For Official Use Only

ALL INDIA COORDINATED RESEARCH NETWORK ON UNDERUTILIZED CROPS

ANNUAL REPORT 2007

भाकृअनुप
ICAR

National Bureau of Plant Genetic Resources
Pusa Campus, New Delhi - 110 012

For Official Use Only

ALL INDIA COORDINATED RESEARCH NETWORK ON UNDERUTILIZED CROPS

PROGRESS REPORT 2007

Compiled By

Dr. Hanuman Lal

Dr. R.P. Dua

Dr. M. Dutta

Dr. B.S. Phogat

Dr. S.K. Sharma

Dr. R.S. Rathi

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

CONTENTS

PREAMBLE

I. PREAMBLE

Underutilized crops 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 agro-biodiversity, 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.

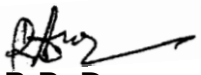
Recognizing the need for organised research effort on less common, under exploited crops, the All India Coordinated Research Project on Under Utilized and Under Exploited Plants was initiated during 1982 by ICAR. The Project was later redesignated as AICRP on Underutilized Crops and recently rechristened 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 31 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.

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.K. Deen, Technical Programme Leaders for Plant Breeding, Agronomy and Quality Analysis for compilation of the report on respective disciplines. I am extremely thankful to Dr. H. Lal, Scientist and Dr. R.S. Rathi, Technical Officer 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. Mangala Rai, Director General, ICAR & Secretary, DARE; Dr. P.L. Gautam, DDG (CS), ICAR; Dr. S.N. Shukla, ADG (FFC), ICAR and Dr. S.K. Sharma, Director, NBPGR.

I wish to record my appreciation to Mrs. Vijay Laxmi, Mr. Satya Prakash and Ms. Amita for neatly typing the report.



R.P. Dua
Nodal Officer

PLANT BREEDING

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 hilly 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 material 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 Screening Nurseries are also conducted in the crops requiring explorative investigation. The results of the experiments conducted during rabi 2006-2007 in the plains and during *kharif* 2007 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, buckwheat and chenopods); grain legumes (rice bean, faba bean and adzuki bean); oil-seed crop (*Perilla)* and dual purpose food and fodder crop (*Coix).* These crops are taken up in the kharif season in the 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 was conducted during kharif, 2007. Although many species of grain amaranth are economically important, but three species, namely, *A*. *hypochondriacus*, *A*. *caudatus* and *A*. *edulis,* being the important grain yielding types, are included in the testing programmes.

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

In this trial, nine entries in IVT, five entries in AVT-I and one entry in AVT-II along with four checks were tested at five locations. The data were received only from 4 centres, as the crop failed at Palampur due to poor germination. 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 4 locations, only IC467901 in IVT trial showed yield superiority over the best check, Annapurna.

Significant differences were observed among the entries for seed yield at all the locations (Table 2). Seed yield level was high at Shimla (30.20 q/ha), moderate at Sangla (11.53 q/ha) and Almora (11.39 q/ha); and low at Ranichauri (9.65 q/ha). Based on the average performance over locations the entry IC467901 was the highest yielder (22.22 q/ha) followed by Annapurna (19.83 q/ha). On individual centre basis, PRA-2007-2 was the highest yielder at Ranichauri (14.83 q/ha), IC0423117 at Shimla (40.75 q/ha), IC467901 at Sangla (19.48 q/ha) and RMA-30 at Almora (17.96 q/ha).

Average plant height of the entries (Table 3) was the highest at Shimla (283.34 cm) followed by Almora (193.95 cm) and Sangla (127.66 cm). It was the lowest at Ranichauri (126.01 cm) centre. The plant height at Shimla ranged from 224.63 cm to 338.07 cm and at Ranichauri from 75.83 cm to 160.13 cm. Based on average performance over the four locations the entry IC467901 had the highest plant height (211.56 cm).

Flowering time showed considerable variation among the locations as well as among the entries within a location. The mean flowering time was the lowest (61.86 days) at Almora while it was the longest (97.91 cm) at Shimla (Table 4). The variation in flowering time among the entries was wider at Shimla (71.00 – 137.33 days). The entry RMA-30 showed consistence for early flowering over the locations and ranked first (60.58 days) based on the overall performance.

Maturity period also showed similar trend as the flowering time. The average maturity period of the entries over all the locations was 140.08 days (Table 5). The entry, RMA-30 was the earliest in maturity (123.42 days) almost similar to that of IC35407 (124.00 days). The average maturity period was the minimum at Almora (104.14 days) while, it was the longest at Shimla (163.72 days).

The length of inflorescence (Table 6) of the entries was the highest at Shimla (77.79 cm) followed by Almora (65.36 cm). Inflorescence length was the lowest (44.70 cm) at Ranichauri. Based on the average over two locations, the check Annapurna had the longest inflorescence (72.65 cm).

Number of fingers per inflorescence (Table 7) was the highest at Shimla (79.07) followed by at Sangla centre (58.83). Based on the average over the locations the entry IC540862 had the highest number of fingers (83.98).

Test weight (Table 8) expressed in terms of weight of 10 ml seed recorded at three centres showed that it was the highest at Ranichauri (12.88 g) and low to moderate at Shimla (7.62 g) and Almora (7.82 g). The variation among the entries was relatively low. Based on the average over three locations the entry, IC540839 (10.88 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. In addition to its foliage and grain, it produces a glucoside called *rutin*, which has a medicinal value against cardio-vascular ailments.

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

A combined trial of Initial Varietal Trial (10 entries), Advanced Varietal Trial I (3 entries) and Advanced Varietal Trial II (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. The entry Sangla B-124 was found superior in yield to the best check variety, Shimla B-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 yield at Ranichauri was comparatively low (3.15 q/ha). Highest seed yield was recorded at Shimla (9.14 q/ha) followed by Sangla (8.68 q/ha) and Almora (8.17 q/ha).

Average plant height (Table 11) was recorded to be the highest at Shimla (178.40 cm) followed by at Ranichauri (113.14 cm). The entry EC 323729 was the tallest (142.52 cm).

Flowering time varied from 21.00 to 44.00 days at Almora, from 34.00 to 64.67 days at Shimla and 21.00 to 68.00 days at Ranichauri centre (Table 12). Mean flowering time was the earliest at Almora (35.13 days) followed by at Shimla (46.46 days).

Maturity period (Table 13) also showed similar trend as that of flowering time. Average maturity period was the earliest at Almora (71.00 days) followed by at Shimla (111.16 days). On the basis of average over four locations the check variety Shimla B-1 was earliest in maturity (83.42 days).

The average test weight was recorded to be higher at Almora (2.23 g) than at other centres (Table 14). On the basis of average over three locations VL 7 possessed the highest (2.44 g) and Shimla B-1 the lowest (1.80 g) test weight.

2.1.3 CHENOPODIUM (*Chenopodium* spp.)

In Chenopodium two species viz. *C. quinoa* and *C. album* are economically important and hence have been included in the evaluation programme. An Initial Varietal Trial and Advanced Varietal Trial comprising both the species was proposed to be conducted at three locations.

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

The Initial Varietal Trial and Advanced Varietal Trial comprising eighteen lines was conducted at three centres. The entries comprised of the lines received from two centres, Shimla and Ranichauri. The performance of the entries has been summarized in table 15. The average grain yield (2.57 q/ha) was low at

Ranichauri (Table 16), while it was the highest at Shimla (11.04 q/ha). Based on average over two locations the entry NIC 22506 was the highest yielder (10.27 q/ha).

Average plant height was the highest at Shimla (262.54 cm) and the lowest at Ranichauri (98.27 cm) centre (Table 17).

Average flowering time varied from 62.48 days at Ranichauri to 86.44 days at Shimla (Table18) and maturity period from 125.94 days at Ranichauri to 137.94 days at Shimla (Table 19). The entry IC415477 was earliest in flowering as well as in maturity.

Inflorescence length showed high variation ranging from 18.01 to 43.31 cm. The entry, EC507733 (33.03 cm) had the longest earhead (Table 20).

2.1.4 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.

2.1.4.1 Initial Varietal Trial and Advanced Varietal Trial (IVT, AVT-I & II)

The IVT, AVT-I and AVT-II comprising 14 entries and four 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 21.

Significant variations were observed among the entries with respect to seed yield at all the locations (Table 22). Yield level at Shimla centre was the highest with an average yield of 33.46 q/ha while it was the lowest (6.67 q/ha) at Ranichauri centre. The yield levels at Almora (8.32 q/ha), Palampur (10.17 q/ha) and Shillong (11.39 q/ha) centres were also low. On the basis of average over two locations LRB005 (18.03 q/ha) was the highest yielder followed by the entry LRB010 (17.79 q/ha).

Plant height (Table 23) was the highest at Bhowali showing an average of 194.06 cm, while it was the lowest at Palampur (95.97 cm) and Shillong (98.08

cm) centres. At Almora centre also plant height was considerably high (145.61 cm). On the basis of average over four locations RBS-53 showed the highest plant height (183.90 cm). The entries PRR 2007-1 and PRR 2007-2 were the shortest entries in terms of plant height.

Flowering time was the earliest at Shillong (62.35 days) and delayed at Shimla (100.02 days) showing more than 28 days difference between the two centres (Table 24). On the basis of average over five locations PRR-2007-2 (52.85 days) and PRR-2007-1 (53.33 days) showed the earliest flowering.

Maturity period was the earliest at Palampur (111.03 days) followed by Almora (111.25 days) and Shillong (112.68 days) and most delayed (171.37 days) at Shimla (Table 25). There was a difference of about 60 days in maturity between Shimla and Palampur centres. Based on the average over five locations PRR 2007-2 and PRR-2007-1 were the earliest maturing (100.45 days and 102.66 days, respectively) lines, but on the basis of six locations check variety PRR-02 was the earliest maturing entry (125.46 days).

The mean 100-seed weight was the highest at Shillong (9.39 g) centre and the lowest at Almora (5.07 g) centre (Table 26). On the basis of average over four locations EC097882 had the largest seed (11.35 g), but based on six locations LRB023 had the bolded seed (8.68 g).

2.1.5 ADZUKIBEAN (*Vigna angularis*)

Adzuki bean is a short duration pulse crop generally grown mixed with rice bean in the North-Western Himalayan region. An Initial Varietal Trial was planned to be conducted in adzuki bean at three locations.

2.1.5.1 Initial Varietal Trial and Advanced Varieral Trials (IVT, AVT-I)

The Initial Varietal Trial and Advanced Vareital Trial-I comprising 13 lines including two checks (HPU 51 and Totru Local) was conducted at three locations. Data have been received from all the three locations. The summary of performance of various entries has been presented in table 27.

The average grain yield (Table 28) level at Shimla was the highest (20.95 q/ha), followed by at Palampur (8.47 q/ha) and was very low at Ranichauri (2.84

q/ha). The range of variation (7.67 – 28.77 q/ha) in seed yield was very high at Shimla. Significant differences were, observed for seed yield of the entries at all the locations. On the basis of three locations average HPU 51 (14.93 q/ha) was the highest yielding check and none of the entries was superior to the check.

Plant height (Table 29) was the highest at Shimla (58.57 cm) followed by at Palampur (53.51 cm). Based on the average over the locations the check, Totru Local had the maximum plant height (58.29 cm).

Flowering time (Table 30) was the earliest at Palampur (49.36 days) followed by at Ranichauri (54.56 days). Considerable variation was observed in flowering time of the lines at all the centres. It ranged from 64.33 to 79.67 days at Shimla and 47.00 to 67.00 days at Ranichauri. Based on the overall average, the entry EC000254 was the earliest in flowering time (54.00 days).

Maturity period (Table 31) of the entries also showed similar trend as was observed for flowering time. Entries took minimum time (79.92 days) to mature at Palampur and maximum at Shimla (119.18 days). Based on the average over the locations the entry, EC341955 (97.45 days) was the earliest maturing entry followed by the entry EC087895 (97.89 days).

The average test weight (100-seed weight) was the highest (Table 32) at Ranichauri (11.34 g) followed by at Shimla (11.02 g). The entry EC087895 (14.18 g) had the highest seed weight based on the average over locations.

2.1.6 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.

2.1.6.1 Initial Varietal Trial (IVT)

The Initial Varietal Trial comprising eighteen entries including two checks was conducted at two locations. Results have been received from all the centres. The summary of performance of the entries has been presented in table 33.

Significant differences were observed among the entries for seed yield at all the centres. Mean seed yield levels were relatively low at all the centres

(Table 34). The average over the locations showed that seed yield was the highest in the entry, HB 123 (6.91 q/ha) followed by the PRT-07 (6.77 q/ha) as against the check variety Vikrant (3.92 q/ha).

Plant height was the highest at Palampur (79.51 cm) followed by Ranichauri (52.87 cm) centre (Table 35). Based on the average over the two locations HB 115 (74.33 cm) showed the highest plant height.

Flowering time ranged from 84.68 days at Palampur to 90.06 days at Ranichauri centre (Table 36). Based on the average over the locations HB 115 (70.63 days) was the earliest flowering line.

Maturity period was almost similar in both the locations with mean maturity period of 196.58 days at each location (Table 37). On the basis of overall mean, HB 123 (188.25 days) had the earliest maturity.

Mean seed weight was the highest at Ranichauri (42.81 g) and the lowest at Palampur (30.24 g) centre (Table 38). Based on the average over the locations BSH-9 (41.01 g) had the boldest seed.

2.1.7 JOB'S TEAR (*Coix lacryma-jobi*)

Job's tear, widely grown in the North-Eastern Himalayan region, is being exploited as a dual purpose crop both for its seed and forage purposes.

2.1.7.1 Advanced Varietal Trial (AVT)

The trial was proposed to be conducted at three locations and results have been received from all the centres. The summary performance has been presented in table 39.

Seed yield was the highest at Shillong (7.44 q/ha) and low at Ranichauri (1.62 q/ha) and Palampur (0.63 q/ha) centres (Table 40). On the basis of average over locations the entry H-2902 was the highest yielder (3.69 q/ha).

Plant height (Table 41) was the highest at Shillong (371.05 cm) followed by at Ranichauri (167.56 cm). Based on the average over the locations the entry HB 2287 (240.87 cm) had the maximum plant height.

Days to flowering was the earliest at Palampur (86.45 days) centre (Table 42) followed by Shillong (114.91 days). Based on the average over the locations the Local check variety Pollin (102.61 days) was earliest in flowering.

Mean maturity period was the earliest (118.97 days) at Palampur (Table 43). Based on the average over the locations the entry H 2902 (157.89 days) was the earliest in maturity.

2.1.8 PERILLA (*Perilla frutescens*)

Perilla is being exploited as an edible oil yielding underutilized crop which is grown in the hills largely as a spice crop. Its green leaves also contain highly aromatic compounds.

2.1.8.1 Initial Varietal Trial (IVT)

In Perilla an Initial Varietal Trial was proposed to be conducted at three hill locations. The results have been received from two locations. The summary of performance of the entries are presented in table 44.

Seed yield (Table 45) was the highest at Shillong (5.26 q/ha) and very low at Ranichauri (0.82 q/ha). The average seed yield over the locations ranged from 1.42 to 5.81 q/ha. The entry BDS-1644 yielded the highest (5.81 q/ha).

Plant height (Table 46) was the highest at Shillong showing an average of 177.35 cm while it was the lowest at Ranichauri (110.20 cm) centre. On the basis of average over two locations BDS-1647 showed the highest plant height (176.18 cm).

Average flowering time at two centres ranged between 128.41 and 150.65 days (Table 47). Based on two locations data the entry SSAKM-68 flowered at the earliest (131.00 days) whereas, the entry, GP-178 took the longest time for flowering (147.50 days).

Maturity period of the entries was recorded at two centres (Table 48). The average maturity period was almost similar at both the locations, Ranichauri (190.29 days) and Shillong (191.15 days). The entry SS-570 matured at the earliest (181.25 days) based on all the locations.

Table 1. Performance of Grain Amaranth entries in Initial and Advanced Varietal Trials (IVT & AVT) during 2007 (Hills)

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 10ml seed (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	Annapurna	Durga	PRA 2	PRA 3
	IVT									
1	IC467901	141.11	10.52	22.22	3	1	12.05	27.18	39.66	31.79
2	IC467910	143.00	9.51	17.14	3	8	-13.55	-1.87	7.75	1.68
3	IC540839	154.78	10.88	16.65	3	11	-16.06	-4.72	4.62	-1.27
4	IC540860	151.06	10.25	19.15	3	3	-3.43	9.61	20.36	13.58
5	IC540862	151.89	10.64	16.97	3	9	-14.43	-2.87	6.66	0.65
6	PRA-2007-1	143.92	9.56	12.60	4	18	-36.46	-27.87	-20.80	-25.26
7	PRA-2007-2	131.92	9.34	14.65	4	14	-26.14	-16.16	-7.94	-13.13
8	RMA-22	148.50	9.12	10.38	4	19	-47.65	-40.58	-34.76	-38.43
9	RMA-30	123.42	9.38	13.28	4	16	-33.01	-23.96	-16.51	-21.21
	AVT-I									
10	IC038312	139.67	9.20	18.72	4	4	-5.59	7.17	17.68	11.04
11	IC042265-2	141.50	9.42	18.00	4	5	-9.21	3.05	13.16	6.78
12	IC042284-5	138.83	9.47	15.58	4	13	-21.45	-10.84	-2.10	-7.61
13	IC0423117	138.83	9.41	17.60	4	6	-11.26	0.72	10.60	4.37
14	IC095341	142.67	9.36	12.73	4	17	-35.82	-27.15	-20.01	-24.51
	AVT-II									
15	VL-0344	124.21	9.47	13.77	4	15	-30.56	-21.18	-13.45	-18.33
16	Annapurna	141.78	7.73	19.83	3	2	0.00	13.49	24.62	17.60
17	IC35407 (Durga)	124.00	9.39	17.47	4	7	-11.92	0.00	9.78	3.60
18	PRA-2	139.50	9.81	15.91	4	12	-19.77	-8.93	0.00	-5.63
19	PRA-3	140.92	9.47	16.86	4	10	-14.97	-3.48	5.98	0.00
	Mean	**140.08**	**9.57**	**16.29**						

Table 2. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
	IVT								
1	IC467901	**-**	12.50	***19.48***	34.67	22.22	1	3	1/3
2	IC467910	**-**	7.06	15.40	28.97	17.14	8	3	0/3
3	IC540839	**-**	5.11	16.88	27.95	16.65	11	3	0/3
4	IC540860	**-**	9.95	15.75	31.75	19.15	3	3	0/3
5	IC540862	**-**	10.99	6.61	33.31	16.97	9	3	0/3
6	PRA-2007-1	11.08	11.79	11.81	15.72	12.60	18	4	0/4
7	PRA-2007-2	9.28	***14.83***	11.89	22.58	14.65	14	4	1/4
8	RMA-22	2.74	11.83	9.93	17.02	10.38	19	4	0/4
9	RMA-30	17.96	8.58	9.14	17.45	13.28	16	4	0/4
	AVT-I								
10	IC038312	12.85	***13.83***	9.38	***38.83***	18.72	4	4	2/4
11	IC042265-2	12.49	10.55	10.40	***38.57***	18.00	5	4	1/4
12	IC042284-5	10.28	6.56	10.60	34.87	15.58	13	4	0/4
13	IC0423117	13.55	8.04	8.05	***40.75***	17.60	6	4	1/4
14	IC095341	8.64	4.00	7.73	30.54	12.73	17	4	0/4
	AVT-II								
15	VL-0344	19.91	7.82	7.95	19.41	13.77	15	4	0/4
16	Annapurna (C)	7.00	-	**16.96**	35.52	19.83	2	3	
17	IC35407 (Durga) (C)	**17.85**	8.89	7.48	35.65	17.47	7	4	
18	PRA-2 (C)	8.09	9.90	12.52	33.13	15.91	12	4	
19	PRA-3 (C)	7.68	**11.39**	11.20	**37.17**	16.86	10	4	
	Mean	**11.39**	**9.65**	**11.53**	**30.20**	**16.29**			
	CD(0.05)	**3.17**	**1.12**	**1.86**	**1.01**	**-**			
	CV (%) error	**16.54**	**7.26**	**10.07**	**2.10**	**-**			

Table 3. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
	IVT						
1	IC467901	**-**	137.20	***162.33***	335.15	211.56	1
2	IC467910	**-**	117.80	***158.03***	274.57	183.47	10
3	IC540839	**-**	101.30	129.07	283.27	171.21	15
4	IC540860	**-**	101.10	***149.33***	307.35	185.93	9
5	IC540862	**-**	145.90	110.93	328.52	195.12	5
6	PRA-2007-1	186.00	125.27	118.13	224.63	163.51	18
7	PRA-2007-2	207.00	113.13	119.93	250.75	172.70	14
8	RMA-22	192.33	157.90	93.47	217.31	165.25	17
9	RMA-30	178.00	160.13	90.57	176.64	151.34	19
	AVT-I						
10	IC038312	206.67	138.30	110.33	338.07	198.34	4
11	IC042265-2	204.33	139.47	125.27	302.82	192.97	6
12	IC042284-5	207.67	124.20	***154.20***	342.15	207.05	3
13	IC0423117	190.33	88.53	141.27	285.63	176.44	13
14	IC095341	199.67	75.83	139.00	330.33	186.21	7
	AVT-II						
15	VL-0344	170.67	166.60	127.87	263.47	182.15	11
16	Annapurna (C)	190.67	-	**137.97**	**302.78**	210.47	2
17	IC35407 (Durga) (C)	185.67	**128.40**	108.13	241.95	166.04	16
18	PRA-2 (C)	197.33	**128.40**	129.87	288.87	186.12	8
19	PRA-3 (C)	**199.00**	118.70	119.80	289.13	181.66	12
	Mean	**193.95**	**126.01**	**127.66**	**283.34**	**183.55**	
	CD(0.05)	**19.72**	**-**	**5.99**	**13.57**	**-**	
	CV (%) error	**6.05**	**-**	**2.93**	**2.99**	**-**	

Table 4. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank
	IVT						
1	IC467901	**-**	61.33	73.67	97.33	77.44	7
2	IC467910	**-**	69.67	74.33	83.00	75.67	6
3	IC540839	**-**	78.00	82.00	92.33	84.11	17
4	IC540860	**-**	70.50	70.33	98.67	79.83	10
5	IC540862	**-**	72.00	84.00	99.00	85.00	18
6	PRA-2007-1	66.33	76.33	72.33	108.67	80.92	14
7	PRA-2007-2	67.00	73.67	74.00	97.00	77.92	8
8	RMA-22	52.67	81.00	76.33	137.33	86.83	19
9	RMA-30	50.67	48.67	68.00	75.00	60.58	1
	AVT-I						
10	IC038312	64.00	76.00	82.67	101.33	81.00	15
11	IC042265-2	64.00	73.33	***60.00***	105.33	75.67	5
12	IC042284-5	64.00	61.00	***63.33***	103.00	72.83	4
13	IC0423117	63.33	77.00	75.00	104.33	79.92	11
14	IC095341	68.33	79.00	78.33	97.00	80.67	13
	AVT-II						
15	VL-0344	50.67	47.00	74.67	74.67	61.75	2
16	Annapurna (C)	66.00	-	73.33	106.33	81.89	16
17	IC35407 (Durga) (C)	**53.00**	**57.00**	73.33	**71.00**	63.58	3
18	PRA-2 (C)	68.33	73.00	**69.33**	105.00	78.92	9
19	PRA-3 (C)	67.67	73.00	77.00	104.00	80.42	12
	Mean	**61.86**	**69.31**	**73.79**	**97.91**	**77.10**	
	CD(0.05)	**20.44**	**-**	**4.01**	**1.60**	**-**	
	CV (%) error	**19.65**	**-**	**3.40**	**1.02**	**-**	

Table 5. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Sangla	Shimla	Mean	Rank	Location	Frequency
	IVT								
1	IC467901	**-**	132.33	145.67	***145.33***	141.11	10	3	1/3
2	IC467910	**-**	136.00	148.00	***145.00***	143.00	14	3	1/3
3	IC540839	**-**	145.00	147.00	172.33	154.78	19	3	0/3
4	IC540860	**-**	131.50	147.67	174.00	151.06	17	3	0/3
5	IC540862	**-**	140.00	147.33	168.33	151.89	18	3	0/3
6	PRA-2007-1	119.00	148.33	***135.33***	173.00	143.92	15	4	1/4
7	PRA-2007-2	108.67	135.00	140.00	***144.00***	131.92	4	4	1/4
8	RMA-22	128.00	145.00	142.00	179.00	148.50	16	4	0/4
9	RMA-30	***78.00***	141.33	***136.00***	***138.33***	123.42	1	4	2/4
	AVT-I								
10	IC038312	105.00	137.00	144.33	172.33	139.67	8	4	0/4
11	IC042265-2	105.33	141.67	144.33	174.67	141.50	11	4	0/4
12	IC042284-5	104.33	145.00	***132.00***	174.00	138.83	6	4	1/4
13	IC0423117	105.33	132.33	144.33	173.33	138.83	5	4	0/4
14	IC095341	119.33	140.00	142.67	168.67	142.67	13	4	0/4
	AVT-II								
15	VL-0344	***78.00***	131.50	142.67	***144.67***	124.21	3	4	2/4
16	Annapurna (C)	108.00	-	147.00	170.33	141.78	12	3	
17	IC35407 (Durga) (C)	**81.00**	**124.00**	**141.67**	**149.33**	124.00	2	4	
18	PRA-2 (C)	109.00	132.33	144.67	172.00	139.50	7	4	
19	PRA-3 (C)	109.00	137.00	145.67	172.00	140.92	9	4	
	Mean	**104.14**	**137.52**	**143.07**	**163.72**	**140.08**			
	CD(0.05)	**1.93**	**-**	**3.22**	**1.55**	**-**			
	CV (%) error	**1.10**	**-**	**1.41**	**0.59**	**-**			

Table 6. Inforescence length (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Shimla	Mean	Rank
	IVT					
1	IC467901	**-**	47.93	70.20	59.07	11
2	IC467910	**-**	45.80	***93.17***	69.48	4
3	IC540839	**-**	40.20	72.95	56.58	17
4	IC540860	**-**	35.70	72.73	54.22	19
5	IC540862	**-**	47.30	***94.08***	70.69	2
6	PRA-2007-1	***71.33***	46.80	69.08	62.41	10
7	PRA-2007-2	64.33	48.47	81.22	64.67	9
8	RMA-22	62.33	55.70	56.67	58.23	13
9	RMA-30	57.00	47.73	62.72	55.82	18
	AVT-I					
10	IC038312	***75.00***	43.00	85.12	67.71	6
11	IC042265-2	***72.67***	50.13	77.88	66.89	7
12	IC042284-5	69.67	47.13	***94.18***	70.33	3
13	IC0423117	67.33	46.30	89.62	67.75	5
14	IC095341	68.33	28.07	75.62	57.34	15
	AVT-II					
15	VL-0344	58.00	47.30	67.83	57.71	14
16	Annapurna (C)	61.67	-	83.63	72.65	1
17	IC35407 (Durga) (C)	59.67	42.60	69.37	57.21	16
18	PRA-2 (C)	**64.00**	**45.10**	**88.76**	65.95	8
19	PRA-3 (C)	63.67	39.25	73.18	58.70	12
	Mean	**65.36**	**44.70**	**77.79**	**62.81**	
	CD(0.05)	**5.70**	**-**	**2.59**	**-**	
	CV (%) error	**5.19**	**-**	**2.08**	**-**	

Table 7. No. of fingres per inflorescense in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Shimla	Mean	Rank
	IVT					
1	IC467901	**-**	60.53	80.50	70.52	3
2	IC467910	**-**	40.80	84.50	62.65	8
3	IC540839	**-**	38.00	78.00	58.00	15
4	IC540860	**-**	30.80	88.50	59.65	12
5	IC540862	**-**	56.40	***111.57***	83.98	1
6	PRA-2007-1	53.67	45.20	77.17	58.68	14
7	PRA-2007-2	45.00	49.60	88.83	61.14	9
8	RMA-22	53.33	54.30	74.01	60.55	10
9	RMA-30	69.33	64.00	40.35	57.89	16
	AVT-I					
10	IC038312	67.00	45.20	93.33	68.51	5
11	IC042265-2	73.67	50.67	87.00	70.45	4
12	IC042284-5	69.00	45.27	89.83	68.03	6
13	IC0423117	64.33	39.33	94.67	66.11	7
14	IC095341	40.00	25.53	94.33	53.29	17
	AVT-II					
15	VL-0344	65.67	56.90	33.67	52.08	19
16	Annapurna (C)	60.00	-	83.83	71.92	2
17	IC35407 (Durga) (C)	**65.33**	**58.60**	34.33	52.76	18
18	PRA-2 (C)	40.00	47.67	**90.33**	59.33	13
19	PRA-3 (C)	57.33	46.00	77.50	60.28	11
	Mean	**58.83**	**47.49**	**79.07**	**62.94**	
	CD(0.05)	**11.37**	**-**	**4.64**	**-**	
	CV (%) error	**11.49**	**-**	**3.67**	**-**	

Table 8. Seed weight (10g/ml) in Initial and Advanced Varietal Trials (IVT & AVT) on Grain Amaranth: 2007 (Hills)

S.No.	Genotypes	Almora	Ranichauri	Shimla	Mean	Rank
	IVT					
1	IC467901	**-**	12.68	***8.35***	10.52	3
2	IC467910		12.48	6.54	9.51	7
3	IC540839	**-**	13.24	***8.51***	10.88	1
4	IC540860	**-**	13.07	7.43	10.25	4
5	IC540862	**-**	13.21	8.06	10.64	2
6	PRA-2007-1	7.90	12.84	7.94	9.56	6
7	PRA-2007-2	8.00	12.21	7.80	9.34	16
8	RMA-22	7.67	13.01	6.67	9.12	18
9	RMA-30	7.63	13.83	6.69	9.38	14
	AVT-I					
10	IC038312	8.00	11.78	7.82	9.20	17
11	IC042265-2	7.70	12.78	7.77	9.42	11
12	IC042284-5	7.50	13.23	7.69	9.47	8
13	IC0423117	7.93	12.52	7.77	9.41	12
14	IC095341	7.93	12.10	8.04	9.36	15
	AVT-II					
15	VL-0344	7.83	13.52	7.06	9.47	10
16	Annapurna (C)	**7.93**	-	7.52	7.73	19
17	IC35407 (Durga) (C)	7.73	12.83	7.61	9.39	13
18	PRA-2 (C)	7.90	**13.71**	**7.81**	9.81	5
19	PRA-3 (C)	7.87	12.82	7.73	9.47	9
	Mean	**7.82**	**12.88**	**7.62**	**9.57**	
	CD(0.05)	**0.16**	**-**	**0.27**	**-**	
	CV (%) error	**1.25**	**-**	**2.23**	**-**	

