>	11.66	8.00	6.60	5.40	<b>7.92</b>
30	SKGPA-20	146	90	153	104	180	125	98	140	86	<b>124.67</b>	12.92	7.00	7.20	5.10	<b>8.06</b>
31	SKGPA-21	146	86	152	105	182	128	103	159	85	<b>127.33</b>	9.24	13.00	4.60	6.30	<b>8.29</b>
32	SKGPA-22	-	95	152	110	155	127	105	147	89	<b>122.50</b>	11.10	7.33	6.30	4.40	<b>7.28</b>
33	SKGPA-23	152	91	151	111	183	128	99	142	90	<b>127.44</b>	10.78	10.66	8.30	4.30	<b>8.51</b>
34	SKGPA-24	149	95	156	112	160	125	98	139	85	<b>124.33</b>	10.98	10.33	7.30	5.50	<b>8.53</b>
35	SKGPA-25	149	89	151	113	175	127	101	143	82	<b>125.56</b>	10.80	9.00	7.90	6.30	<b>8.50</b>
36	SKGPA-26	151	88	154	114	153	128	102	149	84	<b>124.78</b>	13.44	6.33	6.60	5.00	<b>7.84</b>
37	SKGPA-27	149	88	152	113	178	130	105	147	85	<b>127.44</b>	14.12	7.00	7.30	6.40	<b>8.71</b>
38	SKGPA-28	149	89	161	112	158	128	104	142	85	<b>125.33</b>	11.84	11.33	7.80	6.40	<b>9.34</b>
39	SKGPA-29	152	90	159	107	155	130	112	149	84	<b>126.44</b>	12.42	6.33	6.00	5.40	<b>7.54</b>
40	SKGPA-30	154	92	156	108	162	131	103	149	87	<b>126.89</b>	15.32	5.66	6.60	6.00	<b>8.40</b>
41	SKGPA-31	152	93	162	112	153	128	102	153	88	<b>127.00</b>	12.70	7.33	5.60	4.70	<b>7.58</b>
42	SKGPA-32	153	90	163	108	166	128	104	154	89	<b>128.33</b>	14.62	5.00	4.60	4.40	<b>7.16</b>
43	SKGPA-33	153	96	161	107	166	130	106	156	84	<b>128.78</b>	15.36	11.66	8.00	7.70	<b>10.68</b>
44	SKGPA-34	149	92	152	106	166	126	107	149	85	<b>125.78</b>	8.68	11.66	6.30	6.30	<b>8.24</b>
45	SKGPA-35	143	93	150	105	166	127	111	151	86	<b>125.78</b>	12.64	11.00	5.60	3.30	<b>8.14</b>
46	SKGPA-36	150	93	162	111	168	126	102	153	84	<b>127.67</b>	13.54	8.33	4.60	5.10	<b>7.89</b>
47	SKGPA-37	149	95	151	113	164	126	103	147	86	<b>126.00</b>	10.98	9.00	6.00	5.00	<b>7.75</b>
48	SKGPA-38	147	91	161	112	154	123	119	150	85	<b>126.89</b>	10.96	7.66	6.30	6.80	<b>7.93</b>
49	SKGPA-39	-	90	159	108	156	128	118	152	84	<b>124.38</b>	10.84	9.66	5.30	6.40	<b>8.05</b>
50	SKGPA-40	-	92	155	107	156	124	110	154	86	<b>123.00</b>	10.08	8.00	5.00	4.50	<b>6.90</b>
51	SKGPA-41	-	85	152	108	158	123	99	148	81	<b>119.25</b>	10.76	8.00	4.60	5.80	<b>7.29</b>
52	SKGPA-42	-	83	152	110	154	122	95	145	82	<b>117.88</b>	10.56	6.50	5.00	2.60	<b>6.17</b>
53	SKGPA-43	-	80	151	111	154	120	96	132	83	<b>115.88</b>	11.00	8.00	5.50	5.20	<b>7.43</b>
54	SKGPA-44	-	97	151	112	162	131	99	158	87	<b>124.63</b>	12.76	8.25	6.30	5.40	<b>8.18</b>
55	SKGPA-45	-	87	160	113	154	120	98	131	90	<b>119.13</b>	11.76	5.66	5.90	7.80	<b>7.78</b>

S. No.	Accession No.	Plant height (cm)										Stem thickness (mm)			
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean
27	SKGPA-17	53.00	98.80	164.80	85.40	89.00	95.20	128.00	66.00	138.00	<b>102.02</b>	16.38	13.00	2.20	<b>10.53</b>
28	SKGPA-18	55.00	81.60	148.60	87.60	63.00	75.00	141.66	64.00	125.00	<b>93.50</b>	14.64	13.00	4.20	<b>10.61</b>
29	SKGPA-19	65.00	91.40	139.80	91.33	53.00	73.60	143.00	85.30	118.00	<b>95.60</b>	14.28	13.00	5.70	<b>10.99</b>
30	SKGPA-20	59.50	121.00	152.00	110.00	69.00	79.20	142.66	63.40	123.00	<b>102.20</b>	17.02	14.00	4.50	<b>11.84</b>
31	SKGPA-21	67.50	88.00	155.40	108.60	64.00	103.00	146.00	93.70	120.00	<b>105.13</b>	14.10	17.00	3.92	<b>11.67</b>
32	SKGPA-22	-	83.80	145.00	109.40	97.50	157.60	147.66	71.60	138.00	<b>118.82</b>	16.40	13.00	2.80	<b>10.73</b>
33	SKGPA-23	55.50	116.60	151.80	86.00	72.50	102.80	140.33	89.00	115.00	<b>103.28</b>	16.30	10.00	2.94	<b>9.75</b>
34	SKGPA-24	64.50	119.80	148.00	99.40	87.50	99.00	131.33	85.00	134.00	<b>107.61</b>	16.12	14.00	3.56	<b>11.23</b>
35	SKGPA-25	61.50	113.00	150.00	96.00	92.50	97.60	152.00	88.90	133.00	<b>109.39</b>	16.48	13.00	3.12	<b>10.87</b>
36	SKGPA-26	53.50	118.40	141.80	95.00	102.00	93.40	108.00	88.10	136.00	<b>104.02</b>	22.78	15.00	3.36	<b>13.71</b>
37	SKGPA-27	47.50	105.80	152.80	85.00	74.30	87.20	116.66	76.10	114.00	<b>95.48</b>	21.24	10.00	3.14	<b>11.46</b>
38	SKGPA-28	53.50	109.00	153.60	80.40	81.00	110.20	134.33	82.00	137.00	<b>104.56</b>	18.24	12.00	3.16	<b>11.13</b>
39	SKGPA-29	52.50	101.00	169.12	82.70	82.00	104.40	117.33	80.40	110.00	<b>99.94</b>	16.00	12.00	2.44	<b>10.15</b>
40	SKGPA-30	60.00	113.40	161.20	77.70	80.00	85.40	122.33	75.70	101.00	<b>97.41</b>	15.88	13.00	2.60	<b>10.49</b>
41	SKGPA-31	51.50	117.40	156.60	87.40	64.00	91.60	145.66	96.00	121.00	<b>103.46</b>	18.00	12.00	2.82	<b>10.94</b>
42	SKGPA-32	52.50	105.00	154.20	97.00	70.50	89.40	132.00	82.90	109.80	<b>99.26</b>	20.08	12.00	2.34	<b>11.47</b>
43	SKGPA-33	53.50	114.80	137.60	95.00	76.00	148.80	135.00	90.40	130.20	<b>109.03</b>	19.90	10.00	3.88	<b>11.26</b>
44	SKGPA-34	49.50	124.60	81.60	87.67	56.50	95.60	152.00	85.00	112.80	<b>93.92</b>	11.36	12.00	2.42	<b>8.59</b>
45	SKGPA-35	53.00	100.30	135.00	95.00	53.00	78.40	140.33	85.20	104.80	<b>93.89</b>	18.58	13.00	2.40	<b>11.33</b>
46	SKGPA-36	56.50	87.60	160.20	110.69	65.00	76.40	141.66	91.90	104.00	<b>99.33</b>	17.66	12.00	3.42	<b>11.03</b>
47	SKGPA-37	46.50	101.20	143.40	100.00	81.00	87.40	153.66	103.80	99.00	<b>101.77</b>	13.36	13.00	2.50	<b>9.62</b>
48	SKGPA-38	54.50	102.00	120.40	105.00	53.00	69.60	137.00	65.10	132.20	<b>93.20</b>	17.58	12.00	3.36	<b>10.98</b>
49	SKGPA-39	-	115.60	146.20	83.60	67.00	73.00	150.00	70.80	137.40	<b>105.45</b>	16.02	12.00	4.14	<b>10.72</b>
50	SKGPA-40	-	113.80	124.60	82.20	65.00	83.60	136.00	73.30	116.00	<b>99.31</b>	15.06	13.00	3.26	<b>10.44</b>
51	SKGPA-41	-	58.30	134.40	91.20	68.00	59.80	142.00	80.40	65.40	<b>87.44</b>	16.40	8.00	7.12	<b>10.51</b>
52	SKGPA-42	-	69.40	128.00	74.40	49.00	58.80	138.00	70.90	68.20	<b>82.09</b>	18.46	7.00	6.30	<b>10.59</b>
53	SKGPA-43	-	56.80	138.00	71.31	56.00	59.40	149.60	75.30	63.00	<b>83.68</b>	13.64	8.00	1.88	<b>7.84</b>
54	SKGPA-44	-	81.20	143.20	88.60	71.00	184.40	128.00	118.00	115.80	<b>116.28</b>	18.64	15.00	2.68	<b>12.11</b>
55	SKGPA-45	-	74.20	144.00	84.80	65.00	63.80	133.00	59.40	79.80	<b>88.00</b>	19.38	8.00	2.08	<b>9.82</b>

S. No.	Accession No.	Lateral spikelet length (cm)						Inflorescence length (cm)							
		Delhi	Hisar	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	S.K. Nagar	Mean
27	SKGPA-17	12.12	45.00	21.66	29.30	20.20	<b>25.66</b>	16.00	39.40	45.10	37.60	54.20	52.66	90.00	<b>47.85</b>
28	SKGPA-18	15.14	41.30	23.33	32.30	18.50	<b>26.11</b>	23.50	38.40	41.70	35.00	41.60	58.33	83.00	<b>45.93</b>
29	SKGPA-19	14.58	34.50	19.33	33.00	14.60	<b>23.20</b>	22.50	36.80	38.60	41.00	38.60	53.00	82.00	<b>44.64</b>
30	SKGPA-20	12.70	37.50	17.66	40.20	15.30	<b>24.67</b>	23.00	38.20	44.54	42.00	43.20	54.00	76.00	<b>45.85</b>
31	SKGPA-21	13.36	44.50	26.33	26.60	21.70	<b>26.50</b>	22.50	41.60	45.80	38.61	65.00	62.33	78.00	<b>50.55</b>
32	SKGPA-22	14.38	60.50	19.00	32.60	18.10	<b>28.92</b>	-	32.80	43.08	40.60	63.80	45.00	64.00	<b>48.21</b>
33	SKGPA-23	14.18	45.50	22.33	30.30	13.20	<b>25.10</b>	22.00	52.60	39.96	33.00	46.40	60.33	75.00	<b>47.04</b>
34	SKGPA-24	14.32	45.00	27.00	31.00	17.84	<b>27.03</b>	16.50	47.40	43.60	23.80	49.80	46.00	74.00	<b>43.01</b>
35	SKGPA-25	10.66	46.50	25.66	35.00	20.80	<b>27.72</b>	24.50	45.80	43.72	34.20	52.20	64.00	83.00	<b>49.63</b>
36	SKGPA-26	11.32	57.50	26.66	37.00	21.10	<b>30.72</b>	18.00	39.00	33.88	36.00	51.40	39.33	91.00	<b>44.09</b>
37	SKGPA-27	10.60	44.50	17.33	32.30	22.00	<b>25.35</b>	19.50	41.00	34.74	30.00	48.60	47.00	80.00	<b>42.98</b>
38	SKGPA-28	9.50	19.50	23.33	26.30	20.50	<b>19.83</b>	15.00	45.60	37.12	28.60	59.40	58.33	82.00	<b>46.58</b>
39	SKGPA-29	8.40	44.00	16.66	27.30	15.20	<b>22.31</b>	21.00	49.20	36.00	38.00	53.80	45.66	65.00	<b>44.09</b>
40	SKGPA-30	11.80	44.00	20.33	28.60	16.20	<b>24.19</b>	14.00	42.00	40.60	36.00	46.00	48.00	67.00	<b>41.94</b>
41	SKGPA-31	14.82	41.00	21.33	30.00	17.30	<b>24.89</b>	16.50	46.40	34.04	39.60	51.20	52.66	75.00	<b>45.06</b>
42	SKGPA-32	10.86	37.90	16.66	35.60	15.40	<b>23.28</b>	19.50	43.20	34.14	40.00	52.20	46.00	73.20	<b>44.03</b>
43	SKGPA-33	13.42	43.50	21.33	28.30	14.80	<b>24.27</b>	12.00	40.20	30.04	41.00	48.20	45.33	54.00	<b>38.68</b>
44	SKGPA-34	13.32	37.50	23.00	27.60	12.40	<b>22.76</b>	22.50	40.60	32.38	42.00	54.40	57.00	59.40	<b>44.04</b>
45	SKGPA-35	11.98	32.50	26.33	26.30	15.30	<b>22.48</b>	21.50	37.40	38.80	34.20	49.40	55.66	58.80	<b>42.25</b>
46	SKGPA-36	10.70	36.50	19.33	28.60	17.40	<b>22.51</b>	17.50	40.60	34.36	35.20	46.80	57.00	52.60	<b>40.58</b>
47	SKGPA-37	17.48	40.00	24.66	29.30	16.00	<b>25.49</b>	12.00	38.00	40.74	37.00	50.80	55.33	56.40	<b>41.47</b>
48	SKGPA-38	5.94	33.00	18.33	24.60	19.80	<b>20.33</b>	18.50	42.80	38.08	33.00	43.00	56.00	66.40	<b>42.54</b>
49	SKGPA-39	12.34	38.00	22.00	25.30	15.80	<b>22.69</b>	-	46.00	50.92	45.00	44.00	61.00	63.40	<b>51.72</b>
50	SKGPA-40	7.94	40.50	20.00	29.00	22.40	<b>23.97</b>	-	54.60	43.88	44.60	51.80	56.66	54.20	<b>50.96</b>
51	SKGPA-41	11.62	28.00	16.66	27.60	15.80	<b>19.94</b>	-	31.30	49.29	40.60	33.20	26.66	29.00	<b>35.01</b>
52	SKGPA-42	10.48	38.00	19.87	37.00	29.80	<b>27.03</b>	-	36.20	38.70	35.20	43.00	45.25	38.20	<b>39.43</b>
53	SKGPA-43	12.74	39.00	23.25	32.00	15.20	<b>24.44</b>	-	30.60	42.88	38.00	36.40	49.50	38.60	<b>39.33</b>
54	SKGPA-44	13.38	39.00	17.50	40.60	20.80	<b>26.26</b>	-	43.40	44.02	36.60	77.40	52.00	54.60	<b>51.34</b>
55	SKGPA-45	13.50	42.00	26.66	30.60	20.80	<b>26.71</b>	-	40.20	43.68	39.40	46.20	44.00	49.00	<b>43.75</b>

S. No.	Accession No.	No. of primary branches per plant						Seed yield per plant (g)								
		Delhi	Faizabad	Hisar	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
27	SKGPA-17	-	11.00	4.00	4.30	-	<b>6.43</b>	7.54	100.75	11.20	4.70	10.00	32.52	350.00	17.60	<b>66.79</b>
28	SKGPA-18	1.20	12.00	2.00	5.00	-	<b>5.05</b>	8.08	137.54	12.20	2.60	5.60	37.87	425.00	6.00	<b>79.36</b>
29	SKGPA-19	3.60	8.00	4.00	5.00	-	<b>5.15</b>	6.36	45.38	11.67	1.90	7.20	25.38	410.00	12.24	<b>65.02</b>
30	SKGPA-20	2.40	9.00	5.00	5.00	-	<b>5.35</b>	8.46	104.97	15.40	2.80	6.40	44.16	412.00	7.00	<b>75.15</b>
31	SKGPA-21	1.00	10.00	5.00	3.30	-	<b>4.83</b>	7.38	44.52	13.50	2.90	2.00	52.18	310.00	14.00	<b>55.81</b>
32	SKGPA-22	0.80	11.00	6.00	5.60	-	<b>5.85</b>	5.62	58.84	11.80	3.80	12.40	28.61	300.00	6.00	<b>53.38</b>
33	SKGPA-23	2.60	8.00	5.00	5.60	-	<b>5.30</b>	11.04	53.74	10.60	2.80	9.60	47.50	330.00	16.00	<b>60.16</b>
34	SKGPA-24	0.40	9.00	4.00	3.60	-	<b>4.25</b>	9.72	43.28	11.64	4.20	10.40	30.70	389.00	11.00	<b>63.74</b>
35	SKGPA-25	-	10.00	6.00	5.60	-	<b>7.20</b>	8.40	84.00	10.50	4.80	6.40	26.66	447.00	12.00	<b>74.97</b>
36	SKGPA-26	6.80	11.00	6.00	5.00	-	<b>7.20</b>	7.46	29.39	8.60	5.00	12.40	39.00	413.00	18.00	<b>66.61</b>
37	SKGPA-27	-	12.00	6.00	5.60	-	<b>7.87</b>	5.28	40.34	9.54	1.60	10.40	94.44	440.00	13.30	<b>76.86</b>
38	SKGPA-28	-	5.00	8.00	5.60	-	<b>6.20</b>	11.20	65.50	7.80	4.60	20.00	52.51	350.00	16.10	<b>65.96</b>
39	SKGPA-29	-	10.00	4.00	4.60	-	<b>6.20</b>	9.44	61.89	10.40	8.20	21.20	36.45	311.00	14.24	<b>59.10</b>
40	SKGPA-30	-	8.00	4.00	3.60	-	<b>5.20</b>	7.08	70.39	8.65	2.70	8.00	32.40	370.00	5.60	<b>63.10</b>
41	SKGPA-31	-	9.00	6.00	5.30	-	<b>6.77</b>	8.22	66.32	10.90	4.10	12.80	44.56	299.00	10.50	<b>57.05</b>
42	SKGPA-32	-	8.00	4.00	5.00	-	<b>5.67</b>	9.46	106.36	6.70	1.80	12.80	27.71	307.00	12.50	<b>60.54</b>
43	SKGPA-33	-	9.00	3.00	6.00	-	<b>6.00</b>	7.20	64.56	10.20	2.60	15.60	27.24	250.00	7.00	<b>48.05</b>
44	SKGPA-34	5.60	10.00	3.00	4.60	-	<b>5.80</b>	5.28	18.00	6.70	2.10	14.80	53.80	300.00	10.00	<b>51.34</b>
45	SKGPA-35	8.60	11.00	1.00	4.30	-	<b>6.23</b>	8.40	15.37	8.40	1.70	9.20	23.84	220.00	6.00	<b>36.61</b>
46	SKGPA-36	-	12.00	2.00	6.00	-	<b>6.67</b>	7.06	47.76	9.85	3.50	12.40	26.18	316.00	9.00	<b>53.97</b>
47	SKGPA-37	7.80	13.00	3.00	5.30	-	<b>7.28</b>	6.60	72.09	10.60	2.10	7.20	20.47	254.00	10.50	<b>47.95</b>
48	SKGPA-38	-	11.00	2.00	4.60	-	<b>5.87</b>	9.56	17.36	11.40	3.50	11.60	25.28	352.00	13.58	<b>55.54</b>
49	SKGPA-39	0.60	8.00	2.00	4.30	-	<b>3.73</b>	8.44	166.90	12.60	3.50	14.80	22.40	185.00	13.04	<b>53.34</b>
50	SKGPA-40	-	9.00	4.00	5.00	-	<b>6.00</b>	10.20	86.05	13.60	3.10	12.00	33.52	390.00	10.00	<b>69.81</b>
51	SKGPA-41	3.40	10.00	2.00	7.60	4.40	<b>5.48</b>	5.36	86.72	10.60	1.90	10.80	71.95	180.00	4.00	<b>46.42</b>
52	SKGPA-42	-	11.00	2.00	7.30	2.60	<b>5.73</b>	8.42	60.48	10.40	2.70	5.60	23.62	200.00	8.00	<b>39.90</b>
53	SKGPA-43	3.40	10.00	2.00	2.60	1.80	<b>3.96</b>	7.84	63.24	11.60	3.80	9.20	70.86	180.00	7.00	<b>44.19</b>
54	SKGPA-44	4.40	10.00	2.00	3.00	-	<b>4.85</b>	4.32	60.09	12.30	2.20	7.20	29.64	213.00	7.20	<b>41.99</b>
55	SKGPA-45	2.00	11.00	3.00	5.60	0.80	<b>4.48</b>	4.28	33.90	10.40	3.90	12.80	31.56	218.00	10.50	<b>40.67</b>

S. No.	Accession No.	Seed volume weight (g/10ml)								Seed yield (q/ha)				Straw weight per plant(g)	Seed yield per line (g)	Leaf width (cm)
		Bhubaneswar	Delhi	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Mean	S.K. Nagar	Hisar	Rahuri
27	SKGPA-17	7.73	5.73	6.90	7.24	8.38	8.39	8.01	<b>7.48</b>	2.22	10.42	8.93	<b>7.19</b>	415.00	100.70	5.66
28	SKGPA-18	7.56	5.57	5.70	6.63	8.47	9.89	7.81	<b>7.38</b>	2.50	15.42	3.51	<b>7.14</b>	205.00	50.50	5.33
29	SKGPA-19	7.81	5.09	5.40	7.21	9.00	8.19	7.79	<b>7.21</b>	3.33	9.17	4.18	<b>5.56</b>	300.00	35.00	6.00
30	SKGPA-20	7.85	5.45	5.90	7.07	8.60	8.78	7.89	<b>7.36</b>	3.89	15.83	10.72	<b>10.15</b>	190.50	52.20	6.66
31	SKGPA-21	7.96	5.68	5.70	7.56	8.37	9.57	8.57	<b>7.63</b>	1.67	12.92	3.07	<b>5.88</b>	350.50	50.30	10.66
32	SKGPA-22	7.93	5.27	6.60	7.62	8.94	9.70	7.48	<b>7.65</b>	-	8.96	3.83	<b>6.40</b>	268.00	80.50	7.83
33	SKGPA-23	7.82	5.96	6.10	7.23	9.09	9.20	7.46	<b>7.55</b>	2.78	17.71	6.20	<b>8.90</b>	300.00	55.50	9.00
34	SKGPA-24	7.78	6.04	6.50	7.27	8.84	8.49	7.91	<b>7.55</b>	1.56	13.54	5.92	<b>7.01</b>	320.00	75.50	8.00
35	SKGPA-25	7.83	5.95	6.90	7.10	8.80	8.50	7.78	<b>7.55</b>	1.56	11.25	14.84	<b>9.22</b>	310.00	100.50	6.00
36	SKGPA-26	7.85	5.72	6.90	7.41	8.25	9.10	7.63	<b>7.55</b>	2.22	12.50	2.64	<b>5.79</b>	260.00	95.00	7.33
37	SKGPA-27	7.82	5.26	6.80	7.49	8.60	8.84	7.77	<b>7.51</b>	1.11	10.00	3.41	<b>4.84</b>	310.00	30.00	6.83
38	SKGPA-28	7.74	6.35	6.70	7.40	8.86	7.73	7.64	<b>7.49</b>	2.50	17.08	7.04	<b>8.87</b>	266.00	90.30	9.00
39	SKGPA-29	7.98	5.61	6.10	7.65	7.63	8.80	8.15	<b>7.42</b>	1.94	13.33	5.83	<b>7.04</b>	410.00	150.50	6.66
40	SKGPA-30	7.88	5.97	6.40	7.30	8.20	7.72	7.89	<b>7.34</b>	2.78	11.67	5.24	<b>6.56</b>	185.50	60.00	6.66
41	SKGPA-31	7.82	5.23	5.50	6.96	8.85	8.40	8.05	<b>7.26</b>	2.22	12.50	6.11	<b>6.94</b>	310.00	75.50	5.16
42	SKGPA-32	7.85	6.77	5.70	7.62	8.90	8.30	8.13	<b>7.61</b>	1.11	13.96	9.36	<b>8.14</b>	298.00	35.50	5.66
43	SKGPA-33	7.89	5.92	5.40	7.08	6.84	6.71	7.34	<b>6.74</b>	1.11	12.08	7.99	<b>7.06</b>	206.00	50.50	10.16
44	SKGPA-34	7.65	5.35	5.70	7.28	8.34	8.26	8.02	<b>7.23</b>	1.67	8.33	1.62	<b>3.87</b>	280.00	40.00	8.16
45	SKGPA-35	7.93	5.87	4.80	7.03	8.38	9.00	7.48	<b>7.21</b>	3.33	13.54	2.30	<b>6.39</b>	158.00	30.50	6.66
46	SKGPA-36	7.45	6.60	5.00	7.24	7.84	8.30	7.89	<b>7.19</b>	2.22	12.08	2.61	<b>5.64</b>	210.00	35.50	6.50
47	SKGPA-37	7.77	7.07	4.90	6.77	7.48	9.51	7.58	<b>7.30</b>	1.39	11.04	6.90	<b>6.44</b>	260.00	25.50	6.33
48	SKGPA-38	7.82	6.02	5.30	7.16	8.26	7.90	7.68	<b>7.16</b>	3.33	15.83	2.23	<b>7.13</b>	325.00	50.50	6.66
49	SKGPA-39	7.72	5.86	5.60	6.94	3.41	8.40	8.35	<b>6.61</b>	-	17.08	6.20	<b>11.64</b>	300.00	60.50	5.83
50	SKGPA-40	7.76	6.94	5.70	7.37	8.04	9.25	7.87	<b>7.56</b>	-	18.13	10.57	<b>14.35</b>	260.00	60.00	4.33
51	SKGPA-41	7.84	7.03	4.80	7.46	8.62	9.95	7.31	<b>7.57</b>	-	9.17	8.36	<b>8.77</b>	190.00	25.70	4.33
52	SKGPA-42	7.82	6.28	5.60	7.71	8.44	10.05	7.58	<b>7.64</b>	-	15.00	3.63	<b>9.32</b>	250.00	50.60	5.50
53	SKGPA-43	7.95	6.22	6.00	7.55	8.40	8.51	8.10	<b>7.53</b>	-	12.08	11.75	<b>11.92</b>	268.50	50.80	7.40
54	SKGPA-44	7.47	6.16	5.00	7.19	8.19	9.90	6.98	<b>7.27</b>	-	9.17	4.52	<b>6.84</b>	394.60	30.20	7.80
55	SKGPA-45	7.78	5.74	6.10	7.70	8.43	10.12	7.91	<b>7.68</b>	-	8.33	-	<b>8.33</b>	326.90	65.10	5.50

S. No.	Accession No.	Days to 50% flowering										Leaf length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
56	SKGPA-46	-	34	50	35	61	32	62	54	42	<b>46.25</b>	27.06	21.10	8.00	6.80	<b>15.74</b>
57	SKGPA-47	-	43	59	38	77	45	63	72	45	<b>55.25</b>	28.46	28.10	9.00	10.60	<b>19.04</b>
58	SKGPA-48	-	47	51	37	59	43	63	73	44	<b>52.13</b>	30.50	19.60	8.00	12.00	<b>17.53</b>
59	SKGPA-49	80	36	51	40	76	36	59	60	42	<b>53.33</b>	27.54	19.00	8.00	6.00	<b>15.14</b>
60	SKGPA-50	-	36	57	41	73	33	63	57	43	<b>50.38</b>	31.23	29.40	7.90	7.20	<b>18.93</b>
61	SKGPA-51	-	36	48	42	71	34	62	61	42	<b>49.50</b>	29.72	20.10	8.00	7.30	<b>16.28</b>
62	SKGPA-52	-	36	51	43	75	37	63	56	44	<b>50.63</b>	24.10	19.25	8.70	7.20	<b>14.81</b>
63	SKGPA-53	-	36	57	-	71	-	64	-	45	<b>54.60</b>	31.98	16.33	-	8.10	<b>18.80</b>
64	SKGPA-54	-	36	57	-	73	-	63	-	47	<b>55.20</b>	27.62	18.66	-	8.40	<b>18.23</b>
65	SKGPA-55	76	38	57	40	72	36	62	52	42	<b>52.78</b>	27.36	14.33	9.30	7.00	<b>14.50</b>
66	SKGPA-56	-	38	57	42	78	34	63	58	42	<b>51.50</b>	34.12	14.66	9.60	9.00	<b>16.85</b>
67	SKGPA-57	-	34	52	43	66	37	-	52	43	<b>46.71</b>	31.00	-	7.00	8.40	<b>15.47</b>
68	SKGPA-58	76	41	61	40	61	33	-	60	45	<b>52.13</b>	30.22	-	8.60	6.40	<b>15.07</b>
69	SKGPA-59	-	46	51	-	-	-	-	-	46	<b>47.67</b>	29.14	-	-	10.40	<b>19.77</b>
70	SKGPA-60	-	48	51	-	-	-	-	-	51	<b>50.00</b>	30.60	-	-	11.80	<b>21.20</b>
71	BGA-27	94	47	52	41	58	48	64	77	51	<b>59.11</b>	30.48	32.00	10.00	8.90	<b>20.35</b>
72	BGA-28	93	46	51	42	60	45	63	79	45	<b>58.22</b>	29.10	17.66	10.60	10.10	<b>16.87</b>
73	BGA-29	95	43	50	37	58	46	64	68	45	<b>56.22</b>	31.26	17.33	8.60	10.40	<b>16.90</b>
74	BGA-30	97	53	50	38	61	47	66	79	48	<b>59.89</b>	31.74	17.00	8.60	8.30	<b>16.41</b>
75	BGA-31	88	48	51	38	60	47	76	79	49	<b>59.56</b>	30.18	23.33	10.00	8.50	<b>18.00</b>
76	BGA-32	86	49	48	37	65	46	72	76	48	<b>58.56</b>	20.34	21.00	9.30	8.60	<b>14.81</b>
77	BGA-33	92	49	45	35	65	46	75	78	46	<b>59.00</b>	26.12	22.33	8.60	9.50	<b>16.64</b>
78	BGA-34	93	49	49	40	61	45	76	62	45	<b>57.78</b>	27.56	20.33	10.60	9.00	<b>16.87</b>
79	BGA-35	95	52	61	41	58	47	76	82	50	<b>62.44</b>	22.98	23.66	9.00	10.00	<b>16.41</b>
80	BGA-36	94	48	40	42	78	45	69	77	48	<b>60.11</b>	28.62	24.20	11.30	7.80	<b>17.98</b>
81	BGA-37	96	53	42	35	61	49	78	84	45	<b>60.33</b>	19.16	21.66	11.60	10.90	<b>15.83</b>
82	BGA-38	92	49	51	40	75	45	68	76	44	<b>60.00</b>	28.02	25.33	8.30	8.00	<b>17.41</b>
83	BGA-39	93	53	51	44	64	46	62	80	46	<b>59.89</b>	26.26	20.00	10.00	8.90	<b>16.29</b>
84	BGA-40	97	49	44	46	59	43	74	78	45	<b>59.44</b>	26.28	21.00	10.30	10.00	<b>16.90</b>



S. No.	Accession No.	Days to maturity										Petiole length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
56	SKGPA-46	-	87	159	105	154	123	95	132	88	<b>117.88</b>	11.58	6.80	6.60	5.80	<b>7.70</b>
57	SKGPA-47	-	88	163	108	158	127	96	137	88	<b>120.63</b>	10.14	11.23	5.30	5.80	<b>8.12</b>
58	SKGPA-48	-	90	152	107	166	122	96	136	89	<b>119.75</b>	10.72	7.15	4.60	5.00	<b>6.87</b>
59	SKGPA-49	149	81	155	110	154	121	94	132	91	<b>120.78</b>	11.02	7.50	5.00	3.40	<b>6.73</b>
60	SKGPA-50	-	82	157	111	151	121	99	134	90	<b>118.13</b>	11.74	7.90	6.20	4.40	<b>7.56</b>
61	SKGPA-51	-	81	155	112	156	123	99	137	85	<b>118.50</b>	12.04	7.45	5.40	5.10	<b>7.50</b>
62	SKGPA-52	-	83	157	113	157	125	101	135	89	<b>120.00</b>	8.30	6.75	6.60	4.60	<b>6.56</b>
63	SKGPA-53	-	81	159	-	166	-	105	-	90	<b>120.20</b>	12.96	5.00	-	4.50	<b>7.49</b>
64	SKGPA-54	-	82	154	-	164	-	102	-	91	<b>118.60</b>	9.38	7.00	-	4.60	<b>6.99</b>
65	SKGPA-55	133	85	152	110	159	127	103	140	86	<b>121.67</b>	9.40	5.00	4.60	4.80	<b>5.95</b>
66	SKGPA-56	-	85	152	112	154	124	102	139	84	<b>119.00</b>	16.18	5.66	5.00	3.60	<b>7.61</b>
67	SKGPA-57	-	82	155	113	156	124	-	142	85	<b>122.43</b>	11.62	-	4.30	5.00	<b>6.97</b>
68	SKGPA-58	131	85	156	110	160	125	-	142	84	<b>124.13</b>	11.92	-	6.30	4.10	<b>7.44</b>
69	SKGPA-59	-	91	155	-	-	-	-	-	89	<b>111.67</b>	12.16	-	-	7.60	<b>9.88</b>
70	SKGPA-60	-	93	154	-	-	-	-	-	90	<b>112.33</b>	10.96	-	-	8.80	<b>9.88</b>
71	BGA-27	154	90	152	111	171	126	103	153	92	<b>128.00</b>	11.90	11.00	6.00	5.50	<b>8.60</b>
72	BGA-28	152	90	152	112	171	125	104	155	95	<b>128.44</b>	9.58	7.33	5.60	3.50	<b>6.50</b>
73	BGA-29	154	88	154	107	166	124	104	154	85	<b>126.22</b>	11.68	7.40	6.60	7.20	<b>8.22</b>
74	BGA-30	155	95	162	108	171	127	104	156	86	<b>129.33</b>	11.66	5.66	6.30	5.70	<b>7.33</b>
75	BGA-31	148	92	162	108	166	125	119	155	87	<b>129.11</b>	11.82	9.66	6.00	4.30	<b>7.95</b>
76	BGA-32	147	82	165	107	166	124	112	152	50	<b>122.78</b>	7.56	9.00	6.60	4.80	<b>6.99</b>
77	BGA-33	149	93	165	105	166	126	118	147	51	<b>124.44</b>	10.56	9.66	6.60	5.50	<b>8.08</b>
78	BGA-34	151	93	154	110	164	125	119	145	89	<b>127.78</b>	9.66	8.33	7.60	5.80	<b>7.85</b>
79	BGA-35	155	94	167	111	171	126	118	148	91	<b>131.22</b>	6.86	9.00	5.00	2.60	<b>5.87</b>
80	BGA-36	154	91	152	112	168	123	110	155	90	<b>128.33</b>	11.54	9.66	7.00	3.20	<b>7.85</b>
81	BGA-37	152	95	150	105	172	132	120	157	90	<b>130.33</b>	7.82	9.33	8.00	7.00	<b>8.04</b>
82	BGA-38	153	90	155	110	166	124	109	149	89	<b>127.22</b>	9.72	9.00	5.30	6.30	<b>7.58</b>
83	BGA-39	154	96	156	114	168	126	105	158	87	<b>129.33</b>	8.68	8.00	6.60	5.70	<b>7.25</b>
84	BGA-40	152	94	152	116	171	127	116	159	89	<b>130.67</b>	9.90	9.33	7.60	5.90	<b>8.18</b>

S. No.	Accession No.	Plant height (cm)										Stem thickness (mm)			
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean
56	SKGPA-46	-	99.20	158.20	117.60	54.00	74.40	72.40	65.50	58.20	<b>87.44</b>	18.02	12.00	1.80	<b>10.61</b>
57	SKGPA-47	-	92.60	128.80	105.60	49.00	83.00	138.75	74.00	131.80	<b>100.44</b>	20.12	12.00	2.46	<b>11.53</b>
58	SKGPA-48	-	89.40	155.80	108.80	68.50	90.00	96.20	81.00	116.80	<b>100.81</b>	19.04	14.00	2.90	<b>11.98</b>
59	SKGPA-49	35.00	94.60	149.00	115.00	55.50	69.20	153.00	49.70	85.00	<b>89.56</b>	14.22	7.00	1.66	<b>7.63</b>
60	SKGPA-50	-	86.20	139.00	95.00	41.00	57.80	128.60	51.00	97.00	<b>86.95</b>	17.70	13.00	2.34	<b>11.01</b>
61	SKGPA-51	-	101.40	128.60	97.00	54.50	71.40	80.70	69.60	83.00	<b>85.78</b>	19.44	12.00	2.46	<b>11.30</b>
62	SKGPA-52	-	69.20	109.00	100.00	41.00	57.80	96.30	64.70	55.00	<b>74.13</b>	13.70	9.00	1.86	<b>8.19</b>
63	SKGPA-53	-	77.20	130.60	-	42.50	-	78.00	-	116.00	<b>88.86</b>	16.66	10.00	2.58	<b>9.75</b>
64	SKGPA-54	-	91.00	114.80	-	38.50	-	100.33	-	112.00	<b>91.33</b>	14.66	10.00	3.10	<b>9.25</b>
65	SKGPA-55	39.40	59.60	140.20	97.00	58.50	69.40	46.00	48.70	60.00	<b>68.76</b>	14.88	10.00	2.02	<b>8.97</b>
66	SKGPA-56	-	60.20	150.80	85.00	49.00	68.80	71.66	68.40	69.00	<b>77.86</b>	19.46	11.00	2.52	<b>10.99</b>
67	SKGPA-57	-	75.60	127.40	82.60	97.50	62.40	-	67.30	81.00	<b>84.83</b>	14.96	-	2.50	<b>8.73</b>
68	SKGPA-58	35.60	74.40	154.20	75.60	86.00	75.60	-	61.10	68.00	<b>78.81</b>	19.52	-	1.96	<b>10.74</b>
69	SKGPA-59	-	128.20	153.60	-	-	-	-	-	127.00	<b>136.27</b>	14.90	-	2.72	<b>8.81</b>
70	SKGPA-60	-	112.30	138.00	-	-	-	-	-	117.00	<b>122.43</b>	17.34	-	3.06	<b>10.20</b>
71	BGA-27	54.00	104.00	126.00	78.40	68.50	111.80	157.66	86.10	96.00	<b>98.05</b>	16.76	13.00	2.24	<b>10.67</b>
72	BGA-28	63.50	122.40	114.40	82.00	73.50	105.60	153.66	91.80	107.00	<b>101.54</b>	16.84	13.00	2.40	<b>10.75</b>
73	BGA-29	55.50	89.60	149.20	88.40	60.00	79.00	119.33	70.90	101.00	<b>90.33</b>	15.48	12.00	2.60	<b>10.03</b>
74	BGA-30	58.50	118.80	143.40	79.00	70.00	103.40	112.66	86.40	95.00	<b>96.35</b>	19.14	15.00	2.60	<b>12.25</b>
75	BGA-31	59.00	99.80	103.80	80.00	72.00	81.00	117.33	159.00	89.00	<b>95.66</b>	15.72	12.00	2.04	<b>9.92</b>
76	BGA-32	62.00	115.80	104.80	80.00	57.00	111.20	125.33	90.60	94.00	<b>93.41</b>	13.56	12.00	2.20	<b>9.25</b>
77	BGA-33	60.00	120.60	108.00	76.50	69.00	114.00	140.33	86.10	105.00	<b>97.73</b>	11.48	10.00	2.54	<b>8.01</b>
78	BGA-34	58.00	126.60	120.40	85.20	69.00	109.20	145.33	106.70	139.00	<b>106.60</b>	15.52	12.00	3.12	<b>10.21</b>
79	BGA-35	65.50	111.80	133.00	74.40	82.50	93.80	148.33	103.00	121.00	<b>103.70</b>	18.02	15.00	3.02	<b>12.01</b>
80	BGA-36	70.50	128.60	106.40	87.20	77.00	101.40	139.00	91.80	107.00	<b>100.99</b>	11.34	13.00	2.48	<b>8.94</b>
81	BGA-37	54.00	120.60	93.40	82.70	72.50	105.40	156.33	105.30	102.40	<b>99.18</b>	11.07	13.00	2.90	<b>8.99</b>
82	BGA-38	60.50	119.20	129.20	86.10	81.00	87.00	139.66	82.70	87.00	<b>96.93</b>	13.32	14.00	1.70	<b>9.67</b>
83	BGA-39	56.50	108.60	126.20	75.60	69.50	84.80	123.66	76.40	97.00	<b>90.92</b>	13.96	12.00	2.10	<b>9.35</b>
84	BGA-40	60.00	127.00	123.40	86.40	64.00	88.00	145.00	101.80	106.00	<b>100.18</b>	12.60	13.00	2.36	<b>9.32</b>

S. No.	Accession No.	Lateral spikelet length (cm)						Inflorescence length (cm)							
		Delhi	Hisar	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	S.K. Nagar	Mean
56	SKGPA-46	17.66	35.50	8.25	34.00	17.40	<b>22.56</b>	-	51.00	41.50	35.00	46.40	39.82	39.20	<b>42.15</b>
57	SKGPA-47	6.92	34.50	21.00	30.60	19.20	<b>22.44</b>	-	43.80	32.06	33.00	52.00	59.60	60.60	<b>46.84</b>
58	SKGPA-48	11.16	40.00	6.75	28.30	22.80	<b>21.80</b>	-	44.30	50.64	35.60	50.40	36.50	52.80	<b>45.04</b>
59	SKGPA-49	13.00	36.00	22.62	28.60	17.00	<b>23.44</b>	15.50	43.60	48.42	41.00	49.60	56.75	71.20	<b>46.58</b>
60	SKGPA-50	12.88	26.50	24.00	34.30	20.40	<b>23.62</b>	-	44.40	38.10	35.30	47.20	54.00	67.00	<b>47.67</b>
61	SKGPA-51	11.64	32.50	20.10	30.30	25.20	<b>23.95</b>	-	54.20	36.04	38.60	52.60	51.40	55.00	<b>47.97</b>
62	SKGPA-52	12.20	29.00	35.75	30.30	16.60	<b>24.77</b>	-	37.40	37.67	37.30	48.20	54.75	45.00	<b>43.39</b>
63	SKGPA-53	14.40	36.50	27.33	-	22.20	<b>25.11</b>	-	37.60	37.14	-	-	49.33	69.00	<b>48.27</b>
64	SKGPA-54	12.36	30.50	24.00	-	15.60	<b>20.62</b>	-	47.30	34.92	-	-	61.00	63.00	<b>51.56</b>
65	SKGPA-55	12.34	38.00	15.33	31.30	23.60	<b>24.11</b>	17.80	32.20	47.64	42.30	46.20	35.00	47.00	<b>38.31</b>
66	SKGPA-56	15.36	26.50	11.00	31.00	22.20	<b>21.21</b>	-	31.40	44.34	38.30	54.60	37.00	54.00	<b>43.27</b>
67	SKGPA-57	8.82	48.00	-	32.30	25.60	<b>28.68</b>	-	39.20	41.20	36.00	52.00	-	57.00	<b>45.08</b>
68	SKGPA-58	10.34	51.50	-	28.30	23.00	<b>28.29</b>	13.20	37.60	42.66	37.30	58.80	-	56.00	<b>40.93</b>
69	SKGPA-59	9.74	-	-	-	20.60	<b>15.17</b>	-	39.80	47.08	-	-	-	51.80	<b>46.23</b>
70	SKGPA-60	11.20	-	-	-	13.80	<b>12.50</b>	-	42.50	43.92	-	-	-	46.00	<b>44.14</b>
71	BGA-27	10.60	38.50	23.66	29.30	14.80	<b>23.37</b>	20.00	47.60	35.40	42.30	68.60	75.33	57.00	<b>49.46</b>
72	BGA-28	6.74	48.50	22.33	28.00	18.20	<b>24.75</b>	14.50	43.60	27.90	38.30	52.80	63.33	64.00	<b>43.49</b>
73	BGA-29	12.96	24.00	19.33	26.00	17.60	<b>19.98</b>	21.50	46.80	41.04	36.00	45.40	49.00	63.00	<b>43.25</b>
74	BGA-30	12.68	43.50	16.66	25.00	13.20	<b>22.21</b>	20.50	41.00	34.68	36.00	52.20	48.66	55.00	<b>41.15</b>
75	BGA-31	9.34	34.50	21.00	24.00	16.40	<b>21.05</b>	23.00	49.40	28.18	35.00	46.60	56.33	51.00	<b>41.36</b>
76	BGA-32	6.30	35.50	21.00	31.30	26.60	<b>24.14</b>	16.50	41.80	30.92	35.60	51.60	54.66	62.00	<b>41.87</b>
77	BGA-33	14.68	40.50	20.66	28.30	21.80	<b>25.19</b>	18.50	41.20	33.00	43.60	52.20	61.67	62.00	<b>44.60</b>
78	BGA-34	15.16	39.50	22.66	36.00	29.40	<b>28.54</b>	25.50	49.80	45.22	37.30	57.40	64.00	79.00	<b>51.17</b>
79	BGA-35	9.48	41.00	23.00	28.30	23.40	<b>25.04</b>	25.00	47.40	32.64	34.60	48.00	58.66	79.00	<b>46.47</b>
80	BGA-36	19.94	42.50	21.66	28.00	20.80	<b>26.58</b>	15.00	46.00	41.82	37.00	52.20	63.33	65.00	<b>45.76</b>
81	BGA-37	17.94	42.50	17.00	25.30	13.90	<b>23.33</b>	19.50	41.40	33.20	37.00	55.00	59.66	53.00	<b>42.68</b>
82	BGA-38	12.52	52.50	24.66	35.00	17.40	<b>28.42</b>	16.50	42.40	40.00	38.60	49.60	57.33	51.00	<b>42.20</b>
83	BGA-39	11.12	42.50	20.66	26.60	16.10	<b>23.40</b>	14.50	41.80	37.36	55.30	50.40	57.00	51.00	<b>43.91</b>
84	BGA-40	17.12	34.00	19.66	27.30	18.30	<b>23.28</b>	18.00	51.40	40.08	37.60	47.20	48.00	44.00	<b>40.90</b>

S. No.	Accession No.	No. of primary branches per plant						Seed yield per plant (g)								
		Delhi	Faizabad	Hisar	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
56	SKGPA-46	4.00	9.00	2.00	5.20	1.80	<b>4.40</b>	9.44	147.55	10.50	3.50	14.40	34.20	147.00	5.60	<b>46.52</b>
57	SKGPA-47	3.20	10.00	5.00	6.30	-	<b>6.13</b>	11.28	68.00	10.00	5.50	11.20	68.20	148.00	7.00	<b>41.15</b>
58	SKGPA-48	1.20	11.00	4.00	4.00	-	<b>5.05</b>	5.30	117.16	9.60	4.50	12.80	65.20	330.00	16.42	<b>70.12</b>
59	SKGPA-49	1.00	12.00	2.00	5.00	2.60	<b>4.52</b>	7.76	130.40	8.60	3.00	9.60	21.35	250.00	13.00	<b>55.46</b>
60	SKGPA-50	1.60	13.00	1.00	4.60	3.60	<b>4.76</b>	6.84	204.00	10.40	2.10	6.40	49.57	258.00	17.00	<b>69.29</b>
61	SKGPA-51	2.60	8.00	2.00	7.60	1.60	<b>4.36</b>	9.44	64.46	11.60	3.50	13.60	29.42	180.00	8.80	<b>40.10</b>
62	SKGPA-52	4.67	9.00	4.00	7.00	2.60	<b>5.45</b>	13.46	20.48	12.60	4.10	6.40	50.62	330.00	5.40	<b>55.38</b>
63	SKGPA-53	2.80	-	4.00	-	-	<b>3.40</b>	8.82	47.55	-	4.90	-	27.94	-	5.20	<b>18.88</b>
64	SKGPA-54	2.60	-	4.00	-	-	<b>3.30</b>	14.10	20.51	-	4.50	-	28.08	-	11.00	<b>15.64</b>
65	SKGPA-55	3.00	10.00	4.00	4.60	2.20	<b>4.76</b>	5.20	55.11	11.60	3.80	12.00	33.00	385.00	13.60	<b>64.91</b>
66	SKGPA-56	3.20	11.00	2.00	5.60	1.40	<b>4.64</b>	6.48	49.40	10.40	2.00	15.20	20.09	237.00	5.60	<b>43.27</b>
67	SKGPA-57	3.60	8.00	4.00	6.00	1.60	<b>4.64</b>	4.72	103.00	11.20	4.10	19.60	-	439.00	5.40	<b>83.86</b>
68	SKGPA-58	-	9.00	4.00	6.00	2.60	<b>5.40</b>	5.80	119.47	12.50	3.80	22.00	-	285.00	5.20	<b>64.82</b>
69	SKGPA-59	-	-	-	-	-	-	7.42	58.02	-	-	-	-	-	9.00	<b>24.81</b>
70	SKGPA-60	-	-	-	-	-	-	8.50	148.13	-	-	-	-	-	13.80	<b>56.81</b>
71	BGA-27	-	8.00	4.00	5.00	-	<b>5.67</b>	16.34	58.63	13.60	3.70	19.60	28.70	240.00	12.00	<b>49.07</b>
72	BGA-28	-	10.00	3.00	5.30	-	<b>6.10</b>	15.20	31.70	14.00	3.90	15.60	50.31	270.00	13.00	<b>51.71</b>
73	BGA-29	1.80	10.00	2.00	5.60	-	<b>4.85</b>	13.44	30.01	10.60	2.80	10.00	40.41	513.00	11.00	<b>78.91</b>
74	BGA-30	-	11.00	5.00	6.00	-	<b>7.33</b>	12.48	36.42	12.60	2.10	22.40	21.00	210.00	7.00	<b>40.50</b>
75	BGA-31	2.20	12.00	4.00	5.00	-	<b>5.80</b>	14.20	40.37	10.60	3.20	6.80	21.54	240.00	7.60	<b>43.04</b>
76	BGA-32	3.40	10.00	1.00	6.00	3.20	<b>4.72</b>	12.46	119.34	11.60	2.30	10.00	48.64	248.00	9.00	<b>57.67</b>
77	BGA-33	3.40	8.00	2.00	4.60	-	<b>4.50</b>	10.48	8.77	9.60	2.40	23.00	35.05	192.00	9.20	<b>36.31</b>
78	BGA-34	3.60	9.00	2.00	4.60	-	<b>4.80</b>	14.32	35.05	12.40	2.30	6.00	26.74	542.00	12.40	<b>81.40</b>
79	BGA-35	4.00	10.00	2.00	6.00	-	<b>5.50</b>	9.42	28.02	13.00	3.50	24.40	27.98	330.00	14.00	<b>56.29</b>
80	BGA-36	4.00	9.00	3.00	4.60	-	<b>5.15</b>	8.78	39.53	14.00	4.10	8.00	22.02	270.00	8.20	<b>46.83</b>
81	BGA-37	3.80	10.00	2.00	6.30	-	<b>5.53</b>	10.26	27.37	13.60	2.00	15.20	23.59	318.00	14.20	<b>53.03</b>
82	BGA-38	-	11.00	3.00	6.30	-	<b>6.77</b>	10.40	35.43	10.40	6.00	12.80	53.92	298.00	12.20	<b>54.89</b>
83	BGA-39	2.00	12.00	2.00	5.00	-	<b>5.25</b>	11.64	14.67	9.60	2.90	24.00	21.75	147.00	9.00	<b>30.07</b>
84	BGA-40	1.20	8.00	4.00	6.30	-	<b>4.88</b>	12.72	55.98	8.60	2.30	9.20	28.14	211.00	9.20	<b>42.14</b>

S. No.	Accession No.	Seed volume weight (g/10ml)								Seed yield (q/ha)				Straw weight per plant(g)	Seed yield per line (g)	Leaf width (cm)
		Bhubaneswar	Delhi	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Mean	S.K. Nagar	Hisar	Rahuri
56	SKGPA-46	7.45	5.97	6.20	7.32	8.26	7.64	7.68	<b>7.22</b>	-	15.83	1.24	<b>8.54</b>	269.80	55.00	7.30
57	SKGPA-47	7.98	5.52	6.50	7.72	8.57	10.10	7.58	<b>7.71</b>	-	18.75	0.91	<b>9.83</b>	365.50	100.50	7.90
58	SKGPA-48	7.76	5.90	6.30	7.56	8.30	9.71	7.61	<b>7.59</b>	-	8.33	7.04	<b>7.69</b>	425.50	75.50	6.90
59	SKGPA-49	7.86	5.98	6.20	7.67	8.01	10.20	7.58	<b>7.64</b>	0.56	10.00	7.82	<b>6.12</b>	365.50	50.70	5.62
60	SKGPA-50	7.84	7.01	4.90	7.61	8.45	7.74	8.07	<b>7.37</b>	-	8.75	0.46	<b>4.61</b>	450.50	30.20	6.80
61	SKGPA-51	7.95	4.58	5.30	7.41	8.39	6.58	8.48	<b>6.96</b>	-	13.75	1.48	<b>7.62</b>	298.00	45.50	5.15
62	SKGPA-52	7.48	5.53	5.40	7.46	8.34	10.26	8.25	<b>7.53</b>	-	18.54	1.67	<b>10.11</b>	198.00	75.00	5.62
63	SKGPA-53	7.90	6.12	5.30	-	7.85	-	8.39	<b>7.11</b>	-	12.08	3.34	<b>7.71</b>	256.00	95.50	3.00
64	SKGPA-54	7.82	6.21	5.00	-	8.31	-	8.69	<b>7.21</b>	-	19.17	3.37	<b>11.27</b>	250.00	90.20	4.50
65	SKGPA-55	7.76	6.34	5.60	7.34	7.63	10.04	8.12	<b>7.55</b>	5.00	8.33	5.30	<b>6.21</b>	260.00	70.00	3.00
66	SKGPA-56	7.86	5.43	5.60	7.68	7.41	7.84	8.11	<b>7.13</b>	-	9.38	5.02	<b>7.20</b>	265.00	30.00	6.00
67	SKGPA-57	7.57	4.92	6.20	7.57	-	9.92	8.52	<b>7.45</b>	-	8.75	6.37	<b>7.56</b>	220.00	75.00	-
68	SKGPA-58	7.63	6.17	6.40	7.65	-	9.80	8.71	<b>7.73</b>	2.50	9.38	2.36	<b>4.75</b>	190.00	75.00	-
69	SKGPA-59	7.43	6.29	-	-	-	-	8.27	<b>7.33</b>	-	8.33	5.71	<b>7.02</b>	160.00	-	-
70	SKGPA-60	7.69	5.23	-	-	-	-	8.11	<b>7.01</b>	-	9.17	3.68	<b>6.42</b>	185.00	-	-
71	BGA-27	7.68	6.53	5.90	7.76	8.38	7.49	8.51	<b>7.46</b>	5.83	21.25	2.68	<b>9.92</b>	300.00	70.00	7.83
72	BGA-28	7.88	6.18	6.50	7.31	8.69	8.58	8.23	<b>7.62</b>	0.83	20.83	1.71	<b>7.79</b>	325.00	75.50	5.00
73	BGA-29	7.99	5.21	6.60	7.65	9.02	9.23	8.02	<b>7.67</b>	0.56	20.00	2.31	<b>7.62</b>	310.00	50.10	5.33
74	BGA-30	7.65	6.40	6.50	7.52	8.19	7.39	7.84	<b>7.36</b>	0.56	17.08	1.26	<b>6.30</b>	265.00	35.00	4.66
75	BGA-31	7.82	5.17	6.40	7.21	8.05	7.80	8.24	<b>7.24</b>	1.67	20.21	0.84	<b>7.57</b>	365.00	55.20	7.16
76	BGA-32	7.88	6.60	6.30	7.09	8.75	9.05	8.21	<b>7.70</b>	2.22	15.83	0.67	<b>6.24</b>	385.00	35.30	5.00
77	BGA-33	7.82	6.66	6.40	7.40	8.23	9.42	7.62	<b>7.65</b>	0.83	16.46	1.59	<b>6.29</b>	375.00	40.40	8.00
78	BGA-34	7.90	5.82	6.20	7.13	7.86	9.42	7.99	<b>7.47</b>	1.39	19.79	1.00	<b>7.39</b>	265.00	30.50	5.80
79	BGA-35	7.75	6.75	6.30	7.42	8.45	8.48	8.20	<b>7.62</b>	1.94	13.33	4.42	<b>6.57</b>	285.00	50.50	6.16
80	BGA-36	7.78	5.96	6.40	7.38	8.44	7.96	8.11	<b>7.43</b>	2.78	12.50	0.49	<b>5.26</b>	275.00	75.50	6.00
81	BGA-37	7.90	4.84	6.50	7.60	8.14	7.20	8.14	<b>7.19</b>	0.83	15.83	1.95	<b>6.21</b>	325.50	30.00	5.00
82	BGA-38	7.91	5.17	6.10	7.68	7.85	9.62	8.30	<b>7.52</b>	2.78	15.00	5.63	<b>7.80</b>	385.50	100.00	8.00
83	BGA-39	7.97	5.51	6.20	7.75	7.67	6.08	8.19	<b>7.05</b>	1.56	14.38	3.85	<b>6.60</b>	265.50	50.00	5.83
84	BGA-40	7.81	5.88	5.20	7.20	7.98	6.19	8.22	<b>6.93</b>	1.67	17.08	4.09	<b>7.61</b>	275.50	30.50	5.67

S. No.	Accession No.	Days to 50% flowering										Leaf length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
85	BGA-41	95	53	43	48	58	45	68	77	46	<b>59.22</b>	23.36	21.00	10.60	8.40	<b>15.84</b>
86	BGA-42	93	53	43	49	86	45	68	78	48	<b>62.56</b>	16.50	22.00	12.00	8.30	<b>14.70</b>
87	BGA-43	90	51	42	40	60	46	68	76	45	<b>57.56</b>	30.58	23.60	10.60	8.90	<b>18.42</b>
88	BGA-44	87	51	-	46	88	44	71	67	45	<b>62.38</b>	-	19.48	9.00	9.00	<b>12.49</b>
89	BGA-45	85	47	-	45	79	45	69	64	44	<b>59.75</b>	-	25.74	12.60	9.00	<b>15.78</b>
90	BGA-46	87	47	44	46	79	45	68	68	45	<b>58.78</b>	32.18	20.54	11.30	9.30	<b>18.33</b>
91	BGA-47	93	45	40	37	79	44	69	65	45	<b>57.44</b>	24.66	21.33	11.60	8.80	<b>16.60</b>
92	BGA-48	95	46	41	38	79	44	70	75	44	<b>59.11</b>	24.86	21.66	8.30	9.30	<b>16.03</b>
93	BGA-49	88	46	47	39	79	43	72	67	44	<b>58.33</b>	31.62	22.66	10.00	5.83	<b>17.53</b>
94	BGA-50	93	46	-	40	85	47	76	66	45	<b>62.25</b>	-	19.33	10.30	9.40	<b>13.01</b>
95	BGA-51	95	46	-	41	85	45	76	78	44	<b>63.75</b>	-	16.66	9.00	11.40	<b>12.35</b>
<b>Mean for check varieties</b>																
	GA-1 (C)	97.00	55.80	61.00	45.40	70.00	48.78	71.00	80.50	50.20	<b>64.41</b>	30.90	23.97	12.60	10.97	<b>19.61</b>
	GA-2 (C)	-	52.40	52.75	42.00	71.50	47.33	71.00	83.00	50.90	<b>58.86</b>	30.49	29.09	10.60	10.73	<b>20.23</b>
	BGA-2 (C)	-	50.00	59.50	46.20	70.50	53.00	72.00	82.50	52.80	<b>60.81</b>	33.60	21.35	10.00	12.54	<b>19.37</b>
	Suvarna (C)	95.00	51.60	60.33	44.60	75.50	51.78	72.00	81.67	53.80	<b>65.14</b>	34.39	21.16	9.60	12.80	<b>19.49</b>
	<b>Minimum</b>	<b>76.00</b>	<b>34.00</b>	<b>40.00</b>	<b>31.00</b>	<b>58.00</b>	<b>32.00</b>	<b>58.00</b>	<b>52.00</b>	<b>40.00</b>	<b>46.25</b>	<b>16.50</b>	<b>14.33</b>	<b>6.60</b>	<b>4.82</b>	<b>12.35</b>
	<b>Maximum</b>	<b>102.00</b>	<b>55.80</b>	<b>91.00</b>	<b>49.00</b>	<b>88.00</b>	<b>53.00</b>	<b>78.00</b>	<b>88.00</b>	<b>55.00</b>	<b>77.67</b>	<b>35.38</b>	<b>36.67</b>	<b>12.60</b>	<b>16.14</b>	<b>32.59</b>
	<b>Mean</b>	<b>91.56</b>	<b>46.67</b>	<b>53.78</b>	<b>40.25</b>	<b>68.76</b>	<b>44.62</b>	<b>67.28</b>	<b>72.02</b>	<b>45.79</b>	<b>58.00</b>	<b>28.61</b>	<b>21.83</b>	<b>9.39</b>	<b>9.51</b>	<b>17.75</b>
	<b>CD (0.05)</b>	-	<b>4.04</b>	-	<b>9.86</b>	-	<b>1.81</b>	-	<b>6.74</b>	<b>4.43</b>		-	-	-	<b>3.20</b>	
	<b>CV (%) Error</b>	-	<b>2.89</b>	-	<b>8.29</b>	-	<b>1.49</b>	-	<b>3.20</b>	<b>3.55</b>		-	-	-	<b>11.33</b>	
	<b>CV (%) Phen.</b>	<b>6.04</b>	<b>12.23</b>	<b>16.27</b>	<b>9.03</b>	<b>12.58</b>	<b>11.73</b>	<b>7.50</b>	<b>12.47</b>	<b>7.34</b>		<b>12.21</b>	<b>19.10</b>	<b>14.87</b>	<b>23.05</b>	

S. No.	Accession No.	Days to maturity										Petiole length (cm)				
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	Ranchi	S.K. Nagar	Mean
85	BGA-41	151	93	152	118	168	122	106	157	91	<b>128.67</b>	9.06	9.00	5.60	7.26	<b>7.73</b>
86	BGA-42	152	93	151	119	168	121	107	159	92	<b>129.11</b>	6.62	10.66	6.60	5.80	<b>7.42</b>
87	BGA-43	150	90	152	110	171	125	106	155	90	<b>127.67</b>	12.26	8.56	7.00	5.30	<b>8.28</b>
88	BGA-44	137	90	-	116	165	122	110	151	87	<b>122.25</b>	-	9.66	7.30	6.20	<b>7.72</b>
89	BGA-45	135	90	-	115	158	122	107	150	86	<b>120.38</b>	-	10.80	8.60	5.90	<b>8.43</b>
90	BGA-46	137	90	151	116	166	125	106	155	88	<b>126.00</b>	15.10	8.90	7.00	6.80	<b>9.45</b>
91	BGA-47	151	88	159	107	158	125	108	150	97	<b>127.00</b>	9.64	8.00	8.00	6.80	<b>8.11</b>
92	BGA-48	152	89	154	108	164	126	110	157	90	<b>127.78</b>	10.60	8.66	5.30	7.40	<b>7.99</b>
93	BGA-49	149	89	150	109	166	126	112	153	92	<b>127.33</b>	12.64	9.66	6.60	6.22	<b>8.78</b>
94	BGA-50	152	90	-	110	171	124	119	157	88	<b>126.38</b>	-	7.00	7.60	8.20	<b>7.60</b>
95	BGA-51	153	89	-	111	166	127	119	154	87	<b>125.75</b>	-	6.66	7.30	7.60	<b>7.19</b>
<b>Mean for check varieties</b>																
	GA-1 (C)	155.00	95.80	157.75	115.40	167.50	129.11	114.00	159.33	93.20	<b>131.90</b>	12.00	8.78	7.80	6.95	<b>8.88</b>
	GA-2 (C)	-	94.80	157.00	114.00	166.00	126.44	113.00	154.83	95.10	<b>127.65</b>	10.92	10.54	6.00	6.64	<b>8.52</b>
	BGA-2 (C)	-	90.20	159.25	116.20	165.00	131.89	114.00	157.83	97.70	<b>129.01</b>	14.07	5.90	7.15	7.76	<b>8.72</b>
	Suvarna (C)	152.00	92.60	157.33	114.60	169.50	132.00	112.00	157.33	98.50	<b>131.76</b>	15.48	5.02	6.82	8.75	<b>9.02</b>
	<b>Minimum</b>	<b>131.00</b>	<b>80.00</b>	<b>150.00</b>	<b>102.00</b>	<b>151.00</b>	<b>120.00</b>	<b>94.00</b>	<b>120.00</b>	<b>50.00</b>	<b>111.67</b>	<b>6.47</b>	<b>5.00</b>	<b>4.30</b>	<b>2.60</b>	<b>5.87</b>
	<b>Maximum</b>	<b>159.00</b>	<b>97.00</b>	<b>168.00</b>	<b>134.00</b>	<b>183.00</b>	<b>134.00</b>	<b>120.00</b>	<b>160.00</b>	<b>98.50</b>	<b>147.33</b>	<b>16.18</b>	<b>15.40</b>	<b>9.60</b>	<b>10.80</b>	<b>12.87</b>
	<b>Mean</b>	<b>149.67</b>	<b>89.75</b>	<b>156.37</b>	<b>110.74</b>	<b>164.20</b>	<b>126.17</b>	<b>106.21</b>	<b>148.70</b>	<b>87.66</b>	<b>126.31</b>	<b>11.19</b>	<b>8.42</b>	<b>6.53</b>	<b>5.84</b>	<b>8.13</b>
	<b>CD (0.05)</b>	-	<b>2.15</b>	-	<b>10.61</b>	-	<b>4.83</b>	-	<b>9.61</b>	<b>5.40</b>		-	-	<b>1.71</b>	<b>3.41</b>	
	<b>CV (%) Error</b>	-	<b>0.86</b>	-	<b>3.45</b>	-	<b>1.53</b>	-	<b>2.38</b>	<b>2.34</b>		-	-	<b>9.56</b>	<b>18.85</b>	
	<b>CV (%) Phen.</b>	<b>3.79</b>	<b>4.58</b>	<b>2.99</b>	<b>3.87</b>	<b>4.29</b>	<b>2.85</b>	<b>7.00</b>	<b>5.83</b>	<b>7.58</b>		<b>16.95</b>	<b>24.81</b>	<b>18.86</b>	<b>28.02</b>	

S. No.	Accession No.	Plant height (cm)										Stem thickness (mm)			
		Ambikapur	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Delhi	Rahuri	S.K. Nagar	Mean
85	BGA-41	57.00	126.80	118.80	71.40	74.50	74.60	140.66	103.00	99.00	<b>96.20</b>	10.12	13.00	2.68	<b>8.60</b>
86	BGA-42	65.00	118.40	108.40	65.20	77.50	80.40	148.33	108.00	103.00	<b>97.14</b>	11.76	15.00	2.34	<b>9.70</b>
87	BGA-43	52.50	116.60	125.80	77.40	58.00	73.60	154.76	96.50	89.00	<b>93.80</b>	15.02	12.00	1.94	<b>9.65</b>
88	BGA-44	49.00	100.20	-	69.80	58.50	73.60	146.80	81.60	101.00	<b>85.06</b>	-	11.00	2.40	<b>6.70</b>
89	BGA-45	48.60	105.60	-	75.80	65.50	77.60	159.10	80.70	89.00	<b>87.74</b>	-	13.00	2.16	<b>7.58</b>
90	BGA-46	54.80	115.20	116.60	102.80	78.50	84.60	138.40	91.40	101.00	<b>98.14</b>	12.66	11.00	2.20	<b>8.62</b>
91	BGA-47	55.50	95.80	61.80	98.60	75.50	97.20	161.66	101.10	118.00	<b>96.13</b>	5.76	15.00	2.46	<b>7.74</b>
92	BGA-48	56.50	97.80	106.60	98.60	69.00	86.80	156.00	101.50	129.00	<b>100.20</b>	11.78	10.00	2.72	<b>8.17</b>
93	BGA-49	51.00	86.20	105.40	95.20	68.00	96.40	148.66	86.90	75.50	<b>90.36</b>	16.84	12.00	2.13	<b>10.32</b>
94	BGA-50	60.50	85.80	-	98.20	66.50	92.60	126.00	95.00	104.00	<b>91.08</b>	-	12.00	2.24	<b>7.12</b>
95	BGA-51	56.50	98.00	-	72.40	61.50	86.80	110.33	93.70	114.00	<b>86.65</b>	-	13.00	2.20	<b>7.60</b>
<b>Mean for check varieties</b>															
	GA-1 (C)	68.00	133.34	135.15	80.64	82.85	136.18	139.30	104.85	146.04	<b>114.04</b>	16.90	19.00	3.64	<b>13.18</b>
	GA-2 (C)	-	130.88	146.65	92.92	79.60	135.07	165.01	92.98	143.16	<b>123.28</b>	21.94	11.00	3.73	<b>12.22</b>
	BGA-2 (C)	-	102.62	149.60	89.20	85.40	131.78	120.02	85.47	118.32	<b>110.30</b>	22.08	12.00	4.17	<b>12.75</b>
	Suvarna (C)	60.00	108.12	164.00	95.13	86.00	131.53	117.28	84.88	137.88	<b>109.42</b>	17.84	11.00	3.93	<b>10.92</b>
	<b>Minimum</b>	<b>35.00</b>	<b>56.80</b>	<b>54.33</b>	<b>61.00</b>	<b>37.50</b>	<b>57.80</b>	<b>46.00</b>	<b>48.70</b>	<b>55.00</b>	<b>68.76</b>	<b>5.76</b>	<b>7.00</b>	<b>1.66</b>	<b>6.70</b>
	<b>Maximum</b>	<b>70.50</b>	<b>133.34</b>	<b>169.12</b>	<b>117.60</b>	<b>102.00</b>	<b>184.40</b>	<b>165.01</b>	<b>159.00</b>	<b>146.04</b>	<b>136.27</b>	<b>24.90</b>	<b>22.00</b>	<b>8.10</b>	<b>19.80</b>
	<b>Mean</b>	<b>56.09</b>	<b>101.63</b>	<b>132.94</b>	<b>87.81</b>	<b>68.70</b>	<b>97.42</b>	<b>128.87</b>	<b>84.53</b>	<b>107.77</b>	<b>97.05</b>	<b>16.18</b>	<b>12.36</b>	<b>3.14</b>	<b>10.55</b>
	<b>CD (0.05)</b>	-	<b>27.95</b>	-	<b>38.83</b>	-	<b>33.45</b>	-	<b>14.78</b>	<b>23.25</b>		-	-	<b>1.28</b>	
	<b>CV (%) Error</b>	-	<b>8.82</b>	-	<b>16.25</b>	-	<b>10.31</b>	-	<b>6.24</b>	<b>7.09</b>		-	-	<b>13.73</b>	
	<b>CV (%) Phen.</b>	<b>12.88</b>	<b>18.67</b>	<b>16.31</b>	<b>13.25</b>	<b>19.32</b>	<b>30.20</b>	<b>18.00</b>	<b>19.78</b>	<b>20.29</b>		<b>20.66</b>	<b>20.91</b>	<b>38.84</b>	