Table 9. Performance of Buckwheat entries in Initial and Advanced Varietal Trials (IVT & AVT) during 2007 (Hills)

S. No.	Genotypes	Mean maturity duration (days)	Mean weight of 100 seed (g)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	Himpriya	PRB-1	Shimla B-1	VL-7
	IVT									
1	EC125938	120.11	2.06	4.00	3	19	-49.93	-41.43	-60.23	-21.40
2	IC107989	110.08	2.03	7.01	4	11	-12.26	2.64	-30.31	37.73
3	IC108499	108.17	1.98	8.54	4	4	6.94	25.11	-15.06	67.87
4	IC108500	111.33	2.05	7.47	4	10	-6.46	9.43	-25.71	46.84
5	IC213682	123.50	1.95	5.43	2	16	-32.08	-20.55	-46.06	6.61
6	IC261963	101.92	1.97	6.61	4	14	-17.32	-3.28	-34.33	29.79
7	IC266947	102.67	1.94	6.82	4	13	-14.70	-0.22	-32.26	33.89
8	IC540858	118.67	2.74	5.74	2	15	-28.20	-16.01	-42.98	12.70
9	Sangla B-101	111.22	1.86	7.55	3	9	-5.48	10.57	-24.93	48.37
10	Sangla B-124	109.89	2.23	11.48	3	1	43.63	68.02	14.07	125.45
	AVT-I									
11	EC323729	101.58	2.28	4.72	4	18	-40.92	-30.89	-53.08	-7.27
12	IC310045	106.17	1.98	8.11	4	6	1.52	18.76	-19.37	59.36
13	IC341674	116.25	1.90	7.82	4	8	-2.13	14.50	-22.26	53.64
	AVT-II									
14	IC274439	117.33	2.01	8.22	4	5	2.92	20.40	-18.26	61.55
15	SMLBW-5	117.33	2.14	11.03	4	2	38.02	61.46	9.62	116.66
16	Himpriya (C)	117.50	1.97	7.99	4	7	0.00	16.94	-20.60	56.92
17	PRB-1 (C)	112.58	2.00	6.83	4	12	-14.46	0.00	-32.06	34.28
18	Shimla B1 (C)	83.42	1.80	10.06	4	3	25.86	47.24	0.00	97.57
19	VL-7 (C)	83.83	2.44	5.09	4	17	-36.31	-25.49	-49.42	0.00
	Mean	**107.06**	**2.04**	**7.29**						

Table 10. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on Buckwheat: 2007 (Hills)

S.No.	Genotypes	Almora	Shimla	Ranichauri	Sangla	Mean	Rank	Location	Frequency
	IVT								
1	EC125938	-	8.80	1.32	1.88	4.00	19	3	0/3
2	IC107989	7.06	8.85	1.10	11.03	7.01	11	4	0/4
3	IC108499	7.98	11.99	0.80	13.42	8.54	4	4	0/4
4	IC108500	8.79	9.87	1.24	9.99	7.47	10	4	0/4
5	IC213682	-	7.80	-	3.06	5.43	16	2	0/2
6	IC261963	9.09	12.36	2.72	2.26	6.61	14	4	0/4
7	IC266947	12.61	7.58	4.64	2.43	6.82	13	4	0/4
8	IC540858	-	8.93	-	2.54	5.74	15	2	0/2
9	Sangla B-101	4.33	8.55	-	9.77	7.55	9	3	0/3
10	Sangla B-124	9.12	11.40	-	13.90	11.48	1	3	0/3
	AVT-I								
11	EC323729	7.16	6.54	0.64	4.54	4.72	18	4	0/4
12	IC310045	7.61	7.39	0.95	16.49	8.11	6	4	0/4
13	IC341674	8.42	6.68	4.51	11.68	7.82	8	4	0/4
	AVT-II								
14	IC274439	7.52	5.90	5.39	14.09	8.22	5	4	0/4
15	SMLBW-5	7.63	***14.92***	***10.44***	11.12	11.03	2	4	2/4
16	Himpriya (C)	6.35	10.39	**9.25**	5.96	7.99	7	4	
17	PRB-1 (C)	7.19	7.42	1.01	11.72	6.83	12	4	
18	Shimla B1 (C)	8.51	**12.50**	2.63	**16.59**	**10.06**	3	4	
19	VL-7 (C)	**11.43**	5.80	0.61	2.51	5.09	17	4	
	Mean	**8.17**	**9.14**	**3.15**	**8.68**	**7.29**			
	CD(0.05)	**1.40**	**0.17**	**0.85**	**1.53**	**-**			
	CV (%) error	**10.29**	**1.16**	**16.15**	**10.98**	**-**			

Table 11. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Buckwheat: 2007 (Hills)

S.No.	Genotypes	Almora	Shimla	Ranichauri	Sangla	Mean	Rank
	IVT						
1	EC125938		***221.82***	112.00	69.00	134.27	3
2	IC107989	93.00	176.52	128.53	61.13	114.80	11
3	IC108499	79.33	186.20	113.33	74.73	113.40	13
4	IC108500	94.00	131.85	127.83	54.20	101.97	18
5	IC213682		***205.35***		57.60	131.48	4
6	IC261963	107.67	180.53	127.33	60.33	118.97	10
7	IC266947	122.67	***201.32***	105.87	72.53	125.60	6
8	IC540858		***201.20***		68.47	134.83	2
9	Sangla B-101	87.67	151.70		68.33	102.57	17
10	Sangla B-124	110.00	178.78		69.27	119.35	9
	AVT-I						
11	EC323729	126.00	***228.90***	***138.33***	72.87	141.52	1
12	IC310045	99.33	166.62	73.80	87.47	106.80	14
13	IC341674	103.33	182.98	112.93	***97.47***	124.18	7
	AVT-II						
14	IC274439	107.67	140.01	88.80	78.33	103.70	16
15	SMLBW-5	100.67	160.35	117.40	75.53	113.49	12
16	Himpriya (C)	92.00	133.03	92.27	58.27	93.89	19
17	PRB-1 (C)	**117.00**	**190.78**	**129.80**	79.07	129.16	5
18	Shimla B1 (C)	93.33	189.63	117.23	**82.07**	120.57	8
19	VL-7 (C)	99.00	162.05	111.67	51.61	106.08	15
	Mean	**102.04**	**178.40**	**113.14**	**70.44**	**117.72**	
	CD(0.05)	**7.38**	**6.76**	**-**	**5.85**	**-**	
	CV (%) error	**4.34**	**2.37**	**-**	**5.19**	**-**	

Table 12. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on Buckwheat: 2007 (Hills)

S.No.	Genotypes	Almora	Shimla	Ranichauri	Sangla	Mean	Rank
	IVT						
1	EC125938	-	42.33	32.00	66.33	46.89	6
2	IC107989	39.33	45.33	40.00	66.67	47.83	7
3	IC108499	44.33	52.00	40.33	69.00	51.42	9
4	IC108500	40.00	48.67	49.00	69.67	51.83	10
5	IC213682	-	42.33	-	66.00	54.17	14
6	IC261963	27.33	64.67	38.00	57.33	46.83	5
7	IC266947	24.00	42.00	38.00	55.00	39.75	2
8	IC540858	-	41.67	-	66.00	53.83	13
9	Sangla B-101	43.00	47.00	-	71.00	53.67	12
10	Sangla B-124	40.00	48.67	-	68.67	52.44	11
	AVT-I						
11	EC323729	23.00	42.33	47.00	63.67	44.00	4
12	IC310045	43.67	52.33	53.00	71.67	55.17	15
13	IC341674	41.00	49.00	58.00	73.33	55.33	16
	AVT-II						
14	IC274439	38.00	46.33	63.00	74.33	55.42	17
15	SMLBW-5	38.00	52.33	68.00	80.33	59.67	19
16	Himpriya (C)	38.33	51.00	68.00	77.00	58.58	18
17	PRB-1 (C)	30.00	44.67	54.67	73.33	50.67	8
18	Shimla B1 (C)	31.00	36.00	37.00	**57.33**	40.33	3
19	VL-7 (C)	**21.00**	**34.00**	**27.00**	64.33	36.58	1
	Mean	**35.13**	**46.46**	**47.53**	**67.95**	**49.27**	
	CD(0.05)	**2.45**	**14.72**	**-**	**3.21**	**-**	
	CV (%) error	**4.18**	**19.80**	**-**	**2.95**	**-**	

Table 13. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on Buckwheat: 2007 (Hills)

S.No.	Genotypes	Almora	Shimla	Ranichauri	Sangla	Mean	Rank	Location	Frequency
	IVT								
1	EC125938	-	118.33	112.33	129.67	120.11	18	3	0/3
2	IC107989	75.67	115.33	119.00	130.33	110.08	9	4	0/4
3	IC108499	74.00	114.00	114.00	130.67	108.17	7	4	0/4
4	IC108500	74.67	116.33	129.00	***125.33***	111.33	11	4	1/4
5	IC213682	-	117.00	-	130.00	123.50	19	2	0/2
6	IC261963	64.00	111.67	104.00	128.00	101.92	4	4	0/4
7	IC266947	65.67	113.33	104.00	***127.67***	102.67	5	4	1/4
8	IC540858	-	112.67	-	***124.67***	118.67	17	2	1/2
9	Sangla B-101	76.67	124.33	-	132.67	111.22	10	3	0/3
10	Sangla B-124	72.67	123.67	-	133.33	109.89	8	3	0/3
	AVT-I								
11	EC323729	55.67	112.67	114.00	***124.00***	101.58	3	4	1/4
12	IC310045	76.33	117.33	105.67	***125.33***	106.17	6	4	1/4
13	IC341674	76.67	116.33	129.33	142.67	116.25	13	4	0/4
	AVT-II								
14	IC274439	75.33	117.67	134.00	142.33	117.33	14	4	0/4
15	SMLBW-5	75.00	118.00	134.00	142.33	117.33	15	4	0/4
16	Himpriya (C)	76.33	117.67	134.00	142.00	117.50	16	4	
17	PRB-1 (C)	82.00	119.00	109.00	140.33	112.58	12	4	
18	Shimla B1 (C)	64.67	**62.00**	**73.00**	134.00	83.42	1	4	
19	VL-7 (C)	**50.67**	64.67	89.33	**130.67**	83.83	2	4	
	Mean	**71.00**	**111.16**	**113.64**	**132.42**	**107.06**			
	CD(0.05)	**3.92**	**1.94**	**-**	**2.91**	**-**			
	CV (%) error	**3.31**	**1.09**	**-**	**1.37**	**-**			

Table 14. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on Buckwheat: 2007 (Hills)

S.No.	Genotypes	Almora	Shimla	Ranichauri	Mean	Rank
	IVT					
1	EC125938	-	2.31	1.80	2.06	6
2	IC107989	2.27	2.11	1.70	2.03	8
3	IC108499	2.03	2.16	1.74	1.98	12
4	IC108500	2.40	2.05	1.70	2.05	7
5	IC213682	-	1.95	-	1.95	15
6	IC261963	2.23	1.98	1.71	1.97	14
7	IC266947	2.30	1.77	1.76	1.94	16
8	IC540858	-	2.74	-	2.74	1
9	Sangla B-101	1.77	1.96	-	1.86	18
10	Sangla B-124	2.23	2.23	-	2.23	4
	AVT-I					
11	EC323729	2.63	2.52	1.69	2.28	3
12	IC310045	2.13	2.03	1.77	1.98	11
13	IC341674	1.97	2.02	1.70	1.90	17
	AVT-II					
14	IC274439	2.30	1.96	1.78	2.01	9
15	SMLBW-5	2.13	2.48	1.79	2.14	5
16	Himpriya (C)	2.17	1.99	**1.77**	1.97	13
17	PRB-1 (C)	2.30	1.98	1.72	2.00	10
18	Shimla B1 (C)	1.90	1.91	1.60	1.80	19
19	VL-7 (C)	**2.87**	**2.73**	1.71	2.44	2
	Mean	**2.23**	**2.15**	**1.73**	**2.04**	
	CD(0.05)	**0.44**	**0.08**	**-**	**-**	
	CV (%) error	**11.80**	**2.41**	**-**	**-**	

Table 15. Performance of Chenopodium entries in Initial and Advanced Varietal Trials (IVT & AVT) during 2007 (Hills)

S. No.	Genotypes	Mean maturity duration (days)	Mean plant height (cm)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety		
				Mean	Location	Rank	EC-507741	NIC-22503	PRC-9801
	IVT								
1	EC201680	135.50	185.45	8.81	2	4	64.38	60.20	167.00
2	EC507733	112.83	149.77	8.22	2	6	53.39	49.49	149.15
3	IC363733	131.50	186.32	4.33	2	16	-19.26	-21.32	31.14
4	IC540823	128.83	184.29	6.17	2	11	15.08	12.15	86.91
5	IC540842	117.33	163.70	7.18	2	9	33.90	30.49	117.48
6	NIC22498	134.50	164.59	5.14	2	14	-4.02	-6.46	55.90
7	NIC22506	109.83	143.01	10.27	2	1	91.57	86.69	211.16
8	NIC22517	137.16	210.51	6.98	2	10	30.27	26.96	111.59
	AVT I								
9	EC359447	138.33	140.03	3.38	2	17	-36.89	-38.50	2.50
10	IC107299	140.50	197.48	7.80	2	7	45.53	41.82	136.37
11	IC341710	136.67	187.58	7.28	2	8	35.75	32.30	120.49
12	IC415477	109.67	168.67	9.92	2	2	85.07	80.36	200.60
13	NIC15022	144.33	208.63	8.53	2	5	59.14	55.09	158.49
	AVT II								
14	SMLCP-2	138.33	196.89	9.74	2	3	81.71	77.09	195.14
15	SMLCP-5	138.00	224.12	4.55	2	15	-15.09	-17.25	37.92
16	EC507741 (C0	127.67	132.36	5.36	2	13	0.00	-2.59	62.35
17	NIC22503 (C)	150.50	172.66	5.50	2	12	2.58	0.00	66.62
18	PRC-9801 (C)	143.50	159.29	3.30	2	18	-38.35	-39.92	0.00
	Mean	**131.94**	**176.41**	**6.80**					

Table 16. Grain yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on Chenopodium: 2007 (Hills)

S. No.	Genotypes	Ranichauri	Shimla	Mean	Rank	Location	Frequency
	IVT						
1	EC201680	0.99	***16.63***	8.81	4	2	1/2
2	EC507733	1.45	***14.99***	8.22	6	2	1/2
3	IC363733	1.53	7.13	4.33	16	2	0/2
4	IC540823	2.37	***9.97***	6.17	11	2	1/2
5	IC540842	***5.42***	***8.93***	7.18	9	2	2/2
6	NIC22498	1.74	8.55	5.14	14	2	0/2
7	NIC22506	1.85	***18.68***	10.27	1	2	1/2
8	NIC22517	2.14	***11.83***	6.98	10	2	1/2
	AVT I						
9	EC359447	***2.93***	3.83	3.38	17	2	1/2
10	IC107299	***3.38***	***12.22***	7.80	7	2	2/2
11	IC341710	2.63	***11.93***	7.28	8	2	1/2
12	IC415477	1.13	***18.71***	9.92	2	2	1/2
13	NIC15022	***8.02***	***9.04***	8.53	5	2	2/2
	AVT II						
14	SMLCP-2	2.62	***16.86***	9.74	3	2	1/2
15	SMLCP-5	1.82	7.29	4.55	15	2	0/2
16	EC507741 (C)	**2.47**	8.24	5.36	13	2	
17	NIC22503 (C)	2.46	**8.54**	5.50	12	2	
18	PRC-9801 (C)	1.31	5.30	3.30	18	2	
	Mean	**2.57**	**11.04**	**6.80**			
	CD(0.05)	**0.44**	**0.18**	-			
	CV (%) error	**10.78**	**1.00**	-			

Table 17. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Chenopodium: 2007 (Hills)

S. No.	Genotypes	Ranichauri	Shimla	Mean	Rank
	IVT				
1	EC201680	98.33	***272.57***	185.45	8
2	EC507733	61.80	237.73	149.77	15
3	IC363733	99.83	***272.82***	186.32	7
4	IC540823	77.93	***290.65***	184.29	9
5	IC540842	87.20	240.20	163.70	13
6	NIC22498	71.24	***257.93***	164.59	12
7	NIC22506	68.06	217.97	143.01	16
8	NIC22517	106.40	***314.62***	210.51	2
	AVT I				
9	EC359447	102.00	178.07	140.03	17
10	IC107299	105.33	***289.63***	197.48	4
11	IC341710	98.40	***276.77***	187.58	6
12	IC415477	67.26	***270.08***	168.67	11
13	NIC15022	96.66	***320.60***	208.63	3
	AVT II				
14	SMLCP-2	69.80	***323.98***	196.89	5
15	SMLCP-5	122.53	***325.70***	224.12	1
16	EC507741 (C)	86.80	177.92	132.36	18
17	NIC22503 (C)	102.26	**243.05**	172.66	10
18	PRC-9801 (C)	**103.06**	215.52	159.29	14
	Mean	**90.27**	**262.54**	**176.41**	
	CD(0.05)	-	**7.93**	-	
	CV (%) error	-	**1.89**	-	

Table 18. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on Chenopodium: 2007 (Hills)

S. No.	Genotypes	Ranichauri	Shimla	Mean	Rank
	IVT				
1	EC201680	73.33	85.67	79.50	14
2	EC507733	54.67	72.00	63.34	2
3	IC363733	58.00	88.67	73.33	8
4	IC540823	63.00	91.33	77.17	11
5	IC540842	58.00	75.33	66.67	5
6	NIC22498	58.00	91.00	74.50	9
7	NIC22506	54.67	74.00	64.34	3
8	NIC22517	68.00	91.67	79.83	15
	AVT I				
9	EC359447	63.00	95.00	79.00	13
10	IC107299	56.33	88.67	72.50	7
11	IC341710	62.33	87.00	74.67	10
12	IC415477	50.66	73.67	62.16	1
13	NIC15022	63.00	94.67	78.83	12
	AVT II				
14	SMLCP-2	56.33	79.33	67.83	6
15	SMLCP-5	63.00	97.67	80.33	16
16	EC507741 (C)	63.00	66.67	64.83	4
17	NIC22503 (C)	83.00	103.33	93.17	18
18	PRC-9801 (C)	76.33	100.33	88.33	17
	Mean	**62.48**	**86.44**	**74.46**	
	CD(0.05)	-	**1.25**	-	
	CV (%) error	-	**0.91**	-	

Table 19. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on Chenopodium: 2007 (Hills)

S. No.	Genotypes	Ranichauri	Shimla	Mean	Rank	Location	Frequency
	IVT						
1	EC201680	139.66	131.33	135.50	9	2	0/2
2	EC507733	109.00	116.67	112.83	3	2	0/2
3	IC363733	120.66	142.33	131.50	7	2	0/2
4	IC540823	115.66	142.00	128.83	6	2	0/2
5	IC540842	105.66	129.00	117.33	4	2	0/2
6	NIC22498	127.33	141.67	134.50	8	2	0/2
7	NIC22506	104.33	115.33	109.83	2	2	0/2
8	NIC22517	130.66	143.67	137.16	11	2	0/2
	AVT I						
9	EC359447	134.00	142.67	138.33	13	2	0/2
10	IC107299	134.00	147.00	140.50	15	2	0/2
11	IC341710	129.00	144.33	136.67	10	2	0/2
12	IC415477	102.33	117.00	109.67	1	2	0/2
13	NIC15022	137.33	151.33	144.33	17	2	0/2
	AVT II						
14	SMLCP-2	124.00	152.67	138.33	14	2	0/2
15	SMLCP-5	126.33	149.67	138.00	12	2	0/2
16	EC507741 (C)	141.33	**114.00**	127.67	5	2	
17	NIC22503 (C)	150.00	151.00	150.50	18	2	
18	PRC-9801 (C)	**135.66**	151.33	143.50	16	2	
	Mean	**125.94**	**137.94**	**131.94**			
	CD(0.05)	**-**	**1.62**	-			
	CV (%) error	**-**	**0.73**	-			

Table 20. Inflorescence length (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Chenopodium: 2007 (Hills)

S. No.	Genotypes	Ranichauri	Shimla	Mean	Rank
	IVT				
1	EC201680	19.60	43.03	31.32	7
2	EC507733	19.70	46.35	33.03	1
3	IC363733	17.10	41.30	29.20	16
4	IC540823	15.20	42.45	28.83	17
5	IC540842	18.10	43.55	30.83	9
6	NIC22498	14.40	42.93	28.67	18
7	NIC22506	21.70	41.30	31.50	4
8	NIC22517	19.60	41.23	30.42	10
	AVT I				
9	EC359447	17.90	41.83	29.87	14
10	IC107299	17.30	44.48	30.89	8
11	IC341710	18.70	42.03	30.37	11
12	IC415477	17.30	45.60	31.45	6
13	NIC15022	16.00	***47.48***	31.74	3
	AVT II				
14	SMLCP-2	13.10	46.72	29.91	13
15	SMLCP-5	19.10	43.90	31.50	5
16	EC507741 (C)	19.80	40.23	30.02	12
17	NIC22503 (C)	**20.50**	**44.57**	32.53	2
18	PRC-9801 (C)	19.00	40.60	29.80	15
	Mean	**18.01**	**43.31**	**30.66**	
	CD(0.05)	**-**	**3.07**	**-**	
	CV (%) error	**-**	**4.44**	**-**	

Table 21. Performance of Ricebean entries in Initial and Advanced Varietal Trials (IVT & AVT) during 2007 (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 qualifying variety		
				Mean	Location	Rank	PRR-1	PRR-2	RBL-1
	IVT								
1	EC018181	163.83	10.04	11.66	4	14	-17.16	-12.89	-18.95
2	EC097882	167.41	11.35	14.55	4	8	3.36	8.69	1.14
3	IC176563	161.50	10.75	13.05	4	13	-7.29	-2.51	-9.29
4	PRR 2007-1	102.66	6.78	9.21	5	15	-34.56	-31.18	-35.97
5	PRR 2007-2	100.45	6.85	8.06	5	16	-42.77	-39.82	-44.01
6	RBS53	166.83	10.89	13.55	4	11	-3.78	1.18	-5.85
	AVT-I								
7	LRB005	134.33	7.83	18.03	6	1	28.06	34.66	25.30
8	LRB010	130.89	7.73	17.79	6	2	26.36	32.87	23.64
9	LRB013	132.88	7.37	16.44	6	6	16.74	22.75	14.22
10	LRB022	134.43	7.58	15.09	6	7	7.16	12.68	4.85
11	LRB023	133.27	9.31	17.17	6	4	21.92	28.20	19.29
12	RBL463	129.44	8.66	16.47	6	5	16.94	22.97	14.43
13	RBS16	142.42	9.97	7.95	5	17	-43.53	-40.62	-44.75
	AVT-II								
14	VRB 1	127.58	7.96	17.55	4	3	24.62	31.04	21.94
15	PRR-01 (C)	126.05	6.82	14.08	6	-	0.00	5.18	-2.13
16	PRR-02 (C)	125.46	7.74	13.39	6	10	0.03	0.00	-2.13
17	RBL-01 (C)	134.66	7.84	14.39	6	12	-4.88	0.02	0.00
18	RBL-06 (C)	157.17	9.34	**-**	2	9	2.18	7.45	-0.02
	Mean	**131.89**	**8.11**	13.84		-			

Table 22. Seed yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on Ricebean: 2007 (Hills)

S.No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank	Location	Frequency
	IVT										
1	EC018181	-	4.17	-	6.67	14.38	21.44	11.66	14	4	0/4
2	EC097882	-	3.50	-	6.30	20.63	27.79	14.55	8	4	0/4
3	IC176563	-	1.92	-	6.30	20.20	23.80	13.05	13	4	0/4
4	PRR 2007-1	6.44	4.08	-	6.38	9.38	19.79	9.21	15	5	0/4
5	PRR 2007-2	4.79	1.92	-	6.43	10.42	16.73	8.06	16	5	0/4
6	RBS53	-	0.92	-	4.81	22.70	25.76	13.55	11	4	0/4
	AVT-I										
7	LRB005	6.86	26.77	7.22	5.93	8.12	53.29	18.03	1	6	0/6
8	LRB010	***10.36***	19.17	11.78	5.56	11.87	48.02	17.79	2	6	1/6
9	LRB013	9.32	19.17	10.17	5.19	7.08	47.70	16.44	6	6	0/6
10	LRB022	6.64	15.67	7.78	5.56	5.83	49.05	15.09	7	6	0/6
11	LRB023	***10.10***	25.00	8.50	7.04	8.33	44.03	17.17	4	6	1/6
12	RBL463	9.80	20.42	9.94	7.04	9.58	42.01	16.47	5	6	0/6
13	RBS16	-	3.17	8.22	5.93	11.56	10.88	7.95	17	5	0/5
	AVT-II										
14	VRB 1	***11.50***	-	10.28	8.52	-	39.89	17.55	3	4	1/4
15	BRS-01 (C)	-	**22.08**	-	-	-	-	-	-	1	
16	PRR-01 (C)	7.50	21.25	9.72	9.07	6.09	30.87	14.08	10	6	
17	PRR-02 (C)	7.58	12.08	**13.33**	**9.63**	5.00	32.73	13.39	12	6	
18	RBL-01 (C)	**8.90**	20.58	11.83	8.15	**11.05**	25.81	14.39	9	6	
19	RBL-06 (C)	-	-	-	5.56	-	**42.73**	-	-	2	
	Mean	**8.32**	**13.05**	**10.17**	**6.67**	**11.39**	**33.46**	**13.84**			
	CD(0.05)	**1.10**	**5.41**	**2.05**	**0.77**	-	**0.57**	-			
	CV (%) error	**7.83**	**25.89**	**12.01**	**7.20**	-	**1.06**	-			

Table 23. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Ricebean: 2007 (Hills)

S.No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank
	IVT								
1	EC018181	-	225.33	-	133.33	107.33	***209.09***	168.77	3
2	EC097882	-	252.67	-	85.60	119.22	***201.17***	164.66	4
3	IC176563	-	246.33	-	137.40	120.77	***205.42***	177.48	2
4	PRR 2007-1	67.67	69.30	-	68.00	67.33	58.85	66.23	17
5	PRR 2007-2	63.33	45.63	-	60.00	46.00	57.40	54.47	18
6	RBS53	-	255.33	-	145.40	111.22	***223.63***	183.90	1
	AVT-I								
7	LRB005	159.33	211.00	95.67	143.13	110.00	***188.67***	151.30	6
8	LRB010	166.00	194.33	98.00	143.13	107.90	***191.63***	150.17	8
9	LRB013	174.67	190.67	92.33	144.13	96.10	***194.65***	148.76	11
10	LRB022	171.00	197.67	94.00	149.07	107.60	181.13	150.08	9
11	LRB023	176.33	205.33	99.67	139.47	100.10	***205.95***	154.48	5
12	RBL463	152.00	218.00	100.33	133.33	82.90	***197.17***	147.29	12
13	RBS16	-	230.67	97.33	98.67	106.84	***219.62***	150.62	7
	AVT-II								
14	VRB 1	153.67	-	96.67	138.67	-	***189.95***	144.74	13
15	BRS-01 (C)	-	**225.00**	-	-	-	-	-	-
16	PRR-01 (C)	153.33	183.67	90.00	145.60	90.30	**168.07**	138.49	15
17	PRR-02 (C)	140.67	153.67	94.67	**155.60**	**101.30**	160.33	134.37	16
18	RBL-01 (C)	**169.33**	194.43	**99.33**	154.40	94.45	154.02	144.33	14
19	RBL-06 (C)	-	-	-	138.73	-	159.92	149.32	10
	Mean	**145.61**	**194.06**	**95.97**	**128.54**	**98.08**	**175.93**	**139.70**	
	CD(0.05)	**14.16**	**51.47**	**6.28**	**-**	-	**14.26**	-	
	CV (%) error	**5.75**	**16.57**	**3.89**	**-**	-	**5.06**	-	

Table 24. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on Ricebean: 2007 (Hills)

S.No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank
	IVT								
1	EC018181	-	102.67	-	98.43	69.30	120.00	97.60	16
2	EC097882	-	105.67	-	99.00	69.60	122.33	99.15	18
3	IC176563	-	79.00	-	109.00	69.30	120.33	94.41	15
4	PRR 2007-1	***48.00***	***58.33***		48.00	53.30	***59.00***	53.33	2
5	PRR 2007-2	***46.67***	***55.00***	-	50.00	53.60	***59.00***	52.85	1
6	RBS53		96.33	-	109.00	70.00	120.33	98.92	17
	AVT-I								
7	LRB005	83.00	85.00	71.33	69.00	58.00	97.67	77.33	8
8	LRB010	82.33	83.33	73.00	63.00	60.00	99.00	76.78	6
9	LRB013	83.00	86.00	70.67	74.00	61.30	100.00	79.16	11
10	LRB022	83.33	80.33	73.00	69.00	61.00	97.33	77.33	9
11	LRB023	80.33	86.67	76.67	68.00	61.60	97.67	78.49	10
12	RBL463	82.33	83.33	71.33	63.00	61.00	101.67	77.11	7
13	RBS16	-	106.33	72.67	106.67	68.60	108.67	92.59	14
	AVT-II								
14	VRB 1	65.00	-	65.33	72.33	-	98.00	75.17	5
15	BRS-01 (C)	-	80.33	-	-	-	-	-	-
16	PRR-01 (C)	65.67	78.67	**65.67**	**69.00**	**59.45**	**97.67**	72.69	3
17	PRR-02 (C)	**65.33**	**75.33**	69.67	74.00	**59.45**	**97.67**	73.58	4
18	RBL-01 (C)	83.00	86.00	71.00	75.67	62.10	102.00	79.96	12
19	RBL-06 (C)	-	-	-	**69.00**	-	102.00	85.50	13
	Mean	**72.33**	**84.02**	**70.90**	**77.01**	**62.35**	**100.02**	**77.77**	
	CD(0.05)	**1.51**	**12.22**	**6.49**	**-**	-	**1.10**	-	
	CV (%) error	**1.23**	**9.09**	**5.44**	**-**	-	**0.69**	-	

Table 25. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on Ricebean: 2007 (Hills)