S. No.	Accession No.	Lateral spikelet length (cm)						Inflorescence length (cm)							
		Delhi	Hisar	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Faizabad	Mandor	Rahuri	S.K. Nagar	Mean
85	BGA-41	22.14	42.50	21.66	32.00	19.00	<b>27.46</b>	21.50	48.00	43.66	47.20	40.60	64.33	53.40	<b>45.53</b>
86	BGA-42	20.50	46.50	29.33	33.80	17.60	<b>29.55</b>	19.00	37.40	49.56	45.10	47.00	65.40	47.00	<b>44.35</b>
87	BGA-43	18.76	38.00	24.30	25.30	25.60	<b>26.39</b>	12.50	43.20	44.68	46.40	45.20	56.80	47.00	<b>42.25</b>
88	BGA-44	-	36.50	23.70	30.30	19.90	<b>27.60</b>	17.00	48.00	-	37.30	45.00	55.20	53.00	<b>42.58</b>
89	BGA-45	-	40.50	29.00	30.60	21.50	<b>30.40</b>	14.40	42.60	-	38.60	45.60	68.60	49.00	<b>43.13</b>
90	BGA-46	15.54	48.00	24.50	30.60	20.80	<b>27.89</b>	20.60	41.60	41.94	40.30	57.00	27.40	54.00	<b>40.41</b>
91	BGA-47	13.86	43.50	21.66	32.00	19.60	<b>26.12</b>	24.50	40.60	35.46	37.00	61.00	58.66	50.00	<b>43.89</b>
92	BGA-48	17.72	43.50	22.66	22.00	18.60	<b>24.90</b>	18.50	46.40	40.42	35.00	48.20	62.33	52.00	<b>43.26</b>
93	BGA-49	16.38	43.00	21.00	22.30	17.70	<b>24.08</b>	16.00	48.20	40.16	37.00	51.40	60.00	34.20	<b>40.99</b>
94	BGA-50	-	44.00	17.66	29.60	19.20	<b>27.62</b>	23.00	46.40	-	40.20	59.80	55.70	49.60	<b>45.78</b>
95	BGA-51	-	39.00	30.66	30.00	24.60	<b>31.07</b>	20.00	48.60	-	41.00	46.80	53.10	49.00	<b>43.08</b>
<b>Mean for check varieties</b>															
	GA-1 (C)	10.76	37.95	22.19	27.42	20.76	<b>23.81</b>	18.50	51.56	44.31	39.00	63.87	60.13	73.42	<b>50.11</b>
	GA-2 (C)	14.87	38.40	26.68	31.17	20.03	<b>26.23</b>	-	49.96	48.97	36.48	60.56	65.11	66.82	<b>54.65</b>
	BGA-2 (C)	11.34	36.40	13.90	23.10	16.62	<b>20.27</b>	-	49.72	42.19	36.92	46.68	43.10	50.92	<b>44.92</b>
	Suvarna (C)	12.44	41.35	16.27	21.92	18.79	<b>22.15</b>	10.50	46.60	43.61	36.86	50.50	50.26	53.28	<b>41.66</b>
	<b>Minimum</b>	<b>5.94</b>	<b>19.50</b>	<b>6.75</b>	<b>21.92</b>	<b>8.88</b>	<b>12.50</b>	<b>10.50</b>	<b>30.20</b>	<b>27.90</b>	<b>23.80</b>	<b>33.20</b>	<b>26.66</b>	<b>29.00</b>	<b>35.01</b>
	<b>Maximum</b>	<b>25.50</b>	<b>60.50</b>	<b>35.75</b>	<b>40.60</b>	<b>29.80</b>	<b>41.00</b>	<b>25.50</b>	<b>54.60</b>	<b>65.12</b>	<b>55.30</b>	<b>77.40</b>	<b>88.93</b>	<b>91.00</b>	<b>54.65</b>
	<b>Mean</b>	<b>12.94</b>	<b>39.80</b>	<b>20.52</b>	<b>29.58</b>	<b>18.95</b>	<b>24.48</b>	<b>18.26</b>	<b>42.15</b>	<b>41.01</b>	<b>37.86</b>	<b>50.49</b>	<b>51.92</b>	<b>58.90</b>	<b>44.26</b>
	<b>CD (0.05)</b>	-	-	-	<b>4.46</b>	<b>7.55</b>		-	<b>8.79</b>	-	<b>7.64</b>	<b>11.81</b>	-	<b>18.80</b>	
	<b>CV (%) Error</b>	-	-	-	<b>6.70</b>	<b>16.49</b>		-	<b>6.66</b>	-	<b>7.66</b>	<b>8.78</b>	-	<b>12.80</b>	
	<b>CV (%) Phen.</b>	<b>25.24</b>	<b>17.13</b>	<b>24.71</b>	<b>12.69</b>	<b>21.15</b>		<b>19.57</b>	<b>13.08</b>	<b>15.01</b>	<b>11.11</b>	<b>14.00</b>	<b>18.28</b>	<b>22.33</b>	

S. No.	Accession No.	No. of primary branches per plant						Seed yield per plant (g)								
		Delhi	Faizabad	Hisar	Ranchi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Faizabad	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean
85	BGA-41	3.60	8.00	2.00	6.00	-	<b>4.90</b>	8.40	43.77	9.00	3.60	2.80	32.40	256.00	9.80	<b>45.72</b>
86	BGA-42	4.40	9.00	2.00	6.60	-	<b>5.50</b>	8.72	20.68	10.60	3.30	12.40	41.84	443.00	11.00	<b>68.94</b>
87	BGA-43	1.00	10.00	3.00	6.30	3.40	<b>4.74</b>	10.24	65.49	11.40	3.90	17.20	44.10	280.00	8.40	<b>55.09</b>
88	BGA-44	-	11.00	2.00	6.60	-	<b>6.53</b>	13.50	-	12.00	4.30	8.00	56.32	511.00	14.00	<b>88.45</b>
89	BGA-45	-	10.00	3.00	7.60	-	<b>6.87</b>	12.54	-	13.60	5.50	9.60	23.26	418.00	11.60	<b>70.59</b>
90	BGA-46	2.40	9.00	3.00	6.00	-	<b>5.10</b>	9.78	33.44	9.00	3.50	8.00	23.43	260.00	8.00	<b>44.39</b>
91	BGA-47	1.20	8.00	3.00	6.30	-	<b>4.63</b>	10.08	30.22	10.00	3.00	10.80	28.52	388.00	5.00	<b>60.70</b>
92	BGA-48	1.20	9.00	2.00	7.30	-	<b>4.88</b>	8.48	58.33	11.00	3.50	11.20	31.20	276.00	16.50	<b>52.03</b>
93	BGA-49	2.20	8.00	3.00	6.60	-	<b>4.95</b>	11.40	14.43	11.00	2.00	14.80	38.92	420.00	11.00	<b>65.44</b>
94	BGA-50	-	10.00	2.00	8.60	-	<b>6.87</b>	8.42	-	12.60	4.50	12.80	24.82	340.00	8.00	<b>58.73</b>
95	BGA-51	-	11.00	2.00	8.30	-	<b>7.10</b>	10.48	-	13.45	2.50	14.00	53.36	423.00	15.24	<b>76.00</b>
<b>Mean for check varieties</b>																
	GA-1 (C)	-	9.80	3.00	7.52	-	<b>6.77</b>	7.64	96.62	14.08	5.35	20.11	31.92	195.67	14.52	<b>48.24</b>
	GA-2 (C)	1.10	11.20	4.50	7.52	-	<b>6.08</b>	6.77	80.06	14.90	6.30	15.11	28.32	193.83	14.30	<b>44.95</b>
	BGA-2 (C)	0.80	12.20	5.00	7.50	-	<b>6.38</b>	11.87	84.32	14.62	4.15	8.84	26.17	193.50	11.54	<b>44.38</b>
	Suvarna (C)	-	11.40	4.00	6.33	-	<b>7.24</b>	10.06	77.93	14.24	6.35	13.58	26.00	202.50	12.11	<b>45.35</b>
	<b>Minimum</b>	<b>0.40</b>	<b>5.00</b>	<b>1.00</b>	<b>1.60</b>	<b>0.20</b>	<b>3.30</b>	<b>4.28</b>	<b>8.77</b>	<b>6.70</b>	<b>1.20</b>	<b>2.00</b>	<b>20.09</b>	<b>142.00</b>	<b>3.00</b>	<b>6.55</b>
	<b>Maximum</b>	<b>8.60</b>	<b>16.00</b>	<b>8.00</b>	<b>8.60</b>	<b>5.00</b>	<b>8.50</b>	<b>16.34</b>	<b>327.22</b>	<b>16.60</b>	<b>8.20</b>	<b>24.40</b>	<b>94.44</b>	<b>542.00</b>	<b>18.00</b>	<b>99.32</b>
	<b>Mean</b>	<b>2.72</b>	<b>9.89</b>	<b>3.29</b>	<b>5.25</b>	<b>2.52</b>	<b>5.44</b>	<b>9.02</b>	<b>78.78</b>	<b>11.55</b>	<b>3.42</b>	<b>11.76</b>	<b>35.33</b>	<b>294.12</b>	<b>10.10</b>	<b>52.29</b>
	<b>CD (0.05)</b>	-	<b>5.68</b>	-	<b>1.03</b>	-		<b>1.58</b>	-	<b>7.19</b>	-	<b>9.27</b>	-	<b>42.55</b>	<b>5.54</b>	
	<b>CV (%) Error</b>	-	<b>19.08</b>	-	<b>5.57</b>	-		<b>6.53</b>	-	<b>18.62</b>	-	<b>26.50</b>	-	<b>8.42</b>	<b>17.56</b>	
	<b>CV (%) Phen.</b>	<b>62.98</b>	<b>17.21</b>	<b>41.00</b>	<b>27.09</b>	<b>50.33</b>		<b>28.89</b>	<b>79.29</b>	<b>18.04</b>	<b>39.07</b>	<b>42.18</b>	<b>39.96</b>	<b>32.52</b>	<b>35.27</b>	

S. No.	Accession No.	Seed volume weight (g/10ml)								Seed yield (q/ha)				Straw weight per plant(g)	Seed yield per line (g)	Leaf width (cm)
		Bhubaneswar	Delhi	Hisar	Mandor	Rahuri	Ranchi	S.K. Nagar	Mean	Ambikapur	Bhubaneswar	Delhi	Mean	S.K. Nagar	Hisar	Rahuri
85	BGA-41	7.85	5.45	5.60	7.18	7.80	7.48	8.17	<b>7.08</b>	2.50	12.50	1.84	<b>5.61</b>	285.50	60.20	6.33
86	BGA-42	7.83	5.22	5.70	7.50	8.57	7.49	8.21	<b>7.22</b>	2.78	13.54	0.91	<b>5.74</b>	345.50	57.50	6.00
87	BGA-43	7.90	6.12	5.40	7.72	8.86	9.17	8.25	<b>7.63</b>	3.89	15.42	4.26	<b>7.86</b>	285.50	70.00	5.80
88	BGA-44	7.79	-	6.60	7.29	8.77	9.40	8.00	<b>7.98</b>	4.72	17.50	-	<b>11.11</b>	375.20	75.30	5.30
89	BGA-45	7.72	-	6.70	7.36	7.92	9.71	8.15	<b>7.93</b>	5.28	16.67	-	<b>10.97</b>	235.50	100.50	6.40
90	BGA-46	7.83	5.37	6.60	7.26	8.53	8.00	8.11	<b>7.39</b>	8.33	13.54	1.68	<b>7.85</b>	295.50	55.50	5.90
91	BGA-47	7.95	5.69	6.50	7.52	8.40	9.70	8.17	<b>7.70</b>	1.11	14.17	-	<b>7.64</b>	250.50	50.50	6.67
92	BGA-48	7.90	5.88	6.50	7.61	8.00	7.31	8.15	<b>7.34</b>	1.11	12.50	4.65	<b>6.09</b>	380.50	50.50	6.34
93	BGA-49	7.80	6.01	6.70	7.41	8.37	9.59	8.06	<b>7.71</b>	1.67	15.83	1.38	<b>6.29</b>	265.50	30.50	5.80
94	BGA-50	7.73	-	6.30	7.45	8.30	8.20	8.20	<b>7.70</b>	1.67	15.00	-	<b>8.33</b>	250.50	75.50	5.50
95	BGA-51	7.98	-	6.50	7.69	8.40	9.48	8.18	<b>8.04</b>	0.83	16.25	-	<b>8.54</b>	285.50	35.50	5.00
<b>Mean for check varieties</b>																
	GA-1 (C)	7.65	6.02	5.75	7.32	8.96	7.09	8.40	<b>7.31</b>	3.33	10.33	4.65	<b>6.10</b>	324.38	93.00	4.43
	GA-2 (C)	7.73	5.72	6.15	7.38	8.10	7.37	8.27	<b>7.24</b>	-	9.83	6.72	<b>8.28</b>	345.93	110.40	7.14
	BGA-2 (C)	7.97	5.66	5.60	7.05	7.80	6.84	8.05	<b>7.00</b>	-	15.96	5.26	<b>10.61</b>	328.90	63.15	5.66
	Suvarna (C)	7.70	6.19	5.40	7.06	7.63	6.96	7.76	<b>6.96</b>	5.56	13.54	5.39	<b>8.16</b>	309.30	112.75	5.29
	<b>Minimum</b>	<b>7.41</b>	<b>4.52</b>	<b>4.70</b>	<b>6.59</b>	<b>3.41</b>	<b>6.08</b>	<b>6.68</b>	<b>4.90</b>	<b>0.56</b>	<b>8.33</b>	<b>0.46</b>	<b>0.76</b>	<b>75.20</b>	<b>20.50</b>	<b>3.00</b>
	<b>Maximum</b>	<b>7.99</b>	<b>7.54</b>	<b>7.50</b>	<b>7.76</b>	<b>9.09</b>	<b>10.26</b>	<b>8.71</b>	<b>8.04</b>	<b>8.33</b>	<b>21.25</b>	<b>22.98</b>	<b>15.42</b>	<b>450.50</b>	<b>150.50</b>	<b>11.40</b>
	<b>Mean</b>	<b>7.76</b>	<b>5.92</b>	<b>5.98</b>	<b>7.34</b>	<b>8.16</b>	<b>8.52</b>	<b>8.01</b>	<b>7.26</b>	<b>2.24</b>	<b>13.66</b>	<b>6.21</b>	<b>7.92</b>	<b>271.76</b>	<b>60.85</b>	<b>6.47</b>
	<b>CD (0.05)</b>	<b>0.18</b>	-	-	<b>0.60</b>	-	<b>1.14</b>	<b>0.53</b>		-	<b>3.79</b>	-		<b>121.76</b>	-	-
	<b>CV (%) Error</b>	<b>0.89</b>	-	-	<b>3.43</b>	-	<b>6.25</b>	<b>2.73</b>		-	<b>11.44</b>	-		<b>15.48</b>	-	-
	<b>CV (%) Phen.</b>	<b>1.92</b>	<b>10.45</b>	<b>10.11</b>	<b>3.72</b>	<b>8.64</b>	<b>13.07</b>	<b>4.90</b>		<b>64.25</b>	<b>25.18</b>	<b>83.72</b>		<b>28.48</b>	<b>46.04</b>	<b>26.25</b>

**Table 95. Characterization of germplasm lines in grain amaranth at Delhi, Ranchi and S.K. Nagar : Rabi 2009-10 (Plains)**

S. No.	Accession No.	Plant growth habit			Leaf colour			Inflorescence colour			Inflorescence compactness			Stem colour			Stem surface			Inflorescence shape			Inflorescence spininess			Seed colour		Early plant vigour	S.K. Nagar		
		Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	S.K. Nagar	Ranchi	Seedling vigour	Seed shattering	Popping ability of seed			
1	MGA-5	1	1	2	3	5	1	4	11	2	7	5	3	2	6	1	2	1	2	4	1	1	2	1	1	3	1	2	2	1	3
2	MGA-6	1	-	-	3	-	-	4	-	-	7	-	-	2	-	-	2	-	-	4	-	-	2	-	-	2	-	-	-	-	-
3	MGA-7	1	-	1	3	-	1	4	-	2	7	-	3	2	-	1	2	-	2	4	-	1	2	-	1	2	1	-	2	1	2
4	MGA-8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	MGA-9	1	-	1	3	-	1	4	-	2	5	-	3	2	-	1	2	-	2	4	-	1	2	-	1	2	1	-	2	1	2
6	MGA-10	-	-	1	-	-	1	-	-	2	-	-	3	-	-	1	-	-	2	-	-	1	-	-	1	-	1	-	2	1	3
7	MGA-11	1	-	1	3	-	1	4	-	2	3	-	3	2	-	1	2	-	2	4	-	1	2	-	1	2	1	-	2	1	2
8	MGA-12	1	-	2	10	-	9	6	-	9	3	-	1	6	-	5	1	-	2	4	-	4	4	-	1	2	1	-	2	1	3
9	MGA-13	1	-	-	10	-	-	6	-	-	3	-	-	6	-	-	1	-	-	1	-	-	4	-	-	2	-	-	-	-	-
10	MGA-14	1	-	-	8	-	-	6	-	-	3	-	-	6	-	-	1	-	-	1	-	-	4	-	-	2	-	-	-	-	-
11	SKGPA-1	1	1	1	5	5	3	4	11	12	5	5	2	2	6	1	2	1	2	4	1	1	3	1	1	2	1	2	2	1	3
12	SKGPA-2	1	1	1	5	8	3	4	7	12	5	7	2	2	4	1	2	2	2	4	1	1	3	1	1	3	1	3	2	1	3
13	SKGPA-3	1	1	1	5	5	3	4	11	12	5	7	2	2	6	1	2	1	2	4	1	1	3	1	1	3	1	3	2	1	3
14	SKGPA-4	1	1	1	5	8	3	4	7	12	7	5	2	2	4	1	2	2	2	4	1	1	3	1	1	3	1	3	2	1	3
15	SKGPA-5	1	1	1	5	8	3	4	7	12	7	7	2	2	4	1	2	1	2	4	1	1	2	1	1	3	1	3	2	1	3
16	SKGPA-6	1	1	1	8	8	3	6	7	12	7	7	2	6	4	1	2	2	2	4	1	1	4	1	1	3	1	3	2	1	3
17	SKGPA-7	1	1	1	10	8	3	6	7	12	3	7	2	6	4	1	2	2	2	1	1	1	4	1	1	2	1	3	2	1	3
18	SKGPA-8	1	1	1	8	8	3	6	7	12	3	7	2	6	6	1	2	2	2	1	1	1	4	1	1	3	1	3	2	1	3
19	SKGPA-9	1	2	2	5	5	9	4	11	9	3	7	1	2	6	4	2	1	2	4	1	4	3	3	2	2	1	1	2	1	3
20	SKGPA-10	1	2	2	10	5	9	6	11	9	3	3	1	6	6	4	2	1	2	4	1	4	4	3	2	2	1	1	2	1	2

S. No.	Accession No.	Plant growth habit			Leaf colour			Inflorescence colour			Inflorescence compactness			Stem colour			Stem surface			Inflorescence shape			Inflorescence spininess			Seed colour		Early plant vigour	S.K. Nagar		
		Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	S.K. Nagar	Ranchi	Seedling vigour	Seed shattering	Popping ability of seed			
21	SKGPA-11	1	1	1	5	5	3	4	11	2	3	3	2	2	6	1	2	2	2	4	2	1	3	2	1	3	1	2	2	1	3
22	SKGPA-12	1	2	2	8	5	9	6	8	9	3	5	1	6	6	4	2	2	2	4	2	4	4	3	3	3	1	1	2	1	3
23	SKGPA-13	1	1	1	5	8	3	4	8	12	5	3	2	2	6	1	2	2	2	4	1	1	3	1	1	2	1	3	2	1	3
24	SKGPA-14	1	2	1	5	5	9	4	11	9	5	5	3	2	6	4	2	1	2	4	3	4	3	3	2	2	1	1	3	1	3
25	SKGPA-15	1	2	1	10	8	1	6	9	2	5	5	3	6	6	1	2	2	2	4	2	4	4	3	2	2	1	2	3	1	3
26	SKGPA-16	1	2	1	8	5	1	6	11	2	5	5	3	6	6	1	2	1	2	4	2	4	3	3	2	2	1	1	3	1	3
27	SKGPA-17	1	2	1	5	8	1	4	9	2	5	3	3	2	6	1	2	2	2	4	2	4	3	3	2	3	1	1	3	1	3
28	SKGPA-18	1	2	1	8	5	9	6	11	9	3	3	3	6	6	4	2	1	2	4	3	4	4	3	2	3	1	1	3	1	3
29	SKGPA-19	1	2	1	10	8	1	6	9	2	3	3	3	6	6	1	2	2	2	4	2	4	4	3	2	3	1	2	3	1	3
30	SKGPA-20	1	3	1	10	8	9	6	9	9	3	5	3	6	6	4	2	2	2	4	3	4	3	3	1	3	1	2	3	1	3
31	SKGPA-21	1	3	1	10	3	4	6	11	5	3	5	2	6	1	4	2	1	2	4	3	4	4	2	3	3	1	2	3	2	3
32	SKGPA-22	1	2	3	10	5	3	6	11	4	3	3	1	6	6	2	2	1	2	4	2	3	4	3	1	2	1	1	3	2	3
33	SKGPA-23	1	2	1	10	10	9	6	9	9	3	3	3	6	6	4	2	2	2	4	1	4	4	3	2	3	1	2	3	1	3
34	SKGPA-24	1	2	1	5	10	9	4	9	9	5	5	3	2	6	4	2	2	2	4	1	4	3	3	2	2	1	2	3	1	3
35	SKGPA-25	1	2	1	5	10	9	4	9	9	3	5	3	2	6	4	2	2	2	4	1	4	3	3	2	2	1	2	3	1	3
36	SKGPA-26	1	2	1	5	5	1	10	11	2	5	3	3	2	6	1	2	1	2	4	1	4	3	3	2	3	1	2	3	1	3
37	SKGPA-27	1	2	2	3	5	9	7	11	9	5	3	3	2	6	4	2	2	2	4	1	4	3	3	2	2	1	2	3	1	3
38	SKGPA-28	1	2	1	3	8	9	4	9	9	5	5	3	2	99	4	2	1	2	4	1	4	2	3	2	2	1	2	3	1	3
39	SKGPA-29	1	2	1	3	5	1	4	11	2	5	5	3	2	6	1	2	1	2	4	1	4	2	3	2	2	1	1	3	1	3
40	SKGPA-30	1	2	1	3	8	1	4	7	2	7	3	3	2	6	1	2	1	2	4	1	4	2	3	2	3	1	1	3	1	3
41	SKGPA-31	1	2	2	5	8	3	6	7	2	5	3	3	2	6	1	2	1	2	4	1	4	2	3	2	2	1	1	2	1	3
42	SKGPA-32	1	2	1	5	8	3	4	7	2	5	3	3	2	6	1	2	1	2	4	1	4	3	3	2	3	1	2	2	1	3
43	SKGPA-33	1	3	1	5	8	3	6	7	2	7	3	3	6	6	1	2	1	2	4	1	1	2	2	1	2	1	3	1	1	3

S. No.	Accession No.	Plant growth habit			Leaf colour			Inflorescence colour			Inflorescence compactness			Stem colour			Stem surface			Inflorescence shape			Inflorescence spininess			Seed colour		Early plant vigour	S.K. Nagar		
		Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	S.K. Nagar	Ranchi	Seedling vigour	Seed shattering	Popping ability of seed			
44	SKGPA-34	1	2	1	10	10	8	6	9	9	3	7	3	6	6	8	1	2	2	4	1	4	3	3	2	2	1	2	2	1	3
45	SKGPA-35	1	2	1	5	10	8	9	9	9	3	3	3	6	6	8	2	2	2	1	1	4	3	3	2	3	1	1	2	1	3
46	SKGPA-36	1	2	1	3	10	3	1	11	2	7	3	3	2	6	1	2	1	2	4	1	4	2	3	2	2	1	2	2	1	3
47	SKGPA-37	1	2	1	5	10	8	1	11	9	3	3	3	6	6	8	2	2	2	4	1	4	3	3	2	2	1	2	2	1	3
48	SKGPA-38	1	2	1	4	8	3	6	11	2	3	3	3	6	6	1	2	1	2	4	1	4	2	3	2	2	1	1	2	1	3
49	SKGPA-39	1	2	1	5	8	3	6	4	2	3	3	3	6	6	1	2	1	2	4	1	4	3	3	2	2	1	2	2	1	3
50	SKGPA-40	1	1	1	5	8	3	4	11	2	5	3	3	2	6	1	2	2	2	4	1	4	2	3	2	2	1	2	2	1	3
51	SKGPA-41	1	3	2	5	8	5	4	9	5	5	5	2	2	6	2	2	1	2	4	3	1	3	2	1	3	1	2	2	2	3
52	SKGPA-42	1	2	2	3	8	3	4	6	2	5	5	1	2	6	2	2	1	2	4	3	4	2	3	2	2	1	1	2	1	3
53	SKGPA-43	1	2	2	10	8	10	6	9	9	3	7	1	6	6	6	2	1	2	4	3	4	4	3	2	2	1	1	2	1	3
54	SKGPA-44	1	3	3	5	3	8	4	9	8	3	3	3	2	2	3	2	1	2	4	3	3	3	2	1	3	1	1	2	1	3
55	SKGPA-45	1	2	2	10	8	10	6	11	9	3	3	1	6	6	6	2	1	2	4	3	4	3	3	2	2	1	1	2	1	3
56	SKGPA-46	1	2	2	8	8	10	6	9	9	3	5	1	6	6	6	2	1	2	4	3	4	4	3	2	3	1	1	2	1	3
57	SKGPA-47	1	2	2	3	8	3	2	11	2	3	3	1	1	6	2	2	2	2	3	3	4	3	3	2	3	1	1	2	1	3
58	SKGPA-48	1	2	1	10	10	9	6	11	10	3	3	3	6	6	6	2	1	2	4	2	4	4	3	2	3	1	2	2	1	3
59	SKGPA-49	1	2	2	5	8	3	5	11	4	3	5	1	6	6	2	2	1	2	1	1	4	4	3	2	2	1	2	1	1	3
60	SKGPA-50	1	2	2	10	8	3	6	7	4	3	3	1	6	6	2	2	1	2	4	2	4	3	3	2	2	1	2	1	1	3
61	SKGPA-51	1	2	2	3	8	3	4	7	2	5	3	1	2	6	2	6	1	2	4	2	4	3	3	2	2	1	2	2	2	3
62	SKGPA-52	1	2	2	5	8	3	11	7	2	3	3	1	2	6	2	2	1	2	4	2	4	4	3	2	2	1	2	2	2	3
63	SKGPA-53	1	-	1	9	-	3	6	-	2	3	-	3	6	-	2	2	-	2	4	-	4	4	-	2	2	1	-	3	1	3
64	SKGPA-54	1	-	1	3	-	3	4	-	2	7	-	3	2	-	2	2	-	2	4	-	4	2	-	2	3	1	-	3	1	3
65	SKGPA-55	1	2	2	5	8	3	4	11	2	3	3	1	2	6	2	2	1	2	4	2	4	3	3	2	2	1	1	3	2	3
66	SKGPA-56	1	2	2	5	8	3	4	11	2	3	3	1	2	6	2	2	1	2	4	2	4	3	3	2	2	1	1	3	2	3

S. No.	Accession No.	Plant growth habit			Leaf colour			Inflorescence colour			Inflorescence compactness			Stem colour			Stem surface			Inflorescence shape			Inflorescence spininess			Seed colour		Early plant vigour	S.K. Nagar		
		Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	S.K. Nagar	Ranchi	Seedling vigour	Seed shattering	Popping ability of seed			
67	SKGPA-57	1	2	2	5	8	3	4	11	2	5	3	1	2	6	2	2	1	2	4	2	4	4	3	2	2	1	2	3	2	3
68	SKGPA-58	1	2	2	3	8	3	4	11	2	5	5	1	2	6	2	2	1	2	4	2	4	2	3	2	2	1	2	3	2	3
69	SKGPA-59	1	-	1	10	-	9	6	-	9	5	-	3	6	-	6	2	-	2	4	-	4	4	-	2	2	1	-	3	2	3
70	SKGPA-60	1	-	1	10	-	3	6	-	10	5	-	2	6	-	3	2	-	2	4	-	1	4	-	1	2	1	-	2	2	3
71	BGA-27	1	1	1	5	8	3	4	11	2	3	5	3	2	6	2	2	1	2	4	1	4	4	3	2	2	1	2	2	2	3
72	BGA-28	1	1	1	10	8	3	6	11	2	3	3	3	6	6	2	2	1	2	4	1	4	3	3	2	3	1	2	2	2	3
73	BGA-29	1	1	1	5	8	3	4	11	2	5	3	3	2	6	2	2	1	2	4	1	4	3	3	2	3	1	2	2	2	3
74	BGA-30	1	1	1	5	8	3	4	11	2	5	3	3	2	6	2	2	1	2	4	1	4	3	3	2	2	1	2	2	2	3
75	BGA-31	1	1	1	5	8	3	4	11	2	5	5	3	2	6	2	2	1	2	4	1	4	3	3	2	2	1	3	2	2	3
76	BGA-32	1	1	1	5	10	9	5	9	9	7	3	3	2	6	7	2	2	2	4	1	4	3	3	2	2	1	3	2	1	3
77	BGA-33	1	1	1	5	10	9	4	9	9	3	3	3	1	6	7	1	2	2	4	1	4	3	3	2	2	1	3	2	1	3
78	BGA-34	1	1	1	9	10	9	6	11	9	3	5	3	6	6	7	2	2	2	4	1	4	4	3	2	2	1	3	2	1	3
79	BGA-35	1	1	1	10	8	3	9	9	2	3	5	3	1	6	2	1	1	2	2	1	4	3	3	2	3	1	3	2	2	3
80	BGA-36	1	1	1	10	10	9	6	11	9	3	7	3	6	6	7	2	2	2	4	1	4	4	3	2	3	1	3	2	2	3
81	BGA-37	1	1	1	10	5	3	6	9	1	3	3	2	6	6	2	2	1	2	4	1	4	4	3	2	2	1	3	2	2	3
82	BGA-38	1	1	1	5	10	9	4	11	9	5	5	6	2	99	6	2	2	2	4	1	4	3	3	2	3	1	3	2	2	3
83	BGA-39	1	1	1	9	5	3	6	11	1	3	5	2	6	99	2	2	1	2	4	1	4	4	3	2	3	1	3	2	2	3
84	BGA-40	1	1	1	5	5	3	4	9	1	3	3	2	2	6	2	8	1	2	4	1	4	3	3	2	2	1	3	2	2	3
85	BGA-41	1	1	1	10	8	9	4	9	9	3	5	6	1	6	6	1	2	2	4	1	4	4	3	2	2	1	3	2	2	3
86	BGA-42	1	1	1	5	8	9	4	11	9	3	5	6	2	99	6	2	2	2	4	1	4	4	3	2	3	1	3	2	2	3
87	BGA-43	1	1	2	5	5	3	4	9	1	3	3	2	2	6	2	2	1	2	4	1	4	4	3	2	2	1	3	2	2	3
88	BGA-44	-	1	1	-	10	9	-	9	9	-	5	6	-	6	6	-	2	2	-	1	4	-	2	2	-	1	3	2	2	3
89	BGA-45	-	1	1	-	10	9	-	9	9	-	7	6	-	6	6	-	2	2	-	1	4	-	3	2	-	1	3	2	2	3

S. No.	Accession No.	Plant growth habit			Leaf colour			Inflorescence colour			Inflorescence compactness			Stem colour			Stem surface			Inflorescence shape			Inflorescence spininess			Seed colour		Early plant vigour	S.K. Nagar		
		Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	Ranchi	S.K. Nagar	Delhi	S.K. Nagar	Ranchi	Seedling vigour	Seed shattering	Popping ability of seed			
90	BGA-46	1	1	1	10	10	9	1	9	9	3	7	6	6	6	6	1	2	2	4	1	4	3	3	2	3	1	3	2	2	3
91	BGA-47	1	1	1	5	10	9	4	9	9	3	5	3	4	6	6	4	2	2	4	1	4	4	3	2	2	1	3	2	2	3
92	BGA-48	1	1	2	5	10	9	4	9	9	5	5	2	2	6	6	2	2	2	4	1	4	2	3	2	2	1	3	2	2	3
93	BGA-49	1	1	1	5	10	9	4	9	9	5	5	3	2	6	6	2	2	2	4	1	4	3	3	2	2	1	3	2	2	3
94	BGA-50	-	1	2	-	5	3	-	11	2	-	7	2	-	99	2	-	1	2	-	1	4	-	3	2	-	1	3	2	2	3
95	BGA-51	-	1	2	-	5	3	-	7	2	-	5	2	-	6	2	-	1	2	-	1	4	-	3	2	-	1	3	2	2	3
<b>Mean for check varieties</b>																															
	GA-1 (C)	1	1	1	5	5	1	4	11	2	5	5	3	2	6	1	2	1	2	4	1	4	3	3	2	2	1	3	3	1	3
	GA-2 (C)	1	3	1	10	10	9	4	9	9	5	5	3	6	6	4	2	2	2	4	1	4	3	2	2	2	1	3	3	1	3
	BGA-2 (C)	1	3	1	3	5	3	6	11	2	5	5	2	2	99	1	2	1	2	4	1	1	2	2	2	2	1	3	3	1	3
	Suvarna (C)	1	3	1	3	5	3	4	11	2	5	7	2	2	99	1	2	1	2	4	1	1	2	2	2	2	1	3	3	1	3
	<b>Minimum</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</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>2</b>	
	<b>Maximum</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>11</b>	<b>12</b>	<b>7</b>	<b>7</b>	<b>6</b>	<b>6</b>	<b>99</b>	<b>8</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>
	<b>Mode</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>5</b>	<b>8</b>	<b>3</b>	<b>4</b>	<b>11</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>3</b>



**Table 96. Promising lines in grain amaranth germplasm (Kharif, 2010) for various characters at different locations (Plains)**

S.No.	Characters	Range	Promising lines	Value of best check
<b>Bangalore (Accessions 48)</b>				
1.	Days to 50% flowering	38.00-46.00	SKGPA-41, SKGPA-12, SKGPA-36, SKGPA-10, SKGPA-30, SKGPA-32, SKGPA-37, SKPGA-58 (< 41.00 days)	GA-2 & Suvarna (43.75 days)
2.	Days to maturity	70.00-88.00	SKGPA-41, SKGPA-36, SKGPA-12, SKGPA-10, SKGPA-32, SKGPA-37, SKPGA-58, SKGPA-30 (< 78.00 days)	GA-2 (81.50 days)
3.	Plant height (cm)	51.00-156.67	SKGPA-4, SKGPA-14, SKGPA-2, SKGPA-22, SKGPA-13, GPBGA-60, SKGPA-6, SKGPA-18, SKGPA-3, SKGPA-5, SKGPA-23 (> 131.00 cm)	KBGA Selection (126.67 cm)
4.	Inflorescence length (cm)	25.00-73.33	SKGPA-14, SKGPA-57, SKGPA-18, SKGPA-43, SKGPA-50, SKGPA-54 (> 60.00 cm)	KBGA-1 (56.50 cm)
5.	Leaf length (cm)	8.33-37.00	GPBGA-60, SKGPA-13, SKGPA-6, SKGPA-8, SKGPA-4, SKGPA-15, SKGPA-11 (> 24.00 cm)	Suvarna (23.08 cm)
6.	Leaf width (cm)	2.33-13.00	GPBGA-60, SKGPA-13, SKGPA-8 (> 9.00 cm)	KBGA Selection (8.85 cm)
7.	Petiole length (cm)	2.00-16.66	SKGPA-5, SKGPA-4, GPBGA-60, SKGPA-13, SKGPA-8 (> 11.00 cm)	Suvarna (8.75 cm)
8.	Lateral spikelet length (cm)	4.33-28.00	SKGPA-6, SKGPA-13, SKGPA-41, GPBGA-60, SKGPA-5, GPBGA-21, SKGPA-43, SKGPA-4, SKGPA-54, SKGPA-11, SKGPA-28, SKGPA-10, SKGPA-8 (> 18.00 cm)	GA-2 (14.25 cm)
9.	Stem thickness (mm)	6.17-15.57	SKGPA-22, SKGPA-4, SKGPA-15, SKGPA-11, SKGPA-8 (> 13.00 mm)	KBGA-1 (12.71 mm)
10.	Seed yield per plant (g)	2.30-19.20	SKGPA-59, GPBGA-60, SKGPA-8 (> 16.50 g)	KBGA-1 (13.93 g)
11.	Seed weight (g/10 ml)	7.05-9.70	SKGPA-20, SKGPA-53 (> 9.50 g/10 ml)	KBGA Selection (9.28 g/10 ml)

**Table 97. Evaluation of germplasm lines in grain amaranth at Bangalore : Kharif 2010 (Plain)**

S. No.	Accession No.	Qualitative characters									Quantitative characters											
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Days to 50% flowering	Days to 80% maturity	Leaf length (cm)	Petiole length (cm)	Stem thickness (mm)	No. of branches per plant	Plant height (cm)	Lateral spikelet length (cm)	Inflorescence length (cm)	Seed yield per plant (g)	Seed volume weight (g/10ml)	Leaf width (cm)
1	SKGPA-2	3	1	5	10	3	2	1	1	1	41	78	21.67	7.66	11.30	1	145.00	12.67	31.67	8.30	8.16	7.67
2	SKGPA-3	3	1	5	10	3	2	1	1	1	41	78	23.67	7.33	11.73	1	135.00	14.00	32.67	9.40	7.45	7.00
3	SKGPA-4	3	1	5	10	3	2	1	1	1	41	78	26.33	15.66	14.77	1	156.67	19.00	40.33	9.80	9.28	9.00
4	SKGPA-5	3	1	5	10	3	2	1	1	1	41	78	24.00	16.66	12.17	1	133.67	21.33	37.00	9.20	8.89	8.33
5	SKGPA-6	3	1	5	10	3	2	1	1	1	41	78	33.00	8.66	10.40	1	140.00	28.00	43.33	12.20	8.89	9.00
6	SKGPA-7	3	1	5	10	3	2	1	1	1	41	78	21.00	8.33	10.23	1	106.33	13.67	36.67	7.20	7.61	6.67
7	SKGPA-8	2	1	3	10	5	2	1	4	1	41	78	31.00	11.66	13.17	1	128.33	18.33	39.33	18.00	8.48	10.00
8	SKGPA-9	1	1	10	8	5	2	1	4	1	41	78	14.33	4.66	8.53	1	116.00	16.33	53.00	3.30	8.51	8.67
9	SKGPA-10	1	1	10	8	3	1	1	1	1	40	75	20.00	9.33	12.73	1	130.33	18.33	53.33	7.10	8.29	4.00
10	SKGPA-11	2	1	3	4	5	2	1	4	1	45	85	25.00	9.33	13.27	1	131.00	18.67	40.67	8.36	7.56	7.67
11	SKGPA-12	2	1	10	8	5	6	1	1	1	39	74	20.33	7.00	11.20	1	120.00	12.33	53.67	9.10	8.17	5.33
12	SKGPA-13	3	1	5	10	5	2	1	4	1	42	78	33.67	12.33	12.87	1	143.33	24.67	51.00	13.56	8.75	10.00
13	SKGPA-14	1	1	3	8	7	6	1	4	1	42	78	17.33	5.33	9.47	1	148.67	10.67	73.33	10.00	8.46	6.00
14	SKGPA-15	2	1	5	11	7	2	1	4	1	43	80	25.00	7.66	14.33	1	125.00	16.33	41.67	9.30	9.12	5.33
15	SKGPA-17	2	1	5	11	7	2	1	4	3	43	80	21.67	5.33	12.47	1	130.33	16.00	53.67	13.60	9.24	6.00
16	SKGPA-18	2	1	10	8	7	6	1	4	1	44	83	20.33	7.00	12.73	1	138.33	13.33	66.33	10.90	8.70	5.67
17	SKGPA-19	1	1	5	4	7	2	1	4	1	42	80	17.33	5.00	9.17	1	110.33	6.67	51.67	9.20	9.36	4.33
18	SKGPA-20	1	1	10	8	7	6	1	4	1	41	78	15.33	4.66	8.90	1	122.00	10.33	40.67	9.20	9.70	5.33
19	SKGPA-22	1	1	3	4	5	2	1	3	1	46	88	20.00	6.00	15.57	1	143.33	7.67	49.33	6.30	9.16	5.67
20	SKGPA-23	2	1	5	8	7	2	1	4	1	44	83	20.00	5.33	12.37	1	133.33	7.67	54.00	13.70	9.12	6.67
21	SKGPA-25	1	1	10	7	7	2	1	4	1	44	83	19.67	5.33	12.20	1	129.33	10.67	59.33	7.56	9.16	6.67
22	SKGPA-26	2	1	5	11	7	2	1	4	3	41	78	12.00	4.00	7.33	1	118.67	9.67	49.00	10.00	9.20	4.33
23	SKGPA-28	2	1	5	8	5	6	1	4	1	43	80	20.67	5.33	10.07	1	128.33	18.67	58.00	8.70	8.98	6.67

S. No.	Accession No.	Qualitative characters									Quantitative characters											
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Days to 50% flowering	Days to 80% maturity	Leaf length (cm)	Petiole length (cm)	Stem thickness (mm)	No. of branches per plant	Plant height (cm)	Lateral spikelet length (cm)	Inflorescence length (cm)	Seed yield per plant (g)	Seed volume weight (g/10ml)	Leaf width (cm)
24	SKGPA-29	1	1	3	4	7	2	1	4	1	43	80	13.67	5.33	8.20	1	108.33	4.67	38.00	5.14	8.06	4.67
25	SKGPA-30	1	1	3	99	3	2	1	1	3	40	76	16.00	4.33	8.10	1	71.33	4.33	25.00	2.30	7.58	4.33
26	SKGPA-32	1	1	3	99	3	2	1	1	3	40	75	14.67	4.00	8.00	1	89.33	10.33	36.33	2.36	7.16	3.67
27	SKGPA-33	2	1	3	4	3	2	1	1	1	41	78	23.67	8.33	10.00	1	107.00	15.00	35.00	3.43	7.98	8.33
28	SKGPA-35	1	1	10	8	3	6	1	1	3	41	78	11.33	3.33	6.17	1	82.00	6.00	31.67	3.40	7.05	3.67
29	SKGPA-36	1	1	3	99	3	2	1	1	3	39	73	13.00	6.67	8.90	1	89.67	7.33	43.33	2.52	8.67	4.33
30	SKGPA-37	1	1	10	8	3	6	1	4	1	40	75	16.33	4.33	6.87	1	93.67	9.67	37.00	3.70	8.86	3.67
31	SKGPA-38	1	3	4	4	5	2	1	4	1	42	78	13.00	4.00	8.47	1	81.00	9.00	36.00	3.40	9.28	4.00
32	SKGPA-39	1	1	3	4	5	2	1	4	1	41	78	20.33	5.67	9.87	1	107.00	8.00	40.00	3.58	7.45	5.00
33	SKGPA-40	1	1	3	4	5	2	1	4	1	41	78	16.00	5.00	12.10	1	110.67	7.67	52.33	4.60	7.56	4.00
34	SKGPA-41	1	1	3	5	3	2	1	2	1	38	70	8.33	3.00	8.63	1	61.67	23.00	41.67	6.20	8.56	2.67
35	SKGPA-42	2	1	3	4	7	2	1	4	1	41	78	9.67	3.33	10.07	1	89.00	6.67	46.00	5.92	8.35	3.00
36	SKGPA-43	1	1	10	8	5	6	1	4	1	42	80	18.33	5.67	7.63	1	87.67	19.33	63.67	5.10	7.43	4.33
37	SKGPA-44	1	3	8	8	3	2	1	3	1	44	83	15.33	4.67	9.47	1	101.67	9.00	49.67	3.60	7.61	5.00
38	SKGPA-45	2	1	3	4	2	1	1	4	1	44	83	21.67	5.33	10.87	1	106.00	8.00	54.00	12.40	8.52	5.00
39	SKGPA-47	1	1	5	8	7	6	1	4	1	44	83	16.67	5.00	8.67	1	104.33	7.00	52.00	12.40	8.74	4.33
40	SKGPA-48	3	1	5	8	8	6	1	4	1	43	81	17.33	5.67	6.80	1	118.67	12.33	50.67	9.30	9.16	4.33
41	SKGPA-50	1	1	3	4	7	2	1	4	1	45	84	20.00	5.33	9.67	1	111.00	17.33	61.00	7.00	9.21	5.67
42	SKGPA-53	1	1	3	4	7	2	1	4	1	41	78	13.33	4.33	9.40	1	87.00	5.67	41.33	8.00	9.60	4.67
43	SKGPA-54	1	1	3	4	7	2	1	4	1	46	87	17.67	7.00	12.87	1	115.00	19.00	60.67	10.40	8.60	6.00
44	SKGPA-57	1	1	3	4	7	2	1	4	1	45	87	14.33	4.33	11.43	1	99.67	9.67	67.67	16.40	8.34	4.00
45	SKPGA-58	1	1	3	2	5	2	1	2	1	40	75	11.00	2.00	9.43	1	51.00	13.00	35.67	6.70	8.80	2.33
46	SKGPA-59	2	1	5	8	7	1	1	4	1	44	83	23.33	5.33	10.00	1	111.33	13.00	47.67	19.20	8.80	6.00
47	GPBGA-60	3	1	5	10	7	2	1	1	1	43	80	37.00	13.67	12.97	1	142.00	22.00	37.67	18.80	8.91	13.00
48	GPBGA-21	2	1	10	8	7	6	1	4	1	42	78	11.67	5.67	7.33	1	96.33	19.33	53.33	12.32	8.24	3.67

S. No.	Accession No.	Qualitative characters									Quantitative characters											
		Early plant vigour	Plant growth habit	Leaf colour	Inflorescence colour	Inflorescence compactness	Stem colour	Stem surface	Inflorescence shape	Inflorescence spininess	Days to 50% flowering	Days to 80% maturity	Leaf length (cm)	Petiole length (cm)	Stem thickness (mm)	No. of branches per plant	Plant height (cm)	Lateral spikelet length (cm)	Inflorescence length (cm)	Seed yield per plant (g)	Seed volume weight (g/10ml)	Leaf width (cm)
<b>Mean for check variety</b>																						
	<b>BGA-2 (C)</b>	1	1	10	8	5	2	1	4	1	45.00	82.00	20.33	7.67	12.13	1	115.17	11.00	29.84	12.52	8.22	7.55
	<b>GA-2 (C)</b>	2	1	10	8	5	6	1	4	1	43.75	81.50	18.33	4.25	11.60	1	100.50	14.25	51.58	10.63	8.25	3.25
	<b>KBGA Sel. (C)</b>	1	1	10	8	7	6	1	8	1	44.00	83.00	16.67	4.00	12.30	1	126.67	5.67	51.67	12.51	9.28	8.85
	<b>KBGA-1 (C)</b>	1	1	10	8	7	6	1	8	1	44.00	83.00	17.09	4.42	12.71	1	119.17	8.50	56.50	13.93	8.42	5.40
	<b>Suvarna (C)</b>	3	1	5	10	3	2	1	1	1	43.75	82.00	23.08	8.75	10.65	1	111.08	13.75	34.67	13.48	8.63	8.74
	<b>Minimum</b>	1	1	3	2	2	1	1	1	1	<b>38.00</b>	<b>70.00</b>	<b>8.33</b>	<b>2.00</b>	<b>6.17</b>	<b>1</b>	<b>51.00</b>	<b>4.33</b>	<b>25.00</b>	<b>2.30</b>	<b>7.05</b>	<b>2.33</b>
	<b>Maximum</b>	3	3	10	99	8	6	1	8	3	<b>46.00</b>	<b>88.00</b>	<b>37.00</b>	<b>16.66</b>	<b>15.57</b>	<b>1</b>	<b>156.67</b>	<b>28.00</b>	<b>73.33</b>	<b>19.20</b>	<b>9.70</b>	<b>13.00</b>
	<b>Mean</b>	1	1	3	8	7	2	1	4	1	<b>42.22</b>	<b>79.58</b>	<b>19.10</b>	<b>6.41</b>	<b>10.53</b>	<b>1</b>	<b>113.36</b>	<b>12.92</b>	<b>46.63</b>	<b>8.97</b>	<b>8.52</b>	<b>5.84</b>
	<b>CV (%) Phen.</b>										<b>4.45</b>	<b>4.50</b>	<b>31.20</b>	<b>47.10</b>	<b>20.87</b>	<b>-</b>	<b>19.88</b>	<b>43.51</b>	<b>22.88</b>	<b>47.99</b>	<b>7.72</b>	<b>37.47</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-Reddish 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

**Table 98. Promising lines in rice bean germplasm (Kharif, 2010) for various characters at different locations (Plains).**

S.No.	Characters	Range	Promising lines	Highest value of best check
<b>Bangalore (Accessions 50)</b>				
1.	Days to 50% flowering	40.00-43.00	-	RBL-35 (40.00 days)
2.	Days to maturity	75.00-82.25	-	RBL-6 (75.00 days)
3.	Seeds per pod	5.95-8.40	LRB-479, LRB-488, LRB-462, LRB-467, LRB-496 (> 8.10)	RBL-6 (8.03)
4.	100 seed weight (g)	5.62-7.82	LRB-491 (= 7.82 g)	RBL-1 (7.55 g)
5.	Seed yield per plant (g)	3.05-7.65	LRB-482, LRB-478, LRB-446, LRB-484, LRB-474, LRB-488 (> 6.20 g)	RBL-35 (6.03 g)
<b>Bhubaneswar (Accessions 50)</b>				
1.	Days to 50% flowering	41.00-48.00	LRB-319, LRB-460, LRB-461, LRB-493 (< 42.00 days)	RBL-35 (42.40 days)
2.	Days to maturity	81.00-99.00	LRB-484 (= 81.00 days)	RBL-35 82.80
3.	Plant height (cm)	80.00-97.40	LRB-470, LRB-449, LRB-455, LRB-459, LRB-458, LRB-491, LRB-471, LRB-448, LRB-447, LRB-311, LRB-473 (> 91.00 cm)	RBL-50 88.12
4.	Pod length (cm)	6.54-9.75	LRB-493, LRB-496, LRB-465, LRB-478, LRB-325, LRB-459, LRB-447 (> 8.50 cm)	RBL-1 (8.27 cm)
5.	Primary branches per plant	1.80-3.60	LRB-491, LRB-322, LRB-449, LRB-461, LRB-489, LRB-325, LRB-319 (> 3.00)	RBL-6 & RBL-50 (2.60)
6.	Clusters per plant	6.60-20.40	LRB-491, LRB-448, LRB-492, LRB-458, LRB-489, LRB-449, LRB-322, LRB-447, LRB-498, LRB-490, LRB-496, LRB-466, LRB-319, LRB-325, LRB-468, LRB-324, LRB-461 (> 12.00)	RBL-1 (9.88)
7.	Pods per plant	11.40-46.80	LRB-449, LRB-458, LRB-491, LRB-490, LRB-489, LRB-448, LRB-492, LRB-498, LRB-496, LRB-322, LRB-447, LRB-461, LRB-324, LRB-319, LRB-466, LRB-325, LRB-471, LRB-463, LRB-480, LRB-460, LRB-470 (> 25.00)	RBL-6 (20.76)
8.	Seeds per pod	5.50-8.80	LRB-452, LRB-324, LRB-480, LRB-478, LRB-495, LRB-496, LRB-497, LRB-493, LRB-325, LRB-459, LRB-489 (> 8.00)	RBL-35 & RBL-50 (7.22)

9.	Seeds per pod – Adj.	5.66-8.89	LRB-452, LRB-324, LRB-480, LRB-478, LRB-459, LRB-325, LRB-447, LRB-449, LRB-473, LRB-495, LRB-484 (> 8.00)	RBL-35 & RBL-50 (7.22)
10.	Seed yield per plant (g)	5.23-14.03	LRB-491, LRB-465, LRB-489, LRB-458, LRB-322, LRB-492, LRB-466, LRB-488 (> 10.00 g)	RBL-6 (8.05 g)
11.	100 seed weight (g)	4.39-7.31	LRB-474, LRB-468, LRB-325, LRB-478, LRB-496, LRB-311, LRB-455, LRB-448, LRB-447, LRB-457 (> 6.30 g)	RBL-35 (5.84 g)
12.	Seed yield (q/ha)	2.57-7.29	LRB-324, LRB-465, LRB-322, LRB-483, LRB-489, LRB-488, LRB-473, LRB-462, LRB-319, LRB-457, LRB-496, LRB-463, LRB-492, LRB-480, LRB-495, LRB-479, LRB-476, LRB-466, LRB-460, LRB-471, LRB-468, LRB-461, LRB-481 (> 5.00)	RBL-6 (3.97 q/ha)
<b>Delhi (Accessions 50)</b>				
1.	Days to 50% flowering	78.00-92.00	-	RBL-1 (78.00 days)
2.	Days to maturity	112.00-125.00	LRB-448, LRB-474, LRB-485 (< 113.00 days)	RBL-35 (114.00 days)
3.	Plant height (cm)	49.00-144.80	LRB-446, LRB-455, LRB-481, LRB-473, LRB-467, LRB-464 (> 108.00 cm)	RBL-50 (98.67 cm)
4.	Primary branches per plant	1.60-4.80	LRB-461, LRB-498 (> 4.40)	RBL-6 (4.30)
5.	Pods per cluster	2.00-4.00	LRB-467, LRB-472 (> 3.60)	RBL-35 (3.40)
6.	Pod length (cm)	7.62-10.30	LRB-455, LRB-488, LRB-484, LRB-461, LRB-452, LRB-467 (> 9.50 cm)	RBL-35 (9.28 cm)
7.	Seeds per pod	7.00-9.20	LRB-467, LRB-478, LRB-325, LRB-455 (> 8.60)	RBL-1 (8.40)
8.	No. of clusters per plant	11.60-45.60	LRB-449, LRB-467, LRB-481, LRB-498, LRB-464, LRB-455, LRB-480 (> 35.00)	RBL-35 (32.60)
9.	Pods per plant	29.00-151.00	LRB-467 (= 151.00)	RBL-35 (120.00)
10.	Seed yield per plant (g)	12.19-169.22	LRB-487, LRB-488 (> 142.00 g)	RBL-1 (138.92 g)
11.	100 seed weight (g)	3.59-6.03	LRB-493, LRB-455, LRB-452, LRB-470, LRB-471, LRB-472, LRB-473, LRB-467, LRB-488, LRB-478 (> 5.50 g)	RBL-1 (4.97 g)
12.	Seed yield (q/ha)	1.25-16.94	LRB-487, LRB-322, LRB-466, LRB-477, LRB-468, LRB-491, LRB-325, LRB-324 (> 12.00 q/ha)	RBL-6 (9.26 q/ha)

<b>Ludhiana (Accessions 50)</b>				
1.	Days to 50% flowering	66.00-72.00	LRB-475, LRB-325 (< 69.00 days)	RBL-35 (69.80 days)
2.	Days to 50% flowering - Adj.	65.50-72.75	LRB-475, LRB-460, LRB-465, LRB-325 (< 69.00 days)	RBL-35 (69.80 days)
3.	Days to maturity	105.00-112.00	LRB-490 (= 105.00 days)	RBL-6 (106.00 days)
4.	Plant height (cm)	69.00-178.00	LRB-476, LRB-467, LRB-482, LRB-474, LRB-477, LRB-473 (> 155.00 cm)	RBL-35 (145.80 cm)
5.	Primary branches per plant	3.00-13.30	LRB-319, LRB-472, LRB-475 (> 9.50)	RBL-1 (9.50)
6.	Pods per plant	38.00-155.40	LRB-456, LRB-472 (> 148.00)	RBL-1 (145.80)
7.	Pod length (cm)	7.50-10.00	LRB-497, LRB-496, LRB-488, LRB-470, LRB-475, LRB-476, LRB-490, LRB-489, LRB-468, LRB-462, LRB-461, LRB-480 (> 9.30)	RBL-35 (8.86 cm)
8.	Seeds per pod	6.30-9.10	LRB-477, LRB-324, LRB-460, LRB-475 (> 8.80)	RBL-35 (8.32)
9.	100 seed weight (g)	5.20-7.52	LRB-474, LRB-497, LRB-487, LRB-496, LRB-498, LRB-476, LRB-489, LRB-491, LRB-446, LRB-455, LRB-475 (> 6.70 g)	RBL-1 & RBL-6 (6.22 g)
10.	Seed yield (q/ha)	4.17-31.25	LRB-462, LRB-456, LRB-324 (> 24.00 q/ha)	RBL-6 (22.42 q/ha)
<b>Mettupalayam ( Accessions 50)</b>				
1.	Days to 50% flowering	46.00-56.00	LRB-460, LRB-457 (< 48.00 days)	RBL-6 (49.00 days)
2.	Days to maturity	89.00-93.00	-	RBL-6 (89.00 days)
3.	Plant height (cm)	59.00-72.00	-	RBL-50 (72.00 cm)
4.	No. of branches per plant	3.00-5.00	-	RBL-50 (5.00)
5.	No. of pods per plant	19.00-34.00	-	RBL-35 (34.00)
6.	Seed yield per plant (g)	6.50-9.00	-	RBL-35 (9.00)

<b>Rahuri (Accessions 50)</b>				
1.	Days to 50% flowering	58.00-78.00	LRB-478, LRB-325, LRB-479, LRB-477, LRB-471 (< 60.00 days)	RBL-1 (61.80 days)
2.	Days to maturity	99.00-126.00	LRB-478, LRB-471, LRB-466, LRB-311, LRB-325, LRB-479, LRB-319, LRB-322, LRB-477, LRB-459 (< 112.00 days)	RBL-50 (115.80 days)
3.	Plant height (cm)	68.67-198.67	LRB-483, LRB-324, LRB-473, LRB-480, LRB-311, LRB-478, LRB-319, LRB-457, LRB-472, LRB-471, LRB-458, LRB-468, LRB-459 (> 150.00 cm)	RBL-1 (125.20 cm)
4.	Primary branches per plant	2.00-5.00	LRB-471, LRB-487, LRB-459, LRB-482 (> 4.00)	RBL-6 & RBL-50 (3.80)
5.	Stem thickness (cm)	0.47-1.00	-	RBL-6, RBL-35 & RBL-50 (1.0)
6.	Pod length (cm)	6.33-9.27	LRB-322, LRB-446, LRB-319, LRB-311, LRB-458, LRB-493, LRB-491, LRB-495, LRB-466 (> 8.50 cm)	RBL-50 (8.11 cm)
7.	Pod length (cm) – Adj.	6.27-9.10	LRB-458, LRB-488, LRB-466, LRB-493, LRB-491, LRB-482 (> 8.50 cm)	RBL-50 (8.11 cm)
8.	Pods per cluster	3.00-5.00	LRB-488, LRB-311, LRB-466, LRB-325, LRB-446, LRB-449, LRB-455, LRB-484, LRB-460, LRB-463, LRB-471 (= 5.00)	RBL-50 (4.60)
9.	Seeds per pod	5.00-9.00	LRB-488, LRB-311, LRB-491, LRB-466, LRB-490, LRB-465, LRB-480, LRB-492, LRB-464, LRB-477, LRB-487, LRB-325 (> 7.50)	RBL-35 (7.40)
10.	100 seed weight (g)	4.32-6.15	LRB-484, LRB-489, LRB-459, LRB-462, LRB-474, LRB-472, LRB-447, LRB-480, LRB-473, LRB-492, LRB-483, LRB-495, LRB-479, LRB-319, LRB-497 (> 5.60 g)	RBL-6 & RBL-50 (5.43g)
11.	Seed yield (q/ha)	17.50-43.89	LRB-488, LRB-475, LRB-311, LRB-483, LRB-325, LRB-461, LRB-473, LRB-478, LRB-468, LRB-489, LRB-492 (> 35.00 q/ha)	RBL-6 (28.11 q/ha)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	53.80-64.60	LRB-458, LRB-447, LRB-457 (55.00 days)	RBL-35 (57.37 days)
2.	Days to maturity	95.80-105.00	LRB-447, LRB-482, LRB-457, LRB-311, LRB-458 (< 97.00 days)	RBL-6 (98.38 days)
3.	Plant height (cm)	79.12-123.33	LRB-473, LRB-467, LRB-483, LRB-311, LRB-457, LRB-446, LRB-458 (> 110.00 cm)	RBL-50 (103.83 cm)
4.	Primary branches per plant	3.04-5.38	LRB-482, LRB-319 (> 4.90)	RBL-1 (4.62)
5.	Pods per Cluster	2.60-4.30	LRB-449, LRB-466, LRB-446 (> 4.00)	RBL-50 (3.83)



6.	Pods per plant	33.80-103.77	LRB-467, LRB-472 (> 95.00)	RBL-35 (72.10)
7.	Pod length (cm)	7.82-9.22	LRB-493, LRB-488, LRB-452, LRB-496, LRB-472, LRB-497, LRB-319, LRB-322 (> 8.70 cm)	RBL-35 & RBL-50 (8.41 cm)
8.	Seeds per pod	6.62-8.04	LRB-496, LRB-488, LRB-478 (> 7.95)	RBL-35 (7.93)
9.	Clusters per plant	8.80-40.00	LRB-467, LRB-472, LRB-449, LRB-491, LRB-481, LRB-480, LRB-464 (> 23.00)	RBL-35 (20.55)
10.	100 seed weight (g)	5.23-6.40	LRB-474, LRB-457, LRB-497, LRB-473, LRB-482, LRB-488, LRB-447, LRB-311, LRB-483, LRB-496, LRB-478, LRB-472, LRB-487 (> 6.00 g)	RBL-1 (5.89 g)
11.	Seed yield per plant (g)	6.22-48.24	LRB-488, LRB-452 (> 40.00 g)	RBL-1 (39.44 g)
12.	Seed yield (q/ha)	8.27-20.90	LRB-467, LRB-325, LRB-488, LRB-324, LRB-311, LRB-462, LRB-447 (> 16.80 q/ha)	RBL-6 (15.94 q/ha)

**Table 99. Multilocation evaluation of germplasm lines in rice bean at Bangalore, Bhubaneswar, Delhi, Ludhiana, Mettupalayam and Rahuri : Kharif 2010 (Plains)**

S. No.	Accession No.	Days to 50% flowering							Days to maturity						
		Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
1	LRB-311	40	44	78	69	50	63	<b>57.33</b>	78	88	115	107	89	102	<b>96.50</b>
2	LRB-319	40	41	84	69	51	68	<b>58.83</b>	78	87	116	111	89	106	<b>97.83</b>
3	LRB-322	40	42	81	71	49	63	<b>57.67</b>	78	88	116	108	89	108	<b>97.83</b>
4	LRB-324	40	46	80	70	48	65	<b>58.17</b>	78	91	114	107	89	112	<b>98.50</b>
5	LRB-325	40	44	83	68	52	59	<b>57.67</b>	78	89	115	107	90	103	<b>97.00</b>
6	LRB-446	40	43	84	72	51	69	<b>59.83</b>	78	88	116	107	91	118	<b>99.67</b>
7	LRB-447	40	42	-	71	48	71	<b>54.40</b>	78	85	-	106	91	119	<b>95.80</b>
8	LRB-448	40	44	80	70	49	66	<b>58.17</b>	78	89	112	106	90	113	<b>98.00</b>
9	LRB-449	40	46	78	72	49	63	<b>58.00</b>	78	91	116	107	90	115	<b>99.50</b>
10	LRB-452	40	46	86	71	50	62	<b>59.17</b>	78	91	120	106	91	123	<b>101.50</b>
11	LRB-455	40	47	85	71	51	78	<b>62.00</b>	78	93	116	107	89	124	<b>101.17</b>
12	LRB-456	40	47	81	71	50	71	<b>60.00</b>	78	93	114	107	90	114	<b>99.33</b>
13	LRB-457	40	44	-	71	47	70	<b>54.40</b>	78	89	-	108	90	116	<b>96.20</b>
14	LRB-458	40	44	-	71	48	66	<b>53.80</b>	78	91	-	107	89	118	<b>96.60</b>
15	LRB-459	40	45	82	71	49	63	<b>58.33</b>	78	99	117	110	89	110	<b>100.50</b>
16	LRB-460	40	41	82	69	46	76	<b>59.00</b>	78	90	118	108	90	126	<b>101.67</b>
17	LRB-461	40	41	85	70	48	68	<b>58.67</b>	78	89	118	109	90	114	<b>99.67</b>
18	LRB-462	40	42	86	71	50	62	<b>58.50</b>	78	87	122	109	91	116	<b>100.50</b>
19	LRB-463	40	45	80	71	54	62	<b>58.67</b>	78	90	116	107	91	112	<b>99.00</b>
20	LRB-464	40	43	84	72	52	63	<b>59.00</b>	78	88	116	107	91	119	<b>99.83</b>
21	LRB-465	40	47	81	69	51	68	<b>59.33</b>	78	92	118	108	92	122	<b>101.67</b>
22	LRB-466	42	48	86	70	52	62	<b>60.00</b>	80	93	122	106	92	102	<b>99.17</b>

S. No.	Accession No.	Plant height (cm)						No. of primary branches per plant					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
1	LRB-311	91.40	100.40	134.00	62.00	176.67	<b>112.89</b>	2.6	-	8.0	3.0	3.0	<b>4.15</b>
2	LRB-319	89.60	76.40	143.60	61.00	173.67	<b>108.85</b>	3.2	3.2	13.3	4.0	3.0	<b>5.34</b>
3	LRB-322	90.40	90.00	136.30	60.00	102.33	<b>95.81</b>	3.6	2.8	5.6	4.0	3.0	<b>3.80</b>
4	LRB-324	80.20	78.20	137.30	60.00	187.67	<b>108.67</b>	2.6	3.2	3.3	4.0	3.0	<b>3.22</b>
5	LRB-325	90.40	79.60	135.30	61.00	116.00	<b>96.46</b>	3.2	3.0	5.1	3.0	3.0	<b>3.46</b>
6	LRB-446	90.00	144.80	140.00	62.00	118.33	<b>111.03</b>	2.8	3.4	3.0	3.0	3.0	<b>3.04</b>
7	LRB-447	91.60	-	131.60	60.00	117.33	<b>100.13</b>	2.8	-	8.0	3.0	4.0	<b>4.45</b>
8	LRB-448	92.00	72.60	128.30	60.00	139.67	<b>98.51</b>	3.0	2.6	5.3	4.0	4.0	<b>3.78</b>
9	LRB-449	96.00	94.00	140.60	59.00	135.00	<b>104.92</b>	3.4	3.6	6.0	4.0	4.0	<b>4.20</b>
10	LRB-452	91.00	98.80	128.30	61.00	115.33	<b>98.89</b>	2.8	2.8	6.0	4.0	4.0	<b>3.92</b>
11	LRB-455	96.00	133.80	145.00	62.00	110.33	<b>109.43</b>	2.8	3.8	6.3	3.0	3.0	<b>3.78</b>
12	LRB-456	81.00	82.20	150.00	63.00	97.00	<b>94.64</b>	2.6	3.0	7.3	4.0	4.0	<b>4.18</b>
13	LRB-457	87.00	-	140.00	60.00	158.33	<b>111.33</b>	2.4	-	4.6	4.0	2.0	<b>3.25</b>
14	LRB-458	94.00	-	130.00	61.00	155.67	<b>110.17</b>	3.0	-	4.3	3.0	3.0	<b>3.33</b>
15	LRB-459	95.00	92.00	133.30	62.00	151.00	<b>106.66</b>	2.6	4.2	7.6	3.0	5.0	<b>4.48</b>
16	LRB-460	91.00	65.60	136.60	63.00	142.33	<b>99.71</b>	3.0	3.4	8.0	4.0	4.0	<b>4.48</b>
17	LRB-461	88.00	86.20	115.00	64.00	98.33	<b>90.31</b>	3.4	4.8	4.0	5.0	4.0	<b>4.24</b>
18	LRB-462	84.00	74.40	105.00	64.00	128.00	<b>91.08</b>	2.6	3.4	6.0	4.0	3.0	<b>3.80</b>
19	LRB-463	86.00	82.20	141.00	65.00	73.00	<b>89.44</b>	2.4	3.6	6.3	4.0	4.0	<b>4.06</b>
20	LRB-464	87.00	108.40	126.00	69.00	87.67	<b>95.61</b>	2.6	4.4	6.3	4.0	4.0	<b>4.26</b>
21	LRB-465	89.00	56.80	112.60	65.00	101.00	<b>84.88</b>	2.2	3.4	7.6	3.0	3.0	<b>3.84</b>
22	LRB-466	86.80	77.00	113.30	62.00	96.67	<b>87.15</b>	2.8	2.4	8.0	3.0	4.0	<b>4.04</b>

S. No.	Accession No.	No. of pods per plant					No. of seed per pod						Pod length (cm)				
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean
1	LRB-311	20.2	54.2	87.3	25.0	<b>46.68</b>	6.60	7.30	8.00	8.10	8.00	<b>7.60</b>	8.40	8.54	8.50	8.83	<b>8.57</b>
2	LRB-319	29.8	47.0	131.6	26.0	<b>58.60</b>	7.80	7.70	8.60	8.60	7.00	<b>7.94</b>	7.98	9.38	8.60	9.00	<b>8.74</b>
3	LRB-322	33.6	39.8	120.3	28.0	<b>55.43</b>	7.00	7.90	8.40	8.30	7.00	<b>7.72</b>	7.75	8.90	9.00	9.27	<b>8.73</b>
4	LRB-324	31.0	39.6	127.6	25.0	<b>55.80</b>	5.95	8.60	8.20	9.00	7.00	<b>7.75</b>	7.92	9.30	8.80	8.00	<b>8.51</b>
5	LRB-325	28.2	48.4	120.5	24.0	<b>55.28</b>	6.40	8.10	8.80	8.00	8.00	<b>7.86</b>	8.60	9.40	8.30	7.20	<b>8.38</b>
6	LRB-446	13.8	72.6	100.0	23.0	<b>52.35</b>	7.60	6.90	7.40	6.60	7.00	<b>7.10</b>	7.44	9.10	8.60	9.03	<b>8.54</b>
7	LRB-447	32.6	-	89.6	22.0	<b>48.07</b>	6.50	8.00	-	8.80	7.00	<b>7.58</b>	8.52	-	8.80	8.10	<b>8.47</b>
8	LRB-448	37.8	69.0	137.3	24.0	<b>67.03</b>	7.90	7.70	8.00	7.60	7.00	<b>7.64</b>	8.15	8.24	9.30	8.13	<b>8.46</b>
9	LRB-449	46.8	89.5	82.6	25.0	<b>60.97</b>	7.85	8.00	8.20	8.00	7.00	<b>7.81</b>	7.95	8.72	9.00	7.60	<b>8.32</b>
10	LRB-452	23.6	42.2	79.0	24.0	<b>42.20</b>	7.35	8.80	7.40	7.30	6.00	<b>7.37</b>	8.22	9.78	9.30	8.50	<b>8.95</b>
11	LRB-455	17.8	81.4	110.0	20.0	<b>57.30</b>	6.60	6.80	8.80	6.30	6.00	<b>6.90</b>	7.75	10.30	8.00	8.23	<b>8.57</b>
12	LRB-456	22.2	62.8	155.4	24.0	<b>66.10</b>	7.30	6.80	8.40	7.60	6.00	<b>7.22</b>	7.80	8.90	7.50	8.07	<b>8.07</b>
13	LRB-457	17.6	-	81.0	23.0	<b>40.53</b>	7.55	7.30	-	8.60	6.00	<b>7.36</b>	8.40	-	9.00	8.00	<b>8.47</b>
14	LRB-458	44.8	-	98.7	22.0	<b>55.17</b>	7.70	7.20	-	7.80	5.00	<b>6.93</b>	7.95	-	8.60	8.70	<b>8.42</b>
15	LRB-459	24.4	67.8	99.3	26.0	<b>54.38</b>	6.80	8.10	7.20	7.10	7.00	<b>7.24</b>	8.60	8.02	9.30	7.30	<b>8.31</b>
16	LRB-460	25.8	57.0	83.6	27.0	<b>48.35</b>	6.60	5.50	7.80	9.00	6.00	<b>6.98</b>	7.45	8.78	8.60	7.87	<b>8.18</b>
17	LRB-461	31.2	77.6	130.0	25.0	<b>65.95</b>	7.50	7.00	8.40	8.00	6.00	<b>7.38</b>	7.80	9.90	9.50	7.43	<b>8.66</b>
18	LRB-462	22.8	47.4	121.6	23.0	<b>53.70</b>	8.20	7.70	7.40	8.10	7.00	<b>7.68</b>	7.90	8.80	9.50	7.00	<b>8.30</b>
19	LRB-463	27.6	51.0	140.5	22.0	<b>60.28</b>	6.90	7.60	8.20	7.00	6.00	<b>7.14</b>	8.05	8.52	7.50	7.20	<b>7.82</b>
20	LRB-464	21.6	113.4	125.6	24.0	<b>71.15</b>	7.30	7.80	8.20	8.00	8.00	<b>7.86</b>	7.72	8.94	8.30	7.30	<b>8.07</b>
21	LRB-465	16.4	57.0	105.0	25.0	<b>50.85</b>	8.10	6.10	8.00	7.00	8.00	<b>7.44</b>	8.82	8.66	8.80	7.87	<b>8.54</b>
22	LRB-466	28.6	43.2	117.3	26.0	<b>53.78</b>	8.10	7.30	8.20	6.60	8.00	<b>7.64</b>	7.84	9.20	8.30	8.53	<b>8.47</b>