S.No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank	Location	Frequency
	IVT										
1	EC018181	-	170.00	-	155.67	127.00	202.67	163.83	16	4	0/4
2	EC097882	-	175.67	-	155.00	135.30	203.67	167.41	18	4	0/4
3	IC176563	-	175.67	-	145.67	122.00	202.67	161.50	15	4	0/4
4	PRR 2007-1	***82.00***	120.00	-	95.00	98.30	***118.00***	102.66	2	5	2/4
5	PRR 2007-2	***79.00***	112.67	-	99.00	93.60	***118.00***	100.45	1	5	2/4
6	RBS53	-	181.33	-	158.00	125.00	203.00	166.83	17	4	0/4
	AVT-I										
7	LRB005	124.00	146.67	113.00	139.00	113.00	170.33	134.33	10	6	0/6
8	LRB010	122.00	145.67	113.00	129.00	105.00	170.67	130.89	7	6	0/6
9	LRB013	123.00	141.67	109.00	140.00	112.30	171.33	132.88	8	6	0/6
10	LRB022	120.67	149.00	117.00	135.67	111.60	172.67	134.43	11	6	0/6
11	LRB023	121.33	149.00	113.00	139.00	105.60	171.67	133.27	9	6	0/6
12	RBL463	119.67	141.00	106.00	129.00	107.00	174.00	129.44	6	6	0/6
13	RBS16	-	172.33	115.00	139.67	115.45	169.67	142.42	13	5	0/5
	AVT-II										
14	VRB 1	105.00	-	104.67	145.00	-	***155.67***	127.58	5	4	1/4
15	BRS-01 (C)	-	139.00	-	-	-	-	-	-	1	
16	PRR-01 (C)	111.67	134.33	**105.67**	**129.00**	108.30	**167.33**	126.05	4	6	
17	PRR-02 (C)	**108.33**	**128.00**	107.33	134.00	**107.10**	168.00	125.46	3	6	
18	RBL-01 (C)	118.33	147.00	110.33	145.00	116.30	171.00	134.66	12	6	
19	RBL-06 (C)	-	-	-	140.00	-	174.33	157.17	14	2	
	Mean	**111.25**	**148.76**	**111.03**	**136.26**	**112.68**	**171.37**	**131.89**			
	CD(0.05)	**3.40**	**15.46**	**6.87**	**-**	-	**0.76**	-			
	CV (%) error	**1.81**	**6.50**	**3.68**	**-**	-	**0.28**	-			

Table 26. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on Ricebean: 2007 (Hills)

S.No.	Genotypes	Almora	Bhowali	Palampur	Ranichauri	Shillong	Shimla	Mean	Rank
	IVT								
1	EC018181	-	9.27	-	11.80	10.67	***8.41***	10.04	4
2	EC097882	-	10.10	-	11.40	13.32	***10.57***	11.35	1
3	IC176563	-	9.53	-	12.50	11.66	***9.29***	10.75	3
4	PRR 2007-1	5.00	8.13	-	8.00	6.84	5.91	6.78	18
5	PRR 2007-2	4.77	5.67	-	8.25	10.10	5.45	6.85	16
6	RBS53	-	8.83	-	11.60	12.45	***10.67***	10.89	2
	AVT-I								
7	LRB005	5.40	7.70	6.30	11.60	6.93	***9.02***	7.83	11
8	LRB010	5.07	7.17	6.23	13.50	7.63	6.79	7.73	13
9	LRB013	***5.47***	8.17	5.89	11.40	6.16	7.14	7.37	15
10	LRB022	4.70	7.60	6.23	11.50	8.40	7.02	7.58	14
11	LRB023	***5.53***	9.30	6.27	10.80	14.46	***9.47***	9.31	7
12	RBL463	4.97	9.22	6.25	11.90	12.04	7.59	8.66	8
13	RBS16		9.23	6.45	12.80	10.88	***10.51***	9.97	5
	AVT-II								
14	VRB 1	***5.43***		6.86	12.50	-	7.06	7.96	9
15	BRS-01 (C)		8.33	-	-	-		-	-
16	PRR-01 (C)	4.83	6.83	5.90	11.40	5.77	6.15	6.82	17
17	PRR-02 (C)	**4.93**	8.07	6.45	**13.30**	5.79	**7.88**	7.74	12
18	RBL-01 (C)	4.77	**9.17**	**6.95**	12.20	**7.09**	6.84	7.84	10
19	RBL-06 (C)				12.00	-	6.67	9.34	6
	Mean	**5.07**	**8.37**	**6.36**	**11.58**	**9.39**	**7.91**	**8.11**	
	CD(0.05)	**0.49**	**1.73**	**0.56**	**0.77**	-	**0.18**	-	
	CV (%) error	**5.74**	**12.89**	**5.23**	**7.20**	-	**1.41**	-	

Table 27. Performance of Adzuki bean entries in Initial and Advanced Varietal Trials (IVT & AVT) during 2007 (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 qualifying variety	
				Mean	Location	Rank	HPU-51	Totru Local
	IVT							
1	EC087895	97.89	20.05	11.22	3	6	-24.86	28.50
2	EC240246	100.00	14.99	9.36	3	11	-37.32	7.19
3	EC340244	103.56	17.27	10.98	3	7	-26.45	25.79
4	EC340267	100.22	16.12	10.10	3	9	-32.34	15.72
5	EC341955	97.45	15.54	5.98	3	13	-59.92	-31.45
	AVT-I							
6	EC000254	98.22	15.04	9.88	3	10	-33.82	13.18
7	EC008707	104.11	18.67	10.20	3	8	-31.66	16.87
8	EC015257	107.78	15.15	12.26	3	2	-17.87	40.45
9	EC340271	104.22	18.49	12.20	3	3	-18.30	39.72
10	EC341955	101.67	16.26	12.19	3	4	-18.37	39.61
11	SMLAB-1	104.78	16.29	11.73	3	5	-21.45	34.33
12	HPU-51 (C)	104.89	15.52	14.93	3	1	0.00	70.99
13	Totru Local (C)	98.67	10.60	8.73	3	12	-41.54	0.00
	Mean	**101.80**	**16.15**	**10.75**				

Table 28. Seed yield (q/ha) in Initial and Advanced Varietal Trials (IVT & AVT) on Adzuki bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Shimla	Mean	Rank	Location	Frequency
	IVT							
1	EC087895	12.69	2.94	18.03	11.22	6	3	0/3
2	EC240246	10.34	2.21	15.52	9.36	11	3	0/3
3	EC340244	10.37	2.57	20.00	10.98	7	3	0/3
4	EC340267	6.11	2.59	21.61	10.10	9	3	0/3
5	EC341955	8.09	2.20	7.67	5.98	13	3	0/3
	AVT-I							0/3
6	EC000254	6.45	3.46	19.73	9.88	10	3	0/3
7	EC008707	7.41	2.06	21.14	10.20	8	3	0/3
8	EC015257	8.46	3.26	25.07	12.26	2	3	0/3
9	EC340271	6.61	1.50	28.48	12.20	3	3	0/3
10	EC341955	7.19	3.25	26.12	12.19	4	3	0/3
11	SMLAB-1	7.84	2.28	25.06	11.73	5	3	0/3
12	HPU-51 (C)	**13.15**	2.87	**28.77**	14.93	1	3	
13	Totru Local (C)	5.37	**5.68**	15.13	8.73	12	3	
	Mean	**8.47**	**2.84**	**20.95**	**10.75**			
	CD(0.05)	**1.19**	**0.36**	**1.18**	-			
	CV (%) error	**8.34**	**7.59**	**3.35**	-			

Table 29. Plant height (cm) in Initial and Advanced Varietal Trials (IVT & AVT) on Adzuki bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Shimla	Mean	Rank
	IVT					
1	EC087895	45.00	39.27	54.03	46.10	13
2	EC240246	***60.67***	51.20	51.63	54.50	7
3	EC340244	52.33	46.33	45.52	48.06	11
4	EC340267	43.33	45.73	54.03	47.70	12
5	EC341955	***61.33***	48.40	56.27	55.33	4
	AVT-I					
6	EC000254	48.33	48.93	59.22	52.16	9
7	EC008707	54.67	44.53	66.37	55.19	5
8	EC015257	56.67	46.67	68.03	57.12	2
9	EC340271	57.67	51.87	61.48	57.01	3
10	EC341955	57.67	45.93	61.77	55.12	6
11	SMLAB-1	55.67	46.07	50.80	50.85	10
12	HPU-51 (C)	51.00	49.07	60.30	53.46	8
13	Totru Local (C)	**51.33**	**51.53**	**72.00**	58.29	1
	Mean	**53.51**	**47.35**	**58.57**	**53.14**	
	CD(0.05)	**8.69**	**-**	**4.74**	-	
	CV (%) error	**9.66**	**-**	**4.81**	-	

Table 30. Days to 50% flowering in Initial and Advanced Varietal Trials (IVT & AVT) on Adzuki bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Shimla	Mean	Rank
	IVT					
1	EC087895	50.33	50.33	66.00	55.55	5
2	EC240246	47.00	47.00	70.67	54.89	4
3	EC340244	50.00	57.00	66.33	57.78	8
4	EC340267	49.33	57.00	65.00	57.11	6
5	EC341955	49.00	50.33	64.33	54.55	3
	AVT-I					
6	EC000254	50.00	47.00	65.00	54.00	1
7	EC008707	49.00	57.00	72.00	59.33	10
8	EC015257	50.67	62.00	66.67	59.78	11
9	EC340271	48.00	67.00	65.67	60.22	12
10	EC341955	50.33	57.00	66.67	58.00	9
11	SMLAB-1	51.00	57.00	65.00	57.67	7
12	HPU-51 (C)	50.33	52.00	79.67	60.67	13
13	Totru Local (C)	**46.67**	**48.67**	**66.67**	54.00	2
	Mean	**49.36**	**54.56**	**67.67**	**57.20**	
	CD(0.05)	**2.64**	**-**	**1.71**	-	
	CV (%) error	**3.18**	**-**	**1.50**	-	

Table 31. Days to maturity in Initial and Advanced Varietal Trials (IVT & AVT) on Adzuki bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Shimla	Mean	Rank	Location	Frequency
	IVT							
1	EC087895	82.00	103.67	***108.00***	97.89	2	3	1/3
2	EC240246	78.00	98.67	123.33	100.00	5	3	0/3
3	EC340244	86.00	108.67	116.00	103.56	8	3	0/3
4	EC340267	79.67	108.67	112.33	100.22	6	3	0/3
5	EC341955	78.67	103.67	110.00	97.45	1	3	0/3
	AVT-I						3	0/3
6	EC000254	78.67	98.67	117.33	98.22	3	3	0/3
7	EC008707	79.67	108.00	124.67	104.11	9	3	0/3
8	EC015257	85.00	113.67	124.67	107.78	13	3	0/3
9	EC340271	78.00	113.67	121.00	104.22	10	3	0/3
10	EC341955	78.67	103.67	122.67	101.67	7	3	0/3
11	SMLAB-1	80.67	108.67	125.00	104.78	11	3	0/3
12	HPU-51 (C)	78.33	108.67	127.67	104.89	12	3	
13	Totru Local (C)	**75.67**	**103.67**	**116.67**	98.67	4	3	
	Mean	**79.92**	**106.31**	**119.18**	**101.80**			
	CD(0.05)	**2.82**	**-**	**1.33**	-			
	CV (%) error	**2.10**	**-**	**0.66**	-			

Table 32. 100 seed weight (g) in Initial and Advanced Varietal Trials (IVT & AVT) on Adzuki bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Shimla	Mean	Rank
	IVT					
1	EC087895	***14.30***	8.99	***19.24***	14.18	1
2	EC240246	8.87	9.58	9.81	9.42	11
3	EC340244	***9.77***	12.15	10.15	10.69	5
4	EC340267	8.31	11.71	10.45	10.16	7
5	EC341955	7.57	10.35	10.55	9.49	10
	AVT-I					
6	EC000254	7.89	12.00	9.92	9.94	9
7	EC008707	9.12	15.15	***15.20***	13.16	2
8	EC015257	8.75	11.25	7.00	9.00	12
9	EC340271	7.98	13.40	***13.99***	11.79	3
10	EC341955	8.46	10.85	10.73	10.01	8
11	SMLAB-1	7.16	14.00	***11.40***	10.85	4
12	HPU-51 (C)	**7.68**	**13.00**	**10.78**	10.49	6
13	Totru Local (C)	4.02	5.00	4.08	4.37	13
	Mean	**8.45**	**11.34**	**11.02**	**10.27**	
	CD(0.05)	**1.49**	**-**	**0.37**	-	
	CV (%) error	**10.47**	**-**	**2.02**	-	

Table 33. Performance of Faba bean entries in Initial Varietal Trial (IVT) during 2007 (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 qualifying variety
				Mean	Location	Rank	Vikrant
1	BSH-9	194.13	41.01	5.21	2	9	32.89
2	HB-043	194.88	38.98	5.70	2	8	45.34
3	HB-115	192.38	37.68	5.75	2	7	46.62
4	HB-123	188.25	36.65	6.91	2	1	76.27
5	HB-131	231.63	35.30	6.58	2	3	67.85
6	HB-180	193.75	32.69	6.58	2	4	67.85
7	HB-193	194.25	33.42	6.53	2	5	66.55
8	HB-405	199.50	36.66	3.89	2	14	-0.75
9	HB-428	197.88	38.94	5.14	2	10	31.05
10	HB-430	196.25	38.47	4.90	2	11	24.89
11	HB-504	196.25	35.56	6.32	2	6	61.21
12	HB-509	196.00	28.95	3.66	2	15	-6.53
13	HB-521	189.00	29.77	-	1	-	-
14	NDF-I	192.75	34.49	3.59	2	16	-8.32
15	PRT-07	190.25	35.66	6.77	2	2	72.73
16	PRT-12	196.50	40.02	4.77	2	12	21.79
17	Local (C)	193.00	40.08	-	1	-	-
18	Vikrant (C)	196.63	35.29	3.92	2	13	0.00
	Mean	**196.60**	**36.53**	**5.39**			

Table 34. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Faba bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank	Location	Frequency
1	BSH-9	4.58	***5.84***	5.21	9	2	1/2
2	HB-043	5.56	***5.84***	5.70	8	2	1/2
3	HB-115	5.66	***5.84***	5.75	7	2	1/2
4	HB-123	3.82	***10.00***	6.91	1	2	1/2
5	HB-131	5.66	***7.50***	6.58	3	2	1/2
6	HB-180	5.66	***7.50***	6.58	4	2	1/2
7	HB-193	4.72	***8.34***	6.53	5	2	1/2
8	HB-405	3.61	4.17	3.89	14	2	0/2
9	HB-428	4.44	***5.83***	5.14	10	2	1/2
10	HB-430	4.79	***5.00***	4.90	11	2	1/2
11	HB-504	5.14	***7.50***	6.32	6	2	1/2
12	HB-509	3.99	3.34	3.66	15	2	0/2
13	HB-521	6.18	-	-	-	1	0/1
14	NDF-I	4.69	2.50	3.59	16	2	0/2
15	PRT-07	6.04	***7.50***	6.77	2	2	1/2
16	PRT-12	4.55	***5.00***	4.77	12	2	1/2
17	Local (C)	**8.40**	-	-	-	1	
18	Vikrant (C)	4.51	**3.34**	3.92	13	2	
	Mean	**5.11**	**5.94**	**5.39**			
	CD(0.05)	**1.44**	**1.64**	**-**			
	CV (%) error	**20.41**	**12.98**	**-**			

Table 35. Plant height (cm) in Initial Varietal Trial (IVT) on Faba bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank
1	BSH-9	83.80	40.30	62.05	15
2	HB-043	87.28	57.60	72.44	5
3	HB-115	79.65	69.00	74.33	2
4	HB-123	75.10	48.40	61.75	16
5	HB-131	79.95	62.25	71.10	6
6	HB-180	83.13	63.10	73.11	3
7	HB-193	83.90	61.55	72.73	4
8	HB-405	76.85	43.50	60.18	17
9	HB-428	87.05	42.50	64.78	11
10	HB-430	83.75	44.80	64.28	12
11	HB-504	81.85	55.20	68.53	8
12	HB-509	79.70	51.45	65.58	10
13	HB-521	76.20	-	76.20	1
14	NDF-I	73.50	46.50	60.00	18
15	PRT-07	77.40	49.85	63.63	13
16	PRT-12	75.65	49.80	62.73	14
17	Local (C)	70.00	-	70.00	7
18	Vikrant (C)	**76.35**	**60.15**	68.25	9
	Mean	**79.51**	**52.87**	**66.19**	
	CD(0.05)	**12.73**	**-**	**-**	
	CV (%) error	**11.55**	**-**	**-**	

Table 36. Days to 50% flowering in Initial Varietal Trial (IVT) on Faba bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank
1	BSH-9	***83.50***	91.00	87.25	6
2	HB-043	84.25	91.00	87.63	8
3	HB-115	85.25	56.00	70.63	1
4	HB-123	83.75	81.00	82.38	2
5	HB-131	84.25	91.00	87.63	9
6	HB-180	***83.25***	91.00	87.13	5
7	HB-193	85.00	91.00	88.00	10
8	HB-405	85.50	96.00	90.75	15
9	HB-428	86.00	96.00	91.00	17
10	HB-430	***82.25***	96.00	89.13	12
11	HB-504	***81.25***	96.00	88.63	11
12	HB-509	85.75	96.00	90.88	16
13	HB-521	85.25	-	85.25	4
14	NDF-I	***83.50***	91.00	87.25	7
15	PRT-07	84.00	86.00	85.00	3
16	PRT-12	85.25	96.00	90.63	13
17	Local (C)	91.00	-	91.00	18
18	Vikrant (C)	**85.25**	**96.00**	90.63	14
	Mean	**84.68**	**90.06**	**87.37**	
	CD(0.05)	**1.63**	**-**	**-**	
	CV (%) error	**1.39**	**-**	**-**	

Table 37. Days to maturity in Initial Varietal Trial (IVT) on Faba bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank	Location	Frequency
1	BSH-9	192.25	196.00	194.13	8	2	0/2
2	HB-043	193.75	196.00	194.88	10	2	0/2
3	HB-115	193.75	191.00	192.38	4	2	0/2
4	HB-123	193.00	183.50	188.25	1	2	0/2
5	HB-131	267.25	196.00	231.63	18	2	0/2
6	HB-180	191.50	196.00	193.75	7	2	0/2
7	HB-193	192.50	196.00	194.25	9	2	0/2
8	HB-405	198.00	201.00	199.50	17	2	0/2
9	HB-428	194.75	201.00	197.88	16	2	0/2
10	HB-430	191.50	201.00	196.25	12	2	0/2
11	HB-504	191.50	201.00	196.25	13	2	0/2
12	HB-509	191.00	201.00	196.00	11	2	0/2
13	HB-521	189.00	-	189.00	2	1	0/1
14	NDF-I	189.50	196.00	192.75	5	2	0/2
15	PRT-07	192.00	188.50	190.25	3	2	0/2
16	PRT-12	192.00	201.00	196.50	14	2	0/2
17	Local (C)	193.00	-	193.00	6	1	
18	Vikrant (C)	**192.25**	**201.00**	196.63	15	2	
	Mean	**196.58**	**196.63**	**196.60**			
	CD(0.05)	**48.88**	**-**	**-**			
	CV (%) error	**17.94**	**-**	**-**			

Table 38. 100 seed weight (g) in Initial Varietal Trial (IVT) on Faba bean: 2007 (Hills)

S. No.	Genotypes	Palampur	Ranichauri	Mean	Rank
1	BSH-9	30.33	51.70	41.01	1
2	HB-043	29.16	48.80	38.98	4
3	HB-115	34.07	41.30	37.68	7
4	HB-123	31.21	42.10	36.65	9
5	HB-131	31.80	38.80	35.30	12
6	HB-180	30.79	34.60	32.69	16
7	HB-193	29.84	37.00	33.42	15
8	HB-405	29.32	44.00	36.66	8
9	HB-428	30.87	47.00	38.94	5
10	HB-430	29.24	47.70	38.47	6
11	HB-504	30.62	40.50	35.56	11
12	HB-509	17.42	40.48	28.95	18
13	HB-521	29.77	-	29.77	17
14	NDF-I	27.78	41.20	34.49	14
15	PRT-07	29.91	41.40	35.66	10
16	PRT-12	31.75	48.30	40.02	3
17	Local (C)	**40.08**	-	40.08	2
18	Vikrant (C)	30.47	**40.10**	35.29	13
	Mean	**30.24**	**42.81**	**36.53**	
	CD(0.05)	**11.19**	**-**	**-**	
	CV (%) error	**17.54**	**-**	**-**	

Table 39. Performance of Job's tear entries in Advanced Varietal Trial (AVT) during 2007 (Hills)

S. No.	Genotypes	Mean maturity duration (days)	Mean plant height (cm)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety	
				Mean	Location	Rank	Mayeun Local	Pollin Local
1	AAH-33	163.00	230.54	3.46	3	5	40.74	-4.88
2	DKH-07	163.06	237.99	3.53	3	3	43.59	-2.96
3	H-0626	161.50	235.47	2.76	3	10	12.01	-24.30
4	H-0732	162.44	237.82	3.05	3	8	24.03	-16.18
5	H-2215	162.67	206.43	3.53	3	4	43.54	-2.99
6	H-2279	159.89	204.64	3.21	3	7	30.31	-11.94
7	H-2287	160.33	240.87	3.40	3	6	38.26	-6.56
8	H-2902	157.89	230.11	3.69	3	1	49.86	1.28
9	H-3768	160.67	225.12	2.81	3	9	14.23	-22.80
10	Mayeun Local (C)	158.94	236.82	2.46	3	11	0.00	-32.39
11	Pollin Local (C)	158.39	223.20	3.64	3	2	48.15	0.00
	Mean	**160.80**	**228.09**	**3.23**				

Table 40. Grain yield (q/ha) in Advanced Varietal Trial (AVT) on Job's tear: 2007 (Hills)

S.No.	Genotypes	Palampur	Ranichauri	Shillong	Mean	Rank	Location	Frequency
1	AAH-33	0.61	***2.27***	7.50	3.46	5	3	1/3
2	DKH-07	0.51	1.34	8.75	3.53	3	3	0/3
3	H-0626	0.73	***1.90***	5.63	2.76	10	3	1/3
4	H-0732	0.77	1.51	6.88	3.05	8	3	0/3
5	H-2215	0.45	1.70	8.44	3.53	4	3	0/3
6	H-2279	0.59	1.52	7.50	3.21	7	3	0/3
7	H-2287	0.41	1.67	8.13	3.40	6	3	0/3
8	H-2902	0.56	1.75	8.75	3.69	1	3	0/3
9	H-3768	0.53	1.34	6.56	2.81	9	3	0/3
10	Mayeun Local (C)	**1.00**	1.38	5.00	2.46	11	3	
11	Pollin Local (C)	0.76	**1.42**	**8.75**	3.64	2	3	
	Mean	0.63	**1.62**	**7.44**	**3.23**			
	CD (0.05)	0.21	**0.36**	**-**	**-**			
	CV (%) Error	**19.93**	**12.96**	**-**	**-**			

Table 41. Plant height (cm) in Advanced Varietal Trial (AVT) on Job's tear: 2007 (Hills)

S.No.	Genotypes	Palampur	Ranichauri	Shillong	Mean	Rank
1	AAH-33	157.33	173.00	361.30	230.54	6
2	DKH-07	140.00	165.67	408.30	237.99	2
3	H-0626	158.67	188.53	359.20	235.47	5
4	H-0732	154.33	172.13	387.00	237.82	3
5	H-2215	138.67	158.13	322.50	206.43	10
6	H-2279	136.00	152.13	325.80	204.64	11
7	H-2287	131.33	197.07	394.20	240.87	1
8	H-2902	138.33	167.00	385.00	230.11	7
9	H-3768	143.00	164.07	368.30	225.12	8
10	Mayeun Local (C)	**157.67**	147.00	**405.80**	236.82	4
11	Pollin Local (C)	147.00	**158.40**	364.20	223.20	9
	Mean	**145.67**	**167.56**	**371.05**	**228.09**	
	CD (0.05)	**36.43**	**-**	**-**		
	CV (%) Error	**14.66**	**-**	**-**		

Table 42. Days to 50% flowering in Advanced Varietal Trial (AVT) on Job's tear: 2007 (Hills)

S.No.	Genotypes	Palampur	Ranichauri	Shillong	Mean	Rank
1	AAH-33	85.33	139.00	117.50	113.94	11
2	DKH-07	86.00	139.00	115.00	113.33	9
3	H-0626	85.33	133.00	117.50	111.94	7
4	H-0732	81.00	135.67	125.00	113.89	10
5	H-2215	89.00	133.00	114.50	112.17	8
6	H-2279	83.33	128.00	114.50	108.61	5
7	H-2287	85.00	123.00	117.00	108.33	4
8	H-2902	89.67	118.00	115.50	107.72	3
9	H-3768	88.33	123.00	123.50	111.61	6
10	Mayeun Local (C)	**87.67**	128.33	104.50	106.83	2
11	Pollin Local (C)	90.33	**118.00**	**99.50**	102.61	1
	Mean	**86.45**	**128.91**	**114.91**	**110.09**	
	CD (0.05)	**9.54**	**-**	**-**		
	CV (%) Error	**6.46**	**-**	**-**		

Table 43. Days to maturity in Advanced Varietal Trial (AVT) on Job's tear: 2007 (Hills)

S.No.	Genotypes	Palampur	Ranichauri	Shillong	Mean	Rank	Location	Frequency
1	AAH-33	116.00	199.00	174.00	163.00	10	3	0/3
2	DKH-07	115.67	199.00	174.50	163.06	11	3	0/3
3	H-0626	116.00	194.00	174.50	161.50	7	3	0/3
4	H-0732	116.00	197.33	174.00	162.44	8	3	0/3
5	H-2215	120.00	194.00	174.00	162.67	9	3	0/3
6	H-2279	116.67	189.00	174.00	159.89	4	3	0/3
7	H-2287	123.00	184.00	174.00	160.33	5	3	0/3
8	H-2902	120.67	179.00	174.00	157.89	1	3	0/3
9	H-3768	123.00	184.00	175.00	160.67	6	3	0/3
10	Mayeun Local (C)	**118.33**	184.00	**174.50**	158.94	3	3	
11	Pollin Local (C)	123.33	**177.33**	**174.50**	158.39	2	3	
	Mean	**118.97**	**189.15**	**174.27**	**160.80**			
	CD (0.05)	**4.79**	**-**	**-**	**-**			
	CV (%) Error	**2.36**	**-**	**-**	**-**			

Table 44. Performance of Perilla entries in Initial Varietal Trial (IVT) during 2007 (Hills)

S. No.	Genotypes	Mean maturity duration (days)	Mean plant height (cm)	Mean seed yield over locations (q/ha)			Percent increase/ decrease over qualifying variety
				Mean	Location	Rank	
1	BDS-0837	183.75	129.78	2.54	2	12	-17.15
2	BDS-1644	190.25	138.43	5.81	2	1	89.25
3	BDS-1647	194.50	176.18	2.07	2	14	-32.57
4	GP-178	192.25	153.20	3.27	2	7	6.60
5	H-0529	190.75	128.78	3.15	2	8	2.56
6	H-1099	193.75	139.93	2.22	2	13	-27.82
7	H-1143	195.50	171.13	1.66	2	15	-46.01
8	H-1756	193.50	139.53	2.70	2	11	-12.02
9	H-1812	189.75	130.08	4.35	2	2	41.61
10	H-3944	191.75	170.83	3.68	2	5	19.79
11	IC003908	186.25	151.08	3.95	2	4	28.50
12	IC006440	195.50	140.83	3.35	2	6	9.12
13	SS-359	193.00	140.13	4.05	2	3	31.84
14	SS-491	191.25	139.33	1.42	2	17	-53.66
15	SS-570	181.25	125.22	2.88	2	10	-6.32
16	SSAKM-68	182.00	111.55	1.53	2	16	-50.29
17	BDS-1650 (C)	197.25	158.25	3.07	2	9	0.00
	Mean	**190.72**	**143.78**	**3.04**			

Table 45. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Perilla: 2007 (Hills)

S.No.	Genotypes	Ranichauri	Shillong	Mean	Rank	Location
1	BDS-0837	0.90	4.19	2.54	12	2
2	BDS-1644	0.87	10.75	5.81	1	2
3	BDS-1647	0.64	3.50	2.07	14	2
4	GP-178	0.92	5.63	3.27	7	2
5	H-0529	1.11	5.19	3.15	8	2
6	H-1099	0.62	3.81	2.22	13	2
7	H-1143	0.69	2.63	1.66	15	2
8	H-1756	1.09	4.31	2.70	11	2
9	H-1812	0.57	8.13	4.35	2	2
10	H-3944	0.73	6.63	3.68	5	2
11	IC003908	0.64	7.25	3.95	4	2
12	IC006440	0.95	5.75	3.35	6	2
13	SS-359	0.72	7.38	4.05	3	2
14	SS-491	0.97	1.88	1.42	17	2
15	SS-570	0.69	5.06	2.88	10	2
16	SSAKM-68	0.99	2.06	1.53	16	2
17	BDS-1650 (C)	0.89	5.25	3.07	9	2
	Mean	**0.82**	**5.26**	**3.04**		

Table 46. Plant height (cm) in Initial Varietal Trial (IVT) on Perilla: 2007 (Hills)

S.No.	Genotypes	Ranichauri	Shillong	Mean	Rank
1	BDS-0837	89.20	170.35	129.78	14
2	BDS-1644	101.20	175.65	138.43	12
3	BDS-1647	118.20	234.16	176.18	1
4	GP-178	127.60	178.80	153.20	5
5	H-0529	101.60	155.95	128.78	15
6	H-1099	106.00	173.85	139.93	9
7	H-1143	143.60	198.65	171.13	2
8	H-1756	115.40	163.66	139.53	10
9	H-1812	115.00	145.15	130.08	13
10	H-3944	146.00	195.65	170.83	3
11	IC003908	101.00	201.15	151.08	6
12	IC006440	96.00	185.66	140.83	7
13	SS-359	105.60	174.65	140.13	8
14	SS-491	107.00	171.66	139.33	11
15	SS-570	79.60	170.83	125.22	16
16	SSAKM-68	80.40	142.70	111.55	17
17	BDS-1650 (C)	140.00	176.50	158.25	4
	Mean	**110.20**	**177.35**	**143.78**	

Table 47. Days to 50% flowering in Initial Varietal Trial (IVT) on Perilla: 2007 (Hills)

S.No.	Genotypes	Ranichauri	Shillong	Mean	Rank
1	BDS-0837	119.00	151.50	135.25	4
2	BDS-1644	134.00	144.00	139.00	9
3	BDS-1647	134.00	138.00	136.00	5
4	GP-178	139.00	156.00	147.50	17
5	H-0529	129.00	152.50	140.75	11
6	H-1099	139.00	151.50	145.25	15
7	H-1143	134.00	154.00	144.00	13
8	H-1756	129.00	148.00	138.50	8
9	H-1812	134.00	151.50	142.75	12
10	H-3944	139.00	152.00	145.50	16
11	IC003908	124.00	144.50	134.25	2
12	IC006440	134.00	154.00	144.00	14
13	SS-359	119.00	153.50	136.25	6
14	SS-491	119.00	156.00	137.50	7
15	SS-570	114.00	155.00	134.50	3
16	SSAKM-68	114.00	148.00	131.00	1
17	BDS-1650 (C)	129.00	151.00	140.00	10
	Mean	**128.41**	**150.65**	**139.53**	

Table 48. Days to maturity in Initial Varietal Trial (IVT) on Perilla: 2007 (Hills)

S.No.	Genotypes	Ranichauri	Shillong	Mean	Rank	Location
1	BDS-0837	180.00	187.50	183.75	3	2
2	BDS-1644	195.00	185.50	190.25	6	2
3	BDS-1647	195.00	194.00	194.50	14	2
4	GP-178	200.00	184.50	192.25	10	2
5	H-0529	190.00	191.50	190.75	7	2
6	H-1099	200.00	187.50	193.75	13	2
7	H-1143	195.00	196.00	195.50	15	2
8	H-1756	200.00	187.00	193.50	12	2
9	H-1812	195.00	184.50	189.75	5	2
10	H-3944	200.00	183.50	191.75	9	2
11	IC003908	185.00	187.50	186.25	4	2
12	IC006440	195.00	196.00	195.50	16	2
13	SS-359	180.00	206.00	193.00	11	2
14	SS-491	180.00	202.50	191.25	8	2
15	SS-570	175.00	187.50	181.25	1	2
16	SSAKM-68	175.00	189.00	182.00	2	2
17	BDS-1650 (C)	195.00	199.50	197.25	17	2
	Mean	**190.29**	**191.15**	**190.72**		

2.2 PLAINS

The Varietal Trials and Germplasm Screening Nurseries were constituted in grain amaranth, ricebean, faba bean, Kalingada, Kankoda, Winged bean *Jatropha* and Tumba. Most of the experiments were conducted during the kharif 2007 season. However, in some of the crops such as grain amaranth and faba bean, experiments were conducted during the *rabi* 2006-2007 season at most of the centres except at Bangalore and Muttupalayam.