S. No.	Accession No.	Seed yield (q/ha)					100 seed weight (g)					Seed yield per plant (g)					
		Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Mettupalayam	Mean
1	LRB-311	4.03	4.17	22.92	41.94	<b>18.26</b>	7.11	6.74	4.83	6.51	5.12	<b>6.06</b>	3.90	8.51	61.04	7.40	<b>20.21</b>
2	LRB-319	6.25	10.26	18.75	31.94	<b>16.80</b>	6.72	5.48	5.42	5.49	5.63	<b>5.75</b>	5.30	7.65	13.64	7.60	<b>8.55</b>
3	LRB-322	6.94	16.94	22.92	17.50	<b>16.07</b>	6.20	5.11	4.54	6.24	5.20	<b>5.46</b>	3.80	11.65	66.42	7.80	<b>22.42</b>
4	LRB-324	7.29	12.42	25.00	30.00	<b>18.68</b>	6.10	6.08	5.40	5.87	5.38	<b>5.77</b>	6.10	8.81	127.45	7.40	<b>37.44</b>
5	LRB-325	4.86	12.49	20.83	38.33	<b>19.13</b>	5.62	7.05	4.68	5.82	5.55	<b>5.74</b>	3.80	9.43	76.70	7.30	<b>24.31</b>
6	LRB-446	4.65	10.31	22.92	27.78	<b>16.41</b>	6.52	5.80	4.72	6.80	5.46	<b>5.86</b>	6.60	8.35	71.52	7.20	<b>23.42</b>
7	LRB-447	3.82	-	20.83	28.33	<b>17.66</b>	5.90	6.62	-	5.98	5.78	<b>6.07</b>	4.20	7.27	-	7.20	<b>6.22</b>
8	LRB-448	4.17	10.93	20.83	29.00	<b>16.23</b>	6.70	6.65	4.03	5.93	5.32	<b>5.73</b>	3.50	9.83	89.29	7.30	<b>27.48</b>
9	LRB-449	3.13	6.76	12.50	24.17	<b>11.64</b>	6.65	6.00	4.78	6.00	5.60	<b>5.81</b>	4.90	7.43	131.92	7.40	<b>37.91</b>
10	LRB-452	4.51	11.92	17.92	30.28	<b>16.16</b>	5.75	6.23	5.68	5.80	4.86	<b>5.66</b>	5.70	8.23	142.00	7.20	<b>40.78</b>
11	LRB-455	4.51	7.56	18.75	26.39	<b>14.30</b>	5.90	6.65	5.95	6.80	4.65	<b>5.99</b>	3.80	6.33	65.10	7.00	<b>20.56</b>
12	LRB-456	3.47	9.97	27.50	19.44	<b>15.10</b>	6.75	5.43	3.67	5.20	5.10	<b>5.23</b>	3.60	7.36	74.65	7.30	<b>23.23</b>
13	LRB-457	6.25	-	14.58	21.11	<b>13.98</b>	7.20	6.35	-	6.60	5.12	<b>6.32</b>	5.66	6.67	-	7.50	<b>6.61</b>
14	LRB-458	3.82	-	17.50	26.67	<b>16.00</b>	6.20	5.55	-	6.44	5.24	<b>5.86</b>	3.68	12.20	-	7.60	<b>7.83</b>
15	LRB-459	4.51	6.45	15.42	27.22	<b>13.40</b>	6.18	5.65	4.96	6.70	5.98	<b>5.89</b>	4.01	7.12	81.22	7.20	<b>24.89</b>
16	LRB-460	5.21	9.75	7.08	29.17	<b>12.80</b>	6.32	5.03	4.12	6.51	5.55	<b>5.51</b>	4.50	9.45	44.45	7.40	<b>16.45</b>
17	LRB-461	5.21	4.32	18.75	38.06	<b>16.58</b>	5.82	5.42	4.79	5.74	5.60	<b>5.47</b>	3.20	8.42	100.33	7.70	<b>29.91</b>
18	LRB-462	6.25	8.25	31.25	26.11	<b>17.97</b>	5.97	5.68	4.46	5.85	5.95	<b>5.58</b>	3.07	7.97	103.53	7.60	<b>30.54</b>
19	LRB-463	5.90	4.17	22.92	32.78	<b>16.44</b>	5.80	5.79	4.70	6.18	5.21	<b>5.54</b>	4.05	5.23	47.53	7.20	<b>16.00</b>
20	LRB-464	5.00	7.09	16.67	28.61	<b>14.34</b>	6.89	5.91	4.82	6.00	4.90	<b>5.70</b>	3.05	5.35	113.29	6.90	<b>32.15</b>
21	LRB-465	6.94	7.33	16.25	31.67	<b>15.55</b>	6.10	6.28	4.00	6.68	4.63	<b>5.54</b>	3.90	12.71	103.00	6.80	<b>31.60</b>
22	LRB-466	5.21	15.20	10.00	31.11	<b>15.38</b>	6.15	5.47	5.00	6.45	4.58	<b>5.53</b>	6.00	10.35	89.38	6.50	<b>28.06</b>

S. No.	Accession No.	Clusters per plant			No.of pods per cluster			Rahuri
		Bhubaneswar	Delhi	Mean	Delhi	Rahuri	Mean	Stem thickness (cm)
1	LRB-311	10.80	28.40	<b>19.60</b>	2.40	5.00	<b>3.70</b>	0.70
2	LRB-319	13.40	14.00	<b>13.70</b>	3.00	4.00	<b>3.50</b>	0.77
3	LRB-322	16.20	19.00	<b>17.60</b>	2.00	4.00	<b>3.00</b>	0.90
4	LRB-324	13.20	22.60	<b>17.90</b>	2.20	3.00	<b>2.60</b>	0.80
5	LRB-325	13.20	23.20	<b>18.20</b>	2.20	5.00	<b>3.60</b>	0.47
6	LRB-446	7.40	26.60	<b>17.00</b>	3.20	5.00	<b>4.10</b>	0.50
7	LRB-447	15.60	-	<b>15.60</b>	-	4.00	<b>4.00</b>	0.80
8	LRB-448	18.20	26.20	<b>22.20</b>	3.00	4.00	<b>3.50</b>	0.77
9	LRB-449	16.40	45.60	<b>31.00</b>	3.60	5.00	<b>4.30</b>	0.77
10	LRB-452	8.80	18.80	<b>13.80</b>	2.60	4.00	<b>3.30</b>	0.67
11	LRB-455	8.20	36.20	<b>22.20</b>	3.00	5.00	<b>4.00</b>	0.83
12	LRB-456	10.40	24.20	<b>17.30</b>	2.80	4.00	<b>3.40</b>	0.63
13	LRB-457	8.80	-	<b>8.80</b>	-	4.00	<b>4.00</b>	0.73
14	LRB-458	17.20	-	<b>17.20</b>	-	4.00	<b>4.00</b>	0.77
15	LRB-459	10.00	28.40	<b>19.20</b>	3.20	4.00	<b>3.60</b>	0.80
16	LRB-460	10.80	25.60	<b>18.20</b>	2.80	5.00	<b>3.90</b>	0.83
17	LRB-461	12.20	29.00	<b>20.60</b>	3.00	4.00	<b>3.50</b>	0.90
18	LRB-462	10.40	23.00	<b>16.70</b>	2.20	3.00	<b>2.60</b>	0.77
19	LRB-463	10.20	25.00	<b>17.60</b>	2.40	5.00	<b>3.70</b>	0.80
20	LRB-464	9.40	37.00	<b>23.20</b>	3.20	4.00	<b>3.60</b>	0.67
21	LRB-465	7.40	24.20	<b>15.80</b>	2.20	3.00	<b>2.60</b>	0.67
22	LRB-466	13.60	15.20	<b>14.40</b>	3.40	5.00	<b>4.20</b>	0.47

S. No.	Accession No.	Days to 50% flowering							Days to maturity						
		Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
23	LRB-467	42	-	88	71	52	64	<b>63.40</b>	80	-	125	112	91	117	<b>105.00</b>
24	LRB-468	42	42	85	71	55	69	<b>60.67</b>	80	89	123	108	92	119	<b>101.83</b>
25	LRB-470	40	43	81	71	52	68	<b>59.17</b>	78	86	115	108	92	123	<b>100.33</b>
26	LRB-471	40	43	85	71	52	59	<b>58.33</b>	78	88	121	108	92	102	<b>98.17</b>
27	LRB-472	40	-	92	71	55	65	<b>64.60</b>	78	-	123	108	93	116	<b>103.60</b>
28	LRB-473	40	46	86	70	56	69	<b>61.17</b>	78	91	121	107	93	120	<b>101.67</b>
29	LRB-474	43	46	79	71	55	70	<b>60.67</b>	81	92	112	108	93	119	<b>100.83</b>
30	LRB-475	43	42	78	66	54	68	<b>58.50</b>	81	86	118	108	93	115	<b>100.17</b>
31	LRB-476	43	46	80	71	53	68	<b>60.17</b>	81	90	116	111	90	114	<b>100.33</b>
32	LRB-477	40	48	81	70	54	59	<b>58.67</b>	78	93	120	107	92	110	<b>100.00</b>
33	LRB-478	40	44	84	71	55	58	<b>58.67</b>	78	87	122	107	93	99	<b>97.67</b>
34	LRB-479	40	45	79	70	52	59	<b>57.50</b>	78	88	118	108	92	103	<b>97.83</b>
35	LRB-480	40	44	83	71	52	67	<b>59.50</b>	78	89	118	108	90	118	<b>100.17</b>
36	LRB-481	40	43	79	70	52	63	<b>57.83</b>	78	86	116	107	90	114	<b>98.50</b>
37	LRB-482	40	44	-	69	54	68	<b>55.00</b>	78	84	-	106	92	119	<b>95.80</b>
38	LRB-483	40	44	79	70	51	68	<b>58.67</b>	78	85	116	106	91	119	<b>99.17</b>
39	LRB-484	40	42	83	71	49	69	<b>59.00</b>	78	81	113	108	90	121	<b>98.50</b>
40	LRB-487	40	44	83	72	53	68	<b>60.00</b>	78	86	119	107	91	115	<b>99.33</b>
41	LRB-488	43	45	83	71	53	66	<b>60.17</b>	81	90	118	108	92	116	<b>100.83</b>
42	LRB-489	43	45	83	70	52	69	<b>60.33</b>	81	91	113	108	92	116	<b>100.17</b>
43	LRB-490	40	46	80	71	55	66	<b>59.67</b>	78	92	116	105	93	113	<b>99.50</b>
44	LRB-491	43	47	83	69	53	64	<b>59.83</b>	81	94	119	108	93	112	<b>101.17</b>
45	LRB-492	43	42	81	71	52	68	<b>59.50</b>	81	86	115	108	92	116	<b>99.67</b>
46	LRB-493	40	41	82	72	52	69	<b>59.33</b>	78	82	116	107	90	117	<b>98.33</b>
47	LRB-495	43	42	80	71	51	69	<b>59.33</b>	81	83	114	108	91	113	<b>98.33</b>

S. No.	Accession No.	Plant height (cm)						No. of primary branches per plant					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
23	LRB-467	-	108.50	178.00	60.00	117.33	<b>115.96</b>	-	4.0	8.3	3.0	3.0	<b>4.58</b>
24	LRB-468	82.00	65.48	155.00	63.00	154.00	<b>103.90</b>	3.0	3.3	6.3	3.0	4.0	<b>3.91</b>
25	LRB-470	97.40	85.20	117.30	62.00	96.33	<b>91.65</b>	2.0	2.5	6.0	4.0	4.0	<b>3.70</b>
26	LRB-471	92.00	81.20	145.00	63.00	156.67	<b>107.57</b>	2.8	1.6	6.3	4.0	5.0	<b>3.94</b>
27	LRB-472	-	49.00	152.60	64.00	157.33	<b>105.73</b>	-	3.0	9.6	4.0	3.0	<b>4.90</b>
28	LRB-473	91.40	119.00	156.60	65.00	184.67	<b>123.33</b>	2.6	3.6	8.0	3.0	3.0	<b>4.04</b>
29	LRB-474	82.60	74.00	165.00	62.00	98.67	<b>96.45</b>	2.2	2.6	6.6	5.0	4.0	<b>4.08</b>
30	LRB-475	87.00	76.60	141.00	60.00	106.00	<b>94.12</b>	2.8	3.2	9.6	4.0	4.0	<b>4.72</b>
31	LRB-476	87.00	80.40	178.00	62.00	135.00	<b>108.48</b>	2.8	2.8	4.6	4.0	4.0	<b>3.64</b>
32	LRB-477	84.00	77.20	159.30	61.00	109.33	<b>98.17</b>	2.6	3.6	8.0	3.0	4.0	<b>4.24</b>
33	LRB-478	80.00	88.40	135.00	62.00	176.00	<b>108.28</b>	2.4	3.4	3.3	4.0	3.0	<b>3.22</b>
34	LRB-479	82.00	73.00	149.00	63.00	132.67	<b>99.93</b>	2.2	2.0	5.3	4.0	3.0	<b>3.30</b>
35	LRB-480	86.00	87.60	90.50	64.00	178.00	<b>101.22</b>	2.2	4.0	4.6	3.0	3.0	<b>3.36</b>
36	LRB-481	82.60	125.20	95.00	62.00	130.33	<b>99.03</b>	2.4	3.8	4.6	4.0	4.0	<b>3.76</b>
37	LRB-482	86.00	-	165.00	62.00	98.00	<b>102.75</b>	2.2	-	9.3	5.0	5.0	<b>5.38</b>
38	LRB-483	82.60	98.60	135.00	59.00	198.67	<b>114.77</b>	2.8	3.4	4.0	4.0	3.0	<b>3.44</b>
39	LRB-484	88.00	90.20	135.00	59.00	102.67	<b>94.97</b>	2.2	3.6	6.6	4.0	3.0	<b>3.88</b>
40	LRB-487	83.40	84.20	139.30	62.00	90.00	<b>91.78</b>	2.2	4.0	6.0	3.0	5.0	<b>4.04</b>
41	LRB-488	88.00	79.80	125.00	62.00	74.67	<b>85.89</b>	2.2	3.6	6.0	4.0	3.0	<b>3.76</b>
42	LRB-489	85.00	106.80	146.60	63.00	78.33	<b>95.95</b>	3.4	3.2	6.3	5.0	3.0	<b>4.18</b>
43	LRB-490	85.00	100.80	148.30	62.00	68.67	<b>92.95</b>	3.0	2.8	8.6	4.0	3.0	<b>4.28</b>
44	LRB-491	94.00	80.20	128.00	61.00	93.00	<b>91.24</b>	3.6	3.2	7.6	4.0	4.0	<b>4.48</b>
45	LRB-492	89.00	77.20	95.00	63.00	98.67	<b>84.57</b>	3.0	3.0	9.0	4.0	4.0	<b>4.60</b>
46	LRB-493	80.00	79.20	78.50	64.00	114.67	<b>83.27</b>	1.8	3.4	7.0	4.0	4.0	<b>4.04</b>
47	LRB-495	84.40	80.20	79.00	63.00	92.67	<b>79.85</b>	2.0	4.6	11.0	3.0	4.0	<b>4.92</b>



S. No.	Accession No.	No. of pods per plant					No. of seed per pod					Pod length (cm)					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean
23	LRB-467	-	151.0	140.3	20.0	<b>103.77</b>	8.20	-	9.00	7.30	7.00	<b>7.88</b>	-	9.65	8.80	7.37	<b>8.61</b>
24	LRB-468	24.6	41.6	90.6	19.0	<b>43.95</b>	8.10	6.30	7.80	8.30	7.00	<b>7.50</b>	6.54	8.48	9.50	7.73	<b>8.06</b>
25	LRB-470	25.6	37.2	126.0	22.0	<b>52.70</b>	8.00	6.90	7.40	8.60	5.00	<b>7.18</b>	7.50	8.62	9.60	7.83	<b>8.39</b>
26	LRB-471	27.6	38.8	85.3	23.0	<b>43.68</b>	6.50	7.40	7.40	6.80	5.00	<b>6.62</b>	7.82	8.94	9.00	7.07	<b>8.21</b>
27	LRB-472	-	109.0	148.3	24.0	<b>93.77</b>	7.90	-	8.00	8.30	6.00	<b>7.55</b>	-	9.50	9.10	8.03	<b>8.88</b>
28	LRB-473	18.2	68.8	126.3	19.0	<b>58.08</b>	8.00	8.00	7.80	7.00	6.00	<b>7.36</b>	7.94	8.94	8.60	8.20	<b>8.42</b>
29	LRB-474	12.2	50.2	75.6	25.0	<b>40.75</b>	7.80	7.40	8.40	8.80	6.00	<b>7.68</b>	8.35	9.36	8.30	7.77	<b>8.45</b>
30	LRB-475	16.6	53.4	70.6	24.0	<b>41.15</b>	7.10	7.50	7.60	9.00	7.00	<b>7.64</b>	8.20	8.70	9.50	6.33	<b>8.18</b>
31	LRB-476	22.6	50.6	70.6	24.0	<b>41.95</b>	7.56	6.70	7.40	8.80	7.00	<b>7.49</b>	7.50	8.60	9.50	7.13	<b>8.18</b>
32	LRB-477	25.0	37.0	148.0	25.0	<b>58.75</b>	7.30	6.80	7.40	9.10	8.00	<b>7.72</b>	7.40	8.68	8.30	7.27	<b>7.91</b>
33	LRB-478	19.6	78.0	123.0	23.0	<b>60.90</b>	8.00	8.50	9.00	7.30	7.00	<b>7.96</b>	8.72	8.94	8.30	7.73	<b>8.42</b>
34	LRB-479	17.2	29.0	96.6	22.0	<b>41.20</b>	8.40	7.10	7.40	7.30	7.00	<b>7.44</b>	7.92	7.90	8.80	7.50	<b>8.03</b>
35	LRB-480	26.8	82.4	44.6	24.0	<b>44.45</b>	7.30	8.60	7.80	7.00	8.00	<b>7.74</b>	6.85	9.36	9.50	7.73	<b>8.36</b>
36	LRB-481	24.4	84.8	77.0	23.0	<b>52.30</b>	6.90	7.50	8.60	8.00	7.00	<b>7.60</b>	8.30	9.14	8.60	7.40	<b>8.36</b>
37	LRB-482	20.4	-	79.3	22.0	<b>40.57</b>	8.00	7.40	-	7.60	5.00	<b>7.00</b>	7.88	-	9.10	8.17	<b>8.38</b>
38	LRB-483	23.4	57.6	47.9	21.0	<b>37.48</b>	7.80	6.80	7.80	8.00	6.00	<b>7.28</b>	8.50	9.04	8.60	7.07	<b>8.30</b>
39	LRB-484	24.6	54.0	69.6	23.0	<b>42.80</b>	7.90	8.00	8.20	8.60	6.00	<b>7.74</b>	7.72	9.94	8.80	8.10	<b>8.64</b>
40	LRB-487	22.4	50.8	38.0	24.0	<b>33.80</b>	7.80	7.20	8.20	8.30	8.00	<b>7.90</b>	7.73	8.66	9.00	7.27	<b>8.17</b>
41	LRB-488	17.6	78.6	79.0	25.0	<b>50.05</b>	8.35	6.90	8.60	7.00	9.00	<b>7.97</b>	7.75	10.28	10.00	8.47	<b>9.13</b>
42	LRB-489	40.6	57.4	69.0	26.0	<b>48.25</b>	8.10	8.10	8.20	8.60	6.00	<b>7.80</b>	7.80	8.82	9.50	7.73	<b>8.46</b>
43	LRB-490	43.0	49.6	95.6	24.0	<b>53.05</b>	6.80	7.60	7.60	8.60	8.00	<b>7.72</b>	7.40	8.58	9.50	7.90	<b>8.35</b>
44	LRB-491	43.6	72.8	51.3	23.0	<b>47.68</b>	8.10	7.10	7.00	8.00	8.00	<b>7.64</b>	8.20	7.62	8.60	8.63	<b>8.26</b>
45	LRB-492	37.4	44.0	78.6	24.0	<b>46.00</b>	7.50	7.70	7.60	8.00	8.00	<b>7.76</b>	8.05	8.58	9.10	7.30	<b>8.26</b>
46	LRB-493	18.8	60.0	61.0	24.0	<b>40.95</b>	6.50	8.20	7.60	8.30	7.00	<b>7.52</b>	9.75	9.34	9.10	8.70	<b>9.22</b>
47	LRB-495	11.4	82.6	66.6	23.0	<b>45.90</b>	6.80	8.40	8.20	8.00	7.00	<b>7.68</b>	8.43	8.68	9.00	8.53	<b>8.66</b>

S. No.	Accession No.	Seed yield (q/ha)					100 seed weight (g)					Seed yield per plant (g)					
		Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Mettupalayam	Mean
23	LRB-467	-	-	15.42	26.39	<b>20.90</b>	6.81	-	5.57	5.91	5.40	<b>5.92</b>	3.90	-	54.71	7.80	<b>22.14</b>
24	LRB-468	5.21	14.42	8.33	35.83	<b>15.95</b>	5.98	7.13	4.85	6.50	5.50	<b>5.99</b>	4.30	9.13	65.08	7.00	<b>21.38</b>
25	LRB-470	4.86	8.42	21.67	29.17	<b>16.03</b>	6.10	5.67	5.66	6.54	5.54	<b>5.90</b>	5.90	6.89	23.48	7.20	<b>10.87</b>
26	LRB-471	5.21	10.28	4.17	27.22	<b>11.72</b>	6.12	5.76	5.62	6.68	5.45	<b>5.93</b>	3.30	9.33	68.00	7.30	<b>21.98</b>
27	LRB-472	-	4.73	15.00	24.61	<b>14.78</b>	6.50	-	5.60	6.11	5.84	<b>6.01</b>	6.10	-	42.96	7.40	<b>18.82</b>
28	LRB-473	6.25	8.72	10.42	36.39	<b>15.44</b>	6.62	6.04	5.58	6.62	5.78	<b>6.13</b>	4.20	9.20	12.19	7.50	<b>8.27</b>
29	LRB-474	3.47	8.31	8.33	25.00	<b>11.28</b>	6.48	7.31	4.81	7.52	5.90	<b>6.40</b>	6.40	5.59	102.00	7.30	<b>30.32</b>
30	LRB-475	3.06	6.99	8.33	43.33	<b>15.43</b>	6.50	6.19	4.18	6.78	5.10	<b>5.75</b>	5.10	7.82	78.80	7.40	<b>24.78</b>
31	LRB-476	5.28	9.61	8.33	32.22	<b>13.86</b>	7.30	5.89	4.21	6.98	5.34	<b>5.94</b>	4.50	9.15	36.25	7.20	<b>14.28</b>
32	LRB-477	3.47	14.66	18.33	30.44	<b>16.73</b>	6.30	5.70	4.36	5.81	5.42	<b>5.52</b>	4.60	6.65	32.83	7.00	<b>12.77</b>
33	LRB-478	4.17	9.73	12.50	36.39	<b>15.70</b>	6.65	6.78	5.54	6.00	5.12	<b>6.02</b>	6.70	7.27	45.51	7.10	<b>16.65</b>
34	LRB-479	5.56	5.63	6.25	34.44	<b>12.97</b>	7.15	6.11	3.59	6.62	5.65	<b>5.82</b>	4.90	9.05	23.19	7.20	<b>11.09</b>
35	LRB-480	5.56	6.67	6.25	27.50	<b>11.49</b>	6.25	5.82	5.40	6.30	5.78	<b>5.91</b>	3.60	9.87	134.94	7.30	<b>38.93</b>
36	LRB-481	5.21	6.55	10.42	33.61	<b>13.95</b>	6.30	5.42	4.95	6.48	5.23	<b>5.68</b>	3.80	7.97	34.78	7.50	<b>13.51</b>
37	LRB-482	2.57	-	11.25	23.89	<b>12.57</b>	6.51	5.92	-	6.57	5.47	<b>6.12</b>	7.65	7.54	-	7.60	<b>7.60</b>
38	LRB-483	6.60	7.22	12.50	39.44	<b>16.44</b>	6.16	6.26	5.41	6.68	5.69	<b>6.04</b>	4.35	6.91	133.05	7.00	<b>37.83</b>
39	LRB-484	4.86	8.29	11.67	20.00	<b>11.20</b>	5.70	6.00	5.27	5.96	6.15	<b>5.82</b>	6.40	6.56	100.87	7.10	<b>30.23</b>
40	LRB-487	4.17	8.57	16.25	30.56	<b>14.89</b>	6.70	6.10	4.60	7.23	5.43	<b>6.01</b>	3.80	7.87	103.80	7.20	<b>30.67</b>
41	LRB-488	6.25	11.43	14.58	43.89	<b>19.04</b>	7.15	6.00	5.55	6.64	5.23	<b>6.11</b>	6.25	10.19	169.22	7.30	<b>48.24</b>
42	LRB-489	6.25	9.04	12.50	35.83	<b>15.91</b>	6.15	5.05	4.25	6.97	6.10	<b>5.70</b>	5.70	12.42	95.73	7.40	<b>30.31</b>
43	LRB-490	4.86	6.43	7.50	28.89	<b>11.92</b>	6.25	5.89	5.26	6.40	5.49	<b>5.86</b>	3.70	9.73	29.48	7.50	<b>12.60</b>
44	LRB-491	5.00	12.51	7.92	28.33	<b>13.44</b>	7.82	6.30	4.22	6.82	4.78	<b>5.99</b>	4.60	14.03	83.44	7.40	<b>27.37</b>
45	LRB-492	5.56	11.29	7.50	35.83	<b>15.05</b>	6.50	5.63	4.31	6.37	5.75	<b>5.71</b>	3.90	10.37	41.31	7.30	<b>15.72</b>
46	LRB-493	4.51	4.24	5.42	19.22	<b>8.35</b>	6.80	6.30	6.03	6.50	4.32	<b>5.99</b>	6.00	8.15	78.10	7.20	<b>24.86</b>
47	LRB-495	5.56	2.25	7.92	20.56	<b>9.07</b>	7.00	5.75	4.80	6.65	5.65	<b>5.97</b>	6.20	9.79	129.75	7.30	<b>38.26</b>

S. No.	Accession No.	Clusters per plant			No.of pods per cluster			Rahuri
		Bhubaneswar	Delhi	Mean	Delhi	Rahuri	Mean	Stem thickness (cm)
23	LRB-467	-	40.00	<b>40.00</b>	4.00	4.00	<b>4.00</b>	0.70
24	LRB-468	13.20	15.40	<b>14.30</b>	2.80	4.00	<b>3.40</b>	0.77
25	LRB-470	10.40	18.40	<b>14.40</b>	2.20	4.00	<b>3.10</b>	0.67
26	LRB-471	10.60	15.00	<b>12.80</b>	3.00	5.00	<b>4.00</b>	0.67
27	LRB-472	-	35.00	<b>35.00</b>	4.00	4.00	<b>4.00</b>	0.63
28	LRB-473	11.20	34.00	<b>22.60</b>	2.40	4.00	<b>3.20</b>	0.60
29	LRB-474	7.00	24.80	<b>15.90</b>	2.00	4.00	<b>3.00</b>	0.50
30	LRB-475	9.00	24.20	<b>16.60</b>	2.20	3.00	<b>2.60</b>	0.57
31	LRB-476	9.00	16.60	<b>12.80</b>	3.40	4.00	<b>3.70</b>	0.67
32	LRB-477	9.40	17.80	<b>13.60</b>	2.40	4.00	<b>3.20</b>	0.77
33	LRB-478	7.80	34.00	<b>20.90</b>	2.60	4.00	<b>3.30</b>	0.60
34	LRB-479	7.80	11.60	<b>9.70</b>	2.80	4.00	<b>3.40</b>	0.70
35	LRB-480	11.80	35.20	<b>23.50</b>	2.60	4.00	<b>3.30</b>	0.87
36	LRB-481	9.80	40.00	<b>24.90</b>	2.80	3.00	<b>2.90</b>	0.70
37	LRB-482	10.80	-	<b>10.80</b>	-	4.00	<b>4.00</b>	0.60
38	LRB-483	10.80	26.60	<b>18.70</b>	2.40	3.00	<b>2.70</b>	0.60
39	LRB-484	11.40	19.80	<b>15.60</b>	3.00	5.00	<b>4.00</b>	0.60
40	LRB-487	12.00	23.20	<b>17.60</b>	2.80	4.00	<b>3.40</b>	0.50
41	LRB-488	9.00	26.40	<b>17.70</b>	3.00	5.00	<b>4.00</b>	0.73
42	LRB-489	16.60	21.80	<b>19.20</b>	3.40	3.00	<b>3.20</b>	0.77
43	LRB-490	15.20	21.20	<b>18.20</b>	3.00	4.00	<b>3.50</b>	0.60
44	LRB-491	20.40	32.80	<b>26.60</b>	2.60	4.00	<b>3.30</b>	0.70
45	LRB-492	17.80	17.60	<b>17.70</b>	2.60	3.00	<b>2.80</b>	0.77
46	LRB-493	9.00	21.00	<b>15.00</b>	3.40	4.00	<b>3.70</b>	0.73
47	LRB-495	6.60	38.20	<b>22.40</b>	2.60	4.00	<b>3.30</b>	0.60

S. No.	Accession No.	Days to 50% flowering							Days to maturity						
		Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
48	LRB-496	43	42	84	70	51	68	<b>59.67</b>	81	83	115	110	91	119	<b>99.83</b>
49	LRB-497	43	45	83	71	53	71	<b>61.00</b>	81	88	123	107	92	120	<b>101.83</b>
50	LRB-498	43	47	81	69	56	65	<b>60.17</b>	81	92	114	108	93	116	<b>100.67</b>
<b>Mean for check variety</b>															
	<b>RBL-1 (C)</b>	<b>40.75</b>	<b>43.20</b>	<b>78.00</b>	<b>71.20</b>	<b>52.00</b>	<b>61.80</b>	<b>57.83</b>	<b>79.25</b>	<b>84.40</b>	<b>121.00</b>	<b>107.60</b>	<b>92.00</b>	<b>119.20</b>	<b>100.58</b>
	<b>RBL-6 (C)</b>	<b>40.50</b>	<b>44.00</b>	<b>79.50</b>	<b>70.80</b>	<b>49.00</b>	<b>65.00</b>	<b>58.13</b>	<b>75.00</b>	<b>85.80</b>	<b>115.50</b>	<b>106.00</b>	<b>89.00</b>	<b>119.00</b>	<b>98.38</b>
	<b>RBL-35 (C)</b>	<b>40.00</b>	<b>42.40</b>	<b>78.00</b>	<b>69.80</b>	<b>52.00</b>	<b>62.00</b>	<b>57.37</b>	<b>81.25</b>	<b>82.80</b>	<b>114.00</b>	<b>106.20</b>	<b>90.00</b>	<b>118.00</b>	<b>98.71</b>
	<b>RBL-50 (C)</b>	<b>40.75</b>	<b>46.40</b>	<b>80.33</b>	<b>71.20</b>	<b>50.00</b>	<b>63.00</b>	<b>58.61</b>	<b>82.25</b>	<b>87.60</b>	<b>115.00</b>	<b>108.60</b>	<b>90.00</b>	<b>115.80</b>	<b>99.88</b>
	<b>Minimum</b>	<b>40.00</b>	<b>41.00</b>	<b>78.00</b>	<b>66.00</b>	<b>46.00</b>	<b>58.00</b>	<b>53.80</b>	<b>75.00</b>	<b>81.00</b>	<b>112.00</b>	<b>105.00</b>	<b>89.00</b>	<b>99.00</b>	<b>95.80</b>
	<b>Maximum</b>	<b>43.00</b>	<b>48.00</b>	<b>92.00</b>	<b>72.00</b>	<b>56.00</b>	<b>78.00</b>	<b>64.60</b>	<b>82.25</b>	<b>99.00</b>	<b>125.00</b>	<b>112.00</b>	<b>93.00</b>	<b>126.00</b>	<b>105.00</b>
	<b>Mean</b>	<b>40.76</b>	<b>44.15</b>	<b>82.14</b>	<b>70.46</b>	<b>51.52</b>	<b>66.00</b>	<b>58.95</b>	<b>78.83</b>	<b>88.53</b>	<b>117.23</b>	<b>107.64</b>	<b>90.98</b>	<b>114.91</b>	<b>99.52</b>
	<b>CD (0.05)</b>	-	<b>2.52</b>	-	<b>1.67</b>	-	<b>0.60</b>		-	<b>3.95</b>	-	<b>2.17</b>	-	<b>0.97</b>	
	<b>CV (%) Error</b>	-	<b>2.15</b>	-	<b>0.88</b>	-	<b>0.36</b>		-	<b>1.74</b>	-	<b>0.76</b>	-	<b>0.31</b>	
	<b>CV (%) Phen.</b>	<b>3.04</b>	<b>4.44</b>	<b>3.56</b>	<b>1.56</b>	<b>4.55</b>	<b>6.21</b>		<b>1.85</b>	<b>3.94</b>	<b>2.70</b>	<b>1.24</b>	<b>1.44</b>	<b>5.26</b>	

S. No.	Accession No.	Plant height (cm)						No. of primary branches per plant					
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Rahuri	Mean
48	LRB-496	84.00	89.20	74.30	64.00	87.33	<b>79.77</b>	2.8	3.8	7.0	4.0	4.0	<b>4.32</b>
49	LRB-497	89.40	95.20	88.50	64.00	82.67	<b>83.95</b>	2.0	4.4	5.3	5.0	4.0	<b>4.14</b>
50	LRB-498	87.00	96.60	69.00	63.00	80.00	<b>79.12</b>	2.6	3.8	7.6	4.0	4.0	<b>4.40</b>
<b>Mean for check variety</b>													
	<b>RBL-1 (C)</b>	<b>84.80</b>	<b>79.40</b>	<b>134.84</b>	<b>67.00</b>	<b>125.20</b>	<b>98.25</b>	<b>2.40</b>	<b>3.60</b>	<b>9.50</b>	<b>4.00</b>	<b>3.60</b>	<b>4.62</b>
	<b>RBL-6 (C)</b>	<b>84.56</b>	<b>93.20</b>	<b>127.46</b>	<b>71.00</b>	<b>125.13</b>	<b>100.27</b>	<b>2.60</b>	<b>4.30</b>	<b>7.56</b>	<b>4.00</b>	<b>3.80</b>	<b>4.45</b>
	<b>RBL-35 (C)</b>	<b>85.60</b>	<b>80.80</b>	<b>145.80</b>	<b>69.00</b>	<b>88.00</b>	<b>93.84</b>	<b>2.32</b>	<b>3.80</b>	<b>6.32</b>	<b>3.00</b>	<b>3.20</b>	<b>3.73</b>
	<b>RBL-50 (C)</b>	<b>88.12</b>	<b>98.67</b>	<b>145.44</b>	<b>72.00</b>	<b>114.94</b>	<b>103.83</b>	<b>2.60</b>	<b>3.40</b>	<b>7.02</b>	<b>5.00</b>	<b>3.80</b>	<b>4.36</b>
	<b>Minimum</b>	<b>80.00</b>	<b>49.00</b>	<b>69.00</b>	<b>59.00</b>	<b>68.67</b>	<b>79.12</b>	<b>1.80</b>	<b>1.60</b>	<b>3.00</b>	<b>3.00</b>	<b>2.00</b>	<b>3.04</b>
	<b>Maximum</b>	<b>97.40</b>	<b>144.80</b>	<b>178.00</b>	<b>72.00</b>	<b>198.67</b>	<b>123.33</b>	<b>3.60</b>	<b>4.80</b>	<b>13.30</b>	<b>5.00</b>	<b>5.00</b>	<b>5.38</b>
	<b>Mean</b>	<b>87.51</b>	<b>87.89</b>	<b>131.12</b>	<b>62.76</b>	<b>120.87</b>	<b>98.47</b>	<b>2.66</b>	<b>3.39</b>	<b>6.72</b>	<b>3.80</b>	<b>3.62</b>	<b>4.06</b>
	<b>CD (0.05)</b>	<b>9.40</b>	<b>-</b>	<b>49.37</b>	<b>-</b>	<b>12.01</b>		<b>0.77</b>	<b>-</b>	<b>5.80</b>	<b>-</b>	<b>1.60</b>	
	<b>CV (%) Error</b>	<b>4.10</b>	<b>-</b>	<b>13.36</b>	<b>-</b>	<b>3.97</b>		<b>11.62</b>	<b>-</b>	<b>28.58</b>	<b>-</b>	<b>16.63</b>	
	<b>CV (%) Phen.</b>	<b>5.00</b>	<b>20.21</b>	<b>18.91</b>	<b>4.37</b>	<b>27.59</b>		<b>15.92</b>	<b>18.83</b>	<b>29.51</b>	<b>16.49</b>	<b>17.81</b>	

S. No.	Accession No.	No. of pods per plant					No. of seed per pod						Pod length (cm)				
		Bhubaneswar	Delhi	Ludhiana	Mettupalayam	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean
48	LRB-496	33.8	60.4	61.3	22.0	<b>44.38</b>	8.20	8.30	8.20	8.50	7.00	<b>8.04</b>	9.20	8.52	10.00	8.03	<b>8.94</b>
49	LRB-497	25.0	62.2	65.6	24.0	<b>44.20</b>	6.30	8.30	8.20	8.60	6.00	<b>7.48</b>	8.15	9.44	10.00	7.70	<b>8.82</b>
50	LRB-498	36.0	67.6	73.0	25.0	<b>50.40</b>	6.30	7.90	8.00	8.00	7.00	<b>7.44</b>	8.20	9.36	8.30	8.50	<b>8.59</b>
<b>Mean for check variety</b>																	
	<b>RBL-1 (C)</b>	<b>17.24</b>	<b>63.20</b>	<b>145.80</b>	<b>33.00</b>	<b>64.81</b>	<b>7.95</b>	<b>6.94</b>	<b>8.40</b>	<b>8.24</b>	<b>6.60</b>	<b>7.63</b>	<b>8.27</b>	<b>8.74</b>	<b>8.74</b>	<b>7.42</b>	<b>8.29</b>
	<b>RBL-6 (C)</b>	<b>20.76</b>	<b>67.50</b>	<b>126.14</b>	<b>32.00</b>	<b>61.60</b>	<b>8.03</b>	<b>6.96</b>	<b>7.00</b>	<b>7.50</b>	<b>5.80</b>	<b>7.06</b>	<b>7.49</b>	<b>8.64</b>	<b>8.68</b>	<b>7.70</b>	<b>8.13</b>
	<b>RBL-35 (C)</b>	<b>17.36</b>	<b>120.00</b>	<b>117.04</b>	<b>34.00</b>	<b>72.10</b>	<b>7.53</b>	<b>7.22</b>	<b>9.20</b>	<b>8.32</b>	<b>7.40</b>	<b>7.93</b>	<b>8.01</b>	<b>9.28</b>	<b>8.86</b>	<b>7.50</b>	<b>8.41</b>
	<b>RBL-50 (C)</b>	<b>16.20</b>	<b>49.87</b>	<b>96.58</b>	<b>31.00</b>	<b>48.41</b>	<b>7.40</b>	<b>7.22</b>	<b>8.27</b>	<b>7.40</b>	<b>6.40</b>	<b>7.34</b>	<b>7.85</b>	<b>9.01</b>	<b>8.68</b>	<b>8.11</b>	<b>8.41</b>
	<b>Minimum</b>	<b>11.40</b>	<b>29.00</b>	<b>38.00</b>	<b>19.00</b>	<b>33.80</b>	<b>5.95</b>	<b>5.50</b>	<b>7.00</b>	<b>6.30</b>	<b>5.00</b>	<b>6.62</b>	<b>6.54</b>	<b>7.62</b>	<b>7.50</b>	<b>6.33</b>	<b>7.82</b>
	<b>Maximum</b>	<b>46.80</b>	<b>151.00</b>	<b>155.40</b>	<b>34.00</b>	<b>103.77</b>	<b>8.40</b>	<b>8.80</b>	<b>9.20</b>	<b>9.10</b>	<b>9.00</b>	<b>8.04</b>	<b>9.75</b>	<b>10.30</b>	<b>10.00</b>	<b>9.27</b>	<b>9.22</b>
	<b>Mean</b>	<b>25.54</b>	<b>63.42</b>	<b>97.93</b>	<b>24.26</b>	<b>53.14</b>	<b>7.44</b>	<b>7.48</b>	<b>8.02</b>	<b>7.94</b>	<b>6.80</b>	<b>7.53</b>	<b>8.01</b>	<b>8.97</b>	<b>8.89</b>	<b>7.87</b>	<b>8.43</b>
	<b>CD (0.05)</b>	<b>3.34</b>	<b>-</b>	<b>76.70</b>	<b>-</b>		<b>-</b>	<b>0.52</b>	<b>-</b>	<b>2.49</b>	<b>3.00</b>		<b>0.91</b>	<b>-</b>	<b>2.03</b>	<b>1.31</b>	
	<b>CV (%) Error</b>	<b>6.99</b>	<b>-</b>	<b>23.67</b>	<b>-</b>		<b>-</b>	<b>2.72</b>	<b>-</b>	<b>11.84</b>	<b>17.18</b>		<b>4.30</b>	<b>-</b>	<b>8.69</b>	<b>6.41</b>	
	<b>CV (%) Phen.</b>	<b>33.83</b>	<b>36.88</b>	<b>30.81</b>	<b>12.25</b>		<b>8.62</b>	<b>8.99</b>	<b>6.54</b>	<b>8.90</b>	<b>13.54</b>		<b>6.58</b>	<b>6.11</b>	<b>6.18</b>	<b>7.62</b>	

S. No.	Accession No.	Seed yield (q/ha)					100 seed weight (g)					Seed yield per plant (g)					
		Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Ludhiana	Rahuri	Mean	Bangalore	Bhubaneswar	Delhi	Mettupalayam	Mean
48	LRB-496	5.90	2.14	7.08	17.94	<b>8.27</b>	6.45	6.77	4.65	7.10	5.23	<b>6.04</b>	5.50	9.92	99.56	7.60	<b>30.65</b>
49	LRB-497	4.86	2.73	9.17	17.78	<b>8.63</b>	6.32	6.13	5.43	7.28	5.62	<b>6.16</b>	5.60	7.33	114.96	7.60	<b>33.87</b>
50	LRB-498	3.68	6.21	6.25	26.39	<b>10.63</b>	6.74	6.08	4.74	7.10	5.32	<b>6.00</b>	4.90	6.89	68.94	7.70	<b>22.11</b>
<b>Mean for check variety</b>																	
	<b>RBL-1 (C)</b>	<b>3.79</b>	<b>1.25</b>	<b>17.25</b>	<b>24.44</b>	<b>11.68</b>	<b>7.55</b>	<b>5.57</b>	<b>4.97</b>	<b>6.22</b>	<b>5.12</b>	<b>5.89</b>	<b>4.41</b>	<b>6.94</b>	<b>138.92</b>	<b>7.50</b>	<b>39.44</b>
	<b>RBL-6 (C)</b>	<b>3.97</b>	<b>9.26</b>	<b>22.42</b>	<b>28.11</b>	<b>15.94</b>	<b>6.39</b>	<b>5.82</b>	<b>4.87</b>	<b>6.22</b>	<b>5.43</b>	<b>5.74</b>	<b>3.55</b>	<b>8.05</b>	<b>94.66</b>	<b>8.00</b>	<b>28.56</b>
	<b>RBL-35 (C)</b>	<b>3.74</b>	<b>5.71</b>	<b>21.58</b>	<b>23.44</b>	<b>13.62</b>	<b>6.58</b>	<b>5.84</b>	<b>3.95</b>	<b>5.98</b>	<b>5.21</b>	<b>5.51</b>	<b>6.03</b>	<b>7.35</b>	<b>116.20</b>	<b>9.00</b>	<b>34.64</b>
	<b>RBL-50 (C)</b>	<b>2.94</b>	<b>7.75</b>	<b>15.58</b>	<b>25.39</b>	<b>12.92</b>	<b>6.67</b>	<b>4.39</b>	<b>4.54</b>	<b>6.11</b>	<b>5.43</b>	<b>5.43</b>	<b>4.73</b>	<b>5.29</b>	<b>72.84</b>	<b>8.50</b>	<b>22.84</b>
	<b>Minimum</b>	<b>2.57</b>	<b>1.25</b>	<b>4.17</b>	<b>17.50</b>	<b>8.27</b>	<b>5.62</b>	<b>4.39</b>	<b>3.59</b>	<b>5.20</b>	<b>4.32</b>	<b>5.23</b>	<b>3.05</b>	<b>5.23</b>	<b>12.19</b>	<b>6.50</b>	<b>6.22</b>
	<b>Maximum</b>	<b>7.29</b>	<b>16.94</b>	<b>31.25</b>	<b>43.89</b>	<b>20.90</b>	<b>7.82</b>	<b>7.31</b>	<b>6.03</b>	<b>7.52</b>	<b>6.15</b>	<b>6.40</b>	<b>7.65</b>	<b>14.03</b>	<b>169.22</b>	<b>9.00</b>	<b>48.24</b>
	<b>Mean</b>	<b>4.89</b>	<b>8.31</b>	<b>14.63</b>	<b>29.08</b>	<b>14.53</b>	<b>6.46</b>	<b>5.97</b>	<b>4.87</b>	<b>6.39</b>	<b>5.39</b>	<b>5.83</b>	<b>4.76</b>	<b>8.45</b>	<b>80.56</b>	<b>7.39</b>	<b>24.04</b>
	<b>CD (0.05)</b>	<b>1.21</b>	<b>-</b>	<b>10.29</b>	<b>14.23</b>		<b>-</b>	<b>0.56</b>	<b>-</b>	<b>1.22</b>	<b>0.10</b>		<b>-</b>	<b>2.11</b>	<b>-</b>	<b>-</b>	
	<b>CV (%) Error</b>	<b>12.53</b>	<b>-</b>	<b>20.06</b>	<b>21.02</b>		<b>-</b>	<b>3.91</b>	<b>-</b>	<b>7.48</b>	<b>0.72</b>		<b>-</b>	<b>11.44</b>	<b>-</b>	<b>-</b>	
	<b>CV (%) Phen.</b>	<b>23.01</b>	<b>42.07</b>	<b>43.98</b>	<b>22.17</b>		<b>7.30</b>	<b>9.29</b>	<b>12.28</b>	<b>7.39</b>	<b>7.13</b>		<b>23.70</b>	<b>22.73</b>	<b>46.50</b>	<b>5.14</b>	

S. No.	Accession No.	Clusters per plant			No.of pods per cluster			Rahuri
		Bhubaneswar	Delhi	Mean	Delhi	Rahuri	Mean	Stem thickness (cm)
48	LRB-496	14.30	25.60	<b>19.95</b>	2.80	3.00	<b>2.90</b>	0.67
49	LRB-497	11.40	29.20	<b>20.30</b>	2.60	4.00	<b>3.30</b>	0.83
50	LRB-498	15.60	28.00	<b>21.80</b>	2.60	3.00	<b>2.80</b>	0.63
<b>Mean for check variety</b>								
	<b>RBL-1 (C)</b>	<b>9.88</b>	<b>25.20</b>	<b>17.54</b>	<b>2.80</b>	<b>4.20</b>	<b>3.50</b>	<b>0.93</b>
	<b>RBL-6 (C)</b>	<b>9.24</b>	<b>27.70</b>	<b>18.47</b>	<b>2.60</b>	<b>4.00</b>	<b>3.30</b>	<b>1.00</b>
	<b>RBL-35 (C)</b>	<b>8.50</b>	<b>32.60</b>	<b>20.55</b>	<b>3.40</b>	<b>4.00</b>	<b>3.70</b>	<b>1.00</b>
	<b>RBL-50 (C)</b>	<b>8.64</b>	<b>19.13</b>	<b>13.89</b>	<b>3.07</b>	<b>4.60</b>	<b>3.83</b>	<b>1.00</b>
	<b>Minimum</b>	<b>6.60</b>	<b>11.60</b>	<b>8.80</b>	<b>2.00</b>	<b>3.00</b>	<b>2.60</b>	<b>0.47</b>
	<b>Maximum</b>	<b>20.40</b>	<b>45.60</b>	<b>40.00</b>	<b>4.00</b>	<b>5.00</b>	<b>4.30</b>	<b>1.00</b>
	<b>Mean</b>	<b>11.46</b>	<b>25.80</b>	<b>18.64</b>	<b>2.81</b>	<b>4.03</b>	<b>3.46</b>	<b>0.72</b>
	<b>CD (0.05)</b>	<b>1.42</b>	-		-	<b>1.60</b>		<b>0.20</b>
	<b>CV (%) Error</b>	<b>5.88</b>	-		-	<b>14.25</b>		<b>7.50</b>
	<b>CV (%) Phen.</b>	<b>28.49</b>	<b>29.59</b>		<b>16.73</b>	<b>15.73</b>		<b>18.08</b>



**Table 100. Characterization of germplasm lines in rice bean at Bangalore, Delhi and Rahuri : Kharif 2010 (Plains)**

S. No.	Accession No.	Early plant vigour			Plant growth habit			Plant habit			Flower colour			Leaflet shape			Leaflet size			Pod shattering		Pod colour		Seed shape		Rahuri
		Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Delhi	Rahuri	Delhi	Rahuri	Delhi	Rahuri	Biotic susceptible
1	LRB-311	3	2	2	2	3	2	1	2	1	3	3	3	2	2	2	7	5	3	0	1	2	2	1	1	3
2	LRB-319	3	3	2	2	1	2	1	1	2	3	3	3	2	3	2	7	7	3	0	1	2	2	1	1	3
3	LRB-322	3	3	2	2	3	2	1	2	1	3	3	3	2	3	2	7	7	3	0	1	2	2	1	1	5
4	LRB-324	2	3	2	1	2	2	1	2	1	3	3	3	2	1	1	5	5	5	0	1	3	3	1	1	3
5	LRB-325	3	3	2	2	1	2	1	1	2	3	3	3	2	2	3	7	5	5	0	1	2	3	1	1	3
6	LRB-446	2	3	2	1	1	2	1	1	2	3	3	3	2	3	1	7	7	3	1	1	3	3	1	1	3
7	LRB-447	2	-	2	1	-	2	1	-	1	3	-	3	2	-	1	7	-	3	-	1	-	3	-	1	3
8	LRB-448	1	3	2	1	2	2	1	1	2	3	3	3	2	2	1	7	5	3	0	1	2	2	1	1	3
9	LRB-449	2	2	2	1	2	2	1	3	2	3	3	3	2	2	1	7	3	3	0	1	3	2	1	1	3
10	LRB-452	3	2	2	1	3	2	1	3	2	3	3	3	2	1	2	7	5	5	0	1	2	3	1	1	3
11	LRB-455	3	3	2	1	1	2	1	1	2	3	3	3	2	2	2	7	5	5	0	1	2	3	1	1	5
12	LRB-456	3	3	2	1	1	2	1	1	2	3	3	3	2	2	3	7	5	5	0	1	2	3	1	1	3
13	LRB-457	3	-	2	1	-	2	1	-	2	3	-	3	2	-	1	7	-	3	-	1	-	3	-	1	5
14	LRB-458	2	-	2	1	-	2	1	-	2	3	-	3	2	-	1	7	-	3	-	1	-	2	-	1	5
15	LRB-459	1	1	2	1	3	2	1	3	2	3	3	3	2	2	1	5	5	3	0	1	3	2	1	1	5
16	LRB-460	2	2	2	1	3	2	3	2	2	3	3	3	2	2	2	5	5	5	0	1	3	2	1	1	3
17	LRB-461	1	2	2	1	2	2	1	2	2	3	3	3	2	2	2	5	7	3	0	1	2	2	1	1	3
18	LRB-462	1	2	2	1	2	2	1	3	2	3	3	3	2	2	3	5	5	5	0	1	2	2	1	1	3
19	LRB-463	2	3	2	1	2	2	1	2	2	3	3	3	2	2	1	5	5	3	0	1	3	2	1	1	3
20	LRB-464	2	2	2	1	2	2	1	1	2	3	3	3	2	1	1	5	5	3	0	1	3	3	1	1	3
21	LRB-465	2	2	2	1	3	2	1	2	2	3	3	3	2	2	2	5	5	5	1	1	3	2	1	1	3
22	LRB-466	2	2	2	1	1	2	1	2	2	3	3	3	2	2	1	5	5	3	0	1	3	2	1	1	5

S. No.	Accession No.	Early plant vigour			Plant growth habit			Plant habit			Flower colour			Leaflet shape			Leaflet size			Pod shattering		Pod colour		Seed shape		Rahuri
		Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Delhi	Rahuri	Delhi	Rahuri	Delhi	Rahuri	Biotic susceptible
23	LRB-467	2	1	2	1	3	2	1	3	2	3	3	3	2	3	2	5	7	5	0	1	3	3	1	1	5
24	LRB-468	3	2	2	1	3	2	1	3	2	3	3	3	2	1	1	5	7	3	1	1	2	4	1	1	5
25	LRB-470	3	3	2	1	3	2	1	2	2	3	3	3	2	2	2	5	5	3	1	1	3	4	1	1	5
26	LRB-471	3	1	2	1	3	2	1	2	2	3	3	3	2	1	3	5	5	5	0	1	2	3	1	1	3
27	LRB-472	3	1	2	1	2	2	1	3	2	3	3	3	2	1	2	5	3	3	0	1	3	2	-	1	3
28	LRB-473	3	3	2	1	2	2	1	2	2	3	3	3	2	2	3	5	7	5	0	1	2	2	2	1	3
29	LRB-474	1	2	3	1	2	2	1	1	2	3	3	3	2	3	2	5	5	5	0	1	3	4	1	1	3
30	LRB-475	1	2	2	1	2	2	1	2	2	3	3	3	2	2	1	5	7	3	0	1	2	3	1	1	3
31	LRB-476	1	2	3	1	3	2	1	2	2	3	3	3	2	3	2	5	3	5	0	1	2	4	1	1	3
32	LRB-477	1	1	2	1	1	2	1	2	2	3	3	3	2	2	3	5	5	5	1	1	3	4	1	1	3
33	LRB-478	3	2	3	2	3	2	1	2	3	3	3	3	2	3	2	5	5	5	0	1	2	3	1	1	3
34	LRB-479	3	2	2	1	3	2	1	2	2	3	3	3	2	2	2	5	5	5	0	1	3	3	1	1	3
35	LRB-480	2	3	2	1	3	2	1	2	2	3	3	3	2	1	2	5	5	5	0	1	3	2	1	1	3
36	LRB-481	1	2	2	1	2	2	1	2	2	3	3	3	2	2	3	5	5	5	0	1	2	2	1	1	3
37	LRB-482	-	-	2	1	-	2	-	-	2	3	-	3	-	-	1	5	-	3	-	1	-	2	-	1	3
38	LRB-483	3	2	3	1	3	2	1	2	2	3	3	3	2	3	3	5	7	5	1	1	3	3	1	1	3
39	LRB-484	1	2	2	1	1	2	1	1	2	3	3	3	1	2	2	5	5	3	0	1	2	3	1	1	3
40	LRB-487	1	2	2	1	2	2	1	1	2	3	3	3	1	3	2	4	3	3	0	1	3	4	1	1	3
41	LRB-488	1	3	3	1	1	2	1	1	2	3	3	3	1	2	3	3	5	5	0	1	2	2	1	1	3
42	LRB-489	1	3	3	1	3	2	1	1	2	3	3	3	1	3	3	3	7	5	0	1	2	3	1	1	3
43	LRB-490	3	2	3	1	2	2	1	3	2	3	3	3	2	2	3	5	7	5	0	1	2	2	1	1	3
44	LRB-491	3	2	2	1	3	2	1	1	2	3	3	3	2	3	3	5	3	5	0	1	2	2	1	1	3
45	LRB-492	1	3	3	1	2	2	1	1	2	3	3	3	2	1	3	5	7	5	0	1	2	4	1	1	3
46	LRB-493	1	2	2	1	1	2	1	2	2	3	3	3	2	2	2	5	5	5	0	1	3	4	1	1	3
47	LRB-495	1	1	3	1	3	2	1	3	2	3	3	3	2	2	3	5	5	5	0	1	2	2	1	1	3

S. No.	Accession No.	Early plant vigour			Plant growth habit			Plant habit			Flower colour			Leaflet shape			Leaflet size			Pod shattering		Pod colour		Seed shape		Rahuri
		Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Bangalore	Delhi	Rahuri	Delhi	Rahuri	Delhi	Rahuri	Delhi	Rahuri	Biotic susceptible
48	LRB-496	1	3	3	1	1	2	1	1	2	3	3	3	2	2	1	5	7	3	1	1	2	2	1	1	3
49	LRB-497	2	1	2	1	1	2	1	2	2	3	3	3	2	2	1	5	3	3	0	1	0	2	2	1	3
50	LRB-498	2	3	2	1	3	2	1	1	2	3	3	3	2	1	1	5	5	5	1	1	2	4	1	1	3
<b>Mean for check variety</b>																										
	<b>RBL-1</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>RBL-6</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>RBL-35</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>RBL-50</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</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>3</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>
	<b>Maximum</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>7</b>	<b>7</b>	<b>5</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>4</b>	<b>2</b>	<b>1</b>	<b>5</b>
	<b>Mode</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>1</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>3</b>

**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

**Table 101. Promising lines in faba bean germplasm for various characters at different locations : Rabi 2009-10 (Plains)**

S.No.	Characters	Range	Promising lines	Value of best check
<b>Delhi (Accessions 96)</b>				
1.	Days to 50% flowering	65.00-79.00	EC117765, IC322138, HB-57, HB-77, EC007818, EC243524A, EC243596, EC361494, IC329680, EC117748, EC243036, EC243641, IC329648, HB-16, HB-37, EC243793, EC367914 (< 69.00 days)	Vikrant (73.50 days)
2.	Days to maturity	122.00-180.00	HB-20, EC243820 (< 123.00 days)	PRT-12 (123.00 days)
3.	Plant height (cm)	42.20-100.40	EC032976, EC029058, EC243756, EC361494, EC007818, IC329692, IC329648, EC117748, EC243781, EC243608, EC354951, EC005873, EC331564, EC343691, IC117720 (> 85.00 cm)	Vikrant (80.00 cm)
4.	No. of primary branches per plant	2.40-7.20	EC117727, EC107842, EC117795, HB-20, EC243793, EC354985, EC117749, EC243596 (> 5.50)	PRT-12 (4.60)
5.	Pod length (cm)	41.28-68.56	EC117795, IC243594, EC243786, IC276939, HB-44, EC117744, EC243443, EC243782, EC243626, EC354989, EC108906, EC243529, EC354685, EC361482 (> 60.00 cm)	PRT-12 (57.53 cm)
6.	Pod width (mm)	8.32-12.20	HB-44, IC243594, EC003279, EC117795, EC117726, EC354985, EC374731, IC329648 (> 11.30 mm)	PRT-12 (10.80 mm)
7.	No. of pods per plant	12.80-64.40	EC024312, EC343781, EC005873, EC354951, EC117726, EC343808, EC010719, EC354989, EC243588, EC001072, EC361494 (> 55.00)	Vikrant (43.70)
8.	No. of seeds per pod	2.40-4.40	HB-31, EC243626, EC361494 (> 4.00)	Vikrant (3.80)
9.	No. of leaflets per plant	5.00-7.00	HB-1, HB-77, EC010719, EC117755, EC117795, EC243524A, EC243588, EC243782, EC243820, EC343691, EC354985, EC361482, EC367914, EC374731 (> 6.00)	PRT-12 (6.00)
10.	Seed yield (q/ha)	12.56-47.94	EC029058, HB-77, EC117739, EC243626, IC243784, EC243529, EC374731, EC032976, HB-5, IC247649, EC117765, EC243036, EC025085, EC354985, EC243756, EC354989 (> 35.00 q/ha)	PRT-12 (24.76 q/ha)
11.	Seed yield per plant (g)	30.00-165.00	EC343781, EC243793, EC354989, EC005873, EC343691, HB-20, EC354951 (> 135.00 g)	Vikrant (121.00 g)
12.	100 seed weight (g)	14.73-32.00	EC354985 (= 32.00 g)	PRT-12 (29.93 g)

<b>Faizabad (Accessions 97)</b>				
1.	Days to 50% flowering	58.00-81.00	EC243524A, IC243770, IC243784, EC243529, EC354951, EC243709, IC034710, IC322102, EC003279, EC024312, HB-05, HB-16, EC001072, EC025192, EC117755, EC117795, EC243626 (< 66.00 days)	Vikrant (69.00 days)
2.	Days to maturity	117.00-171.00	EC243584, HB-05, HB-10, IC243784, HB-15, HB-01, EC243529, EC354951, EC243709, IC034710, IC322102, EC003279, EC024312, HB-16, EC001072, EC025192, EC117755, EC243626 (< 156.00 days)	Vikrant (159.22 days)
3.	Plant height (cm)	103.40-148.60	IC243594, EC117765, EC117792, HB-15, EC117744, EC117739, EC117727, IC117720, EC243624, IC034710, EC374731 (> 122.00 cm)	Vikrant (116.02 cm)
4.	No. of primary branches per plant	2.80-6.00	EC243624, IC117784, EC243588, EC003279, EC243820, EC010845, EC108906, IC322138, IC243784, HB-44, HB-16, EC243641, HB-77, EC374735 (> 5.20)	PRT-13 (4.64)
5.	No. of seeds per pod	2.00-4.60	HB-76, HB-20, EC107842, EC117724, HB-57, HB-23, HB-37, EC117749 (> 3.80)	Vikrant (3.33)
6.	100 seed weight (g)	17.79-34.80	IC243770, EC361499, HB-77, EC243794, EC117724, EC361494, EC117755, EC117758, HB-57, EC243608, IC034710, HB-20, HB-17, IC276939, IC247649, EC117795 (> 32.00 g)	PRT-13 (29.40 g)
7.	Seed yield per plant (g)	15.89-33.80	EC361499, IC329680, EC243608, EC117743, EC361429, EC107842, EC243755, EC243794, HB-57, EC010719, EC243808, EC117749, EC007818, EC108906, EC361482, EC243584, IC243784 (> 30.00 g)	Vikrant (27.12 g)
<b>Hisar (Accessions 60)</b>				
1.	Days to 50% flowering	54.00-74.00	EC117739, HB-20, HB-15, HB-18, HB-37, HB-10, HB-31, HB-17, EC024312, EC029085, EC117705, EC117726, EC243756 (< 63.00 days)	PRT-12 (66.00 days)
2.	Days to maturity	140.00-164.00	HB-50, EC117726, EC117739, EC243608, EC361497, HB-15, HB-44, HB-20, EC025085, HB-77, EC374735, EC354951, EC374731, HB-5, EC243596, EC-361429 (< 147.00 days)	Vikrant (150.67 days)
3.	Plant height (cm)	37.60-110.30	HB-20, EC117744, HB-10, HB-37, HB-16, HB-31, HB-23, HB-44, EC010845, HB-17, HB-18, EC108906, EC117743, HB-15, HB-5 (> 80.00 cm)	Vikrant (66.43 cm)
4.	No. of primary branches per plant	3.00-8.00	EC361494, EC005864, HB-20, HB-10, HB-37, HB-44, EC010845, HB-17, EC117749, IC374710, EC025192, EC331564, EC032976, EC024312 (< 6.00)	PRT-7 & PRT-12 (6.00)
5.	No. of clusters per plant	1.00-17.00	HB-17, HB-18, HB-50, HB-20, HB-37, HB-10, HB-44, EC117741, HB-1 (> 8.00)	Vikrant (6.33)
6.	No. of pods per plant	13.00-68.00	HB-50, HB-17, HB-44, HB-18, HB-20, HB-10, HB-23, EC361497, HB-37, HB-31 (> 40.00)	Vikrant (30.67)

7.	Pod length (cm)	3.90-6.80	EC243608, HB-20, EC005864, EC243588, EC010719, HB-31, EC354951, EC354685, EC108906, EC025192, EC361494, IC374710, IC329680, EC117749 (> 6.00)	PRT-12 (5.40 cm)
8.	No. of seeds per pod	3.00-4.00	-	PRT-7 & PRT-7 (4.00)
9.	100 seed weight (g)	25.10-34.50	HB-10, HB-76, EC361429, EC354985, HB-50, HB-17, EC374735, EC117749, EC243786 (> 32.00 g)	PRT-7 (31.40 g)
10.	Seed yield per plant (g)	9.40-76.40	IC374710, HB-17, HB-18, HB-50, HB-10, HB-20, HB-23, HB-37 (> 46.00 g)	PRT-7 (35.40 g)
11.	Seed yield per line (g)	85.00-640.50	HB-50, HB-17, HB-44, HB-23, HB-20, HB-18, EC117743, HB-16, EC010845, HB-77, EC361482, HB-01, HB-15, EC117724, EC117741 (> 425.00 g)	Vikrant (260.23 g)
<b>Best entries over location</b>				
1.	Days to 50% flowering	62.00-79.00	EC243524A, EC117739, HB-20, HB-10, EC024312, HB-15, HB-16, HB-37, HB-18, HB-57, EC117765, EC243709, IC322138, HB-17, HB-77, EC003279, EC243596 (< 67.00 days)	PRT-7 (68.28 days)
2.	Days to maturity	124.00-161.33	EC243584, EC001072, HB-15, IC243784, EC243529, HB-20, EC003279, EC117755, EC117792, EC361429, HB-05, EC117758, EC354951, HB-44, EC117765, EC243626 (< 143.00 days)	Vikrant (145.30 days)
3.	Plant height (cm)	68.97-107.20	EC117792, IC243594, IC117720, IC329648, IC329692, EC243036, EC117765, EC007818, EC117748, EC243443, HB-20, EC343691, EC243781, EC117755 (> 98.00 cm)	Vikrant (87.49 cm)
4.	No. of primary branches per plant	3.10-6.00	HB-20, HB-44, EC117727, EC010845, EC243820, EC107842 (> 5.70)	PRT-7 (5.28)
5.	No. of pods per plant	13.60-64.00	EC343781, EC005873, EC001072, EC243781, IC276939, HB-37, EC117727, EC243794, HB-23, HB-44, EC354951, EC024312, HB-20, EC243588, HB-31, HB-50, EC361482 (> 45.00)	Vikrant (37.18)
6.	No. of seeds per pod	2.68-4.07	EC361494, HB-76, EC243626, EC361482 (> 3.70)	PRT-7 (3.56)
7.	100 seed weight (g)	21.40-30.82	IC247649, EC108906, EC354985, HB-77, IC276939, EC361494, EC117795 (> 30.00 g)	PRT-12 (29.24 g)
8.	Seed yield per plant (g)	22.10-92.89	EC343781, EC005873, EC343691, IC117784, EC243443, HB-20, EC243781, EC243794, IC276939, EC243793, EC117727, EC361494, EC117744 (> 67.00 g)	Vikrant (56.69 g)

**Table 102. Multilocation evaluation of germplasm lines in faba bean at Delhi, Faizabad and Hisar: Rabi 2009-10 (Plains)**

S. No.	Accession No.	Qualitative characters					Quantitative characters							
		Delhi					Days to 50% flowering				Days to maturity			
		Pod colour	Pod shape	Seed coat colour	Hilum colour	Seed shape	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
1	HB-01	2	1	2	1	2	76	70	69	<b>71.67</b>	180	150	154	<b>161.33</b>
2	HB-05	2	1	2	1	2	69	65	67	<b>67.00</b>	135	145	146	<b>142.00</b>
3	HB-10	2	1	7	1	2	69	66	60	<b>65.00</b>	130	146	153	<b>143.00</b>
4	HB-15	2	1	7	1	2	71	67	58	<b>65.33</b>	127	150	144	<b>140.33</b>
5	HB-16	2	1	2	1	2	68	65	63	<b>65.33</b>	129	155	147	<b>143.67</b>
6	HB-17	2	1	7	1	2	71	67	61	<b>66.33</b>	129	157	150	<b>145.33</b>
7	HB-18	2	1	7	1	2	71	68	58	<b>65.67</b>	131	158	150	<b>146.33</b>
8	HB-20	2	1	4	1	2	71	67	56	<b>64.67</b>	122	157	145	<b>141.33</b>
9	HB-23	2	1	2	1	2	70	70	64	<b>68.00</b>	129	160	150	<b>146.33</b>
10	HB-31	2	1	7	1	2	77	68	60	<b>68.33</b>	129	158	149	<b>145.33</b>
11	HB-37	2	1	2	1	2	68	69	59	<b>65.33</b>	124	159	147	<b>143.33</b>
12	HB-44	2	1	2	1	2	75	70	63	<b>69.33</b>	123	160	144	<b>142.33</b>
13	HB-50	2	1	7	1	2	75	71	63	<b>69.67</b>	129	161	140	<b>143.33</b>
14	HB-57	2	1	2	1	2	66	69	63	<b>66.00</b>	129	159	147	<b>145.00</b>
15	HB-76	2	1	7	1	2	69	68	67	<b>68.00</b>	128	158	153	<b>146.33</b>
16	HB-77	2	1	5	1	3	66	67	66	<b>66.33</b>	130	157	145	<b>144.00</b>
17	EC001072	2	1	7	1	2	77	65	-	<b>71.00</b>	125	155	-	<b>140.00</b>
18	EC003279	2	1	2	1	3	69	64	-	<b>66.50</b>	129	154	-	<b>141.50</b>
19	EC005864	2	1	7	1	2	71	68	67	<b>68.67</b>	133	158	147	<b>146.00</b>
20	EC005873	2	1	7	1	2	71	69	-	<b>70.00</b>	127	159	-	<b>143.00</b>
21	EC007818	2	1	2	1	2	66	68	-	<b>67.00</b>	130	158	-	<b>144.00</b>
22	EC010845	2	1	2	1	2	78	74	68	<b>73.33</b>	129	164	153	<b>148.67</b>
23	EC010719	2	1	2	1	2	69	75	72	<b>72.00</b>	131	165	151	<b>149.00</b>
24	EC024312	2	1	2	1	2	69	64	62	<b>65.00</b>	133	154	148	<b>145.00</b>
25	EC025085	2	1	7	1	2	75	66	63	<b>68.00</b>	130	156	145	<b>143.67</b>
26	EC025192	2	1	7	1	2	76	65	66	<b>69.00</b>	130	155	150	<b>145.00</b>
27	EC029058	2	1	7	1	2	77	68	62	<b>69.00</b>	132	158	153	<b>147.67</b>

S. No.	Accession No.	Quantitative characters														
		Plant height (cm)				No. of branches per plant				Seeds per pod				Pods per plant		
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Hisar	Mean
1	HB-01	73.20	121.60	69.30	<b>88.03</b>	4.00	5.00	4.00	<b>4.33</b>	3.80	3.08	3.00	<b>3.29</b>	18.80	39.00	<b>28.90</b>
2	HB-05	73.60	115.00	81.00	<b>89.87</b>	3.60	4.60	4.00	<b>4.07</b>	3.80	3.12	3.00	<b>3.31</b>	16.40	28.00	<b>22.20</b>
3	HB-10	78.00	111.00	92.30	<b>93.77</b>	5.20	3.00	7.00	<b>5.07</b>	2.60	3.20	3.00	<b>2.93</b>	31.00	51.00	<b>41.00</b>
4	HB-15	78.20	128.00	81.30	<b>95.83</b>	3.40	4.20	6.00	<b>4.53</b>	3.20	3.40	4.00	<b>3.53</b>	28.20	27.00	<b>27.60</b>
5	HB-16	73.60	112.40	88.70	<b>91.57</b>	4.20	5.60	5.00	<b>4.93</b>	3.80	3.60	3.00	<b>3.47</b>	48.80	25.00	<b>36.90</b>
6	HB-17	76.00	113.20	84.00	<b>91.07</b>	4.40	3.20	7.00	<b>4.87</b>	3.40	3.00	3.00	<b>3.13</b>	14.00	64.00	<b>39.00</b>
7	HB-18	74.60	110.80	83.70	<b>89.70</b>	3.40	4.60	6.00	<b>4.67</b>	4.00	3.00	3.00	<b>3.33</b>	13.20	52.00	<b>32.60</b>
8	HB-20	77.80	111.20	110.30	<b>99.77</b>	6.00	5.00	7.00	<b>6.00</b>	3.20	4.00	3.00	<b>3.40</b>	40.80	51.00	<b>45.90</b>
9	HB-23	74.40	108.00	87.70	<b>90.03</b>	3.20	4.00	3.00	<b>3.40</b>	3.60	4.00	3.00	<b>3.53</b>	47.20	51.00	<b>49.10</b>
10	HB-31	75.80	115.40	88.00	<b>93.07</b>	3.60	3.60	4.00	<b>3.73</b>	4.40	3.28	3.00	<b>3.56</b>	46.00	45.00	<b>45.50</b>
11	HB-37	61.40	110.40	89.00	<b>86.93</b>	4.40	3.80	7.00	<b>5.07</b>	3.80	4.00	3.00	<b>3.60</b>	53.60	48.00	<b>50.80</b>
12	HB-44	71.80	113.20	85.00	<b>90.00</b>	5.20	5.60	7.00	<b>5.93</b>	3.80	3.00	3.00	<b>3.27</b>	40.80	56.00	<b>48.40</b>
13	HB-50	64.40	119.80	73.30	<b>85.83</b>	4.80	3.40	6.00	<b>4.73</b>	4.00	3.00	3.00	<b>3.33</b>	22.80	68.00	<b>45.40</b>
14	HB-57	74.40	109.20	73.30	<b>85.63</b>	4.40	4.00	4.00	<b>4.13</b>	3.00	4.00	3.00	<b>3.33</b>	12.80	15.00	<b>13.90</b>
15	HB-76	74.80	116.40	72.30	<b>87.83</b>	3.40	4.00	3.00	<b>3.47</b>	3.60	4.60	3.00	<b>3.73</b>	35.00	33.00	<b>34.00</b>
16	HB-77	78.00	110.00	63.00	<b>83.67</b>	4.00	5.60	4.00	<b>4.53</b>	3.20	3.60	3.00	<b>3.27</b>	18.00	18.00	<b>18.00</b>
17	EC001072	63.80	105.80	-	<b>84.80</b>	3.80	3.40	-	<b>3.60</b>	2.80	3.40	-	<b>3.10</b>	55.60	-	<b>55.60</b>
18	EC003279	70.40	110.60	-	<b>90.50</b>	5.40	6.00	-	<b>5.70</b>	3.20	2.76	-	<b>2.98</b>	35.60	-	<b>35.60</b>
19	EC005864	74.20	105.60	74.00	<b>84.60</b>	3.40	4.40	8.00	<b>5.27</b>	3.40	2.61	4.00	<b>3.34</b>	51.00	39.00	<b>45.00</b>
20	EC005873	85.80	105.80	-	<b>95.80</b>	3.60	4.00	-	<b>3.80</b>	3.00	3.33	-	<b>3.17</b>	62.40	-	<b>62.40</b>
21	EC007818	92.00	110.40	-	<b>101.20</b>	3.00	5.00	-	<b>4.00</b>	3.40	3.33	-	<b>3.37</b>	16.60	-	<b>16.60</b>
22	EC010845	61.60	105.00	84.30	<b>83.63</b>	4.40	6.00	7.00	<b>5.80</b>	2.60	3.67	3.00	<b>3.09</b>	23.60	39.00	<b>31.30</b>
23	EC010719	76.40	103.40	77.70	<b>85.83</b>	3.60	4.20	4.00	<b>3.93</b>	3.00	3.00	4.00	<b>3.33</b>	57.60	28.00	<b>42.80</b>
24	EC024312	77.20	121.60	43.00	<b>80.60</b>	3.40	3.80	7.00	<b>4.73</b>	3.20	3.20	4.00	<b>3.47</b>	64.40	28.00	<b>46.20</b>
25	EC025085	73.40	105.60	54.30	<b>77.77</b>	3.80	4.20	6.00	<b>4.67</b>	3.60	2.56	4.00	<b>3.39</b>	36.20	33.00	<b>34.60</b>
26	EC025192	61.00	112.40	66.30	<b>79.90</b>	4.40	4.20	7.00	<b>5.20</b>	2.80	2.78	4.00	<b>3.19</b>	31.60	37.00	<b>34.30</b>
27	EC029058	96.00	110.00	40.00	<b>82.00</b>	3.60	5.20	4.00	<b>4.27</b>	3.80	3.00	3.00	<b>3.27</b>	13.40	20.00	<b>16.70</b>



S. No.	Accession No.	Quantitative characters														
		100 seed weight (g)				Seed yield per plant (g)				Hisar			Delhi			
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Clusters per plant	Pod length (cm)	Seed yield per line (g)	Pod length (mm)	Pod width (mm)	Number of leaflets per plant	Seed yield (q/ha)
1	HB-01	23.14	28.50	30.20	<b>27.28</b>	83.00	28.50	26.50	<b>46.00</b>	9.00	5.80	475.00	57.54	10.06	7.00	31.61
2	HB-05	24.62	30.00	31.60	<b>28.74</b>	45.00	26.00	32.40	<b>34.47</b>	4.00	5.30	350.00	54.20	10.92	6.00	37.22
3	HB-10	26.13	24.00	34.50	<b>28.21</b>	118.00	23.51	55.40	<b>65.64</b>	9.00	5.30	375.10	44.76	10.16	6.00	32.22
4	HB-15	20.42	23.43	29.50	<b>24.45</b>	36.00	17.80	31.40	<b>28.40</b>	3.00	5.90	460.00	50.75	9.72	5.00	25.61
5	HB-16	14.73	24.99	29.70	<b>23.14</b>	118.00	27.70	21.90	<b>55.87</b>	3.00	5.40	500.00	55.96	10.00	6.00	19.67
6	HB-17	21.44	32.40	32.50	<b>28.78</b>	50.00	29.36	71.40	<b>50.25</b>	17.00	4.80	550.50	59.88	10.70	6.00	27.33
7	HB-18	24.82	26.52	31.60	<b>27.65</b>	30.00	28.40	61.90	<b>40.10</b>	13.00	4.90	520.10	59.66	9.66	6.00	28.33
8	HB-20	21.66	32.40	28.50	<b>27.52</b>	150.00	26.17	52.40	<b>76.19</b>	12.00	6.60	525.30	46.20	9.96	6.00	20.00
9	HB-23	21.36	30.52	29.10	<b>26.99</b>	70.00	24.08	46.30	<b>46.79</b>	3.00	5.60	525.50	58.10	10.58	6.00	26.78
10	HB-31	23.90	29.89	28.60	<b>27.46</b>	58.00	22.79	37.60	<b>39.46</b>	8.00	6.30	410.00	55.58	10.42	6.00	30.89
11	HB-37	19.42	22.50	31.40	<b>24.44</b>	125.00	25.50	46.20	<b>65.57</b>	10.00	5.70	425.00	55.18	9.56	6.00	24.44
12	HB-44	24.70	30.90	28.50	<b>28.03</b>	100.00	29.20	45.90	<b>58.37</b>	9.00	5.30	550.50	63.24	12.20	6.00	25.50
13	HB-50	23.79	25.00	32.50	<b>27.10</b>	52.00	26.60	61.40	<b>46.67</b>	13.00	5.70	640.50	59.40	10.74	6.00	27.61
14	HB-57	23.93	33.00	29.20	<b>28.71</b>	47.00	31.15	14.40	<b>30.85</b>	3.00	5.40	150.20	50.18	10.16	5.00	29.39
15	HB-76	23.31	27.90	34.10	<b>28.44</b>	86.00	27.38	30.10	<b>47.83</b>	7.00	6.00	325.50	55.74	9.96	6.00	19.67
16	HB-77	25.25	34.80	30.50	<b>30.18</b>	71.00	25.36	13.40	<b>36.59</b>	5.00	3.90	485.00	56.06	10.14	7.00	41.11
17	EC001072	23.39	28.89	-	<b>26.14</b>	100.00	28.29	-	<b>64.15</b>	-	-	-	45.06	9.22	5.00	17.89
18	EC003279	23.62	25.91	-	<b>24.77</b>	58.00	23.90	-	<b>40.95</b>	-	-	-	53.08	11.96	5.00	25.94
19	EC005864	22.61	29.70	30.80	<b>27.70</b>	115.00	22.49	43.50	<b>60.33</b>	7.00	6.50	410.50	48.22	9.62	5.00	24.39
20	EC005873	25.97	28.60	-	<b>27.29</b>	153.00	21.30	-	<b>87.15</b>	-	-	-	56.02	10.10	6.00	20.56
21	EC007818	24.88	20.98	-	<b>22.93</b>	72.00	31.00	-	<b>51.50</b>	-	-	-	57.58	9.70	6.00	29.78
22	EC010845	27.70	30.00	27.10	<b>28.27</b>	62.00	23.24	33.50	<b>39.58</b>	6.00	5.60	490.00	46.92	10.10	5.00	12.56
23	EC010719	25.24	31.35	31.50	<b>29.36</b>	82.00	31.11	27.60	<b>46.90</b>	8.00	6.40	300.40	52.08	10.14	7.00	16.56
24	EC024312	25.36	28.40	25.10	<b>26.29</b>	119.00	29.70	20.10	<b>56.27</b>	4.00	5.30	250.50	53.00	10.54	6.00	21.72
25	EC025085	26.05	29.00	29.50	<b>28.18</b>	70.00	20.70	33.30	<b>41.33</b>	8.00	5.70	400.50	53.84	10.22	6.00	36.06
26	EC025192	21.83	24.01	30.10	<b>25.31</b>	90.00	27.02	35.40	<b>50.81</b>	6.00	6.20	325.00	49.22	9.18	5.00	26.33
27	EC029058	25.88	23.40	25.70	<b>24.99</b>	50.00	19.43	13.10	<b>27.51</b>	2.00	4.80	90.50	56.82	10.42	6.00	47.94

S. No.	Accession No.	Qualitative characters					Quantitative characters							
		Delhi					Days to 50% flowering				Days to maturity			
		Pod colour	Pod shape	Seed coat colour	Hilum colour	Seed shape	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
28	EC032976	2	1	-	-	-	74	69	67	<b>70.00</b>	125	159	152	<b>145.33</b>
29	EC107842	2	1	2	1	2	78	72	68	<b>72.67</b>	123	162	147	<b>144.00</b>
30	EC108906	2	1	7	1	2	72	70	70	<b>70.67</b>	129	160	153	<b>147.33</b>
31	EC117705	2	1	7	1	2	79	66	62	<b>69.00</b>	130	156	153	<b>146.33</b>
32	EC117724	2	1	7	1	3	69	67	72	<b>69.33</b>	130	157	150	<b>145.67</b>
33	EC117726	2	1	7	1	2	71	68	62	<b>67.00</b>	131	158	142	<b>143.67</b>
34	EC117727	2	1	7	1	2	71	69	-	<b>70.00</b>	128	159	-	<b>143.50</b>
35	EC117739	2	1	-	-	-	69	70	54	<b>64.33</b>	133	160	143	<b>145.33</b>
36	EC117741	2	1	2	1	2	69	71	67	<b>69.00</b>	129	161	148	<b>146.00</b>
37	EC117743	2	1	7	1	2	69	72	71	<b>70.67</b>	129	162	150	<b>147.00</b>
38	EC117744	1	1	7	1	2	76	73	68	<b>72.33</b>	129	163	153	<b>148.33</b>
39	EC117748	2	1	7	1	2	67	74	-	<b>70.50</b>	128	164	-	<b>146.00</b>
40	EC117749	2	1	7	1	2	77	68	73	<b>72.67</b>	130	158	153	<b>147.00</b>
41	EC117755	2	1	2	1	2	69	65	-	<b>67.00</b>	128	155	-	<b>141.50</b>
42	EC117758	2	1	7	1	2	69	68	-	<b>68.50</b>	126	158	-	<b>142.00</b>
43	EC117765	2	1	2	1	2	65	67	-	<b>66.00</b>	128	157	-	<b>142.50</b>
44	EC117792	2	1	7	1	2	79	68	-	<b>73.50</b>	125	158	-	<b>141.50</b>
45	EC117795	2	1	7	1	2	76	65	-	<b>70.50</b>	130	159	-	<b>144.50</b>
46	EC117842	2	1	2	1	2	75	70	-	<b>72.50</b>	130	160	-	<b>145.00</b>
47	EC243036	2	1	7	1	3	67	78	-	<b>72.50</b>	130	168	-	<b>149.00</b>
48	EC243443	2	1	7	1	2	69	75	-	<b>72.00</b>	130	165	-	<b>147.50</b>
49	EC243524A	2	1	7	1	2	66	58	-	<b>62.00</b>	129	158	-	<b>143.50</b>
50	EC243529	2	1	7	1	2	79	61	-	<b>70.00</b>	131	151	-	<b>141.00</b>
51	EC243584	2	1	2	1	2	70	81	-	<b>75.50</b>	131	117	-	<b>124.00</b>
52	EC243588	1	1	2	1	2	71	67	69	<b>69.00</b>	128	157	163	<b>149.33</b>
53	EC243596	2	1	2	1	3	66	67	67	<b>66.67</b>	128	157	146	<b>143.67</b>
54	EC243608	2	1	2	1	2	69	71	67	<b>69.00</b>	130	161	143	<b>144.67</b>
55	EC243624	2	1	2	1	2	78	75	63	<b>72.00</b>	131	165	147	<b>147.67</b>
56	EC243626	2	1	2	1	2	71	65	-	<b>68.00</b>	130	155	-	<b>142.50</b>
57	EC243641	2	1	7	1	2	67	79	67	<b>71.00</b>	131	169	152	<b>150.67</b>

S. No.	Accession No.	Quantitative characters														
		Plant height (cm)				No. of branches per plant				Seeds per pod				Pods per plant		
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Hisar	Mean
28	EC032976	100.40	112.00	45.00	<b>85.80</b>	2.60	4.60	7.00	<b>4.73</b>	3.40	3.00	3.00	<b>3.13</b>	23.20	23.00	<b>23.10</b>
29	EC107842	75.00	117.00	76.00	<b>89.33</b>	6.40	4.80	6.00	<b>5.73</b>	3.80	4.00	3.00	<b>3.60</b>	42.80	28.00	<b>35.40</b>
30	EC108906	84.20	122.00	82.30	<b>96.17</b>	3.40	5.60	5.00	<b>4.67</b>	3.20	3.25	3.00	<b>3.15</b>	44.20	29.00	<b>36.60</b>
31	EC117705	73.20	120.20	44.00	<b>79.13</b>	3.40	4.20	6.00	<b>4.53</b>	3.40	3.00	3.00	<b>3.13</b>	54.80	14.00	<b>34.40</b>
32	EC117724	73.40	120.60	77.70	<b>90.57</b>	2.40	4.00	5.00	<b>3.80</b>	3.60	4.00	3.00	<b>3.53</b>	17.20	37.00	<b>27.10</b>
33	EC117726	76.00	118.00	37.60	<b>77.20</b>	3.40	4.00	6.00	<b>4.47</b>	2.40	2.75	3.00	<b>2.72</b>	59.00	19.00	<b>39.00</b>
34	EC117727	69.00	125.00	-	<b>97.00</b>	7.20	4.60	-	<b>5.90</b>	3.00	3.00	-	<b>3.00</b>	50.80	-	<b>50.80</b>
35	EC117739	64.60	125.20	42.00	<b>77.27</b>	3.40	4.80	5.00	<b>4.40</b>	3.40	3.12	3.00	<b>3.17</b>	17.60	20.00	<b>18.80</b>
36	EC117741	76.00	118.20	71.00	<b>88.40</b>	2.80	4.00	5.00	<b>3.93</b>	3.20	3.40	3.00	<b>3.20</b>	21.20	37.00	<b>29.10</b>
37	EC117743	81.00	110.40	82.00	<b>91.13</b>	3.40	4.00	5.00	<b>4.13</b>	3.20	3.00	4.00	<b>3.40</b>	41.60	35.00	<b>38.30</b>
38	EC117744	73.80	126.60	92.70	<b>97.70</b>	4.40	3.60	4.00	<b>4.00</b>	3.60	3.40	4.00	<b>3.67</b>	24.00	22.00	<b>23.00</b>
39	EC117748	87.80	112.00	-	<b>99.90</b>	2.80	4.00	-	<b>3.40</b>	3.40	3.60	-	<b>3.50</b>	40.20	-	<b>40.20</b>
40	EC117749	64.80	118.00	79.00	<b>87.27</b>	5.80	3.60	7.00	<b>5.47</b>	3.20	4.00	3.00	<b>3.40</b>	40.80	29.00	<b>34.90</b>
41	EC117755	77.20	119.00	-	<b>98.10</b>	5.00	4.20	-	<b>4.60</b>	3.20	3.00	-	<b>3.10</b>	16.00	-	<b>16.00</b>
42	EC117758	42.20	118.80	-	<b>80.50</b>	3.80	4.20	-	<b>4.00</b>	2.60	3.00	-	<b>2.80</b>	19.00	-	<b>19.00</b>
43	EC117765	73.80	130.40	-	<b>102.10</b>	5.00	4.80	-	<b>4.90</b>	2.60	2.75	-	<b>2.68</b>	26.80	-	<b>26.80</b>
44	EC117792	84.60	129.80	-	<b>107.20</b>	3.60	3.80	-	<b>3.70</b>	2.60	2.92	-	<b>2.76</b>	35.60	-	<b>35.60</b>
45	EC117795	69.20	121.40	-	<b>95.30</b>	6.20	5.00	-	<b>5.60</b>	4.00	2.80	-	<b>3.40</b>	26.60	-	<b>26.60</b>
46	EC117842	64.00	120.00	-	<b>92.00</b>	4.20	5.20	-	<b>4.70</b>	2.60	2.86	-	<b>2.73</b>	20.80	-	<b>20.80</b>
47	EC243036	84.80	120.00	-	<b>102.40</b>	3.40	3.80	-	<b>3.60</b>	4.00	3.20	-	<b>3.60</b>	21.20	-	<b>21.20</b>
48	EC243443	85.00	114.80	-	<b>99.90</b>	2.60	4.20	-	<b>3.40</b>	3.40	2.84	-	<b>3.12</b>	30.60	-	<b>30.60</b>
49	EC243524A	75.80	115.40	-	<b>95.60</b>	2.60	3.60	-	<b>3.10</b>	3.60	3.24	-	<b>3.42</b>	26.80	-	<b>26.80</b>
50	EC243529	73.60	117.20	-	<b>95.40</b>	5.00	4.20	-	<b>4.60</b>	4.00	3.00	-	<b>3.50</b>	25.40	-	<b>25.40</b>
51	EC243584	74.60	107.40	-	<b>91.00</b>	3.20	4.80	-	<b>4.00</b>	3.00	2.84	-	<b>2.92</b>	13.80	-	<b>13.80</b>
52	EC243588	71.80	112.00	56.00	<b>79.93</b>	3.40	6.00	5.00	<b>4.80</b>	3.00	3.00	3.00	<b>3.00</b>	57.20	34.00	<b>45.60</b>
53	EC243596	77.20	118.60	74.00	<b>89.93</b>	5.60	4.20	4.00	<b>4.60</b>	3.20	2.60	3.00	<b>2.93</b>	35.60	27.00	<b>31.30</b>
54	EC243608	86.60	108.60	64.60	<b>86.60</b>	3.60	5.00	4.00	<b>4.20</b>	3.40	2.85	3.00	<b>3.08</b>	42.80	25.00	<b>33.90</b>
55	EC243624	73.80	123.00	71.60	<b>89.47</b>	3.40	6.00	5.00	<b>4.80</b>	3.80	2.68	3.00	<b>3.16</b>	43.40	30.00	<b>36.70</b>
56	EC243626	74.80	116.00	-	<b>95.40</b>	5.20	4.80	-	<b>5.00</b>	4.40	3.04	-	<b>3.72</b>	25.20	-	<b>25.20</b>
57	EC243641	78.00	110.20	69.30	<b>85.83</b>	4.60	5.60	5.00	<b>5.07</b>	3.80	3.12	3.00	<b>3.31</b>	16.00	27.00	<b>21.50</b>

S. No.	Accession No.	Quantitative characters														
		100 seed weight (g)				Seed yield per plant (g)				Hisar			Delhi			
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Clusters per plant	Pod length (cm)	Seed yield per line (g)	Pod length (mm)	Pod width (mm)	Number of leaflets per plant	Seed yield (q/ha)
28	EC032976	21.40	25.90	28.50	<b>25.27</b>	57.00	23.88	33.40	<b>38.09</b>	4.00	5.30	200.00	49.92	9.68	6.00	38.06
29	EC107842	23.13	25.50	28.50	<b>25.71</b>	113.00	32.51	24.20	<b>56.57</b>	3.00	5.70	375.00	51.78	8.32	6.00	29.94
30	EC108906	29.04	31.52	31.80	<b>30.79</b>	107.00	30.90	29.00	<b>55.63</b>	4.00	6.30	360.00	61.36	11.06	6.00	32.78
31	EC117705	20.70	24.08	29.00	<b>24.59</b>	85.00	21.17	11.40	<b>39.19</b>	1.00	5.40	125.00	49.72	9.50	6.00	25.50
32	EC117724	28.09	33.13	28.20	<b>29.81</b>	55.00	29.08	30.40	<b>38.16</b>	4.00	5.20	450.30	56.58	10.74	6.00	31.06
33	EC117726	23.77	28.30	31.20	<b>27.76</b>	90.00	22.79	25.40	<b>46.06</b>	3.00	5.30	130.20	53.26	11.60	6.00	23.72
34	EC117727	26.53	25.90	-	<b>26.22</b>	106.00	29.57	-	<b>67.79</b>	-	-	-	49.80	10.22	6.00	23.22
35	EC117739	26.70	25.90	27.20	<b>26.60</b>	52.00	27.15	12.50	<b>30.55</b>	3.00	5.30	200.00	53.00	10.94	6.00	40.56
36	EC117741	21.25	27.40	31.40	<b>26.68</b>	53.00	26.32	33.50	<b>37.61</b>	9.00	4.90	450.10	48.78	10.64	6.00	32.72
37	EC117743	27.15	29.86	28.50	<b>28.50</b>	80.00	32.52	33.50	<b>48.67</b>	8.00	6.00	510.00	53.66	11.12	6.00	27.33
38	EC117744	24.93	21.27	26.50	<b>24.23</b>	135.00	29.21	37.50	<b>67.24</b>	3.00	5.40	230.20	62.98	10.72	6.00	32.39
39	EC117748	24.23	29.00	-	<b>26.62</b>	107.00	26.65	-	<b>66.83</b>	-	-	-	53.06	9.54	6.00	27.17
40	EC117749	23.46	28.00	32.10	<b>27.85</b>	118.00	31.10	21.40	<b>56.83</b>	5.00	6.10	335.00	54.22	10.60	6.00	27.22
41	EC117755	24.23	33.13	-	<b>28.68</b>	55.00	23.90	-	<b>39.45</b>	-	-	-	52.58	9.72	7.00	23.33
42	EC117758	21.88	33.13	-	<b>27.51</b>	60.00	23.90	-	<b>41.95</b>	-	-	-	48.76	11.14	6.00	28.33
43	EC117765	25.05	29.30	-	<b>27.18</b>	65.00	24.42	-	<b>44.71</b>	-	-	-	46.72	9.10	6.00	36.94
44	EC117792	23.30	29.47	-	<b>26.39</b>	95.00	23.62	-	<b>59.31</b>	-	-	-	49.00	10.40	6.00	28.11
45	EC117795	27.73	32.33	-	<b>30.03</b>	109.00	23.60	-	<b>66.30</b>	-	-	-	68.56	11.82	7.00	30.67
46	EC117842	19.05	28.40	-	<b>23.73</b>	60.00	23.24	-	<b>41.62</b>	-	-	-	41.28	8.84	6.00	21.89
47	EC243036	27.52	31.40	-	<b>29.46</b>	85.00	25.90	-	<b>55.45</b>	-	-	-	57.54	9.98	6.00	36.17
48	EC243443	28.27	28.30	-	<b>28.29</b>	124.00	28.50	-	<b>76.25</b>	-	-	-	62.64	10.70	6.00	31.11
49	EC243524A	23.33	26.40	-	<b>24.87</b>	50.00	27.60	-	<b>38.80</b>	-	-	-	57.80	10.84	7.00	31.61
50	EC243529	26.35	30.23	-	<b>28.29</b>	94.00	24.50	-	<b>59.25</b>	-	-	-	61.18	10.60	6.00	38.89
51	EC243584	21.37	29.25	-	<b>25.31</b>	85.00	30.50	-	<b>57.75</b>	-	-	-	57.00	9.92	5.00	27.50
52	EC243588	20.60	31.78	30.60	<b>27.66</b>	72.00	22.73	15.40	<b>36.71</b>	6.00	6.40	325.60	49.20	9.84	7.00	18.17
53	EC243596	23.62	25.93	28.50	<b>26.02</b>	82.00	24.36	25.40	<b>43.92</b>	4.00	5.20	240.40	47.72	10.08	6.00	25.78
54	EC243608	22.90	32.70	29.40	<b>28.33</b>	95.00	33.40	21.40	<b>49.93</b>	4.00	6.80	260.50	52.66	10.78	6.00	27.67
55	EC243624	25.12	29.40	30.10	<b>28.21</b>	82.00	24.08	20.30	<b>42.13</b>	4.00	5.90	220.40	58.78	10.60	6.00	24.89
56	EC243626	27.33	28.10	-	<b>27.72</b>	80.00	25.57	-	<b>52.79</b>	-	-	-	62.34	11.06	6.00	39.94
57	EC243641	26.55	29.20	29.50	<b>28.42</b>	65.00	22.15	26.10	<b>37.75</b>	3.00	5.90	300.50	57.22	10.64	5.00	26.94

S. No.	Accession No.	Qualitative characters					Quantitative characters							
		Delhi					Days to 50% flowering				Days to maturity			
		Pod colour	Pod shape	Seed coat colour	Hilum colour	Seed shape	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
58	EC243709	-	-	-	-	-	-	63	69	<b>66.00</b>	-	153	154	<b>153.50</b>
59	EC243755	2	1	2	1	2	69	66	<b>67.50</b>	131	156	-	<b>143.50</b>	
60	EC243756	2	1	7	1	2	76	71	<b>69.67</b>	131	161	153	<b>148.33</b>	
61	EC243761	2	1	7	1	2	74	71	<b>72.50</b>	128	161	-	<b>144.50</b>	
62	EC243764	2	1	2	1	2	71	77	<b>74.00</b>	131	167	-	<b>149.00</b>	
63	EC243781	2	1	2	1	2	72	70	<b>71.00</b>	129	160	-	<b>144.50</b>	
64	EC243782	2	1	7	1	2	75	78	<b>74.67</b>	126	168	156	<b>150.00</b>	
65	EC243786	2	1	7	1	2	76	81	<b>73.33</b>	128	171	150	<b>149.67</b>	
66	EC243793	2	1	7	1	3	68	74	<b>70.33</b>	129	164	164	<b>152.33</b>	
67	EC243794	2	1	7	1	2	69	79	<b>74.00</b>	125	169	-	<b>147.00</b>	
68	EC243808	2	1	7	1	2	69	81	<b>73.67</b>	127	171	148	<b>148.67</b>	
69	EC243820	2	1	2	1	2	69	78	<b>71.67</b>	122	168	162	<b>150.67</b>	
70	EC331564	2	1	7	1	2	79	70	<b>73.33</b>	127	160	162	<b>149.67</b>	
71	EC343691	2	1	7	1	2	79	79	<b>79.00</b>	127	169	-	<b>148.00</b>	
72	EC343781	2	1	7	1	3	78	75	<b>76.50</b>	124	165	-	<b>144.50</b>	
73	EC343808	2	1	2	1	2	69	78	<b>72.67</b>	130	168	148	<b>148.67</b>	
74	EC351999	2	1	7	1	3	69	80	<b>74.50</b>	129	170	-	<b>149.50</b>	
75	EC354685	2	1	7	1	2	71	72	<b>71.33</b>	130	162	151	<b>147.67</b>	
76	EC354951	2	1	2	1	2	69	62	<b>67.33</b>	130	152	145	<b>142.33</b>	
77	EC354985	2	1	2	1	2	69	68	<b>69.33</b>	131	158	148	<b>145.67</b>	
78	EC354989	2	1	7	1	2	76	72	<b>73.00</b>	130	162	149	<b>147.00</b>	
79	EC361429	2	1	4	1	2	71	66	<b>70.00</b>	123	156	146	<b>141.67</b>	
80	EC361482	2	1	7	1	2	77	70	<b>73.67</b>	128	160	148	<b>145.33</b>	
81	EC361494	2	1	2	1	2	66	68	<b>69.00</b>	130	158	152	<b>146.67</b>	
82	EC361497	2	1	2	1	3	75	74	<b>72.67</b>	131	164	143	<b>146.00</b>	
83	EC367914	2	1	7	1	2	68	68	<b>68.00</b>	131	158	-	<b>144.50</b>	
84	EC374731	2	1	2	1	2	78	70	<b>73.33</b>	130	160	145	<b>145.00</b>	
85	EC374735	2	1	2	1	2	70	70	<b>69.67</b>	127	160	145	<b>144.00</b>	
86	IC034710	2	1	7	1	2	77	63	<b>70.33</b>	130	153	155	<b>146.00</b>	
87	IC117720	2	1	2	1	2	69	75	<b>72.00</b>	128	165	-	<b>146.50</b>	

S. No.	Accession No.	Quantitative characters														
		Plant height (cm)				No. of branches per plant				Seeds per pod				Pods per plant		
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Hisar	Mean
58	EC243709	-	114.00	72.00	<b>93.00</b>	-	3.20	4.00	<b>3.60</b>	-	3.40	3.00	<b>3.20</b>	-	22.00	<b>22.00</b>
59	EC243755	78.20	103.40	-	<b>90.80</b>	4.60	4.80	-	<b>4.70</b>	3.20	2.72	-	<b>2.96</b>	24.00	-	<b>24.00</b>
60	EC243756	93.40	108.90	42.60	<b>81.63</b>	3.60	3.20	6.00	<b>4.27</b>	3.40	3.08	3.00	<b>3.16</b>	35.60	16.00	<b>25.80</b>
61	EC243761	67.20	117.60	-	<b>92.40</b>	5.40	4.00	-	<b>4.70</b>	3.00	3.20	-	<b>3.10</b>	37.20	-	<b>37.20</b>
62	EC243764	78.40	104.80	-	<b>91.60</b>	4.80	3.60	-	<b>4.20</b>	3.00	3.04	-	<b>3.02</b>	24.00	-	<b>24.00</b>
63	EC243781	87.00	111.00	-	<b>99.00</b>	3.40	2.80	-	<b>3.10</b>	3.80	3.12	-	<b>3.46</b>	52.40	-	<b>52.40</b>
64	EC243782	72.80	115.60	63.60	<b>84.00</b>	3.60	3.40	5.00	<b>4.00</b>	3.40	3.20	3.00	<b>3.20</b>	25.80	26.00	<b>25.90</b>
65	EC243786	57.20	104.00	45.70	<b>68.97</b>	3.40	4.00	4.00	<b>3.80</b>	4.00	2.80	3.00	<b>3.27</b>	19.00	22.00	<b>20.50</b>
66	EC243793	68.40	110.40	57.00	<b>78.60</b>	6.00	4.00	6.00	<b>5.33</b>	3.40	3.00	3.00	<b>3.13</b>	34.40	28.00	<b>31.20</b>
67	EC243794	74.00	108.40	-	<b>91.20</b>	3.60	4.80	-	<b>4.20</b>	3.20	2.52	-	<b>2.86</b>	50.80	-	<b>50.80</b>
68	EC243808	78.60	109.60	54.00	<b>80.73</b>	5.20	4.50	5.00	<b>4.90</b>	3.00	2.86	3.00	<b>2.95</b>	31.60	13.00	<b>22.30</b>
69	EC243820	74.00	110.20	66.30	<b>83.50</b>	5.40	6.00	6.00	<b>5.80</b>	3.80	3.20	3.00	<b>3.33</b>	36.00	23.00	<b>29.50</b>
70	EC331564	85.80	112.00	64.70	<b>87.50</b>	4.60	4.00	7.00	<b>5.20</b>	4.00	3.36	3.00	<b>3.45</b>	21.20	32.00	<b>26.60</b>
71	EC343691	85.80	112.60	-	<b>99.20</b>	4.00	4.60	-	<b>4.30</b>	3.80	2.92	-	<b>3.36</b>	41.40	-	<b>41.40</b>
72	EC343781	63.40	108.40	-	<b>85.90</b>	5.40	3.60	-	<b>4.50</b>	3.60	2.00	-	<b>2.80</b>	64.00	-	<b>64.00</b>
73	EC343808	66.60	110.40	72.30	<b>83.10</b>	3.00	3.80	6.00	<b>4.27</b>	3.00	2.68	3.00	<b>2.89</b>	58.20	20.00	<b>39.10</b>
74	EC351999	83.60	105.60	-	<b>94.60</b>	4.00	3.40	-	<b>3.70</b>	3.20	3.20	-	<b>3.20</b>	13.60	-	<b>13.60</b>
75	EC354685	84.80	107.00	58.30	<b>83.37</b>	3.40	4.00	6.00	<b>4.47</b>	3.80	3.12	4.00	<b>3.64</b>	37.20	34.00	<b>35.60</b>
76	EC354951	86.60	115.00	71.30	<b>90.97</b>	4.20	3.60	6.00	<b>4.60</b>	3.40	2.56	4.00	<b>3.32</b>	60.00	35.00	<b>47.50</b>
77	EC354985	77.40	105.60	62.30	<b>81.77</b>	6.00	3.20	5.00	<b>4.73</b>	4.00	2.80	3.00	<b>3.27</b>	24.60	27.00	<b>25.80</b>
78	EC354989	73.40	113.40	70.00	<b>85.60</b>	5.20	3.60	6.00	<b>4.93</b>	3.60	3.10	3.00	<b>3.23</b>	57.60	28.00	<b>42.80</b>
79	EC361429	79.00	107.00	77.30	<b>87.77</b>	3.20	4.20	6.00	<b>4.47</b>	3.20	3.00	3.00	<b>3.07</b>	44.00	40.00	<b>42.00</b>
80	EC361482	66.80	111.60	79.00	<b>85.80</b>	4.20	5.00	5.00	<b>4.73</b>	4.00	3.12	4.00	<b>3.71</b>	53.20	37.00	<b>45.10</b>
81	EC361494	92.20	105.60	77.70	<b>91.83</b>	4.20	4.80	8.00	<b>5.67</b>	4.40	3.80	4.00	<b>4.07</b>	55.40	33.00	<b>44.20</b>
82	EC361497	73.40	107.60	73.60	<b>84.87</b>	4.40	4.60	5.00	<b>4.67</b>	3.00	3.28	3.00	<b>3.09</b>	22.40	49.00	<b>35.70</b>
83	EC367914	60.00	120.60	-	<b>90.30</b>	5.20	3.80	-	<b>4.50</b>	3.20	3.00	-	<b>3.10</b>	37.00	-	<b>37.00</b>
84	EC374731	70.00	122.40	48.30	<b>80.23</b>	4.80	5.20	4.00	<b>4.67</b>	3.80	3.00	4.00	<b>3.60</b>	31.80	29.00	<b>30.40</b>
85	EC374735	74.00	118.60	65.00	<b>85.87</b>	4.60	5.30	5.00	<b>4.97</b>	3.40	3.00	3.00	<b>3.13</b>	31.60	28.00	<b>29.80</b>
86	IC034710	74.00	122.40	72.00	<b>89.47</b>	5.00	4.60	7.00	<b>5.53</b>	3.00	3.10	3.00	<b>3.03</b>	44.80	36.00	<b>40.40</b>
87	IC117720	85.80	123.60	-	<b>104.70</b>	2.80	4.20	-	<b>3.50</b>	3.80	2.80	-	<b>3.30</b>	30.40	-	<b>30.40</b>

S. No.	Accession No.	Quantitative characters														
		100 seed weight (g)				Seed yield per plant (g)				Hisar			Delhi			
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Clusters per plant	Pod length (cm)	Seed yield per line (g)	Pod length (mm)	Pod width (mm)	Number of leaflets per plant	Seed yield (q/ha)
58	EC243709	-	26.00	29.40	<b>27.70</b>	-	26.30	17.90	<b>22.10</b>	2.00	5.60	225.00	-	-	-	-
59	EC243755	23.47	27.30	-	<b>25.39</b>	85.00	32.50	-	<b>58.75</b>	-	-	-	50.50	9.42	6.00	27.11
60	EC243756	24.81	24.08	27.50	<b>25.46</b>	123.00	29.21	14.90	<b>55.70</b>	2.00	5.20	135.50	54.04	10.10	5.00	35.50
61	EC243761	25.39	29.70	-	<b>27.55</b>	92.00	25.29	-	<b>58.65</b>	-	-	-	54.06	10.98	5.00	34.28
62	EC243764	22.20	29.10	-	<b>25.65</b>	65.00	23.80	-	<b>44.40</b>	-	-	-	48.78	9.92	6.00	25.22
63	EC243781	24.35	25.80	-	<b>25.08</b>	130.00	21.30	-	<b>75.65</b>	-	-	-	59.46	9.70	6.00	16.94
64	EC243782	21.80	22.20	28.90	<b>24.30</b>	50.00	22.60	11.00	<b>27.87</b>	5.00	5.40	225.00	62.36	10.40	7.00	29.72
65	EC243786	25.90	29.00	32.10	<b>29.00</b>	70.00	26.18	31.60	<b>42.59</b>	3.00	5.50	140.20	64.98	10.34	6.00	28.06
66	EC243793	26.62	30.35	27.50	<b>28.16</b>	160.00	18.00	31.40	<b>69.80</b>	3.00	4.90	250.60	57.24	11.22	6.00	29.22
67	EC243794	26.12	33.40	-	<b>29.76</b>	113.00	31.15	-	<b>72.08</b>	-	-	-	47.24	8.84	6.00	30.00
68	EC243808	17.88	30.12	29.60	<b>25.87</b>	65.00	31.10	10.60	<b>35.57</b>	1.00	5.00	125.10	50.80	9.38	6.00	25.56
69	EC243820	22.45	27.14	28.40	<b>26.00</b>	110.00	24.10	31.50	<b>55.20</b>	3.00	5.60	150.40	54.26	9.58	7.00	18.78
70	EC331564	22.40	29.47	28.10	<b>26.66</b>	85.00	20.18	22.50	<b>42.56</b>	4.00	5.20	325.10	58.12	10.14	6.00	29.89
71	EC343691	20.35	24.10	-	<b>22.23</b>	152.00	15.92	-	<b>83.96</b>	-	-	-	53.08	9.50	7.00	18.33
72	EC343781	25.80	24.60	-	<b>25.20</b>	165.00	20.78	-	<b>92.89</b>	-	-	-	56.74	10.42	6.00	25.78
73	EC343808	20.60	25.60	28.40	<b>24.87</b>	57.00	29.18	13.40	<b>33.19</b>	3.00	5.90	250.10	49.74	10.22	6.00	22.78
74	EC351999	28.76	29.50	-	<b>29.13</b>	42.00	19.83	-	<b>30.92</b>	-	-	-	56.16	10.42	6.00	33.00
75	EC354685	23.10	30.90	27.50	<b>27.17</b>	80.00	27.02	21.40	<b>42.81</b>	8.00	6.30	410.10	60.54	10.74	6.00	25.28
76	EC354951	25.67	28.00	29.40	<b>27.69</b>	144.00	19.43	37.50	<b>66.98</b>	4.00	6.30	325.00	49.88	9.76	6.00	15.22
77	EC354985	32.00	27.60	32.60	<b>30.73</b>	120.00	23.88	26.40	<b>56.76</b>	2.00	5.30	150.20	56.42	11.42	7.00	35.89
78	EC354989	25.04	25.52	31.40	<b>27.32</b>	160.00	15.89	14.50	<b>63.46</b>	6.00	5.90	325.50	62.22	10.94	6.00	35.17
79	EC361429	21.60	26.40	33.10	<b>27.03</b>	115.00	32.51	30.30	<b>59.27</b>	6.00	5.60	360.10	49.42	9.86	6.00	23.28
80	EC361482	22.21	31.52	26.80	<b>26.84</b>	110.00	30.90	34.40	<b>58.43</b>	5.00	5.90	475.00	60.12	9.72	7.00	29.17
81	EC361494	25.53	33.13	31.50	<b>30.05</b>	133.00	30.00	39.80	<b>67.60</b>	8.00	6.20	325.00	56.46	10.04	5.00	31.39
82	EC361497	26.20	25.90	28.50	<b>26.87</b>	55.00	29.90	38.40	<b>41.10</b>	6.00	5.70	350.20	46.64	9.82	6.00	31.89
83	EC367914	29.22	29.10	-	<b>29.16</b>	50.00	29.40	-	<b>39.70</b>	-	-	-	54.30	10.30	7.00	32.94
84	EC374731	24.31	30.96	27.80	<b>27.69</b>	120.00	27.38	23.50	<b>56.96</b>	8.00	4.80	350.60	56.58	11.34	7.00	38.33
85	EC374735	27.30	29.00	32.20	<b>29.50</b>	80.00	25.00	30.40	<b>45.13</b>	3.00	5.40	290.20	54.90	11.28	5.00	22.89
86	IC034710	21.16	32.57	30.10	<b>27.94</b>	93.00	28.29	76.40	<b>65.90</b>	4.00	6.10	350.50	48.56	10.42	6.00	21.67
87	IC117720	25.02	28.86	-	<b>26.94</b>	55.00	23.00	-	<b>39.00</b>	-	-	-	56.88	9.50	6.00	28.61

S. No.	Accession No.	Qualitative characters					Quantitative characters							
		Delhi					Days to 50% flowering				Days to maturity			
		Pod colour	Pod shape	Seed coat colour	Hilum colour	Seed shape	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean
88	IC117784	2	1	7	1	2	69	72	-	<b>70.50</b>	130	162	-	<b>146.00</b>
89	IC243594	2	1	7	1	2	74	68	-	<b>71.00</b>	130	158	-	<b>144.00</b>
90	IC243784	2	1	7	1	1	78	60	-	<b>69.00</b>	131	150	-	<b>140.50</b>
91	IC247649	2	1	7	1	2	78	70	-	<b>74.00</b>	130	160	-	<b>145.00</b>
92	IC276939	2	1	2	1	3	69	75	-	<b>72.00</b>	132	165	-	<b>148.50</b>
93	IC322102	2	1	2	1	2	71	63	-	<b>67.00</b>	134	153	-	<b>143.50</b>
94	IC322138	2	1	7	1	2	65	67	-	<b>66.00</b>	130	157	-	<b>143.50</b>
95	IC329648	2	1	7	1	2	67	78	-	<b>72.50</b>	131	168	-	<b>149.50</b>
96	IC329680	2	1	2	1	2	66	68	67	<b>67.00</b>	127	158	149	<b>144.67</b>
97	IC329692	2	1	7	1	2	75	79	-	<b>77.00</b>	130	169	-	<b>149.50</b>
<b>Mean for check variety</b>														
	<b>PRT-7 (c)</b>	-	-	-	-	-	-	<b>69.56</b>	<b>67.00</b>	<b>68.28</b>	-	<b>159.56</b>	<b>153.00</b>	<b>156.28</b>
	<b>PRT-12 (c)</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>76.33</b>	<b>72.44</b>	<b>66.00</b>	<b>71.59</b>	<b>123.00</b>	<b>163.56</b>	<b>154.00</b>	<b>146.85</b>
	<b>Vikrant (c)</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>73.50</b>	<b>69.00</b>	<b>66.33</b>	<b>69.61</b>	<b>126.00</b>	<b>159.22</b>	<b>150.67</b>	<b>145.30</b>
	<b>Minimum</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>65.00</b>	<b>58.00</b>	<b>54.00</b>	<b>62.00</b>	<b>122.00</b>	<b>117.00</b>	<b>140.00</b>	<b>124.00</b>
	<b>Maximum</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>3</b>	<b>79.00</b>	<b>81.00</b>	<b>74.00</b>	<b>79.00</b>	<b>180.00</b>	<b>171.00</b>	<b>164.00</b>	<b>161.33</b>
	<b>Mean</b>	<b>2</b>	<b>1</b>	<b>7</b>	<b>1</b>	<b>2</b>	<b>71.80</b>	<b>70.02</b>	<b>66.51</b>	<b>69.95</b>	<b>129.39</b>	<b>159.26</b>	<b>149.79</b>	<b>145.62</b>
	<b>CD (0.05)</b>						-	<b>17.06</b>	-	-	-	<b>18.00</b>	-	-
	<b>CV (%) Error</b>						-	<b>9.40</b>	-	-	-	<b>4.34</b>	-	-
	<b>CV (%) Phen.</b>						<b>5.68</b>	<b>7.06</b>	<b>6.92</b>	-	<b>4.45</b>	<b>4.24</b>	<b>3.31</b>	-



S. No.	Accession No.	Quantitative characters														
		Plant height (cm)				No. of branches per plant				Seeds per pod				Pods per plant		
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Delhi	Hisar	Mean
88	IC117784	73.60	115.60	-	<b>94.60</b>	4.00	6.00	-	<b>5.00</b>	3.40	2.62	-	<b>3.01</b>	43.80	-	<b>43.80</b>
89	IC243594	62.60	148.60	-	<b>105.60</b>	4.20	5.20	-	<b>4.70</b>	3.80	2.84	-	<b>3.32</b>	25.40	-	<b>25.40</b>
90	IC243784	57.40	116.60	-	<b>87.00</b>	4.80	5.60	-	<b>5.20</b>	3.20	3.40	-	<b>3.30</b>	33.00	-	<b>33.00</b>
91	IC247649	55.80	117.60	-	<b>86.70</b>	3.80	3.00	-	<b>3.40</b>	3.60	3.20	-	<b>3.40</b>	33.60	-	<b>33.60</b>
92	IC276939	74.00	116.00	-	<b>95.00</b>	3.40	5.00	-	<b>4.20</b>	3.20	2.70	-	<b>2.95</b>	52.00	-	<b>52.00</b>
93	IC322102	59.40	114.00	-	<b>86.70</b>	4.20	3.40	-	<b>3.80</b>	3.60	2.80	-	<b>3.20</b>	34.00	-	<b>34.00</b>
94	IC322138	58.40	118.50	-	<b>88.45</b>	4.40	5.60	-	<b>5.00</b>	3.80	2.60	-	<b>3.20</b>	28.00	-	<b>28.00</b>
95	IC329648	88.20	120.00	-	<b>104.10</b>	3.40	4.80	-	<b>4.10</b>	3.00	2.52	-	<b>2.76</b>	42.60	-	<b>42.60</b>
96	IC329680	55.40	117.00	64.30	<b>78.90</b>	3.60	3.40	4.00	<b>3.67</b>	3.40	2.60	3.00	<b>3.00</b>	14.00	31.00	<b>22.50</b>
97	IC329692	92.00	115.40	-	<b>103.70</b>	4.00	4.40	-	<b>4.20</b>	4.00	2.80	-	<b>3.40</b>	19.80	-	<b>19.80</b>
<b>Mean for check variety</b>																
	<b>PRT-7 (c)</b>	-	<b>114.33</b>	<b>52.60</b>	<b>83.47</b>	-	<b>4.56</b>	<b>6.00</b>	<b>5.28</b>	-	<b>3.12</b>	<b>4.00</b>	<b>3.56</b>	-	<b>26.00</b>	<b>26.00</b>
	<b>PRT-12 (c)</b>	<b>71.80</b>	<b>115.00</b>	<b>47.00</b>	<b>77.93</b>	<b>4.60</b>	<b>4.64</b>	<b>6.00</b>	<b>5.08</b>	<b>3.13</b>	<b>3.15</b>	<b>4.00</b>	<b>3.43</b>	<b>30.13</b>	<b>25.00</b>	<b>27.57</b>
	<b>Vikrant (c)</b>	<b>80.00</b>	<b>116.02</b>	<b>66.43</b>	<b>87.49</b>	<b>3.70</b>	<b>4.47</b>	<b>4.33</b>	<b>4.17</b>	<b>3.80</b>	<b>3.33</b>	<b>3.00</b>	<b>3.38</b>	<b>43.70</b>	<b>30.67</b>	<b>37.18</b>
	<b>Minimum</b>	<b>42.20</b>	<b>103.40</b>	<b>37.60</b>	<b>68.97</b>	<b>2.40</b>	<b>2.80</b>	<b>3.00</b>	<b>3.10</b>	<b>2.40</b>	<b>2.00</b>	<b>3.00</b>	<b>2.68</b>	<b>12.80</b>	<b>13.00</b>	<b>13.60</b>
	<b>Maximum</b>	<b>100.40</b>	<b>148.60</b>	<b>110.30</b>	<b>107.20</b>	<b>7.20</b>	<b>6.00</b>	<b>8.00</b>	<b>6.00</b>	<b>4.40</b>	<b>4.60</b>	<b>4.00</b>	<b>4.07</b>	<b>64.40</b>	<b>68.00</b>	<b>64.00</b>
	<b>Mean</b>	<b>74.68</b>	<b>114.62</b>	<b>69.05</b>	<b>89.41</b>	<b>4.15</b>	<b>4.39</b>	<b>5.45</b>	<b>4.52</b>	<b>3.42</b>	<b>3.10</b>	<b>3.24</b>	<b>3.24</b>	<b>34.64</b>	<b>32.09</b>	<b>33.50</b>
	<b>CD (0.05)</b>	-	<b>19.62</b>	-		-	<b>2.13</b>	-		-	<b>0.77</b>	-		-	-	
	<b>CV (%) Error</b>	-	<b>6.61</b>	-		-	<b>18.14</b>	-		-	<b>9.31</b>	-		-	-	
	<b>CV (%) Phen.</b>	<b>13.10</b>	<b>6.14</b>	<b>22.16</b>		<b>22.95</b>	<b>17.95</b>	<b>22.44</b>		<b>12.68</b>	<b>13.12</b>	<b>13.26</b>		<b>40.90</b>	<b>36.28</b>	

S. No.	Accession No.	Quantitative characters														
		100 seed weight (g)				Seed yield per plant (g)				Hisar			Delhi			
		Delhi	Faizabad	Hisar	Mean	Delhi	Faizabad	Hisar	Mean	Clusters per plant	Pod length (cm)	Seed yield per line (g)	Pod length (mm)	Pod width (mm)	Number of leaflets per plant	Seed yield (q/ha)
88	IC117784	23.38	26.60	-	<b>24.99</b>	127.00	27.40	-	<b>77.20</b>	-	-	-	57.66	10.88	6.00	16.67
89	IC243594	25.00	17.79	-	<b>21.40</b>	95.00	19.42	-	<b>57.21</b>	-	-	-	67.68	12.18	6.00	32.67
90	IC243784	21.91	29.47	-	<b>25.69</b>	96.00	30.16	-	<b>63.08</b>	-	-	-	56.82	10.48	6.00	39.17
91	IC247649	29.30	32.33	-	<b>30.82</b>	96.00	24.10	-	<b>60.05</b>	-	-	-	58.72	10.24	6.00	37.06
92	IC276939	27.78	32.40	-	<b>30.09</b>	115.00	24.80	-	<b>69.90</b>	-	-	-	63.46	10.76	6.00	17.22
93	IC322102	24.83	30.12	-	<b>27.48</b>	80.00	27.60	-	<b>53.80</b>	-	-	-	58.78	10.00	5.00	31.00
94	IC322138	27.74	29.21	-	<b>28.48</b>	75.00	22.70	-	<b>48.85</b>	-	-	-	57.64	10.76	6.00	27.61
95	IC329648	26.46	26.05	-	<b>26.26</b>	106.00	22.10	-	<b>64.05</b>	-	-	-	58.72	11.34	6.00	31.39
96	IC329680	22.68	29.39	29.60	<b>27.22</b>	50.00	33.80	9.40	<b>31.07</b>	5.00	6.10	85.00	56.92	10.62	6.00	25.56
97	IC329692	26.15	29.47	-	<b>27.81</b>	93.00	28.80	-	<b>60.90</b>	-	-	-	59.42	9.92	6.00	33.72
<b>Mean for check variety</b>																
	<b>PRT-7 (c)</b>	-	<b>26.16</b>	<b>31.40</b>	<b>28.78</b>	-	<b>23.90</b>	<b>35.40</b>	<b>29.65</b>	<b>4.00</b>	<b>5.00</b>	<b>208.60</b>	-	-	-	-
	<b>PRT-12 (c)</b>	<b>29.93</b>	<b>29.40</b>	<b>28.40</b>	<b>29.24</b>	<b>94.33</b>	<b>26.59</b>	<b>22.50</b>	<b>47.81</b>	<b>4.00</b>	<b>5.40</b>	<b>160.50</b>	<b>57.53</b>	<b>10.80</b>	<b>6.00</b>	<b>24.76</b>
	<b>Vikrant (c)</b>	<b>24.00</b>	<b>27.07</b>	<b>29.27</b>	<b>26.78</b>	<b>121.00</b>	<b>27.12</b>	<b>21.97</b>	<b>56.69</b>	<b>6.33</b>	<b>4.43</b>	<b>260.23</b>	<b>57.18</b>	<b>10.78</b>	<b>6.00</b>	<b>21.75</b>
	<b>Minimum</b>	<b>14.73</b>	<b>17.79</b>	<b>25.10</b>	<b>21.40</b>	<b>30.00</b>	<b>15.89</b>	<b>9.40</b>	<b>22.10</b>	<b>1.00</b>	<b>3.90</b>	<b>85.00</b>	<b>41.28</b>	<b>8.32</b>	<b>5.00</b>	<b>12.56</b>
	<b>Maximum</b>	<b>32.00</b>	<b>34.80</b>	<b>34.50</b>	<b>30.82</b>	<b>165.00</b>	<b>33.80</b>	<b>76.40</b>	<b>92.89</b>	<b>17.00</b>	<b>6.80</b>	<b>640.50</b>	<b>68.56</b>	<b>12.20</b>	<b>7.00</b>	<b>47.94</b>
	<b>Mean</b>	<b>24.35</b>	<b>28.34</b>	<b>29.72</b>	<b>27.13</b>	<b>89.32</b>	<b>25.91</b>	<b>30.21</b>	<b>51.54</b>	<b>5.43</b>	<b>5.59</b>	<b>325.44</b>	<b>54.94</b>	<b>10.32</b>	<b>6.00</b>	<b>28.13</b>
	<b>CD (0.05)</b>	-	<b>9.06</b>	-	-	-	<b>9.49</b>	-	-	-	-	-	-	-	-	-
	<b>CV (%) Error</b>	-	<b>12.75</b>	-	-	-	<b>14.23</b>	-	-	-	-	-	-	-	-	-
	<b>CV (%) Phen.</b>	<b>11.40</b>	<b>11.12</b>	<b>6.64</b>	-	<b>35.16</b>	<b>15.36</b>	<b>47.96</b>	-	<b>57.91</b>	<b>9.88</b>	<b>41.26</b>	<b>9.56</b>	<b>6.92</b>	<b>8.95</b>	<b>23.30</b>

**Table 103. Promising lines in winged bean germplasm for various characters at different locations (Plains)**

S. No.	Characters	Range	Promising lines	Value of best check
<b>Akola (Accessions 102)</b>				
1.	Days to 50% flowering	74.00 - 131.00	EC-38821-1, EC-38821-P1, EC-38821-P2, EC-38957, IC-17006-1, IC-95227, IC-95234 (< 75.00 days)	AKWB-1 (77.00 days)
2.	Green pod weight (g)	2.40 - 10.00	EC-142652-1, EC-27884, EC-121918-1, EC-118345, IC-95240, IC-26942, EC-38957, EC-38821-1, EC-38957-A, EC-38821-P1, IC-95231, IC-26949, EC-38823, IC-17006-1, EC-142601 (> 7.00 g)	AKWB-1 (5.60 g)
3.	Wing width (cm)	1.00 - 3.10	IC-112416, IC-45225, EC-21904, IC-95231, IC-95240, IC-17005-1, EC-11885, EC-38825-3, IC-38683, EC-142652-1, IC-34861, IC-34865-1 (> 2.20 cm)	AKWB-1 (2.00 cm)
4.	Pod length (cm)	10.40 - 21.50	EC-118345, IC-26942, IC-26945, EC-27884, EC-178271, EC-142652 (> 17.50 cm)	AKWB-1 (16.80 cm)
5.	Green pod yield per plant (g)	7.84 - 215.28	EC-121918-1, IC-34861 (> 167.00 g)	AKWB-1 (156.80 g)
6.	No. of pods per plant	1.40 - 31.00	IC-34861 (= 31.00)	AKWB-1 (28.00)
7.	No. of seeds per pod	4.20 - 17.20	IC-26942, EC-21904, EC-128269, EC-118345, IC-26170-2, EC-38823, EC-27884, IC-95222, IC-26170, IC-95232, IC-95226, IC-95236 (> 12.50)	AKWB-1 (11.30)
8.	100-seed weight (g)	20.20 - 37.00	IC-41980, EC-178276, EC-130184, EC-38955-A, EC-121919, IC-26949-1, IC-45229-1, IC-34865-2, IC-112416, IC-31981, EC-178283, EC-27886-A2, EC-142600, IC-26170-2, EC-178266, EC-27884, EC-178271, EC-121918, EC-27885-1, IC-95226, EC-38824-1, IC-112417, IC-95227, IC-34861, EC-142601, IC-45225, EC-38956-2 (> 32.00 g)	AKWB-1 (26.30 g)
<b>Ranchi (Accessions 102)</b>				
1.	Days to 50% flowering	72.00 - 111.00	IC-17004-1, IC-15017, IC-45229-1, IC-95222, EC-38825-2, IC-26941-B, IC-26942, IC-26949, IC-95236, EC-142601, IC-26944, EC-178266, EC-27886-A-2, EC-38821, IC-26949-1, EC-142652, EC-142666, EC-28886, EC-38824-3, EC38825-3 (< 88.00 days)	AKWB-1 (104.00 days)

2.	Days to maturity	159.00 - 181.00	EC-38825-2, EC-38821-P-4, IC-45229-1, IC-95238, IC-17004-1, IC-45225, IC-15017, IC-95225, IC-34865-1, IC-45229, IC-95226, EC-114273, EC121918-1, EC-142652, EC-28886A-1, EC-38957, IC-41980, IC-95237 (< 170.00 days)	AKWB-1 (177.00 days)
3.	Plant height (cm)	179.00 - 398.00	IC-45229-1, EC-38821-P-1, EC-114273-A, EC-128269, EC-178282, IC-24940, IC-38683 (> 340.00 cm)	AKWB-1 (310.00 cm)
4.	No of primary branches	1.00 - 6.00	IC-45229-1, EC-38823, IC-95241 (> 4.00)	AKWB-1 (3.00)
5.	Pod length (cm)	11.00 - 19.00	EC-38825 P-3, EC-38823, EC-38957, IC-41979-1, IC-45229 (> 17.00 cm)	AKWB-1 (16.00 cm)
6.	No. of pods per plant	4.00 - 30.00	EC-142666, EC-178266, EC-38823, EC-38824-3 (> 24.00)	AKWB-1 (21.00)
7.	No. of seeds per pod	6.00 - 15.00	EC-38823, EC-118030, EC-142652, EC-38824-3, EC-38825 P-3, IC-95222 IC-95234, IC-95242, EC-38959 (> 13.00)	AKWB-1 (12.00)
8.	100-seed weight (g)	24.86 - 45.00	IC-41979-1, IC-17004-1, EC-128269 (> 32.00 g)	AKWB-1 (31.30 g)
<b>Best entries over locations</b>				
1.	Days to 50% flowering	79.00 - 115.50	IC-95222, EC-27886-A2, IC-26944, IC-95236, EC-27886-A1, EC-38825-2, IC-26949, IC-15017, IC-17006-1, EC-142653, EC-38957 (< 88.00 days)	AKWB-1 (90.50 days)
2.	Pod length (cm)	10.50 - 17.75	EC-118345, EC-142652, EC-38823, IC-95222, IC-26945 (> 17.00 cm)	AKWB-1 (16.40 cm)
3.	No. of pods per plant	2.70 - 24.50	-	AKWB-1 (24.50)
4.	No. of seeds per pod	6.80 - 14.50	EC-38823, EC-21904, IC-95222, EC-128269, EC-142652, IC-95226, IC-95227, IC-95234, IC-26942 (> 12.50)	AKWB-1 (11.65)
5.	100-seed weight (g)	23.92 - 34.85	IC-41979-1, IC-112416, IC-112417, IC-41980, EC-38955-A, IC-26949-1, IC-45229-1, EC-178276, EC-130184, EC-121919, IC-31981, IC-34865-2, EC-38824-1, IC-95226, EC-178271, EC-142601, IC-45225, EC-27884, EC-121918 (> 31.00 g)	AKWB-1 (28.80 g)

**Table 104. Multilocation evaluation of germplasm lines in winged bean at Akola and Rahuri : Kharif 2010 (Plain)**

S. No.	Accession No.	Akola											Days to 50% flowering			Pod length (cm)			No. of pods per plant			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Biotic stress susceptibility	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
1	EC-114273	4	2	2	1	1	2	3	1	3	1	3	3	81.00	110.00	<b>95.50</b>	16.40	15.00	<b>15.70</b>	18.10	14.00	<b>16.05</b>
2	EC-114273-A	4	2	2	1	1	2	2	1	4	2	1	3	94.00	103.00	<b>98.50</b>	11.50	16.00	<b>13.75</b>	9.20	19.00	<b>14.10</b>
3	EC-116881-1	3	1	2	1	1	1	3	1	2	2	1	3	77.00	109.00	<b>93.00</b>	13.50	14.90	<b>14.20</b>	9.30	21.00	<b>15.15</b>
4	EC-118030	5	2	2	1	1	2	3	1	4	1	3	3	99.00	106.00	<b>102.50</b>	11.50	17.00	<b>14.25</b>	8.30	24.00	<b>16.15</b>
5	EC-118345	4	3	2	1	1	4	6	1	6	3	1	3	108.00	107.00	<b>107.50</b>	21.50	14.00	<b>17.75</b>	7.50	14.00	<b>10.75</b>
6	EC-11885	2	1	2	1	1	2	3	1	3	1	3	3	94.00	107.00	<b>100.50</b>	15.20	16.00	<b>15.60</b>	8.40	12.00	<b>10.20</b>
7	EC-119921	5	2	2	1	1	2	3	1	2	1	3	3	103.00	92.00	<b>97.50</b>	16.70	11.70	<b>14.20</b>	14.10	11.00	<b>12.55</b>
8	EC-121918	2	1	2	1	1	2	2	1	2	2	1	3	92.00	88.00	<b>90.00</b>	12.30	16.00	<b>14.15</b>	6.70	20.00	<b>13.35</b>
9	EC-121918-1	1	1	2	1	1	2	4	1	3	2	1	3	99.00	88.00	<b>93.50</b>	13.30	12.80	<b>13.05</b>	23.40	17.00	<b>20.20</b>
10	EC-121919	5	2	2	1	1	2	3	1	2	2	1	3	94.00	93.00	<b>93.50</b>	14.50	16.50	<b>15.50</b>	4.80	19.00	<b>11.90</b>
11	EC-128269	2	3	2	1	1	4	3	1	2	1	3	3	104.00	96.00	<b>100.00</b>	14.50	15.00	<b>14.75</b>	13.60	14.00	<b>13.80</b>
12	EC-130184	1	1	2	1	2	2	3	1	2	1	1	3	120.00	97.00	<b>108.50</b>	15.50	11.00	<b>13.25</b>	4.50	16.00	<b>10.25</b>
13	EC-142600	5	2	3	1	1	1	3	1	2	2	1	3	104.00	92.00	<b>98.00</b>	15.80	14.00	<b>14.90</b>	6.30	12.00	<b>9.15</b>
14	EC-142601	4	3	2	1	1	4	2	1	2	1	3	3	120.00	84.00	<b>102.00</b>	17.40	12.00	<b>14.70</b>	3.40	23.00	<b>13.20</b>
15	EC-142652	3	2	2	1	1	4	3	1	2	1	3	3	99.00	86.00	<b>92.50</b>	18.30	16.50	<b>17.40</b>	6.20	24.00	<b>15.10</b>
16	EC-142652-1	2	1	2	1	1	4	2	1	2	1	1	3	124.00	97.00	<b>110.50</b>	13.50	15.00	<b>14.25</b>	5.80	12.00	<b>8.90</b>
17	EC-142653	3	1	2	1	1	4	4	1	3	2	3	3	77.00	98.00	<b>87.50</b>	11.50	16.00	<b>13.75</b>	4.50	13.00	<b>8.75</b>
18	EC-142654	3	2	2	1	1	2	2	1	3	2	3	3	103.00	107.00	<b>105.00</b>	15.20	14.00	<b>14.60</b>	2.30	19.00	<b>10.65</b>
19	EC-142660	1	1	2	1	1	2	2	1	3	2	1	3	94.00	108.00	<b>101.00</b>	15.30	13.90	<b>14.60</b>	3.80	19.00	<b>11.40</b>
20	EC-142666	4	3	2	1	1	4	3	1	2	1	1	3	125.00	86.00	<b>105.50</b>	15.80	16.00	<b>15.90</b>	2.30	30.00	<b>16.15</b>
21	EC-178266	3	3	2	1	1	1	2	1	1	1	3	3	97.00	85.00	<b>91.00</b>	14.50	14.00	<b>14.25</b>	2.10	29.00	<b>15.55</b>
22	EC-178271	5	3	2	1	1	2	2	1	2	1	3	3	95.00	109.00	<b>102.00</b>	18.40	13.50	<b>15.95</b>	3.00	15.00	<b>9.00</b>

S. No.	Accession No.	Number of seeds per pod			100-seed weight (g)			Akola			Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Wing width (cm)	Green pod yield per plant (g)	Green pod weight (g)	Days to maturity	Plant height (cm)	No of primary branches
1	EC-114273	8.00	11.00	<b>9.50</b>	24.30	24.86	<b>24.58</b>	1.80	108.60	6.00	169	230.0	2
2	EC-114273-A	7.60	13.00	<b>10.30</b>	27.41	26.87	<b>27.14</b>	2.00	42.32	4.60	170	375.0	3
3	EC-116881-1	10.30	11.00	<b>10.65</b>	27.80	28.32	<b>28.06</b>	2.00	55.80	6.00	172	235.0	3
4	EC-118030	10.10	14.00	<b>12.05</b>	30.10	31.45	<b>30.78</b>	1.80	41.50	5.00	177	240.0	4
5	EC-118345	14.40	10.00	<b>12.20</b>	31.90	29.45	<b>30.68</b>	2.00	64.50	8.60	171	233.0	2
6	EC-11885	12.00	11.00	<b>11.50</b>	26.30	27.45	<b>26.88</b>	2.50	50.40	6.00	177	340.0	2
7	EC-119921	12.30	8.00	<b>10.15</b>	27.10	26.48	<b>26.79</b>	1.70	78.96	5.60	174	213.0	2
8	EC-121918	11.20	12.00	<b>11.60</b>	33.70	28.56	<b>31.13</b>	1.80	38.86	5.80	179	262.0	3
9	EC-121918-1	9.20	8.00	<b>8.60</b>	30.10	31.05	<b>30.58</b>	1.60	215.28	9.20	169	268.3	3
10	EC-121919	10.20	13.00	<b>11.60</b>	36.10	27.56	<b>31.83</b>	1.60	24.96	5.20	170	283.0	2
11	EC-128269	14.60	12.00	<b>13.30</b>	29.70	32.08	<b>30.89</b>	1.40	54.40	4.00	171	360.0	2
12	EC-130184	10.30	7.00	<b>8.65</b>	36.20	27.46	<b>31.83</b>	2.10	27.00	6.00	174	192.0	2
13	EC-142600	10.50	9.00	<b>9.75</b>	34.10	26.58	<b>30.34</b>	1.70	44.10	7.00	177	195.2	2
14	EC-142601	11.20	9.00	<b>10.10</b>	32.20	30.45	<b>31.33</b>	1.70	25.16	7.40	179	330.0	3
15	EC-142652	12.10	14.00	<b>13.05</b>	32.00	28.56	<b>30.28</b>	2.00	43.40	7.00	169	308.0	3
16	EC-142652-1	9.40	12.00	<b>10.70</b>	26.30	31.11	<b>28.71</b>	2.40	58.00	10.00	172	204.0	2
17	EC-142653	11.40	13.00	<b>12.20</b>	26.00	27.65	<b>26.83</b>	1.40	31.50	7.00	170	250.0	2
18	EC-142654	12.20	12.00	<b>12.10</b>	29.20	29.85	<b>29.53</b>	1.80	11.96	5.20	170	248.0	3
19	EC-142660	12.40	10.00	<b>11.20</b>	23.30	27.66	<b>25.48</b>	1.80	24.32	6.40	173	223.0	3
20	EC-142666	11.20	12.00	<b>11.60</b>	23.30	30.04	<b>26.67</b>	2.00	9.20	4.00	177	230.0	4
21	EC-178266	11.30	10.00	<b>10.65</b>	34.00	27.54	<b>30.77</b>	1.80	8.82	4.20	175	260.0	4
22	EC-178271	12.30	11.00	<b>11.65</b>	33.70	29.14	<b>31.42</b>	1.90	16.20	5.40	174	282.0	2

S. No.	Accession No.	Akola											Days to 50% flowering			Pod length (cm)			No. of pods per plant			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Biotic stress susceptibility	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
23	EC-178276	2	1	2	1	1	4	2	1	2	1	1	3	87.00	110.00	<b>98.50</b>	16.10	13.00	<b>14.55</b>	3.60	18.00	<b>10.80</b>
24	EC-178282	2	2	2	1	1	2	3	1	2	1	3	3	93.00	99.00	<b>96.00</b>	13.50	14.50	<b>14.00</b>	3.70	19.00	<b>11.35</b>
25	EC-178283	2	1	2	1	1	4	2	1	2	1	3	3	117.00	111.00	<b>114.00</b>	13.40	14.00	<b>13.70</b>	2.20	22.00	<b>12.10</b>
26	EC-21904	5	2	2	1	1	2	3	1	2	1	3	3	110.00	111.00	<b>110.50</b>	13.30	13.60	<b>13.45</b>	8.60	11.00	<b>9.80</b>
27	EC-27884	4	3	2	4	1	2	2	1	2	2	3	3	109.00	104.00	<b>106.50</b>	19.00	12.00	<b>15.50</b>	5.50	9.00	<b>7.25</b>
28	EC-27885-1	4	2	2	1	1	4	3	1	4	2	3	3	108.00	108.00	<b>108.00</b>	13.50	15.20	<b>14.35</b>	3.40	11.00	<b>7.20</b>
29	EC-27886	2	1	2	1	1	2	2	1	2	2	3	3	130.00	86.00	<b>108.00</b>	10.80	11.00	<b>10.90</b>	6.30	9.00	<b>7.65</b>
30	EC-27886-A1	2	1	2	1	1	4	4	1	6	2	1	3	77.00	92.00	<b>84.50</b>	12.50	14.00	<b>13.25</b>	10.80	15.00	<b>12.90</b>
31	EC-27886-A2	3	1	2	1	2	4	3	1	5	2	3	3	75.00	85.00	<b>80.00</b>	11.50	15.00	<b>13.25</b>	4.20	14.00	<b>9.10</b>
32	EC-38154	1	1	2	1	1	1	3	2	2	2	3	3	105.00	98.00	<b>101.50</b>	14.30	16.00	<b>15.15</b>	4.30	5.00	<b>4.65</b>
33	EC-38821	4	2	2	1	1	2	3	1	3	2	1	3	100.00	85.00	<b>92.50</b>	13.40	13.00	<b>13.20</b>	9.10	9.00	<b>9.05</b>
34	EC-38821-1	5	3	2	1	1	2	2	1	2	1	3	3	74.00	111.00	<b>92.50</b>	13.30	14.00	<b>13.65</b>	9.20	11.00	<b>10.10</b>
35	EC-38821-P1	3	1	2	1	1	2	2	1	2	1	1	3	74.00	109.00	<b>91.50</b>	12.00	17.00	<b>14.50</b>	5.90	15.00	<b>10.45</b>
36	EC-38821-P2	5	1	2	1	1	2	4	1	3	1	3	3	74.00	105.00	<b>89.50</b>	15.50	13.00	<b>14.25</b>	8.20	12.00	<b>10.10</b>
37	EC-38821-P4	4	2	2	1	1	2	3	1	2	2	1	3	103.00	95.00	<b>99.00</b>	17.30	11.00	<b>14.15</b>	3.20	6.00	<b>4.60</b>
38	EC-38823	2	1	2	1	1	2	2	1	2	1	3	3	117.00	107.00	<b>112.00</b>	16.50	18.00	<b>17.25</b>	4.10	27.00	<b>15.55</b>
39	EC-38824	3	2	2	1	1	2	2	1	2	1	3	3	104.00	110.00	<b>107.00</b>	13.50	13.00	<b>13.25</b>	4.80	8.00	<b>6.40</b>
40	EC-38824-1	3	2	2	1	1	2	2	1	2	1	3	3	104.00	111.00	<b>107.50</b>	13.50	15.50	<b>14.50</b>	5.20	13.00	<b>9.10</b>
41	EC-38824-2	2	1	2	1	3	4	2	1	2	2	3	3	121.00	100.00	<b>110.50</b>	14.70	14.00	<b>14.35</b>	10.50	8.00	<b>9.25</b>
42	EC-38824-3	1	1	2	1	1	2	2	1	2	2	3	3	118.00	86.00	<b>102.00</b>	11.50	16.50	<b>14.00</b>	9.53	27.00	<b>18.27</b>
43	EC-38825-1	4	1	2	1	1	2	3	1	5	2	3	3	93.00	89.00	<b>91.00</b>	13.30	14.00	<b>13.65</b>	7.60	6.00	<b>6.80</b>
44	EC-38825-2	3	1	2	1	1	2	3	1	5	2	3	3	89.00	82.00	<b>85.50</b>	14.40	16.00	<b>15.20</b>	5.70	13.00	<b>9.35</b>
45	EC-38825-3	3	1	2	1	1	2	2	1	2	1	3	3	92.00	87.00	<b>89.50</b>	16.80	15.50	<b>16.15</b>	4.70	17.00	<b>10.85</b>
46	EC-38825-P3	2	1	2	1	1	4	3	1	3	2	3	3	90.00	110.00	<b>100.00</b>	11.30	19.00	<b>15.15</b>	6.70	21.00	<b>13.85</b>