2.2.1 GRAIN AMARANTH (*Amaranthus spp.)*

In grain amaranth an Initial Varietal Trial and an Advanced Varietal Trial were conducted during *rabi* 2006-07and *kharif* 2007.

2.2.1.1 Initial Varietal Trial (IVT) : Rabi 2006-07

The trial comprising 16 entries including four checks was conducted at seven locations. Results have been received from all the centres, however, some entries did not germinate at a many centres and hence, excluded from statistical analysis. Results from Ambikapur and Faizabad were not included because of very poor yields. The summary of performance of the entries has been presented in table 49.

Significant differences were observed among the entries for grain yield at all the centres. Grain yield levels were high at Mandor (18.68 q/ha) followed by S.K. Nagar (16.90 q/ha) and Bhubaneswar (11.26 q/ha) (Table 50). However, it was low at most of the other centres. The overall average showed that among IVT entries, BGA-15 (16.68 q/ha) was the highest yielder.

Plant height was the highest at S.K. Nagar (127.42 cm) and the lowest at Ranchi (83.24 cm) centre (Table 51). On the basis of average over the locations GA 1 (126.38 cm) had the highest plant height whereas Annapurna had the lowest plant height (55.01 cm).

Flowering time was the earliest at S.K. Nagar (43.08 days) followed by at Bhubaneswar (49.13 days) and Mandor (51.92 days); while it was moderately late at Hisar and Ranchi centres (Table 52). On the basis of average over locations Annapurna was the earliest flowering (45.45 days) entry.

Maturity period was the earliest at Bhubaneswar (95.33 days) followed by at S.K. Nagar (100.64 days) (Table 53). Annapurna (112.05 days) and BGA-15 (128.08 days) were the earliest maturing lines.

Inflorescence length of the entries showed significant difference at Hisar and Bhubaneswar (Table 54). Based on the average over the locations GA 2 (55.08 cm) had the longest inflorescence.

Test weight (Table 55) as measured by the weight of 10 ml seed showed maximum mean value at S.K. Nagar (9.55 g) and minimum at Hisar (6.58 g). Based on the average over five locations BGA-15 had the highest seed weight (8.70 g).

2.2.1.2 Advanced Varietal Trial (AVT-I & II)

In this trial, eight AVT-I and four AVT-II entries along with four checks were tested at seven locations. The results have been received from all the centres, however, the data from Ambikapur and Faizabad were not included because of poor yield. The performance of the entries as compared to the checks has been given in table 56. Based on the overall mean performance in respect of grain yield over five locations, RMA-4 (16.07 q/ha) entry showed grain yield superiority over the best check variety, Suvarna (15.02 q/ha).

Significant differences were observed among the entries for grain yield at all the locations except S.K. Nagar (Table 57). Grain yield level was high at Mandor (20.84 q/ha) and S.K. Nagar (18.78 q/ha) and moderate at Bhubaneswar (12.31 q/ha) and low at Hisar (10.57 q/ha) and Ranchi (9.17 q/ha). Based on the average performance over locations the entry RMA-4 was the highest yielder (16.07 q/ha) followed by SKNA 21 (15.84 q/ha).

Average plant height of the entries (Table 58) was the highest at S.K. Nagar (140.39 cm) followed by Mandor (117.76 cm) and Hisar (114.05 cm). It was the lowest at Bhubaneswar (95.27 cm) centre. Based on average performance over five locations RMA-8 had the highest plant height (138.82 cm).

Flowering time showed considerable variation among the locations as well as among the entries within a location. The mean flowering time was the lowest (45.89 days) at S.K. Nagar while it was the longest (84.41 days) at Hisar (Table 59). The check Annapurna showed consistence for early flowering over the locations and ranked first (46.38 days) based on the overall performance.

Maturity period also showed similar trend as that of flowering time. The average maturity period of the entries over all the locations was 125.55 days (Table 60). The entry, Annapurna was the earliest in maturity (111.36 days) followed by SKNA 21 (123.35 days). The average maturity period was the minimum at Bhubaneswar (94.17 days) while, it was the longest at Hisar (188.69 days).

The length of inflorescence (Table 61) of the entries was the highest at S.K. Nagar (71.54 cm) followed by at Mandor (58.96 cm). Inflorescence length was the lowest (26.87 cm) at Hisar. Based on the average over four locations, the entry RMA 9 had the longest inflorescence (64.05 cm).

Test weight (Table 62) expressed in terms of weight of 10 ml seed recorded at five centres showed that it was the highest at S.K. Nagar (9.78 g) and low to moderate at Hisar (6.30 g). The variation among the entries was relatively low. Based on the average over five locations, the check, GA 2 (8.41 g) showed the highest test weight.

2.2.1.3 Initial Varietal Trial (IVT) : Kharif - 2007

In this trial 15 entries, including four checks, were conducted at two locations. The performance of the entries as compared to the checks has been summarized in table 63. The entry BGA-07 showed numerical yield superiority over the best check variety, Survana.

Significant differences were observed among the entries for grain yield at both the locations (Table 64). Mean seed yield level was very low at both the locations. BGA-07 (4.47 q/ha) was the highest yielding entry based on average over two locations.

Average plant height of the entries was the highest at Mettupalayam (169.50 cm) but low at Bangalore (104.72 cm) centre (Table 65). Based on two locations data RMA-22 had the highest plant height (157.81 cm).

Flowering time showed little variation among the locations. The mean flowering time was almost similar (50.38 days and 50.44 days) both at Bangalore and at Mettupalayam centres (Table 66). The check variety Annapurna showed early flowering consistently at both the locations.

Maturity period also showed similar trend as that of flowering time. The average maturity period of the entries over two locations was 89.28 days (Table 67). The entry, Suvarna was the earliest in maturity (73.79 days). The average maturity period was slightly higher at Bangalore (90.95 days) as compared to that observed at Mettupalayam (87.60 days).

Test weight (Table 68) expressed in terms of weight of 10 ml seed recorded at two centres showed that it was higher at Mettupalayam (7.36 g) followed by Bangalore (5.46 g) cnetre. Based on both the locations data the check, Suvarna (6.73 g) showed the highest test weight.

2.2.1.4 Advanced Varietal Trial (AVT) : Kharif - 2007

The trial comprising 11 entries including four checks was proposed to be conducted at two locations and data have been received from both the centres. The summary of performance of the entries has been presented in table 69.

Significant differences were observed among the entries for grain yield at all the centres. Seed yield levels were very low at Mettupalayam (2.55 q/ha) (Table 70). Among AVT-I and AVT-II entries, SKNA-502 (5.30 q/ha) was the highest yielder followed by Suvarna (4.83 q/ha).

Plant height was the highest at Mettupalayam (190.47 cm) and lowest at Bangalore (136.09 cm) centre (Table 71). On the basis of average over the locations GA-2 (182.51 cm) had the highest plant height whereas Annapurna had the lowest height (106.83 cm).

Flowering time was almost similar at both the centres viz. 50.48 days at Bangalore and 51.79 days at Mettupalayam (Table 72).

Maturity period was the earliest at Mettupalayam (85.48 days) followed by Bangalore (94.23 days) centre (Table 73). Annapurna (76.17 days) was the earliest maturing line.

Test weight (Table 74) as measured by the weight of 10 ml seed, showed maximum mean value at Mettupalayam (7.56 g) and minimum at Bangalore (5.53 g). Based on single location data SKNA 501 had the highest seed weight (7.07 g).

2.2.2 RICE BEAN (*Vigna umbellata*)

2.2.2.1 Initial Varietal Trial (Kharif 2007)

The Initial Varietal Trial comprising 20 entries along with four checks was conducted at nine locations in the plains. Results have been received from all the locations. Results of Bangalore centre were not included in the average since only seven entries were tested. Summary of performance of these entries has been indicated in table 75.

The average seed yield ranged from 2.18 q/ha at Faizabad to 13.99 q/ha at Ludhiana (Table 76). Significant differences were observed among the entries for seed yield at three locations. On the basis of average performance over eight locations the entry BRB018 (10.04 q/ha) was the highest yielder.

Plant height showed extreme variation ranging from 43.78 cm at Rahuri to 129.52 cm at Ambikapur centres (Table 77). Based on the average performance over the locations the entry LRB162 had the maximum plant height (96.13 cm).

Flowering time was the earliest at Bhubaneswar (52.10 days) which was closely followed by at Mettupalayam (54.03 days), while it was the longest at Hisar (81.37 days) centre (Table 78). Based on the average over locations LRB324 (58.38 days) had the earliest flowering.

Maturity period showed wide variation among the locations but very little among the entries. The earliest maturity was observed at Mettupalayam (83.00 days), while it was late at Faizabad (129.05 days) centre (Table 79). On the basis of average over the locations LRB460 (107.38 days) was the earliest in maturity.

Weight of 100 seeds was almost uniform at most of the centres but slightly higher at Bhubaneswar (6.98 g) followed by at Ranchi (6.43 g) centre (Table 80). Based on the average over locations LRB189 (6.15 g) had the boldest seed.

2.2.2.2 Advanced Varietal Trial (AVT-I)

The Advanced Varietal Trial-I comprising 10 entries and four checks was conducted at nine locations. Results have been received from eight centres only. The summary of performance of the entries has been presented in table 81.

Significant variations were observed among the entries with respect to seed yield at all the locations (Table 82). Yield level at Ludhiana centre was the highest with an average yield of 14.19 q/ha while it was the lowest (2.69 q/ha) at Faizabad centre. The yield levels at Mettupalayam (5.18 q/ha) and Rahuri (3.35 q/ha) centres were also low. On the basis of average over eight locations RBL-50 (8.76 q/ha) was the highest yielder followed by the entry LRB068 (8.59 q/ha).

Plant height (Table 83) was the highest at Hisar showing an average of 135.94 cm while, it was the lowest at Mettupalayam (56.48 cm) and Ludhiana (65.74 cm) centre. On the basis of average over eight locations RBL-35 showed the highest plant height (104.60 cm).

Flowering time was the earliest at Mettupalayam (46.93 days) and delayed at Faizabad (82.49 days) showing more than 35 days difference between the two centres (Table 84). On the basis of average over eight locations LRB087 (60.33 days) and LRB334 (60.83 days) showed the earliest flowering.

Maturity period was the earliest at Mettupalayam (84.05 days) but at Faizabad (130.00 days) and Hisar (121.00 days) it was quite delayed (Table 85). There was a difference of about 46 days in maturity between Faizabad and Mettupalayam centres. Based on the average over eight locations LRB309 and LRB081 was the earliest maturing (109.04 days and 109.08 days, respectively) entry.

The mean 100-seed weight was the highest at Hisar (6.64 g) and the lowest at Faizabad (5.13 g) centre (Table 86). On the basis of average over eight locations LRB099 had the largest seed (6.03 g).

2.2.3 FABA BEAN (*Vicia faba*)

2.2.3.1 Initial Varietal Trial (IVT)

The Initial Varietal Trial comprising 14 entries including one check was conducted at six locations. Results have been received from all the centres. The results of Ambikapur and Ludhiana centres were not included in overall mean because of very low yields. The summary of performance of the entries has been presented in table 88.

Significant differences were observed among the entries for seed yield at all the centres. The average over the locations showed that seed yield was the highest in the entry, EC243575 (28.75 q/ha) followed by HB 180 (28.47 q/ha) as against the check Vikrant (24.62 q/ha).

Plant height was the highest at Hisar (130.60 cm) followed by Delhi (78.36 cm) centre (Table 89). Moderate plant height was observed at other centres. Based on the average over the locations HB 504 (76.53 cm) showed the highest plant height.

Flowering time ranged from 58.54 days at Ranchi to 92.05 days at Hisar centre (Table 90). Based on the average over the locations IC361427 (66.38 days) was the earliest flowering line.

Maturity period varied among the locations with mean maturity period ranging from 114.11 days at Ranchi to 170.43 days at Hisar centre (Table 91). On the basis of overall mean, EC243834 (133.51 days) had the earliest maturity.

Mean seed weight was the highest at Delhi (31.41 g) and the lowest at Ludhiana (23.96 g) centre (Table 92). Based on the average over the locations HB 504 (31.07 g) had the boldest seed.

2.2.3.2 Advanced Varietal Trial (AVT-I & II)

In this trial, four AVT-I and two AVT-II entries along with one check were tested at six locations. The results were received from all the centres. The results from Ambikapur and Ludhiana were not included because of poor yield. The performance of the entries as compared to the checks has been given in table 94. Based on the overall mean performance in respect of grain yield over four locations, HB418 (28.88 q/ha) entry showed grain yield superiority over the best check variety, Vikrant (25.43 q/ha).

Significant differences were observed among the entries for seed yield at all the locations (Table 94). Seed yield, level was high at Hisar (43.94 q/ha) and moderate at Delhi (25.67 q/ha) and Faizabad (21.16 q/ha); while, it was considerably low at Ranchi (14.05 q/ha). Based on the average performance over locations the entry HB418 was the highest yielder (28.88 q/ha) followed by HB416 (27.05 q/ha).

Average plant height of the entries (Table 95) was the highest at Hisar (99.88 cm) followed by Faizabad (79.68 cm) and Delhi (74.17 cm). It was the lowest at Ludhiana (40.81 cm) centre. Based on average performance over six locations HB418 had the highest plant height (73.14 cm).

Flowering time showed considerable variation among the locations. The mean flowering time was the shortest (55.68 days) at Ranchi while it was the longest (74.29 days) at Hisar (Table 96). The check Vikrant showed consistency for early flowering over the locations and ranked first (63.78 days) based on the overall performance.

Maturity period also showed similar trend as that of flowering time. The average maturity period of the entries over all the locations was 134.45 days (Table 97). The entry, HB418 was the earliest in maturity (133.13 days) followed closely by HB405 (133.44 days). The average maturity period was the minimum at Ranchi (114.29 days) while, it was the longest at Hisar (168.19 days).

Test weight (Table 98) recorded at four centres showed that it was the highest at Delhi (31.35 g) and low to moderate at Ludhiana (24.51 g). The variation among the entries was relatively low. Based on the average over four locations, the entry HB 430 (29.39 g) showed the highest test weight.

The pod yield (Table 99) of the entries was the highest at Hisar (224.14 q/ha) followed by Delhi (67.68 q/ha). Based on the average over two locations, the entry HB418 had the highest pod yield (159.06 q/ha).

2.2.4 WINGED BEAN (*Psophocarpus tetragonolobus*)

2.2.4.1 Initial Varietal Trial (IVT)

The Initial Varietal Trial consisting of 11 entries mainly from Akola and Bangalore centres was conducted at two locations. The summary of performance of the entries has been given in table 100.

Significant variation was observed for seed yield at both the locations. Seed yield (Table 101) was the highest at Rahuri (9.36 q/ha) followed by Ambikapur (8.77 q/ha). The entry EC027885-1 yielded the highest (14.83 q/ha).

Average flowering time at two centres ranged between 55.92 and 81.45 days (Table 102). Based on single location data the entry IC095248 flowered the earliest (56.00 days) whereas, the entry, EC045229-1 took the longest time for flowering (73.00 days).

Maturity period of the entries was recorded at both the centres (Table 103). The average maturity period was the lowest at Rahuri (152.75 days) and Ambikapur (165.15 days). Based on single location data the entry IC095248

matured the earliest (152.33 days) whereas, the entry, EC027885-1 had the longest time for maturity (163.83 days).

Pod length (Table 104) of the entries was the lowest at Rahuri (12.58 cm) and highest at Ambikapur (15.14 cm) Based on the average performance over the two locations, the entry EC021904 had the highest (15.43 cm) whereas, the entry IC095248 had the smallest pod length (10.67 cm).

2.2.4.2 Advanced Varietal Trial (AVT-II)

The Advanced Varietal Trial-II comprising 9 entries and one check was conducted at four locations. Results have been received from all the centres. The summary of performance of the entries has been presented in table 105.

Significant variations were observed among the entries with respect to seed yield at all the locations (Table 106). Yield level at Rahuri centre was the highest with an average yield of 8.39 q/ha while it was the lowest (6.65 q/ha) at Ranchi centre. On the basis of average over four locations Dwarf Mutant (8.83 q/ha) was the highest yielder followed by the entry EC178331 (8.72 q/ha).

Flowering time was the earliest at Rahuri (57.43 days) and delayed at Ambikapur (82.33 days) showing more than 34 days difference between the two centres (Table 107). On the basis of average over four locations NBRI-Sel. (68.50 days) and AKWB-1 (68.79 days) showed the earliest flowering.

Maturity period was the earliest at Rahuri (152.67 days) and delayed at Ranchi (186.67 days) (Table 108). There was a difference of about 34 days in maturity between Rahuri and Ranchi centres. Based on the average over four locations EC038955 and EC142665 was the earliest maturing (160.56 days and 161.33 days, respectively) entries.

The mean 100-seed weight was the highest at Ranchi (30.48 g) centre and the lowest at Bangalore (19.40 g) centre (Table 109). On the basis of average over three locations EC142665 had the largest seed (27.82 g).

Green pod yield (Table 110) of the entries was the highest at Ambikapur (135.04 q/ha) and very low at Bangalore (3.69 q/ha), therefore, data from

Bangalore was not included in the overall mean. Based on the average performance over the two locations, the entry EC178313 was the highest (123.70 q/ha) whereas, the IC026945 was the lowest yielder (71.72 q/ha).

2.2.5 KALINGADA (*Citrullus lanatus*)

Kalingada is primarily a vegetable crop grown for its ripe fruits which are used as vegetable. However, its seed yields useful oil. In Kalingada one Advanced Varietal Trial was proposed to be conducted during the year.

2.2.5.1 Advanced Varietal Trial

The Advanced Varietal Trial consisting of 18 entries 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 111. Seed yield levels were higher at S.K. Nagar and ranged from 0.94 to 3.49 q/ha while seed yield at Mandor was quite low (1.11 q/ha) centre (Table 112). Based on average, the entry, SKNK665 was the highest yielder (2.83 q/ha).

Number of fruits and fruit diameter recorded at two centres showed that there was considerable variation at both the centres (Table 113). The number of fruits per plant recorded at two centres showed that it was the highest at Mandor (4.71) and lowest at S.K. Nagar (2.67). The entry SKNK653 had the highest number of fruits per plant. The fruit diameter was recorded the highest at S.K. Nagar (18.94 cm) and lowest at Mandor (8.47 cm). The entry SKNK679 had the largest fruit diameter (15.46 cm).

Fruit yield was the highest at S.K. Nagar centre (68.98 q/ha) and lowest at Mandor (34.73 q/ha) centre (Table 113). Based on average SKNK665 (78.39 q/ha) was the highest fruit yielder.

2.2.6 KANKODA (*Momordica dioica*)

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

2.2.6.1 Advanced Varietal Trial (AVT-II)

The Advanced Varietal Trial-II on ten Kankoda entries was planned to be conducted at five locations. The results have been received from four centres. The performance of the entries has been presented in table 114.

Fruit yield was the highest at Rahuri centre (11.42 q/ha) and lowest at Ranchi (5.63 q/ha) centre (Table 115). Fruit yield at other centres was moderate. Based on average, RMF 37 (10.28 q/ha) was the highest yielder. For days to fruit setting considerable variation was observed (Table 116) at most of the locations (44.04 – 68.17 days). Earliest fruit setting (44.04 days) was observed at Ranchi centre. Based on average, NDM-1 (52.22 days) had the earliest fruit setting.

Number of fruits per plant showed wide variation (27.63 – 112.13) among the centres (Table 117). Highest number of fruits was observed at Bhubaneswar (112.13) followed by Ambikapur (53.38) centre. Based on average over locations average fruit number was the highest in Phule-MD-05-1 (66.94).

Days taken to first picking (Table 118) was the lowest at Ranchi (44.76 days) and the days taken for last picking (Table 119) was also the lowest at this centre (88.67 days). Number of pickings recorded at five locations showed that it was the highest (8.90) at Bhubaneswar and the lowest (2.93) at Faizabad (Table 120). Based on average over the locations RMF 7-P-1 had the highest number of pickings (5.40). Individual fruit weight was the highest (11.34 g) at Rahuri centre (Table 121). The entry RMF-27 (8.59) had the highest single fruit weight as compared to check varietry RMF 37.

2.2.7 TUMBA (*Citrullus colocynthis*)

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

2.2.7.1 Initial Varietal Trial (IVT)

In this trial 15 entries were proposed to be evaluated at one location. The performance of the entries and yield attributes have been given in tables 122

and 123. Seed yield of the entries ranged from 0.71 to 1.34 q/ha, the entry RMT 407 (1.34 q/ha) being the highest yielder. Fruit yield (6.89 q/ha to 22.95 q/ha) and single fruit weight (84.33 g to 131.17 g) showed wide variation while number of fruits, fruit circumference and test weight showed less variation.

2.2.8 JATROPHA (*Jatropha* spp.)

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

2.2.8.1 Initial Varietal Trial (IVT)

The results of the trial with eight entries were received from three centres. The summary of performance of the entries has been given in table 124. The seed yield recorded at three locations has been presented in table 125. Seed yield was higher at Hisar (21.71 q/ha) centre as compared to that of other centres. The check Chhattrapati (16.06 q/ha) was the highest yielder based on the average over three locations followed closely by JH 1 (15.79 q/ha).

Plant height was high at Hisar (409.96 cm) and moderate at S.K. Nagar (241.71 cm) and Bhubaneswar (214.67 cm) (Table 126). JH 1 had the highest plant height (309.13 cm) based on the average over the locations.

Number of branches per plant (Table 127) was the highest at Bhubaneswar (35.65) followed by Hisar (20.47). Based on the average over the locations, entry JH-1 had the highest number of branches (25.96).

100 seed weight (Table 128) recorded at three locations showed that it was the highest at Bhubaneswar (64.56 g) and lowest at S.K. Nagar (50.49 g). Based on the average over three locations, entry JH 1 had the boldest seed (59.03 g).

Table 49. Performance of Grain amaranth entries in Initial Varietal Trial (IVT) during Rabi 2006-07 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	Annapurna	GA-1	GA-2	Suvarna
1	BGA-10	131.28	8.46	15.09	5	2	73.64	14.57	20.23	5.52
2	BGA-15	128.08	8.70	16.68	5	1	91.96	26.66	32.92	16.65
3	IC035370	-	-	-	-	-	-	-	-	-
4	IC035399	-	-	-	-	-	-	-	-	-
5	IC035440	-	-	-	-	-	-	-	-	-
6	IC035626	-	-	-	-	-	-	-	-	-
7	IC035675	-	-	-	-	-	-	-	-	-
8	IGAS 1	-	-	-	-	-	-	-	-	-
9	PRA2004	-	-	-	-	-	-	-	-	-
10	RMA-19	136.92	8.13	14.82	5	3	70.49	12.50	18.05	3.61
11	RMA-24	133.50	7.90	14.46	5	4	66.45	9.83	15.25	1.15
12	SKNA-601	135.27	8.01	11.79	5	8	35.63	-10.51	-6.09	-17.58
13	Annapurna (C)	112.05	8.41	8.69	5	9	0.00	-34.05	-30.79	-39.26
14	GA-1 (C)	138.05	8.22	13.17	5	6	51.50	0.00	4.90	-7.94
15	GA-2 (C)	135.20	8.20	12.55	5	7	44.45	-4.69	0.00	-12.22
16	Suvarna (C)	129.92	7.87	14.30	4	5	64.60	8.61	13.97	0.00
	Mean	**131.92**	**8.21**	**12.99**						

Table 50. Grain yield (q/ha) in Initial Varietal Trial (IVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank	Location	Frequency
1	BGA-10	***16.74***	***13.89***	18.44	9.38	17.00	15.09	2	5	2/5
2	BGA-15	***16.25***	***17.59***	21.18	9.62	18.77	16.68	1	5	2/5
3	IC035370	-	7.08	14.65	-	-	-	-	-	-
4	IC035399	-	9.95	-	-	-	-	-	-	-
5	IC035440	-	4.34	15.12	-	-	-	-	-	-
6	IC035626	-	7.13	-	-	-	-	-	-	-
7	IC035675	-	9.40	16.60	-	-	-	-	-	-
8	IGAS 1	-	8.56	-	-	-	-	-	-	-
9	PRA2004	-	***12.08***	17.78	7.99	-	-	-	-	-
10	RMA-19	9.20	***12.96***	23.68	9.35	18.88	14.82	3	5	1/5
11	RMA-24	10.42	***11.57***	22.76	8.71	18.86	14.46	4	5	1/5
12	SKNA-601	9.03	5.32	22.10	5.72	16.76	11.79	8	5	0/5
13	Annapurna (C)	7.29	**8.56**	9.03	8.34	10.21	8.69	9	5	
14	GA-1 (C)	9.03	8.52	20.97	**9.17**	**18.13**	13.17	6	5	
15	GA-2 (C)	10.18	8.06	18.93	8.69	16.92	12.55	7	5	
16	Suvarna (C)	**11.46**	7.64	**21.57**	-	16.55	14.30	5	4	
	Mean	**11.26**	**9.54**	**18.68**	**8.55**	**16.90**	**12.99**			
	CD(0.05)	**1.18**	**2.34**	**3.52**	**1.09**	**3.14**				
	CV (%) error	**7.23**	**14.70**	**13.62**	**8.79**	**12.76**				

Note : Data from Ambikapur and Faizabad not included because of poor yields

Table 51. Plant height (cm) in Initial Varietal Trial (IVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank
1	BGA-10	79.30	70.67	88.50	65.95	86.25	78.13	8
2	BGA-15	87.90	84.07	84.00	76.30	91.75	84.80	7
3	IC035370	-	130.13	97.50	-	-	-	-
4	IC035399	-	114.33	-	-	-	-	-
5	IC035440	-	123.73	100.25	-	-	-	-
6	IC035626	-	117.83	-	-	-	-	-
7	IC035675	-	***153.03***	90.50	-	-	-	-
8	IGAS 1	-	84.83	-	-	-	-	-
9	PRA2004	-	118.43	81.75	57.20	-	-	-
10	RMA-19	114.25	111.80	107.00	97.15	163.25	118.69	3
11	RMA-24	109.90	109.47	108.50	100.70	157.75	117.26	4
12	SKNA-601	84.15	106.83	83.00	94.75	84.25	90.60	6
13	Annapurna (C)	50.90	48.90	54.25	43.73	77.25	55.01	9
14	GA-1 (C)	**119.50**	**120.83**	**120.50**	**111.30**	159.75	126.38	1
15	GA-2 (C)	104.20	96.17	107.00	102.05	**171.25**	116.13	5
16	Suvarna (C)	96.00	114.33	113.25	-	155.25	119.71	2
	Mean	**94.19**	**106.59**	**95.08**	**83.24**	**127.42**	**101.30**	
	CD(0.05)	**7.92**	**16.09**	**14.45**	**9.36**	**4.81**		
	CV (%) error	**5.80**	**9.06**	**10.97**	**7.72**	**2.59**		

Table 52. Days to flowering in Initial Varietal Trial (IVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank
1	BGA-10	48.75	87.67	50.00	68.00	44.25	59.73	3
2	BGA-15	49.00	81.00	51.50	59.00	43.25	56.75	2
3	IC035370	-	84.33	52.00	-	-	-	-
4	IC035399	-	82.67	-	-	-	-	-
5	IC035440	-	93.00	52.50	-	-	-	-
6	IC035626	-	84.33	-	-	-	-	-
7	IC035675	-	89.00	50.50	-	-	-	-
8	IGAS 1	-	95.00	-	-	-	-	-
9	PRA2004	-	81.00	51.25	65.00	-	-	-
10	RMA-19	49.50	90.33	50.25	72.50	42.50	61.02	4
11	RMA-24	51.25	88.33	52.75	73.25	41.50	61.42	6
12	SKNA-601	40.50	89.67	52.50	88.00	43.00	62.73	7
13	Annapurna (C)	**39.50**	**74.00**	**40.50**	**44.50**	**28.75**	45.45	1
14	GA-1 (C)	55.50	91.00	57.00	82.75	51.75	67.60	9
15	GA-2 (C)	54.00	91.00	54.50	63.25	42.50	61.05	5
16	Suvarna (C)	52.25	93.00	59.75	-	50.25	63.81	8
	Mean	**49.13**	**87.21**	**51.92**	**68.47**	**43.08**	**59.96**	
	CD(0.05)	**1.28**	**5.72**	**3.99**	**3.02**	**2.42**		
	CV (%) error	**1.79**	**3.94**	**5.55**	**3.03**	**3.86**		

Table 53. Days to maturity in Initial Varietal Trial (IVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank	Location	Frequency
1	BGA-10	95.75	187.67	120.50	153.00	99.50	131.28	4	5	0/5
2	BGA-15	95.75	184.67	119.50	137.00	103.50	128.08	2	5	0/5
3	IC035370	-	195.33	120.75	-	-	-	-	-	-
4	IC035399	-	184.33	-	-	-	-	-	-	-
5	IC035440	-	203.00	120.25	-	-	-	-	-	-
6	IC035626	-	186.67	-	-	-	-	-	-	-
7	IC035675	-	192.33	121.00	-	-	-	-	-	-
8	IGAS 1	-	206.67	-	-	-	-	-	-	-
9	PRA2004	-	199.67	120.00	146.75	-	-	-	-	-
10	RMA-19	100.00	203.33	116.00	158.25	107.00	136.92	8	5	0/5
11	RMA-24	100.25	190.00	116.50	157.25	103.50	133.50	5	5	0/5
12	SKNA-601	89.50	201.33	121.00	161.50	103.00	135.27	7	5	0/5
13	Annapurna (C)	**81.75**	**183.00**	**96.75**	**124.75**	**74.00**	112.05	1	5	
14	GA-1 (C)	100.50	199.00	118.25	164.50	108.00	138.05	9	5	
15	GA-2 (C)	98.00	197.00	121.50	159.75	99.75	135.20	6	5	
16	Suvarna (C)	96.75	192.67	122.75	-	107.50	129.92	3	4	
	Mean	**95.33**	**194.17**	**118.06**	**151.42**	**100.64**	**131.92**			
	CD(0.05)	**3.49**	**5.89**	**3.33**	**2.86**	**2.53**				
	CV (%) error	**2.53**	**1.82**	**2.03**	**1.30**	**1.72**				

Table 54. Inflorescence length (cm) in Initial Varietal Trial (IVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	S.K. Nagar	Mean	Rank
1	BGA-10	***56.00***	17.47	55.50	58.00	46.74	6
2	BGA-15	***63.00***	24.80	53.50	66.50	51.95	5
3	IC035370	-	29.73	55.00	-	-	-
4	IC035399	-	22.17	-	-	-	-
5	IC035440	-	25.80	56.75	-	-	-
6	IC035626	-	24.80	-	-	-	-
7	IC035675	-	26.43	60.25	-	-	-
8	IGAS 1	-	***33.43***	-	-	-	-
9	PRA2004	-	25.03	49.25	-	-	-
10	RMA-19	50.95	24.07	60.75	80.00	53.94	4
11	RMA-24	49.60	28.40	61.75	76.50	54.06	3
12	SKNA-601	32.95	20.20	38.00	66.50	39.41	9
13	Annapurna (C)	36.20	20.27	43.25	72.50	43.05	7
14	GA-1 (C)	50.60	26.43	**65.00**	75.75	54.45	2
15	GA-2 (C)	**51.40**	**26.90**	61.50	**80.50**	55.08	1
16	Suvarna (C)	39.75	23.43	45.50	53.50	40.55	8
	Mean	**48.85**	**24.96**	**54.31**	**69.97**	**49.52**	
	CD(0.05)	**4.20**	**5.11**	**7.97**	**3.53**		
	CV (%) error	**5.93**	**12.30**	**10.58**	**3.47**		

Table 55. Seed volume weight (g/10ml) in Initial Varietal Trial (IVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank
1	BGA-10	***8.22***	7.10	7.98	9.35	9.67	8.46	2
2	BGA-15	***8.30***	7.50	7.95	10.30	9.46	8.70	1
3	IC035370	-	6.40	7.88	-	-	-	
4	IC035399	-	7.07	-	-	-	-	
5	IC035440	-	6.23	7.80	-	-	-	
6	IC035626	-	5.63	-	-	-	-	
7	IC035675	-	6.60	7.90	-	-	-	
8	IGAS 1	-	6.30	-	-	-	-	
9	PRA2004	-	6.50	7.85	9.23	-	-	
10	RMA-19	7.86	6.70	7.95	8.75	9.37	8.13	6
11	RMA-24	7.89	5.57	7.85	8.73	9.48	7.90	8
12	SKNA-601	7.99	5.90	7.85	8.85	9.47	8.01	7
13	Annapurna (C)	7.85	7.10	7.85	**9.78**	9.50	8.41	3
14	GA-1 (C)	7.68	**7.40**	7.88	8.73	9.43	8.22	4
15	GA-2 (C)	**7.89**	6.80	**7.95**	8.68	9.68	8.20	5
16	Suvarna (C)	7.33	6.50	7.78	-	**9.88**	7.87	9
	Mean	**7.91**	**6.58**	**7.88**	**9.15**	**9.55**	**8.21**	
	CD(0.05)	**0.21**	**0.39**	**0.17**	**0.87**	**0.14**		
	CV (%) error	**1.86**	**3.55**	**1.58**	**6.51**	**1.02**		

Table 56. Performance of Grain amaranth entries in Advanced Varietal Trial (AVT) during Rabi 2006-07 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	Annapurna	GA-1	GA-2	Suvarna
	AVT-I									
1	IC-268367	-	-	-	2	-	-	-	-	-
2	Phule GA 2004	-	-	-	3	-	-	-	-	-
3	PLP 1	-	-	-	2	-	-	-	-	-
4	RMA 7	125.00	8.02	14.39	5	6	48.24	2.16	4.08	-4.17
5	RMA 8	128.35	8.24	14.95	5	5	53.94	6.09	8.08	-0.48
6	Shimla A-3	-	-	-	-	-	-	-	-	-
7	Shimla A-4	-	-	-	1	-	-	-	-	-
8	VL-344	127.08	7.73	13.94	5	8	43.53	-1.08	0.78	-7.21
	AVT-II									
9	RMA-3	125.32	8.04	15.78	5	3	62.54	12.01	14.12	5.07
10	RMA 4	125.47	8.17	16.07	5	1	65.49	14.05	16.19	6.99
11	RMA 9	-	-	-	3	-	-	-	-	-
12	SKNA-21	123.35	8.34	15.84	5	2	63.17	12.45	14.56	5.49
13	Annapurna (C)	111.36	8.24	9.71	5	10	0.00	-31.07	-29.77	-35.34
14	GA-1 (C)	129.93	8.18	14.09	5	7	45.12	0.00	1.89	-6.19
15	GA-2 (C)	132.60	8.41	13.83	5	9	42.43	-1.85	0.00	-7.93
16	Suvarna (C)	127.57	7.80	15.02	4	4	54.70	6.61	8.61	0.00
	Mean	**125.55**	**8.11**	**14.33**						

Table 57. Grain yield (q/ha) in Advanced Varietal Trial (AVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank	Location	Frequency
	AVT-I									
1	IC-268367	-	-	15.97	-	16.21	-	-	2	0/2
2	Phule GA 2004	13.43	***14.51***	-	-	20.93	-	-	3	1/3
3	PLP 1	-	7.53	-	-	18.99	-	-	2	0/2
4	RMA 7	12.73	6.17	***24.88***	7.59	20.60	14.39	6	5	1/5
5	RMA 8	12.91	11.79	22.31	6.99	20.74	14.95	5	5	0/5
6	Shimla A-3	-	-	-	-	-	-	-	-	-
7	Shimla A-4	-	***12.96***	-	-	-	-	-	1	1/1
8	VL-344	12.62	9.57	20.06	7.59	19.85	13.94	8	5	0/5
	AVT-II									
9	RMA-3	***15.63***	11.36	24.71	8.43	18.79	15.78	3	5	1/5
10	RMA 4	***14.65***	***13.58***	23.84	***11.47***	16.80	16.07	1	5	3/5
11	RMA 9	12.45	-	23.64	-	19.25	-	-	3	0/3
12	SKNA-21	11.92	***12.96***	22.43	10.77	21.15	15.84	2	5	1/5
13	Annapurna (C)	8.40	8.56	9.20	**10.47**	11.92	9.71	10	5	
14	GA-1 (C)	8.80	9.17	**22.11**	9.34	21.04	14.09	7	5	
15	GA-2 (C)	9.70	**10.43**	18.94	9.91	**20.18**	13.83	9	5	
16	Suvarna (C)	**12.80**	8.80	21.99	-	16.50	15.02	4	4	
	Mean	**12.31**	**10.57**	**20.84**	**9.17**	**18.78**	**14.33**			
	CD (0.05)	**1.23**	**1.77**	**2.77**	**0.83**	**2.20**				
	CV (%) error	**7.21**	**9.97**	**9.60**	**6.21**	**8.46**				

Note : Data from Ambikapur and Faizabad not included because of poor yields

Table 58. Plant height (cm) in Advanced Varietal Trial (AVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank
	AVT-I							
1	IC-268367	-	-	112.08	-	89.00	-	-
2	Phule GA 2004	83.65	85.10	-	-	124.75	-	-
3	PLP 1	-	116.37	-	-	112.50	-	-
4	RMA 7	96.90	93.03	115.90	102.65	150.50	111.80	9
5	RMA 8	89.45	172.87	125.78	124.75	***181.25***	138.82	1
6	Shimla A-3	-	-	-	-	-	-	-
7	Shimla A-4	-	110.47	-	-	-	-	-
8	VL-344	97.60	101.40	132.23	115.15	144.25	118.13	6
	AVT-II							
9	RMA-3	106.00	108.47	118.15	120.60	158.75	122.39	5
10	RMA 4	99.70	101.83	108.25	112.10	156.50	115.68	7
11	RMA 9	96.70	-	117.30	-	161.25	-	-
12	SKNA-21	97.75	108.13	114.30	114.25	138.50	114.59	8
13	Annapurna (C)	51.20	116.67	79.00	46.88	68.75	72.50	10
14	GA-1 (C)	110.25	**132.67**	130.28	**125.05**	**167.88**	133.22	2
15	GA-2 (C)	**111.05**	113.00	125.48	116.35	156.75	124.53	4
16	Suvarna (C)	96.75	122.67	**134.40**	-	154.88	127.17	3
	Mean	**95.27**	**114.05**	**117.76**	**108.64**	**140.39**	**115.22**	
	CD (0.05)	**10.84**	**51.13**	**10.08**	**8.69**	**13.37**		
	CV (%) error	**8.21**	**26.65**	**6.17**	**5.49**	**6.87**		

Table 59. Days to 50% flowering in Advanced Varietal Trial (AVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank
	AVT-I							
1	IC-268367	-	-	49.00	-	40.00	-	-
2	Phule GA 2004	41.75	76.67	-	-	48.25	-	-
3	PLP 1	-	94.67	-	-	44.50	-	-
4	RMA 7	51.50	75.00	49.75	77.25	43.25	59.35	2
5	RMA 8	46.25	78.67	53.25	92.25	45.75	63.23	4
6	Shimla A-3	-	-	-	-	-	-	-
7	Shimla A-4	-	92.67	-	-	-	-	-
8	VL-344	51.75	91.33	59.00	90.00	51.75	68.77	9
	AVT-II							
9	RMA-3	50.00	78.00	54.75	89.50	53.00	65.05	6
10	RMA 4	52.00	80.00	51.75	91.25	52.50	65.50	7
11	RMA 9	46.25	-	50.75	-	43.00	-	-
12	SKNA-21	51.50	81.00	53.50	85.50	46.25	63.55	5
13	Annapurna (C)	**39.75**	**74.67**	**41.50**	**46.50**	**29.50**	46.38	1
14	GA-1 (C)	57.50	89.00	57.75	92.00	49.63	69.18	10
15	GA-2 (C)	55.50	96.33	54.50	82.75	43.88	66.59	8
16	Suvarna (C)	52.50	89.33	58.00	-	51.25	62.77	3
	Mean	**49.81**	**84.41**	**52.79**	**83.00**	**45.89**	**63.18**	
	CD (0.05)	**3.19**	**3.59**	**2.72**	**4.44**	**1.39**		
	CV (%) error	**4.63**	**2.53**	**3.72**	**3.67**	**2.19**		

Table 60. Days to maturity in Advanced Varietal Trial (AVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank	Location	Frequency
	AVT-I									
1	IC-268367	-	-	125.00	-	100.00	-	-	2	0/2
2	Phule GA 2004	86.25	184.00	-	-	98.50	-	-	3	0/3
3	PLP 1	-	201.67	-	-	104.50	-	-	2	0/2
4	RMA 7	97.00	177.00	117.25	125.25	108.50	125.00	3	5	0/5
5	RMA 8	92.50	198.00	119.75	122.50	109.00	128.35	8	5	0/5
6	Shimla A-3	-	-	-	-	-	-	-	-	-
7	Shimla A-4	-	197.00	-	-	-	-	-	1	0/1
8	VL-344	97.50	192.67	124.00	114.00	107.25	127.08	6	5	0/5
	AVT-II									
9	RMA-3	96.75	182.33	117.50	122.50	107.50	125.32	4	5	0/5
10	RMA 4	97.25	194.33	115.75	***113.75***	106.25	125.47	5	5	1/5
11	RMA 9	87.75	-	115.00	-	106.50	-	-	3	0/3
12	SKNA-21	99.75	178.00	124.25	***112.50***	102.25	123.35	2	5	1/5
13	Annapurna (C)	**80.75**	**177.67**	**95.50**	**125.50**	**77.38**	111.36	1	5	
14	GA-1 (C)	103.00	180.67	121.25	136.25	108.50	129.93	9	5	
15	GA-2 (C)	95.75	203.00	128.25	135.25	100.75	132.60	10	5	
16	Suvarna (C)	95.75	186.67	122.00	-	105.88	127.57	7	4	
	Mean	**94.17**	**188.69**	**118.79**	**123.06**	**103.05**	**125.55**			
	CD (0.05)	**2.60**	**5.43**	**3.09**	**8.57**	**2.61**				
	CV (%) error	**1.99**	**1.71**	**1.88**	**4.78**	**1.83**				

Table 61. Inflorescence length (cm) in Advanced Varietal Trial (AVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	S.K. Nagar	Mean	Rank
	AVT-I						
1	IC-268367	-	-	54.70	77.75	-	-
2	Phule GA 2004	49.05	25.40	-	78.00	-	-
3	PLP 1	-	26.47	-	72.00	-	-
4	RMA 7	41.05	27.73	56.35	67.00	48.03	8
5	RMA 8	47.95	24.47	60.75	82.00	53.79	4
6	Shimla A-3	-	-	-	-	-	-
7	Shimla A-4	-	28.77	-	-	-	-
8	VL-344	43.80	24.77	55.95	62.50	46.75	9
	AVT-II						
9	RMA-3	49.70	24.40	64.10	78.50	54.18	3
10	RMA 4	48.15	23.10	59.10	79.00	52.34	6
11	RMA 9	48.15	-	63.75	80.25	64.05	1
12	SKNA-21	46.00	25.47	61.20	65.00	49.42	7
13	Annapurna (C)	28.35	25.10	58.45	61.50	43.35	10
14	GA-1 (C)	48.60	**37.33**	**65.50**	72.50	55.98	2
15	GA-2 (C)	**51.75**	32.00	57.90	**73.38**	53.76	5
16	Suvarna (C)	41.75	24.27	49.75	52.13	41.97	11
	Mean	**46.43**	**26.87**	**58.96**	**71.54**	**50.95**	
	CD(0.05)	**6.21**	**7.26**	**8.00**	**9.60**		
	CV (%) error	**9.64**	**16.06**	**9.79**	**9.69**		

Table 62. Seed volume weight (g/10 ml) in Advanced Varietal Trial (AVT) on Grain Amaranth - Rabi 2006-07 (Plains)

S.No.	Genotypes	Bhubaneswar	Hisar	Mandor	Ranchi	S.K. Nagar	Mean	Rank
	AVT-I							
1	IC-268367	-	-	7.83	-	9.69	-	-
2	Phule GA 2004	7.84	6.90	-	-	9.64	-	-
3	PLP 1	-	5.50	-	-	9.21	-	-
4	RMA 7	7.84	6.00	7.93	8.48	9.84	8.02	8
5	RMA 8	7.94	6.67	8.00	8.63	9.97	8.24	3
6	Shimla A-3	-	-	-	-	-	-	-
7	Shimla A-4	-	5.43	-	-	-	-	-
8	VL-344	7.61	5.00	7.73	8.80	9.50	7.73	10
	AVT-II							
9	RMA-3	7.99	5.43	7.95	8.83	10.02	8.04	7
10	RMA 4	7.74	6.83	7.93	8.48	9.89	8.17	6
11	RMA 9	7.90	-	8.00	-	9.95	-	-
12	SKNA-21	7.91	7.20	7.93	8.70	9.99	8.34	2
13	Annapurna (C)	7.86	7.00	**8.03**	8.88	9.42	8.24	4
14	GA-1 (C)	7.81	**7.07**	7.85	8.13	**10.05**	8.18	5
15	GA-2 (C)	**7.98**	6.80	7.93	**9.43**	9.93	8.41	1
16	Suvarna (C)	7.49	6.07	7.75	-	9.91	7.80	9
	Mean	**7.85**	**6.30**	**7.90**	**8.70**	**9.78**	**8.11**	
	CD(0.05)	**0.25**	**0.31**	**0.15**	**0.47**	**0.29**		
	CV (%) error	**2.29**	**2.95**	**1.39**	**3.71**	**2.12**		

Table 63. Performance of Grain amaranth entries in Initial Varietal Trial (IVT) during - Kharif 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean seed weight (g/10ml)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	Annapurna	GA-1	GA-2	Suvarna
1	BGA-06	95.88	6.56	3.15	2	7	12.72	-4.12	46.96	-6.95
2	BGA-07	95.21	6.39	4.47	2	1	60.19	36.26	108.84	32.22
3	BGA-10	86.63	6.55	3.56	2	3	27.75	8.66	66.55	5.45
4	BGA-11	90.25	6.38	2.84	2	9	1.78	-13.43	32.69	-15.99
5	BGA-12	85.00	6.32	3.56	2	4	27.58	8.52	66.34	5.31
6	BGA-15	89.88	6.45	3.06	2	8	9.57	-6.80	42.85	-9.55
7	RMA-19	94.63	5.96	2.67	2	12	-4.16	-18.48	24.95	-20.89
8	RMA-22	95.00	6.15	2.44	2	13	-12.49	-25.56	14.10	-27.76
9	RMA-24	95.50	6.18	2.19	2	14	-21.55	-33.27	2.28	-35.24
10	RMA-30	80.75	6.19	3.81	2	2	36.62	16.21	78.12	12.77
11	SKNA-601	95.25	6.60	2.70	2	11	-3.12	-17.59	26.30	-20.03
12	Annapurna (C)	73.88	6.47	2.79	2	10	0.00	-15.08	30.16	-17.59
13	GA-1 (C)	93.00	6.60	3.28	2	6	17.56	0.00	53.27	-2.96
14	GA-2 (C)	94.50	6.67	2.14	2	15	-23.15	-34.63	0.00	-36.56
15	Suvarna (C)	73.79	6.73	3.38	2	5	21.13	3.04	57.92	0.00
	Mean	**89.28**	**6.41**	**3.07**						

Table 64. Grain yield (q/ha) in Initial Varietal Trial (IVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank	Location	Frequency
1	BGA-06	3.19	3.10	3.15	7	2	0/2
2	BGA-07	3.91	5.03	4.47	1	2	0/2
3	BGA-10	4.08	3.05	3.56	3	2	0/2
4	BGA-11	3.90	1.78	2.84	9	2	0/2
5	BGA-12	3.11	4.01	3.56	4	2	0/2
6	BGA-15	4.13	1.99	3.06	8	2	0/2
7	RMA-19	4.14	1.21	2.67	12	2	0/2
8	RMA-22	3.64	1.24	2.44	13	2	0/2
9	RMA-24	3.38	1.00	2.19	14	2	0/2
10	RMA-30	3.49	4.13	3.81	2	2	0/2
11	SKNA-601	3.45	1.95	2.70	11	2	0/2
12	Annapurna (C)	2.14	3.43	2.79	10	2	
13	GA-1 (C)	**4.56**	2.00	3.28	6	2	
14	GA-2 (C)	2.06	2.23	2.14	15	2	
15	Suvarna (C)	1.89	**4.87**	3.38	5	2	
	Mean	**3.40**	**2.74**	**3.07**			
	CD (0.05)	**0.49**	**0.18**				
	CV (%) error	**10.32**	**3.94**				

Table 65. Plant height (cm) in Initial Varietal Trial (IVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank
1	BGA-06	120.75	156.33	138.54	10
2	BGA-07	106.25	190.43	148.34	5
3	BGA-10	86.00	183.00	134.50	11
4	BGA-11	112.25	180.93	146.59	6
5	BGA-12	105.00	174.13	139.57	9
6	BGA-15	92.25	154.00	123.13	13
7	RMA-19	114.50	199.20	156.85	3
8	RMA-22	121.75	193.87	157.81	1
9	RMA-24	102.75	194.07	148.41	4
10	RMA-30	106.50	177.13	141.82	7
11	SKNA-601	120.75	126.60	123.68	12
12	Annapurna (C)	69.75	115.80	92.78	15
13	GA-1 (C)	**126.25**	**188.53**	157.39	2
14	GA-2 (C)	108.50	173.07	140.78	8
15	Suvarna (C)	77.50	135.40	106.45	14
	Mean	**104.72**	**169.50**	**137.11**	
	CD (0.05)	**27.46**	**14.48**		
	CV (%) error	**18.92**	**5.10**		

Table 66. Days to 50% flowering in Initial Varietal Trial (IVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank
1	BGA-06	54.25	52.67	53.46	13
2	BGA-07	52.25	52.33	52.29	8
3	BGA-10	51.75	52.33	52.04	7
4	BGA-11	52.50	53.00	52.75	9
5	BGA-12	49.25	49.33	49.29	5
6	BGA-15	44.75	52.67	48.71	4
7	RMA-19	54.75	54.00	54.38	15
8	RMA-22	53.75	52.00	52.88	11
9	RMA-24	53.50	52.00	52.75	10
10	RMA-30	53.00	50.33	51.67	6
11	SKNA-601	54.00	40.00	47.00	3
12	Annapurna (C)	40.25	**39.00**	39.63	1
13	GA-1 (C)	53.25	53.00	53.13	12
14	GA-2 (C)	53.50	53.67	53.58	14
15	Suvarna (C)	**35.00**	50.33	42.67	2
	Mean	**50.38**	**50.44**	**50.41**	
	CD (0.05)	**3.42**	**0.69**		
	CV (%) error	**4.90**	**0.82**		

Table 67. Days to maturity in Initial Varietal Trial (IVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank	Location	Frequency
1	BGA-06	95.75	96.00	95.88	15	2	0/2
2	BGA-07	94.75	95.67	95.21	12	2	0/2
3	BGA-10	93.25	80.00	86.63	5	2	0/2
4	BGA-11	93.50	87.00	90.25	7	2	0/2
5	BGA-12	91.00	79.00	85.00	4	2	0/2
6	BGA-15	92.75	87.00	89.88	6	2	0/2
7	RMA-19	94.25	95.00	94.63	10	2	0/2
8	RMA-22	95.00	95.00	95.00	11	2	0/2
9	RMA-24	95.00	96.00	95.50	14	2	0/2
10	RMA-30	91.50	***70.00***	80.75	3	2	1/2
11	SKNA-601	95.50	95.00	95.25	13	2	0/2
12	Annapurna (C)	75.75	**72.00**	73.88	2	2	
13	GA-1 (C)	90.00	96.00	93.00	8	2	
14	GA-2 (C)	92.00	97.00	94.50	9	2	
15	Suvarna (C)	**74.25**	73.33	73.79	1	2	
	Mean	**90.95**	**87.60**	**89.28**			
	CD (0.05)	**4.61**	**0.35**				
	CV (%) error	**3.66**	**0.24**				

Table 68. Seed volume weight (g/10ml) in Initial Varietal Trial (IVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank
1	BGA-06	5.25	7.87	6.56	5
2	BGA-07	5.28	7.50	6.39	9
3	BGA-10	5.68	7.43	6.55	6
4	BGA-11	5.53	7.23	6.38	10
5	BGA-12	5.58	7.07	6.32	11
6	BGA-15	5.33	7.57	6.45	8
7	RMA-19	5.35	6.57	5.96	15
8	RMA-22	5.43	6.87	6.15	14
9	RMA-24	5.25	7.10	6.18	13
10	RMA-30	5.55	6.83	6.19	12
11	SKNA-601	5.83	7.37	6.60	3
12	Annapurna (C)	5.50	7.43	6.47	7
13	GA-1 (C)	**5.63**	7.57	6.60	4
14	GA-2 (C)	5.38	7.97	6.67	2
15	Suvarna (C)	5.40	**8.07**	6.73	1
	Mean	**5.46**	**7.36**	**6.41**	
	CD (0.05)	**0.52**	**0.23**		
	CV (%) error	**6.90**	**1.84**		

Table 69. Performance of Grain amaranth entries in Advanced Varietal Trial (AVT) during - Kharif 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean seed volume weight (g/10ml)	Mean grain yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	Annapurna	GA-1	GA-2	Suvarna
	AVT-I									
1	RMA-9	85.75	6.38	3.25	2	6	5.93	8.04	25.56	-32.67
2	SKNA-501	79.00	7.07	3.42	1	5	11.51	13.73	32.18	-29.12
3	SKNA-502	88.25	6.44	5.30	2	1	72.48	75.91	104.44	9.63
4	SKNA-503	87.75	6.30	4.64	2	3	51.24	54.25	79.26	-3.87
	AVT-II									
5	RMA-3	99.38	6.73	2.52	2	11	-18.01	-16.38	-2.82	-47.89
6	RMA-4	91.38	6.54	4.03	2	4	31.31	33.93	55.65	-16.54
7	SKNA-21	98.88	6.65	2.76	2	9	-10.06	-8.26	6.61	-42.83
8	Annpurna (C)	76.17	6.45	3.07	2	7	0.00	1.91	18.44	-36.49
9	GA-1 (C)	94.75	6.84	3.01	2	8	-2.02	0.00	16.14	-37.72
10	GA-2 (C)	95.00	6.52	2.59	2	10	-15.69	-14.01	0.00	-46.41
11	Suvarna (C)	83.00	6.73	4.83	2	2	57.23	60.37	86.37	0.00
	Mean	**89.86**	**6.54**	**3.63**						

Table 70. Grain yield (q/ha) in Advanced Varietal Trial (AVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank	Location	Frequency
	AVT-I						
1	RMA-9	5.08	1.43	3.25	6	2	0/2
2	SKNA-501	-	3.42	3.42	5	1	0/1
3	SKNA-502	***7.45***	3.14	5.30	1	2	1/2
4	SKNA-503	***5.93***	3.35	4.64	3	2	1/2
	AVT-II						
5	RMA-3	3.51	1.53	2.52	11	2	0/2
6	RMA-4	***6.45***	1.61	4.03	4	2	1/2
7	SKNA-21	4.06	1.46	2.76	9	2	0/2
8	Annpurna (C)	2.52	3.62	3.07	7	2	
9	GA-1 (C)	4.60	1.41	3.01	8	2	
10	GA-2 (C)	3.09	2.09	2.59	10	2	
11	Suvarna (C)	**4.72**	**4.94**	4.83	2	2	
	Mean	**4.71**	**2.55**	**3.63**			
	CD(0.05)	**1.13**	**0.50**				
	CV (%) error	**16.56**	**11.47**				

Table 71. Plant height (cm) in Advanced Varietal Trial (AVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank
	AVT-I				
1	RMA-9	148.50	205.80	177.15	6
2	SKNA-501	-	177.87	177.87	4
3	SKNA-502	143.00	194.33	168.67	8
4	SKNA-503	138.25	222.47	180.36	2
	AVT-II				
5	RMA-3	144.75	207.17	175.96	7
6	RMA-4	115.75	166.27	141.01	10
7	SKNA-21	150.25	206.40	178.33	3
8	Annpurna (C)	90.00	123.67	106.83	11
9	GA-1 (C)	**150.00**	**204.33**	177.17	5
10	GA-2 (C)	143.75	221.27	182.51	1
11	Suvarna (C)	124.00	165.60	144.80	9
	Mean	**136.09**	**190.47**	**163.28**	
	CD(0.05)	**19.05**	**29.45**		
	CV (%) error	**9.70**	**9.06**		

Table 72. Days to 50% flowering in Advanced Varietal Trial (AVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank
	AVT-I				
1	RMA-9	52.25	54.00	53.13	9
2	SKNA-501	-	52.00	52.00	4
3	SKNA-502	50.25	52.00	51.13	3
4	SKNA-503	48.75	53.00	50.88	2
	AVT-II				
5	RMA-3	56.00	52.00	54.00	10
6	RMA-4	52.00	54.00	53.00	8
7	SKNA-21	51.25	53.00	52.13	5
8	Annpurna (C)	**36.50**	**39.67**	38.08	1
9	GA-1 (C)	55.50	54.00	54.75	11
10	GA-2 (C)	51.25	53.00	52.13	6
11	Suvarna (C)	52.00	53.00	52.50	7
	Mean	**50.48**	**51.79**	**51.13**	
	CD(0.05)	**4.17**	**0.30**		
	CV (%) error	**5.72**	**0.34**		

Table 73. Days to maturity in Advanced Varietal Trial (AVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank	Location	Frequency
	AVT-I						
1	RMA-9	96.50	75.00	85.75	4	2	0/2
2	SKNA-501	-	79.00	79.00	2	1	1/2
3	SKNA-502	96.50	80.00	88.25	6	2	0/2
4	SKNA-503	95.50	80.00	87.75	5	2	0/2
	AVT-II						
5	RMA-3	96.75	102.00	99.38	11	2	0/2
6	RMA-4	95.75	87.00	91.38	7	2	0/2
7	SKNA-21	96.75	101.00	98.88	10	2	0/2
8	Annpurna (C)	**78.00**	74.33	76.17	1	2	
9	GA-1 (C)	95.50	94.00	94.75	8	2	
10	GA-2 (C)	96.00	94.00	95.00	9	2	
11	Suvarna (C)	92.00	**74.00**	83.00	3	2	
	Mean	**94.23**	**85.48**	**89.86**			
	CD(0.05)	**1.65**	**0.30**				
	CV (%) error	**1.21**	**0.20**				

Table 74. Seed volume weight (g/10ml) in Advanced Varietal Trial (AVT) on Grain Amaranth - Kharif 2007 (Plains)

S.No.	Genotypes	Bangalore	Mettupalayam	Mean	Rank
	AVT-I				
1	RMA-9	5.03	7.73	6.38	10
2	SKNA-501	-	7.07	7.07	1
3	SKNA-502	5.68	7.20	6.44	9
4	SKNA-503	5.68	6.93	6.30	11
	AVT-II				
5	RMA-3	5.50	7.97	6.73	3
6	RMA-4	5.35	7.73	6.54	6
7	SKNA-21	5.68	7.63	6.65	5
8	Annpurna (C)	5.53	7.37	6.45	8
9	GA-1 (C)	**5.65**	**8.03**	6.84	2
10	GA-2 (C)	5.58	7.47	6.52	7
11	Suvarna (C)	5.45	8.00	6.73	4
	Mean	**5.53**	**7.56**	**6.54**	
	CD(0.05)	**0.53**	**0.11**		
	CV (%) error	**6.69**	**0.83**		