S. No.	Accession No.	Number of seeds per pod			100-seed weight (g)			Akola			Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Wing width (cm)	Green pod yield per plant (g)	Green pod weight (g)	Days to maturity	Plant height (cm)	No of primary branches
23	EC-178276	12.40	7.00	<b>9.70</b>	36.20	27.46	<b>31.83</b>	2.00	23.04	6.40	170	205.5	3
24	EC-178282	7.10	10.00	<b>8.55</b>	30.50	30.15	<b>30.33</b>	2.10	19.24	5.20	174	360.0	2
25	EC-178283	9.30	9.00	<b>9.15</b>	34.20	27.45	<b>30.83</b>	1.80	12.76	5.80	173	298.0	3
26	EC-21904	17.00	11.00	<b>14.00</b>	30.20	27.68	<b>28.94</b>	2.80	46.44	5.40	181	244.0	2
27	EC-27884	13.20	8.00	<b>10.60</b>	33.80	28.50	<b>31.15</b>	2.00	55.00	10.00	173	214.0	1
28	EC-27885-1	10.20	8.00	<b>9.10</b>	33.60	28.12	<b>30.86</b>	2.00	17.00	5.00	172	198.0	2
29	EC-27886	8.50	7.00	<b>7.75</b>	30.10	29.75	<b>29.93</b>	1.30	25.20	4.00	173	213.0	2
30	EC-27886-A1	8.10	9.00	<b>8.55</b>	26.10	28.75	<b>27.43</b>	2.00	75.60	7.00	169	300.0	3
31	EC-27886-A2	8.40	8.00	<b>8.20</b>	34.20	27.66	<b>30.93</b>	2.10	27.72	6.60	171	200.0	3
32	EC-38154	12.00	12.00	<b>12.00</b>	26.10	29.16	<b>27.63</b>	1.90	30.10	7.00	170	196.0	1
33	EC-38821	9.10	8.00	<b>8.55</b>	29.70	28.47	<b>29.09</b>	2.10	58.24	6.40	174	204.0	2
34	EC-38821-1	6.30	9.00	<b>7.65</b>	24.10	27.85	<b>25.98</b>	2.00	69.92	7.60	172	201.3	2
35	EC-38821-P1	7.00	13.00	<b>10.00</b>	24.10	28.84	<b>26.47</b>	1.60	44.84	7.60	171	380.0	3
36	EC-38821-P2	10.20	7.00	<b>8.60</b>	24.30	29.72	<b>27.01</b>	2.20	50.84	6.20	172	204.0	2
37	EC-38821-P4	9.50	8.00	<b>8.75</b>	24.20	28.85	<b>26.53</b>	2.10	22.40	7.00	162	190.0	1
38	EC-38823	14.00	15.00	<b>14.50</b>	24.30	27.46	<b>25.88</b>	2.10	30.34	7.40	176	320.0	5
39	EC-38824	6.20	8.00	<b>7.10</b>	26.40	28.54	<b>27.47</b>	2.10	27.84	5.80	172	207.0	2
40	EC-38824-1	6.20	11.00	<b>8.60</b>	33.10	30.05	<b>31.58</b>	2.10	29.12	5.60	175	328.0	3
41	EC-38824-2	5.60	8.00	<b>6.80</b>	20.55	27.58	<b>24.07</b>	2.20	73.50	7.00	171	192.0	1
42	EC-38824-3	7.20	14.00	<b>10.60</b>	26.15	28.08	<b>27.12</b>	2.10	45.74	4.80	179	233.0	4
43	EC-38825-1	9.30	10.00	<b>9.65</b>	22.10	29.26	<b>25.68</b>	1.00	42.56	5.60	175	181.0	1
44	EC-38825-2	10.30	11.00	<b>10.65</b>	26.30	30.12	<b>28.21</b>	2.10	39.90	7.00	159	190.0	2
45	EC-38825-3	6.80	11.00	<b>8.90</b>	24.00	29.48	<b>26.74</b>	2.40	25.38	5.40	170	244.0	3
46	EC-38825-P3	7.80	14.00	<b>10.90</b>	25.40	27.48	<b>26.44</b>	1.30	34.84	5.20	171	265.0	4



S. No.	Accession No.	Akola											Days to 50% flowering			Pod length (cm)			No. of pods per plant			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Biotic stress susceptibility	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
47	EC-38954	1	1	2	1	3	4	3	1	2	1	3	3	104.00	90.00	<b>97.00</b>	10.40	16.00	<b>13.20</b>	10.00	18.00	<b>14.00</b>
48	EC-38954-C	3	1	2	1	1	2	3	1	3	3	1	3	92.00	110.00	<b>101.00</b>	10.50	14.00	<b>12.25</b>	6.50	10.00	<b>8.25</b>
49	EC-38955	4	2	2	1	1	2	3	1	2	1	3	3	94.00	98.00	<b>96.00</b>	17.50	14.10	<b>15.80</b>	13.10	18.00	<b>15.55</b>
50	EC-38955-A	2	1	2	1	1	2	2	1	3	1	3	3	105.00	100.00	<b>102.50</b>	10.40	15.80	<b>13.10</b>	5.70	21.00	<b>13.35</b>
51	EC-38956-2	2	1	2	1	1	3	4	1	3	2	1	3	81.00	100.00	<b>90.50</b>	14.50	15.00	<b>14.75</b>	9.10	12.00	<b>10.55</b>
52	EC-38957	2	1	2	1	1	2	3	1	2	2	2	3	74.00	101.00	<b>87.50</b>	14.30	17.70	<b>16.00</b>	11.70	15.00	<b>13.35</b>
53	EC-38957-A	5	2	2	1	2	2	3	1	2	1	1	3	112.00	99.00	<b>105.50</b>	13.50	12.00	<b>12.75</b>	7.60	6.00	<b>6.80</b>
54	EC-38958	3	2	2	1	1	2	3	1	3	2	1	3	90.00	106.00	<b>98.00</b>	14.40	16.00	<b>15.20</b>	13.20	15.00	<b>14.10</b>
55	EC-38959	3	1	2	1	1	2	2	1	2	2	3	3	77.00	109.00	<b>93.00</b>	13.30	15.40	<b>14.35</b>	18.80	11.00	<b>14.90</b>
56	IC-112416	2	1	2	1	1	2	4	1	3	1	3	3	99.00	-	<b>99.00</b>	10.50	-	<b>10.50</b>	7.39	-	<b>7.39</b>
57	IC-112417	2	1	2	1	1	4	3	1	2	1	3	3	94.00	-	<b>94.00</b>	12.30	-	<b>12.30</b>	7.33	-	<b>7.33</b>
58	IC-15017	2	1	2	1	1	2	4	1	6	2	3	3	100.00	74.00	<b>87.00</b>	14.20	14.00	<b>14.10</b>	1.70	16.00	<b>8.85</b>
59	IC-17004-1	1	3	2	1	1	2	2	1	3	2	3	3	131.00	72.00	<b>101.50</b>	12.10	15.00	<b>13.55</b>	7.20	11.00	<b>9.10</b>
60	IC-17005-1	4	2	2	1	1	2	2	1	2	2	3	3	122.00	95.00	<b>108.50</b>	15.70	14.00	<b>14.85</b>	11.40	8.00	<b>9.70</b>
61	IC-17006-1	3	2	2	1	1	4	3	1	3	2	3	3	74.00	100.00	<b>87.00</b>	12.50	16.00	<b>14.25</b>	4.10	9.00	<b>6.55</b>
62	IC-26170	2	2	2	1	1	2	2	1	2	2	1	3	90.00	94.00	<b>92.00</b>	14.50	15.00	<b>14.75</b>	8.40	8.00	<b>8.20</b>
63	IC-26170-2	2	1	2	1	1	2	4	1	3	2	1	3	95.00	96.00	<b>95.50</b>	17.50	12.00	<b>14.75</b>	3.90	10.00	<b>6.95</b>
64	IC-26940	3	1	2	1	2	2	2	1	2	1	3	3	77.00	99.00	<b>88.00</b>	12.30	12.00	<b>12.15</b>	3.80	11.00	<b>7.40</b>
65	IC-26941-B	5	2	2	1	1	2	3	1	3	1	2	3	101.00	82.00	<b>91.50</b>	17.30	14.00	<b>15.65</b>	6.00	8.00	<b>7.00</b>
66	IC-26942	4	3	2	1	1	2	2	1	2	1	3	3	103.00	82.00	<b>92.50</b>	20.10	13.00	<b>16.55</b>	2.70	6.00	<b>4.35</b>
67	IC-26944	3	2	2	1	1	4	4	1	2	2	1	3	77.00	84.00	<b>80.50</b>	11.50	15.00	<b>13.25</b>	12.60	7.00	<b>9.80</b>
68	IC-26945	3	2	2	1	1	2	2	1	2	2	3	3	104.00	101.00	<b>102.50</b>	20.10	14.00	<b>17.05</b>	5.00	6.00	<b>5.50</b>
69	IC-26946	3	1	2	1	1	3	2	1	3	1	3	3	92.00	102.00	<b>97.00</b>	14.50	13.00	<b>13.75</b>	5.80	5.00	<b>5.40</b>
70	IC-26949	3	2	2	1	3	3	2	1	3	1	3	3	90.00	83.00	<b>86.50</b>	13.30	13.00	<b>13.15</b>	6.40	8.00	<b>7.20</b>

S. No.	Accession No.	Number of seeds per pod			100-seed weight (g)			Akola			Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Wing width (cm)	Green pod yield per plant (g)	Green pod weight (g)	Days to maturity	Plant height (cm)	No of primary branches
47	EC-38954	9.40	13.00	<b>11.20</b>	21.20	26.75	<b>23.98</b>	1.80	58.00	5.80	172	300.0	3
48	EC-38954-C	8.80	11.00	<b>9.90</b>	29.40	29.44	<b>29.42</b>	1.60	33.80	5.20	174	271.0	2
49	EC-38955	10.00	12.00	<b>11.00</b>	24.10	28.65	<b>26.38</b>	2.10	73.36	5.60	176	301.0	3
50	EC-38955-A	8.10	13.00	<b>10.55</b>	36.20	28.48	<b>32.34</b>	2.10	34.20	6.00	177	313.0	4
51	EC-38956-2	10.40	12.00	<b>11.20</b>	32.10	28.24	<b>30.17</b>	1.60	56.42	6.20	171	208.0	2
52	EC-38957	8.00	10.00	<b>9.00</b>	30.10	29.55	<b>29.83</b>	2.10	91.26	7.80	169	211.0	3
53	EC-38957-A	8.00	8.00	<b>8.00</b>	20.20	27.64	<b>23.92</b>	2.00	57.76	7.60	170	198.0	1
54	EC-38958	12.10	12.00	<b>12.05</b>	22.50	28.54	<b>25.52</b>	1.70	63.36	4.80	179	260.0	2
55	EC-38959	8.40	13.20	<b>10.80</b>	24.80	29.81	<b>27.31</b>	1.70	101.52	5.40	172	241.0	2
56	IC-112416	7.20	-	<b>7.20</b>	34.28	-	<b>34.28</b>	3.10	48.77	6.60	-	-	-
57	IC-112417	11.20	-	<b>11.20</b>	32.78	-	<b>32.78</b>	2.10	38.12	5.20	-	-	-
58	IC-15017	11.50	8.00	<b>9.75</b>	30.00	31.77	<b>30.89</b>	2.00	10.20	6.00	167	310.0	4
59	IC-17004-1	10.00	9.00	<b>9.50</b>	24.40	32.59	<b>28.50</b>	2.00	50.40	7.00	164	300.5	2
60	IC-17005-1	12.30	11.00	<b>11.65</b>	30.10	28.27	<b>29.19</b>	2.50	70.68	6.20	170	320.0	2
61	IC-17006-1	10.40	10.00	<b>10.20</b>	27.20	29.87	<b>28.54</b>	2.10	30.34	7.40	174	299.5	2
62	IC-26170	13.20	9.00	<b>11.10</b>	26.30	30.05	<b>28.18</b>	1.60	42.00	5.00	171	290.0	2
63	IC-26170-2	14.40	8.00	<b>11.20</b>	34.00	26.80	<b>30.40</b>	1.80	23.40	6.00	177	288.0	3
64	IC-26940	10.40	8.00	<b>9.20</b>	30.20	29.42	<b>29.81</b>	1.80	22.04	5.80	178	355.0	3
65	IC-26941-B	12.40	10.00	<b>11.20</b>	26.80	27.44	<b>27.12</b>	2.00	14.40	2.40	179	340.0	4
66	IC-26942	17.20	8.00	<b>12.60</b>	26.40	28.62	<b>27.51</b>	2.10	22.68	8.40	176	244.0	1
67	IC-26944	9.50	11.00	<b>10.25</b>	29.70	30.00	<b>29.85</b>	1.80	83.16	6.60	180	224.4	2
68	IC-26945	12.50	9.00	<b>10.75</b>	26.10	28.95	<b>27.53</b>	2.00	27.00	5.40	177	217.0	1
69	IC-26946	9.80	8.00	<b>8.90</b>	30.00	27.45	<b>28.73</b>	2.20	29.00	5.00	175	239.0	1
70	IC-26949	9.80	10.00	<b>9.90</b>	29.40	29.61	<b>29.51</b>	1.70	47.36	7.40	174	238.0	2

S. No.	Accession No.	Akola											Days to 50% flowering			Pod length (cm)			No. of pods per plant			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Biotic stress susceptibility	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
71	IC-26949-1	3	2	2	1	1	3	2	1	3	1	3	3	107.00	85.00	<b>96.00</b>	11.40	14.00	<b>12.70</b>	1.40	4.00	<b>2.70</b>
72	IC-31981	3	2	2	1	1	2	2	1	2	1	1	3	120.00	92.00	<b>106.00</b>	14.40	17.00	<b>15.70</b>	6.70	9.00	<b>7.85</b>
73	IC-34861	4	2	2	1	1	2	2	1	2	1	3	3	111.00	101.00	<b>106.00</b>	12.50	15.00	<b>13.75</b>	31.00	9.00	<b>20.00</b>
74	IC-34865-1	3	2	2	1	1	2	2	1	2	1	3	3	123.00	104.00	<b>113.50</b>	12.60	16.00	<b>14.30</b>	10.10	6.00	<b>8.05</b>
75	IC-34865-2	3	2	2	1	2	2	3	1	4	1	3	3	115.00	105.00	<b>110.00</b>	12.40	16.00	<b>14.20</b>	8.20	5.00	<b>6.60</b>
76	IC-38683	2	2	2	1	4	3	2	1	2	1	3	3	122.00	109.00	<b>115.50</b>	14.50	15.00	<b>14.75</b>	2.80	14.00	<b>8.40</b>
77	IC-41979-1	2	2	2	1	1	3	3	1	3	1	3	3	123.00	106.00	<b>114.50</b>	13.40	17.40	<b>15.40</b>	9.10	9.00	<b>9.05</b>
78	IC-41980	3	2	2	1	1	2	2	1	3	3	2	3	100.00	108.00	<b>104.00</b>	11.30	15.10	<b>13.20</b>	7.30	6.00	<b>6.65</b>
79	IC-45225	4	2	2	1	1	2	2	1	2	2	3	3	103.00	104.00	<b>103.50</b>	12.00	16.30	<b>14.15</b>	6.10	14.00	<b>10.05</b>
80	IC-45229	4	2	2	1	2	2	3	1	2	2	3	3	99.00	110.00	<b>104.50</b>	13.50	17.40	<b>15.45</b>	5.70	9.00	<b>7.35</b>
81	IC-45229-1	3	2	2	1	1	2	3	1	2	2	3	3	104.00	77.00	<b>90.50</b>	11.00	13.20	<b>12.10</b>	11.00	16.00	<b>13.50</b>
82	IC-95222	4	2	2	1	1	2	3	1	2	2	1	3	79.00	79.00	<b>79.00</b>	17.30	16.80	<b>17.05</b>	14.88	8.00	<b>11.44</b>
83	IC-95223	4	2	3	1	1	4	3	1	2	1	3	3	81.00	107.00	<b>94.00</b>	10.40	11.00	<b>10.70</b>	12.42	7.00	<b>9.71</b>
84	IC-95224	3	1	2	1	1	4	3	1	2	1	3	3	105.00	101.00	<b>103.00</b>	13.30	16.00	<b>14.65</b>	11.92	15.00	<b>13.46</b>
85	IC-95225	4	2	2	1	1	4	2	1	2	1	1	3	103.00	102.00	<b>102.50</b>	17.10	14.00	<b>15.55</b>	15.76	6.00	<b>10.88</b>
86	IC-95226	3	2	2	1	1	4	3	1	2	2	1	3	91.00	103.00	<b>97.00</b>	14.30	15.50	<b>14.90</b>	9.25	9.00	<b>9.13</b>
87	IC-95227	3	1	2	1	1	2	3	1	2	1	3	3	74.00	110.00	<b>92.00</b>	16.40	15.60	<b>16.00</b>	16.83	13.00	<b>14.92</b>
88	IC-95228	4	2	2	1	1	1	3	1	2	1	1	3	89.00	105.00	<b>97.00</b>	14.10	14.30	<b>14.20</b>	17.93	11.00	<b>14.47</b>
89	IC-95230	4	2	2	1	1	4	2	1	2	1	1	3	91.00	107.00	<b>99.00</b>	14.50	15.00	<b>14.75</b>	25.25	14.00	<b>19.63</b>
90	IC-95231	3	1	2	1	1	4	3	1	3	1	3	3	104.00	109.00	<b>106.50</b>	13.60	15.80	<b>14.70</b>	13.24	18.00	<b>15.62</b>
91	IC-95232	4	2	2	1	1	2	2	1	2	1	1	3	94.00	102.00	<b>98.00</b>	14.40	14.00	<b>14.20</b>	12.82	14.00	<b>13.41</b>
92	IC-95233	3	2	1	1	1	2	4	1	3	2	1	3	89.00	100.00	<b>94.50</b>	15.00	14.00	<b>14.50</b>	8.32	10.00	<b>9.16</b>
93	IC-95234	3	2	1	1	1	4	4	1	3	2	3	3	74.00	106.00	<b>90.00</b>	14.10	17.00	<b>15.55</b>	10.92	14.00	<b>12.46</b>
94	IC-95235	5	1	2	1	1	4	2	1	3	1	1	3	105.00	104.00	<b>104.50</b>	14.40	13.00	<b>13.70</b>	10.63	6.00	<b>8.32</b>

S. No.	Accession No.	Number of seeds per pod			100-seed weight (g)			Akola			Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Wing width (cm)	Green pod yield per plant (g)	Green pod weight (g)	Days to maturity	Plant height (cm)	No of primary branches
71	IC-26949-1	8.40	7.00	<b>7.70</b>	35.80	28.75	<b>32.28</b>	1.80	7.84	5.60	172	208.0	1
72	IC-31981	11.40	12.00	<b>11.70</b>	34.20	29.45	<b>31.83</b>	2.20	38.86	5.80	170	218.0	2
73	IC-34861	9.30	10.00	<b>9.65</b>	32.30	29.37	<b>30.84</b>	2.40	167.40	5.40	173	300.0	2
74	IC-34865-1	9.50	12.00	<b>10.75</b>	32.00	27.65	<b>29.83</b>	2.30	60.60	6.00	168	200.4	1
75	IC-34865-2	10.50	9.00	<b>9.75</b>	34.30	28.92	<b>31.61</b>	2.10	42.64	5.20	180	201.2	1
76	IC-38683	10.20	10.00	<b>10.10</b>	22.30	28.00	<b>25.15</b>	2.40	15.12	5.40	176	350.0	3
77	IC-41979-1	10.00	11.00	<b>10.50</b>	24.70	45.00	<b>34.85</b>	1.70	50.96	5.60	170	222.0	2
78	IC-41980	10.80	12.00	<b>11.40</b>	37.00	27.85	<b>32.43</b>	2.00	51.10	7.00	169	199.5	1
79	IC-45225	10.50	10.00	<b>10.25</b>	32.10	30.21	<b>31.16</b>	3.00	34.16	5.60	166	291.3	3
80	IC-45229	4.20	11.00	<b>7.60</b>	30.10	29.78	<b>29.94</b>	1.40	35.34	6.20	168	310.0	2
81	IC-45229-1	8.30	11.00	<b>9.65</b>	35.80	27.89	<b>31.85</b>	2.00	50.60	4.60	162	398.0	6
82	IC-95222	13.20	14.00	<b>13.60</b>	28.00	29.48	<b>28.74</b>	1.80	92.26	6.20	181	217.3	2
83	IC-95223	9.10	6.00	<b>7.55</b>	26.52	27.84	<b>27.18</b>	1.80	47.20	3.80	171	198.0	2
84	IC-95224	7.20	11.00	<b>9.10</b>	26.19	26.80	<b>26.50</b>	1.70	54.83	4.60	172	252.0	3
85	IC-95225	11.30	8.00	<b>9.65</b>	22.73	29.58	<b>26.16</b>	2.00	107.17	6.80	167	195.0	1
86	IC-95226	13.10	13.00	<b>13.05</b>	33.29	29.64	<b>31.47</b>	2.20	57.35	6.20	168	182.3	2
87	IC-95227	12.30	13.00	<b>12.65</b>	32.63	27.80	<b>30.22</b>	1.80	100.98	6.00	178	300.0	3
88	IC-95228	11.20	9.00	<b>10.10</b>	30.40	29.45	<b>29.93</b>	2.00	100.41	5.60	172	179.0	2
89	IC-95230	12.10	9.00	<b>10.55</b>	21.87	28.78	<b>25.33</b>	1.80	131.30	5.20	170	219.5	3
90	IC-95231	9.10	13.00	<b>11.05</b>	25.20	26.78	<b>25.99</b>	2.70	97.98	7.40	171	281.0	4
91	IC-95232	13.20	11.00	<b>12.10</b>	25.37	30.25	<b>27.81</b>	1.70	61.54	4.80	170	240.0	3
92	IC-95233	9.20	12.00	<b>10.60</b>	31.92	28.75	<b>30.34</b>	2.10	53.25	6.40	170	188.2	2
93	IC-95234	11.20	14.00	<b>12.60</b>	20.97	28.80	<b>24.89</b>	1.80	54.60	5.00	170	290.0	3
94	IC-95235	9.20	10.00	<b>9.60</b>	20.91	27.48	<b>24.20</b>	2.20	68.03	6.40	171	190.0	1

S. No.	Accession No.	Akola											Days to 50% flowering			Pod length (cm)			No. of pods per plant			
		Plant type	Leaflet size	Leaflet shape	Stem colour	Calyx colour	Corolla colour	Pod colour	Pod specks	Wing colour	Pod surface texture	Pod shape	Biotic stress susceptibility	Akola	Ranchi	Mean	Akola	Ranchi	Mean	Akola	Ranchi	Mean
95	IC-95236	2	1	2	1	1	2	2	1	3	2	3	3	79.00	83.00	<b>81.00</b>	16.40	12.50	<b>14.45</b>	11.46	8.00	<b>9.73</b>
96	IC-95237	4	2	3	1	1	4	3	1	3	1	1	3	99.00	111.00	<b>105.00</b>	12.30	14.40	<b>13.35</b>	11.28	11.00	<b>11.14</b>
97	IC-95238	5	2	2	1	1	2	2	1	2	2	1	3	97.00	108.00	<b>102.50</b>	16.50	13.00	<b>14.75</b>	22.63	16.00	<b>19.32</b>
98	IC-95239	-	-	-	-	-	-	-	-	-	-	-	-	-	92.00	<b>92.00</b>	-	14.00	<b>14.00</b>	-	15.00	<b>15.00</b>
99	IC-95240	3	2	2	1	1	4	2	1	2	1	1	3	89.00	110.00	<b>99.50</b>	16.30	12.00	<b>14.15</b>	12.13	20.00	<b>16.07</b>
100	IC-95241	3	2	2	1	1	4	3	1	2	1	1	3	104.00	96.00	<b>100.00</b>	16.80	15.00	<b>15.90</b>	11.50	19.00	<b>15.25</b>
101	IC-95242	3	1	2	1	1	4	3	1	2	2	3	3	101.00	109.00	<b>105.00</b>	13.40	16.00	<b>14.70</b>	26.30	13.00	<b>19.65</b>
102	IC-95243	-	-	-	-	-	-	-	-	-	-	-	-	-	111.00	<b>111.00</b>	-	14.00	<b>14.00</b>	-	8.00	<b>8.00</b>
<b>Mean for check variety</b>																						
	<b>AKWB-1 (C)</b>	4	2	2	1	1	2	3	1	2	1	3	3	77.00	104.00	<b>90.50</b>	16.80	16.00	<b>16.40</b>	28.00	21.00	<b>24.50</b>
	<b>Minimum</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>1</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>74.00</b>	<b>72.00</b>	<b>79.00</b>	<b>10.40</b>	<b>11.00</b>	<b>10.50</b>	<b>1.40</b>	<b>4.00</b>	<b>2.70</b>
	<b>Maximum</b>	<b>5</b>	<b>3</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>2</b>	<b>6</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>131.00</b>	<b>111.00</b>	<b>115.50</b>	<b>21.50</b>	<b>19.00</b>	<b>17.75</b>	<b>31.00</b>	<b>30.00</b>	<b>24.50</b>
	<b>Mean</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>3</b>	<b>3</b>	<b>97.99</b>	<b>98.77</b>	<b>98.39</b>	<b>14.26</b>	<b>14.61</b>	<b>14.40</b>	<b>8.98</b>	<b>13.26</b>	<b>11.09</b>
	<b>CV (%) Phen.</b>												<b>14.89</b>	<b>10.23</b>		<b>16.31</b>	<b>11.46</b>		<b>65.25</b>	<b>43.67</b>		

**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 lancelolate; **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, 4-Bluish purple, 5-Others; **Pod colour :** 1-Cream, 2-Light green, 3-Green, 4-Dark green, 5-Pink, 6-Purple, 7-Others; **Pod specks :** 1-Absent, 2-Present; **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; **Biotic stress susceptibility :** 1-Very low or no visible sign, 3-Low, 5-Intermediate, 7-High, 9-Very high

S. No.	Accession No.	Number of seeds per pod			100-seed weight (g)			Akola			Ranchi		
		Akola	Ranchi	Mean	Akola	Ranchi	Mean	Wing width (cm)	Green pod yield per plant (g)	Green pod weight (g)	Days to maturity	Plant height (cm)	No of primary branches
95	IC-95236	13.10	10.00	<b>11.55</b>	28.80	29.80	<b>29.30</b>	1.70	64.18	5.60	172	212.0	2
96	IC-95237	9.10	11.00	<b>10.05</b>	24.03	27.60	<b>25.82</b>	1.50	40.61	3.60	169	236.0	2
97	IC-95238	11.40	7.00	<b>9.20</b>	22.52	28.55	<b>25.54</b>	2.00	149.36	6.60	163	210.0	3
98	IC-95239	-	10.00	<b>10.00</b>	-	29.75	<b>29.75</b>	-	-	-	170	219.0	3
99	IC-95240	10.50	9.00	<b>9.75</b>	25.55	28.72	<b>27.14</b>	2.60	101.89	8.40	178	255.0	4
100	IC-95241	12.10	10.00	<b>11.05</b>	21.45	29.45	<b>25.45</b>	1.60	62.10	5.40	179	250.0	5
101	IC-95242	9.30	14.00	<b>11.65</b>	25.51	27.84	<b>26.68</b>	2.00	142.02	5.40	177	201.0	3
102	IC-95243	-	10.00	<b>10.00</b>	-	29.64	<b>29.64</b>	-	-	-	178	302.5	-
<b>Mean for check variety</b>													
	<b>AKWB-1 (C)</b>	11.30	12.00	<b>11.65</b>	26.30	31.30	<b>28.80</b>	2.00	156.80	5.60	177.00	310.00	3.00
	<b>Minimum</b>	<b>4.20</b>	<b>6.00</b>	<b>6.80</b>	<b>20.20</b>	<b>24.86</b>	<b>23.92</b>	<b>1.00</b>	<b>7.84</b>	<b>2.40</b>	<b>159.00</b>	<b>179.00</b>	<b>1.00</b>
	<b>Maximum</b>	<b>17.20</b>	<b>15.00</b>	<b>14.50</b>	<b>37.00</b>	<b>45.00</b>	<b>34.85</b>	<b>3.10</b>	<b>215.28</b>	<b>10.00</b>	<b>181.00</b>	<b>398.00</b>	<b>6.00</b>
	<b>Mean</b>	<b>10.32</b>	<b>10.42</b>	<b>10.35</b>	<b>28.45</b>	<b>28.93</b>	<b>28.75</b>	<b>1.96</b>	<b>53.77</b>	<b>6.03</b>	<b>172.51</b>	<b>252.71</b>	<b>2.46</b>
	<b>CV (%) Phen.</b>	<b>22.22</b>	<b>19.90</b>		<b>15.62</b>	<b>7.21</b>		<b>17.09</b>	<b>68.10</b>	<b>20.89</b>	<b>2.49</b>	<b>21.25</b>	<b>40.62</b>

**Table 105. Promising lines in kankoda germplasm for various characters at different locations (Plains)**

S.No.	Characters	Range	Promising lines
<b>Rahuri (Accessions 10)</b>			
1.	Days to first picking	82.00-99.00	RMFG-52, RMFG-36, RMFG-59 (< 85.00 days)
2.	Days to last picking	128.00-152.00	RMFG-16, RMFG-39, RMFG-52 (< 132.00 days)
3.	No. of fruits	12.00-68.00	RMFG-39, RMFG-51, RMFG-16 (> 30.00)
4.	Single fruit weight (g)	9.20-24.10	RMFG-37, RMFG-39, RMFG-59 (> 18.00 g)
5.	Fruit yield per plant (kg)	0.10-1.53	RMFG-39, RMFG-51, RMFG-16 (> 0.50 kg)
6.	Fruit girth (cm)	9.00-13.00	RMFG-37, RMFG-21, RMFG-2 (> 11.00 cm)
7.	Fruit length (cm)	4.10-6.00	RMFG-39, RMFG-37, RMFG-52, RMFG-2 (> 5.20 cm)

**RMFG : Rahuri Momordica Female Germplasm**

**Table 106. Evaluation of germplasm lines on fruit yield and ancillary characters of kankoda germplasm evaluated at Rahuri during *Kharif*, 2010 (Plain)**

S. No.	Entry	Fruit shape	Fruit size	Spiny/Non-spiny	Fruit yield per plant (kg)	Days to first Picking	Days to last Picking	No. of fruits	Single fruit weight (g)	Fruit girth (cm)	Fruit length (cm)
1	RMFG-2	Elongated	Medium	Spiny	0.13	92	152	12	12.10	11.20	5.30
2	RMFG-16	Elongated	Small	Non spiny	0.51	86	128	35	14.20	10.10	5.00
3	RMFG-21	Elongated	Medium	Spiny	0.46	90	149	30	16.22	11.30	5.20
4	RMFG-36	Round	Small	Spiny	0.10	83	132	13	9.20	9.00	4.60
5	RMFG-37	Elongated	Small	Non spiny	0.25	97	142	12	24.10	13.00	5.90
6	RMFG-39	Elongated	Medium	Non spiny	1.53	89	129	68	23.50	11.00	6.00
7	RMFG-45	Round	Medium	Spiny	0.13	85	139	19	9.50	9.50	4.10
8	RMFG-51	Round	Big	Non spiny	0.81	99	140	51	17.35	10.20	4.80
9	RMFG-52	Round	Medium	Spiny	0.24	82	130	15	16.40	11.00	5.40
10	RMFG-59	Elongated	Medium	Spiny	0.22	84	146	16	18.64	9.80	5.10
<b>Minimum</b>					<b>0.10</b>	<b>82.00</b>	<b>128.00</b>	<b>12.00</b>	<b>9.20</b>	<b>9.00</b>	<b>4.10</b>
<b>Maximum</b>					<b>1.53</b>	<b>99.00</b>	<b>152.00</b>	<b>68.00</b>	<b>24.10</b>	<b>13.00</b>	<b>6.00</b>
<b>Mean</b>					<b>0.44</b>	<b>88.70</b>	<b>138.70</b>	<b>27.10</b>	<b>16.12</b>	<b>10.61</b>	<b>5.14</b>
<b>CV (%) Phen.</b>					<b>101.10</b>	<b>6.60</b>	<b>6.26</b>	<b>70.71</b>	<b>31.88</b>	<b>10.77</b>	<b>11.09</b>

**RMFG : Rahuri Momordica Female Germplasm**



**Table 107. Promising lines in kalingada germplasm for various characters at different locations (Plains)**

S.No.	Characters	Range	Promising lines	Value of best check
<b>Mandor (Accessions 20)</b>				
1.	Fruit diameter (cm)	6.72-10.59	SKGPK-6, SKGPK-15, SKGPK-16 (> 10.00 cm)	GK-1 (9.92 cm)
2.	No. of fruits per plant	2.50-11.50	SKGPK-20, SKGPK-9, SKGPK-14 (> 9.00)	GK-1 (6.85)
3.	Single fruit weight (g)	191.50-395.00	SKGPK-6, SKGPK-16 (> 340.00 g)	GK-1 (314.00 g)
4.	100-seed weight (g)	2.55-6.55	SKGPK-14, SKGPK-17 (> 6.00 g)	GK-1 (5.00 g)
5.	Fruit yield (q/ha)	11.11-88.89	SKGPK-20, SKGPK-15 (> 88.00 q/ha)	GK-1 (71.67 q/ha)
6.	Seed yield (q/ha)	0.47-2.61	SKGPK-20, SKGPK-15 (> 2.40 q/ha)	GK-1 (2.39 q/ha)
<b>S.K. Nagar (Accessions 20)</b>				
1.	Days to first male flower opening	37.50-47.50	SKGPK-17, SKGPK-19, SKGPK-13, SKGPK-15, SKGPK-20, SKGPK-11 (< 40.00 days)	GK-1 (44.00 days)
2.	Days to first female flower opening	46.50-52.50	SKGPK-19, SKGPK-5, SKGPK-8, SKGPK-17, SKGPK-7, SKGPK-13, SKGPK-16, SKGPK-20 (< 49.00 days)	GK-1 (51.50 days)
3.	Days to maturity	87.50-98.50	SKGPK-20, SKGPK-2, SKGPK-6, SKGPK-19, SKGPK-13, SKGPK-18, SKGPK-8, SKGPK-11, SKGPK-10, SKGPK-16 (< 93.00 days)	GK-1 (98.50 days)
4.	Fruit length (cm)	11.02-14.84	SKGPK-13, SKGPK-8, SKGPK-15, SKGPK-20 (> 19.00 cm)	GK-1 (18.40 cm)
5.	Fruit diameter (cm)	10.32-11.66	SKGPK-20, SKGPK-15 (> 11.56 cm)	GK-1 (11.56 cm)
6.	Wine length (m)	3.45-4.99	SKGPK-13 (= 4.99 m)	GK-1 (4.75 m)
7.	Cotyledone ratio (%)	48.36-59.55	SKGPK-2, SKGPK-6, SKGPK-4, SKGPK-20, SKGPK-10 (> 57.00%)	GK-1 (51.60%)
8.	100-seed weight (g)	6.26-7.58	SKGPK-13, SKGPK-2, SKGPK-17 (> 7.40 g)	GK-1 (7.20 g)

9.	No. of fruits per plant	8.63-16.27	SKGPK-10, SKGPK-7 (> 14.00)	GK-1 (12.45)
10.	Fruit yield (q/ha)	86.67-198.33	SKGPK-10, SKGPK-12, SKGPK-16 (< 160.00 q/ha)	GK-1 (158.33 q/ha)
11.	Seed yield (q/ha)	2.17-7.17	SKGPK-5, SKGPK-10 (> 7.00 q/ha)	GK-1 (6.43 q/ha)
<b>Best entries over locations</b>				
1.	100-seed weight (g)	4.59-6.80	SKGPK-17, SKGPK-14, SKGPK-11, SKGPK-18, SKGPK-8, SKGPK-13 (> 6.30 g)	GK-1 (6.10 g)
2.	Fruit diameter (cm)	8.66-10.92	SKGPK-15, SKGPK-6 (> 10.80 cm)	GK-1 (10.74 cm)
3.	No. of fruits per plant	6.57-11.64	SKGPK-20, SKGPK-9, SKGPK-10, SKGPK-7, SKGPK-14 (> 10.00)	GK-1 (9.65)
4.	Fruit yield (q/ha)	64.86-127.08	SKGPK-12, SKGPK-10 (> 119.00 q/ha)	GK-1 (115.00 q/ha)
5.	Seed yield (q/ha)	1.32-4.48	SKGPK-9 (= 4.48 q/ha)	GK-1 (4.41 q/ha)

**Table 108. Multilication evaluation of germplasm lines in kalingada at Mandor and S.K. Nagar: 2010 (Plain)**

S. No.	Genotypes	Seed yield (q/ha)			Fruit yield (q/ha)			Fruit diameter (cm)			100-seed weight (g)		
		Mandor	S.K. Nagar	Mean	Mandor	S.K. Nagar	Mean	Mandor	S.K. Nagar	Mean	Mandor	S.K. Nagar	Mean
1	SKGPK-1	2.11	5.28	<b>3.70</b>	62.78	121.67	<b>92.22</b>	9.04	10.89	<b>9.97</b>	4.75	7.08	<b>5.92</b>
2	SKGPK-2	1.64	5.83	<b>3.74</b>	38.33	150.00	<b>94.17</b>	8.79	11.11	<b>9.95</b>	4.95	7.55	<b>6.25</b>
3	SKGPK-3	0.86	5.07	<b>2.96</b>	29.17	109.17	<b>69.17</b>	7.67	10.64	<b>9.15</b>	4.21	7.18	<b>5.70</b>
4	SKGPK-4	0.47	2.17	<b>1.32</b>	11.11	123.33	<b>67.22</b>	6.72	10.61	<b>8.66</b>	4.68	6.66	<b>5.67</b>
5	SKGPK-5	0.97	7.17	<b>4.07</b>	28.06	141.67	<b>84.86</b>	7.88	10.86	<b>9.37</b>	4.73	7.28	<b>6.01</b>
6	SKGPK-6	1.67	5.28	<b>3.47</b>	47.22	133.33	<b>90.28</b>	10.59	11.18	<b>10.88</b>	5.53	6.26	<b>5.90</b>
7	SKGPK-7	1.56	6.80	<b>4.18</b>	65.28	158.33	<b>111.81</b>	9.58	11.24	<b>10.41</b>	3.81	6.52	<b>5.16</b>
8	SKGPK-8	2.06	3.85	<b>2.95</b>	56.94	105.00	<b>80.97</b>	9.63	11.50	<b>10.56</b>	5.82	6.96	<b>6.39</b>
9	SKGPK-9	2.17	6.80	<b>4.48</b>	58.33	138.33	<b>98.33</b>	9.63	10.35	<b>9.99</b>	4.68	6.59	<b>5.63</b>
10	SKGPK-10	1.33	7.10	<b>4.22</b>	40.28	198.33	<b>119.30</b>	8.21	10.32	<b>9.26</b>	2.55	6.64	<b>4.59</b>
11	SKGPK-11	1.94	5.75	<b>3.85</b>	51.39	146.67	<b>99.03</b>	8.96	10.96	<b>9.96</b>	5.76	7.17	<b>6.46</b>
12	SKGPK-12	2.17	6.58	<b>4.37</b>	62.50	191.67	<b>127.08</b>	9.09	11.43	<b>10.26</b>	5.25	6.83	<b>6.04</b>
13	SKGPK-13	0.81	5.17	<b>2.99</b>	58.33	121.67	<b>90.00</b>	9.54	10.92	<b>10.23</b>	5.18	7.58	<b>6.38</b>
14	SKGPK-14	1.67	3.88	<b>2.77</b>	58.33	107.50	<b>82.92</b>	8.88	11.34	<b>10.11</b>	6.55	6.98	<b>6.77</b>
15	SKGPK-15	2.44	4.75	<b>3.60</b>	88.89	128.33	<b>108.61</b>	10.25	11.59	<b>10.92</b>	4.84	7.40	<b>6.12</b>
16	SKGPK-16	1.50	4.75	<b>3.12</b>	54.17	161.17	<b>107.67</b>	10.17	10.41	<b>10.29</b>	4.41	7.06	<b>5.74</b>
17	SKGPK-17	0.89	4.32	<b>2.60</b>	29.17	153.33	<b>91.25</b>	8.79	10.83	<b>9.81</b>	6.19	7.41	<b>6.80</b>
18	SKGPK-18	1.56	3.83	<b>2.69</b>	50.56	121.67	<b>86.11</b>	9.45	10.51	<b>9.98</b>	5.78	7.04	<b>6.41</b>
19	SKGPK-19	1.14	3.23	<b>2.19</b>	43.06	86.67	<b>64.86</b>	8.84	10.38	<b>9.61</b>	4.51	7.10	<b>5.80</b>
20	SKGPK-20	2.61	4.60	<b>3.61</b>	88.89	142.50	<b>115.69</b>	9.79	11.66	<b>10.72</b>	4.89	6.92	<b>5.90</b>
<b>Mean for check variety</b>													
<b>GK-1 (C)</b>		<b>2.39</b>	<b>6.43</b>	<b>4.41</b>	<b>71.67</b>	<b>158.33</b>	<b>115.00</b>	<b>9.92</b>	<b>11.56</b>	<b>10.74</b>	<b>5.00</b>	<b>7.20</b>	<b>6.10</b>
<b>Minimum</b>		<b>0.47</b>	<b>2.17</b>	<b>1.32</b>	<b>11.11</b>	<b>86.67</b>	<b>64.86</b>	<b>6.72</b>	<b>10.32</b>	<b>8.66</b>	<b>2.55</b>	<b>6.26</b>	<b>4.59</b>
<b>Maximum</b>		<b>2.61</b>	<b>7.17</b>	<b>4.48</b>	<b>88.89</b>	<b>198.33</b>	<b>127.08</b>	<b>10.59</b>	<b>11.66</b>	<b>10.92</b>	<b>6.55</b>	<b>7.58</b>	<b>6.80</b>
<b>Mean</b>		<b>1.62</b>	<b>5.17</b>	<b>3.40</b>	<b>52.12</b>	<b>138.03</b>	<b>95.07</b>	<b>9.11</b>	<b>10.97</b>	<b>10.04</b>	<b>4.95</b>	<b>7.02</b>	<b>5.99</b>
<b>CD (0.05)</b>		<b>0.98</b>	<b>1.56</b>		<b>27.78</b>	<b>75.26</b>		<b>1.73</b>	<b>0.60</b>		<b>1.72</b>	<b>0.68</b>	
<b>CV (%) Error</b>		<b>28.94</b>	<b>14.39</b>		<b>25.50</b>	<b>26.09</b>		<b>9.08</b>	<b>4.18</b>		<b>16.59</b>	<b>4.66</b>	
<b>CV (%) Phen.</b>		<b>37.22</b>	<b>26.22</b>		<b>36.85</b>	<b>19.83</b>		<b>10.20</b>	<b>4.04</b>		<b>17.49</b>	<b>4.93</b>	

S. No.	Genotypes	No. of fruits per plant			S.K. Nagar						Mandor
		Mandor	S.K. Nagar	Mean	Days to first male flower opening	Days to first female flower opening	Days to maturity	Fruit length (cm)	Wine length (m)	Cotyledone ratio (%)	Single fruit weight (g)
1	SKGPK-1	8.70	10.61	<b>9.66</b>	43.50	52.50	93.00	11.59	4.36	50.08	226.50
2	SKGPK-2	5.40	10.33	<b>7.87</b>	42.50	49.50	90.00	11.97	4.27	59.55	252.00
3	SKGPK-3	4.85	10.84	<b>7.85</b>	47.50	51.50	94.00	11.53	4.50	49.07	209.00
4	SKGPK-4	2.50	10.63	<b>6.57</b>	40.50	50.00	97.50	11.27	4.26	58.69	200.00
5	SKGPK-5	3.85	11.65	<b>7.75</b>	40.50	47.50	96.50	11.91	4.33	54.37	240.00
6	SKGPK-6	5.50	9.42	<b>7.46</b>	43.50	49.00	90.00	12.04	4.35	58.91	395.00
7	SKGPK-7	7.35	14.75	<b>11.05</b>	41.00	48.00	94.00	11.78	4.58	48.50	265.00
8	SKGPK-8	8.40	9.36	<b>8.88</b>	41.00	47.50	91.50	12.23	3.95	54.69	242.50
9	SKGPK-9	11.25	11.69	<b>11.47</b>	42.00	51.00	96.00	11.02	3.83	48.79	191.50
10	SKGPK-10	6.00	16.27	<b>11.14</b>	42.50	50.00	92.50	11.02	3.70	57.46	198.50
11	SKGPK-11	6.00	12.86	<b>9.43</b>	39.50	49.00	91.50	11.91	4.42	50.63	259.00
12	SKGPK-12	6.50	11.92	<b>9.21</b>	43.50	50.50	97.50	11.85	4.32	48.82	293.50
13	SKGPK-13	6.40	8.63	<b>7.52</b>	38.00	48.00	91.00	14.84	4.99	56.88	340.00
14	SKGPK-14	9.90	10.32	<b>10.11</b>	42.00	51.00	93.50	11.53	4.08	51.76	211.00
15	SKGPK-15	8.50	10.30	<b>9.40</b>	38.00	50.00	93.00	12.17	4.64	52.39	317.00
16	SKGPK-16	5.60	14.00	<b>9.80</b>	41.00	48.50	92.50	11.34	3.45	48.36	355.00
17	SKGPK-17	3.00	12.32	<b>7.66</b>	37.50	47.50	93.00	11.59	4.31	55.85	302.00
18	SKGPK-18	7.50	11.57	<b>9.53</b>	41.50	50.50	91.00	11.72	3.62	56.38	207.00
19	SKGPK-19	7.15	8.89	<b>8.02</b>	37.50	46.50	90.50	11.40	3.93	50.50	223.50
20	SKGPK-20	11.50	11.78	<b>11.64</b>	38.50	48.50	87.50	12.17	3.94	58.41	290.50
<b>Mean for check variety</b>											
	<b>GK-1 (C)</b>	<b>6.85</b>	<b>12.45</b>	<b>9.65</b>	<b>44.00</b>	<b>51.50</b>	<b>98.50</b>	<b>11.72</b>	<b>4.75</b>	<b>51.60</b>	<b>314.00</b>
	<b>Minimum</b>	<b>2.50</b>	<b>8.63</b>	<b>6.57</b>	<b>37.50</b>	<b>46.50</b>	<b>87.50</b>	<b>11.02</b>	<b>3.45</b>	<b>48.36</b>	<b>191.50</b>
	<b>Maximum</b>	<b>11.50</b>	<b>16.27</b>	<b>11.64</b>	<b>47.50</b>	<b>52.50</b>	<b>98.50</b>	<b>14.84</b>	<b>4.99</b>	<b>59.55</b>	<b>395.00</b>
	<b>Mean</b>	<b>6.80</b>	<b>11.46</b>	<b>9.13</b>	<b>41.21</b>	<b>49.43</b>	<b>93.07</b>	<b>11.84</b>	<b>4.22</b>	<b>53.41</b>	<b>263.45</b>
	<b>CD (0.05)</b>	<b>2.88</b>	<b>6.00</b>		<b>5.32</b>	<b>2.72</b>	<b>10.33</b>	<b>0.57</b>	<b>1.22</b>	<b>0.90</b>	<b>107.41</b>
	<b>CV (%) Error</b>	<b>20.29</b>	<b>25.07</b>		<b>6.18</b>	<b>2.63</b>	<b>5.31</b>	<b>3.69</b>	<b>13.82</b>	<b>0.80</b>	<b>19.51</b>
	<b>CV (%) Phen.</b>	<b>35.06</b>	<b>16.72</b>		<b>6.12</b>	<b>3.27</b>	<b>3.05</b>	<b>6.52</b>	<b>9.18</b>	<b>7.39</b>	<b>21.89</b>

**Table 109. Promising lines in tumba germplasm for various characters at different locations (Plains)**

<b>S. No.</b>	<b>Characters</b>	<b>Range</b>	<b>Promising lines</b>	<b>Value of best check</b>
<b>Mandor (Accessions 13)</b>				
1.	No. of fruits per plant	1.00 - 2.80	MGPT-17, RMT-408, MGPT-6, RMT-404 (> 2.00)	RMT-59 (1.50)
2.	Single fruit weight (kg)	28.00 - 168.00	MGPT-21, RMT-403 (> 125.00 kg)	RMT-59 (105.00 kg)
3.	Fruit diameter (cm)	4.00 - 6.40	MGPT-21, RMT-403 (> 6.20 cm)	RMT-59 (6.00 cm)
4.	Seed yield (kg/ha)	2.30 - 17.60	MGPT-21, RMT-408, MGPT-17, MGPT-13, MGPT-6, RMT-516 (> 10.00 kg/ha)	RMT-59 (6.40 kg/ha)
5.	Fruit yield (kg/ha)	30.60 - 411.10	MGPT-17, MGPT-21, RMT-408, MGPT-6, RMT-403, MGPT-13 (> 200.00 kg/ha)	RMT-59 (150.00 kg/ha)
6.	100-seed weight (g)	2.07 - 2.92	RMT-406, MGPT-5, MGPT-6, MGPT-12, RMT-404, MGPT-13, RMT-403 (> 2.50 g)	RMT-59 (2.22 g)

**Table 110. Multilication evaluation of germplasm lines in tumba at Mandor-kharif, 2010 (Plain)**

S. No.	Entry	Seed yield (kg/ha)	Fruit yield (kg/ha)	No. of fruits per plant	Single fruit weight (kg)	Fruit diameter (cm)	100-seed weight (g)
1	MGPT-5	9.60	194.40	1.50	100.00	5.40	2.89
2	MGPT-6	11.00	229.60	2.30	96.00	5.10	2.67
3	MGPT-7	7.90	183.30	2.00	89.00	5.60	2.14
4	MGPT-8	2.30	30.60	1.00	28.00	4.00	2.07
5	MGPT-12	7.70	163.90	2.00	58.00	5.20	2.61
6	MGPT-13	12.10	218.50	2.00	102.00	6.10	2.52
7	MGPT-17	12.90	411.10	2.80	78.00	5.10	2.45
8	MGPT-21	17.60	372.20	2.00	168.00	6.40	2.28
9	RMT-403	9.20	222.20	1.70	128.00	6.30	2.51
10	RMT-404	8.40	164.80	2.30	46.00	4.50	2.59
11	RMT-406	4.70	68.50	1.00	62.00	4.80	2.92
12	RMT-408	13.60	296.30	2.80	80.00	5.00	2.42
13	RMT-516	10.90	127.80	1.00	115.00	5.80	2.46
	<b>RMT-59 (C)</b>	<b>6.40</b>	<b>150.00</b>	<b>1.50</b>	<b>105.00</b>	<b>6.00</b>	<b>2.22</b>
	<b>Minimum</b>	<b>2.30</b>	<b>30.60</b>	<b>1.00</b>	<b>28.00</b>	<b>4.00</b>	<b>2.07</b>
	<b>Maximum</b>	<b>17.60</b>	<b>411.10</b>	<b>2.80</b>	<b>168.00</b>	<b>6.40</b>	<b>2.92</b>
	<b>Mean</b>	<b>9.59</b>	<b>202.37</b>	<b>1.85</b>	<b>89.64</b>	<b>5.38</b>	<b>2.48</b>

**Table 111. Promising lines in *Jatropha* germplasm (Kharif, 2010) for various characters at different locations (Plains).**

S.No.	Characters	Range	Promising lines	Highest value of best check
<b>Hisar (Accessions 158)</b>				
1.	Plant height (cm)	119.80-485.60	-	Chhattarpati (485.60 cm)
2.	Girth (cm)	27.50-99.80	JH-29, JH-40, JH-14, JH-15, JH-22, JH-59, JH-133, JH-7, JH-1, JH-19, JH-37, JH-4, JH-70, JH-103, JH-53, JH-39 (> 75.00 cm)	Chhattarpati (45.00 cm)
3.	Branches per plant	5.00-36.00	JH-109, JH-106, JH-93, JH-62, JH-133, JH-111, JH-1, JH-103, JH-117 (> 18.00)	Chhattarpati (16.00)
4.	Clusters per plant	6.00-45.00	JH-62, JH-103, JH-40, JH-53, JH-1, JH-14, JH-137, JH-64, JH-93, JH-117, JH-22, JH-36, JH-122, JH-27, JH-11, JH-48, JH-141, JH-70 (> 25.00)	Chhattarpati (18.00)
5.	Balls per plant	45.00-565.00	JH-103, JH-1, JH-40, JH-62, JH-27, JH-137, JH-14, JH-53, JH-64, JH-93, JH-122, JH-117, JH-36, JH-22, JH-141, JH-131, JH-60 (> 250.00)	Chhattarpati (133.00)
6.	Balls per cluster	6.00-12.00	JH-103, JH-27, JH-64, JH-93, JH-60, JH-55, JH-108, JH-79, JH-34, JH-82, JH-46, JH-37, JH-89, JH-42, JH-142, JH-59, JH-35 (> 10.00)	Chhattarpati (8.00)
7.	Seeds per plant	130.00-1663.00	JH-103, JH-40, JH-62, JH-27, JH-14, JH-53, JH-137, JH-93, JH-64, JH-122, JH-117, JH-36, JH-22, JH-141, JH-131, JH-11, JH-60, JH-48, JH-55, JH-2, JH-70 (> 700.00)	Chhattarpati (391.00)
8.	100 seed weight (g)	48.50-62.50	JH-1, JH-40, JH-13, JH-82, JH-83, JH-108, JH-30, JH-91, JH-135, JH-117, JH-141, JH-110, JH-8, JH-130, JH-116, JH-85, JH-98, JH-111 (> 58.00 g)	Chhattarpati (53.70 g)
9.	Seed size (cm)	1.65-1.89	JH-38, JH-43, JH-46, JH-42, JH-48, JH-40, JH-1, JH-82, JH-83, JH-130, JH-84, JH-45, JH-62, JH-96, JH-101, JH-2, JH-58, JH-77, JH-24, JH-34 (> 1.80 cm)	Chhattarpati (1.68 cm)
10.	Seed yield per plant (g)	65.40-890.80	JH-103, JH-1, JH-40, JH-62, JH-27, JH-137, JH-14, JH-93, JH-53, JH-122, JH-117, JH-141, JH-64, JH-36, JH-131, JH-22, JH-60, JH-70, JH-128, JH-133, JH-48, JH-11, JH-142, JH-109 (> 325.00 g)	Chhattarpati (197.40 g)

**Table 112. Multilication evaluation of germplasm lines in Jatropha at Hisar: 2009-10 (Plain)**

S. No.	Genotype	Plant height (cm)	Girth (cm)	Branches per plant	clusters per plant	Balls per plant	Balls per cluster	Seeds per ball	Seeds per plant	100-seed weight (g)	Seed size (cm)	Seed yield per plant (g)
1	JH-1	415.70	78.20	19	42	450	10	3	134	62.50	1.82	675.50
2	JH-2	325.60	72.40	15	25	239	9	3	715	52.50	1.82	310.50
3	JH-3	350.60	49.30	13	20	189	9	3	564	50.20	1.71	290.70
4	JH-4	315.60	77.50	9	15	128	8	3	370	56.40	1.70	180.50
5	JH-5	370.20	69.40	10	11	98	8	3	282	53.90	1.69	140.00
6	JH-6	360.50	65.30	11	19	158	8	3	474	54.00	1.68	195.50
7	JH-7	385.50	81.20	12	13	108	8	3	324	55.40	1.75	159.40
8	JH-8	295.60	53.40	12	7	58	8	3	174	58.50	1.74	100.50
9	JH-9	310.60	54.40	10	21	178	8	3	524	53.10	1.80	251.00
10	JH-10	345.50	49.30	6	8	68	8	3	184	54.20	1.77	85.50
11	JH-11	360.20	51.20	8	31	158	8	3	764	52.50	1.77	345.50
12	JH-12	290.60	42.40	7	17	117	7	3	340	55.10	1.74	158.00
13	JH-13	325.70	45.00	11	15	140	10	3	400	61.00	1.71	194.70
14	JH-14	470.60	90.20	15	38	359	9	3	1077	54.30	1.74	560.50
15	JH-15	395.00	89.50	10	13	140	10	3	410	55.50	1.68	201.00
16	JH-16	410.70	63.50	8	10	98	8	3	280	54.50	1.69	140.20
17	JH-17	350.60	55.10	11	25	199	9	3	581	55.10	1.75	295.00
18	JH-18	378.10	60.00	8	12	88	8	3	552	52.10	1.76	110.90
19	JH-19	365.60	77.50	15	20	168	8	3	480	51.50	1.74	235.00
20	JH-20	330.40	54.20	10	11	78	8	3	221	52.20	1.78	90.50
21	JH-21	350.10	64.90	10	17	169	9	3	500	53.50	1.71	215.40
22	JH-22	380.10	86.80	15	33	278	8	3	813	55.70	1.80	430.00
23	JH-23	350.20	60.00	9	13	108	8	3	310	51.00	1.75	110.50
24	JH-24	325.00	43.50	7	9	97	9	3	271	54.50	1.81	95.90
25	JH-25	342.20	46.90	12	15	159	10	3	463	51.10	1.76	195.00
26	JH-26	355.50	54.00	10	19	178	9	3	520	54.20	1.76	240.50
27	JH-27	425.60	60.70	9	31	381	12	3	1130	55.00	1.80	580.50
28	JH-28	415.50	62.40	9	10	111	10	3	305	55.50	1.80	135.60
29	JH-29	398.10	99.80	8	8	75	10	3	211	52.40	1.75	85.70
30	JH-30	415.60	75.00	13	15	125	9	3	317	59.70	1.76	155.00
31	JH-31	410.50	54.20	8	9	93	9	3	268	55.20	1.80	121.50



S. No.	Genotype	Plant height (cm)	Girth (cm)	Branches per plant	clusters per plant	Balls per plant	Balls per cluster	Seeds per ball	Seeds per plant	100-seed weight (g)	Seed size (cm)	Seed yield per plant (g)
32	JH-32	390.40	61.30	8	7	75	10	3	213	55.10	1.78	86.50
33	JH-33	379.10	67.40	6	9	103	9	3	300	51.70	1.75	145.90
34	JH-34	435.50	65.30	15	13	163	12	3	478	52.30	1.81	200.50
35	JH-35	400.50	53.00	10	11	109	11	3	317	54.70	1.74	160.50
36	JH-36	380.60	60.40	12	33	285	9	3	845	53.90	1.75	445.40
37	JH-37	357.00	77.50	9	10	131	12	3	385	57.90	1.79	151.20
38	JH-38	310.50	45.50	7	11	115	9	3	337	55.70	1.89	165.50
39	JH-39	320.50	75.20	17	22	188	8	3	563	55.90	1.77	240.50
40	JH-40	436.10	99.50	18	45	441	10	3	1323	61.50	1.83	665.50
41	JH-41	435.10	53.80	9	10	110	9	3	315	54.50	1.79	137.50
42	JH-42	412.60	64.20	10	8	104	12	3	305	55.50	1.85	132.00
43	JH-43	427.10	67.40	12	19	185	9	3	541	56.20	1.86	249.50
44	JH-44	420.00	69.90	9	13	97	9	3	281	57.80	1.80	140.50
45	JH-45	400.50	65.10	9	9	75	9	3	225	56.30	1.82	100.10
46	JH-46	365.40	58.50	7	11	139	12	3	410	57.30	1.85	209.50
47	JH-47	430.20	69.20	11	23	210	9	3	251	55.50	1.80	109.50
48	JH-48	420.50	73.10	15	27	243	8	3	723	55.00	1.85	355.60
49	JH-49	325.40	70.90	8	9	93	9	3	269	56.50	1.79	127.50
50	JH-50	350.50	63.50	8	7	87	10	3	257	57.70	1.71	117.70
51	JH-51	298.70	48.20	8	17	185	10	3	541	57.50	1.80	295.40
52	JH-52	249.40	41.80	7	13	123	9	3	360	55.80	1.79	165.80
53	JH-53	420.00	75.70	13	45	353	9	3	1053	57.90	1.72	519.60
54	JH-54	370.40	73.50	8	13	105	8	3	300	56.50	1.70	139.60
55	JH-55	420.50	72.90	8	19	243	12	3	722	57.00	1.72	295.50
56	JH-56	365.20	60.80	13	18	227	10	3	665	55.50	1.80	270.00
57	JH-57	385.20	64.90	9	11	87	9	3	248	56.50	1.70	105.40
58	JH-58	410.50	61.40	8	10	110	9	3	325	57.30	1.81	156.20
59	JH-59	330.20	86.70	12	12	145	11	3	421	54.50	1.76	189.90
60	JH-60	369.40	51.90	11	21	253	12	3	751	55.10	1.76	391.20
61	JH-61	430.40	73.50	10	15	119	9	3	339	56.40	1.80	155.40
62	JH-62	338.10	48.50	21	45	430	10	3	1281	55.30	1.82	580.50
63	JH-63	295.50	47.20	8	9	105	9	3	305	54.70	1.74	145.80
64	JH-64	366.40	62.40	15	35	348	12	3	1015	52.60	1.78	455.60
65	JH-65	299.10	61.40	8	13	125	9	3	359	56.00	1.75	165.50

S. No.	Genotype	Plant height (cm)	Girth (cm)	Branches per plant	clusters per plant	Balls per plant	Balls per cluster	Seeds per ball	Seeds per plant	100-seed weight (g)	Seed size (cm)	Seed yield per plant (g)
66	JH-66	327.10	29.20	7	11	111	9	3	331	54.30	1.72	141.50
67	JH-67	325.10	46.90	9	21	173	8	3	500	56.90	1.80	245.60
68	JH-68	339.10	59.80	11	17	149	9	3	423	55.50	1.77	205.50
69	JH-69	315.60	48.10	10	13	125	10	3	361	56.70	1.70	185.40
70	JH-70	375.20	77.20	7	27	241	8	3	713	57.50	1.70	380.50
71	JH-71	383.10	51.00	11	10	95	9	3	271	57.30	1.70	125.50
72	JH-72	317.10	54.00	8	18	198	10	3	573	55.20	1.70	260.50
73	JH-73	310.40	51.80	7	9	97	9	3	273	56.50	1.75	130.50
74	JH-74	217.50	41.40	6	10	115	10	3	330	53.70	1.75	140.00
75	JH-75	319.50	47.50	9	17	155	8	3	457	55.40	1.79	225.00
76	JH-76	300.00	43.00	7	13	139	10	3	395	55.50	1.77	190.50
77	JH-77	265.60	41.70	9	9	81	8	3	235	55.90	1.81	120.10
78	JH-78	245.40	37.50	8	12	123	10	3	369	54.50	1.70	180.50
79	JH-79	294.50	53.90	9	15	175	12	3	514	55.20	1.75	270.70
80	JH-80	276.10	38.50	10	10	71	8	3	213	54.60	1.72	90.50
81	JH-81	208.00	39.10	13	8	85	9	3	242	55.60	1.75	100.00
82	JH-82	236.50	74.00	12	11	141	12	3	423	60.90	1.82	205.50
83	JH-83	345.50	59.90	14	19	183	9	3	540	60.40	1.82	276.00
84	JH-84	240.60	47.10	9	10	93	9	3	265	57.50	1.82	122.00
85	JH-85	265.40	45.50	11	20	193	9	3	569	58.20	1.78	300.50
86	JH-86	200.10	66.90	8	8	85	9	3	240	55.50	1.78	113.50
87	JH-87	190.40	43.50	7	10	81	9	3	243	56.70	1.78	115.00
88	JH-88	230.20	42.60	6	9	66	8	3	183	57.60	1.78	85.00
89	JH-89	278.50	48.10	8	11	121	12	3	359	55.50	1.70	155.00
90	JH-90	261.40	44.90	9	8	75	10	3	211	54.30	1.67	110.00
91	JH-91	241.20	50.00	9	10	83	9	3	243	59.50	1.72	125.00
92	JH-92	235.10	74.10	13	11	99	8	3	275	55.60	1.74	140.50
93	JH-93	250.70	62.20	21	33	345	12	3	1022	55.70	1.78	539.70
94	JH-94	225.40	33.40	6	12	85	8	3	270	57.50	1.79	120.50
95	JH-95	305.20	39.90	10	18	193	10	3	565	55.40	1.75	300.50
96	JH-96	268.00	43.10	9	11	99	8	3	272	55.10	1.82	130.40
97	JH-97	225.10	51.50	13	22	169	7	3	477	56.90	1.76	250.50
98	JH-98	245.10	45.50	17	19	143	8	3	411	58.20	1.78	215.00
99	JH-99	214.00	56.80	13	15	139	9	3	395	57.50	1.70	220.00

S. No.	Genotype	Plant height (cm)	Girth (cm)	Branches per plant	clusters per plant	Balls per plant	Balls per cluster	Seeds per ball	Seeds per plant	100-seed weight (g)	Seed size (cm)	Seed yield per plant (g)
100	JH-100	262.50	62.80	16	17	183	10	3	539	55.20	1.68	280.40
101	JH-101	220.00	53.00	10	9	85	10	3	240	54.50	1.82	120.50
102	JH-102	299.10	50.40	9	9	99	10	3	275	57.00	1.76	135.00
103	JH-103	268.50	76.40	19	45	565	12	3	1663	54.70	1.78	890.80
104	JH-104	259.60	57.80	7	10	123	10	3	358	56.20	1.75	185.60
105	JH-105	235.00	56.90	6	8	91	10	3	273	54.70	1.71	137.50
106	JH-106	236.60	59.30	30	16	171	10	3	513	55.40	1.70	275.40
107	JH-107	281.10	57.00	15	9	70	8	3	210	54.20	1.75	95.50
108	JH-108	293.00	41.90	12	17	199	12	3	575	59.80	1.76	315.00
109	JH-109	290.40	39.50	36	20	205	10	3	595	55.00	1.76	325.20
110	JH-110	281.70	38.60	12	9	93	9	3	270	58.50	1.70	151.30
111	JH-111	293.90	57.10	20	13	125	9	3	361	58.20	1.70	205.00
112	JH-112	269.60	53.50	16	18	113	8	3	331	54.10	1.73	165.00
113	JH-113	238.00	67.50	12	14	135	10	3	394	55.60	1.70	200.50
114	JH-114	243.00	29.50	10	12	111	9	3	329	55.50	1.80	180.50
115	JH-115	255.60	48.10	9	19	205	10	3	603	56.20	1.70	310.50
116	JH-116	270.50	53.50	8	11	104	9	3	304	58.30	1.69	165.40
117	JH-117	260.50	54.00	19	33	307	9	3	910	58.80	1.70	490.50
118	JH-118	172.40	48.10	12	20	165	8	3	483	55.70	1.70	265.00
119	JH-119	177.70	43.50	10	13	127	10	3	365	55.50	1.65	195.00
120	JH-120	259.80	65.00	9	21	201	10	3	599	56.70	1.66	315.90
121	JH-121	271.00	53.80	17	18	135	8	3	389	54.10	1.80	195.50
122	JH-122	283.50	39.90	11	31	327	10	3	952	55.50	1.78	518.40
123	JH-123	207.40	43.50	15	9	75	8	3	209	55.80	1.75	106.70
124	JH-124	277.00	50.10	9	19	163	7	3	478	57.40	1.75	260.50
125	JH-125	263.50	33.50	15	17	140	8	3	415	57.90	1.80	225.20
126	JH-126	215.40	27.50	9	8	75	9	3	208	55.70	1.75	109.50
127	JH-127	227.90	39.90	14	17	181	10	3	539	55.50	1.71	285.00
128	JH-128	259.40	49.20	11	23	239	10	3	690	57.80	1.75	375.50
129	JH-129	295.80	54.90	8	11	85	8	3	241	57.40	1.75	135.30
130	JH-130	289.00	68.10	14	8	70	9	3	200	58.40	1.82	99.50
131	JH-131	265.70	31.90	8	25	261	10	3	783	57.30	1.75	435.00
132	JH-132	290.50	55.40	12	15	143	9	3	420	56.50	1.75	230.50
133	JH-133	297.50	83.00	20	25	235	9	3	691	55.50	1.75	370.90

S. No.	Genotype	Plant height (cm)	Girth (cm)	Branches per plant	clusters per plant	Balls per plant	Balls per cluster	Seeds per ball	Seeds per plant	100-seed weight (g)	Seed size (cm)	Seed yield per plant (g)
134	JH-134	207.40	58.40	8	6	45	7	3	130	57.30	1.72	65.40
135	JH-135	201.30	36.50	7	10	65	6	3	189	58.90	1.74	115.00
136	JH-136	285.40	51.20	6	7	60	8	3	175	57.50	1.72	90.50
137	JH-137	119.80	27.50	10	37	361	10	3	1050	56.00	1.72	580.50
138	JH-138	247.10	73.20	8	10	75	7	3	203	55.40	1.75	105.50
139	JH-139	237.40	42.40	9	7	60	9	3	180	55.00	1.70	90.80
140	JH-140	250.00	52.50	15	17	150	9	3	450	57.30	1.69	255.00
141	JH-141	261.10	53.90	12	27	273	10	3	808	58.50	1.78	465.50
142	JH-142	255.40	51.80	13	19	209	11	3	611	55.60	1.80	325.50
143	JH-143	319.00	49.80	9	11	84	7	3	242	55.00	1.75	125.50
144	JH-144	270.50	45.00	9	9	75	8	3	211	53.90	1.72	100.10
145	JH-145	296.30	35.40	8	8	87	10	3	250	54.70	1.74	127.50
146	JH-146	179.10	32.90	10	10	75	8	3	225	55.60	1.79	115.70
147	JH-147	193.20	55.40	9	13	105	9	3	301	55.30	1.70	145.50
148	JH-148	215.40	40.80	7	7	67	9	3	196	52.80	1.77	95.00
149	JH-149	251.40	47.50	11	9	79	8	3	215	54.50	1.72	105.60
150	JH-150	220.80	41.50	13	14	151	10	3	453	55.10	1.78	239.60
151	SKNA-1	215.40	43.00	9	9	89	9	3	251	55.50	1.69	111.50
152	ISJ-1	279.00	38.40	9	7	61	9	3	183	54.50	1.66	90.50
153	Urlikanchan	271.40	38.10	10	9	75	9	3	225	54.90	1.65	117.50
154	SKN (Big)	195.20	45.50	8	15	141	9	3	423	56.70	1.70	205.00
155	Hansraj	279.30	32.90	10	17	159	9	3	461	51.20	1.65	220.10
156	Phule J-1	230.90	41.50	11	9	87	9	3	250	53.80	1.65	105.50
157	TNMC-7	231.20	35.80	5	9	65	7	3	180	49.10	1.67	84.50
158	TNMC-25	215.40	33.10	7	7	55	7	3	140	48.50	1.67	81.00
<b>Mean for check variety</b>												
<b>Chhattarpati (C)</b>		485.60	45.00	16	18	133	8	3	391	53.70	1.68	197.40
<b>Minimum</b>		<b>119.80</b>	<b>27.50</b>	<b>5.00</b>	<b>6.00</b>	<b>45.00</b>	<b>6.00</b>	<b>3.00</b>	<b>130.00</b>	<b>48.50</b>	<b>1.65</b>	<b>65.40</b>
<b>Maximum</b>		<b>485.60</b>	<b>99.80</b>	<b>36.00</b>	<b>45.00</b>	<b>565.00</b>	<b>12.00</b>	<b>3.00</b>	<b>1663.00</b>	<b>62.50</b>	<b>1.89</b>	<b>890.80</b>
<b>Mean</b>		<b>305.48</b>	<b>55.10</b>	<b>10.91</b>	<b>15.80</b>	<b>150.45</b>	<b>9.18</b>	<b>3.00</b>	<b>433.60</b>	<b>55.67</b>	<b>1.75</b>	<b>218.17</b>
<b>CV (%) Phen.</b>		<b>23.72</b>	<b>26.54</b>	<b>38.72</b>	<b>54.64</b>	<b>58.55</b>	<b>13.74</b>	<b>-</b>	<b>58.89</b>	<b>3.93</b>	<b>2.79</b>	<b>63.68</b>

**Table 113. Promising lines in Simarouba germplasm for various characters at different locations (Plains)**

S.No.	Characters	Range	Promising lines
<b>Rahuri – Male Paradise tree (Accessions 18)</b>			
1.	Flowering span (days)	28.00 - 39.00	PS-2003-65, PS-2003-37, PS-2003-56, PS-2003-60, PS-2003-22, PS-2003-24, PS-2003-40 (< 33.00 days)
2.	Plant height (m)	3.60 - 6.00	PS-2003-12, PS-2003-15, PS-2003-10, PS-2003-24, PS-2003-6, PS-2003-58, PS-2003-18, PS-2003-37 (> 5.00 m)
3.	Trunk girth (cm)	30.70 - 72.80	PS-2003-58, PS-2003-18, PS-2003-15, PS-2003-24, PS-2003-12, PS-2003-6, PS-2003-10 (> 61.50 cm)
4.	Primary branches per plant	2.00 - 4.00	PS-2003-12, PS-2003-10, PS-2003-40, PS-2003-22 (> 3.00)
<b>Rahuri – Female Paradise tree (Accessions 36)</b>			
1.	Days for fruit development	24.00 - 38.00	PS-2003-59, PS-2003-1, PS-2003-61, PS-2003-46, PS-2003-26, PS-2003-3, PS-2003-27, PS-2003-7, PS-2003-16, PS-2003-57, PS-2003-51 (< 30.00 days)
2.	Days to maturity	52.00 - 87.00	PS-2003-20, PS-2003-35, PS-2003-19, PS-2003-59, PS-2003-39, PS-2003-29, PS-2003-42, PS-2003-61, PS-2003-57, PS-2003-21, PS-2003-13, PS-2003-41 (< 72.00 days)
3.	Plant height (m)	2.78 - 5.80	PS-2003-7, PS-2003-29, PS-2003-5, PS-2003-39, PS-2003-4, PS-2003-28, PS-2003-23, PS-2003-3, PS-2003-41, PS-2003-17, PS-2003-27, PS-2003-16, PS-2003-59 (> 5.00 m)
4.	Trunk girth (cm)	20.00 - 80.60	PS-2003-3, PS-2003-29, PS-2003-26, PS-2003-27, PS-2003-8, PS-2003-7, PS-2003-23, PS-2003-16, PS-2003-45, PS-2003-17, PS-2003-20, PS-2003-5 (> 60.00 cm)
5.	Primary branches per plant	2.00 - 6.00	PS-2003-54, PS-2003-48, PS-2003-35, PS-2003-49, PS-2003-61 (> 4.00)
6.	No. of drupelets per flower bunch	17.00 - 103.00	PS-2003-4, PS-2003-62, PS-2003-45, PS-2003-63, PS-2003-59, PS-2003-46, PS-2003-41, PS-2003-20, PS-2003-3, PS-2003-28, PS-2003-57, PS-2003-21 (> 50.00)
7.	Seed yield per plant (kg)	0.16 - 7.96	PS-2003-45, PS-2003-4, PS-2003-21, PS-2003-48, PS-2003-20, PS-2003-47, PS-2003-66, PS-2003-5, PS-2003-62 (> 5.00 kg)
8.	100 seed weight (g)	110.00 - 195.00	PS-2003-29, PS-2003-27, PS-2003-20, PS-2003-39, PS-2003-42, PS-2003-21, PS-2003-23, PS-2003-26, PS-2003-8, PS-2003-3, PS-2003-59, PS-2003-28, PS-2003-13, PS-2003-7 (> 152.00 g)
9.	No. of fruits per drupelets	5.00 - 164.00	PS-2003-4, PS-2003-1, PS-2003-48, PS-2003-7, PS-2003-13, PS-2003-47, PS-2003-45, PS-2003-8, PS-2003-20, PS-2003-46 (> 90.00)