Table 75. Performance of Rice bean entries in Initial Varietal Trial (IVT) during Kharif, 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	RBL-1	RBL-6	RBL-35	RBL-50
1	BRB004	108.23	5.73	9.33	8	6	13.19	6.59	27.24	3.40
2	BRB006	110.00	5.73	8.69	8	14	5.46	-0.69	18.55	-3.66
3	BRB014	108.02	5.91	9.66	8	2	17.27	10.43	31.83	7.13
4	BRB018	107.65	5.79	10.04	8	1	21.85	14.74	36.97	11.31
5	LRB141	110.17	6.04	8.88	8	11	7.72	1.44	21.09	-1.60
6	LRB162	109.46	6.13	9.56	8	4	16.01	9.25	30.42	5.98
7	LRB163	109.71	5.79	7.78	8	17	-5.59	-11.09	6.13	-13.75
8	LRB172	108.46	5.98	9.39	8	5	13.92	7.28	28.06	4.07
9	LRB184	109.71	5.86	8.55	8	15	3.78	-2.27	16.66	-5.20
10	LRB189	109.65	6.15	9.61	8	3	16.59	9.79	31.06	6.50
11	LRB193	110.10	5.89	8.97	8	9	8.90	2.55	22.41	-0.52
12	LRB218	109.77	5.83	9.21	8	7	11.72	5.21	25.59	2.06
13	LRB241	108.58	5.64	8.93	8	10	8.35	2.04	21.80	-1.02
14	LRB273	108.54	5.95	7.76	8	18	-5.77	-11.26	5.93	-13.92
15	LRB324	109.58	5.82	7.03	8	20	-14.74	-19.71	-4.16	-22.11
16	LRB460	107.38	5.84	8.71	8	13	5.67	-0.49	18.79	-3.47
17	RBL-1 (C)	108.46	5.72	8.24	8	16	0.00	-5.79	12.46	-8.61
18	RBL-6 (C)	108.90	5.80	8.75	8	12	6.17	0.00	19.35	-3.01
19	RBL-35 (C)	107.77	5.99	7.33	8	19	-11.03	-16.22	0.00	-18.72
20	RBL-50 (C)	109.56	5.73	9.02	8	8	9.43	3.05	23.02	0.00
	Mean	**108.51**	**5.88**	**8.79**						

Table 76. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank	Location	Frequency
1	BRB004	9.58	7.87	***17.36***	2.24	16.39	14.71	4.67	3.67	5.99	9.33	6	8	1/8
2	BRB006	8.60	8.00	***17.71***	1.89	13.89	13.05	4.70	2.36	7.33	8.69	14	8	1/8
3	BRB014	12.71	6.90	***17.36***	1.87	18.06	14.58	4.43	2.55	5.74	9.66	2	8	1/8
4	BRB018	10.63	6.97	***17.71***	1.75	***22.57***	15.62	4.50	1.64	5.91	10.04	1	8	2/8
5	LRB141	14.10	-	***14.58***	2.52	13.19	12.08	3.63	3.45	7.44	8.88	11	8	1/8
6	LRB162	12.50	-	12.15	1.98	***22.22***	12.70	4.40	4.33	6.19	9.56	4	8	1/8
7	LRB163	13.47	-	12.15	2.03	7.99	12.91	4.97	2.03	6.69	7.78	17	8	0/8
8	LRB172	12.64	-	11.81	2.08	17.01	17.01	3.70	4.71	6.13	9.39	5	8	0/8
9	LRB184	14.38	-	11.81	2.47	12.15	13.74	4.67	2.16	7.03	8.55	15	8	0/8
10	LRB189	***16.60***	-	12.50	2.05	16.32	14.99	4.37	2.74	7.28	9.61	3	8	1/8
11	LRB193	13.12	-	***16.32***	1.82	11.46	12.43	4.37	4.71	7.55	8.97	9	8	1/8
12	LRB218	12.29	-	***13.54***	2.64	***19.10***	13.53	4.63	2.63	5.28	9.21	7	8	2/8
13	LRB241	14.38	-	12.85	2.47	14.93	12.35	3.50	3.62	7.33	8.93	10	8	0/8
14	LRB273	12.85	-	12.85	2.28	7.99	13.60	4.17	1.86	6.52	7.76	18	8	0/8
15	LRB324	9.79	7.43	10.07	2.10	7.64	14.44	4.60	1.59	5.98	7.03	20	8	0/8
16	LRB460	10.35	6.23	10.42	2.05	15.21	16.66	4.80	3.34	6.83	8.71	13	8	0/8
17	RBL-1 (C)	14.17	6.47	10.42	2.24	12.50	12.63	5.40	3.62	4.97	8.24	16	8	
18	RBL-6 (C)	7.64	6.93	**11.46**	2.19	**15.28**	14.99	**6.40**	3.89	8.13	8.75	12	8	
19	RBL-35 (C)	9.93	5.83	9.72	2.26	8.33	**15.06**	3.60	2.30	7.43	7.33	19	8	
20	RBL-50 (C)	**15.76**	6.20	10.76	**2.59**	12.99	12.63	4.87	**3.95**	**8.59**	9.02	8	8	
	Mean	**12.43**	**6.88**	**13.18**	**2.18**	**14.26**	**13.99**	**4.52**	**3.06**	**6.72**	**8.79**			
	CD (0.05)	**0.72**	**0.88**	**1.96**	**0.37**	**3.65**	**2.85**	**0.33**	**0.89**	**1.83**				
	CV (%) error	**3.62**	**7.47**	**9.28**	**10.76**	**16.01**	**12.74**	**4.63**	**13.91**	**17.02**				

Don't include Bangalore centre data since seven entries is tested

Table 77. Plant height (cm) in Initial Varietal Trial (IVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	S.K. Nagar	Mean	Rank
1	BRB004	118.00	13.40	90.67	121.10	118.43	74.33	56.00	45.50	117.53	-	92.70	8
2	BRB006	119.00	12.00	97.33	124.97	123.17	66.67	55.33	47.50	121.33	-	94.41	4
3	BRB014	121.33	11.60	85.00	129.13	120.83	54.67	49.67	38.50	120.53	-	89.96	16
4	BRB018	120.67	10.63	80.67	126.60	126.53	62.33	51.00	35.50	121.87	-	90.65	12
5	LRB141	127.33	-	91.33	126.43	123.30	71.00	56.00	40.00	131.60	46.50	90.39	13
6	LRB162	135.00	-	89.33	129.33	117.07	82.67	52.33	59.50	126.40	***73.57***	96.13	1
7	LRB163	126.33	-	105.00	132.47	113.53	60.67	53.67	41.00	121.80	56.50	90.11	14
8	LRB172	131.67	-	84.00	126.00	114.40	55.00	54.33	50.50	119.67	67.63	89.24	17
9	LRB184	126.67	-	101.00	120.53	127.83	60.33	51.67	38.50	113.07	***70.40***	90.00	15
10	LRB189	133.00	-	92.00	123.37	125.20	73.67	52.00	43.50	122.13	55.00	91.10	10
11	LRB193	139.00	-	104.33	120.40	124.87	69.33	58.33	55.50	121.60	57.83	94.58	3
12	LRB218	142.33	-	103.00	130.10	108.20	82.00	52.33	53.50	126.07	49.83	94.15	6
13	LRB241	133.67	-	***111.33***	132.80	112.30	78.67	53.00	40.50	117.73	66.63	94.07	7
14	LRB273	136.00	-	90.33	128.43	111.63	75.00	57.00	35.00	124.20	44.27	89.10	18
15	LRB324	135.67	17.47	97.00	130.40	111.20	75.00	49.00	34.00	130.73	-	95.38	2
16	LRB460	132.00	15.47	99.00	120.00	102.87	64.33	57.00	33.00	119.27	-	90.93	11
17	RBL-1 (C)	117.00	14.70	95.67	121.67	117.40	**69.33**	**69.67**	**60.00**	114.53	**62.03**	91.92	9
18	RBL-6 (C)	113.00	15.27	**102.33**	120.67	110.20	69.00	66.33	41.50	116.20	52.33	87.95	20
19	RBL-35 (C)	127.33	**15.60**	98.00	**130.53**	118.53	59.33	63.33	35.50	**125.07**	42.07	88.86	19
20	RBL-50 (C)	**137.33**	10.60	98.33	126.87	**119.97**	62.33	61.33	47.00	101.60	-	94.35	5
	Mean	**129.52**	**13.67**	**95.78**	**126.09**	**117.37**	**68.28**	**55.97**	**43.78**	**120.78**	**58.20**	**90.64**	
	CD (0.05)	**19.87**	**4.21**	**5.19**	**2.97**	**10.92**	**20.67**	**1.86**	**4.73**	**17.75**	**6.48**		
	CV (%) erro	**9.58**	**17.98**	**3.38**	**1.47**	**5.81**	**18.92**	**2.08**	**5.17**	**9.19**	**11.56**		

Table 78. Days to flowering in Initial Varietal Trial (IVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	S.K. Nagar	Mean	Rank
1	BRB004	64.67	41.67	***45.67***	78.67	84.33	58.33	54.67	58.50	56.67	-	62.69	7
2	BRB006	64.67	41.67	***48.00***	78.00	83.67	58.67	55.67	55.50	55.67	-	62.48	5
3	BRB014	64.00	42.00	***46.67***	85.00	80.00	56.33	54.67	56.00	50.67	-	61.67	3
4	BRB018	61.00	41.00	***46.33***	87.00	79.00	58.33	54.67	55.00	53.67	-	61.88	4
5	LRB141	68.33	-	56.67	78.00	80.33	59.33	***45.33***	55.00	56.00	72.00	63.44	9
6	LRB162	65.33	-	55.33	77.00	84.67	56.67	56.67	56.00	51.00	***68.33***	63.44	10
7	LRB163	67.00	-	56.33	78.00	78.33	57.67	54.67	56.00	65.67	71.33	65.00	16
8	LRB172	68.33	-	***50.00***	80.00	81.33	57.67	***45.00***	56.00	57.00	72.00	63.04	8
9	LRB184	63.00	-	***49.00***	81.00	84.00	56.67	57.33	55.00	61.67	69.00	64.07	12
10	LRB189	67.67	-	***53.00***	80.00	79.00	60.67	55.33	55.00	56.33	73.00	64.44	14
11	LRB193	70.33	-	***53.00***	82.00	81.33	60.67	55.33	58.00	62.33	74.00	66.33	19
12	LRB218	68.67	-	54.00	85.67	84.00	58.00	55.00	55.50	51.67	***71.00***	64.83	15
13	LRB241	67.33	-	***49.33***	84.00	80.67	58.33	56.33	57.50	64.33	***71.00***	65.43	17
14	LRB273	64.33	-	***48.33***	88.00	83.00	59.33	***43.67***	56.00	48.00	73.33	62.67	6
15	LRB324	***45.67***	42.33	***48.00***	79.00	79.00	57.67	55.67	55.00	47.00	-	58.38	1
16	LRB460	60.67	41.33	54.67	***75.33***	75.00	56.33	56.67	54.50	50.67	-	60.48	2
17	RBL-1 (C)	68.00	**41.33**	**56.33**	82.00	**80.33**	58.00	**54.67**	58.00	63.67	73.33	66.04	18
18	RBL-6 (C)	**63.00**	**41.33**	**56.33**	**77.33**	81.33	57.67	56.00	55.00	59.00	**72.00**	64.19	13
19	RBL-35 (C)	68.00	42.00	56.67	81.00	83.33	**55.00**	56.67	**52.50**	**48.33**	**72.00**	63.72	11
20	RBL-50 (C)	67.67	42.33	58.33	80.67	84.67	60.00	56.67	56.50	66.67	-	66.40	20
	Mean	**66.71**	**41.70**	**52.10**	**80.88**	**81.37**	**58.07**	**54.03**	**55.83**	**56.31**	**71.50**	**64.09**	
	CD (0.05)	**12.81**	**1.20**	**2.39**	**1.70**	**6.71**	**1.80**	**1.03**	**2.55**	**5.38**	**0.99**		
	CV (%) erro	**12.00**	**1.68**	**2.86**	**1.31**	**5.15**	**1.94**	**1.19**	**2.19**	**5.98**	**1.45**		

Table 79. Days to maturity in Initial Varietal Trial (IVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bangalore	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank	Location	Frequency
1	BRB004	131.33	83.33	***93.33***	130.00	119.33	110.67	84.33	93.50	103.33	108.23	5	8	1/8
2	BRB006	131.67	86.33	***96.33***	128.67	131.00	112.67	83.33	91.00	105.33	110.00	18	8	1/8
3	BRB014	129.00	85.00	***94.00***	128.33	124.67	109.00	83.33	91.50	104.33	108.02	4	8	1/8
4	BRB018	128.00	84.33	***94.33***	***127.00***	118.33	111.33	84.33	91.50	106.33	107.65	2	8	2/8
5	LRB141	133.67	-	101.33	128.00	119.67	113.33	84.00	94.00	107.33	110.17	20	8	0/8
6	LRB162	131.00	-	104.33	***126.67***	121.67	112.33	80.67	92.00	107.00	109.46	11	8	1/8
7	LRB163	133.00	-	102.00	***125.33***	123.00	111.33	82.00	93.00	108.00	109.71	15	8	1/8
8	LRB172	133.33	-	***96.67***	***126.33***	116.00	113.67	84.33	92.00	105.33	108.46	7	8	2/8
9	LRB184	129.00	-	***98.33***	131.00	122.33	113.67	81.67	95.00	106.67	109.71	16	8	1/8
10	LRB189	133.67	-	100.67	130.33	119.00	115.00	***81.33***	91.50	105.67	109.65	14	8	1/8
11	LRB193	135.33	-	102.33	130.33	118.67	114.00	82.00	91.50	106.67	110.10	19	8	0/8
12	LRB218	134.67	-	104.33	129.67	114.33	114.33	81.67	94.50	104.67	109.77	17	8	0/8
13	LRB241	133.33	-	***98.33***	***126.33***	115.67	112.33	81.67	95.00	106.00	108.58	9	8	2/8
14	LRB273	129.67	-	***97.67***	130.67	118.33	111.33	82.67	92.00	106.00	108.54	8	8	1/8
15	LRB324	131.00	85.67	***98.67***	133.33	120.00	113.00	83.00	91.00	106.67	109.58	13	8	1/8
16	LRB460	126.67	81.33	101.33	127.67	116.67	109.33	83.67	91.00	102.67	107.38	1	8	0/8
17	RBL-1 (C)	120.67	84.67	**101.00**	**129.67**	**118.67**	113.33	84.67	92.00	107.67	108.46	6	8	
18	RBL-6 (C)	**116.67**	**83.33**	101.67	130.67	126.00	114.33	84.33	**91.50**	106.00	108.90	10	8	
19	RBL-35 (C)	120.33	85.00	**101.00**	130.67	124.67	**110.67**	**82.67**	90.50	**101.67**	107.77	3	8	
20	RBL-50 (C)	121.00	86.67	105.33	130.33	123.00	112.33	84.33	92.50	107.67	109.56	12	8	
	Mean	**125.19**	**84.57**	**99.65**	**129.05**	**120.55**	**112.40**	**83.00**	**92.33**	**105.91**	**108.51**			
	CD (0.05)	**2.32**	**2.79**	**2.23**	**2.32**	**5.30**	**3.38**	**1.04**	**2.46**	**3.77**				
	CV (%) erro	**1.16**	**1.92**	**1.40**	**1.12**	**2.75**	**1.88**	**0.78**	**1.27**	**2.23**				

Table 80. 100 seed weight (g) in Initial Varietal Trial (IVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Bangalore	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank
1	BRB004	6.27	7.89	5.05	6.47	4.86	5.20	4.95	5.70	5.73	16
2	BRB006	5.80	7.08	5.42	6.67	4.72	5.35	5.03	5.83	5.73	18
3	BRB014	6.30	7.68	5.65	6.60	5.09	5.13	5.04	6.20	5.91	7
4	BRB018	6.20	7.61	5.43	6.03	5.47	5.13	4.71	6.17	5.79	14
5	LRB141	-	6.54	5.20	6.37	5.41	5.77	6.16	***6.87***	6.04	3
6	LRB162	-	6.85	5.15	6.27	***6.98***	4.83	5.70	***7.17***	6.13	2
7	LRB163	-	6.09	5.17	6.57	5.71	4.97	5.67	6.33	5.79	15
8	LRB172	-	6.54	5.55	***6.90***	5.94	4.90	5.27	6.80	5.98	5
9	LRB184	-	6.65	5.45	6.57	5.66	5.07	5.22	6.43	5.86	9
10	LRB189	-	7.33	5.48	7.23	5.40	5.27	5.68	6.67	6.15	1
11	LRB193	-	6.69	5.02	5.97	6.08	5.37	5.78	6.37	5.89	8
12	LRB218	-	6.60	5.55	6.37	5.78	4.93	5.21	6.37	5.83	11
13	LRB241	-	5.93	5.15	6.27	5.46	5.07	4.80	6.80	5.64	20
14	LRB273	-	7.29	5.23	5.07	5.61	5.87	5.19	***7.37***	5.95	6
15	LRB324	7.40	7.72	4.88	6.30	5.28	4.87	5.90	5.77	5.82	12
16	LRB460	6.00	6.87	5.47	6.63	5.58	5.07	5.05	6.20	5.84	10
17	RBL-1 (C)	5.80	6.93	5.00	**6.60**	5.05	5.20	5.09	**6.20**	5.72	19
18	RBL-6 (C)	**7.00**	7.07	**5.58**	5.93	5.09	**5.90**	5.17	5.83	5.80	13
19	RBL-35 (C)	6.07	**7.76**	5.25	6.63	5.10	5.27	**5.82**	6.13	5.99	4
20	RBL-50 (C)	5.87	6.44	5.48	5.93	**5.48**	5.37	5.40	6.00	5.73	17
	Mean	**6.27**	**6.98**	**5.31**	**6.37**	**5.49**	**5.23**	**5.34**	**6.43**	**5.88**	
	CD (0.05)	**1.59**	**0.30**	**0.17**	**0.28**	**0.70**	**0.16**	**0.11**	**0.63**		
	CV (%) error	**14.82**	**2.73**	**2.05**	**2.77**	**7.98**	**1.91**	**1.02**	**6.15**		

Table 81. Performance of Rice bean entries in Advanced Varietal Trial (AVT) during Kharif, 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over qualifying variety			
				Mean	Location	Rank	RBL-1	RBL-6	RBL-35	RBL-50
	AVT-I									
1	LRB018	111.42	5.72	8.25	8	4	-0.97	0.84	2.09	-5.83
2	LRB068	110.75	5.55	8.59	8	2	3.11	5.00	6.30	-1.96
3	LRB074-1	111.75	6.01	7.83	8	8	-6.01	-4.28	-3.10	-10.62
4	LRB080	109.79	5.88	7.46	8	10	-10.40	-8.76	-7.63	-14.80
5	LRB081	109.08	5.66	7.14	8	13	-14.25	-12.67	-11.59	-18.46
6	LRB087	110.13	6.02	6.69	8	14	-19.66	-18.19	-17.17	-23.60
7	LRB099	110.50	6.03	7.36	8	12	-11.61	-9.99	-8.87	-15.95
8	LRB107	109.33	5.69	8.16	8	6	-2.01	-0.21	1.03	-6.82
9	LRB309	109.04	5.69	7.39	8	11	-11.34	-9.71	-8.59	-15.69
10	LRB334	109.75	5.91	7.48	8	9	-10.19	-8.54	-7.41	-14.60
11	RBL-1 (C)	111.17	5.69	8.33	8	3	0.00	1.89	3.15	-4.85
12	RBL-6 (C)	112.29	5.97	8.18	8	5	-1.84	0.00	1.20	-6.66
13	RBL-35 (C)	113.33	5.81	8.08	7	7	-3.05	-1.27	0.00	-7.81
14	RBL-50 (C)	109.14	5.80	8.76	7	1	5.15	7.08	8.40	0.00
	Mean	**110.54**	**5.81**	**7.74**						

Table 82. Seed yield (q/ha) in Advanced Varietal Trial (AVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank	Location	Frequency
	AVT-I												
1	LRB018	7.08	10.19	2.29	18.98	14.09	4.08	3.29	6.00	8.25	4	8	0/8
2	LRB068	6.06	11.81	2.59	***21.30***	14.58	5.32	2.14	4.91	8.59	2	8	1/8
3	LRB074-1	6.34	10.65	2.24	16.20	14.23	4.70	3.65	4.62	7.83	8	8	0/8
4	LRB080	6.81	9.49	2.57	12.04	13.61	5.33	3.29	6.58	7.46	10	8	0/8
5	LRB081	7.92	8.56	2.54	10.42	15.06	5.34	2.95	4.36	7.14	13	8	0/8
6	LRB087	6.16	10.65	2.43	5.56	16.66	4.92	2.90	4.27	6.69	14	8	0/8
7	LRB099	6.76	***15.97***	2.99	5.09	12.63	5.75	3.75	5.96	7.36	12	8	1/8
8	LRB107	5.28	12.04	2.54	15.74	15.90	5.25	3.70	4.85	8.16	6	8	0/8
9	LRB309	9.12	10.88	2.33	10.42	12.63	5.09	3.44	5.18	7.39	11	8	0/8
10	LRB334	6.06	9.95	2.68	10.88	13.95	6.18	***4.21***	5.93	7.48	9	8	1/8
11	RBL-1 (C)	9.44	**10.88**	2.82	15.28	12.63	5.27	3.05	**7.31**	8.33	3	8	
12	RBL-6 (C)	5.09	10.65	3.45	**16.67**	14.99	**6.23**	**3.70**	4.63	8.18	5	8	
13	RBL-35 (C)	6.62	10.65	**3.49**	12.04	**15.06**	4.07	-	4.60	8.08	7	7	
14	RBL-50 (C)	**10.51**	10.19	-	13.24	12.63	4.96	3.41	6.38	8.76	1	7	
	Mean	**7.09**	**10.90**	**2.69**	**13.13**	**14.19**	**5.18**	**3.35**	**5.40**	**7.74**			
	CD (0.05)	**0.48**	**1.79**	**0.54**	**3.24**	**2.36**	**0.51**	**0.39**	**0.81**				
	CV (%) error	**4.00**	**9.77**	**11.87**	**14.65**	**9.91**	**5.89**	**6.89**	**8.83**				

Table 83. Plant height (cm) in Advanced Varietal Trial (AVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank
	AVT-I										
1	LRB018	118.33	80.73	134.27	161.40	71.67	51.00	83.00	113.47	101.73	4
2	LRB068	130.33	106.63	126.43	140.63	60.33	52.00	77.67	110.33	100.55	7
3	LRB074-1	112.33	97.90	129.93	136.20	82.67	50.00	79.67	106.80	99.44	9
4	LRB080	117.00	107.50	131.50	161.30	73.33	53.00	68.67	112.00	103.04	3
5	LRB081	112.67	91.43	132.50	118.20	55.33	55.00	78.33	104.47	93.49	14
6	LRB087	111.33	99.33	130.53	127.30	65.67	51.00	79.00	112.37	97.07	10
7	LRB099	113.33	105.43	125.23	121.30	62.33	52.00	76.00	110.67	95.79	13
8	LRB107	114.33	101.80	121.13	139.43	56.00	48.00	78.00	112.20	96.36	11
9	LRB309	144.33	108.77	120.63	150.50	66.00	47.67	84.67	107.53	103.76	2
10	LRB334	117.33	99.33	127.10	120.07	67.00	52.67	78.33	105.47	95.91	12
11	RBL-1 (C)	117.00	103.20	132.53	124.20	**69.33**	**74.00**	71.33	**121.27**	101.61	5
12	RBL-6 (C)	113.00	104.90	**133.10**	**137.63**	69.00	69.00	80.33	105.53	101.56	6
13	RBL-35 (C)	127.33	100.77	132.77	131.03	59.33	67.33	-	113.60	104.60	1
14	RBL-50 (C)	**137.33**	**115.33**	-	133.97	62.33	68.00	**82.33**	101.00	100.04	8
	Mean	**120.43**	**101.65**	**129.05**	**135.94**	**65.74**	**56.48**	**78.26**	**109.76**	**99.66**	
	CD (0.05)	**17.66**	**8.11**	**3.56**	**35.64**	**22.28**	**1.40**	**3.63**	**20.27**		
	CV (%) error	**8.72**	**4.74**	**1.64**	**15.59**	**20.15**	**1.47**	**2.76**	**10.87**		

Table 84. Days to 50% flowering in Advanced Varietal Trial (AVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank
	AVT-I										
1	LRB018	66.00	51.33	81.00	79.00	58.00	49.00	55.00	74.33	64.21	9
2	LRB068	67.67	58.33	84.00	78.00	56.67	47.00	55.00	71.00	64.71	11
3	LRB074-1	67.33	57.33	81.00	82.00	59.00	48.33	55.00	74.67	65.58	14
4	LRB080	65.33	***48.33***	***78.00***	77.33	57.67	47.33	56.67	69.33	62.50	4
5	LRB081	67.67	***47.33***	80.00	81.67	57.67	48.33	55.00	68.67	63.29	5
6	LRB087	61.67	53.00	84.00	***67.33***	55.67	45.00	55.67	***60.33***	60.33	1
7	LRB099	65.00	***46.00***	88.00	72.33	56.33	48.00	56.67	65.67	62.25	3
8	LRB107	66.67	***48.00***	***79.00***	82.33	57.33	46.00	56.00	71.33	63.33	6
9	LRB309	65.67	***44.33***	84.33	81.33	58.67	46.67	56.33	72.00	63.67	7
10	LRB334	64.67	***46.67***	80.00	78.67	54.67	45.33	55.67	61.00	60.83	2
11	RBL-1 (C)	68.00	**52.00**	87.00	81.00	58.00	47.00	**54.67**	70.67	64.79	13
12	RBL-6 (C)	**63.00**	57.67	**81.00**	**79.00**	57.67	46.00	56.33	73.33	64.25	10
13	RBL-35 (C)	68.00	55.33	85.00	80.33	**55.00**	**45.00**	-	**64.67**	64.76	12
14	RBL-50 (C)	67.67	56.00	-	82.00	60.00	48.00	57.00	76.00	63.81	8
	Mean	**66.02**	**51.55**	**82.49**	**78.74**	**57.31**	**46.93**	**55.77**	**69.50**	**63.54**	
	CD (0.05)	**2.40**	**2.52**	**1.50**	**7.90**	**1.70**	**0.55**	**2.04**	**3.67**		
	CV (%) error	**2.16**	**2.90**	**1.08**	**5.97**	**1.76**	**0.69**	**2.18**	**3.11**		

Table 85. Days to maturity in Advanced Varietal Trial (AVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Ambikapur	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank	Location	Frequency
	AVT-I												
1	LRB018	119.33	99.33	129.67	120.33	112.67	***81.00***	95.67	133.33	111.42	11	8	1/8
2	LRB068	120.33	100.33	131.00	122.67	110.67	***81.67***	92.00	127.33	110.75	9	8	1/8
3	LRB074-1	120.33	99.33	130.67	122.00	113.67	83.67	94.33	130.00	111.75	12	8	0/8
4	LRB080	118.67	95.67	131.00	124.67	109.00	84.67	92.00	122.67	109.79	6	8	0/8
5	LRB081	120.33	93.67	***126.67***	119.33	111.33	84.33	92.67	124.33	109.08	2	8	1/8
6	LRB087	117.33	100.67	***128.00***	***116.67***	114.33	84.33	96.00	123.67	110.13	7	8	2/8
7	LRB099	120.00	96.33	131.33	118.67	113.33	85.67	91.00	127.67	110.50	8	8	0/8
8	LRB107	118.33	95.67	129.00	119.67	111.33	***83.00***	92.67	125.00	109.33	4	8	1/8
9	LRB309	120.67	94.67	***127.00***	120.00	111.67	***83.33***	89.67	125.33	109.04	1	8	2/8
10	LRB334	119.67	93.00	130.33	119.00	111.67	84.67	97.00	122.67	109.75	5	8	0/8
11	RBL-1 (C)	120.67	**93.67**	131.33	122.33	113.33	**84.67**	93.33	130.00	111.17	10	8	
12	RBL-6 (C)	**116.67**	102.00	133.33	**122.00**	114.33	86.00	94.67	129.33	112.29	13	8	
13	RBL-35 (C)	120.33	100.67	**130.67**	124.67	**110.67**	85.00	-	**121.33**	113.33	14	7	
14	RBL-50 (C)	121.00	105.33	-	**122.00**	112.33	**84.67**	**90.00**	128.67	109.14	3	7	
	Mean	**119.55**	**97.88**	**130.00**	**121.00**	**112.17**	**84.05**	**93.15**	**126.52**	**110.54**			
	CD (0.05)	**1.97**	**2.87**	**2.16**	**4.44**	**4.25**	**1.05**	**3.03**	**5.23**				
	CV (%) error	**0.98**	**1.74**	**0.99**	**2.18**	**2.25**	**0.74**	**1.94**	**2.43**				

Table 86. 100 seed weight (g) in Advanced Varietal Trial (AVT) on Rice bean : 2007 (Plains)

S.No.	Genotypes	Bhubaneswar	Faizabad	Hisar	Ludhiana	Mettupalayam	Rahuri	Ranchi	Mean	Rank
	AVT-I									
1	LRB018	6.07	5.08	6.60	5.28	5.13	5.74	6.17	5.72	9
2	LRB068	5.28	5.13	6.27	5.24	5.10	5.57	6.23	5.55	14
3	LRB074-1	6.72	5.08	***7.27***	5.61	5.27	5.58	***6.57***	6.01	3
4	LRB080	6.26	5.00	6.83	5.77	5.20	5.75	6.37	5.88	6
5	LRB081	6.09	5.00	5.77	5.58	5.50	5.60	6.07	5.66	13
6	LRB087	6.15	5.32	6.63	***6.69***	5.23	***6.06***	6.07	6.02	2
7	LRB099	***7.34***	5.30	7.03	5.73	5.03	5.62	6.13	6.03	1
8	LRB107	5.84	5.13	6.53	5.17	4.83	5.71	***6.63***	5.69	10
9	LRB309	5.68	5.12	6.27	5.65	5.10	5.58	6.43	5.69	12
10	LRB334	6.12	5.02	6.77	5.91	5.03	***6.00***	***6.53***	5.91	5
11	RBL-1 (C)	6.18	5.08	6.67	5.05	5.37	5.64	5.87	5.69	11
12	RBL-6 (C)	6.79	**5.38**	6.83	5.09	**6.03**	**5.66**	**6.00**	5.97	4
13	RBL-35 (C)	**6.82**	5.07	6.60	5.10	5.33	-	5.93	5.81	7
14	RBL-50 (C)	6.38	-	**6.87**	**5.48**	5.50	5.13	5.47	5.80	8
	Mean	**6.27**	**5.13**	**6.64**	**5.52**	**5.26**	**5.66**	**6.18**	**5.81**	
	CD (0.05)	**0.34**	**0.17**	**0.24**	**0.66**	**0.14**	**0.30**	**0.45**		
	CV (%) error	**3.24**	**1.94**	**2.19**	**7.09**	**1.62**	**3.12**	**4.32**		

Table 87. Performance of Faba bean entries in Initial Varietal Trial (IVT) during Rabi 2006-07 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/ decrease over qualifying variety
				Mean	Location	Rank	
1	BSH 9	134.07	27.23	24.55	4	10	-0.27
2	EC010845	135.72	27.24	23.67	4	12	-3.87
3	EC243575	137.15	28.84	28.75	4	1	16.79
4	EC243834	133.51	28.08	22.86	4	14	-7.17
5	HB 180	135.51	29.15	28.47	4	2	15.64
6	HB 501	134.06	27.63	23.38	4	13	-5.03
7	HB 502	133.78	28.74	24.74	4	7	0.47
8	HB 503	135.46	28.29	28.37	4	3	15.22
9	HB 504	136.28	31.07	25.62	4	6	4.05
10	HB 516	136.36	30.08	27.72	4	4	12.58
11	HB 518	133.58	27.71	26.06	4	5	5.85
12	IC331587	136.33	26.49	24.56	4	9	-0.26
13	IC361427	135.08	28.66	24.49	4	11	-0.52
14	Vikrant (C)	135.13	27.69	24.62	4	8	0.00
	Mean	**135.14**	**28.35**	**25.56**			

Table 88. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Faba bean : Rabi 2006-07 (Plains)

S. No.	Genotype	Ambikapur*	Delhi	Faizabad	Hisar	Ludhiana*	Ranchi	Mean	Rank	Location	Frequency
1	BSH 9	0.97	24.29	17.89	41.11	5.05	14.93	24.55	10	4	0/4
2	EC010845	1.90	23.65	18.87	34.44	5.36	17.71	23.67	12	4	0/4
3	EC243575	1.76	***37.62***	19.67	41.44	6.25	16.29	28.75	1	4	1/4
4	EC243834	1.44	20.63	20.16	30.83	4.84	***19.79***	22.86	14	4	1/4
5	HB 180	0.95	***30.95***	18.55	***49.44***	5.36	14.93	28.47	2	4	2/4
6	HB 501	2.55	24.29	18.41	36.11	7.39	14.72	23.38	13	4	0/4
7	HB 502	1.39	28.41	18.41	36.67	8.43	15.45	24.74	7	4	0/4
8	HB 503	1.07	***35.87***	21.95	40.33	5.88	15.31	28.37	3	4	1/4
9	HB 504	1.02	22.54	19.13	45.00	5.62	15.80	25.62	6	4	0/4
10	HB 516	2.31	28.41	20.86	***47.22***	5.46	14.38	27.72	4	4	1/4
11	HB 518	0.88	***30.63***	16.98	40.56	6.04	16.08	26.06	5	4	1/4
12	IC331587	2.04	22.22	19.85	38.33	5.20	***17.81***	24.56	9	4	1/4
13	IC361427	2.18	28.41	18.62	35.56	6.56	15.38	24.49	11	4	0/4
14	Vikrant (C)	2.64	23.49	20.69	39.44	6.61	14.86	24.62	8	4	
	Mean	**1.65**	**27.25**	**19.29**	**39.75**	**6.00**	**15.96**	**25.56**			
	CD (0.05)	**0.14**	**5.63**	**4.77**	**6.02**	**1.36**	**2.98**				
	CV (%) Error	**5.54**	**12.29**	**17.85**	**9.00**	**16.30**	**13.45**				

*** Data not considered because of low yields**

Table 89. Plant height (cm) in Initial Varietal Trial (IVT) on Faba bean : Rabi 2006-07 (Plains)

S. No.	Genotype	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
1	BSH 9	45.50	79.67	75.65	119.40	38.25	68.70	71.19	12
2	EC010845	44.00	70.00	78.40	132.87	39.25	68.45	72.16	10
3	EC243575	41.50	77.87	75.35	133.77	40.50	77.40	74.40	4
4	EC243834	41.50	71.73	67.10	141.73	38.50	70.33	71.82	11
5	HB 180	42.50	***91.47***	66.05	126.87	40.75	70.80	73.07	5
6	HB 501	41.00	76.87	***82.55***	115.47	42.50	65.65	70.67	13
7	HB 502	41.25	78.20	71.90	128.77	43.25	72.55	72.65	7
8	HB 503	44.75	81.80	72.10	135.80	41.00	72.65	74.68	3
9	HB 504	42.50	74.13	75.75	***157.50***	39.50	69.80	76.53	1
10	HB 516	44.25	83.53	77.55	130.80	41.50	72.40	75.01	2
11	HB 518	41.00	81.60	67.98	122.77	41.75	78.35	72.24	9
12	IC331587	40.00	79.67	64.40	139.47	40.00	74.00	72.92	6
13	IC361427	48.00	80.20	70.55	126.47	39.75	69.40	72.39	8
14	Vikrant (C)	45.50	70.33	72.75	116.73	41.00	75.20	70.25	14
	Mean	**43.09**	**78.36**	**72.72**	**130.60**	**40.54**	**71.83**	**72.86**	
	CD (0.05)	**7.12**	**18.48**	**6.04**	**28.90**	**5.28**	**12.88**		
	CV (%) Error	**11.12**	**14.02**	**6.00**	**13.15**	**9.40**	**12.94**		

Table 90. Days to 50% flowering in Initial Varietal Trial (IVT) on Faba bean : Rabi 2006-07 (Plains)

S. No.	Genotype	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
1	BSH 9	58.25	64.00	***57.50***	92.00	77.75	59.50	68.17	7
2	EC010845	60.75	60.67	60.00	***90.00***	76.50	62.75	68.44	8
3	EC243575	60.25	63.33	61.00	93.33	78.50	63.50	69.99	14
4	EC243834	59.50	69.00	60.25	***86.67***	77.00	60.75	68.86	11
5	HB 180	59.00	62.00	59.75	93.33	77.00	57.25	68.06	6
6	HB 501	57.00	69.67	62.25	93.00	76.00	60.00	69.65	12
7	HB 502	57.25	67.33	58.75	91.33	76.00	57.25	67.99	5
8	HB 503	60.25	65.33	60.25	***87.33***	77.75	60.75	68.61	10
9	HB 504	58.50	62.67	***56.25***	97.00	77.75	58.75	68.49	9
10	HB 516	59.50	67.67	60.25	94.67	77.75	58.50	69.72	13
11	HB 518	58.50	60.00	***55.25***	92.33	77.00	57.50	66.76	2
12	IC331587	57.00	60.00	59.25	93.33	77.25	57.25	67.35	3
13	IC361427	57.75	59.33	***55.50***	***89.67***	76.00	60.00	66.38	1
14	Vikrant (C)	58.50	58.00	62.00	94.67	74.75	59.75	67.94	4
	Mean	**58.71**	**63.50**	**59.16**	**92.05**	**76.93**	**59.54**	**68.31**	
	CD (0.05)	**2.29**	**7.87**	**2.89**	**3.78**	**1.49**	**3.70**		
	CV (%) Error	**2.63**	**7.37**	**3.52**	**2.44**	**1.40**	**4.49**		

Table 91. Days to maturity in Initial Varietal Trial (IVT) on Faba bean : Rabi 2006-07 (Plains)

S. No.	Genotype	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
1	BSH 9	117.75	120.67	132.25	***169.00***	150.00	114.75	134.07	5	6	1/6
2	EC010845	119.75	121.33	140.25	170.00	150.25	112.75	135.72	10	6	0/6
3	EC243575	120.75	121.33	140.50	174.33	150.00	116.00	137.15	14	6	0/6
4	EC243834	118.25	120.00	***129.25***	***166.33***	150.50	116.75	133.51	1	6	2/6
5	HB 180	119.75	123.33	132.00	172.00	149.50	116.50	135.51	9	6	0/6
6	HB 501	117.75	123.00	134.00	***167.33***	149.50	112.75	134.06	4	6	1/6
7	HB 502	117.50	124.00	***131.00***	***167.67***	150.50	112.00	133.78	3	6	2/6
8	HB 503	117.25	124.33	139.00	***167.67***	150.50	114.00	135.46	8	6	1/6
9	HB 504	119.25	124.33	136.25	170.33	150.75	116.75	136.28	11	6	0/6
10	HB 516	120.25	120.67	134.50	176.00	150.50	116.25	136.36	13	6	0/6
11	HB 518	116.00	124.67	***128.00***	170.33	150.50	112.00	133.58	2	6	1/6
12	IC331587	118.00	124.33	142.00	170.67	150.25	112.75	136.33	12	6	0/6
13	IC361427	117.75	120.67	138.25	171.33	150.00	112.50	135.08	6	6	0/6
14	Vikrant (C)	117.00	124.00	134.75	173.00	150.25	111.75	135.13	7	6	
	Mean	**118.36**	**122.62**	**135.14**	**170.43**	**150.21**	**114.11**	**135.14**			
	CD (0.05)	**2.02**	**8.59**	**3.68**	**3.28**	**1.13**	**2.31**				
	CV (%) Error	**1.15**	**4.16**	**1.96**	**1.14**	**0.55**	**1.46**				

Table 92. 100 seed weight (g) in Initial Varietal Trial (IVT) on Faba bean : Rabi 2006-07 (Plains)

S. No.	Genotype	Delhi	Hisar	Ludhiana	Ranchi	Mean	Rank
1	BSH 9	28.45	***29.10***	23.05	28.33	27.23	13
2	EC010845	29.67	***28.10***	21.10	30.08	27.24	12
3	EC243575	32.55	***28.10***	24.30	30.40	28.84	4
4	EC243834	31.39	25.20	25.10	30.65	28.08	8
5	HB 180	31.66	***28.60***	23.93	32.40	29.15	3
6	HB 501	31.80	25.70	23.58	29.45	27.63	11
7	HB 502	31.80	***30.40***	24.30	28.48	28.74	5
8	HB 503	***34.20***	25.40	25.38	28.20	28.29	7
9	HB 504	***33.39***	***33.17***	25.20	32.50	31.07	1
10	HB 516	32.09	***32.37***	24.33	31.55	30.08	2
11	HB 518	30.80	***27.90***	23.33	28.83	27.71	9
12	IC331587	28.73	26.00	21.83	29.40	26.49	14
13	IC361427	32.46	26.00	25.40	30.80	28.66	6
14	Vikrant (C)	30.61	25.80	24.63	29.73	27.69	10
	Mean	**31.40**	**27.99**	**23.96**	**30.06**	**28.35**	
	CD (0.05)	**2.62**	**0.64**	**2.86**	**3.98**		
	CV (%) Error	**4.96**	**1.35**	**8.62**	**9.55**		

Table 93. Performance of Faba bean entries in Advanced Varietal Trial (AVT) during 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/ decrease over qualifying variety
				Mean	Location	Rank	
	AVT-I						
1	BSH 42	136.38	28.06	23.43	4	7	-7.87
2	HB 303	133.57	28.45	26.73	4	3	5.12
3	HB 416	133.65	28.92	27.05	4	2	6.37
4	HB 418	133.13	29.13	28.88	4	1	13.56
	AVT-II						
5	HB 405	133.44	28.66	25.69	4	5	1.02
6	HB 430	135.28	29.39	26.22	4	4	3.09
7	Vikrant (C)	135.72	27.93	25.43	4	6	0.00
	Mean	**134.45**	**28.65**	**26.20**			

Table 94. Seed yield (q/ha) in Advanced Varietal Trial (AVT) on Faba bean : 2007 (Plains)

S. No.	Genotype	Ambikapur*	Delhi	Faizabad	Hisar	Ludhiana*	Ranchi	Mean	Rank	Location	Frequency
	AVT-I										
1	BSH 42	1.74	23.33	21.07	38.40	6.17	10.90	23.43	7	4	0/4
2	HB 303	1.60	25.87	22.06	44.52	3.85	14.48	26.73	3	4	0/4
3	HB 416	2.01	***28.73***	22.05	44.52	4.26	12.90	27.05	2	4	1/4
4	HB 418	1.81	***32.54***	22.37	***46.26***	5.04	14.34	28.88	1	4	2/4
	AVT-II										
5	HB 405	1.70	24.92	18.76	44.18	5.04	14.90	25.69	5	4	0/4
6	HB 430	1.84	20.79	23.17	***48.34***	5.31	12.55	26.22	4	4	1/4
7	Vikrant (C)	2.01	23.49	18.62	41.33	3.89	18.28	25.43	6	4	
	Mean	**1.82**	**25.67**	**21.16**	**43.94**	**4.79**	**14.05**	**26.20**			
	CD (0.05)	**0.24**	**3.05**	**5.10**	**3.25**	**0.82**	**3.91**				
	CV (%) Error	**7.43**	**6.68**	**16.25**	**4.15**	**9.56**	**18.73**				

*** Data not considered because of low yields**

Table 95. Plant height (cm) in Advanced Varietal Trial (AVT) on Faba bean : 2007 (Plains)

S. No.	Genotype	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
	AVT-I								
1	BSH 42	38.80	70.00	76.25	85.80	43.67	59.65	62.36	7
2	HB 303	40.53	73.67	76.15	100.10	38.00	63.85	65.38	6
3	HB 416	42.80	69.53	81.40	109.43	42.33	62.75	68.04	2
4	HB 418	43.20	***88.40***	82.35	106.43	41.00	77.45	73.14	1
	AVT-II								
5	HB 405	43.80	73.60	77.58	97.80	40.67	68.00	66.91	5
6	HB 430	42.53	73.67	81.75	100.47	40.00	64.55	67.16	4
7	Vikrant (C)	43.20	70.33	82.25	99.13	40.00	71.55	67.74	3
	Mean	**42.12**	**74.17**	**79.68**	**99.88**	**40.81**	**66.83**	**67.25**	
	CD (0.05)	**4.51**	**15.56**	**3.99**	**12.33**	**7.14**	**13.30**		
	CV (%) Error	**6.02**	**11.79**	**3.37**	**6.94**	**9.84**	**13.40**		

Table 96. Days to 50% flowering in Advanced Varietal Trial (AVT) on Faba bean : 2007 (Plains)

S. No.	Genotype	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank
	AVT-I								
1	BSH 42	57.33	67.00	59.00	74.67	76.67	58.50	65.53	3
2	HB 303	59.00	85.67	60.25	74.00	76.00	52.50	67.90	7
3	HB 416	59.67	72.00	64.50	74.00	77.00	59.00	67.69	6
4	HB 418	57.67	76.00	***52.50***	***71.33***	75.00	55.25	64.63	2
	AVT-II								
5	HB 405	58.67	83.00	***57.00***	75.33	76.00	53.50	67.25	5
6	HB 430	59.67	66.67	62.50	***73.33***	77.00	58.50	66.28	4
7	Vikrant (C)	58.33	58.00	60.50	***77.33***	76.00	52.50	63.78	1
	Mean	**58.62**	**72.62**	**59.46**	**74.29**	**76.24**	**55.68**	**66.15**	
	CD (0.05)	**2.70**	**9.28**	**3.10**	**3.98**	**1.69**	**2.40**		
	CV (%) Error	**2.59**	**7.18**	**3.52**	**3.01**	**1.25**	**2.90**		

Table 97. Days to maturity in Advanced Varietal Trial (AVT) on Faba bean : 2007 (Plains)

S. No.	Genotype	Ambikapur	Delhi	Faizabad	Hisar	Ludhiana	Ranchi	Mean	Rank	Location	Frequency
	AVT-I										
1	BSH 42	120.00	130.33	***133.00***	***167.67***	150.00	117.25	136.38	7	6	2/6
2	HB 303	***116.67***	124.67	***128.25***	169.67	149.67	112.50	133.57	3	6	2/6
3	HB 416	118.67	124.00	***128.75***	***165.33***	150.67	114.50	133.65	4	6	2/6
4	HB 418	***116.67***	120.67	***129.75***	***164.67***	151.00	116.00	133.13	1	6	3/6
	AVT-II										
5	HB 405	***116.00***	121.33	***129.75***	***168.00***	150.33	115.25	133.44	2	6	3/6
6	HB 430	119.00	126.00	***132.75***	***168.00***	150.67	115.25	135.28	5	6	2/6
7	Vikrant (C)	118.33	124.00	138.75	174.00	150.00	109.25	135.72	6	6	
	Mean	**117.90**	**124.43**	**131.57**	**168.19**	**150.33**	**114.29**	**134.45**			
	CD (0.05)	**0.82**	**7.32**	**3.42**	**4.49**	**1.03**	**6.78**				
	CV (%) Error	**0.39**	**3.31**	**1.75**	**1.50**	**0.38**	**3.99**				

Table 98. 100 seed weight (g) in Advanced Varietal Trial (AVT) on Faba bean : 2007 (Plains)

S. No.	Genotype	Delhi	Hisar	Ludhiana	Ranchi	Mean	Rank
	AVT-I						
1	BSH 42	29.93	***28.40***	24.23	29.68	28.06	6
2	HB 303	29.00	***29.23***	24.70	30.88	28.45	5
3	HB 416	***34.51***	***28.90***	23.00	29.28	28.92	3
4	HB 418	31.11	***27.17***	25.40	***32.83***	29.13	2
	AVT-II						
5	HB 405	31.25	***28.20***	24.93	30.28	28.66	4
6	HB 430	33.04	***29.83***	24.50	30.20	29.39	1
7	Vikrant (C)	30.61	26.50	24.80	29.83	27.93	7
	Mean	**31.35**	**28.32**	**24.51**	**30.42**	**28.65**	
	CD (0.05)	**3.06**	**0.34**	**2.49**	**1.58**		
	CV (%) Error	**5.48**	**0.67**	**5.72**	**3.49**		

Table 99. Green pod yield (q/ha) in Advanced Varietal Trial (AVT) on Faba bean : 2007 (Plains)

S. No.	Genotype	Ambikapur*	Delhi	Hisar	Mean	Rank
	AVT-I					
1	BSH 42	5.00	67.46	197.00	132.23	6
2	HB 303	5.03	75.87	231.67	153.77	3
3	HB 416	4.79	88.89	225.00	156.94	2
4	HB 418	2.67	77.78	***240.33***	159.06	1
	AVT-II					
5	HB 405	4.83	39.48	221.67	130.58	7
6	HB 430	3.51	60.20	***243.33***	151.77	4
7	Vikrant (C)	4.65	64.09	210.00	137.04	5
	Mean	**4.36**	**67.68**	**224.14**	**145.91**	
	CD (0.05)	**1.93**	**27.41**	**23.43**		
	CV (%) Error	**24.88**	**22.76**	**5.87**		

*** Data not considered because of low yields**

Table 100. Performance of Winged bean entries in Initial Varietal Trial (IVT) during 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean pod length (cm)	Mean seed yield over locations (q/ha)			Percent increase/ decrease over qualifying variety
				Mean	Location	Rank	
1	EC021904	160.17	15.43	13.67	2	2	41.91
2	EC027885-1	163.83	14.55	14.83	2	1	53.97
3	EC027886	155.58	14.14	13.08	2	3	35.82
4	EC116887	156.17	14.17	9.59	2	5	-0.41
5	EC142654-4	159.17	13.72	7.47	2	7	-22.39
6	EC142662	155.67	12.47	6.36	2	11	-34.00
7	EC142667	159.83	14.15	7.04	2	9	-26.88
8	IC045229-1	162.17	14.13	4.99	2	12	-48.22
9	IC095222	157.17	14.56	6.69	2	10	-30.54
10	IC095248	152.33	10.67	8.73	1	6	-9.31
11	NBRI - Sel	159.50	12.73	7.12	2	8	-26.10
12	AKWB-1(C)	153.67	11.67	9.63	1	4	0.00
	Mean	**158.95**	**13.86**	**9.07**			

Table 101. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Winged bean : 2007 (Plains)

S.No.	Genotype	Ambikapur	Rahuri	Mean	Rank	Location	Frequency
1	EC021904	16.94	10.39	13.67	2	2	0/2
2	EC027885-1	20.56	9.10	14.83	1	2	0/2
3	EC027886	14.72	11.44	13.08	3	2	0/2
4	EC116887	8.61	10.57	9.59	5	2	0/2
5	EC142654-4	5.28	9.67	7.47	7	2	0/2
6	EC142662	4.44	8.27	6.36	11	2	0/2
7	EC142667	5.42	8.67	7.04	9	2	0/2
8	IC045229-1	1.47	8.50	4.99	12	2	0/2
9	IC095222	4.44	8.93	6.69	10	2	0/2
10	IC095248	-	8.73	8.73	6	1	0/1
11	NBRI - Sel	5.83	8.40	7.12	8	2	0/2
12	AKWB-1(C)	-	**9.63**	9.63	4	1	
	Mean	**8.77**	**9.36**	**9.07**			
	CD (0.05)	**16.18**	**1.16**				
	CV (%) error	**18.60**	**7.31**				

Table 102. Days to 50% flowering in Initial Varietal Trial (IVT) on Winged bean : 2007 (Plains)

S.No.	Genotype	Ambikapur	Rahuri	Mean	Rank
1	EC021904	83.50	55.67	69.58	9
2	EC027885-1	75.00	59.00	67.00	5
3	EC027886	73.50	56.67	65.08	3
4	EC116887	83.00	***52.67***	67.83	7
5	EC142654-4	85.00	56.33	70.67	11
6	EC142662	82.50	55.33	68.92	8
7	EC142667	81.00	***54.00***	67.50	6
8	IC045229-1	89.00	57.00	73.00	12
9	IC095222	77.00	56.00	66.50	4
10	IC095248	-	56.00	56.00	1
11	NBRI - Sel	85.00	55.67	70.33	10
12	AKWB-1(C)	-	**56.67**	56.67	2
	Mean	**81.45**	**55.92**	**68.68**	
	CD (0.05)	**4.49**	**2.54**		
	CV (%) error	**2.44**	**2.68**		

Table 103. Days to maturity in Initial Varietal Trial (IVT) on Winged bean : 2007 (Plains)

S.No.	Genotype	Ambikapur	Rahuri	Mean	Rank	Location	Frequency
1	EC021904	162.00	158.33	160.17	10	2	0/2
2	EC027885-1	169.00	158.67	163.83	12	2	0/2
3	EC027886	160.50	150.67	155.58	3	2	0/2
4	EC116887	162.00	150.33	156.17	5	2	0/2
5	EC142654-4	167.00	151.33	159.17	7	2	0/2
6	EC142662	162.00	***149.33***	155.67	4	2	1/2
7	EC142667	169.00	150.67	159.83	9	2	0/2
8	IC045229-1	169.00	155.33	162.17	11	2	0/2
9	IC095222	163.00	151.33	157.17	6	2	0/2
10	IC095248	-	152.33	152.33	1	1	0/1
11	NBRI - Sel	168.00	151.00	159.50	8	2	0/2
12	AKWB-1(C)	-	**153.67**	153.67	2	1	
	Mean	**165.15**	**152.75**	**158.95**			
	CD (0.05)	**3.31**	**3.64**				
	CV (%) error	**0.89**	**1.41**				

Table 104. Pod length (cm) in Initial Varietal Trial (IVT) on Winged bean : 2007 (Plains)

S.No.	Genotype	Ambikapur	Rahuri	Mean	Rank
1	EC021904	16.85	14.00	15.43	1
2	EC027885-1	16.10	13.00	14.55	3
3	EC027886	14.95	13.33	14.14	6
4	EC116887	16.00	12.33	14.17	4
5	EC142654-4	15.10	12.33	13.72	8
6	EC142662	13.60	11.33	12.47	10
7	EC142667	15.30	13.00	14.15	5
8	IC045229-1	14.25	14.00	14.13	7
9	IC095222	15.45	13.67	14.56	2
10	IC095248	-	10.67	10.67	12
11	NBRI - Sel	13.80	11.67	12.73	9
12	AKWB-1(C)	-	**11.67**	11.67	11
	Mean	**15.14**	**12.58**	**13.86**	
	CD (0.05)	**3.14**	**2.37**		
	CV (%) error	**9.19**	**11.13**		

Table 105. Performance of Winged bean entries in Advanced Varietal Trial (AVT) during 2007 (Plains)

S. No.	Genotypes	Mean maturity duration (days)	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/ decrease over qualifying variety
				Mean	Location	Rank	
	AVT-II						
1	Dwarf Mutant	161.67	25.27	8.83	4	1	28.53
2	EC038955	160.56	23.92	7.43	4	8	8.15
3	EC142665	161.33	27.82	7.50	4	7	9.20
4	EC178271	165.11	26.54	6.03	4	10	-12.20
5	EC178313	168.44	26.23	8.03	4	5	16.94
6	EC178331	163.22	25.81	8.72	4	2	26.98
7	IC026945	166.89	23.75	8.15	4	4	18.59
8	Mysore Local	164.56	26.96	8.27	4	3	20.39
9	NBRI-Sel.	162.33	25.92	7.59	4	6	10.47
10	AKWB-1 (C)	166.89	27.05	6.87	4	9	0.00
	Mean	**164.10**	**25.93**	**7.74**			

Table 106. Seed yield (q/ha) in Advanced Varietal Trial (AVT) on Winged bean : 2007 (Plains)

S. No.	Genotypes	Ambikapur	Bangalore	Rahuri	Ranchi	Mean	Rank	Location	Frequency
	AVT-II								
1	Dwarf Mutant	***8.89***	6.60	***10.13***	***9.70***	8.83	1	4	3/4
2	EC038955	4.72	***9.00***	9.14	6.87	7.43	8	4	1/4
3	EC142665	***8.61***	***9.20***	6.90	5.30	7.50	7	4	1/4
4	EC178271	3.61	***7.77***	6.85	5.90	6.03	10	4	1/4
5	EC178313	***9.44***	***7.93***	8.09	6.67	8.03	5	4	2/4
6	EC178331	***11.67***	***8.07***	9.49	5.67	8.72	2	4	2/4
7	IC026945	***9.72***	***8.73***	8.53	5.60	8.15	4	4	2/4
8	Mysore Local	***9.72***	***9.23***	7.86	6.27	8.27	3	4	2/4
9	NBRI-Sel.	6.67	***8.27***	8.49	6.93	7.59	6	4	1/4
10	AKWB-1 (C)	**4.44**	**6.97**	**8.46**	**7.60**	6.87	9	4	
	Mean	**7.75**	**8.18**	**8.39**	**6.65**	**7.74**			
	CD (0.05)	**2.59**	**0.51**	**1.09**	**0.92**				
	CV (%) error	**14.79**	**3.62**	**7.59**	**8.05**				

Table 107. Days to 50% flowering in Advanced Varietal Trial (AVT) on Winged bean : 2007 (Plains)

S. No.	Genotypes	Ambikapur	Bangalore	Rahuri	Ranchi	Mean	Rank
	AVT-II						
1	Dwarf Mutant	82.25	65.33	57.00	81.33	71.48	8
2	EC038955	85.25	66.33	57.00	72.00	70.15	4
3	EC142665	83.50	60.00	56.33	82.67	70.63	5
4	EC178271	84.50	63.67	59.67	84.00	72.96	9
5	EC178313	81.75	65.67	63.67	82.67	73.44	10
6	EC178331	81.00	64.33	57.00	75.67	69.50	3
7	IC026945	82.00	69.33	55.67	77.67	71.17	6
8	Mysore Local	79.50	65.67	56.00	83.67	71.21	7
9	NBRI-Sel.	82.00	64.33	55.67	72.00	68.50	1
10	AKWB-1 (C)	**81.50**	**64.67**	**56.33**	**72.67**	68.79	2
	Mean	**82.33**	**64.93**	**57.43**	**78.43**	**70.78**	
	CD (0.05)	**4.90**	**1.56**	**2.84**	**3.71**		
	CV (%) error	**2.90**	**1.40**	**2.89**	**2.76**		

Table 108. Days to maturity in Advanced Varietal Trial (AVT) on Winged bean : 2007 (Plains)

S. No.	Genotypes	Ambikapur	Bangalore	Rahuri	Ranchi	Mean	Rank	Location	Frequency
	AVT-II								
1	Dwarf Mutant	167.00	153.00	***150.00***	***182.00***	161.67	3	4	2/4
2	EC038955	***162.00***	152.00	151.33	***178.33***	160.56	1	4	2/4
3	EC142665	***162.00***	150.33	151.33	***182.33***	161.33	2	4	2/4
4	EC178271	165.00	***150.00***	155.33	190.00	165.11	7	4	1/4
5	EC178313	***159.00***	154.33	159.00	192.00	168.44	10	4	1/4
6	EC178331	164.00	155.67	151.33	***182.67***	163.22	5	4	1/4
7	IC026945	***160.00***	155.67	150.33	194.67	166.89	8	4	1/4
8	Mysore Local	***156.00***	157.00	153.00	***183.67***	164.56	6	4	2/4
9	NBRI-Sel.	***161.50***	***149.67***	151.33	***186.00***	162.33	4	4	3/4
10	AKWB-1 (C)	**165.50**	**152.00**	**153.67**	**195.00**	166.89	9	4	
	Mean	**162.20**	**152.97**	**152.67**	**186.67**	**164.10**			
	CD (0.05)	**3.20**	**1.77**	**3.58**	**5.02**				
	CV (%) error	**0.87**	**0.68**	**1.37**	**1.57**				

Table 109. 100-seed weight (g) in Advanced Varietal Trial (AVT) on Winged bean : 2007 (Plains)

S. No.	Genotypes	Bangalore	Rahuri	Ranchi	Mean	Rank
	AVT-II					
1	Dwarf Mutant	19.57	30.01	26.23	25.27	8
2	EC038955	19.50	21.48	30.77	23.92	9
3	EC142665	18.93	31.31	33.23	27.82	1
4	EC178271	20.03	28.19	31.40	26.54	4
5	EC178313	19.23	29.43	30.03	26.23	5
6	EC178331	20.97	27.07	29.40	25.81	7
7	IC026945	18.10	24.31	28.83	23.75	10
8	Mysore Local	19.23	30.32	31.33	26.96	3
9	NBRI-Sel.	19.13	27.66	30.97	25.92	6
10	AKWB-1 (C)	**19.27**	**29.28**	**32.60**	27.05	2
	Mean	**19.40**	**27.90**	**30.48**	**25.93**	
	CD (0.05)	**2.96**	**1.46**	**5.16**		
	CV (%) error	**8.89**	**3.05**	**9.87**		

Table 110. Green pod yield (q/ha) in Advanced Varietal Trial (AVT) on Winged bean : 2007 (Plains)

S. No.	Genotypes	Ambikapur	Bangalore*	Rahuri	Mean	Rank
	AVT-II					
1	Dwarf Mutant	***167.50***	2.97	58.04	112.77	2
2	EC038955	97.22	***4.70***	58.83	78.03	9
3	EC142665	***163.61***	3.07	50.43	107.02	4
4	EC178271	119.03	***4.30***	55.68	87.35	6
5	EC178313	187.50	3.20	59.90	123.70	1
6	EC178331	158.61	3.90	62.50	110.55	3
7	IC026945	89.39	***5.20***	54.04	71.72	10
8	Mysore Local	154.31	3.07	58.84	106.57	5
9	NBRI-Sel.	104.72	3.07	53.17	78.94	8
10	AKWB-1 (C)	**108.47**	**3.40**	**56.82**	82.65	7
	Mean	**135.04**	**3.69**	**56.83**	95.93	
	CD (0.05)	**54.15**	**0.84**	**8.70**		
	CV (%) error	**17.74**	**13.22**	**8.93**		