10.	Weight of 100 mature fruit (g)	321.00 - 646.16	PS-2003-17, PS-2003-5, PS-2003-20, PS-2003-29, PS-2003-3, PS-2003-27, PS-2003-26, PS-2003-59, PS-2003-23, PS-2003-63, PS-2003-16, PS-2003-28, PS-2003-39 (> 540.00 g)
<b>Mandor (Accessions 5)</b>			
1.	Seed yield per plant (kg)	0.65 - 2.70	Plant No. 1, Plant No. 3, Plant No. 5, Plant No. 4 (> 0.70 kg)
2.	100 seed weight (g)	76.60 - 93.80	Plant No. 4, Plant No. 1, Plant No. 5, Plant No. 2 (> 77.00 g)
3.	Stem girth (cm)	52.00 - 70.00	Plant No. 3, Plant No. 1, Plant No. 4, Plant No. 2 (> 52.00 cm)
<b>S.K. Nagar – Male Paradise tree (Accessions 8)</b>			
1.	Plant height (m)	1.90 - 3.55	Plant No. L12P7, Plant No. L1P5, Plant No. L10P18 (> 3.00 m)
2.	No. of Primary branches	2.00 - 6.00	Plant No. L1P5, Plant No. L10P18, Plant No. L1P9, Plant No. L12P7 (> 3.00)
3.	No. of secondary branches per plant	3.00 - 33.00	Plant No. L1P5, Plant No. L10P18, Plant No. L1P9, Plant No. L12P7, Plant No. L9P5 (> 6.00)
4.	Trunk girth (cm)	21.00 - 46.00	Plant No. L1P5, Plant No. L10P18, Plant No. L12P7, Plant No. L1P9, Plant No. L9P5 (> 26.00 cm)
<b>S.K. Nagar – Female Paradise tree (Accessions 19)</b>			
1.	Plant height (m)	3.00 - 4.40	Plant No. L15P4, Plant No. L13P12, Plant No. L11P4, Plant No. L12P9, Plant No. L8P9, Plant No. L13P13, Plant No. L12P1 (> 4.00 m)
2.	No. of primary branches	2.00 - 10.00	Plant No. L11P4, Plant No. L13P13, Plant No. L10P7, Plant No. L15P4, Plant No. L13P12, Plant No. L11P7, Plant No. L11P18 (> 4.00)
3.	No. of secondary branches per plant	9.00 - 33.00	Plant No. L10P7, Plant No. L13P13, Plant No. L13P5, Plant No. L11P7, Plant No. L1P6, Plant No. L11P4, Plant No. L12P9, Plant No. L13P12, Plant No. L15P4, Plant No. L8P9 (> 15.00)
4.	No. of bunches per plant	3.00 - 104.00	Plant No. L11P2, Plant No. L10P7, Plant No. L11P4, Plant No. L8P9, Plant No. L11P7, Plant No. L2P4, Plant No. L13P5, Plant No. L8P3, Plant No. L15P12 (> 12.00)
5.	No. of fruit per bunch	10.00 - 55.00	Plant No. L12P9, Plant No. L11P7, Plant No. L13P5, Plant No. L15P12, Plant No. L11P18, Plant No. L11P2, Plant No. L12P1 (> 26.00)
6.	Trunk girth (cm)	32.00 - 70.00	Plant No. L8P3, Plant No. L1P6, Plant No. L10P7, Plant No. L12P9, Plant No. L11P2, Plant No. L11P7, Plant No. L11P18, Plant No. L2P4 (> 42.00 cm)
7.	Seed yield per plant (kg)	1.50 - 8.15	Plant No. L10P7, Plant No. L11P4, Plant No. L8P9, Plant No. L2P4, Plant No. L8P3, Plant No. L11P7, Plant No. L13P5, Plant No. L12P9 (> 4.50 kg)

**Table 114a. Evaluation of germplasm lines of male paradise tree (Simarouba) at Rahuri : 2010 (Plain)**

S. No.	Male genotypes	Date of flower initiation	Flowering span (Days)	Plant height (m)	Trunk girth (cm)	No. of primary branches
1	PS-2003-2	18/01/10	33	4.18	50.50	2
2	PS-2003-6	21/01/10	39	5.65	62.30	3
3	PS-2003-9	02-01-2010	34	3.60	30.70	3
4	PS-2003-10	01-06-2010	37	5.85	61.80	4
5	PS-2003-11	19/02/10	36	4.45	40.30	3
6	PS-2003-12	01-05-2010	33	6.00	62.30	4
7	PS-2003-15	01-02-2010	38	6.00	71.10	3
8	PS-2003-18	02-03-2010	35	5.42	71.40	2
9	PS-2003-22	19/01/10	32	4.75	50.60	4
10	PS-2003-24	27/01/10	32	5.72	70.20	3
11	PS-2003-37	02-02-2010	29	5.40	60.20	3
12	PS-2003-40	17/02/10	32	4.80	61.50	4
13	PS-2003-44	27/01/10	37	4.00	50.10	2
14	PS-2003-53	01-05-2010	39	4.80	51.30	2
15	PS-2003-56	27/12/09	30	3.80	40.40	3
16	PS-2003-58	20/12/09	38	5.50	72.80	2
17	PS-2003-60	25/01/10	31	4.00	41.50	3
18	PS-2003-65	19/01/10	28	4.00	50.70	2
	<b>Minimum</b>		<b>28.00</b>	<b>3.60</b>	<b>30.70</b>	<b>2.00</b>
	<b>Maximum</b>		<b>39.00</b>	<b>6.00</b>	<b>72.80</b>	<b>4.00</b>
	<b>Mean</b>		<b>34.06</b>	<b>4.88</b>	<b>55.54</b>	<b>2.89</b>
	<b>CV (%) Phen.</b>		<b>10.20</b>	<b>16.86</b>	<b>22.23</b>	<b>26.25</b>

**Table 114b. Evaluation of germplasm lines of female paradise tree (Simarouba) at Rahuri : 2010 (Plains)**

S. No.	Female genotypes	Seed yield (kg/tree)	Days for fruit development	Days to maturity	Plant height (m)	No. of primary branches	Trunk girth (cm)	No. of drupelets per flower bunch	No. of fruits per drupelets	Weight of 100 mature fruit (g)	100 dry seed weight (g)
1	PS-2003-1	4.80	25	84	3.90	4	40.50	43	148	472.60	123
2	PS-2003-3	1.21	27	84	5.40	4	80.60	55	35	617.28	158
3	PS-2003-4	7.74	31	77	5.45	4	40.70	103	164	510.44	145
4	PS-2003-5	5.18	33	82	5.50	3	60.30	22	83	629.96	152
5	PS-2003-7	4.92	29	75	5.80	3	70.30	36	133	422.56	155
6	PS-2003-8	4.18	31	75	5.00	3	70.40	34	113	520.30	165
7	PS-2003-13	4.15	36	71	4.42	2	52.70	46	132	496.20	155
8	PS-2003-16	3.75	29	77	5.20	4	62.50	25	32	545.72	130
9	PS-2003-17	4.06	30	74	5.26	3	62.10	44	89	646.16	145
10	PS-2003-19	2.28	32	66	4.36	2	42.60	41	47	435.40	140
11	PS-2003-20	7.31	37	52	4.50	4	60.60	58	112	629.40	180
12	PS-2003-21	7.68	32	70	4.65	4	53.70	52	73	516.36	173
13	PS-2003-23	2.38	31	79	5.40	2	62.80	28	59	580.52	168
14	PS-2003-26	1.43	27	78	4.50	3	73.10	45	37	585.60	165
15	PS-2003-27	1.85	28	73	5.20	2	71.40	23	7	610.20	187
16	PS-2003-28	1.33	33	79	5.45	4	52.10	55	33	544.00	155
17	PS-2003-29	0.68	32	68	5.62	2	73.50	37	11	620.40	195
18	PS-2003-35	1.74	36	62	4.40	5	30.80	32	5	520.64	145
19	PS-2003-39	0.88	33	67	5.48	3	53.70	33	7	543.04	180
20	PS-2003-41	2.30	37	71	5.26	3	53.40	61	79	377.68	124



S. No.	Female genotypes	Seed yield (kg/tree)	Days for fruit development	Days to maturity	Plant height (m)	No. of primary branches	Trunk girth (cm)	No. of drupelets per flower bunch	No. of fruits per drupelets	Weight of 100 mature fruit (g)	100 dry seed weight (g)
21	PS-2003-42	1.26	36	68	3.80	4	50.70	23	13	520.60	175
22	PS-2003-45	7.96	35	78	5.00	4	62.20	79	117	423.88	138
23	PS-2003-46	3.51	27	79	3.50	2	56.10	65	110	437.00	110
24	PS-2003-47	7.28	33	85	4.70	4	40.50	34	121	509.72	146
25	PS-2003-48	7.33	33	82	4.56	5	42.80	46	134	366.20	124
26	PS-2003-49	2.58	32	87	4.00	5	41.60	45	83	354.68	113
27	PS-2003-51	0.60	29	76	3.80	3	30.20	17	47	410.30	127
28	PS-2003-52	0.65	38	78	4.30	4	52.10	18	57	386.50	128
29	PS-2003-54	0.16	36	77	3.70	6	22.60	43	18	390.40	125
30	PS-2003-57	1.85	29	70	3.70	4	30.70	55	53	321.00	135
31	PS-2003-59	3.38	24	67	5.10	3	40.60	71	72	581.44	155
32	PS-2003-61	0.43	26	70	2.78	5	20.00	43	5	360.50	134
33	PS-2003-62	5.13	31	78	4.50	3	40.20	82	68	409.40	125
34	PS-2003-63	3.36	30	77	4.10	3	50.60	72	73	560.68	152
35	PS-2003-66	6.16	31	81	4.15	4	50.30	47	87	410.20	125
36	PS-2003-67	0.75	35	72	4.00	2	50.70	28	34	430.60	135
	<b>Minimum</b>	<b>0.16</b>	<b>24.00</b>	<b>52.00</b>	<b>2.78</b>	<b>2.00</b>	<b>20.00</b>	<b>17.00</b>	<b>5.00</b>	<b>321.00</b>	<b>110.00</b>
	<b>Maximum</b>	<b>7.96</b>	<b>38.00</b>	<b>87.00</b>	<b>5.80</b>	<b>6.00</b>	<b>80.60</b>	<b>103.00</b>	<b>164.00</b>	<b>646.16</b>	<b>195.00</b>
	<b>Mean</b>	<b>3.39</b>	<b>31.50</b>	<b>74.69</b>	<b>4.62</b>	<b>3.47</b>	<b>51.38</b>	<b>45.58</b>	<b>69.19</b>	<b>491.60</b>	<b>146.86</b>
	<b>CV (%) Phen.</b>	<b>71.87</b>	<b>11.42</b>	<b>9.50</b>	<b>15.63</b>	<b>29.60</b>	<b>28.64</b>	<b>42.57</b>	<b>65.46</b>	<b>18.98</b>	<b>14.70</b>

**Table 115. Evaluation of germplasm lines in Simarouba at Mandor : 2010 (Plain)**

<b>Plant No.</b>	<b>Stem girth (cm)</b>	<b>Seed yield per plant (kg)</b>	<b>100 seed weight (g)</b>
1	69.00	2.70	91.00
2	58.00	0.65	77.80
3	70.00	1.50	76.60
4	66.00	0.75	93.80
5	52.00	1.00	89.40
<b>Minimum</b>	<b>52.00</b>	<b>0.65</b>	<b>76.60</b>
<b>Maximum</b>	<b>70.00</b>	<b>2.70</b>	<b>93.80</b>
<b>Mean</b>	<b>63.00</b>	<b>1.32</b>	<b>85.72</b>

**Table 116a. Evaluation of germplasm lines of male paradise tree (Simarouba) at S.K. Nagar : 2010 (Plains)**

S. No.	Plant No.	Location of Plantation	Age of the plant	Pigmentation in tender leaf	Scar on trunk	Petiole color	Plant height (m)	No. of Primary branches	No. of secondary branches per plant	Trunk girth (cm)
1	L1P5	D-21	4 year 9 month	Red	Scar observed	Yellow	3.40	6	33	46
2	L1P9	D-21	4 year 9 month	Green	Scar observed	Yellow	2.80	5	14	31
3	L2P7	D-21	4 year 9 month	Red	Scar observed	Yellow	2.45	2	6	25
4	L9P5	D-21	4 year 9 month	Red	Scar observed	Yellow	2.55	3	7	31
5	L10P18	D-21	4 year 9 month	Green	Scar observed	Yellow	3.40	6	21	38
6	L12P7	D-21	4 year 9 month	Green	Scar observed	Yellow	3.55	4	7	36
7	L14P20	D-21	4 year 9 month	Green	Scar observed	Yellow	3.00	3	6	26
8	L6P10	D-22	4 year 9 month	Green	Scar observed	Yellow	1.90	2	3	21
<b>Minimum</b>							<b>1.90</b>	<b>2.00</b>	<b>3.00</b>	<b>21.00</b>
<b>Maximum</b>							<b>3.55</b>	<b>6.00</b>	<b>33.00</b>	<b>46.00</b>
<b>Mean</b>							<b>2.88</b>	<b>3.88</b>	<b>12.13</b>	<b>31.75</b>

**Table 116b. Evaluation of germplasm lines of female paradise tree (Simarouba) at S.K. Nagar : 2010 (Plain)**

S. No.	Plant No.	Location of Plantation	Age of the plant	Pigmentation in tender leaf	Fruit setting type	Fruit shape	Scar on trunk	Petiole color	Fruit color at maturity	Plant height (m)	No. of Primary branches	No. of secondary branches per plant	No. of Bunches per plant	No. of fruit per bunch	Trunk girth (cm)	Seed yield per plant (kg)
1	L1P6	D-21	4 year 9 month	Green	Low	Oblong	Scar observed	Yellow	Yellow	3.25	4	21	3	12	59	3.00
2	L2P4	D-21	4 year 9 month	Green	Heavy	Oblong	Scar observed	Green	Yellow	3.35	2	10	28	10	44	6.00
3	L8P3	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Yellow	3.65	2	12	17	16	70	5.50
4	L8P9	D-21	4 year 9 month	Green	Heavy	Oblong	Scar observed	Yellow	Brown	4.15	4	16	53	14	41	7.18
5	L10P7	D-21	4 year 9 month	Green	Heavy	Oblong	Scar observed	Yellow	Yellow	3.85	10	33	99	15	51	8.15
6	L11P2	D-21	4 year 9 month	Green	Heavy	Oblong	Scar observed	Yellow	Brown	3.35	4	14	104	30	47	4.50
7	L11P7	D-21	4 year 9 month	Red	Medium	Oblong	Scar observed	Yellow	Black	3.90	5	21	32	46	45	5.50
8	L11P4	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	4.25	10	20	86	25	40	7.20
9	L11P18	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Black	3.00	5	12	12	32	45	3.50
10	L12P1	D-21	4 year 9 month	Red	Medium	Oblong	Scar observed	Black	Black	4.06	2	15	7	28	39	-
11	L12P9	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Black	4.25	4	19	7	55	47	4.60
12	L13P13	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	4.10	10	32	12	26	42	3.60
13	L13P5	D-21	4 year 9 month	Green	Heavy	Oblong	Scar observed	Yellow	Brown	3.05	4	22	19	42	36	5.50
14	L13P12	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	4.30	6	18	9	26	39	4.00
15	L14P9	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	3.45	2	14	11	22	33	2.10
16	L15P4	D-21	4 year 9 month	Green	Low	Oblong	Scar observed	Yellow	Brown	4.40	9	17	5	11	35	1.50
17	L15P12	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	3.30	2	11	17	35	32	2.35
18	L15P17	D-21	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	3.35	3	9	10	25	35	2.60
19	L5P5	D-22	4 year 9 month	Green	Medium	Oblong	Scar observed	Yellow	Brown	3.45	4	9	10	25	42	3.22
<b>Minimum</b>										<b>3.00</b>	<b>2.00</b>	<b>9.00</b>	<b>3.00</b>	<b>10.00</b>	<b>32.00</b>	<b>1.50</b>
<b>Maximum</b>										<b>4.40</b>	<b>10.00</b>	<b>33.00</b>	<b>104.00</b>	<b>55.00</b>	<b>70.00</b>	<b>8.15</b>
<b>Mean</b>										<b>3.71</b>	<b>4.84</b>	<b>17.11</b>	<b>28.47</b>	<b>26.05</b>	<b>43.26</b>	<b>4.44</b>

**AGRONOMY**

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## IV. AGRONOMY

A total of thirteen agronomic experiments were formulated to be conducted at eight locations in 25 trials. These comprised of three studies on amaranth, one each on buckwheat and kalingada, five on rice bean and four on underutilized crops in general. Out of these, results of eight experiments were received from eight locations in 15 trials, five experiments at eight location(s) were taken up during rabi 2010-11 while two (out of twenty five) were not reported. Centre-wise details of experiments are presented in Table 117 and the findings are as follows:

### **Experiment 1 : Evaluation of organic sources for nitrogen management in grain amaranth**

To standardize the dose of vermicompost or a combination of other organic manures for organic farming of grain amaranth, the crop of grain amaranth was subjected to fifteen manurial treatments at Bangalore and Bhubaneswar in RBD with three replications.

#### **Results :**

The amaranth crop fertilized with recommended dose of fertilizer gave the highest grain yield ( $T_{15}$ ) at Bangalore whereas application of FYM@8 t/ha resulted in the highest amaranth grain yield at Bhubaneswar (Table 118). Amongst the organic manurial treatments, application of vermicompost @7.5 t/ha ( $T_4$ ), FYM @8.0 t/ha ( $T_8$ ) and vermicompost @2.5 t/ha + FYM @4.0 t/ha ( $T_9$ ) gave the second highest grain yield of amaranth at Bangalore and were at par with each other. Similarly,  $T_4$ ,  $T_9$  and  $T_{15}$  resulted in the second highest grain yield of amaranth at Bhubaneswar and were at par with each other.

### **Experiment 2 : Intercropping of amaranth with major crops of the area**

In order to find out suitable intercrops to fit in grain amaranth with the existing crops, the experiment was conducted in RBD with three replications at S.K. Nagar and Mettupalayam. The intercrop treatments imposed at the three locations are given below:

Treatments	:	<b>For S.K. Nagar (Rabi 2009-10)</b>
T <sub>1</sub>	-	Amaranth sole
T <sub>2</sub>	-	French bean sole
T <sub>3</sub>	-	Fenugreek sole
T <sub>4</sub>	-	Gram sole
T <sub>5</sub>	-	Amaranth + French bean (1:1)
T <sub>6</sub>	-	Amaranth+ Fenugreek (1:1)
T <sub>7</sub>	-	Amaranth+ Gram (1:1)
T <sub>8</sub>	-	Amaranth+ French bean (1:2)
T <sub>9</sub>	-	Amaranth + Fenugreek (1:2)
T <sub>10</sub>	-	Amaranth+ Gram (1:2)

**For Bangalore (Kharif 2010)**

T <sub>1</sub>	-	Amaranth sole
T <sub>2</sub>	-	Pigeonpea sole
T <sub>3</sub>	-	Groundnut sole
T <sub>4</sub>	-	Ragi sole
T <sub>5</sub>	-	Amaranth + Pigeonpea (2:1)
T <sub>6</sub>	-	Amaranth+ Groundnut (2:4)
T <sub>7</sub>	-	Amaranth+ Ragi (2:4)
T <sub>8</sub>	-	Amaranth+ Pigeonpea (2:2)
T <sub>9</sub>	-	Amaranth + Groundnut (2:8)
T <sub>10</sub>	-	Amaranth+ Ragi (2:8)

**For Mettupalayam (Kharif 2010)**

T <sub>1</sub>	-	Amaranth sole
T <sub>2</sub>	-	Cowpea sole
T <sub>3</sub>	-	Sesame sole
T <sub>4</sub>	-	Maize sole
T <sub>5</sub>	-	Amaranth+cowpea(2:2)
T <sub>6</sub>	-	Amaranth+sesame(2:2)
T <sub>7</sub>	-	Amaranth+maize(2:2)
T <sub>8</sub>	-	Amaranth+cowpea(2:4)
T <sub>9</sub>	-	Amaranth+sesame(2:4)
T <sub>10</sub>	-	Amaranth+maize(2:4)

**Results :**

At S.K. Nagar (Table 119), the highest values of amaranth equivalent yield, gross and net incomes and B:C ratio were obtained by growing amaranth

+ gram grown in 1: ratio (T<sub>7</sub>). On the other hand, highest value of land equivalent ratio was observed under amaranth + french bean grown in 1:1 ratio (T<sub>5</sub>).

Intercropping amaranth + ragi in 2:8 row ratio resulted in the highest values of LER at Bangalore (Table 120) whereas amaranth + sesame (2:4) intercrop gave highest LER (calculated) followed by amaranth + cowpea (2:4) intercrop at Mettupalayam (Table 121).

### **Experiment 3 : Integrated nutrient management studies in rice bean during kharif 2010**

With a view to standardize a suitable dose of chemical fertilizer in combination with biofertilizer for rice bean, twelve manurial treatments were given to rice bean in RBD with three replications at Bhubaneswar and Bangalore. Details of treatments for Bhubaneswar and Bangalore are give below:

Treatments	:	<b>For Bhubaneswar</b>
		1. Control
		2. RDF (N <sub>20</sub> P <sub>40</sub> )
		3. PSB
		4. Rhizobium culture
		5. 50% RDF + PSB
		6. 50% RDF + Rhizobium
		7. 100% RDF + PSB
		8. 100% RDF + Rhizobium
		9. PSB + Rhizobium
		10. 50% RDF + PSB + Rhizobium
		11. 75% RDF + PSB + Rhizobium
		12. 100% RDF + PSB + Rhizobium

#### **For Bangalore**

T <sub>1</sub>	-	No fertilizer (Control)
T <sub>2</sub>	-	RDF (N <sub>20</sub> P <sub>2</sub> O <sub>5</sub> 40 kg / ha)
T <sub>3</sub>	-	PSB
T <sub>4</sub>	-	Rhizobium culture
T <sub>5</sub>	-	50% P <sub>2</sub> O <sub>5</sub> + 100% N + PSB
T <sub>6</sub>	-	50% N + 100% P <sub>2</sub> O <sub>5</sub> + Rhizobium
T <sub>7</sub>	-	100% RDF (N & P <sub>2</sub> O <sub>5</sub> ) + PSB
T <sub>8</sub>	-	100% RDF (N & P <sub>2</sub> O <sub>5</sub> ) + Rhizobium
T <sub>9</sub>	-	PSB + Rhizobium
T <sub>10</sub>	-	50% RDF + PSB + Rhizobium
T <sub>11</sub>	-	75% RDF + PSB + Rhizobium
T <sub>12</sub>	-	100% RDF + PSB + Rhizobium



## Results :

Application of 100% RDF + PSB + Rhizobium (T<sub>12</sub>) recorded maximum seed yield of rice bean both at Bhubaneswar (Table 122) and Bangalore (Table 123) which was followed by that obtained by application of 100% RDF + Rhizobium culture (T<sub>8</sub>) and 75%RDF + PSB + Rhizobium (T<sub>11</sub>) in that order.

## Experiment 4 : Intercropping study in rice bean during kharif 2010

This experiment was taken up at Ranichauri, Hisar and Bhubaneswar with the objective to identify appropriate intercrop system for rice bean in different parts of the country. The experiment was laid out in Randomized Block Design with three replications. Centre-wise details of intercrop treatment are as follows:

### Treatments : For Ranichauri

1. Rice bean sole
2. Maize sole
3. Amaranth sole
4. Barnyard millet sole
5. Maize + rice bean (1:2)
6. Amaranth + rice bean (1:2)
7. Barnyard millet + rice bean (1:2)
8. Maize + rice bean (2:2)
9. Amaranth + rice bean (2:2)
10. Barnyard millet + rice bean (2:2)
11. Barnyard millet + rice bean (4:2)
12. Amaranth + rice bean (1:1)

### For Bhubaneswar

1. Sole crop of rice bean
2. Sole crop of maize
3. Sole crop of arhar
4. Sole crop of sorghum
5. Maize + rice bean (1:2)
6. Arhar + rice bean (1:2)
7. Sorghum + rice bean (1:2)
8. Maize + rice bean (2:4)
9. Arhar + rice bean (2:4)
10. Sorghum + rice bean (2:4)

### **For Hisar**

1. Sole crop of bajra
2. Sole crop of sorghum
3. Sole crop of pigeonpea
4. Sole crop of rice bean
5. Rice bean + bajra (2:2)
6. Rice bean + sorghum (2:2)
7. Rice bean + pigeonpea (1:1)
8. Rice bean + bajra (2:4)
9. Rice bean + sorghum (2:4)
10. Rice bean + pigeonpea (2:1)

### **Results :**

Intercropping rice bean and amaranth in 2:2 row ratio resulted in the highest value of LER at Ranichauri (Table 124). On the other hand, rice bean + bajra (2:4) gave maximum returns and but not highest value of LER at Hisar (Table 125). At Bhubaneswar (Table 126), maize + rice bean (2:4) gave highest values of LER while arhar + rice bean (2:4) resulted in maximum rice bean equivalent yield.

### **Experiment 5 : Fertilizer management in rice bean based intercrop**

To work out fertilizer requirements of rice bean based intercrop (rice bean + maize and rice bean + amaranth), five fertilizer doses were applied in split plot with three replications 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 127). Also, the grain yields of maize intercrop ( $I_1$ ) were higher than that of grain amaranth ( $I_2$ ) at all levels of fertilizer application.

### **Experiment 6 : Effect of planting geometry, fertilizer dose and plants/hill of kalingada under rainfed condition**

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 :**

A perusal of results in Table 128a 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 3x1m 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  $S_1F_2P_1$  resulting in highest seed and green fruit yields. Followed by those obtained under different treatments for seed ( $S_3F_1P_2$ ) and green fruit ( $S_2F_2P_2$ ) yields. Pulp ratio, on the other hand, was observed to be the highest under  $S_2F_2P_2$ , followed by  $S_1F_1P_2$  and  $S_3F_2P_2$ , respectively.

#### **Experiment 7 : Intercropping studies in underutilized crops in apple orchards during kharif 2010**

To find out suitable underutilized crops for apple orchards in 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 :**

Chenopodium was observed to give highest yield (Table 129) followed by French bean, buckwheat, peas and amaranth in the descending order.

#### **Experiment 8 : Performance of different underutilized crops in rice fallows**

The objective of this trial was to identify suitable underutilized crop for rice fallows of West Bengal and Orissa. Accordingly, the trial was conducted at Cooch Behar and Bhubaneswar in RBD with four replications. Details of crops grown in rice fallows at the two locations are given below:

Treatments	:	<b>For Bhubaneswar</b>
		Rice - Mustard
		Rice - Mung
		Rice - Urd
		Rice - Amaranth
		Rice - Lathyrus
		Rice - Horsegram
		Rice - Rice bean
		Rice - Lin seed
		<b>For Cooch Behar</b>
		Rice - Buckwheat
		Rice - Faba bean
		Rice - Mustard
		Rice - Lathyrus
		Rice - Niger
		Rice - Linseed
		Rice - Lentil
		Rice - Wheat
		Rice - Amaranth

**Results :**

Data presented in Table 130 indicated that at Cooch Behar, the highest seed yield was obtained in rice fallows from the crop of wheat, followed by lathyrus, lentil, faba bean and buckwheat, which were statistically at par with one another (Table 130). On the other hand, grain amaranth was observed to be the highest yielder at Bhubaneswar (Table 131), followed by rice bean and urd, which were at par with each other.

**Table 117. Centre-wise details of agronomic experiments allotted/conducted on different underutilized crops**

S.No.	Experiment	Cooch Behar	Ranichauri	Sangla	Hisar	S.K. Nagar	Bhubaneswar	Bangalore	Mettupalayam	Total
1.	Effect of fertilizer doses on different amaranth genotypes in rice fallows	?	-	-	-	-	-	-	-	<b>1(0)</b>
2.	Evaluation of organic sources for nitrogen management in grain amaranth	-	-	-	-	?	Y	Y	-	<b>3(2)</b>
3.	Intercropping of amaranth with major crops of the area	-	-	-	-	Y	-	Y	Y	<b>3(3)</b>
4.	Effect of fertilizer doses on buckwheat genotypes	?	-	-	-	-	-	-	-	<b>1(0)</b>
5.	Performance of different rice bean genotypes	?	-	-	-	-	-	-	-	<b>1(0)</b>
6.	Integrated nutrient management studies in rice bean	-	-	-	-	-	Y	Y	N	<b>3(2)</b>
7.	Intercropping study of rice bean	?	Y	-	Y	-	Y	N	?	<b>6(3)</b>
8.	Fertilizer management in rice bean based intercrops	-	Y	-	-	-	-	-	-	<b>1(1)</b>
9.	Effect of plant geometry, fertilizer and plants/hill of kalingada under rainfed conditions	-	-	-	-	Y	-	-	-	<b>1(1)</b>
10.	Intercropping studies on underutilized crops with tree crops	-	-	-	-	-	-	-	?	<b>1(0)</b>
11.	Intercropping studies on underutilized crops in Jatropha	-	-	-	?	-	-	-	-	<b>1(0)</b>
12.	Intercropping studies on underutilized crops in apple orchards	-	-	Y	-	-	-	-	-	<b>1(1)</b>
13.	Performance of different underutilized crops in rice fallows	Y	-	-	-	-	Y	-	-	<b>2(2)</b>
	<b>Total allotted (results received)</b>	<b>5(1)</b>	<b>2(2)</b>	<b>1(1)</b>	<b>2(1)</b>	<b>3(2)</b>	<b>4(4)</b>	<b>4(3)</b>	<b>4(1)</b>	<b>25(15)</b>

? = data not received; Y = data received; N = not conducted

**Table 118. Effect of different organic sources on grain yield of grain amaranth at Bhubaneswar (Rabi 2009-10) and at Bangalore (Kharif 2010)**

S. No.	Treatments	Grain yield (kg/ha)		
		Bhubaneswar	Bangalore	Mean
1	T <sub>1</sub> - Control	418	663	<b>540.33</b>
2	T <sub>2</sub> - Vermicompost @ 2.5 t/ha	1003	877	<b>940.00</b>
3	T <sub>3</sub> - Vermicompost @ 5.0 t/ha	1361	971	<b>1166.17</b>
4	T <sub>4</sub> - Vermicompost @ 7.5 t/ha	1547	1050	<b>1298.33</b>
5	T <sub>5</sub> - Neem cake @ 2.5 t/ha	863	902	<b>882.33</b>
6	T <sub>6</sub> - Vermicompost @ 5 t/ha	1005	734	<b>869.33</b>
7	T <sub>7</sub> - Vermicompost @ 7.5 t/ha	1129	707	<b>917.83</b>
8	T <sub>8</sub> - FYM @ 8.0 t/ha	1623	1041	<b>1332.00</b>
9	T <sub>9</sub> - Vermicompost @ 2.5 t/ha + FYM @ 4.0 t/ha	1435	1004	<b>1219.33</b>
10	T <sub>10</sub> - Neem cake @ 2.5 t/ha + FYM @ 4.0 t/ha	1260	942	<b>1101.00</b>
11	T <sub>11</sub> - Vermicompost @ 2.5 t/ha + Neem cake @ 2.5 t/ha	1251	853	<b>1052.17</b>
12	T <sub>12</sub> - FYM @ 4.0 t/ha + Azotobactor	1140	892	<b>1015.83</b>
13	T <sub>13</sub> - Vermicompost @ 2.5 t/ha + Azotobactor	1080	833	<b>956.33</b>
14	T <sub>14</sub> - Neem cake @ 2.5 t/ha + Azotobactor	902	892	<b>896.83</b>
15	T <sub>15</sub> - RDF (60:40:20 kg N : P <sub>2</sub> O <sub>5</sub> : K <sub>2</sub> O / ha )	1483	1322	<b>1402.50</b>
	<b>Mean</b>	<b>1166.67</b>	<b>912.04</b>	<b>1039.36</b>
	<b>CD (0.05)</b>	<b>136.20</b>	<b>148.32</b>	

**Table 119. Yield and economics of different amaranth based inter cropping systems (2009-10) at S.K. Nagar**

Treatments		Yield (kg ha)		Amaranth Equivalent Yield (kg/ha.)	cost of cultivation (kg/ha)	Gross income (Rs/ha)	Net income (Rs/ha)	B:C ratio	LER
		Amaranth	Inter crop						
1	Amaranth sole	1454 (5139)		1528	11000	53480	42480	4.86	1.0
2	French bean sole	815 (2662)		726	12245	25410	13165	2.07	1.0
3	Fenugreek sole	995 (3804)		874	13680	30590	16910	2.24	1.0
4	Gram sole	1600 (4213)		1329	9950	46515	32565	4.67	1.0
5	Amaranth + Frenchbean (1:1)	1231 (4360)	326 (1235)	1567	11622	54845	43223	4.72	1.33
6	Amaranth + Fenugreek (1:1)	926 (4977)	355 (1370)	1309	12340	45815	33475	3.71	0.99
7	Amaranth + Gram (1:1)	1401 (4938)	502 (1551)	1894	10475	66255	55780	6.32	1.27
8	Amaranth + Frenchbean (1:2)	903 (3627)	513 (1505)	1310	11833	45850	34017	3.87	1.25
9	Amaranth + Fenugreek (1:2)	1003 (3935)	571 (2353)	1567	12699	54845	42146	4.31	1.27
10	Amaranth + Gram (1.2)	973 (4475)	841 (2210)	1720	12240	60200	47960	4.91	1.19
<b>S.Em ±</b>				<b>80.69</b>					
<b>C.D. at 5 %</b>				<b>234.14</b>					
<b>C.V.%</b>				<b>10.96</b>					

**Table 120. Effect of different intercrop treatments of grain amaranth on yield and LER at Bangalore during kharif 2010**

<b>S. No</b>	<b>Treatments</b>	<b>Amaranth Yield (kg/ha)</b>	<b>Intercrop Yield (kg/ha)</b>	<b>LER</b>
1	Amaranth Sole Crop	1262	–	1.00
2	Pigeon pea Sole Crop	–	963	1.00
3	Groundnut Sole Crop	–	1012	1.00
4	Ragi Sole Crop	–	3070	1.00
5	Amaranth + Pigeon pea (2:1)	995	346	1.15
6	Amaranth + Groundnut (2:4)	515	829	1.23
7	Amaranth + Ragi (2:4)	305	2536	1.06
8	Amaranth + Pigeon pea (2:2)	723	405	1.07
9	Amaranth + Groundnut (2:8)	356	887	1.16
10	Amaranth + Ragi (2:8)	390	2725	1.20



**Table 121. Effect of different intercrop treatments on yield and LER at Mettupalayam during kharif 2010**

Treatments	50% Flowering			PLANT HEIGHT (cm)			Yield (kg/ha)			1st crop yeild (q/ha)		
	Amaranth	Intercrop	LER	Amaranth	Intercrop	LER	Amaranth	Intercrop	LER	Amaranth	Intercrop	LER
T <sub>1</sub> - Amaranth sole	50.66		1.00	188.33		1.00	1362.00		1.00	12.5		1.00
T <sub>2</sub> - Cowpea sole	47.00		1.00	58.00		1.00	1163.33		1.00	11.2		1.00
T <sub>3</sub> - Sesame sole	44.00		1.00	86.67		1.00	903.33		1.00	8.9		1.00
T <sub>4</sub> - Maize sole	54.00		1.00	202.67		1.00	1518.33		1.00	15.0		1.00
T <sub>5</sub> - Amaranth+cowpea(2:2)	51.33	48.33	2.04	166.66	45.36	1.67	669.00	581.66	0.99	6.8	5.7	1.05
T <sub>6</sub> - Amaranth+sesame(2:2)	51.33	44.33	2.02	166.63	45.86	1.41	630.00	450.66	0.96	6.4	4.5	1.02
T <sub>7</sub> - Amaranth+maize(2:2)	52.33	55.00	2.05	151.40	39.83	1.00	625.00	764.00	0.96	6.3	7.6	1.01
T <sub>8</sub> - Amaranth+cowpea(2:4)	52.33	48.00	2.05	177.16	50.66	1.81	571.66	725.00	1.04	5.8	7.2	1.11
T <sub>9</sub> - Amaranth+sesame(2:4)	52.66	45.00	2.06	177.53	48.93	1.51	572.33	646.00	1.14	5.7	6.5	1.19
T <sub>10</sub> - Amaranth+maize(2:4)	53.33	55.33	2.08	158.50	43.76	1.06	585.66	973.33	1.07	5.8	9.7	1.11

**Table 122. Effect of integrated nutrient management practices on seed yield of rice bean at Bhubaneswar during kharif 2010**

<b>Treatment</b>	<b>Seed Yield ( Kg./ha)</b>
T <sub>1</sub> - Control	433
T <sub>2</sub> - Recommended dose of Fertilizer (RDF) (20:40:20 Kg N:P <sub>2</sub> O <sub>5</sub> :K <sub>2</sub> O / ha)	1115
T <sub>3</sub> - Phospho Solubilizing Bacteria (PSB)	508
T <sub>4</sub> - Rhizobium Culture	539
T <sub>5</sub> - 50% RDF + PSB	915
T <sub>6</sub> - 50% RDF + Rhizobium Culture	944
T <sub>7</sub> - 100% RDF + PSB	1137
T <sub>8</sub> - 100% RDF + Rhizobium Culture	1180
T <sub>9</sub> - PSB + Rhizobium Culture	617
T <sub>10</sub> - 50% RDF + PSB + Rhizobium Culture	982
T <sub>11</sub> - 75% RDF + PSB + Rhizobium Culture	1158
T <sub>12</sub> - 100% RDF + PSB + Rhizobium Culture	1275
<b>Mean</b>	<b>900.25</b>
<b>C.D. (0.05)</b>	<b>111.80</b>

**Table 123. Effect of different manurial treatments on yield and yield attributes of rice bean at Bangalore during kharif 2010**

<b>S. No.</b>	<b>Treatments</b>	<b>Grain yield (q/ha)</b>	<b>Plant height (cm)</b>	<b>No. of clusters per plant</b>	<b>No. of pods per plant</b>	<b>100 Seed weight (g)</b>
1	No fertilizer (Control)	5.40	26.60	4.50	13.93	4.52
2	RDF (N20P2O5 40kg/ha)	9.40	34.20	6.20	27.43	5.71
3	PSB	5.94	27.30	4.80	18.23	4.90
4	Rhizobium culture	7.40	30.10	5.10	22.83	5.23
5	50% P2O5+100%N + PSB	9.21	33.90	6.00	25.37	5.49
6	50%N+100%P2O5+Rhizobium	8.98	34.70	5.83	26.20	5.40
7	100% RDF(N & P2O5)+ PSB	9.95	36.20	6.50	27.10	5.92
8	100% RDF(N & P2O5)+ Rhizobium	10.50	38.13	6.90	30.30	6.03
9	PSB + Rhizobium	7.48	32.53	5.00	22.40	5.13
10	50% RDF+ PSB+Rhizobium	9.50	35.13	6.40	27.73	5.73
11	75%RDF+PSB+Rhizoibum	11.25	38.60	7.20	32.41	6.11
12	100% RDF+PSB+Rhizobium	13.95	41.17	10.30	36.53	6.40
	<b>Mean</b>	<b>9.08</b>	<b>34.05</b>	<b>6.23</b>	<b>25.87</b>	<b>5.55</b>
	<b>CD (0.05)</b>	<b>2.80</b>	<b>6.09</b>	<b>1.58</b>	<b>6.72</b>	<b>1.14</b>
	<b>CV (%) Error</b>	<b>18.25</b>	<b>10.58</b>	<b>15.02</b>	<b>15.36</b>	<b>12.14</b>

**Table 124. Effect of different intercrop treatments on yield and LER at Ranichauri during kharif 2010**

Treatment	GrainYield (Kg/ha)		
	Main Crop	Intercrop	LER
T <sub>1</sub> - Ricebean sole crop	915.66		1.00
T <sub>2</sub> - Maize sole crop	2845.35		1.00
T <sub>3</sub> - Amaranth sole crop	1505.96		1.00
T <sub>4</sub> - Barnyard millet sole crop	1736.19		1.00
T <sub>5</sub> - Ricebean + Maize (2:1)	724.34	1805.62	1.43
T <sub>6</sub> - Ricebean + Amaranth (2:1)	690.81	1400.10	1.68
T <sub>7</sub> - Ricebean + Barnyard millet (2:1)	692.73	1427.95	1.58
T <sub>8</sub> - Ricebean + Maize (2:2)	718.78	2421.61	1.64
T <sub>9</sub> - Ricebean + Amaranth (2:2)	716.63	1565.45	1.82
T <sub>10</sub> - Ricebean + Barnyard millet (2:2)	687.78	1438.38	1.58
T <sub>11</sub> - Ricebean + Barnyard millet (2:4)	671.92	1618.28	1.67
T <sub>12</sub> - Ricebean + Amaranth (1:1)	687.74	1444.85	1.71

**Table 125. Effect of intercropping systems of rice bean on yield and economics of different crops at Hisar during kharif 2010**

Treatments	Grain yield (q/ha)			By products yield (q/ha)			Gross returns (Rs./ha)			Ricebean equivalent yield (q/ha)
	Main crop	Intercrop yield	LER	Main crop	Intercrop	LER	Grain portion	By product portion	Total	
Bajra	24.3		1.00	72.7		1.00	20412	9088	29500	13.41
Sorghum	8.9		1.00	48.6		1.00	11036	12150	23186	10.54
Pigeonpea	5.9		1.00	18.3		1.00	18880	458	19338	8.79
Rice bean	7.3		1.00	16.8		1.00	16060	420	16480	7.49
Rice bean+Bajra (2:2)	4.1	10.5	0.99	9.2	38.7	1.08	17840	5068	22908	10.41
Rice bean+Sorghum (2:2)	3.2	5.1	1.01	8.1	25.3	1.00	13364	6528	19892	9.04
Rice bean+Pigeonpea (1:1)	4.2	3.2	1.12	10.3	13.4	1.35	19480	593	20073	9.12
Rice bean+Bajra (2:4)	2.4	16.4	1.00	6.1	46.4	1.00	19056	5953	25009	11.37
Rice bean+Sorghum (2:4)	2.1	6.5	1.02	6.4	35.2	1.11	12680	8960	21640	9.84
Rice bean+Pigeonpea (2:1)	5.3	2.1	1.08	12.6	7.7	1.17	18380	508	18888	8.59

**Rates (Rs/q) :** Bajra Grain : 840, Pigeonpea : 3200, Sorghum : 1240, Ricebean grain : 2200  
 Bajra stover : 125, P.pea Sticks : 25, Sorghum stover : 250, Ricebean Bhusa : 25

**Table 126. Effect of rice bean intercropping on seed yield and LER (Kharif 2010) at Bhubaneswar**

<b>Treatment</b>	<b>Ricebean yield (kg/ha)</b>	<b>Intercrop yield (kg/ha)</b>	<b>Ricebean equivalent yield (kg/ha)</b>	<b>LER</b>
T1= Ricebean Sole Crop	1265	-	1265	1.00
T2= Maize Sole Crop	-	2428	1700	1.00
T3= Arhar Sole Crop	-	1104	2116	1.00
T4= Sesamum Sole Crop	-	755	1793	1.00
T5= Maize + Ricebean ( 1: 2)	884	1772	2124	1.42
T6= Arhar + Ricebean ( 1:2 )	835	730	2234	1.32
T7= Sesamum + Ricebean ( 1:2 )	840	472	1961	1.28
T5= Maize + Ricebean ( 2:4)	959	1984	2348	1.58
T6= Arhar + Ricebean ( 2:4 )	892	779	2385	1.41
T7= Sesamum + Ricebean ( 2:4 )	880	506	2082	1.37
<b>C.D. (0.05)</b>			94.8	

**Table 127. Effect of fertilizer doses on rice bean based intercrops during kharif 2010 at Ranichauri**

S. No.	Intercrop	Fertilizer dose	Intercrop yield (kg/ha)	Rice bean yield (kg/ha)	Total
1	Rice bean + Maize (2:2)	F <sub>1</sub> - 100 % RDF to main crop (Ricebean) + 100% RDF intercrops (Maize and Amaranth)	3232.32	833.34	4065.66
2	Rice bean + Maize (2:2)	F <sub>2</sub> - 75 % RDF to main crop (Ricebean) + 50% RDF intercrops (Maize and Amaranth)	2702.02	757.58	3459.59
3	Rice bean + Maize (2:2)	F <sub>3</sub> - 50 % RDF to main crop (Ricebean) + 50% RDF intercrops (Maize and Amaranth)	2626.26	734.85	3361.11
4	Rice bean + Maize (2:2)	F <sub>4</sub> - 50 % RDF to main crop (Ricebean) + 25% RDF intercrops (Maize and Amaranth)	2424.24	714.65	3138.89
5	Rice bean + Maize (2:2)	F <sub>5</sub> - 25 % RDF to main crop (Ricebean) + 25% RDF intercrops (Maize and Amaranth)	2398.99	699.49	3098.48
6	Rice bean + Amaranth (2:2)	F <sub>1</sub> - 100 % RDF to main crop (Ricebean) + 100% RDF intercrops (Maize and Amaranth)	1398.99	888.89	2287.88
7	Rice bean + Amaranth (2:2)	F <sub>2</sub> - 75 % RDF to main crop (Ricebean) + 50% RDF intercrops (Maize and Amaranth)	1116.16	775.25	1891.41
8	Rice bean + Amaranth (2:2)	F <sub>3</sub> - 50 % RDF to main crop (Ricebean) + 50% RDF intercrops (Maize and Amaranth)	984.85	777.78	1762.63
9	Rice bean + Amaranth (2:2)	F <sub>4</sub> - 50 % RDF to main crop (Ricebean) + 25% RDF intercrops (Maize and Amaranth)	964.65	717.17	1681.82
10	Rice bean + Amaranth (2:2)	F <sub>5</sub> - 25 % RDF to main crop (Ricebean) + 25% RDF intercrops (Maize and Amaranth).	921.72	691.92	1613.64
	<b>Mean</b>		<b>1877.02</b>	<b>759.09</b>	
	<b>CD (0.05) – Intercrop (Main plot)</b>		<b>38.97</b>	<b>35.83</b>	
	<b>CD (0.05) – Fertilizer (Sub plots)</b>		<b>154.24</b>	<b>49.69</b>	
	<b>CD (0.05) – Interaction (Intercrop x Fertilizer)</b>		<b>NS</b>	<b>NS</b>	
	<b>CV (%) Error</b>		<b>15.21</b>	<b>13.53</b>	

**Table 128a. Effect of different treatments on seed yield, green fruit weight and pulp ratio of kalingada during kharif 2010 at S.K. Nagar**

<b>S. No.</b>	<b>Treatment</b>	<b>Seed yield (kg/ha)</b>	<b>Green fruit weight (kg/ha)</b>	<b>Pulp ratio</b>
1	S1 F1 P1	345	8184	1:23
2	S1 F1 P2	306	11262	1:36
3	S1 F2 P1	538	14508	1:27
4	S1 F2 P2	360	10690	1:30
5	S2 F1 P1	357	9353	1:26
6	S2 F1 P2	264	8972	1:34
7	S2 F2 P1	351	8735	1:25
8	S2 F2 P2	308	12026	1:39
9	S3 F1 P1	307	8781	1:29
10	S3 F1 P2	380	6687	1:18
11	S3 F2 P1	331	7826	1:24
12	S3 F2 P2	341	10881	1:32
	<b>Mean</b>	<b>349.00</b>	<b>9825.42</b>	
<b>Mean of spacing</b>				
	S1	387.25	11161.00	
	S2	320.00	9771.50	
	S3	339.75	8543.75	
<b>Mean of fertilizer</b>				
	F1	326.50	8873.17	
	F2	371.50	10777.67	
<b>Mean of plants/hill</b>				
	P1	371.50	9564.50	
	P2	326.50	10086.33	
<b>CD at 0.05%</b>				
	Spacing	39.00		
	Fertilizer	39.00		
	Plant	31.80		
	S x F	31.80		
	F x P	55.10		
	S x P	55.10		
	S x F x P	77.90		
<b>CV (%)</b>		<b>13.19</b>		



**Table 128b. Effect of interaction among different factors for seed yield and green fruit weight of kalingada at S.K. Nagar**

**(a) Seed yield**

	<b>P1</b>		<b>P2</b>		
	<b>F1</b>	<b>F2</b>	<b>F1</b>	<b>F2</b>	<b>Mean</b>
<b>S1</b>	345	538	306	360	<b>387.25</b>
<b>S2</b>	357	351	264	308	<b>320.00</b>
<b>S3</b>	307	331	380	341	<b>339.75</b>
<b>Mean</b>	<b>336.33</b>	<b>406.67</b>	<b>316.67</b>	<b>336.33</b>	<b>349.00</b>

	<b>P1</b>	<b>P2</b>	<b>Mean</b>
<b>F1</b>	336.33	316.67	<b>326.50</b>
<b>F2</b>	406.67	336.33	<b>371.50</b>
<b>Mean</b>	<b>371.50</b>	<b>326.50</b>	<b>349.00</b>

**(b) Green fruit weight**

	<b>P1</b>		<b>P2</b>		
	<b>F1</b>	<b>F2</b>	<b>F1</b>	<b>F2</b>	<b>Mean</b>
<b>S1</b>	8184	14508	11262	10690	<b>11161.00</b>
<b>S2</b>	9353	8735	8972	12026	<b>9771.50</b>
<b>S3</b>	8781	7826	6687	10881	<b>8543.75</b>
<b>Mean</b>	<b>8772.67</b>	<b>10356.33</b>	<b>8973.67</b>	<b>11199.00</b>	<b>9825.42</b>

	<b>P1</b>	<b>P2</b>	<b>Mean</b>
<b>F1</b>	8772.67	8973.67	<b>8873.17</b>
<b>F2</b>	10356.33	11199.00	<b>10777.67</b>
<b>Mean</b>	<b>9564.50</b>	<b>10086.33</b>	<b>9825.42</b>

**Table 129. Grain yield of different crops as intercrop with apple at Sangla during kharif 2010**

<b>S No</b>	<b>Entry</b>	<b>Grain yield (q/ha)</b>
1	Rajmash (Baspa)	6.67
2	Buckwheat(HimPriya)	4.22
3	Amaranthus(Annapurna)	1.67
4	Chenopodium (PRC9801)	7.03
5	Peas (Palam Priya)	4.17
	<b>Mean</b>	<b>4.75</b>
	<b>CD (0.05)</b>	<b>2.10</b>
	<b>CV (%) Error</b>	<b>28.63</b>

**Table 130. Growth and yield performance of different crops in rice fallows during Rabi (2010-11) at Cooch Behar**

<b>Name of crops</b>	<b>Plant height (cm)</b>	<b>No of branches/ tillers/plant</b>	<b>No of clusters/ pod/ plant /spiklets/ earhead</b>	<b>Seed yield (q/ha)</b>
Buckwheat	92.60	8.23	21.54	12.39
Fababean	85.10	5.81	16.29	12.71
Lathyrus	82.30	15.42	86.60	16.85
Lentil	61.60	10.32	80.50	12.78
Niger	80.60	9.70	90.30	8.59
Linseed	79.90	9.40	121.40	9.94
Wheat	158.70	23.40	27.80	24.70
<b>Mean</b>	<b>91.54</b>	<b>11.75</b>	<b>63.49</b>	<b>13.99</b>
<b>CD (p=0.05)</b>	<b>5.14</b>	<b>1.87</b>	<b>21.43</b>	<b>1.24</b>

**Table 131. Yield of different crops in rice – fallows at Bhubaneswar**

<b>Treatment</b>	<b>Yield (kg/ha)</b>
T <sub>1</sub> - Rice – Mustard	859
T <sub>2</sub> - Rice – Moong	874
T <sub>3</sub> - Rice – Urd	1061
T <sub>4</sub> - Rice- Horsegram	807
T <sub>5</sub> - Rice – Amaranth	1505
T <sub>6</sub> - Rice- Rice bean	1174
T <sub>7</sub> - Rice- Linseed	970
T <sub>8</sub> - Rice – Sesamum	824
<b>C.D. (0.05)</b>	<b>115.83</b>

\* Rice crops grown in Kharif (2009) and remaining all crops grown in Rabi (2009-10)

# **QUALITY ANALYSIS**

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## **V. QUALITY ANALYSIS**

The seed of promising genotypes evaluated in IVT, AVT and germplasm evaluation of the seven underutilized crops were planned for quality analysis at three centres viz. MPKV, Rahuri; CSKHPKV, Palampur and CCS HAU, Hisar, Quality analysis was done at three centres and seed was supplied by Shimla, Rahuri, S.K. Nagar, and Hisar centres. The crop-wise details of quality traits are given below:

### **5.1 HILLS**

Quality analysis on grain amaranth (IVT & AVT and promising genotypes in germplasm), buckwheat (IVT & AVT and promising genotypes in germplasm), adzuki bean (promising germplasm genotypes), chenopodium (promising germplasm genotypes) and rice bean (IVT & AVT and promising genotypes in germplasm) has been done at two centres Hisar and Palampur for different quality parameters. Seed for quality analysis for two centres was sent by NBPGR, Shimla centre.

#### **5.1.1 Grain Amaranth :**

##### **5.1.1.1 IVT (Kharif 2010) and promising germplasm genotype (Kharif 2009)**

A combined quality trial of IVT kharif 2010 (3 entries) and ten entries of promising germplasm genotypes (kharif 2009) with four checks were analysed at two location Hisar and Shimla. The summary performance of various entries in respect of different quality parameters as compared to check varieties has been given in Table 132.

No significant differences were observed among the entries for mean protein content at both the locations. Protein content was high at Hisar (12.70%), moderate and similar at Palampur (12.66%). Based on the average performance over two locations, the entry IC04294-2 had highest protein content (13.70%) followed by entry IC042339 (13.65%).

Fat content (%) was analysed at Hisar centre only. Fat content varied from 6.50%-8.80% with average value 7.51%. The genotype IC042329 had highest fat content (8.80%).

Average Zn content of the entries was the equal at both the centres (2.86 mg/100g). The Zn content at Hisar ranged from 2.30 to 3.40 mg/100g and at Palampur from 2.00 to 3.50 mg/100g. Based on average performance over two locations the entry IC035542 had highest Zn content (3.40 mg/100g).

The mean Fe content was highest (5.50 mg/100g) at Hisar. No entry was superior to check variety Durga (7.25 mg/100g) in Fe content based on the overall performance.

Average Ca content of the entries was almost equal at both the centres (277.70 mg/100g). Based on average over two location entry IC042294-2 had the highest Ca content (314.00 mg/100g).

Fibre content expressed in terms of percentage recorded at two centres showed that it was similar at both centres. Based on the average over two locations the entry IC042329 (3.65%) showed the highest fibre content.

## **5.1.2 Buckwheat :**

### **5.1.2.1 IVT & AVT-II and promising germplasm genotype (Kharif 2009) and IVT (Kharif 2010)**

In this trial one entry in IVT, three entries in AVT-II, seven entries of promising germplasm genotypes (Kharif 2009) and two entries in IVT (Kharif 2010) alongwith five checks were analysed at two locations. Seed was supplied by NBPGR Shimla centre (Table 133).

Protein content was high at Hisar (12.22%), moderate and similar at Palampur (12.01%). Based on the average performance over two locations, entry IC107994 had highest protein content (13.60%) followed by the entry IC036919 (13.00%).

Average Zn content of the entries was the highest at Palampur (2.92 mg/100g) followed by at Hisar (2.84 mg/100g). The Zn content at Hisar ranged

from 2.30 to 3.30 mg/100g and at Palampur from 2.40 to 3.80 mg/100g. Based on average performance over two locations the entry IC109549 had highest Zn content (3.65 mg/100g).

The mean Fe content was highest (5.09 mg/100g) at Palampur. The entry IC108500 ranked first (6.90 mg/100g) based on the overall performance.

Average Ca content of the entries was the highest at Palampur (80.70 mg/100g) followed by Hisar (77.83 mg/100g). Based on average over two location, the entry IC042424 had the highest Ca content (93.25 mg/100g).

Fibre content expressed in terms of percentage recorded at two centres showed that it was the highest at Palampur (9.22%) and low at Hisar (8.88%). Based on the average over two locations the local check Reshwal (9.85%) showed the highest fibre content.

### **5.1.3 Chenopodium :**

#### **5.1.3.1 Promising germplasm genotypes (Kharif 2009)**

Thirteen genotypes alongwith three check varieties were analysed at Hisar and Palampur centres and seed was sent to two centres (Hisar and Palampur) for protein and mineral content analysis by Shimla centre (Table 134).

Mean protein content was highest at Hisar (15.86%) followed by Palampur (15.43%). Based on the average performance over two locations, entry IC108896 had highest protein content (17.90%) followed by IC107535 (16.90%).

Average Fe content of the entries was the highest at Hisar (11.61 mg/100g) followed by at Palampur (11.49 mg/100g). The Fe content at Hisar ranged from 8.30 to 14.20 mg/100g and at Palampur from 7.70 to 14.40 mg/100g. Based on average performance over two locations, entry IC107185 had highest Fe content (14.10 mg/100g).

The mean Zn content was highest (2.69 mg/100g) at Hisar. The entry IC107585 ranked first (3.10 mg/100g) based on the overall performance.



Average Ca content of the entries was highest at Hisar (287.25 mg/100g) and Palampur (284.72 mg/100g). Based on average over two location, entry IC107296 had the highest Ca content (318.90 mg/100g).

Fibre content expressed in terms of percentage recorded at two centres showed almost same result at Hisar (9.09%) and Palampur (8.94%). Based on the average over two locations the entry IC106340 (10.55%) showed the highest fibre content.

#### **5.1.4 Adzuki bean :**

##### **5.1.4.1 Promising germplasm genotypes (Kharif 2009)**

Eight genotypes of Adzuki bean along with two standard check varieties were analysed for protein, Fe, Zn, Ca, tannins, cooking quality and crude fibre. Protein content varied from 20.90 to 23.95 percent, with an average value of 22.59%. Fe, Zn, Ca and tannins ranged from 6.65 to 9.85, 2.65 to 4.10, 305.40 to 339.25 and 475.00 to 826.50 with an average value of 8.15, 3.29, 322.80 and 639.65 (mg/100g) respectively (Table 135). The check variety HPU-51 (23.95%) had the highest protein content.

#### **5.1.5 Rice bean :**

##### **5.1.5.1 IVT, AVT-I, Promising germplasm genotypes (Kharif 2009) and IVT (Kharif 2010)**

In this trial one entry in IVT, four entries in AVT-I, five entries of promising germplasm genotypes (Kharif 2009) and two entries in IVT (Kharif 2010) alongwith two checks were analysed at two locations. Seed was supplied by NBPGR Shimla centre (Table 136).

Protein content varied from 17.50-21.00%, with an average value of 18.98%. Fe, Zn and Ca content varied from 3.80-8.95 mg/100g, 2.55-4.30 mg/100g and 307.00-379.50 mg/100g, respectively. The genotype LRB-467 had the highest protein content (21.30%) while PRR-2 had the highest Ca content (379.50 mg/100g).

## **5.2 PLAINS**

Quality analysis on grain amaranth (IVT, AVT and germplasm), rice bean (AVT and germplasm), faba bean (IVT & AVT), kalingada (IVT & AVT and germplasm) and tumba (AVT-II) has been done at Hisar and Rahuri centre for different quality parameters.

### **5.2.1 Grain Amaranth :**

#### **5.2.1.1 IVT (Rabi 2009-10)**

Fifteen genotypes alongwith four checks of grain amaranth were analyzed for protein, Fe and Ca. Protein content varied from 10.33 to 14.76% with an average value of 12.09%. Fe and Ca content ranged from 5.09 to 7.69 and 202.50 to 503.17 with an average value of 6.18 and 344.30 (mg/100g), respectively (Table 137). The promising genotypes for protein content MGA-4 (14.76%), Fe content BGA-18 (7.69 mg/100g) and Ca content MGA-4 (503.17 mg/100g) at Rahuri centre were found as compared to check varieties.

#### **5.2.1.2 AVT (Rabi 2009-10)**

Sixteen genotypes alongwith four checks of grain amaranth were analyzed for protein, oil, ash and moisture at Hisar centre and used your own seed. Protein content varied from 10.10 to 13.20% with an average value of 11.82%. oil content and moisture content ranged from 3.90 to 6.40 and 9.20 to 11.60 with an average value of 5.23 and 10.43 (%), respectively (Table 138). The promising genotypes for protein content BGA-12 (13.20%).

#### **5.2.1.3 Germplasm (Rabi 2009-10)**

Eight seven genotypes of grain amaranth were analyzed for protein, Fe and Ca. Protein content varied from 10.08 to 13.99% with an average value of 12.08%. Fe and Ca content ranged from 4.18 to 7.98 and 232.60 to 527.00 with an average value of 6.55 and 363.61 (mg/100g), respectively (Table 139). The promising genotypes for protein content SKGPA-7 (13.99%), Fe content BGA-31 (7.98 mg/100g) and Ca content BGA-30 (527.00 mg/100g) at Rahuri centre were found as compared to check varieties.

## **5.2.2 Rice bean :**

### **5.2.2.1 AVT-I & II (Kharif 2009)**

Ten genotypes alongwith four standard check varieties from Hisar centre were analysed for its protein, Fe, Zn, Ca, Tannin and Cooking time. Protein content varied from 18.30 to 20.70%, with an average value of 19.23%. Fe, Zn, Ca and tannins varied from 5.10 to 5.90, 3.20 to 3.80, 305.00 to 336.00 and 513.00 to 617.00 with an average value of 5.46, 3.48, 318.50 and 572.25 (mg/100g), respectively (Table 140). Cooking time was in the range of 48 to 55 minutes with the average value of 51.96 minutes.

### **5.2.2.2 Germplasm (Kharif 2010)**

Fifty genotypes alongwith four standard check varieties from Rahuri centre were analysed for protein content (%). Protein content varied from 15.41 to 21.47%, with an average value of 17.69% (Table 141). The entry LRB-324 had the highest protein content (21.47%).

### **5.2.2.3 FYT (Kharif 2010)**

Seven genotypes alongwith three check varieties from Hisar centre were analysed for protein content (%), cooking time, tannin, Ca, Fe and Zn. Protein content varied from 17.40 to 20.60%, with an average value of 19.19% (Table 142). The entry HRB-493 had the highest protein content (20.60%).

### **5.2.2.4 SST (Kharif 2010)**

Seven genotypes alongwith four check varieties from Hisar centre were analysed for protein content (%), cooking time, tannin, Ca, Fe and Zn. Protein content varied from 18.80 to 21.80%, with an average value of 20.51% (Table 143). The entry HBR-438 had the highest protein content (21.80%).

### **5.2.3 Faba bean :**

#### **5.2.3.1 IVT (Rabi 2009-10)**

Nine genotypes from Hisar centre were analysed for its protein and vicine-convicine and ash contents. Protein content varied from 21.60 to 24.70%, vicine-convicine content varied from 0.74 to 0.84% and ash content were in the range of 1.18 to 1.37% with an average value of 23.27, 0.78 and 1.28%, respectively (Table 144). The entry HB-82 had the highest protein content (24.70%), while two entries DBF-9-1 and DBF-9-2 had lowest vicine-convicine content (0.74%).

#### **5.2.3.2 AVT (Rabi 2009-10)**

Fifteen genotypes alongwith one check from Hisar centre were analysed for its protein and vicine-convicine and ash contents. Protein content varied from 20.20 to 25.55%, vicine-convicine content varied from 0.76 to 0.95% and ash content were in the range of 1.29 to 1.45% with an average value of 22.83, 0.83 and 1.38%, respectively (Table 145). The check variety Vikrant had the highest protein content (25.55%), while entry EC366272 had lowest vicine-convicine content (0.76%).

#### **5.2.3.3 SST (Rabi 2009-10)**

Eleven genotypes alongwith one check from Hisar centre were analysed for its protein and vicine-convicine and ash contents. Protein content varied from 24.20 to 26.60%, vicine-convicine content varied from 0.76 to 0.92% and ash content were in the range of 1.35 to 1.46% with an average value of 25.29, 0.84 and 1.39%, respectively (Table 146). The entry HB-08-3 had the highest protein content (25.60%), while entry HB-08-15 had lowest vicine-convicine content (0.76%).

#### **5.2.3.4 PRT-1 (Rabi 2009-10)**

Twenty one genotypes alongwith one check from Hisar centre were analysed for its protein and vicine-convicine and ash contents. Protein content

varied from 22.70 to 27.70%, vicine-convicine content varied from 0.78 to 0.96% and ash content were in the range of 1.08 to 1.48% with an average value of 25.09, 0.89 and 1.36%, respectively (Table 147). The entry PRT-1 had the highest protein content (27.70%), while entry PRT-12 had lowest vicine-convicine content (0.78%).

#### **5.2.3.5 FYT-1 (Rabi 2009-10)**

Twenty one genotypes alongwith one check from Hisar centre were analysed for its protein and vicine-convicine and ash contents. Protein content varied from 23.00 to 26.20%, vicine-convicine content varied from 0.80 to 0.92% and ash content were in the range of 1.41 to 1.45% with an average value of 24.50, 0.85 and 1.30%, respectively (Table 148). The entry HB-06-34, HB-06-39 had the highest protein content (26.20%), while entry HB-06-27, HB-51, HB-73 had lowest vicine-convicine content (0.80%).

#### **5.2.3.6 LST-1 (Rabi 2009-10)**

Nineteen genotypes alongwith one check from Hisar centre were analysed for its protein and vicine-convicine and ash contents. Protein content varied from 22.50 to 26.20%, vicine-convicine content varied from 0.82 to 0.94% and ash content were in the range of 1.19 to 1.42% with an average value of 24.44, 0.86 and 1.32%, respectively (Table 149). The entry HB-176 had the highest protein content (26.20%), while entry HB-07-10 had lowest vicine-convicine content (0.82%).

### **5.2.4 Kalingada :**

#### **5.2.4.1 IVT and AVT-I (Kharif 2009)**

Seeds of nine genotypes alongwith one check of Kalingada supplied by S.K. Nagar were analysed at Hisar centre for oil, protein (in the whole seed), Zn and Fe content. Oil content ranged from 30.90 to 36.00% with an average value of 33.63%. Protein content from 18.20 to 21.80% having an average value of 19.65%. Zn and Fe content ranged from 6.70 to 8.30 and 12.80 to 15.20 (mg/100g) with an average value of 7.41 and 14.08 (mg/100g), respectively

(Table 150). The SKNK-801 had the highest oil content (36.00%) while highest protein in defatted seed cake was in genotype SKNK-804 (21.80%).

#### **5.2.4.2 Germplasm (Kharif 2009)**

Two set of seeds of twenty two genotypes of Kalingada supplied by Mandor and S.K. Nagar were analysed at Hisar centre for oil, protein (in the whole seed), Fe and Zn content. Protein content ranged from 16.70 to 19.60% having an average value of 18.14%. Zn and Fe content ranged from 6.05 to 8.70 and 14.10 to 16.55 (mg/100g) with an average value of 7.38 and 15.36 (mg/100g), respectively (Table 151). The genotypes SKGPK-3 and SKGPK-4 had the highest protein content (19.60%).

#### **5.2.5 Tumba :**

##### **5.2.5.1 AVT-II (Kharif 2009)**

Seeds of eight genotypes including one check of tumba supplied by Mandor were analysed at Hisar centre for oil, protein (in the whole seed), Zn and Fe content. Oil content ranged from 22.60 to 24.40% with an average value of 23.30%. Protein content from 13.20 to 14.20% having an average value of 13.88%. Zn and Fe content ranged from 2.70 to 3.80 and 11.20 to 14.30 (mg/100g) with an average value of 3.19 and 12.95 (mg/100g), respectively (Table 152). The RMT-406 had the highest oil content (24.40%) while highest protein in defatted seed cake was in genotype RMT-407 (14.20%).

##### **5.2.5.2 SST (Kharif 2009)**

Seeds of seventeen genotypes including one check of tumba supplied by Mandor were analysed at Hisar centre for oil, protein (in the whole seed), Zn and Fe content. Oil content ranged from 22.20 to 24.30% with an average value of 23.48%. Protein content from 13.20 to 14.90% having an average value of 13.99%. Zn and Fe content ranged from 2.70 to 3.90 and 9.30 to 19.70 (mg/100g) with an average value of 3.18 and 13.61 (mg/100g), respectively (Table 153). The MGPT-9 had the highest oil content (24.30%) while highest protein in defatted seed cake was in genotype MGPT-16 (14.90%).

**Table 132: Quality parameters in IVT and promising germplasm genotypes of grain amaranth - Hills**

S. No.	Genotypes	Crude protein (%)			Fe (mg/100 g)			Zn (mg/100 g)			Ca (mg/100 g)			Crude fibre (%)			Fat (%)
		Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar
<b>IVT (Kharif 2010)</b>																	
1	IC035468	12.70	12.70	<b>12.70</b>	6.40	6.60	<b>6.50</b>	3.20	2.80	<b>3.00</b>	261.00	255.10	<b>258.05</b>	3.10	2.90	<b>3.00</b>	6.80
2	IC035520-1	12.70	12.50	<b>12.60</b>	4.90	4.80	<b>4.85</b>	3.10	2.70	<b>2.90</b>	248.00	247.10	<b>247.55</b>	3.20	3.20	<b>3.20</b>	7.30
3	IC035542	11.90	12.40	<b>12.15</b>	4.50	4.40	<b>4.45</b>	3.40	3.40	<b>3.40</b>	259.00	253.50	<b>256.25</b>	2.90	3.20	<b>3.05</b>	7.10
<b>Promising germplasm genotypes (Kharif 2009)</b>																	
4	IC041999	12.10	12.30	<b>12.20</b>	5.30	4.90	<b>5.10</b>	2.40	2.90	<b>2.65</b>	288.00	287.50	<b>287.75</b>	2.60	2.30	<b>2.45</b>	7.20
5	IC042290-13	11.80	11.60	<b>11.70</b>	5.50	6.00	<b>5.75</b>	2.80	2.70	<b>2.75</b>	272.00	276.60	<b>274.30</b>	2.80	2.40	<b>2.60</b>	7.90
6	IC042294-2	13.40	14.00	<b>13.70</b>	4.80	4.40	<b>4.60</b>	2.80	3.00	<b>2.90</b>	318.00	310.00	<b>314.00</b>	3.00	2.70	<b>2.85</b>	7.80
7	IC042310-2	13.20	12.80	<b>13.00</b>	4.60	3.40	<b>4.00</b>	2.30	2.30	<b>2.30</b>	295.00	291.50	<b>293.25</b>	2.60	2.80	<b>2.70</b>	7.60
8	IC042319-1	12.70	12.30	<b>12.50</b>	5.70	5.60	<b>5.65</b>	2.40	2.60	<b>2.50</b>	288.00	299.00	<b>293.50</b>	3.10	3.40	<b>3.25</b>	6.50
9	IC042324	12.10	11.80	<b>11.95</b>	7.20	6.90	<b>7.05</b>	3.20	2.90	<b>3.05</b>	271.00	275.50	<b>273.25</b>	2.90	3.00	<b>2.95</b>	7.10
10	IC042326	13.70	13.40	<b>13.55</b>	6.80	6.50	<b>6.65</b>	3.40	3.30	<b>3.35</b>	298.00	304.90	<b>301.45</b>	3.50	3.10	<b>3.30</b>	7.20
11	IC042329	13.60	13.60	<b>13.60</b>	6.10	5.60	<b>5.85</b>	2.80	2.70	<b>2.75</b>	271.00	270.50	<b>270.75</b>	3.70	3.60	<b>3.65</b>	8.80
12	IC042339	13.50	13.80	<b>13.65</b>	5.10	4.90	<b>5.00</b>	2.30	2.20	<b>2.25</b>	311.00	316.90	<b>313.95</b>	3.20	3.20	<b>3.20</b>	8.80
13	IC042340	13.40	13.80	<b>13.60</b>	5.20	5.20	<b>5.20</b>	2.70	3.00	<b>2.85</b>	263.00	267.90	<b>265.45</b>	2.60	2.90	<b>2.75</b>	7.80
	<b>Annapurna (C)</b>	11.90	11.20	<b>11.55</b>	4.80	4.80	<b>4.80</b>	2.60	2.50	<b>2.55</b>	231.00	229.20	<b>230.10</b>	2.80	3.00	<b>2.90</b>	8.10
	<b>Durga (C)</b>	12.90	12.70	<b>12.80</b>	6.80	7.70	<b>7.25</b>	2.90	2.80	<b>2.85</b>	308.00	309.50	<b>308.75</b>	2.60	2.60	<b>2.60</b>	7.60
	<b>PRA-2 (C)</b>	12.10	11.80	<b>11.95</b>	5.30	5.10	<b>5.20</b>	3.20	3.50	<b>3.35</b>	271.00	266.70	<b>268.85</b>	2.70	2.50	<b>2.60</b>	7.20
	<b>PRA-3 (C)</b>	12.20	12.50	<b>12.35</b>	5.10	5.40	<b>5.25</b>	3.20	3.30	<b>3.25</b>	268.00	259.50	<b>263.75</b>	2.60	2.80	<b>2.70</b>	6.80
	<b>Minimum</b>	<b>11.80</b>	<b>11.20</b>	<b>11.55</b>	<b>4.50</b>	<b>3.40</b>	<b>4.00</b>	<b>2.30</b>	<b>2.20</b>	<b>2.25</b>	<b>231.00</b>	<b>229.20</b>	<b>230.10</b>	<b>2.60</b>	<b>2.30</b>	<b>2.45</b>	<b>6.50</b>
	<b>Maximum</b>	<b>13.70</b>	<b>14.00</b>	<b>13.70</b>	<b>7.20</b>	<b>7.70</b>	<b>7.25</b>	<b>3.40</b>	<b>3.50</b>	<b>3.40</b>	<b>318.00</b>	<b>316.90</b>	<b>314.00</b>	<b>3.70</b>	<b>3.60</b>	<b>3.65</b>	<b>8.80</b>
	<b>Mean</b>	<b>12.70</b>	<b>12.66</b>	<b>12.68</b>	<b>5.54</b>	<b>5.42</b>	<b>5.48</b>	<b>2.86</b>	<b>2.86</b>	<b>2.86</b>	<b>277.71</b>	<b>277.70</b>	<b>277.70</b>	<b>2.94</b>	<b>2.92</b>	<b>2.93</b>	<b>7.51</b>

Seed supply by NBPGR RS Shimla at Palampur and Hisar

**Table 133: Quality parameters in IVT & AVT and promising germplasm genotypes of buckwheat - Hills**

S. No.	Genotypes	Protein (%)			Fe (mg/100)			Zn (mg/100 g)			Ca (mg/100 g)			Crude fibre (%)		
		Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean
<b>IVT (Kharif 2009)</b>																
1	IC109549	12.30	12.00	<b>12.15</b>	4.30	4.10	<b>4.20</b>	3.70	3.60	<b>3.65</b>	77.00	79.30	<b>78.15</b>	8.20	8.80	<b>8.50</b>
<b>AVT-II (Kharif 2009)</b>																
2	IC107989	11.20	11.90	<b>11.55</b>	5.10	5.00	<b>5.05</b>	2.70	2.30	<b>2.50</b>	61.00	72.30	<b>66.65</b>	7.90	8.60	<b>8.25</b>
3	IC108499	12.40	12.80	<b>12.60</b>	5.60	5.10	<b>5.35</b>	2.80	2.50	<b>2.65</b>	83.00	86.30	<b>84.65</b>	9.80	9.60	<b>9.70</b>
4	IC108500	11.80	11.70	<b>11.75</b>	6.80	7.00	<b>6.90</b>	2.10	1.90	<b>2.00</b>	63.00	55.80	<b>59.40</b>	9.50	9.80	<b>9.65</b>
<b>Promising germplasm genotypes (Kharif 2009)</b>																
5	IC036919	12.90	13.10	<b>13.00</b>	4.60	5.20	<b>4.90</b>	3.10	3.40	<b>3.25</b>	84.00	95.50	<b>89.75</b>	7.80	9.70	<b>8.75</b>
6	IC037290	12.90	10.70	<b>11.80</b>	4.70	5.00	<b>4.85</b>	2.40	2.70	<b>2.55</b>	88.00	85.60	<b>86.80</b>	9.20	9.10	<b>9.15</b>
7	IC042424	11.60	11.40	<b>11.50</b>	5.80	6.40	<b>6.10</b>	3.30	3.80	<b>3.55</b>	88.00	98.50	<b>93.25</b>	8.20	8.50	<b>8.35</b>
8	IC049671	12.20	12.70	<b>12.45</b>	5.10	5.60	<b>5.35</b>	2.90	3.00	<b>2.95</b>	83.00	89.50	<b>86.25</b>	9.20	9.70	<b>9.45</b>
9	IC107619	12.70	12.30	<b>12.50</b>	5.80	6.20	<b>6.00</b>	3.10	2.60	<b>2.85</b>	69.00	68.40	<b>68.70</b>	8.40	8.90	<b>8.65</b>
10	IC107994	13.80	13.40	<b>13.60</b>	6.50	6.90	<b>6.70</b>	2.80	2.90	<b>2.85</b>	88.00	93.40	<b>90.70</b>	9.30	9.20	<b>9.25</b>
11	IC108519	11.00	11.20	<b>11.10</b>	4.80	4.10	<b>4.45</b>	2.80	3.00	<b>2.90</b>	78.00	82.00	<b>80.00</b>	9.10	9.30	<b>9.20</b>
<b>IVT (Kharif 2010)</b>																
12	IC109728	11.10	11.30	<b>11.20</b>	4.60	4.20	<b>4.40</b>	3.10	3.00	<b>3.05</b>	83.00	89.90	<b>86.45</b>	9.40	9.40	<b>9.40</b>
13	IC109729	12.80	12.30	<b>12.55</b>	5.10	4.80	<b>4.95</b>	2.70	2.40	<b>2.55</b>	78.00	84.50	<b>81.25</b>	8.80	9.30	<b>9.05</b>
	<b>Himpriya (C)</b>	11.80	12.00	<b>11.90</b>	4.60	4.20	<b>4.40</b>	2.30	2.50	<b>2.40</b>	63.00	53.30	<b>58.15</b>	9.40	9.20	<b>9.30</b>
	<b>Reshwal (IC485355)(C)</b>	12.40	12.80	<b>12.60</b>	4.40	4.20	<b>4.30</b>	2.80	2.70	<b>2.75</b>	71.00	70.00	<b>70.50</b>	9.70	10.00	<b>9.85</b>
	<b>Shimla B-1 (C)</b>	11.40	10.90	<b>11.15</b>	4.70	4.30	<b>4.50</b>	2.80	3.00	<b>2.90</b>	61.00	57.80	<b>59.40</b>	8.10	8.30	<b>8.20</b>
	<b>PRB-1</b>	11.20	11.40	<b>11.30</b>	3.50	3.70	<b>3.60</b>	2.30	2.00	<b>2.15</b>	87.00	94.30	<b>90.65</b>	9.60	9.90	<b>9.75</b>
	<b>VL-7</b>	12.60	12.80	<b>12.70</b>	3.60	3.70	<b>3.65</b>	2.50	2.30	<b>2.40</b>	62.00	59.30	<b>60.65</b>	9.80	9.50	<b>9.65</b>
	<b>Minimum</b>	<b>11.00</b>	<b>10.70</b>	<b>11.10</b>	<b>4.40</b>	<b>4.10</b>	<b>4.30</b>	<b>2.30</b>	<b>2.40</b>	<b>2.40</b>	<b>61.00</b>	<b>53.30</b>	<b>58.15</b>	<b>7.80</b>	<b>8.30</b>	<b>8.20</b>
	<b>Maximum</b>	<b>13.80</b>	<b>13.40</b>	<b>13.60</b>	<b>6.50</b>	<b>6.90</b>	<b>6.70</b>	<b>3.30</b>	<b>3.80</b>	<b>3.55</b>	<b>88.00</b>	<b>98.50</b>	<b>93.25</b>	<b>9.70</b>	<b>10.00</b>	<b>9.85</b>
	<b>Mean</b>	<b>12.22</b>	<b>12.01</b>	<b>12.11</b>	<b>5.06</b>	<b>5.09</b>	<b>5.08</b>	<b>2.84</b>	<b>2.92</b>	<b>2.88</b>	<b>77.83</b>	<b>80.70</b>	<b>79.27</b>	<b>8.88</b>	<b>9.22</b>	<b>9.05</b>

Seed supply by NBPGR RS Shimla at Palampur and Hisar



**Table 134: Quality parameters of promising germplasm genotypes in chenopodium (Kharif 2009) - Hills**

S. No.	Genotypes	Crude protein (%)			Fe (mg/100g)			Zn (mg/100 g)			Ca (mg/100 g)			Crude fibre (%)		
		Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean
1	IC106340	14.20	14.00	<b>14.10</b>	9.70	9.80	<b>9.75</b>	2.40	2.90	<b>2.65</b>	270.00	261.90	<b>265.95</b>	10.70	10.40	<b>10.55</b>
2	IC107185	15.20	14.90	<b>15.05</b>	13.80	14.40	<b>14.10</b>	2.50	2.20	<b>2.35</b>	272.00	262.90	<b>267.45</b>	9.10	8.60	<b>8.85</b>
3	IC107296	15.00	14.40	<b>14.70</b>	13.60	14.10	<b>13.85</b>	3.10	2.70	<b>2.90</b>	314.00	323.80	<b>318.90</b>	9.60	9.30	<b>9.45</b>
4	IC107535	17.00	16.80	<b>16.90</b>	11.40	11.30	<b>11.35</b>	2.80	2.50	<b>2.65</b>	290.00	281.20	<b>285.60</b>	10.30	10.50	<b>10.40</b>
5	IC107585	16.10	15.80	<b>15.95</b>	12.20	11.90	<b>12.05</b>	3.20	3.00	<b>3.10</b>	291.00	283.00	<b>287.00</b>	6.10	6.40	<b>6.25</b>
6	IC108087	15.80	15.80	<b>15.80</b>	14.20	13.70	<b>13.95</b>	2.80	2.20	<b>2.50</b>	306.00	293.10	<b>299.55</b>	9.60	9.30	<b>9.45</b>
7	IC108816	18.20	17.60	<b>17.90</b>	10.30	10.80	<b>10.55</b>	2.70	2.20	<b>2.45</b>	281.00	290.40	<b>285.70</b>	9.80	9.20	<b>9.50</b>
8	IC108818	14.20	13.60	<b>13.90</b>	13.80	11.00	<b>12.40</b>	2.60	2.20	<b>2.40</b>	298.00	282.50	<b>290.25</b>	10.10	6.70	<b>8.40</b>
9	IC274533	15.00	14.40	<b>14.70</b>	13.80	14.10	<b>13.95</b>	2.80	2.50	<b>2.65</b>	311.00	311.20	<b>311.10</b>	6.10	10.10	<b>8.10</b>
10	IC341705	16.80	16.20	<b>16.50</b>	11.20	11.70	<b>11.45</b>	2.20	2.40	<b>2.30</b>	293.00	283.70	<b>288.35</b>	9.70	9.10	<b>9.40</b>
11	IC415403	15.80	15.30	<b>15.55</b>	13.10	13.20	<b>13.15</b>	2.80	2.20	<b>2.50</b>	263.00	267.50	<b>265.25</b>	10.10	9.50	<b>9.80</b>
12	IC415477	15.50	15.30	<b>15.40</b>	8.40	8.10	<b>8.25</b>	2.50	2.20	<b>2.35</b>	281.00	273.70	<b>277.35</b>	9.70	9.00	<b>9.35</b>
13	EC507744	16.10	15.50	<b>15.80</b>	8.30	8.10	<b>8.20</b>	2.80	2.20	<b>2.50</b>	292.00	291.80	<b>291.90</b>	7.40	7.40	<b>7.40</b>
	<b>EC507741 (C)</b>	15.30	14.90	<b>15.10</b>	8.40	7.70	<b>8.05</b>	2.80	2.40	<b>2.60</b>	261.00	256.80	<b>258.90</b>	8.70	9.30	<b>9.00</b>
	<b>PRC-9801 (C)</b>	16.80	16.20	<b>16.50</b>	13.20	14.00	<b>13.60</b>	2.10	2.10	<b>2.10</b>	301.00	313.40	<b>307.20</b>	9.70	9.90	<b>9.80</b>
	<b>NIC-22503 (C)</b>	16.70	16.20	<b>16.45</b>	10.40	9.90	<b>10.15</b>	2.90	2.40	<b>2.65</b>	272.00	278.60	<b>275.30</b>	8.80	8.30	<b>8.55</b>
	<b>Minimum</b>	<b>14.20</b>	<b>13.60</b>	<b>13.90</b>	<b>8.30</b>	<b>7.70</b>	<b>8.05</b>	<b>2.10</b>	<b>2.10</b>	<b>2.10</b>	<b>261.00</b>	<b>256.80</b>	<b>258.90</b>	<b>6.10</b>	<b>6.40</b>	<b>6.25</b>
	<b>Maximum</b>	<b>18.20</b>	<b>17.60</b>	<b>17.90</b>	<b>14.20</b>	<b>14.40</b>	<b>14.10</b>	<b>3.20</b>	<b>3.00</b>	<b>3.10</b>	<b>314.00</b>	<b>323.80</b>	<b>318.90</b>	<b>10.70</b>	<b>10.50</b>	<b>10.55</b>
	<b>Mean</b>	<b>15.86</b>	<b>15.43</b>	<b>15.64</b>	<b>11.61</b>	<b>11.49</b>	<b>11.55</b>	<b>2.69</b>	<b>2.39</b>	<b>2.54</b>	<b>287.25</b>	<b>284.72</b>	<b>285.98</b>	<b>9.09</b>	<b>8.94</b>	<b>9.02</b>

*Seed supply by NBPGR RS Shimla at Palampur and Hisar*

**Table 135: Quality parameters of promising germplasm genotypes in adzuki bean (Kharif 2009) - Hills**

S. No.	Genotypes	Crude protein (%)			Ca (mg/100 g)			Fe (mg/ 100 g)			Zn (mg/100 g)		
		Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean
1	EC030256	23.70	23.60	<b>23.65</b>	335.00	329.30	<b>332.15</b>	9.10	8.50	<b>8.80</b>	3.70	3.90	<b>3.80</b>
2	EC034625	22.60	22.30	<b>22.45</b>	318.00	321.80	<b>319.90</b>	7.60	7.80	<b>7.70</b>	4.10	4.10	<b>4.10</b>
3	EC290251	21.20	21.40	<b>21.30</b>	311.00	315.30	<b>313.15</b>	8.10	7.80	<b>7.95</b>	3.30	2.80	<b>3.05</b>
4	EC290652	21.90	21.60	<b>21.75</b>	342.00	336.50	<b>339.25</b>	8.40	8.10	<b>8.25</b>	3.70	3.30	<b>3.50</b>
5	EC340246	22.80	22.80	<b>22.80</b>	315.00	322.00	<b>318.50</b>	8.10	8.20	<b>8.15</b>	3.10	3.40	<b>3.25</b>
6	EC340249	23.30	23.20	<b>23.25</b>	330.00	338.90	<b>334.45</b>	8.80	8.50	<b>8.65</b>	3.40	3.00	<b>3.20</b>
7	IC341946	21.30	20.50	<b>20.90</b>	330.00	320.30	<b>325.15</b>	10.20	9.50	<b>9.85</b>	2.80	3.10	<b>2.95</b>
8	IC341948	22.30	21.80	<b>22.05</b>	334.00	335.20	<b>334.60</b>	8.10	7.80	<b>7.95</b>	2.80	2.90	<b>2.85</b>
	<b>HPU-51 (C)</b>	24.30	23.60	<b>23.95</b>	309.00	301.80	<b>305.40</b>	7.80	7.20	<b>7.50</b>	2.70	2.60	<b>2.65</b>
	<b>Totru Local (C)</b>	23.80	23.80	<b>23.80</b>	310.00	300.80	<b>305.40</b>	6.80	6.50	<b>6.65</b>	3.60	3.50	<b>3.55</b>
	<b>Minimum</b>	<b>21.20</b>	<b>20.50</b>	<b>20.90</b>	<b>309.00</b>	<b>300.80</b>	<b>305.40</b>	<b>6.80</b>	<b>6.50</b>	<b>6.65</b>	<b>2.70</b>	<b>2.60</b>	<b>2.65</b>
	<b>Maximum</b>	<b>24.30</b>	<b>23.80</b>	<b>23.95</b>	<b>342.00</b>	<b>338.90</b>	<b>339.25</b>	<b>10.20</b>	<b>9.50</b>	<b>9.85</b>	<b>4.10</b>	<b>4.10</b>	<b>4.10</b>
	<b>Mean</b>	<b>22.72</b>	<b>22.46</b>	<b>22.59</b>	<b>323.40</b>	<b>322.19</b>	<b>322.80</b>	<b>8.30</b>	<b>7.99</b>	<b>8.15</b>	<b>3.32</b>	<b>3.26</b>	<b>3.29</b>

*Seed supply by NBPGR RS Shimla at Palampur and Hisar*

S. No.	Genotypes	Tannins (mg/100g)			Cooking quality (min.)			Crude fibre (%)		
		Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean
1	EC030256	521.00	510.00	<b>515.50</b>	47.00	46.00	<b>46.50</b>	4.80	4.90	<b>4.85</b>
2	EC034625	670.00	685.00	<b>677.50</b>	43.00	41.00	<b>42.00</b>	4.70	4.50	<b>4.60</b>
3	EC290251	481.00	470.00	<b>475.50</b>	46.00	44.00	<b>45.00</b>	4.90	4.70	<b>4.80</b>
4	EC290652	682.00	685.00	<b>683.50</b>	47.00	45.00	<b>46.00</b>	5.40	5.70	<b>5.55</b>
5	EC340246	698.00	722.00	<b>710.00</b>	42.00	42.00	<b>42.00</b>	4.90	4.40	<b>4.65</b>
6	EC340249	622.00	609.00	<b>615.50</b>	42.00	43.00	<b>42.50</b>	5.40	5.40	<b>5.40</b>
7	IC341946	634.00	641.00	<b>637.50</b>	41.00	40.00	<b>40.50</b>	5.30	5.30	<b>5.30</b>
8	IC341948	821.00	832.00	<b>826.50</b>	40.00	39.00	<b>39.50</b>	5.50	5.10	<b>5.30</b>
	<b>HPU-51 (C)</b>	677.00	681.00	<b>679.00</b>	44.00	45.00	<b>44.50</b>	4.90	4.70	<b>4.80</b>
	<b>Totru Local (C)</b>	581.00	571.00	<b>576.00</b>	45.00	46.00	<b>45.50</b>	5.30	5.60	<b>5.45</b>
	<b>Minimum</b>	<b>481.00</b>	<b>470.00</b>	<b>475.50</b>	<b>40.00</b>	<b>39.00</b>	<b>39.50</b>	<b>4.70</b>	<b>4.40</b>	<b>4.60</b>
	<b>Maximum</b>	<b>821.00</b>	<b>832.00</b>	<b>826.50</b>	<b>47.00</b>	<b>46.00</b>	<b>46.50</b>	<b>5.50</b>	<b>5.70</b>	<b>5.55</b>
	<b>Mean</b>	<b>638.70</b>	<b>640.60</b>	<b>639.65</b>	<b>43.70</b>	<b>43.10</b>	<b>43.40</b>	<b>5.11</b>	<b>5.03</b>	<b>5.07</b>

**Table 136: Quality parameters in IVT & AVT and promising germplasm genotypes of rice bean - Hills**

S. No.	Genotypes	Crude protein (%)			Crude fibre (%)			Ca (mg/100 g)			Fe (mg/100 g)			Zn (mg/100 g)			Tannin mg/100 g)			Cooking quality (min.)		
		Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean	Hisar	Palampur	Mean
<b>IVT (Kharif 2009)</b>																						
1	VRB-3	20.10	19.30	<b>19.70</b>	5.80	6.60	<b>6.20</b>	351.00	340.00	<b>345.50</b>	3.90	4.20	<b>4.05</b>	3.20	3.10	<b>3.15</b>	586.00	630.00	<b>608.00</b>	46.00	45.00	<b>45.50</b>
<b>AVT-I (Kharif 2009)</b>																						
2	BC-1	19.30	19.70	<b>19.50</b>	5.80	5.90	<b>5.85</b>	341.00	333.50	<b>337.25</b>	7.40	7.90	<b>7.65</b>	3.80	3.80	<b>3.80</b>	511.00	510.00	<b>510.50</b>	54.00	53.00	<b>53.50</b>
3	LRB-160	18.30	17.50	<b>17.90</b>	5.10	5.70	<b>5.40</b>	358.00	364.00	<b>361.00</b>	5.50	5.40	<b>5.45</b>	3.70	3.80	<b>3.75</b>	527.00	520.00	<b>523.50</b>	50.00	48.00	<b>49.00</b>
4	LRB-460	20.60	20.10	<b>20.35</b>	5.90	5.20	<b>5.55</b>	312.00	302.00	<b>307.00</b>	5.70	5.30	<b>5.50</b>	3.10	2.70	<b>2.90</b>	542.00	530.00	<b>536.00</b>	54.00	54.00	<b>54.00</b>
5	RL-3	18.80	18.40	<b>18.60</b>	5.30	5.90	<b>5.60</b>	362.00	353.30	<b>357.65</b>	5.30	5.70	<b>5.50</b>	3.80	4.10	<b>3.95</b>	593.00	570.00	<b>581.50</b>	48.00	47.00	<b>47.50</b>
<b>Germplasm (Kharif 2009)</b>																						
6	LRB-10	18.90	19.60	<b>19.25</b>	6.30	6.30	<b>6.30</b>	321.00	311.30	<b>316.15</b>	5.20	5.80	<b>5.50</b>	2.60	2.50	<b>2.55</b>	533.00	530.00	<b>531.50</b>	44.00	42.00	<b>43.00</b>
7	LRB-311	18.40	17.70	<b>18.05</b>	6.10	6.50	<b>6.30</b>	318.00	315.8	<b>318.00</b>	5.80	6.50	<b>6.15</b>	3.10	3.30	<b>3.20</b>	582.00	560.00	<b>571.00</b>	51.00	53.00	<b>52.00</b>
8	LRB-448	19.20	19.70	<b>19.45</b>	5.30	5.10	<b>5.20</b>	315.00	302.80	<b>308.90</b>	6.40	6.30	<b>6.35</b>	3.80	3.40	<b>3.60</b>	592.00	620.00	<b>606.00</b>	47.00	49.00	<b>48.00</b>
9	LRB-452	18.40	18.20	<b>18.30</b>	6.10	6.20	<b>6.15</b>	368.00	354.80	<b>361.40</b>	8.80	9.10	<b>8.95</b>	4.10	4.50	<b>4.30</b>	562.00	540.00	<b>551.00</b>	53.00	53.00	<b>53.00</b>
10	LRB-467	21.60	21.00	<b>21.30</b>	5.20	4.80	<b>5.00</b>	352.00	345.00	<b>348.50</b>	5.10	4.60	<b>4.85</b>	3.80	3.20	<b>3.50</b>	574.00	560.00	<b>567.00</b>	51.00	53.00	<b>52.00</b>
<b>IVT (Kharif 2010)</b>																						
11	IC141077	20.10	19.60	<b>19.85</b>	5.90	5.70	<b>5.80</b>	358.00	307.00	<b>332.50</b>	6.20	6.20	<b>6.20</b>	2.80	2.50	<b>2.65</b>	592.00	610.00	<b>601.00</b>	48.00	46.00	<b>47.00</b>
12	IC563980	19.60	18.80	<b>19.20</b>	5.10	4.60	<b>4.85</b>	345.00	325.80	<b>335.40</b>	5.70	6.50	<b>6.10</b>	3.10	2.90	<b>3.00</b>	587.00	560.00	<b>573.50</b>	49.00	48.00	<b>48.50</b>
	<b>PRR-1 (C)</b>	19.10	18.80	<b>18.95</b>	5.30	5.50	<b>5.40</b>	325.00	318.30	<b>321.65</b>	3.60	4.00	<b>3.80</b>	4.10	3.60	<b>3.85</b>	601.00	650.00	<b>625.50</b>	55.00	56.00	<b>55.50</b>
	<b>PRR-2 (C)</b>	18.40	17.70	<b>18.05</b>	5.10	4.80	<b>4.95</b>	376.00	383.00	<b>379.50</b>	4.40	4.60	<b>4.50</b>	4.00	4.20	<b>4.10</b>	613.00	630.00	<b>621.50</b>	55.00	56.00	<b>55.50</b>
	<b>Minimum</b>	<b>18.30</b>	<b>17.50</b>	<b>17.90</b>	<b>5.10</b>	<b>4.60</b>	<b>4.85</b>	<b>312.00</b>	<b>302.00</b>	<b>307.00</b>	<b>3.60</b>	<b>4.00</b>	<b>3.80</b>	<b>2.60</b>	<b>2.50</b>	<b>2.55</b>	<b>511.00</b>	<b>510.00</b>	<b>510.50</b>	<b>44.00</b>	<b>42.00</b>	<b>43.00</b>
	<b>Maximum</b>	<b>21.60</b>	<b>21.00</b>	<b>21.30</b>	<b>6.30</b>	<b>6.50</b>	<b>6.30</b>	<b>376.00</b>	<b>383.00</b>	<b>379.50</b>	<b>8.80</b>	<b>9.10</b>	<b>8.95</b>	<b>4.10</b>	<b>4.50</b>	<b>4.30</b>	<b>613.00</b>	<b>650.00</b>	<b>625.50</b>	<b>55.00</b>	<b>56.00</b>	<b>55.50</b>
	<b>Mean</b>	<b>19.28</b>	<b>18.98</b>	<b>19.13</b>	<b>5.58</b>	<b>5.55</b>	<b>5.57</b>	<b>342.38</b>	<b>333.40</b>	<b>337.30</b>	<b>5.78</b>	<b>5.99</b>	<b>5.88</b>	<b>3.52</b>	<b>3.42</b>	<b>3.47</b>	<b>569.92</b>	<b>568.46</b>	<b>569.19</b>	<b>50.69</b>	<b>50.62</b>	<b>50.65</b>

Seed supply by NBPGR RS Shimla at Palampur and Hisar

**Table 137. Quality parameters in IVT of grain amaranth (Rabi 2009-10) - Plains**

S. No.	Genotypes	Protein (%)			Rahuri		Hisar		
		Hisar	Rahuri	Mean	Iron (Fe) (mg/100 g)	Calcium (Ca) (mg/100 g)	Oil (%)	Ash (D.M.) (%)	Moisture (%)
1	BGA-18	-	11.80	<b>11.80</b>	7.69	364.88	-	-	-
2	BGA-19	-	11.06	<b>11.06</b>	6.53	400.19	-	-	-
3	BGA-27	10.30	12.50	<b>11.40</b>	5.91	402.78	6.00	1.50	9.30
4	MGA-3	-	10.33	<b>10.33</b>	7.09	418.11	-	-	-
5	MGA-4	-	10.62	<b>10.62</b>	6.39	503.17	-	-	-
6	RGA-2	12.10	11.06	<b>11.58</b>	5.64	212.50	4.40	1.32	9.90
7	RGAS-08-10	12.00	14.76	<b>13.38</b>	6.79	395.00	5.50	1.30	10.10
8	RGAS-08-14	-	13.25	<b>13.25</b>	5.48	286.43	-	-	-
9	RGAS-08-17	12.30	14.00	<b>13.15</b>	5.20	381.73	5.90	1.54	9.70
10	RGAS-92-10-1	-	14.76	<b>14.76</b>	7.03	442.83	-	-	-
11	RMA-37	12.70	11.06	<b>11.88</b>	5.48	444.91	4.60	1.32	10.30
12	RMA-38	12.30	12.50	<b>12.40</b>	5.46	416.98	4.60	1.40	11.00
13	SKNA-707	12.20	12.50	<b>12.35</b>	5.97	202.50	4.10	1.30	9.40
14	SKNA-717	12.60	11.06	<b>11.83</b>	6.41	221.32	6.60	1.45	9.50
15	SKNA-719	12.10	14.00	<b>13.05</b>	6.93	366.38	4.80	1.36	9.40
	<b>BGA-2 (C)</b>	11.60	13.25	<b>12.43</b>	6.14	301.67	5.10	1.42	11.20
	<b>GA-1 (C)</b>	-	10.33	<b>10.33</b>	5.43	264.25	-	-	-
	<b>GA-2 (C)</b>	11.80	11.51	<b>11.66</b>	5.03	255.79	4.90	1.38	10.20
	<b>Suvarna (C)</b>	12.50	12.50	<b>12.50</b>	6.88	260.26	4.70	1.58	10.50
	<b>Minimum</b>	<b>10.30</b>	<b>10.33</b>	<b>10.33</b>	<b>5.03</b>	<b>202.50</b>	<b>4.10</b>	<b>1.30</b>	<b>9.30</b>
	<b>Maximum</b>	<b>12.70</b>	<b>14.76</b>	<b>14.76</b>	<b>7.69</b>	<b>503.17</b>	<b>6.60</b>	<b>1.58</b>	<b>11.20</b>
	<b>Mean</b>	<b>12.04</b>	<b>12.26</b>	<b>12.09</b>	<b>6.18</b>	<b>344.30</b>	<b>5.10</b>	<b>1.41</b>	<b>10.04</b>

*Seed supply - used their own seed*

**Table 138. Quality parameters in AVT of grain amaranth (Rabi 2009-10) - Hisar**

S. No.	Genotypes	Protein (%)	Oil (%)	Ash (D.M.) (%)	Moisture (%)
<b>AVT-I</b>					
1	BGA-06	11.50	5.00	1.33	10.60
2	BGA-07	12.40	5.40	1.42	9.70
3	BGA-10	12.20	5.00	1.43	11.60
4	BGA-11	13.00	5.10	1.49	10.10
5	BGA-12	13.20	5.30	1.52	11.30
6	BGA-15	12.90	5.80	1.33	9.40
7	IC415243	11.40	6.40	1.41	10.60
8	IC415282	11.40	6.10	1.46	10.20
9	IC515387	11.80	6.30	1.51	9.20
10	IC515448	11.80	5.00	1.36	10.50
11	RMA-22	10.10	4.60	1.37	10.10
12	RMA-30	12.60	4.10	1.50	10.20
<b>AVT-II</b>					
13	SKNA-501	11.40	5.60	1.34	9.50
14	SKNA-502	11.30	3.90	1.19	10.60
15	SKNA-503	11.20	4.30	1.25	10.50
16	SKNA-504	11.60	5.00	1.42	11.00
	<b>BGA-2 (C)</b>	11.50	5.25	1.36	10.95
	<b>GA-1 (C)</b>	12.10	5.25	1.39	11.10
	<b>GA-2 (C)</b>	11.50	4.95	1.48	10.65
	<b>Suvarna (C)</b>	11.55	6.20	1.51	10.75
	<b>Minimum</b>	<b>10.10</b>	<b>3.90</b>	<b>1.19</b>	<b>9.20</b>
	<b>Maximum</b>	<b>13.20</b>	<b>6.40</b>	<b>1.52</b>	<b>11.60</b>
	<b>Mean</b>	<b>11.82</b>	<b>5.23</b>	<b>1.40</b>	<b>10.43</b>

*Seed supply - used their own seed*

**Table 139: Quality parameters in promising germplasm genotypes of grain amaranth (Rabi 2009-10) - Rahuri**

S. No.	Genotypes	Protein (%)	Iron (Fe) (mg/100 g)	Calcium (Ca) (mg/100 g)
1	SKGPA-1	13.25	7.72	476.40
2	SKGPA-2	13.08	7.82	329.40
3	SKGPA-3	12.20	7.27	359.60
4	SKGPA-4	11.30	4.65	273.00
5	SKGPA-5	10.56	6.11	325.20
6	SKGPA-6	13.08	5.54	403.80
7	SKGPA-7	13.99	4.60	349.80
8	SKGPA-8	11.30	5.89	389.00
9	SKGPA-9	13.08	6.89	268.60
10	SKGPA-10	11.30	5.32	462.60
11	SKGPA-11	13.69	7.85	359.20
12	SKGPA-12	13.52	5.03	240.80
13	SKGPA-13	13.08	6.91	456.80
14	SKGPA-14	12.20	7.70	312.80
15	SKGPA-15	11.30	7.90	448.20
16	SKGPA-16	12.34	5.21	453.00
17	SKGPA-17	10.91	2.49	352.68
18	SKGPA-18	13.08	7.85	259.80
19	SKGPA-19	12.30	4.18	267.40
20	SKGPA-20	11.30	6.65	296.00
21	SKGPA-21	12.30	7.68	299.60
22	SKGPA-22	11.30	7.55	491.00
23	SKGPA-23	13.17	7.60	489.40
24	SKGPA-24	11.30	5.40	288.00
25	SKGPA-25	13.08	6.75	482.60
26	SKGPA-26	11.30	5.65	482.20
27	SKGPA-27	12.30	5.26	518.20
28	SKGPA-28	13.08	4.68	290.40
29	SKGPA-29	12.90	5.17	343.20
30	SKGPA-30	12.10	5.03	373.60
31	SKGPA-31	12.50	6.61	382.80
32	SKGPA-32	12.50	7.75	245.20
33	SKGPA-33	11.30	7.56	331.20
34	SKGPA-34	12.80	7.87	258.20
35	SKGPA-35	12.50	6.50	445.20
36	SKGPA-36	12.10	5.09	470.80
37	SKGPA-37	12.10	5.12	350.40
38	SKGPA-38	13.50	4.31	336.60
39	SKGPA-39	12.90	5.40	405.20
40	SKGPA-40	12.50	4.98	259.40
41	SKGPA-41	12.90	4.94	318.40
42	SKGPA-42	11.30	6.51	513.00
43	SKGPA-43	10.84	7.03	517.20
44	SKGPA-44	10.20	7.96	265.60

S. No.	Genotypes	Protein (%)	Iron (Fe) (mg/100 g)	Calcium (Ca) (mg/100 g)
45	SKGPA-45	12.30	7.84	506.20
46	SKGPA-46	13.05	6.45	404.60
47	SKGPA-47	12.90	7.72	475.20
48	SKGPA-48	13.10	6.90	393.20
49	SKGPA-49	13.70	7.31	384.20
50	SKGPA-50	10.66	5.53	374.60
51	SKGPA-51	12.30	6.36	397.80
52	SKGPA-52	13.10	5.31	414.20
53	SKGPA-53	13.90	7.55	305.20
54	SKGPA-54	10.73	7.84	402.20
55	SKGPA-55	12.39	6.93	479.20
56	SKGPA-56	10.91	6.73	482.00
57	BGA-27	10.70	4.40	503.00
58	BGA-28	13.60	7.89	476.20
59	BGA-29	10.08	7.06	441.80
60	BGA-30	10.91	7.66	527.00
61	BGA-31	10.91	7.98	513.80
62	BGA-32	12.20	7.94	503.40
63	BGA-33	10.84	6.18	506.40
64	BGA-34	12.08	7.61	394.60
65	BGA-35	13.69	6.78	288.80
66	BGA-36	12.21	7.00	287.20
67	BGA-37	10.91	7.04	305.00
68	BGA-38	10.73	7.70	261.20
69	BGA-39	13.04	6.54	263.20
70	BGA-40	13.86	7.73	292.20
71	BGA-41	10.78	6.83	252.60
72	BGA-42	12.39	7.94	261.40
73	BGA-43	10.91	6.87	525.80
74	BGA-44	12.39	7.59	259.60
75	BGA-45	10.26	6.74	271.60
76	BGA-46	10.08	7.69	293.40
77	BGA-47	10.43	7.45	278.20
78	BGA-48	10.26	6.66	259.80
79	BGA-49	12.21	4.71	232.60
80	BGA-50	12.39	5.53	235.60
81	BGA-51	12.69	4.88	274.20
82	MGA-5	12.21	7.16	285.00
83	MGA-6	13.04	7.76	246.00
84	MGA-7	12.39	7.51	258.00
85	MGA-9	10.91	7.58	339.80
86	MGA-11	10.91	7.21	271.40
87	MGA-14	12.39	6.25	264.80
	<b>Minimum</b>	<b>10.08</b>	<b>4.18</b>	<b>232.60</b>
	<b>Maximum</b>	<b>13.99</b>	<b>7.98</b>	<b>527.00</b>
	<b>Mean</b>	<b>12.08</b>	<b>6.55</b>	<b>363.61</b>

*Seed supply - used their own seed*



**Table 140: Quality parameters in AVT of rice bean (Kharif 2009) - Hisar**

S. No.	Genotypes	Protein (%)	Cooking time (min.)	Tannin (mg/100 g)	Ca (mg/100 g)	Fe (mg/100 g)	Zn (mg/100 g)
<b>AVT-I</b>							
1	BRB-20	18.40	54.00	573.00	323.00	5.30	3.30
2	RL-3	18.30	51.00	578.00	327.00	5.80	3.20
3	LRB-160	19.10	52.00	513.00	336.00	5.10	3.30
4	LRB-324	19.60	53.00	521.00	329.00	5.40	3.70
5	LRB-470	20.70	50.00	517.00	332.00	5.80	3.20
<b>AVT-II</b>							
6	LRB-141	19.00	55.00	617.00	317.00	5.10	3.40
7	LRB-189	18.90	54.00	611.00	309.00	5.90	3.70
8	LRB-193	19.50	52.00	617.00	311.00	5.40	3.80
9	LRB-218	19.20	54.00	589.00	305.00	5.80	3.70
10	LRB-460	19.40	48.00	521.00	310.00	5.10	3.30
	<b>RBL-1 (C)</b>	19.55	51.50	607.50	324.50	5.25	3.75
	<b>RBL-35 (C)</b>	18.90	50.00	571.00	311.00	5.70	3.20
	<b>RBL-6 (C)</b>	19.95	50.00	594.00	319.50	5.20	3.50
	<b>RBL-50 (C)</b>	18.70	53.00	582.00	305.00	5.55	3.60
	<b>Minimum</b>	<b>18.30</b>	<b>48.00</b>	<b>513.00</b>	<b>305.00</b>	<b>5.10</b>	<b>3.20</b>
	<b>Maximum</b>	<b>20.70</b>	<b>55.00</b>	<b>617.00</b>	<b>336.00</b>	<b>5.90</b>	<b>3.80</b>
	<b>Mean</b>	<b>19.23</b>	<b>51.96</b>	<b>572.25</b>	<b>318.50</b>	<b>5.46</b>	<b>3.48</b>

*Seed supply - used their own seed*

**Table 141: Quality parameters in promising germplasm genotypes of rice bean (Kharif 2010) - Rahuri**

S. No.	Genotypes	Protein (%)	S. No.	Genotypes	Protein (%)
1	LRB-311	15.41	28	LRB-473	18.52
2	LRB-319	16.71	29	LRB-474	15.41
3	LRB-322	16.71	30	LRB-475	15.41
4	LRB-324	21.47	31	LRB-476	15.89
5	LRB-325	18.19	32	LRB-477	16.06
6	LRB-446	16.71	33	LRB-478	18.19
7	LRB-447	17.86	34	LRB-479	17.86
8	LRB-448	18.19	35	LRB-480	19.17
9	LRB-449	18.16	36	LRB-481	18.19
10	LRB-452	17.86	37	LRB-482	15.89
11	LRB-455	19.17	38	LRB-483	16.71
12	LRB-456	18.84	39	LRB-484	17.86
13	LRB-457	19.17	40	LRB-487	18.19
14	LRB-458	18.19	41	LRB-488	18.52
15	LRB-459	18.16	42	LRB-489	18.19
16	LRB-460	18.19	43	LRB-490	21.47
17	LRB-461	18.16	44	LRB-491	17.86
18	LRB-462	16.71	45	LRB-492	15.89
19	LRB-463	21.24	46	LRB-493	15.41
20	LRB-464	18.16	47	LRB-495	17.86
21	LRB-465	19.17	48	LRB-496	18.19
22	LRB-466	18.19	49	LRB-497	18.52
23	LRB-467	21.47	50	LRB-498	15.89
24	LRB-468	20.65		<b>RBL-1 (C)</b>	16.71
25	LRB-470	15.89		<b>RBL-6 (C)</b>	15.06
26	LRB-471	15.41		<b>RBL-35 (C)</b>	16.06
27	LRB-472	15.89		<b>RBL-50 (C)</b>	15.89
				<b>Minimum</b>	<b>15.41</b>
				<b>Maximum</b>	<b>21.47</b>
				<b>Mean</b>	<b>17.69</b>

*Seed supply - used their own seed*

**Table 142: Quality parameter in rice bean (FYT) from Hisar**

S. No.	Genotypes	Protein (%)	Cooking time (min.)	Tannin (mg/100 g)	Ca (mg/100 g)	Fe (mg/100 g)	Zn (mg/100 g)
1	ST-3	17.40	54.00	577.00	298.00	5.60	3.30
2	ST-4	18.70	54.00	571.00	287.00	5.40	3.50
3	ST-8	20.10	53.00	602.00	311.00	5.40	3.70
4	ST-12	18.90	54.00	598.00	301.00	5.70	3.40
5	ST-13	18.60	54.00	606.00	312.00	5.50	3.10
6	HRB-446	19.40	52.00	602.00	312.00	5.50	3.70
7	HRB-493	20.60	50.00	612.00	307.00	5.10	3.20
	<b>RBL-1(C)</b>	19.40	52.00	597.00	319.00	5.60	3.80
	<b>RBL-35(C)</b>	19.60	51.00	577.00	307.00	5.70	3.40
	<b>RBL-50(C)</b>	19.20	52.00	581.00	304.00	5.60	3.30
	<b>Minimum</b>	<b>17.40</b>	<b>50.00</b>	<b>571.00</b>	<b>287.00</b>	<b>5.10</b>	<b>3.10</b>
	<b>Maximum</b>	<b>20.60</b>	<b>54.00</b>	<b>612.00</b>	<b>319.00</b>	<b>5.70</b>	<b>3.80</b>
	<b>Mean</b>	<b>19.19</b>	<b>52.60</b>	<b>592.30</b>	<b>305.80</b>	<b>5.51</b>	<b>3.44</b>

**Table 143: Quality parameters in rice bean (SST) from Hisar**

S. No.	Genotypes	Protein (%)	Cooking time (min.)	Tannin (mg/100 g)	Ca (mg/100 g)	Fe (mg/100 g)	Zn (mg/100 g)
1	HBR-216	20.70	53.00	578.00	308.00	5.20	3.60
2	HBR-308	21.00	52.00	598.00	310.00	5.30	3.20
3	HBR-366	21.80	52.00	612.00	317.00	5.10	3.30
4	HBR-425	21.30	53.00	591.00	305.00	4.80	3.10
5	HBR-438	21.80	51.00	598.00	311.00	5.40	3.80
6	HBR-441	19.90	53.00	607.00	309.00	5.30	3.70
7	Selection-6	21.80	54.00	590.00	317.00	5.50	3.60
	<b>RBL-1(C)</b>	19.60	52.00	601.00	321.00	5.30	3.80
	<b>RBL-6(C)</b>	19.30	52.00	598.00	318.00	5.40	3.50
	<b>RBL-35(C)</b>	19.60	50.00	577.00	311.00	5.60	3.30
	<b>RBL-50(C)</b>	18.80	53.00	580.00	312.00	5.30	3.40
	<b>Minimum</b>	<b>18.80</b>	<b>50.00</b>	<b>577.00</b>	<b>305.00</b>	<b>4.80</b>	<b>3.10</b>
	<b>Maximum</b>	<b>21.80</b>	<b>54.00</b>	<b>612.00</b>	<b>321.00</b>	<b>5.60</b>	<b>3.80</b>
	<b>Mean</b>	<b>20.51</b>	<b>52.27</b>	<b>593.64</b>	<b>312.64</b>	<b>5.29</b>	<b>3.48</b>

**Table 144: Quality parameter in IVT of faba bean (Rabi 2009-10) at Hisar (Plain)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Moisture (%)</b>	<b>Ash (D.M.) (%)</b>	<b>Protein (%)</b>	<b>Vicine - convicine (%)</b>
1	HB-(M)-1	8.70	1.31	23.30	0.78
2	HB-51	9.10	1.20	23.90	0.76
3	HB-82	8.60	1.18	24.70	0.84
4	HB-119	8.80	1.37	23.00	0.81
5	HB-122	8.50	1.28	23.60	0.78
6	HB-174	8.70	1.32	22.60	0.78
7	NDF-9	8.60	1.23	24.70	0.76
8	DFB-9-1	8.80	1.33	21.60	0.74
9	DFB-9-2	8.60	1.30	22.00	0.74
	<b>Minimum</b>	<b>8.50</b>	<b>1.18</b>	<b>21.60</b>	<b>0.74</b>
	<b>Maximum</b>	<b>9.10</b>	<b>1.37</b>	<b>24.70</b>	<b>0.84</b>
	<b>Mean</b>	<b>8.71</b>	<b>1.28</b>	<b>23.27</b>	<b>0.78</b>

*Seed supply - used their own seed*

**Table 145: Quality parameter in AVT of faba bean (Rabi 2009-10) at Hisar (Plain)**

S. No.	Genotypes	Moisture (%)	Ash (D.M.) (%)	Protein (%)	Vicine - convicine (%)
<b>AVT-I</b>					
1	HB-62	8.90	1.33	21.80	0.95
2	HB-64	8.80	1.29	21.40	0.93
3	HB-70	8.60	1.39	22.10	0.81
4	HB-617	8.80	1.37	22.70	0.79
5	HB-645	8.80	1.33	22.50	0.82
6	EC-117792	8.70	1.35	22.70	0.84
7	EC-366272	8.60	1.36	20.20	0.76
<b>AVT-II</b>					
8	HB-603	8.50	1.42	24.90	0.92
9	HB-604	8.50	1.42	24.10	0.88
10	HB-608	8.40	1.45	23.50	0.82
11	HB-611	8.80	1.35	23.80	0.80
12	HB-613	8.60	1.36	23.10	0.80
13	NDF-1	8.60	1.37	23.40	0.82
14	NDF-4	8.70	1.44	22.30	0.78
15	ISU-10-2	8.50	1.45	21.30	0.76
<b>Vikrant (C)</b>		8.70	1.34	25.55	0.86
<b>Minimum</b>		<b>8.40</b>	<b>1.29</b>	<b>20.20</b>	<b>0.76</b>
<b>Maximum</b>		<b>8.90</b>	<b>1.45</b>	<b>25.55</b>	<b>0.95</b>
<b>Mean</b>		<b>8.66</b>	<b>1.38</b>	<b>22.83</b>	<b>0.83</b>

*Seed supply - used their own seed*

**Table 146: Quality parameter in faba bean (SST-1) during Rabi 2009-10 at Hisar (Plain)**

S. No.	Genotypes	Moisture (%)	Ash (D.M.) (%)	Protein (%)	Vicine - convicine (%)
1	HB-07-15	8.60	1.39	25.40	0.88
2	HB-08-3	8.70	1.38	26.60	0.92
3	HB-08-10	8.70	1.35	25.60	0.90
4	HB-08-11	8.40	1.38	24.60	0.88
5	HB-08-15	8.50	1.37	24.20	0.79
6	HB-08-17	8.80	1.35	25.40	0.76
7	HB-08-18	8.70	1.40	26.20	0.82
8	HB-08-21	8.50	1.46	24.80	0.78
9	HB-08-23	8.70	1.42	26.10	0.84
10	HB-08-24	8.70	1.38	24.80	0.82
11	HB-08-29	8.90	1.36	24.50	0.82
<b>Vikrant (C)</b>		8.70	1.42	25.30	0.88
<b>Minimum</b>		<b>8.40</b>	<b>1.35</b>	<b>24.20</b>	<b>0.76</b>
<b>Maximum</b>		<b>8.90</b>	<b>1.46</b>	<b>26.60</b>	<b>0.92</b>
<b>Mean</b>		<b>8.66</b>	<b>1.39</b>	<b>25.29</b>	<b>0.84</b>

**Table 147: Quality parameter in faba bean (PRT-1) during Rabi 2009-10 at Hisar (Plain)**

S. No.	Genotypes	Moisture (%)	Ash (D.M.) (%)	Protein (%)	Vicine - convicine (%)
1	PRT-1	8.60	1.35	27.70	0.92
2	PRT-2	8.70	1.40	27.00	0.96
3	PRT-3	8.10	1.43	26.60	0.94
4	PRT-4	8.50	1.40	26.40	0.94
5	PRT-5	8.30	1.43	24.20	0.88
6	PRT-6	8.30	1.48	25.10	0.86
7	PRT-7	8.60	1.31	26.90	0.92
8	PRT-8	8.40	1.42	24.50	0.94
9	PRT-9	8.20	1.40	23.80	0.94
10	PRT-10	9.10	1.37	24.50	0.88
11	PRT-11	8.00	1.40	24.20	0.86
12	PRT-12	8.10	1.35	23.30	0.78
13	PRT-13	9.00	1.08	24.30	0.82
14	PRT-14	8.60	1.39	24.30	0.86
15	PRT-15	8.50	1.32	22.70	0.86
16	PRT-16	8.30	1.37	23.80	0.91
17	PRT-17	9.00	1.36	25.10	0.88
18	PRT-18	9.00	1.36	26.90	0.94
19	PRT-19	8.30	1.34	24.80	0.88
20	PRT-20	8.80	1.31	26.90	0.96
21	PRT-21	8.20	1.40	23.70	0.82
	<b>Vikrant (C)</b>	8.40	1.33	25.20	0.84
	<b>Minimum</b>	<b>8.00</b>	<b>1.08</b>	<b>22.70</b>	<b>0.78</b>
	<b>Maximum</b>	<b>9.10</b>	<b>1.48</b>	<b>27.70</b>	<b>0.96</b>
	<b>Mean</b>	<b>8.50</b>	<b>1.36</b>	<b>25.09</b>	<b>0.89</b>



**Table 148: Quality parameter in faba bean (FYT-1) during Rabi 2009-10 at Hisar (Plain)**

S. No.	Genotypes	Moisture (%)	Ash (D.M.) (%)	Protein (%)	Vicine - convicine (%)
1	HB-06-1	8.60	1.30	25.60	0.86
2	HB-06-5	8.70	1.27	25.10	0.84
3	HB-06-12	9.10	1.24	24.80	0.82
4	HB-06-22	8.80	1.21	25.20	0.84
5	HB-06-27	8.80	1.24	23.10	0.80
6	HB-06-32	8.90	1.34	23.20	0.86
7	HB-06-34	9.10	1.14	26.20	0.84
8	HB-06-39	8.50	1.33	26.20	0.86
9	HB-06-40	8.60	1.40	23.20	0.88
10	HB-06-48	8.50	1.45	24.70	0.92
11	HB-06-65	8.60	1.21	25.80	0.85
12	HB-51	8.60	1.27	23.60	0.80
13	HB-73	8.50	1.36	23.60	0.80
14	HB-603	8.60	1.28	25.10	0.92
15	HB-604	8.40	1.33	24.00	0.85
16	HB-608	8.90	1.30	23.00	0.88
17	HB-611	8.80	1.35	24.20	0.86
18	HB-613	8.50	1.31	24.90	0.88
19	HB-617	9.00	1.33	23.80	0.88
20	HB-645	9.30	1.23	24.40	0.82
21	HB-(M)-1	9.10	1.42	24.80	0.86
	<b>Vikrant (C)</b>	8.60	1.33	24.50	0.84
	<b>Minimum</b>	<b>8.40</b>	<b>1.14</b>	<b>23.00</b>	<b>0.80</b>
	<b>Maximum</b>	<b>9.30</b>	<b>1.45</b>	<b>26.20</b>	<b>0.92</b>
	<b>Mean</b>	<b>8.75</b>	<b>1.30</b>	<b>24.50</b>	<b>0.85</b>

**Table 149: Quality parameter in faba bean (LST-1) during Rabi 2009-10 at Hisar (Plain)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Moisture (%)</b>	<b>Ash (D.M.) (%)</b>	<b>Protein (%)</b>	<b>Vicine - convicine (%)</b>
1	HB-07-1	9.00	1.36	24.00	0.90
2	HB-07-2	8.80	1.35	22.80	0.84
3	HB-07-3	9.40	1.42	22.90	0.88
4	HB-07-5	8.90	1.35	25.20	0.84
5	HB-07-10	8.70	1.31	22.90	0.82
6	HB-07-14	9.10	1.38	24.60	0.88
7	HB-07-18	8.80	1.31	25.00	0.86
8	HB-07-20	9.30	1.33	22.50	0.82
9	HB-07-24	8.90	1.30	25.90	0.86
10	HB-07-30	8.90	1.35	24.70	0.86
11	HB-51	8.90	1.29	24.30	0.82
12	HB-62	9.00	1.23	24.60	0.86
13	HB-64	8.90	1.30	24.40	0.84
14	HB-70	8.90	1.28	24.70	0.86
15	HB-82	9.10	1.19	24.10	0.82
16	HB-119	9.00	1.29	23.80	0.84
17	HB-122	9.20	1.36	25.90	0.88
18	HB-174	8.70	1.42	26.20	0.94
19	HB-(M)-1	8.90	1.34	25.60	0.88
	<b>Vikrant (C)</b>	8.90	1.28	24.70	0.84
	<b>Minimum</b>	<b>8.70</b>	<b>1.19</b>	<b>22.50</b>	<b>0.82</b>
	<b>Maximum</b>	<b>9.40</b>	<b>1.42</b>	<b>26.20</b>	<b>0.94</b>
	<b>Mean</b>	<b>8.97</b>	<b>1.32</b>	<b>24.44</b>	<b>0.86</b>

**Table 150: Quality parameter in IVT & AVT-I of karingada (Kharif 2009) at Hisar (Plain)**

S. No.	Genotypes	Oil (%)	Protein (%)	Fe (mg/100g)	Zn (mg/100 g)
<b>IVT</b>					
1	SKNK-801	36.00	19.40	14.70	6.80
2	SKNK-802	32.00	21.10	12.80	7.10
3	SKNK-803	33.70	18.70	15.20	7.30
4	SKNK-804	33.80	21.80	14.80	7.10
5	SKNK-805	34.30	19.20	13.20	8.30
6	SKNK-806	34.10	20.00	12.90	7.80
7	SKNK-807	34.90	18.80	14.80	6.70
<b>AVT-I</b>					
8	SKNK-711	30.90	19.90	14.20	8.10
9	SKNK-712	33.80	18.20	13.40	7.70
<b>GK-1 (C )</b>		32.80	19.40	14.80	7.20
<b>Minimum</b>		<b>30.90</b>	<b>18.20</b>	<b>12.80</b>	<b>6.70</b>
<b>Maximum</b>		<b>36.00</b>	<b>21.80</b>	<b>15.20</b>	<b>8.30</b>
<b>Mean</b>		<b>33.63</b>	<b>19.65</b>	<b>14.08</b>	<b>7.41</b>

*Seed supply by S.K. Nagar*

**Table 151: Quality parameter in germplasm of karingada during kharif 2009 (Plain) at Hisar**

S. No.	Genotypes	Oil (%)			Protein (%)			Fe (mg/100)			Zn (mg/100 g)		
		Mandor	S.K. Nagar	Mean	Mandor	S.K. Nagar	Mean	Mandor	S.K. Nagar	Mean	Mandor	S.K. Nagar	Mean
1	SKGPK-1	31.90	34.40	<b>33.15</b>	19.20	18.70	<b>18.95</b>	16.20	12.80	<b>14.50</b>	7.50	6.30	<b>6.90</b>
2	SKGPK-2	33.60	35.10	<b>34.35</b>	17.30	17.50	<b>17.40</b>	14.60	14.50	<b>14.55</b>	8.10	6.10	<b>7.10</b>
3	SKGPK-3	31.80	34.20	<b>33.00</b>	20.20	19.00	<b>19.60</b>	18.30	13.20	<b>15.75</b>	6.20	5.90	<b>6.05</b>
4	SKGPK-4	32.70	33.90	<b>33.30</b>	20.60	18.60	<b>19.60</b>	15.50	14.10	<b>14.80</b>	7.10	6.80	<b>6.95</b>
5	SKGPK-5	32.70	34.50	<b>33.60</b>	16.90	18.50	<b>17.70</b>	17.70	12.70	<b>15.20</b>	6.90	6.80	<b>6.85</b>
6	SKGPK-6	33.50	33.80	<b>33.65</b>	15.30	19.90	<b>17.60</b>	18.70	14.20	<b>16.45</b>	8.30	5.80	<b>7.05</b>
7	SKGPK-7	34.80	33.90	<b>34.35</b>	17.50	18.90	<b>18.20</b>	16.80	15.20	<b>16.00</b>	8.10	6.10	<b>7.10</b>
8	SKGPK-8	30.40	33.70	<b>32.05</b>	18.70	20.00	<b>19.35</b>	18.80	14.30	<b>16.55</b>	7.30	5.80	<b>6.55</b>
9	SKGPK-9	31.80	33.70	<b>32.75</b>	18.30	16.40	<b>17.35</b>	14.80	15.60	<b>15.20</b>	8.20	7.40	<b>7.80</b>
10	SKGPK-10	31.50	34.90	<b>33.20</b>	18.60	17.10	<b>17.85</b>	15.30	13.10	<b>14.20</b>	8.20	8.10	<b>8.15</b>
11	SKGPK-11	32.30	33.90	<b>33.10</b>	17.00	18.10	<b>17.55</b>	17.50	14.80	<b>16.15</b>	9.40	7.20	<b>8.30</b>
12	SKGPK-12	30.20	32.10	<b>31.15</b>	18.40	19.20	<b>18.80</b>	14.40	13.80	<b>14.10</b>	8.20	6.70	<b>7.45</b>
13	SKGPK-13	29.50	36.70	<b>33.10</b>	18.10	18.90	<b>18.50</b>	16.90	15.20	<b>16.05</b>	7.40	7.40	<b>7.40</b>
14	SKGPK-14	31.90	32.60	<b>32.25</b>	16.80	18.30	<b>17.55</b>	14.30	14.80	<b>14.55</b>	8.10	6.80	<b>7.45</b>
15	SKGPK-15	32.50	33.40	<b>32.95</b>	16.90	18.20	<b>17.55</b>	18.50	13.60	<b>16.05</b>	7.50	7.40	<b>7.45</b>
16	SKGPK-16	31.60	33.60	<b>32.60</b>	17.50	17.90	<b>17.70</b>	17.60	12.90	<b>15.25</b>	8.70	6.10	<b>7.40</b>
17	SKGPK-17	30.30	34.90	<b>32.60</b>	17.40	17.50	<b>17.45</b>	16.10	13.30	<b>14.70</b>	9.20	7.40	<b>8.30</b>
18	SKGPK-18	33.30	33.30	<b>33.30</b>	17.60	17.80	<b>17.70</b>	18.40	14.60	<b>16.50</b>	7.50	8.50	<b>8.00</b>
19	SKGPK-19	31.60	34.10	<b>32.85</b>	17.50	19.00	<b>18.25</b>	18.40	12.70	<b>15.55</b>	6.80	8.20	<b>7.50</b>
20	SKGPK-20	30.20	35.20	<b>32.70</b>	17.60	19.30	<b>18.45</b>	16.90	14.20	<b>15.55</b>	7.10	6.10	<b>6.60</b>
21	SKGPK-21	30.90	-	<b>30.90</b>	16.70	-	<b>16.70</b>	15.30	-	<b>15.30</b>	8.70	-	<b>8.70</b>
22	SKGPK-22	30.60	-	<b>30.60</b>	18.20	-	<b>18.20</b>	15.20	-	<b>15.20</b>	8.10	-	<b>8.10</b>
	<b>GK-1 (C)</b>	-	31.50	<b>31.50</b>	-	19.20	<b>19.20</b>	-	15.10	<b>15.10</b>	-	6.70	<b>6.70</b>
	<b>Minimum</b>	<b>29.50</b>	<b>31.50</b>	<b>30.60</b>	<b>15.30</b>	<b>16.40</b>	<b>16.70</b>	<b>14.30</b>	<b>12.70</b>	<b>14.10</b>	<b>6.20</b>	<b>5.80</b>	<b>6.05</b>
	<b>Maximum</b>	<b>34.80</b>	<b>36.70</b>	<b>34.35</b>	<b>20.60</b>	<b>20.00</b>	<b>19.60</b>	<b>18.80</b>	<b>15.60</b>	<b>16.55</b>	<b>9.40</b>	<b>8.50</b>	<b>8.70</b>
	<b>Mean</b>	<b>31.80</b>	<b>33.97</b>	<b>32.74</b>	<b>17.83</b>	<b>18.48</b>	<b>18.14</b>	<b>16.65</b>	<b>14.03</b>	<b>15.36</b>	<b>7.85</b>	<b>6.84</b>	<b>7.38</b>

**Table 152: Quality parameter in tumba (AVT-II) at Hisar (Plain)**

<b>S. No.</b>	<b>Genotypes</b>	<b>Oil (%)</b>	<b>Protein (%)</b>	<b>Fe (mg/100)</b>	<b>Zn (mg/100 g)</b>
1	RMT-401	23.70	13.80	12.40	3.10
2	RMT-403	23.00	14.10	11.20	3.80
3	RMT-404	23.20	13.70	13.10	3.40
4	RMT-406	24.40	13.20	12.60	3.20
5	RMT-407	23.10	14.20	12.80	3.70
6	RMT-408	23.10	14.10	13.40	2.80
7	RMT-516	22.60	14.10	14.30	2.80
	<b>RMT-59(C)</b>	22.70	13.80	13.80	2.70
	<b>Minimum</b>	<b>22.60</b>	<b>13.20</b>	<b>11.20</b>	<b>2.70</b>
	<b>Maximum</b>	<b>24.40</b>	<b>14.20</b>	<b>14.30</b>	<b>3.80</b>
	<b>Mean</b>	<b>23.23</b>	<b>13.88</b>	<b>12.95</b>	<b>3.19</b>

*Seed supply by Mandor*

**Table 153: Quality parameter in tumba (SST) during kharif 2009 at Hisar (Plain)**

S. No.	Genotypes	Oil (%)	Protein (%)	Fe (mg/100)	Zn (mg/100 g)
1	MGPT-4	22.80	14.70	14.40	3.30
2	MGPT-5	23.80	14.20	10.20	3.10
3	MGPT-6	22.20	14.80	10.20	3.10
4	MGPT-7	23.90	13.70	9.30	3.10
5	MGPT-8	23.20	13.90	12.20	2.70
6	MGPT-9	24.30	13.20	12.60	3.90
7	MGPT-10	23.80	13.80	16.60	3.30
8	MGPT-12	23.60	13.90	14.30	3.40
9	MGPT-13	23.80	14.00	11.20	3.90
10	MGPT-14	22.90	14.60	12.60	3.20
11	MGPT-16	22.30	14.90	18.90	2.90
12	MGPT-17	23.70	13.70	18.50	3.20
13	MGPT-18	24.10	13.20	14.20	3.30
14	MGPT-19	23.80	13.80	19.70	2.80
15	MGPT-21	23.60	13.90	11.70	3.10
16	MGPT-22	23.90	13.50	12.50	3.10
<b>RMT-59(C)</b>		23.40	14.10	12.20	2.70
<b>Minimum</b>		<b>22.20</b>	<b>13.20</b>	<b>9.30</b>	<b>2.70</b>
<b>Maximum</b>		<b>24.30</b>	<b>14.90</b>	<b>19.70</b>	<b>3.90</b>
<b>Mean</b>		<b>23.48</b>	<b>13.99</b>	<b>13.61</b>	<b>3.18</b>

*Seed supply by Mandor*

**VALUE ADDITION**

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## VI. VALUE ADDITION

### 6.1 Introduction

Underutilized crops which are grown particularly in the tribal areas and have very good nutritional profile. In spite of high nutritional and medicinal properties these under-utilized crops are at the verge of extinction. These crops have not only nutraceutical properties but are also attractable to the farming community. These underutilized plants have promising economic value and economically important for medicinal purpose. Attempts have been made to evaluate the nutritional and product development potential of these crops.

Five varieties of ricebean (BRS-1, PRR-1, PRR-2, RBL-1 and RBL-6), one of amaranths (Suvarna) and one of adzuki bean (HPU-51) were procured from Department of Organic Agriculture, College of Agriculture, CSK Himachal Pradesh Agricultural University Palampur. The seeds were cleaned manually to get rid of dust and other foreign materials and stored in air tight container for further study. The physico-chemical and nutritional characteristics of buckwheat, amaranths, rice bean and adzuki bean grains were evaluated by adopting standard procedures.

A portion of popped amaranth, buckwheat, rice bean and adzuki bean grains was milled in the grinder and used for preparation of value added products. Methodology for preparation of confectionery products like *pinnis* was standardized using adzuki bean and whole wheat flour in different proportions viz. 0%, 25%, 50%, 75% and 100%. Different formulations of composite flour containing rice bean and whole wheat flour in ratios of 25, 50 and 75 % were evaluated for preparation of good quality acceptable *pinnis*. Acceptable levels of supplementation of adzuki bean flour for preparation of traditional foods viz *mathri*, *sevia*n, *pakoru* were assessed. The composite flours used for preparation of *mathri*, *sevia*n, *pakoru* and *bari* consisted of different levels (0%, 25%, 50%, 75% and 100%) of adzuki bean and refined wheat flour, Bengal gram flour and black gram *dal* respectively.

Methodology for preparation of sweet *Chilay* (*babroos*) and *matar*i using rice bean flour with whole wheat flour and refined wheat flour in the ratios of 20:80, 40:60 and 60:40 was worked out. Rice bean flour supplemented *Bari* was



prepared by using dehusked black gram *dal* in varying ratios (0%, 25%, 50%, 75% and 100%). Popped amaranths were used for preparing *panjeeri* and buckwheat flour was used to prepare *pinni*. The following value added products of various underutilized crops were prepared :

## 6.2 Amaranth based value added products

- **Panjeeri:** Methodology for preparation of amaranth based panjeeri using popped amaranth flour, popped lotus seeds (phool makhana), edible gum, dry fruits, coconut powder, jaggery powder and desi ghee. The prepared product was got evaluated for various sensory attributes by a panel of judges on nine point hedonic scale and was liked extremely by the judges.
- **Salty bite biscuits:** Attempts were made to prepare salty biscuits using 20 per cent popped amaranths flour. The prepared product was liked very much by a panel of judges on nine point hedonic scale.

## 6.3 Buckwheat supplemented value added products

- **Biscuits and Khatai:** Based on the results of last years trails on biscuits where 20 per cent level of supplementation was adjudged best. Attempts were made to prepare 20 per cent buckwheat supplemented biscuits on large scale for mass acceptability trails. *Khatai* were also standardized by incorporating 25 per cent buck wheat flour.
- **Pinni:** Methodology for preparation of pure buckwheat *pinnis* was also standardized. The overall acceptability scores of buckwheat *pinnis* on nine point hedonic scale ranged between liked moderately to liked very much.
- **Sweet sevian:** Sugar coated buckwheat *sevian* were standardized using buckwheat flour and Bengal gram flour blends in equal proportions. The overall acceptability scores of the prepared *sevian* on nine point hedonic scale ranged between liked moderately to liked very much.

## 6.4 Rice bean based value added products

- **Chilay (babroos) and Matari:** Methodology for preparation of sweet *Chilay (babroos)* and *matari* using rice bean flour with whole wheat flour and refined wheat flour in the ratios of 20:80, 40:60 and 60:40 respectively was standardized. The overall acceptability scores of *Chilay (babroos)* and *matari* slightly declined as the level of supplementation

increased but the scores ranged between liked moderately and liked very much on nine point hedonic scale. The most acceptable levels of rice bean flour supplementation were 20 per cent in both the products.

- **Pinni:** Methodology for preparation of *pinni* using whole wheat flour and rice bean flour in varying proportions (100:00, 75:25, 50:50 and 25:75) was standardized. The incorporation of ricebean flour in pinni improved the taste and texture of the pinni and the overall acceptability scores of pinni prepared by using 25 parts of whole wheat flour and 75 parts of rice bean flour was adjudged best among all treatments on nine point hedonic scale.
- **Shakarpara:** Methodology was standardized for preparation of shakarpara using refined wheat flour and rice bean flour in equal proportions.
- **Bari:** Rice bean *dal* supplemented *Bari* was prepared by using dehusked black gram dal in varying ratios viz. 0%, 25%, 50%, 75% and 100%.

#### 6.5 Adzuki bean based value added products

- **Pinni:** Methodology for preparation of *pinnis* was standardized using adzuki bean and whole wheat flour in different proportions viz. 0%, 25%, 50%, 75% and 100%. The *pinnis* prepared by using equal proportion of adzuki bean flour and whole wheat flour were rated best among all the levels of supplementation. The overall acceptability scores *pinni* prepared by using 100 per cent adzuki bean flour were comparatively lower but ranged between liked slightly to liked moderately.
- **Mathri :** Different formulations of composite flour containing refined wheat flour and adzuki bean flour (0%, 25%, 50%, 75% and 100%) were evaluated for preparation of *mathri*. The overall acceptability scores of *mathri* supplemented with 25 per cent adzuki bean flour were next to the control *mathri* which were adjudged best. Although the overall acceptability scores of the supplemented mathri declined as the level of supplementation increased yet the overall acceptability scores of all the blends ranged near to liked moderately.
- **Sevian:** Different blends of bengal gram flour and adzuki bean flour (0%, 25%, 50%, 75% and 100%) were evaluated for preparation of *sevian*.

Results of the overall acceptability scores revealed that the sevian prepared by using 25 parts of adzuki bean flour and 75 parts of Bengal gram flour were adjudged better than the control ones. This could be due to the reason that addition of adzuki bean flour at this particular level improved the crunchiness of the product. The overall acceptability scores of the sevian declined with increase in the level of supplementation but ranged between liked moderately to liked extremely on nine point hedonic scale.

- **Pakoru:** Different formulations were standardized for preparation of *pakoru* using black gram *dal* and adzuki bean *dal*. Both the *dals* were soaked in water for overnight and the husk was removed manually by rubbing with both hands. The soaked dehusked *dals* were ground to a fine paste using optimum water in a mixer grinder. Different blends of black gram *dal* and adzuki bean *dal* paste (0%, 25%, 50%, 75% and 100%) were evaluated for preparation of *pakorus*. The overall acceptability of the blended pakoru improved with addition of adzuki bean.

# **CENTRE REPORT**

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## VII. CENTRE REPORT

### 7.1 HILLS

#### 7.1.1 GBPUAT, Ranichauri

**Frontline Demonstration on elite lines :** Field level demonstrations on rice bean (83 farmers), grain amaranth (81 farmers) and buckwheat (69 farmers) were conducted on 233 farmers field in kharif 2010 in different villages of Uttarakhand.

#### 7.1.2 HPKV, Palampur

##### **Hybridization:**

**Ricebean:** Fresh crosses were attempted among the local genotypes of H.P. namely RBHP-44(A), RBHP-43, RBHP-38, RBHP-39, RBHP-53, RBHP-35, RBHP-36 RBHP-10 1and RBHP-102 with early maturing genotype PRR-2007-2, whereas  $F_2$ 's were advanced for further evaluation.

**Amaranths:** Durga was crossed with the local genotypes of H.P. as well as other promising genotypes namely IC415448, PRA-3, Annapurna, PRA-2, VL-44, IC519522 and IC422795 and  $F_1$  seed was harvested.  $F_2$ 's were advanced under field conditions for further evaluation.

**Buckwheat:** In Buckwheat  $F_2$  seed was harvested from crosses involving IC341653, VL-7, IC341693, EC125938, IC382728, IC444178, IC447689, IC423431, PRB-1 and VL-27 whereas fresh crosses were attempted among the parents Shimla B-1, Sangla B-1, VL-7, Sangla B-126 and Himpriya.

**Local Collections:** Different local germplasm lines/landraces of underutilized crops were collected and evaluated under field conditions during the Kharif season.

<b>Crop</b>	<b>No. of Lines</b>	<b>Place of collection</b>
Amaranths	12	Distt. Sirmaur & Shimla of H.P.
Rice bean	5	Distt. Mandi of H.P
Faba bean	5	Disstt. Kangra of H.P.
Buckwheat	3	Shimla

**Seed Multiplication:** Seed of different varieties of underutilized crops was produced on the experimental farm of Deptt. of Organic Agriculture, CSKHPKV, Palampur during the current year.

S .No.	Crop	Varieties	Quantity (Kg)
1	Ricebean	BRS-1	20
2	Ricebean	BRS-2	15
3	HPU-51	Totru Local	15
4	Adzuki Bean	HPU-51	60
5	Amaranths	Durga	5

**Field level demonstrations:** Various field level demonstrations were conducted at 15 farmers field on faba bean, amaranths, rice bean and adzuki bean in different parts of Himachal Pradesh.

## 7.2 PLAINS

### 7.2.1 UAS, Bangalore

#### Breeding material :

**Grain Amaranth:** Twenty five Individual Plant Selections were made from the trial material which will be evaluated during summer 2011.

**Rice Bean :** Fifteen F<sub>2</sub> crosses of rice bean were raised and thirty individual plant selections were made from the different crosses.

#### Seed Production :

S. No.	Name of the variety	Qty. of seeds produced
1	Suvarna (Grain Amaranth)	100 kg
2	KBGA -1 (Grain Amaranth)	20 kg
3.	KBR-1 (Rice Bean)	30 kg

**Front Line Demonstrations :** Three FLDs on Suvarna variety in Nagasandra village of Bangalore North Taluk Field Day and Training Programme.

**Farm Trial:** Ten farm trials on winged bean genotype KBWB-1 were conducted in the farmers field through the Karnataka State Department of Agriculture and

the feed back on the trials was presented in the Zonal Research and Extension Programme (ZREP) Workshop of Zone-V.

**Multilocation Trials:** Three multilocation trial each in grain amaranth and rice bean were conducted in Mandya, Chintamani and Chamarajnagar representing different agro-climatic zones in southern Karnataka.

### **7.2.2 NDUAT, Faizabad:**

**Station Trial on Faba bean :** Four entries including checks were evaluated in Randomized Block Design with four replications. The genotype NDFB- 11 (30.0 g/plant) gave maximum grain yield followed by best check variety Vikrant (27.0 g/ plant).

**Station Trial on Rice bean :** Three entries including checks were evaluated in Randomized Block Design with four replications. The genotype NDRB1 (22.0 g/ plant) gave maximum grain yield followed by check variety RBL50 (18.0 g) and RBL35 (17.50 g).

### **Hybridization Programme:**

**Segregating population:** Twenty single crosses ( $F_2$ ) of faba bean were evaluated along with their parents and check varieties.  $F_3$  progenies of previous crosses for desirable traits through selection were made. Like-wise thirteen population of  $F_4$  generation were grown during current season.

**New crosses :** Forty five faba bean new crosses with three checks were made during *rabi* season 2010-11.

**Front line demonstration on faba bean :** Various field level demonstrations were conducted at 9 farmers field on faba bean in different villages of Faizabad.

**Collection of germplasm :** Five new germplasm of faba bean were collected from the farmer's field of eastern Uttar Pradesh during *rabi* 2009-10. The seeds of these germplasm have been evaluated in during *rabi* 2010-11.

Eight new germplasm of grain amaranth were collected from the farmers field of Uttar Pradesh during *rabi* 2009-10. The seed of these germplasm have been evaluated during *rabi* 2010-11.

### 7.2.3 SDAU, S.K. Nagar:

#### Seed and seedling production (2009-10)

- **Seed production**

S. No.	Crop/Variety	Seed production	Seed sold
1.	Gujarat Amaranthus-1 (GA-1)	155 kg	105 kg
2.	Gujarat Amaranthus-2 (GA-2)	132 kg	110 kg
3.	Gujarat Amaranthus-3 (GA-3)	21 kg	15 kg
3.	Kalingada (GK-1)	45 kg	25 kg
4.	Simarouba	130 kg	125 kg
5.	Aritha	25 kg	25 kg
6.	Baheda	15kg	10 kg

- **Seedling production**

S. No.	Details	Raised	Supplied
1	Jatropha seedlings	250	-
2	Simarouba seedlings	500	-
3.	Kankoda	2500	500
4.	Tumba	500	-

### 7.2.4 MPKV, Rahuri:

**Front Line Demonstration:** During rabi 2009-10, 20 FLDs were conducted on farmer fields in grain amaranth with one variety Suvarna in different parts of Maharashtra.

### 7.2.5 SK RAU, Mandor:

**Station trial on grain amaranth:** This trial comprised of 20 entries including five checks. Entries RMA-42 (1924 kg/ha), RMA-44 (1923 kg/ha), RMA-43 (1843 kg/ha), EC519548 (1833 kg/ha), BGA-12 (1772 kg/ha) and RMA-45 (1706 kg/ha) recorded numerically higher seed yield over the best check RMA-4 (1644 kg/ha). The range of variation in days to flowering was from 41 (IC415290) to 57 days (BGA-2).



**Breeding material on grain amaranth:** A few crosses were attempted between different genotypes based on marker characteristics. Seeds from  $F_1$  and  $F_2$  plants were harvested for advancement and further evaluation.

**Field Demonstration:** Five demonstrations (RMA-4, GA-1, GA-2 and Suvarna) were conducted on farmer's field at different villages of Jodhpur district.

**Breeding material on tumba :** 9  $F_1$ s, 10  $F_2$ s, 12 backcrosses and 30  $F_3$ s were grown and single plants were selected from segregating generations.

**Station Trial on kalingada :** This trial comprised of 22 entries including check GK-1. Entries MK-45-3 (230 kg/ha), MK-81-1 (189 kg/ha) and MK-74-2 (180 kg/ha) recorded higher seed yield while entries MK-74-2 (63.70 q/ha), MK-45-3 (60.19 q/ha) and MK-72 (59.63 q/ha) showed superiority in fruit yield over check GK-1 which recorded 165 kg/ha seed yield and 58.33 q/ha fruit yield. Number of fruits per plant ranged from 2.3 (MK-65-1) to 7.9 (MK-45-3). Entry MK-72 had biggest fruit while entry MK-65-1 had smallest fruit. Entry MK-74-2 recorded maximum 100 seed weight (5.91 g) followed by MK-73-1 (5.71 g) and MK-65-1 (5.68 g).

#### **7.2.6 OUAT, Bhubaneswar:**

**Hybridization on rice bean:** Ten crosses were made during kharif, 2009.  $F_1$  was grown during Kharif, 2010. Seeds harvested from  $F_1$  will be grown for  $F_2$  generation in the next season.

A second set of ten hybridization on rice bean was under taken during kharif, 2010. Seeds harvested for growing  $F_1$  in the next season.

**Seed Production:** During Rabi, 2009–10 : 30 Kg of BGA -2 (Kapilasa) seed was produced.

# SUMMARY

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## VIII. SUMMARY

A total of 157 experiments were allotted during 2010 which included germplasm evaluation (60), breeding (54), agronomic (25) and quality aspects (18). These were allotted at twenty locations in different agro-climatic zones of the country. Out of these, 133 trials were carried out. A summary of research achievements is given below:

### 8.1 Plant breeding

Fifty four varietal trials, 17 in hills and 37 in plains, were conducted on six 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 154.

**Table 154. Best genotypes in different trials conducted at multilocations during 2010**

Crop		Entries	Locations	Top yielder	Yield (q/ha)	Best check yield (q/ha)
<b>HILLS</b>						
Amaranth	IVT	10	2	PRA-2010-1	23.71	Annapurna (19.46)
	AVT-I	-	-	-	-	
	AVT-II	-	-	-	-	
Buckwheat	IVT	4	4	IC109728	6.67	PRB-1 (5.87)
	AVT-I	2	4	IC109549	6.50	
	AVT-II	-	-	-	-	
Faba bean	IVT	10	2	-	-	Local (73.61)
	AVT-I	-	-	-	-	
	AVT-II	-	-	-	-	
Rice bean	IVT	8	6	RBHP-43	18.46	PRR-1 (17.57)
	AVT-I	1	6	VRB-3	18.06	
	AVT-II	4	6	-	-	
<b>PLAINS</b>						
Amaranth (Rabi 2009-10 & Kharif 2010)	IVT	14	11	RMA-38	12.16	Suvarna (11.84)
	AVT-I	13	10	-	-	Suvarna (11.67)
	AVT-II	5	10	BGA-5	12.78	

Amaranth (Rabi 2009-10)	IVT	14	9	RMA-38	11.58	GA-1 (10.16)
	AVT-I	13	8	BGA-12	10.83	GA-1 (9.03)
	AVT-II	5	8	SKNA-502	11.26	
Amaranth (Kharif 2010)	IVT	14	2	MGA-4	14.58	Suvarna (14.02)
	AVT-I	13	2	-	-	Suvarna (15.07)
	AVT-II	2	2	BGA-5	15.31	
Rice bean	IVT	7	8	LRB-482	11.28	RBL-50 (10.79)
	AVT -I	-	-	-	-	-
	AVT-II	-	-	-	-	
Faba bean	IVT	9	6	NDF-9	21.29	Vikrant (18.48)
	AVT-I	7	6	-	-	Vikrant (20.08)
	AVT-II	8	6	NDF-4	22.21	
Kalingada	IVT	8	2	MGPM-1	0.30	GK-1 (3.59)
	AVT-I	4	2	SKNK-805	3.84	GK-1 (3.21)
	AVT-II	2	2	-	-	
Jatropha	IVT	-	-	-	-	-
	AVT-I	-	-	-	-	Chhatrapati (18.75)
	AVT-II	10	2	TNMC-7	6.44	

Based on the three years data, the best genotype in each crop with respect to yield has been identified and indicated in Table 155.

**Table 155. List of promising genotypes based on three years data**

Crop	Variety	Seed yield (q/ha)	Maturity (days)	Increase / decrease in yield over check (%) - First check
<b>PLAIN</b>				
Grain amaranth (Rabi)	SKNA-502	11.81	122.56	13.69
Grain amaranth (Kharif)	SKNA-504	31.94	90.44	13.79
Grain amaranth (Rabi & Kharif)	BGA-5	14.62	121.1	10.57
Fababean	HB-608	20.49	140.57	6.46
Jatropha	JH-1	18.92	115.06	6.02

## 8.2 Germplasm evaluation

About 1741 accessions in different crops, some of them tested at more than one location, were evaluated at nineteen locations during 2010. Crop-wise number of accessions, locations and promising accessions have been given in Table 156.

**Table 156. 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	<b>IC-35407 (27.87 g/plant)</b>	<b>IC-35407 (96.00 days)</b>
Ranichauri	IC042336, IC041987, IC042329, IC042323, IC042334 (>25.00 g/plant) <b>IC-035407 (17.76 g/plant)</b>	IC042294-2, IC042310-1, IC042315, IC042290-20, IC042312-4 (<151.00) <b>IC-035407 (157.00 days)</b>
Sangla	IC042282-1, IC042310-1, IC042315, IC042279-5, IC042290-21 (>5.00 g/plant) <b>Annapurna &amp; IC-035407 (3.00 g/plant)</b>	IC042310-2, IC042339, IC042290-21, IC042310-1, IC042290-20 (<146.00) <b>IC-035407 (148.80 days)</b>
Shimla	IC042323, IC042334, IC042328, IC042333, IC042282-1 (>118.00 g/plant) <b>IC-035407 (103.85 g/plant)</b>	<b>IC-035407 (Durga) (140.00 days)</b>
<b>Based on average over locations</b>	IC042323, IC042334, IC042328, IC042333, IC042340 (>38.00 g/plant) <b>IC-35407 (38.12 g/plant)</b>	IC042315, IC042310-1, IC042290-21 (<136.00) <b>IC-35407 (135.45 days)</b>
<b>Buckwheat (25 Accessions)</b>		
Ranichauri	IC109433, IC037309, IC042418, IC042424, IC107291 (>5.50 g/plant) <b>VL-7 (5.18 g/plant)</b>	<b>VL-7 (81.00 days)</b>
Sangla	<b>PRB-1 (2.20 g/plant)</b>	IC107291, IC108516, IC049666, IC049676, IC042418 (<111.00) <b>Shimla B1 &amp; PRB-1 (112.20 days)</b>
Shimla	IC049671, IC107994, IC108514, IC108519, IC107988 (>26.00 g/plant) <b>Himpriya (24.22 g/plant)</b>	<b>VL-7 (85.00 days)</b>
<b>Based on average over four locations</b>	IC037309, IC049671, IC107994, IC108519, IC107988 (>10.45 g/plant) <b>Himpriya (9.89 g/plant)</b>	IC037309 (= 94.00) <b>Shimla B-1 (95.29 days)</b>

<b>Chenopodium (25 Accessions)</b>		
Ranichauri	IC108816, IC108088, IC107854, IC106340, IC447573 (>3.40 g/plant) <b>NIC-22503 (2.54 g/plant)</b>	IC107854, IC108816, IC108087, IC100818, IC341708 (<122.00) <b>EC-507741 (123.00 days)</b>
Sangla	<b>PRC-9801 (8.00 g/plant)</b>	IC341695, IC108816, IC108088, IC108518, IC341708 (<152.00) <b>NIC-22503 &amp; PRC-9801 (158.00 days)</b>
Shimla	IC107296, IC107585, IC107535, IC106340, NC58231 (>13.00 g/plant) <b>NIC-22503 (11.85 g/plant)</b>	EC507744, IC341695 (<103.00) <b>EC-507741 (105.00 days)</b>
<b>Based on average over locations</b>	EC507742, EC507740, IC107296, EC507744, IC107585 (> 8.50 g/plant) <b>PRC-9801 (7.30 g/plant)</b>	EC507744, EC507740, EC507748, EC507742 (<111.00) <b>EC-507741 (114.00 days)</b>
<b>Faba bean (97 Accessions)</b>		
Palampur	EC001072, EC117748, IC374710, EC361497, EC243608 (>18.80 q/ha) <b>HPFB-1 (12.19 q/ha)</b>	EC343781, EC117755, EC005873, EC351999, EC117741 (<154.00) <b>HB-649 (154.20 days)</b>
Ranichauri	EC117727, EC354985, EC354951, EC343781, EC117743 (>16.10 g/plant) <b>Vikrant (9.67 g/plant)</b>	EC117739, EC117727, EC010845, EC343691, IC117720 (<140.00) <b>Vikrant (146.60 days)</b>
<b>Based on average over locations</b>	-	EC117727, EC117739, EC343691, EC010845, EC343781 (<147.00) <b>Vikrant (150.95 days)</b>
<b>Adzukibean(25 Accessions)</b>		
Palampur	EC340246, IC341946, IC030270, EC240251, EC340258 (>7.50 g/plant) <b>HPU-51 (6.99 g/plant)</b>  EC034625, EC000251, IC030253, EC340258, IC030270 (>36.50 q/ha) <b>Totru Local (34.26 q/ha)</b>	EC030256, EC024523, EC034625, IC030253, IC341948 (<86.00) <b>HPU-51 (87.00 days)</b>
Ranichauri	IC030253, EC000262, EC340255, EC340249, EC034625 (>4.00 g/plant) <b>HPU-51 (4.14 g/plant)</b>	EC000251, EC340260 (<114.00) <b>HPU-51 (115.33 days)</b>
Shimla	EC000262, EC030256, EC015648, EC034625, EC340260 (>17.90 g/plant) <b>HPU-51 (17.08 g/plant)</b>	EC000377 (<96.00) <b>Totru Local (102.0 days)</b>
<b>Based on average over locations</b>	EC000262, EC030256, EC034625, EC340260, EC015648 (>9.60 g/plant) <b>HPU-51 (9.40 g/plant)</b>	EC030256, EC000377, EC057959, EC240251, EC015256 (<104.00) <b>HPU-51 (103.11 days)</b>

<b>Rice bean (50 Accessions)</b>		
Almora	LRB-457, LRB-496, LRB-449, LRB-490, LRB-456 (>23.55 g/plant) <b>RBL-1 (17.20 g/plant)</b>	LRB-488 (<112.00) <b>PRR-1 &amp; PRR-2 (113.00 days)</b>
Bhowali	<b>PRR-1 (35.75 q/plant)</b>	LRB-488 (<116.00) <b>RBL-1 (184.00 days)</b>
Palampur	LRB-448, LRB-472, LRB-479, LRB-329, LRB-474 (>7.10 g/plant) <b>PRR-1 (6.43 g/plant)</b>  LRB-311, LRB-496, LRB-473, LRB-480, LRB-322 (>46.90 q/ha) <b>RBL-6 (35.44 q/ha)</b>	LRB-480, LRB-311 (<118.00) <b>PRR-1 (120.00 days)</b>
Ranichauri	<b>PRR-2 (13.10 g/plant)</b>	LRB-459 (<132.00) <b>PRR-1 (135.00 days)</b>
Shillong	LRB-496, LRB-473, LRB-476, LRB-480, LRB-490 (>7.60 q/ha)	LRB-484, LRB-483, LRB-482, LRB-488, LRB-489 (<109.00 days)
Shimla	LRB-482 (>7.10 g/plant) <b>RBL-6 (69.67 g/plant)</b>	LRB-475, LRB-479 (<144.00) <b>PRR-1 (144.00 days)</b>
<b>Based on average over locations</b>	<b>RBL-6 (25.57 g/plant)</b> <b>PRR-1 (33.93 q/ha)</b>	LRB-488, LRB-498, LRB-474, LRB-471, LRB-495 (<143.00) <b>PRR-1 (143.95 days)</b>
<b>Job's tear (25 Accessions)</b>		
Ranichauri	IC089382 (>7.30 g/plant) <b>Pollin (6.87 g/plant)</b>	IC089382, IC540256, IC521338, IC416897, IC089387 (<203.00) <b>Pollin (205.00 days)</b>
Shillong	IC089381 (>3.18 g/plant) <b>Mayeun (27.65 g/plant)</b>  IC089391, IC089387, IC012703, IC521338, IC416897 (>5.80 q/ha) <b>Mayeun (5.67 q/ha)</b>	-
<b>Based on average over locations</b>	IC089381 (>17.00 g/plant) <b>Mayeun (16.87 g/plant)</b>	-
<b>Perilla</b>		
Ranichauri <b>(19 Accessions)</b>	IC374590, IC374494, IC211608, IC416861, IC006447 (>4.65 g/plant) <b>Jaintia (2.96 g/plant)</b>	IC374593, IC003908, IC211608, IC374590, IC419606 (< 186.00) <b>Jaintia (190.00 days)</b>
Shillong <b>(25 Accessions)</b>	IC006444, IC216268, IC006442, IC419564, IC374609 (>12.82 g/plant) <b>Jaintia (5.23 g/plant)</b>  IC374593, IC006441, IC006444, IC374609, IC419477 (>3.75 q/ha) <b>Jaintia (3.00 q/ha)</b>	IC369449, IC374494, IC006447, IC006444, IC204185 (<179.00) <b>Shillong Local (185.33 days)</b>

<b>Based on average over locations</b>	IC374609, IC006442, IC006444, IC521284, IC369354 (>8.72 g/plant) <b>Jaintia (4.09 g/plant)</b>	IC204185, IC369449, IC374590, IC374494, IC521284 (<186.00) <b>Shillong Local (190.67 days)</b>
<b>PLAINS</b>		
<b>Amaranth (Rabi)</b>		
Ambikapur <b>(64 Accessions)</b>	BGA-46, BGA-27 (> 5.80 q/ha) <b>Suvarna (5.56 q/ha)</b>	SKGPA-58, SKGPA-55, BGA-45, SKGPA-12, BGA-44 (<138.00) <b>Suvarna (152.00 days)</b>
Bhubaneswar <b>(85 Accessions)</b>	BGA-27, BGA-28, BGA-34, BGA-31, SKGPA-54 (>14.00 g/plant) <b>BGA-2 (11.87 g/plant)</b>  BGA-27, BGA-28, BGA-31, BGA-29, BGA-34 (>19.75 q/ha) <b>BGA-2 (15.96 q/ha)</b>	SKGPA-43, SKGPA-9, SKGPA-49, SKGPA-51, SKGPA-53 (<82.00) <b>BGA-2 (90.20 days)</b>
Delhi <b>(89 Accessions)</b>	BGA-35, BGA-38, BGA-30, BGA-42, BGA-32 (>206.70 g/plant) <b>BGA-2 (96.62 g/plant)</b> BGA-38, BGA-33, BGA-32, BGA-31, BGA-39 (>16.85 q/ha) <b>GA-2 (6.72 q/ha)</b>	BGA-45, SKGPA-10, SKGPA-46, SKGPA-58, MGA-12 (<152.00) <b>GA-2 (157.00 days)</b>
Faizabad <b>(90 Accessions)</b>	SKGPA-11, SKGPA-5, SKGPA-10, SKGPA-20, SKGPA-6 (>14.99 g/plant) <b>GA-2 (14.90 g/plant)</b>	SKGPA-17, SKGPA-20, SKGPA-14, SKGPA-21, SKGPA-35 (<106.00) <b>GA-2 (114.00 days)</b>
Hisar <b>(93 Accessions)</b>	SKGPA-29 (>8.00 g/plant) <b>Suvarna (6.35 g/plant)</b>	SKGPA-50, SKGPA-26, SKGPA-31, SKGPA-46, SKGPA-45 (<155.00) <b>BGA-2 (165.00 days)</b>
Mandor <b>(81 Accessions)</b>	BGA-35, BGA-39, BGA-33, BGA-30, SKGPA-58 (>21.00 g/plant) <b>GA-1 (20.11 g/plant)</b>	SKGPA-43, SKGPA-45, SKGPA-50, SKGPA-49, SKGPA-9 (<122.00) <b>GA-2 (126.44 days)</b>
Rahuri <b>(87 Accessions)</b>	SKGPA-27, SKGPA-41, SKGPA-43, SKGPA-47, SKGPA-48 (>65.15 g/plant) <b>GA-1 (31.92 g/plant)</b>	SKGPA-49, SKGPA-42, SKGPA-46, SKGPA-5, SKGPA-43, SKGPA-18 (<97.00) <b>Suvarna (112.00 days)</b>
Ranchi <b>(81 Accessions)</b>	BGA-34, BGA-29, BGA-44, SKGPA-25, BGA-42 (>442.90 g/plant) <b>Suvarna (202.50 g/plant)</b>	SKGPA-13, SKGPA-45, SKGPA-43, SKGPA-46, SKGPA-49 (<133.00) <b>GA-2 (154.83 days)</b>
S.K.Nagar <b>(91 Accessions)</b>	SKGPA-26, SKGPA-17, SKGPA-50, BGA-48, SKGPA-48 (>82.00 g/plant) <b>GA-1 (14.52 g/plant)</b>	BGA-32, BGA-33, SKGPA-7, SKGPA-41, SKGPA-25 (<83.00) <b>GA-1 (93.20 days)</b>



<b>Based on average over locations</b>	SKGPA-9, BGA-44, SKGPA-16, SKGPA-57, BGA-34 (>81.35 g/plant) <b>GA-1 (48.24 g/plant)</b>  SKGPA-9, SKGPA-40, SKGPA-12, SKGPA-13, SKGPA-43 (>11.90) <b>BGA-2 (10.61 q/ha)</b>	SKGPA-59, SKGPA-60, SKGPA-43, SKGPA-46, SKGPA-42 (<116.00) <b>GA-2 (127.65 days)</b>
<b>Amaranth (Kharif)</b>		
Bangalore (48 Accessions)	SKGPA-59, GPBGA-60, SKGPA-8, SKGPA-57 (>16.00 g/plant) <b>KBGA-1 (13.93 g/plant)</b>	SKGPA-41, SKGPA-36, SKGPA-12, SKGPA-10, SKGPA-32 (<76.00) <b>GA-2 (81.50 days)</b>
<b>Ricebean (50 Accessions)</b>		
Bangalore	LRB-482, LRB-478, LRB-446, LRB-484, LRB-474 (>6.30 g/plant) <b>RBL-35 (6.03 g)</b>	<b>RBL-6 (75.00 days)</b>
Bhubaneswar	LRB-491, LRB-465, LRB-489, LRB-458, LRB-322 (>11.62 g/plant) <b>RBL-6 (8.05 g/plant)</b>  LRB-324, LRB-465, LRB-322, LRB-483, LRB-489 (> 6.22 q/ha) <b>RBL-6 (3.97 q/ha)</b>	LRB-484, LRB-493 (<83.00) <b>RBL-35 (82.80 days)</b>
Delhi	LRB-487, LRB-488, LRB-452 (>141.90 g/plant) <b>RBL-1 (138.92 g/plant)</b>  LRB-487, LRB-322, LRB-466, LRB-477, LRB-468 (>389.30 q/ha) <b>RBL-6 (9.26 q/ha)</b>	LRB-448, LRB-474, LRB-485, LRB-484, LRB-489 (<114.00) <b>RBL-35 (114.00 days)</b>
Ludhiana	LRB-462, LRB-456, LRB-324, LRB-322, LRB-446 (>22.90 q/ha) <b>RBL-6 (22.42 q/ha)</b>	LRB-490, LRB-482, LRB-448, LRB-466, LRB-483 (<107.00) <b>RBL-6 (106.00 days)</b>
Mettupalayam	<b>RBL-35 (9.00 g/plant)</b>	<b>RBL-6 (89.00 days)</b>
Rahuri	LRB-488, LRB-475, LRB-311, LRB-483, LRB-325 (>38.30 q/ha) <b>RBL-6 (28.11 q/ha)</b>	LRB-478, LRB-471, LRB-466, LRB-311, LRB-325 (<104.00) <b>RBL-50 (115.80 days)</b>
<b>Based on average over locations</b>	LRB-488, LRB-452 (>40.75 g/plant) <b>RBL-1 (39.44 g/plant)</b>  LRB-467, LRB-325, LRB-488, LRB-324, LRB-311 (>18.22 q/ha) <b>RBL-6 (15.94 q/ha)</b>	LRB-447, LRB-482, LRB-457, LRB-311, LRB-458 (< 97.00) <b>RBL-6 (98.38 days)</b>

<b>Faba bean</b>		
Delhi <b>(96 Accessions)</b>	EC029058, HB-77, EC117739, EC243626, IC243784 (>39.15 q/ha) <b>PRT-12 (24.76 q/ha)</b>  EC343781, EC243793, EC354989, EC005873, EC343691(>151.90 g/plant) <b>Vikrant (121.00 g/plant)</b>	HB-20, EC243820, HB-44, EC107842, EC361429 (<124.00) <b>PRT-12 (123.00 days)</b>
Faizabad <b>(97 Accessions)</b>	EC361499, IC329680, EC243608, EC117743, EC361429 (>32.50 g/plant) <b>Vikrant (27.12 g/plant)</b>	EC243584, HB-05, HB-10, IC243784, HB-15 (<149.00) <b>Vikrant (159.22 days)</b>
Hisar <b>(60 Accessions)</b>	IC374710, HB-17, HB-18, HB- 50, HB-10 (>55.35 g/plant) <b>PRT-7 (35.40 g/plant)</b>	HB-50, EC117726, EC117739, EC243608, EC361497 (<144.00) <b>Vikrant (150.67 days)</b>
<b>Based on average over locations</b>	EC343781, EC005873, EC343691, IC117784, EC243443 (>76.20 g/plant) <b>Vikrant (56.69 g/plant)</b>	EC243584, EC001072, HB-15, IC243784, EC243529 (<142.00) <b>Vikrant (145.30 days)</b>
<b>Winged bean (102 Accessions)</b>		
Akola	<b>Green pod yield</b> EC121918-1, IC034861 (> 167.00 g/plant) <b>AKWB-1 (156.80 g/plant)</b>	-
Ranchi	-	EC038825-2, EC038821-P-4, IC045229-1, IC095238, IC017004-4 (< 166.00 days) <b>AKWB-1 (177.00 days)</b>
<b>Kankoda (10 Accessions)</b>		
Rahuri	<b>Fruit yield</b> RMFG-39, RMFG-51, RMFG-16, RMFG-21 (> 0.45 kg/plant)	-
<b>Kalingada (20 Accessions)</b>		
Mandor	SKGPK-20, SKGPK-15 (>2.40 q/ha) <b>GK-1 (2.39 q/ha)</b>	-
S.K. Nagar	SKGPK-5, SKGPK-10, SKGPK- 9, SKGPK-7, SKGPK-12 (>6.50 q/ha) <b>GK-1 (6.43 q/ha)</b>	SKGPK-20, SKGPK-2, SKGPK-6, SKGPK-19, SKGPK-13 (<90.00) <b>GK-1 (98.50 days)</b>
<b>Based on average over locations</b>	SKGPK-9 (4.46 q/ha) <b>GK-1 (4.41 q/ha)</b>	
<b>Simarouba</b>		
Mandor <b>(5 Accessions)</b>	Plant No. 1, Plant No. 3, Plant No. 5, Plant No. 4, Plant No. 2 (>0.64 g/plant)	-

Rahuri -Male Paradise tree <b>(18 Accessions)</b>	-	-
Rahuri – Female Paradise tree <b>(36 Accessions)</b>	PS-2003-45, PS-2003-4, PS-2003-21, PS-2003-48, PS-2003-20 (>7.30 kg/plant)	PS-2003-20, PS-2003-35, PS-2003-19, PS-2003-59, PS-2003-39 (<38.00 days)
S.K. Nagar -Male Paradise tree <b>(8 Accessions)</b>	-	-
S.K. Nagar – Female Paradise tree <b>(19 Accessions)</b>	Plant No. L10P7, Plant No. L11P4, Plant No. L8P9, Plant No. L2P4, Plant No. L8P3 (>5.48 kg/plant)	-
<b>Tumba (13 Accessions)</b>		
Mandor	MGPT-21, RMT-408, MGPT-17, MGPT-13, MGPT-6 (>10.00 kg/ha) <b>RMT-59 (6.40 kg/ha)</b>	-
<b>Jatropha (158 Accessions)</b>		
Hisar	JH-103, JH-1, JH-40, JH-62, JH-27 (>580.45 g/plant) <b>Chhattarpati (197.40 g/plant)</b>	-

### 8.3 Quality

The seed of promising genotypes evaluated in IVT, AVT and germplasm evaluation of the eight 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)</b>	
IVT (Kharif 2010) and promising germplasm genotypes (Kharif 2009), Hisar	Protein (IC042326: 13.70%, <b>Durga: 12.90%</b> ) Fat (IC042329, IC042339: 8.80 %, <b>Annapurna: 8.10%</b> ) Zn (IC042326, IC035542: 3.40 mg/100g, <b>PRA-2 &amp; PRA-3: 3.20 mg/100g</b> ) Fe (IC042324: 7.20 mg/100g, <b>Durga: 6.80 mg/100g</b> ) Ca (IC042294-2: 318.00 mg/100g, <b>Durga: 308.00 mg/100g</b> ) Fibre (IC042329: 3.70%, <b>Annapurna: 2.80%</b> )
IVT (Kharif 2010) and promising germplasm genotypes (Kharif 2009), Palampur	Protein (IC042326: 14.00%, <b>Annapurna: 13.80%</b> ) Zn ( <b>PRA-2: 3.50 mg/100g</b> ) Fe ( <b>Durga: 7.70 mg/100g</b> ) Ca (IC042339: 316.90 mg/100g, <b>Durga: 309.50 mg/100g</b> ) Fibre (IC042329: 3.60%, <b>Annapurna: 3.00%</b> )

<b>Based on average over locations</b>	Protein (IC042294-2: 13.70%, <b>Durga : 12.80%</b> ) Zn (IC035542: 3.40 mg/100g, <b>PRA-2: 3.35 mg/100g</b> ) Fe ( <b>Durga: 7.25 mg/100g</b> ) Ca (IC042294-2: 341.00, <b>Durga: 308.75 mg/100g</b> ) Fibre (IC042329: 3.65, <b>Annapurna: 2.90%</b> )
<b>Buckwheat (Seed supply by Shimla centre)</b>	
IVT, AVT-II, promising germplasm genotypes (Kharif 2009) and IVT (Kharif 2010), Hisar	Protein (IC107994: 13.80%, <b>Reshwal (IC485355): 12.40%</b> ) Zn (IC109549: 3.70 mg/100g, <b>Shimla B-1 &amp; Reshwal (IC485355): 2.80 mg/100g</b> ) Fe (IC108500: 6.80 mg/100g, <b>Shimla B-1: 4.70 mg/100g</b> ) Ca (IC042424: 88.00 mg/100g, <b>Reshwal (IC485355): 71.00 mg/100g</b> ) Fibre (IC108499: 9.80%, <b>Reshwal (IC485355): 9.70%</b> )
IVT, AVT-II, promising germplasm genotypes (Kharif 2009) and IVT (Kharif 2010), Palampur	Protein (IC107994 : 13.40%, <b>Reshwal (IC485355): 12.80%</b> ) Zn (IC042424: 3.80 mg/100g, <b>Shimla B-1: 3.00 mg/100g</b> ) Fe (IC108500: 7.00 mg/100g, <b>Shimla B-1: 4.30 mg/100g</b> ) Ca (IC042424: 98.50, <b>Reshwal (IC485355): 70.00 mg/100g</b> ) Fibre ( <b>Reshwal (IC485355): 10.00%</b> )
<b>Based on average over locations</b>	Protein (IC107994: 13.60%, <b>Reshwal (IC485355): 12.60%</b> ) Zn (IC109549: 3.65 mg/100g, <b>Shimla B-1: 2.90 mg/100g</b> ) Fe (IC108500: 6.90 mg/100g, <b>Shimla B-1: 4.50 mg/100g</b> ) Ca (IC042424: 93.25, <b>Reshwal (IC485355): 70.50 mg/100g</b> ) Fibre ( <b>Reshwal (IC485355) : 9.85%</b> )
<b>Chenopodium (Seed supply by Shimla centre)</b>	
Promising germplasm genotypes (Kharif 2009), Hisar	Protein (IC108816: 18.20%, <b>PRC-9801: 16.80%</b> ) Fe (IC108087: 14.20 mg/100g, <b>PRC-9801: 13.20 mg/100g</b> ) Zn (IC107585: 3.20 mg/100g, <b>NIC-22503: 2.90 mg/100g</b> ) Ca (IC107296: 314.00 mg/100g, <b>PRC-9801: 301.00 mg/100g</b> ) Fibre (IC106340: 10.70%, <b>PRC-9801: 9.70%</b> )
Promising germplasm genotypes (Kharif 2009), Palampur	Protein (IC108816: 17.60%, <b>PRC-9801: 16.20%</b> ) Fe (IC107185: 14.40 mg/100g, <b>PRC-9801: 14.00 mg/100g</b> ) Zn (IC107585: 3.00 mg/100g, <b>EC-507741 &amp; NIC-22503: 2.40 mg/100g</b> ) Ca (IC107296: 323.80 mg/100g, <b>PRC-9801: 313.40 mg/100g</b> ) Fibre (IC107535: 10.50%, <b>PRC-9801: 9.90%</b> )

<b>Based on average over locations</b>	Protein (IC108816: 17.90%, <b>PRC-9801: 16.50%</b> ) Fe (IC107185: 14.10 mg/100g, <b>PRC-9801: 13.60 mg/100g</b> ) Zn (IC107585: 3.10 mg/100g, <b>NIC-22503: 2.65 mg/100g</b> ) Ca (IC107296: 318.90 mg/100g, <b>PRC-9801: 307.20 mg/100g</b> ) Fibre (IC106340: 10.55%, <b>PRC-9801: 9.80%</b> )
<b>Rice bean (Seed supply by Shimla centre)</b>	
IVT, AVT-I, promising germplasm genotypes (Kharif 2009) and IVT (Kharif 2010), Hisar	Protein (LRB-467: 21.60%, <b>PRR-1: 19.10%</b> ) Fibre (LRB-10: 6.30%, <b>PRR-1: 5.30%</b> ) Ca ( <b>PRR-2 : 376.00 mg/100g</b> ) Fe (LRB-452 : 8.80 mg/100g, <b>PRR-2 : 4.40 mg/100g</b> ) Zn (LRB-452 : 4.10 mg/100g, <b>PRR-1 : 4.10 mg/100g</b> ) Tannins (BC-1: 511.00 mg/100g, <b>PRR-1: 601.00 mg/100g</b> ) Cooking time ( <b>PRR-1 &amp; PRR-2: 55 min.</b> )
IVT, AVT-I, promising germplasm genotypes (Kharif 2009) and IVT (Kharif 2010), Palampur	Protein (LRB-467: 21.00%, <b>PRR-1: 18.80%</b> ) Fibre (VRB-3: 6.60%, <b>PRR-1: 5.50%</b> ) Ca (LRB-311: 315.80 mg/100g, <b>PRR-2 : 383.00 mg/100g</b> ) Fe (LRB-452 : 9.10 mg/100g, <b>PRR-2 : 4.60 mg/100g</b> ) Zn (LRB-452 : 4.50 mg/100g, <b>PRR-2 : 4.20 mg/100g</b> ) Tannins (BC-1: 510.00 mg/100g, <b>PRR-2: 630.0 mg/100g</b> ) Cooking time ( <b>PRR-2 &amp; PRR-1: 56 min.</b> )
<b>Based on average over locations</b>	Protein (LRB-467: 21.30%, <b>PRR-1: 18.95%</b> ) Fibre (LRB-10: 6.30%, <b>PRR-1: 5.40%</b> ) Ca ( <b>PRR-2 : 379.50 mg/100g</b> ) Fe (LRB-452 : 8.95 mg/100g, <b>PRR-2 : 4.50 mg/100g</b> ) Zn (LRB-452 : 4.30 mg/100g, <b>PRR-2 : 4.10 mg/100g</b> ) Tannins (BC-1: 510.50 mg/100g, <b>PRR-2: 621.50 mg/100g</b> ) Cooking time ( <b>PRR-2 &amp; PRR-1: 55.50 min.</b> )
<b>Azuki bean(Seed supply by Shimla centre)</b>	
Promising germplasm genotypes (Kharif 2009), Hisar	Protein ( <b>HPU-51 : 24.30%</b> ) Fe (IC341946: 10.20 mg/100g, <b>HPU-51: 7.80 mg/100g</b> ) Zn (EC034625: 4.10 mg/100g, <b>Totru Local : 3.60 mg/100</b> ) Ca (EC290652: 342.00 mg/100g, <b>Totru Local: 310.00 mg/100g</b> ) Fiber (IC341948: 5.50%, <b>Totru Local : 5.30%</b> ) Tannins (EC29025: 481.00 mg/100g, <b>Totru Local: 581.00 mg/100g</b> ) Cooking time (EC030256: 47.00 min., <b>Totru Local: 45.00 min.</b> )

Promising germplasm genotypes (Kharif 2009), Palampur	Protein ( <b>Totru Local : 23.80%</b> ) Fe (IC341946: 9.50 mg/100g, <b>HPU-51: 7.20 mg/100g</b> ) Zn (EC034625: 4.10 mg/100g, <b>Totru Local : 3.50 mg/100</b> ) Ca (EC340249: 338.90 mg/100g, <b>HPU-51: 301.80 mg/100g</b> ) Fiber (EC290652: 5.70%, <b>Totru Local : 5.60%</b> ) Tannins (EC290251: 470.00 mg/100g, <b>Totru Local : 571.00 mg/100g</b> ) Cooking time (EC030256: 46.00 min., <b>Totru Local: 46.00 min.</b> )
<b>Based on average over locations</b>	Protein ( <b>HPU-51 : 23.95%</b> ) Fe (IC341946: 9.85 mg/100g, <b>HPU-51: 7.50 mg/100g</b> ) Zn (EC034625: 4.10 mg/100g, <b>Totru Local: 3.55 mg/100</b> ) Ca (EC290652: 339.25 mg/100g, <b>HPU-51 &amp; Totru Local: 305.40 mg/100g</b> ) Fiber (EC290652: 5.55%, <b>Totru Local : 5.45%</b> ) Tannins (EC290251: 475.50 mg/100g, <b>Totru Local : 576.00 mg/100g</b> ) Cooking time (EC030256: 46.50 min., <b>Totru Local: 45.50 min.</b> )
<b>PLAINS</b>	
<b>Grain amaranth (Seed supply- used their own seed)</b>	
IVT (Rabi 2009-10), Hisar	Protein (BGA-18: 12.70%, <b>GA-1: 12.60%</b> ) Oil ( <b>GA-1: 6.60%</b> ) Moisture ( <b>GA-2: 11.20%</b> ) Ash (SKNA-707: 1.58%, <b>GA-1: 1.45%</b> )
IVT (Rabi 2009-10), Rahuri	Protein (RGAS-08-10 & RGAS-92-10-1: 14.76%, <b>BGA-2: 13.25%</b> ) Fe (BGA-18: 7.69 mg/100g, <b>Suvarna: 6.88 mg/100g</b> ) Ca (MGA-4: 503.17 mg/100g, <b>BGA-2 : 301.67 mg/100g</b> )
<b>Based on average over locations</b>	Protein (MGA-4: 14.76%, <b>GA-2: 12.40%</b> )
AVT I & II (Rabi 2009-10), Hisar	Protein (BGA-12: 13.20%, <b>GA-1: 12.10%</b> ) Oil (IC041533: 6.40%, <b>GA-1: 6.20%</b> ) Moisture (SKNA-504: 11.70, <b>GA-1: 11.10%</b> ) Ash (BGA-12: 1.52%, <b>Suvarna: 1.51%</b> )
Promising germplasm genotypes(Rabi 2009-10), Rahuri	Protein (SKGPA-7: 13.99%) Fe (BGA-31: 7.98 mg/100g) Ca (BGA-30: 527.00 mg/100g)
<b>Rice bean (Seed supply- used their own seed)</b>	
AVT I & II (Kharif 2009), Hisar	Protein (LRB-470: 20.70%, <b>RBL-6: 19.95%</b> ) Ca (LRB-160:336.00 mg/100g, <b>RBL-1: 324.50 mg/100g</b> ) Fe (LRB-189: 5.90 mg/100g, <b>RBL-35: 5.70 mg/100g</b> ) Zn (LRB-193: 3.80 mg/100g, <b>RBL-1: 3.75 mg/100g</b> ) Tannin (LRB-160: 513.00 mg/100g, <b>RBL-35: 571.00 mg/100g</b> ) Cooking time (LRB-141: 55.00 min., <b>RBL-50: 53.00 min.</b> )

FYT, Hisar	Protein (HRB-493: 20.60%, <b>RBL-35: 19.60%</b> ) Ca ( <b>RBL-1: 319.00 mg/100g</b> ) Fe ( <b>RBL-35: 5.70 mg/100g</b> ) Zn ( <b>RBL-1: 3.80 mg/100g</b> ) Tannin (ST-4: 571.00, <b>RBL-35: 577.00 mg/100g</b> ) Cooking time (ST-12: 54.00 min., <b>RBL-50: 52.00 min.</b> )
SST,Hisar	Protein (Selection-6: 21.80%, <b>RBL-6: 19.30%</b> ) Ca ( <b>RBL-1: 321.00 mg/100g</b> ) Fe ( <b>RBL-35: 5.60 mg/100g</b> ) Zn (HRB-438: 3.80 mg/100g, <b>RBL-1: 3.80 mg/100g</b> ) Tannin ( <b>RBL-35: 577.00 mg/100g</b> ) Cooking time (Selection-6: 54.00 min., <b>RBL-50: 53.00 min.</b> )
Promising germplasm genotypes(Kharif 2010), Rahuri	Protein (LRB-324, LRB-467 & LRB-490: 21.47%, <b>RBL-1: 16.71%</b> )
<b>Faba bean (Seed supply- used their own seed)</b>	
IVT (Rabi 2009-10), Hisar	Protein (NDF-9 & HB-82: 24.70%) Moisture (HB-51: 9.10%) Ash (D.M) (HB-199: 1.37%) Vicine-convicine (HB-82: 0.84%)
AVT (Rabi 2009-10), Hisar	Protein ( <b>Vikrant: 25.55%</b> ) Moisture (HB-62: 8.90%, <b>Vikrant: 8.70%</b> ) Ash (D.M) (ISU-10-2: 1.45%, <b>Vikrant: 1.30%</b> ) Vicine-convicine (HB-62: 0.95%, <b>Vikrant: 0.86%</b> )
SST-1 (Rabi 2009-10), Hisar	Protein (HB-08-3: 26.60%, <b>Vikrant: 25.30%</b> ) Moisture (HB-08-29: 8.90%, <b>Vikrant: 8.70%</b> ) Ash (D.M) (HB-08-21: 1.46%, <b>Vikrant: 1.42</b> ) Vicine-convicine (HB-08-3: 0.92%, <b>Vikrant: 0.88%</b> )
PRT-1 (Rabi 2009-10), Hisar	Protein (PRT-1: 27.70, <b>Vikrant: 25.20%</b> ) Moisture (PRT10: 9.10%, <b>Vikrant: 8.40%</b> ) Ash (D.M) (PRT-6: 1.48%, <b>Vikrant: 1.33%</b> ) Vicine-convicine (PRT-2: 0.96%, <b>Vikrant: 0.84%</b> )
FYT-1 (Rabi 2009-10), Hisar	Protein (HB-06-39 & HB-06-34: 26.20%, <b>Vikrant: 24.50%</b> ) Moisture (HB-645: 9.30%, <b>Vikrant: 8.60%</b> ) Ash (D.M) (HB-06-48: 1.45%, <b>Vikrant: 1.33%</b> ) Vicine-convicine (HB-603: 0.92%, <b>Vikrant: 0.84%</b> )
LST-1 (Rabi 2009-10), Hisar	Protein (HB174: 26.20%, <b>Vikrant: 24.70%</b> ) Moisture (HB-07-3: 9.40%, <b>Vikrant: 8.90%</b> ) Ash (D.M) (HB-07-3: 1.42%, <b>Vikrant: 1.28%</b> ) Vicine-convicine (HB-174: 0.94%, <b>Vikrant: 0.84%</b> )
<b>Kalingada (Seed supply by S.K. Nagar centre)</b>	
IVT, AVT-I (Kharif 2009), Hisar	Oil (SKNK-801: 36.00%, <b>GK-1: 32.80%</b> ) Protein (SKNK-804: 21.80%, <b>GK-1: 19.40%</b> ) Zn (SKNK-805: 8.30 mg/100g, <b>GK-1: 7.20 mg/100g</b> ) Fe (SKNK-803: 15.20 mg/100g, <b>GK-1: 14.80 mg/100g</b> )

Promising germplasm genotypes(Kharif 2009), Hisar	Oil (SKGPK-13: 36.70%, <b>GK-1: 31.50%</b> ) Protein (SKGPK-8: 21.00%, <b>GK-1: 19.20%</b> ) Zn (SKGPK-18: 8.50 mg/100g, <b>GK-1: 6.70 mg/100g</b> ) Fe (SKGPK-9: 15.60 mg/100g, <b>GK-1: 15.10 mg/100g</b> )
Promising germplasm genotypes (Kharif 2009), Mandor	Oil (SKGPK-7: 34.80%) Protein (SKGPK-4: 20.60%) Zn (SKGPK-11: 9.40 mg/100g) Fe (SKGPK-8: 18.80 mg/100g)
<b>Based on average over locations</b>	Oil (SKGPK-2: 34.35%, <b>GK-1: 31.50%</b> ) Protein (SKGPK-4: 19.60%, <b>GK-1: 19.20%</b> ) Zn (SKGPK-21: 8.70 mg/100g, <b>GK-1: 6.70 mg/100g</b> ) Fe (SKGPK-8: 16.55 mg/100g, <b>GK-1: 15.10 mg/100g</b> )
<b>Tumba (Seed supply by Mandor centre)</b>	
AVT-II (Kharif 2009), Hisar	Oil (RMT-406: 24.40%, <b>RMT-59: 22.70%</b> ) Protein (RMT-407: 14.20%, <b>RMT-59: 13.80%</b> ) Zn (RMT-403: 3.80 mg/100g, <b>RMT-59: 2.70 mg/100g</b> ) Fe (RMT-516: 14.30 mg/100g, <b>RMT-59: 13.80 mg/100g</b> )
SST (Kharif 2009), Hisar	Oil (MGPT-9: 24.30%, <b>RMT-59: 23.40%</b> ) Protein (MGPT-16: 14.90%, <b>RMT-59: 14.10%</b> ) Zn (MGPT-9: 3.90 mg/100g, <b>RMT-59: 2.70 mg/100g</b> ) Fe (MGPT-19: 19.70 mg/100g, <b>RMT-59: 12.20 mg/100g</b> )

#### 8.4 VALUE ADDITION

Following genotypes/ varieties were selected for standardization of recipes in underutilized crops to exploit their nutritive value.

**Buckwheat :**       **4**       Himpriya, Sangla B-1, OC-2, Shimla B-1

**Amaranth:**       **1**       Suvarna

**Rice bean :**       **5**       BRS-1, PRR-1, PRR-2, RBL-1, RBL-6

**Adzuki bean :**   **1**       HPU-1

Standardization of different recipes for value addition was taken as under:

##### **Amaranth based value added products**

- **Panjeeri:** Methodology for preparation of amaranth based panjeeri using popped amaranth flour, popped lotus seeds (phool makhana), edible gum, dry fruits, coconut powder, jaggery powder and desi ghee. The prepared product was got evaluated for various sensory attributes by a panel of judges on nine point hedonic scale and was liked extremely by the judges.



- **Salty bite biscuits:** Attempts were made to prepare salty biscuits using 20 per cent popped amaranths flour. The prepared product was liked very much by a panel of judges on nine point hedonic scale.

### **Buckwheat supplemented value added products**

- **Biscuits and *Khatai*:** Based on the results of last years trails on biscuits where 20 per cent level of supplementation was adjudged best. Attempts were made to prepare 20 per cent buckwheat supplemented biscuits on large scale for mass acceptability trails. *Khatai* were also standardized by incorporating 25 per cent buck wheat flour.
- ***Pinni*:** Methodology for preparation of pure buckwheat *pinnis* was also standardized. The overall acceptability scores of buckwheat *pinnis* on nine point hedonic scale ranged between liked moderately to liked very much.
- **Sweet *sevian*:** Sugar coated buckwheat *sevian* were standardized using buckwheat flour and Bengal gram flour blends in equal proportions. The overall acceptability scores of the prepared *sevian* on nine point hedonic scale ranged between liked moderately to liked very much.

### **Rice bean based value added products**

- ***Chilay (babroos) and Matari*:** Methodology for preparation of sweet *Chilay (babroos)* and *matari* using rice bean flour with whole wheat flour and refined wheat flour in the ratios of 20:80, 40:60 and 60:40 respectively was standardized. The overall acceptability scores of *Chilay (babroos)* and *matari* slightly declined as the level of supplementation increased but the scores ranged between liked moderately and liked very much on nine point hedonic scale. The most acceptable levels of rice bean flour supplementation were 20 per cent in both the products.
- ***Pinni*:** Methodology for preparation of *pinni* using whole wheat flour and rice bean flour in varying proportions (100:00, 75:25, 50:50 and 25:75) was standardized. The incorporation of rice bean flour in pinni improved the taste and texture of the pinni and the overall acceptability scores of pinni prepared by using 25 parts of whole wheat flour and 75 parts of rice

bean flour was adjudged best among all treatments on nine point hedonic scale.

- **Shakarpara:** Methodology was standardized for preparation of shakarpara using refined wheat flour and rice bean flour in equal proportions.
- **Bari:** Rice bean *dal* supplemented *Bari* was prepared by using dehusked black gram dal in varying ratios viz. 0%, 25%, 50%, 75% and 100%.

### **Adzuki bean based value added products**

- **Pinni:** Methodology for preparation of *pinnis* was standardized using adzuki bean and whole wheat flour in different proportions viz. 0%, 25%, 50%, 75% and 100%. The *pinnis* prepared by using equal proportion of adzuki bean flour and whole wheat flour were rated best among all the levels of supplementation. The overall acceptability scores *pinni* prepared by using 100 per cent adzuki bean flour were comparatively lower but ranged between liked slightly to liked moderately.
- **Mathri :** Different formulations of composite flour containing refined wheat flour and adzuki bean flour (0%, 25%, 50%, 75% and 100%) were evaluated for preparation of *mathri*. The overall acceptability scores of *mathri* supplemented with 25 per cent adzuki bean flour were next to the control *mathri* which were adjudged best. Although the overall acceptability scores of the supplemented *mathri* declined as the level of supplementation increased yet the overall acceptability scores of all the blends ranged near to liked moderately.
- **Sevian:** Different blends of bengal gram flour and adzuki bean flour (0%, 25%, 50%, 75% and 100%) were evaluated for preparation of *sevian*. Results of the overall acceptability scores revealed that the *sevian* prepared by using 25 parts of adzuki bean flour and 75 parts of Bengal gram flour were adjudged better than the control ones. This could be due to the reason that addition of adzuki bean flour at this particular level improved the crunchiness of the product. The overall acceptability scores of the *sevian* declined with increase in the level of supplementation but

ranged between liked moderately to liked extremely on nine point hedonic scale.

- **Pakorū:** Different formulations were standardized for preparation of *pakorū* using black gram *dal* and adzuki bean *dal*. Both the *dals* were soaked in water for overnight and the husk was removed manually by rubbing with both hands. The soaked dehusked *dals* were ground to a fine paste using optimum water in a mixer grinder. Different blends of black gram *dal* and adzuki bean *dal* paste (0%, 25%, 50%, 75% and 100%) were evaluated for preparation of *pakorū*s. The overall acceptability of the blended *pakorū* improved with addition of adzuki bean.

## 8.5 AGRONOMY

A total of thirteen agronomic experiments were formulated to be conducted at eight locations in 25 trials. These comprised of three studies on amaranth, one each on buckwheat and kalingada, five on rice bean and four on underutilized crops in general during Rabi 2009-10 and Kharif 2010. Out of 25 trials allotted, results of 15 were received. Salient findings are as follows:

S. No.	Experiment	Finding
1.	Evaluation of organic sources for nitrogen management in grain amaranth	Recommended dose of fertilizer gave the highest seed yield at Bangalore whereas application of FYM @8 t/ha resulted in highest amaranth grain yield at Bhubaneswar based on both the location, recommended dose of fertilizer gave the highest yield.
2.	Intercropping of amaranth with major crops of the area	Intercropping amaranth with French bean (1:1) resulted in more efficient land use (LER) than the sole crop at S.K. Nagar.
3.	Integrated nutrient management studies in rice bean	Application of 100% RDF + PSB + Rhizobium recorded maximum seed yield of rice bean both at Bhubaneswar and Bangalore which was followed by that obtained by application of 100% RDF + Rhizobium culture and 75%RDF + PSB + Rhizobium in that order.

4.	Intercropping study in rice bean	Intercropping rice bean and amaranth in 2:2 row ratio resulted in the highest value of LER at Ranichauri while, rice bean + bajra (2:4) gave maximum returns and highest value of LER at Hisar. At Bhubaneswar, maize + rice bean (2:4) gave highest values of LER while arhar + rice bean (2:4) resulted in maximum rice bean equivalent yield.
5.	Fertilizer management in rice bean based intercrop	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. Also, the grain yields of maize intercrop were higher than that of grain amaranth at all levels of fertilizer application.
6.	Effect of planting geometry, fertilizer dose and plants/hill of kalingada under rainfed condition	Maximum seed yield was obtained by growing the crop in 3x1m 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 $S_1F_2P_1$ resulting in highest seed and green fruit yields.
7.	Intercropping studies in underutilized crops in apple orchards	Chenopodium was observed to give highest yield followed by French bean, buckwheat, peas and amaranth in the descending order.
8.	Performance of different underutilized crops in rice fallows	The highest seed yield was obtained in rice fallows from the crop of wheat, followed by lathyrus while, grain amaranth was observed to be the highest yielder at Bhubaneswar followed by rice bean and urd, which were also at par with each other.

# ANNEXURES

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**Mean seed yield (q/ha) of rice bean varieties tested for the last three years : Hill**

S. No.	Genotypes	2008		2009		2010		Weighted			Percent increase / decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	PRR-1	PRR-2	RBL-6
1	PRR-2008-1	6.88	0/3	8.81	0/5	12.80	1/6	10.11	1/14		-30.88	-30.77	-24.60
2	PRR-2008-2	9.23	0/3	10.60	0/5	13.94	1/6	11.74	1/14		-19.72	-19.60	-12.43
3	PRR-2007-1	5.34	0/4	5.58	0/5	16.47	1/5	9.40	1/14		-35.70	-35.61	-29.86
4	PRR-2007-2	3.98	0/4	6.42	0/5	7.02	0/6	6.01	0/15		-58.90	-58.84	-55.17
5	PRR-1 (C)	13.91	4	12.83	5	17.57	4	14.62	13	I	-	0.15	9.08
6	PRR-2 (C)	15.21	4	11.35	5	16.90	6	14.60	15	II	-0.15	-	8.92
7	RBL-6 (C)	12.15	4	13.69	5	14.00	6	13.40	15	III	-8.33	-8.19	-

## Mean maturity days of rice bean varieties tested for the last three years : Hill

S. No.	Genotypes	2008		2009		2010		Weighted			Percent increase / decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	PRR-1	PRR-2	RBL-6
1	PRR-2008-1	121.25	1/4	129.00	4/5	123.80	2/5	124.93	7/14	III	-8.05	-10.43	-14.10
2	PRR-2008-2	121.25	1/4	135.73	2/5	132.86	2/6	130.72	5/15		-3.79	-6.28	-10.11
3	PRR-2007-1	106.73	2/5	112.40	5/5	124.93	3/5	114.69	10/15	II	-15.59	-17.77	-21.14
4	PRR-2007-2	105.93	2/5	111.27	5/5	123.56	3/6	114.21	10/16	I	-15.94	-18.11	-21.47
5	PRR-1 (C)	135.91	5	138.87	5	132.08	4	135.87	14		-	-2.58	-6.57
6	PRR-2 (C)	137.44	5	140.67	5	140.17	6	139.47	16		2.65	-	-4.10
7	RBL-6 (C)	143.24	5	146.20	5	146.61	6	145.43	16		7.03	4.27	-

**Mean seed yield (q/ha) of grain amaranth (Rabi & Kharif) varieties tested for the last three years**

S. No.	Genotypes	Rabi						Kharif						Weighted			Percent increase / decrease over check			
		2005-06		2007-08		2009-10		2007		2008		2010								
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	BGA-2	GA-1	GA-2	Suvarna
1	BGA-5	13.72	1/6	10.61	1/7	10.26	0/7			9.18	0/2	15.31	1/2	11.56	3/24	I	19.80	17.29	19.88	14.57
2	SKNA-501	13.72	2/6	8.40	0/5	10.96	0/8	3.42	0/1	9.52	0/2	11.17	0/2	10.70	2/24		10.90	8.59	10.98	6.06
3	SKNA-502	13.65	1/6	10.79	0/7	11.26	0/7	5.30	1/2	11.80	0/2	10.30	0/2	11.19	2/26	II	16.03	13.60	16.11	10.96
4	SKNA-503	13.89	0/6	9.48	0/7	10.90	0/8	4.64	1/2	15.80	1/2	8.20	0/2	10.90	2/27		12.93	10.57	13.01	8.00
5	SKNA-504	12.38	0/6	11.39	1/7	9.38	0/8			14.59	1/2	9.38	0/2	11.08	2/25	III	14.84	12.44	14.92	9.83
6	BGA-2 (C)					8.49	8					14.28	2	9.65	10		-	-2.09	0.07	-4.36
7	GA-1 (C)	12.11	6	10.47	7	9.03	8	3.01	2	11.07	2			9.85	25		2.14	-	2.21	-2.32
8	GA-2 (C)	12.78	6	10.39	7	8.91	8	2.59	2	7.14	2	10.08	2	9.64	27		-0.07	-2.16	-	-4.43
9	Suvarna (C)	12.27	4	8.93	5	8.27	8	4.83	2	16.17	2	15.07	2	10.09	23		4.56	2.38	4.64	-



**Mean maturity days of grain amaranth (Rabi & Kharif) varieties tested for the last three years**

S. No.	Genotypes	Rabi						Kharif						Weighted			Percent increase / decrease over check			
		2005-06		2007-08		2009-10		2007		2008		2010								
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	BGA-2	GA-1	GA-2	Suvarna
1	BGA-5	123.78	0/6	123.92	1/6	136.47	0/8			83.25	0/2	81.00	0/2	121.10	1/24		-2.34	-2.13	2.33	4.67
2	SKNA-501	113.78	0/6	119.13	1/5	129.28	2/8	79.00	1/2	89.13	0/2	80.00	0/2	112.35	4/25	I	-9.40	-9.20	-5.06	-2.89
3	SKNA-502	115.67	0/6	123.48	0/7	127.54	1/7	88.25	0/2	90.25	1/2	85.00	0/2	114.54	2/26	II	-7.63	-7.43	-3.21	-1.00
4	SKNA-503	114.33	0/6	124.67	0/7	132.11	2/8	87.75	0/2	89.75	0/2	88.17	0/2	116.55	2/27		-6.01	-5.81	-1.51	0.74
5	SKNA-504	121.00	0/6	123.74	0/7	131.76	1/8			90.88	1/2	90.00	0/2	120.32	2/25		-2.97	-2.76	1.67	4.00
6	BGA-2 (C)					134.88	8					80.50	2	124.00	10		-	0.22	4.79	7.18
7	GA-1 (C)	121.42	6	130.21	7	134.96	8	94.75	2	92.13	2			123.74	25		-0.22	-	4.56	6.95
8	GA-2 (C)	116.74	6	126.61	7	134.58	8	95.00	2	90.00	2	80.92	2	118.34	27		-4.57	-4.36	-	2.29
9	Suvarna (C)	117.19	4	120.20	5	137.47	8	83.00	2	82.25	2	80.50	2	115.70	23	III	-6.70	-6.50	-2.23	-

**Mean seed yield (q/ha) of grain amaranth (Rabi) varieties tested for the last three years : Plain**

S. No.	Genotypes	2005-06		2007-08		2009-10		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	BGA-2	GA-1	GA-2	Suvarna
1	BGA-5	13.72	1/6	10.61	1/7	10.26	0/7	11.42	2/20	II	34.52	9.92	8.67	21.43
2	SKNA-501	13.72	2/6	8.40	0/5	10.96	0/8	11.16	2/19		31.42	7.39	6.17	18.63
3	SKNA-502	13.65	1/6	10.79	0/7	11.26	0/7	11.81	1/20	I	39.13	13.69	12.40	25.59
4	SKNA-503	13.89	0/6	9.48	0/7	10.90	0/8	11.28	0/21	III	32.87	8.58	7.35	19.94
5	SKNA-504	12.38	0/6	11.39	1/7	9.38	0/8	10.91	1/21		28.47	4.98	3.79	15.97
6	BGA-2 (C)					8.49	8	8.49	8		-	-18.29	-19.21	-9.73
7	GA-1 (C)	12.11	6	10.47	7	9.03	8	10.39	21		22.38	-	-1.13	10.47
8	GA-2 (C)	12.78	6	10.39	7	8.91	8	10.51	21		23.78	1.15	-	11.74
9	Suvarna (C)	12.27	4	8.93	5	8.27	8	9.41	17		10.78	-9.48	-10.50	-

## Mean maturity days of grain amaranth (Rabi) varieties tested for the last three years : Plain

S. No.	Genotypes	2005-06		2007-08		2009-10		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	BGA-2	GA-1	GA-2	Suvarna
1	BGA-5	123.78	0/6	123.92	1/6	136.47	0/8	128.90	1/20		-4.44	-0.47	1.63	1.00
2	SKNA-501	113.78	0/6	119.13	1/5	129.28	2/8	121.71	3/19	I	-9.76	-6.02	-4.03	-4.63
3	SKNA-502	115.67	0/6	123.48	0/7	127.54	1/7	122.56	1/20	II	-9.14	-5.37	-3.37	-3.97
4	SKNA-503	114.33	0/6	124.67	0/7	132.11	2/8	124.55	2/21	III	-7.66	-3.83	-1.79	-2.40
5	SKNA-504	121.00	0/6	123.74	0/7	131.76	1/8	126.01	1/21		-6.57	-2.70	-0.64	-1.26
6	BGA-2 (C)					134.88	8	134.88	8		-	4.15	6.35	5.69
7	GA-1 (C)	121.42	6	130.21	7	134.96	8	129.51	21		-3.98	-	2.11	1.48
8	GA-2 (C)	116.74	6	126.61	7	134.58	8	126.83	21		-5.97	-2.07	-	-0.62
9	Suvarna (C)	117.19	4	120.20	5	137.47	8	127.62	17		-5.38	-1.46	0.62	-

**Mean seed yield (q/ha) of grain amaranth (Kharif) varieties tested for the last three years : Plain**

S. No.	Genotypes	2007		2008		2010		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	BGA-2	GA-1	GA-2	Suvarna
1	BGA-5			9.18	0/2	15.31	1/2	12.25	1/4	II	-14.25	73.93	85.44	1.84
2	SKNA-501	3.42	0/1	9.52	0/2	11.17	0/2	8.96	0/5		-37.25	27.27	35.69	-25.48
3	SKNA-502	5.30	1/2	11.80	0/2	10.30	0/2	9.13	1/6		-36.04	29.73	38.31	-24.04
4	SKNA-503	4.64	1/2	15.80	1/2	8.20	0/2	9.55	2/6		-33.15	35.61	44.57	-20.60
5	SKNA-504			14.59	1/2	9.38	0/2	11.99	1/4		-16.07	70.24	81.50	-0.32
6	BGA-2 (C)					14.28	2	14.28	2	I	-	102.84	116.25	18.77
7	GA-1 (C)	3.01	2	11.07	2			7.04	4		-50.70	-	6.61	-41.45
8	GA-2 (C)	2.59	2	7.14	2	10.08	2	6.60	6		-53.76	-6.20	-	-45.08
9	Suvarna (C)	4.83	2	16.17	2	15.07	2	12.02	6	III	-15.80	70.79	82.08	-

**Mean maturity days of grain amaranth (Kharif) varieties tested for the last three years : Plain**

S. No.	Genotypes	2007		2008		2010		Weighted			Percent increase / decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	BGA-2	GA-1	GA-2	Suvarna
1	BGA-5			83.25	0/2	81.00	0/2	82.13	0/4	III	2.02	-12.11	-7.35	0.25
2	SKNA-501	79.00	1/2	89.13	0/2	80.00	0/2	82.71	1/6		2.75	-11.48	-6.69	0.97
3	SKNA-502	88.25	0/2	90.25	1/2	85.00	0/2	87.83	1/6		9.11	-6.00	-0.91	7.22
4	SKNA-503	87.75	0/2	89.75	0/2	88.17	0/2	88.56	0/6		10.01	-5.23	-0.09	8.11
5	SKNA-504			90.88	1/2	90.00	0/2	90.44	1/4		12.35	-3.21	2.03	10.40
6	BGA-2 (C)					80.50	2	80.50	2	I	-	-13.85	-9.18	-1.73
7	GA-1 (C)	94.75	2	92.13	2			93.44	4		16.07	-	5.42	14.07
8	GA-2 (C)	95.00	2	90.00	2	80.92	2	88.64	6		10.11	-5.14	-	8.21
9	Suvarna (C)	83.00	2	82.25	2	80.50	2	81.92	6	II	1.76	-12.33	-7.58	-

**Mean seed yield (q/ha) of fababean varieties tested for the last three years : Plain**

S. No.	Genotypes	2005-06		2007-08		2009-10		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Vikrant
1	HB-603	16.99	0/5	20.13	0/4	20.12	2/6	19.08	2/15		-0.85
2	HB-604	16.92	1/5	20.09	1/4	20.12	1/6	19.05	3/15		-1.03
3	HB-608	19.25	1/5	20.47	0/4	21.53	2/6	20.49	3/15	I	6.46
4	HB-611	18.10	1/5	20.74	1/4	19.75	1/6	19.46	3/15	III	1.15
5	HB-613	18.66	2/5	23.55	2/4	19.77	1/6	20.41	5/15	II	6.05
6	IGSV-10-2	13.90	0/5	18.72	1/4	19.91	1/6	17.59	2/15		-8.60
7	NDF-1	16.51	1/5	20.44	0/4	19.00	0/5	18.52	1/14		-3.75
8	NDF-4	15.02	0/5	18.32	0/4	22.21	1/5	18.53	1/14		-3.70
9	Vikrant (C)	17.37	5	20.33	4	20.08	6	19.24	15		-

**Mean maturity days of fababean varieties tested for the last three years : Plain**

S. No.	Genotypes	2005-06		2007-08		2009-10		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Vikrant
1	HB-603	141.22	1/6	140.58	2/6	142.25	1/6	141.35	4/18		-1.65
2	HB-604	139.33	1/6	137.79	3/6	143.06	2/6	140.06	6/18	I	-2.54
3	HB-608	140.44	1/6	138.57	3/6	142.69	2/6	140.57	6/18		-2.19
4	HB-611	140.33	1/6	138.40	2/6	142.19	3/6	140.31	6/18	III	-2.37
5	HB-613	141.50	1/6	140.17	2/6	142.31	3/6	141.33	6/18		-1.66
6	IGSV-10-2	137.00	2/6	139.92	3/6	143.68	1/6	140.20	6/18	II	-2.45
7	NDF-1	141.94	1/6	141.06	1/6	145.03	1/5	142.54	3/17		-0.82
8	NDF-4	140.72	1/6	138.79	2/6	143.75	1/5	140.93	4/17		-1.94
9	Vikrant (C)	144.33	6	142.68	6	144.14	6	143.72	18		-

**Mean seed yield (q/ha) of jatropha varieties tested for the last three years : Plain**

S. No.	Genotypes	2008		2009		2010		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Chhatrapati
1	Hansraj	17.30	0/3	12.23	0/2	13.81	0/2	14.85	0/7		-16.76
2	ISJ-1	15.95	0/3	11.72	0/2	14.14	0/2	14.22	0/7		-20.29
3	JH-1	21.60	2/3	15.07	1/2	18.75	1/2	18.92	4/7	I	6.02
4	JH-2			3.64	0/1	14.54	0/2	10.91	0/3		-38.88
5	Phule-1	15.49	1/3	12.40	0/2	14.74	0/2	14.39	1/7		-19.35
6	S.K. Nagar-Big	18.77	0/3	12.80	0/2	13.44	0/2	15.54	0/7	III	-12.91
7	SKNJ-4	15.80	1/3	12.49	0/2	15.34	0/2	14.72	1/7		-17.50
8	TNMC-7			1.65	0/1	6.44	0/1	4.05	0/2		-77.33
9	TNMC-25			1.84	0/1	4.51	0/1	3.18	0/2		-82.21
10	Urlikanchan	17.67	0/3	13.83	0/2	8.85	0/1	14.92	0/6		-16.39
11	Chhatrapati (C)	18.52	3	15.93	2	18.75	2	17.85	7	II	-



**Mean Fruit yield yield (q/ha) of jatropha varieties tested for the last three years : Plain**

S. No.	Genotypes	2008		2009		2010		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Chhatrapati
1	Hansraj	133.67	0/2	44.48	0/2	48.30	0/2	75.48	0/6		322.98
2	ISJ-1	96.44	0/2	37.46	0/2	52.41	0/2	62.10	0/6		248.00
3	JH-1	193.74	1/2	67.82	1/2	83.62	1/2	115.06	3/6	I	544.75
4	JH-2			17.43	0/1	45.00	0/2	35.81	0/3		100.66
5	Phule-1	85.26	0/2	36.11	0/2	50.47	0/2	57.28	0/6		220.97
6	S.K. Nagar-Big	139.77	0/2	47.06	0/2	48.80	0/2	78.54	0/6		340.12
7	SKNJ-4	108.29	1/2	37.70	0/2	50.31	0/2	65.43	1/6		266.66
8	TNMC-7			10.06	0/1	49.13	0/1	29.60	0/2		65.84
9	TNMC-25			11.28	0/1	36.16	0/1	23.72	0/2		32.92
10	Urlikanchan	143.66	0/2	51.06	0/2	89.13	0/1	95.71	0/5	II	436.34
11	Chhatrapati (C)	153.62	2	57.46	2	65.85	2	92.31	6	III	417.27

## Mean seed yield (q/ha) of kalingada varieties tested for the last three years : Plain

S. No.	Genotypes	2008		2009		2010		Weighted			Percent increase / decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	GK-1
1	SKNK-711	6.12	0/1	3.00	1/2	2.43	0/2	3.40	1/5	II	-0.24
2	SKNK-712	3.50	0/1	2.61	0/2	2.92	0/2	2.91	0/5	III	-14.45
3	GK-1 (C)	6.02	1	2.29	2	3.21	2	3.40	5	I	-

## Annexure-XIV

## Number of trials/activities allotted and conducted at various centers AICRN on Underutilized Crops

S. No	Name of Centre	Alloted					Conducted					%age
		Breeding	Germplasm	Agronomy	Quality	Total	Breeding	Germplasm	Agronomy	Quality	Total	
<b>(A) Hill</b>												
1	Almora	3	3			6	3	3			6	100.00
2	Bhowali	1	1			2	1	1			2	100.00
3	Palampur	2	3		5	10	2	3		5	10	100.00
4	Ranichauri	4	8	2		14	4	8	2		14	100.00
5	Sangla	2	4	1		7	2	4	1		7	100.00
6	Shillong	1	3			4	1	3			4	100.00
7	Shimla	3	5			8	3	5			8	100.00
8	Cooch Behar	1		5		6			1		1	16.67
	<b>Total (A)</b>	<b>17</b>	<b>27</b>	<b>8</b>	<b>5</b>	<b>57</b>	<b>16</b>	<b>27</b>	<b>4</b>	<b>5</b>	<b>52</b>	<b>91.23</b>
<b>(B) Plain</b>												
1	Ambikapur	4	1			5	4	1			5	100.00
2	Bangalore	2	2	4		8	2	2	3		7	87.50
3	Bhubaneswar	3	3	4		10	3	2	4		9	90.00
4	Delhi	3	3			6	3	3			6	100.00
5	Faizabad	3	2			5	3	2			5	100.00
6	Hisar	4	2	2	10	18	4	2	1	10	17	94.44
7	Ludhiana	3	2			5	2	1			3	60.00
8	Mandor	3	4			7	3	4			7	100.00
9	Mattupalayam	2	3	4		9	2	1	1		4	44.44
10	Rahuri	1	4		3	8	1	4			5	62.50
11	Ranchi	3	2			5	3	2			5	100.00
12	S.K. Nagar	4	5	3		12	2	4	2		8	66.67
13	Cooch Behar	2				2	-	-			0	0.00
	<b>Total (B)</b>	<b>37</b>	<b>33</b>	<b>17</b>	<b>13</b>	<b>100</b>	<b>32</b>	<b>28</b>	<b>11</b>	<b>10</b>	<b>81</b>	<b>81.00</b>
	<b>Grand Total (A+B)</b>	<b>54</b>	<b>60</b>	<b>25</b>	<b>18</b>	<b>157</b>	<b>48</b>	<b>55</b>	<b>15</b>	<b>15</b>	<b>133</b>	<b>84.71</b>
	<b>Percentage of trials conducted</b>						<b>88.89</b>	<b>91.67</b>	<b>60.00</b>	<b>83.33</b>	<b>84.71</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*)

## List of Centres and Names of Scientists working on AICRP Underutilized Crops

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