**** Data are not included in overall mean***

Table 111. Performance of Kalingada entries in Advanced Varietal Trial (AVT) during 2007 (Plains)

S. No.	Genotypes	Mean Number of fruits per plant	Mean seed yield over locations (q/ha)			Percent increase/decrease over qualifying variety
			Mean	Location	Rank	
1	SKNK-102	3.72	2.09	2	5	27.51
2	SKNK-112	3.90	1.83	2	8	11.76
3	SKNK-136	4.88	2.21	2	3	34.63
4	SKNK-138	3.17	1.76	2	9	7.05
5	SKNK-140	3.35	1.67	2	10	2.08
6	SKNK-645	4.33	1.61	2	12	-1.96
7	SKNK-648	3.53	1.00	2	17	-38.79
8	SKNK-653	5.05	2.64	2	2	60.67
9	SKNK-659	2.42	1.31	2	15	-19.87
10	SKNK-665	4.20	2.83	2	1	72.45
11	SKNK-674	3.73	1.33	2	14	-18.87
12	SKNK-676	3.25	1.05	2	16	-35.72
13	SKNK-678	3.45	1.51	2	13	-7.91
14	SKNK-679	3.27	2.20	2	4	34.35
15	SKNK-680	4.35	1.99	2	6	21.53
16	SKNK-681	2.13	0.67	2	18	-58.93
17	SKNK-683	4.47	1.99	2	7	21.38
18	GK-1 (C)	3.02	1.64	2	11	0.00
	Mean	**3.68**	**1.74**			

Table 112. Different characters of Kalingada entries in Advanced Varietal Trial (AVT) at various location during 2007 (Plains)

S.No.	Genotypes	100 seed weight (g)				Seed yield (q/ha)					
		Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank	Location	Frequency
1	SKNK-102	5.97	***6.89***	6.43	8	1.38	***2.81***	2.09	5	2	1/2
2	SKNK-112	5.99	6.69	6.34	13	1.23	2.44	1.83	8	2	0/2
3	SKNK-136	6.38	6.66	6.52	5	***1.79***	2.63	2.21	3	2	1/2
4	SKNK-138	6.05	***7.46***	6.75	3	1.32	2.19	1.76	9	2	0/2
5	SKNK-140	6.17	6.65	6.41	11	1.22	2.13	1.67	10	2	0/2
6	SKNK-645	6.28	6.63	6.46	7	1.59	1.62	1.61	12	2	0/2
7	SKNK-648	5.43	6.53	5.98	16	1.06	0.94	1.00	17	2	0/2
8	SKNK-653	6.17	6.74	6.46	6	***2.19***	***3.08***	2.64	2	2	2/2
9	SKNK-659	5.39	6.45	5.92	18	1.15	1.48	1.31	15	2	0/2
10	SKNK-665	5.61	6.66	6.14	15	***2.16***	***3.49***	2.83	1	2	2/2
11	SKNK-674	6.35	***7.15***	6.75	4	0.88	1.78	1.33	14	2	0/2
12	SKNK-676	6.19	6.65	6.42	10	0.98	1.13	1.05	16	2	0/2
13	SKNK-678	6.68	6.18	6.43	9	***1.84***	1.18	1.51	13	2	1/2
14	SKNK-679	6.36	***7.46***	6.91	1	***2.01***	2.40	2.20	4	2	1/2
15	SKNK-680	***6.88***	***6.80***	6.84	2	1.58	2.40	1.99	6	2	0/2
16	SKNK-681	6.24	6.56	6.40	12	0.28	1.06	0.67	18	2	0/2
17	SKNK-683	5.72	6.18	5.95	17	0.62	***3.36***	1.99	7	2	1/2
18	GK-1 (C)	6.01	6.65	6.33	14	1.11	2.17	1.64	11	2	
	Mean	**6.10**	**6.72**	**6.41**		**1.36**	**2.13**	**1.74**			
	CD(0.05)	**0.73**	**0.14**			**0.65**	**0.58**				
	CV (%) error	**7.45**	**1.26**			**29.91**	**17.12**				

Table 113. Different characters of Kalingada entries in Advanced Varietal Trial (AVT) at various location during 2007 (Plains)

S.No.	Genotypes	No. of fruits per plant				Fruit diameter (cm)				Fruits yield (q/ha)					
		Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank	Mandor	S.K. Nagar	Mean	Rank	Location	Frequency
1	SKNK-102	3.77	***3.67***	3.72	9	7.95	16.47	12.21	17	21.11	***81.10***	51.10	9	2	1/2
2	SKNK-112	4.90	***2.90***	3.90	7	8.62	18.40	13.51	11	41.48	***82.41***	61.95	5	2	1/2
3	SKNK-136	6.27	***3.50***	4.88	2	8.47	19.27	13.87	8	***45.19***	***95.29***	70.24	2	2	2/2
4	SKNK-138	3.47	***2.87***	3.17	15	8.77	18.57	13.67	9	29.26	***82.46***	55.86	8	2	1/2
5	SKNK-140	4.30	2.40	3.35	12	7.67	18.13	12.90	16	30.37	58.25	44.31	11	2	0/2
6	SKNK-645	5.73	***2.93***	4.33	5	8.42	17.43	12.93	15	31.48	48.61	40.05	16	2	0/2
7	SKNK-648	4.50	***2.57***	3.53	10	7.75	18.20	12.98	14	21.48	63.11	42.30	14	2	0/2
8	SKNK-653	***6.83***	***3.27***	5.05	1	9.05	19.17	14.11	5	***55.93***	***80.30***	68.12	3	2	2/2
9	SKNK-659	2.90	1.93	2.42	17	7.79	***22.73***	15.26	2	28.15	***73.53***	50.84	10	2	1/2
10	SKNK-665	5.73	***2.67***	4.20	6	***9.30***	***20.97***	15.13	3	***56.67***	***100.05***	78.36	1	2	2/2
11	SKNK-674	4.77	***2.70***	3.73	8	7.99	20.03	14.01	7	25.18	61.71	43.45	12	2	0/2
12	SKNK-676	5.00	1.50	3.25	14	8.41	19.73	14.07	6	35.18	45.65	40.42	15	2	0/2
13	SKNK-678	5.00	1.90	3.45	11	9.54	17.27	13.41	12	***48.15***	37.56	42.85	13	2	1/2
14	SKNK-679	3.57	***2.97***	3.27	13	9.23	***21.70***	15.46	1	43.33	69.01	56.17	7	**2**	0/2
15	SKNK-680	5.67	***3.03***	4.35	4	***9.26***	17.83	13.55	10	***54.07***	***72.34***	63.21	4	2	2/2
16	SKNK-681	2.83	1.43	2.13	18	7.85	15.41	11.63	18	11.11	43.15	27.13	18	2	0/2
17	SKNK-683	5.23	***3.70***	4.47	3	8.06	***20.97***	14.52	4	18.52	***95.55***	57.03	6	2	1/2
18	GK-1 (C)	4.33	1.70	3.02	16	8.24	18.57	13.41	13	28.52	51.55	40.03	17	2	
Mean		**4.71**	**2.65**	**3.68**		**8.47**	**18.94**	**13.70**		**34.73**	**68.98**	**51.86**			
CD(0.05)		**2.10**	**0.85**			**1.00**	**2.24**			**16.40**	**19.99**				
CV (%) error		**27.80**	**20.06**			**7.36**	**7.40**			**29.50**	**18.11**				

Table 114. Performance of Kankoda entries in Advanced Varietal Trial (AVT) during 2007 (Plains)

S. No.	Genotypes	Mean fruit setting (days)	Mean yield over locations (q/ha)			Percent increase/decrease over qualifying variety
			Mean	Location	Rank	
	AVT - II					
1	NDM – 1	52.22	7.79	3	7	-24.25
2	Phule MD 05-1	52.22	9.34	3	2	-9.17
3	Phule MD 05-2	54.22	6.42	3	10	-37.51
4	RMF-01	56.42	8.75	4	4	-14.84
5	RMF-17	57.83	8.40	4	6	-18.34
6	RMF-27	56.08	8.47	4	5	-17.65
7	RMF 05-P-4	53.75	9.33	4	3	-9.29
8	RMF 07-P-1	56.50	7.77	4	8	-24.44
9	SKNA 501	52.44	6.63	3	9	-35.47
10	RMF 37 (C)	52.42	10.28	4	1	0.00
	Mean	**54.75**	**8.70**			

Table 115. Fruit yield (q/ha) in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Bhubaneswar	Faizabad	Rahuri	Ranchi	Mean	Rank	Location	Frequency
	AVT - II								
1	NDM – 1	6.98	10.42	-	5.97	7.79	7	3	0/3
2	Phule MD 05-1	***14.48***	7.50	-	6.03	9.34	2	3	1/3
3	Phule MD 05-2	7.60	5.83	-	5.83	6.42	10	3	0/3
4	RMF-01	10.21	7.71	11.66	5.44	8.75	4	4	0/4
5	RMF-17	10.83	6.25	10.38	6.12	8.40	6	4	0/4
6	RMF-27	11.67	4.79	11.58	5.82	8.47	5	4	0/4
7	RMF 05-P-4	11.77	7.50	12.37	5.67	9.33	3	4	0/4
8	RMF 07-P-1	6.04	9.33	10.36	5.33	7.77	8	4	0/4
9	SKNA 501	9.58	5.83	-	4.48	6.63	9	3	0/3
10	RMF 37 (C)	13.33	10.00	12.15	5.65	10.28	1	4	
	Mean	**10.25**	**7.52**	**11.42**	**5.63**	**8.70**			
	CD(0.05)	**1.13**	**2.13**	**1.59**	**0.70**				
	CV (%) error	**6.41**	**16.50**	**7.67**	**7.21**				

Table 116. Days to fruit setting in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Bhubaneswar	Faizabad	Rahuri	Ranchi	Mean	Rank
	AVT - II						
1	NDM – 1	56.67	***62.00***	**-**	***38.00***	52.22	1
2	Phule MD 05-1	52.67	66.67	**-**	***37.33***	52.22	2
3	Phule MD 05-2	53.33	65.00	**-**	44.33	54.22	6
4	RMF-01	54.00	66.33	56.33	49.00	56.42	8
5	RMF-17	56.67	74.33	52.33	48.00	57.83	10
6	RMF-27	53.33	72.67	54.67	43.67	56.08	7
7	RMF 05-P-4	***45.67***	71.00	56.00	42.33	53.75	5
8	RMF 07-P-1	51.00	71.67	56.67	46.67	56.50	9
9	SKNA 501	48.67	65.33	**-**	43.33	52.44	4
10	RMF 37 (C)	49.33	66.67	52.00	41.67	52.42	3
	Mean	**52.13**	**68.17**	**54.67**	**44.04**	**54.75**	
	CD(0.05)	**2.18**	**3.89**	**3.89**	**2.56**		
	CV (%) error	**2.44**	**3.33**	**3.91**	**3.43**		

Table 117. Number of fruits per plant in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Ambikapur	Bhubaneswar	Faizabad	Rahuri	Ranchi	Mean	Rank
	AVT - II							
1	NDM – 1	32.22	78.83	28.33	-	32.67	43.01	10
2	Phule MD 05-1	***73.31***	***133.47***	27.00	-	34.00	66.94	1
3	Phule MD 05-2	50.58	78.73	23.00	-	37.67	47.49	9
4	RMF-01	48.62	112.57	22.67	51.67	40.00	55.10	6
5	RMF-17	40.54	102.83	26.33	51.67	40.33	52.34	8
6	RMF-27	56.11	123.30	27.67	55.67	35.00	59.55	4
7	RMF 05-P-4	***82.53***	104.80	28.67	57.00	39.33	62.47	3
8	RMF 07-P-1	63.92	***150.10***	***34.67***	49.00	37.00	66.94	2
9	SKNA 501	32.39	122.13	***31.00***	-	33.33	54.71	7
10	RMF 37 (C)	53.58	114.50	27.00	55.00	36.67	57.35	5
	Mean	**53.38**	**112.13**	**27.63**	**53.33**	**37.04**	**56.70**	
	CD(0.05)	**9.06**	**14.89**	**3.81**	**4.57**	**5.79**		
	CV (%) error	**9.90**	**7.74**	**8.03**	**4.71**	**9.23**		

Table 118. Days taken to first picking in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Bhubaneswar	Faizabad	Rahuri	Ranchi	Mean	Rank
	AVT - II						
1	NDM – 1	69.00	72.00	-	43.67	61.56	2
2	Phule MD 05-1	64.67	76.67	-	***36.33***	59.22	1
3	Phule MD 05-2	71.33	74.33	-	45.67	63.78	4
4	RMF-01	***63.00***	77.33	74.33	44.67	64.83	6
5	RMF-17	***61.33***	84.33	72.33	43.00	65.25	8
6	RMF-27	***62.33***	82.67	72.33	47.67	66.25	9
7	RMF 05-P-4	65.67	81.33	76.33	48.00	67.83	10
8	RMF 07-P-1	***60.33***	80.33	72.33	47.67	65.17	7
9	SKNA 501	66.33	75.33	-	48.00	63.22	3
10	RMF 37 (C)	65.67	76.67	72.33	41.67	64.08	5
	Mean	**64.97**	**78.10**	**73.33**	**44.74**	**65.29**	
	CD(0.05)	**2.03**	**4.77**	**5.31**	**3.88**		
	CV (%) error	**1.82**	**3.56**	**3.98**	**5.07**		

Table 119. Days taken to last picking in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Bhubaneswar	Faizabad	Rahuri	Ranchi	Mean	Rank
	AVT - II						
1	NDM – 1	78.33	102.67	-	84.00	88.33	1
2	Phule MD 05-1	107.67	98.00	-	90.67	98.78	2
3	Phule MD 05-2	109.33	98.33	-	90.67	99.44	3
4	RMF-01	108.00	102.00	113.33	90.67	103.50	10
5	RMF-17	103.67	101.00	111.33	89.33	101.33	7
6	RMF-27	105.33	102.33	113.67	88.67	102.50	9
7	RMF 05-P-4	99.00	105.33	113.33	85.33	100.75	5
8	RMF 07-P-1	105.67	102.67	111.67	83.33	100.83	6
9	SKNA 501	107.33	102.33	-	94.67	101.44	8
10	RMF 37 (C)	105.33	100.67	111.00	84.67	100.42	4
	Mean	**102.97**	**101.53**	**112.39**	**88.67**	**101.39**	
	CD(0.05)	**31.56**	**3.30**	**4.98**	**6.34**		
	CV (%) error	**17.88**	**1.89**	**2.43**	**4.19**		

Table 120. Number of pickings in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Ambikapur	Bhubaneswar	Faizabad	Rahuri	Ranchi	Mean	Rank
	AVT - II							
1	NDM – 1	4.33	8.00	3.00	-	4.00	4.83	5
2	Phule MD 05-1	5.00	9.00	2.67	-	3.67	5.08	4
3	Phule MD 05-2	5.33	7.33	3.00	-	3.33	4.75	6
4	RMF-01	4.67	***11.00***	2.67	4.00	3.33	5.13	2
5	RMF-17	3.67	8.33	2.67	3.67	3.67	4.40	10
6	RMF-27	4.67	10.00	3.33	3.67	4.00	5.13	3
7	RMF 05-P-4	5.00	8.33	3.00	3.67	3.33	4.67	8
8	RMF 07-P-1	5.33	***11.00***	2.67	4.00	4.00	5.40	1
9	SKNA 501	4.00	7.33	3.00	-	3.33	4.42	9
10	RMF 37 (C)	4.33	8.67	3.33	3.67	3.67	4.73	7
	Mean	**4.63**	**8.90**	**2.93**	**3.78**	**3.59**	**4.77**	
	CD(0.05)	**1.72**	**1.55**	**0.78**	**1.23**	**1.04**		
	CV (%) error	**21.70**	**10.17**	**15.53**	**17.87**	**16.67**		

Table 121. Single fruit weight (g) in Advanced Varietal Trial (AVT) on Kankoda : 2007 (Plains)

S. No.	Genotypes	Bhubaneswar	Rahuri	Ranchi	Mean	Rank
	AVT - II					
1	NDM – 1	***7.43***	**-**	6.23	6.83	8
2	Phule MD 05-1	***9.19***	**-**	6.60	7.90	6
3	Phule MD 05-2	5.31	**-**	6.37	5.84	10
4	RMF-01	6.87	11.18	6.40	8.15	5
5	RMF-17	***7.39***	11.22	6.77	8.46	3
6	RMF-27	***8.03***	10.72	7.00	8.59	1
7	RMF 05-P-4	5.96	12.04	7.67	8.55	2
8	RMF 07-P-1	6.04	10.39	6.67	7.70	7
9	SKNA 501	6.30	**-**	6.40	6.35	9
10	RMF 37 (C)	6.51	12.49	5.97	8.32	4
	Mean	**6.90**	**11.34**	**6.65**	**8.30**	
	CD(0.05)	**0.38**	**1.71**	**0.96**		
	CV (%) error	**3.25**	**8.26**	**8.50**		

Table 122. Performance of Tumba entries in Initial Varietal Trial (IVT) during 2007 (Plains) - Mandor

S. No.	Genotypes	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over qualifying variety
			Mean	Location	Rank	
1	RMT 401	2.68	1.02	1	5	14.23
2	RMT 402	2.47	0.89	1	9	-0.37
3	RMT 403	2.47	1.04	1	4	16.48
4	RMT 404	2.54	1.20	1	2	34.83
5	RMT 405	2.71	0.75	1	13	-15.36
6	RMT 406	2.31	1.00	1	6	12.36
7	RMT 407	2.41	1.34	1	1	50.19
8	RMT 408	2.43	1.05	1	3	17.60
9	RMT 409	2.55	0.83	1	11	-6.37
10	RMT 501	2.25	0.71	1	14	-19.85
11	RMT 502	2.36	0.86	1	10	-3.00
12	RMT 509	2.36	0.70	1	15	-20.97
13	RMT 515	2.49	0.78	1	12	-12.36
14	RMT 516	2.52	0.97	1	7	9.36
15	RMT 59 (C)	2.43	0.89	1	8	0.00
	Mean	**2.46**	**0.94**			

Table 123. Different characters of Tumba entries in Initial Varietal Trial (IVT) during 2007 at Mandor (Plains)

S.No.	Genotypes	Fruit yeild (q/ha)	Number of fruits per plant	Single fruit weight (g)	Fruit circumference (cm)	100-seed weight (g)	Seed yield (q/ha)	Rank
1	RMT 401	13.61	5.83	84.13	18.73	2.68	1.02	5
2	RMT 402	10.63	3.77	96.70	22.03	2.47	0.89	9
3	RMT 403	16.02	4.17	131.17	21.33	2.47	1.04	4
4	RMT 404	17.15	6.13	95.97	21.23	2.54	1.20	2
5	RMT 405	6.89	3.47	83.33	19.23	2.71	0.75	13
6	RMT 406	16.22	5.67	111.33	21.03	2.31	1.00	6
7	RMT 407	22.95	6.70	119.10	23.03	2.41	1.34	1
8	RMT 408	12.04	4.60	102.33	18.90	2.43	1.05	3
9	RMT 409	10.32	3.37	104.33	20.47	2.55	0.83	11
10	RMT 501	11.15	3.33	115.33	19.40	2.25	0.71	14
11	RMT 502	10.57	4.80	85.00	18.43	2.36	0.86	10
12	RMT 509	10.63	4.27	99.90	19.73	2.36	0.70	15
13	RMT 515	9.43	4.63	102.67	22.33	2.49	0.78	12
14	RMT 516	18.82	5.20	125.40	20.67	2.52	0.97	7
15	RMT 59 (C)	14.71	4.17	120.73	21.47	2.43	0.89	8
	Mean	**13.41**	**4.67**	**105.16**	**20.54**	**2.46**	**0.94**	
	CD (0.05)	**3.90**	**1.63**	**13.31**	**2.61**	**0.25**	**0.31**	
	CV (%) Error	**17.36**	**20.88**	**7.56**	**7.60**	**6.09**	**19.57**	

Table 124. Performance of Jatropha entries in Initial Varietal Trial (IVT) during 2007 (Plains)

S. No.	Genotypes	Mean 100 seed weight (g)	Mean seed yield over locations (q/ha)			Percent increase/decrease over qualifying variety
			Mean	Location	Rank	
1	Hansraj	54.95	12.00	3	5	-25.28
2	ISJ 1	54.27	9.23	3	7	-42.55
3	JH 1	59.03	15.79	3	2	-1.65
4	Phule 1	54.11	8.10	3	8	-49.57
5	S.K. Nagar (Big)	57.34	13.34	3	3	-16.91
6	SKNJ 4	53.30	9.30	3	6	-42.07
7	Urlikanchan	54.10	12.33	3	4	-23.23
8	Chhatrapati (C)	57.27	16.06	3	1	0.00
	Mean	**55.55**	**12.02**			

Table 125. Seed yield (q/ha) in Initial Varietal Trial (IVT) on Jatropha : 2007 (Plains)

S. No.	Genotype	Bhubaneswar	Hisar	S.K. Nagar	Mean	Location	Rank	Frequency
1	Hansraj	11.96	21.44	2.60	12.00	3	5	0/3
2	ISJ 1	8.04	15.63	4.01	9.23	3	7	0/3
3	JH 1	8.13	***35.38***	3.88	15.79	3	2	1/3
4	Phule 1	8.79	14.59	0.91	8.10	3	8	0/3
5	S.K. Nagar (Big)	12.96	23.44	3.63	13.34	3	3	0/3
6	SKNJ 4	10.08	14.00	3.83	9.30	3	6	0/3
7	Urlikanchan	12.63	22.31	2.05	12.33	3	4	0/3
8	Chhatrapati (C)	16.46	26.94	4.78	16.06	3	1	
	Mean	**11.13**	**21.71**	**3.21**	**12.02**			
	CD(0.05)	**1.74**	**2.17**	**0.78**				
	CV (%) error	**8.92**	**6.79**	**13.85**				

Table 126. Plant height (cm) in Initial Varietal Trial (IVT) on Jatropha : 2007 (Plains)

S. No.	Genotype	Bhubaneswar	Hisar	S.K. Nagar	Mean	Rank
1	Hansraj	210.33	406.53	247.67	288.18	6
2	ISJ 1	211.00	338.43	241.00	263.48	8
3	JH 1	224.67	***482.05***	220.67	309.13	1
4	Phule 1	206.67	354.15	243.00	267.94	7
5	S.K. Nagar (Big)	209.67	428.55	248.33	295.52	3
6	SKNJ 4	209.00	417.35	253.67	293.34	4
7	Urlikanchan	214.67	411.58	242.33	289.53	5
8	Chhatrapati (C)	231.33	441.03	237.00	303.12	2
	Mean	**214.67**	**409.96**	**241.71**	**288.78**	
	CD(0.05)	**20.76**	**26.94**	**25.40**		
	CV (%) error	**5.51**	**4.47**	**5.99**		

Table 127. Number of primary branches per plant in Initial Varietal Trial (IVT) on Jatropha : 2007 (Plains)

S. No.	Genotype	Bhubaneswar	Hisar	S.K. Nagar	Mean	Rank
1	Hansraj	35.20	14.50	6.27	18.66	6
2	ISJ 1	35.20	14.75	5.93	18.63	7
3	JH 1	38.87	***33.75***	5.27	25.96	1
4	Phule 1	34.00	14.25	5.80	18.02	8
5	S.K. Nagar (Big)	34.33	24.75	6.07	21.72	3
6	SKNJ 4	36.53	15.50	5.93	19.32	5
7	Urlikanchan	34.53	19.25	5.93	19.91	4
8	Chhatrapati (C)	36.53	27.00	5.33	22.96	2
	Mean	**35.65**	**20.47**	**5.82**	**20.65**	
	CD(0.05)	**5.53**	**3.28**	**1.71**		
	CV (%) error	**8.84**	**10.91**	**16.73**		

Table 128. 100 seed weight (g) in Initial Varietal Trial (IVT) on Jatropha : 2007 (Plains)

S. No.	Genotype	Bhubaneswar	Hisar	S.K. Nagar	Mean	Rank
1	Hansraj	67.47	50.85	46.53	54.95	4
2	ISJ 1	61.63	45.83	***55.35***	54.27	5
3	JH 1	64.53	***61.75***	***50.82***	59.03	1
4	Phule 1	61.67	45.70	***54.97***	54.11	6
5	S.K. Nagar (Big)	62.57	54.55	***54.90***	57.34	2
6	SKNJ 4	63.83	45.95	***50.11***	53.30	8
7	Urlikanchan	63.17	52.80	46.35	54.10	7
8	Chhatrapati (C)	71.60	55.30	44.91	57.27	3
	Mean	**64.56**	**51.59**	**50.49**	**55.55**	
	CD(0.05)	**2.31**	**0.72**	**3.83**		
	CV (%) error	**2.04**	**0.95**	**4.32**		

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 five locations viz. Ranichauri, Sangla, Almora, Palampur and Shimla. The results were received from four locations. The checks used were PRA 2, PRA 3, Annapurna, VL-44 and Durga. The list of promising lines for all the characters have been presented in table 129 and the range and means in table 130.

At GBPUA&T, Ranichauri a set of 50 genotypes and four checks were evaluated for 11 characters. The longest inflorescence (61.66 cm) was recorded in the genotype IC 540812 followed by IC 415220 (60.00 cm). EC 519549 (48.00 days) was earliest in flowering and IC 415314 (114.00 days) was earliest in maturity. The maximum plant height (192.66 cm) was observed in the genotype IC 540890 followed by IC 540870 (183.00 cm). The genotype IC 415220 was observed as the highest yielder with 36.75 g grain yield per plant followed by IC 423408 (31.15 g).

A total of 50 genotypes were also evaluated at CSKHPKV, Sangla for five characters only. EC 519522 (62 days) was earliest in flowering as well as in maturity (130.00 days). Maximum plant height (171.00 cm) was observed in the genotype IC 540890 followed by EC 519549 (131.80 cm). The genotype IC 457397 (19.01 q/ha) was observed as the highest grain yielder followed by IC 423448 (18.01 q/ha).

A set of 50 genotypes and four checks were screened at NBPGR, Shimla for 12 quantitative and 12 qualitative characters (Table 131). The genotype, IC 415258 (80 days) was found superior to the check variety for days to 50%

flowering. Maximum plant height (321.35 cm) was recorded in the genotype, IC 415262. The longest inflorescence (106.45 cm) was recorded in the genotype, IC 415262 followed by IC 415264 (97.65 cm). IC 415448 (96.20 g) and IC 415128 (89.05 g) genotypes were found superior to the check variety in respect of grain yield per plant.

A set of 50 accessions and four checks were evaluated for 10 quantitative characters at Almora. Genotype IC 423448 (60.00 g/plant) was observed to be the highest grain yielder. The maximum plant height (230.00 cm) was observed in the accessions IC 423448 followed by IC 415282 (212.00 cm). The longest inflorescence (90.00 cm) was recorded in the genotype IC 423448 followed by IC 423400 (88.00 cm). Genotype EC 519543 (54.00 days) was earliest in flowering while the genotype EC 519554 (89.00 days) was earliest in maturity.

The performance of a entry based on adjusted value, average over the locations has been summarized in the following paragraphs:

The length of inflorescence of the accessions was the highest at Shimla (73.89 cm) followed by Almora (60.99 cm). Inflorescence length was the lowest (39.86 cm) at Ranichauri. Based on the average over three locations, the accession IC423468 had the longest inflorescence (69.17 cm).

Number of fingers per inflorescence was the highest at Almora (58.62) followed by Ranichauri centre (33.82). Based on the average over two locations the entry EC519554 had the highest number of fingers (62.67).

Test weight expressed in terms of weight of 10 ml seed recorded at three centres showed that it was the highest at Ranichauri (13.02 g) and very low at Almora (6.75 g) and Shimla (6.95 g). Based on the average over three locations the entry, IC415264 (9.72 g) showed the highest test weight.

The length of petiole of the accessions was the highest at Shimla (14.30 cm) followed by Ranichauri (11.39 cm). Petiole length was the lowest (8.49 cm) at Almora. Based on the average over three locations, the accession EC519554 had the longest petiole length (14.53 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, HPKV, Sangla and VPKAS, Almora along

with four checks Himpriya, VL 7, PRB 1 and Shimla B-1. The results were received from all the locations. The list of promising accessions for all the characters have been presented in table 132 and mean and range in table 133.

A set of 25 genotypes and three checks Himpriya, PRB 1 and Shimla B-1 were evaluated at GBPUA&T, Ranichauri for yield and its related characters. The entries EC 104484, IC 540851, IC 540853, IC 547385 (32.00 days) were found superior to the check variety for days to flowering and IC 016580 (99.00 days) for maturity and IC 016579 (49.58 g) for seed yield per plant. Maximum plant height (113.60 cm) was recorded in the genotype EC 104484 while maximum number of branches (1.60) was observed in the genotype IC 540859.

A set of 26 genotypes and two checks was screened for 13 yield related attributes at Almora. The entry IC 018664 (20 days) was observed to be early flowering. No entry was found superior to the check variety for days to maturity. The genotype EC 037289 was recorded as the highest yielder with 13.20 g seed yield per plant followed by EC 001537 with seed yield of 8.00 g per plant. The maximum plant height (152.00 cm) was recorded in the genotype IC 341653 followed by EC 104484 (142.00 cm).

At NBPGR, Shimla a set of 26 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 for flowering and maturity. The same set of 26 accessions was also characterized for 10 qualitative traits (Table 134).

A set of 25 genotypes and two checks Himpriya and Shimla B-1 were evaluated at Sangla for yield and its related characters. The entry EC 018300 (51.00) was found superior to the check variety for days to flowering and the entry IC 540851 produced highest seed yield per plant (9.00 g) and seed yield (32.18 q/ha). Maximum plant height (153.00 cm) was recorded in the genotype EC 018629.

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

Significant difference was observed among the entries for seed yield per plant at the four locations. Mean seed yield per plant was high at Ranichauri (25.98 g) but very low at Sangla (4.83 g) and Almora (4.84 g). Based on the average over locations, no entry was superior to check variety.

Average plant height of the entries was the highest at Shimla (149.68 cm) followed by at Almora (119.63 cm). Based on average over four locations, no entry was taller than the check variety.

Flowering time varied from centre to centre but mean flowering time was the earliest at Almora (34.89 days) followed by at Shimla (47.80 days). On the basis of average over four locations no accession was found superior to the best check.

Maturity period also showed similar trend to that of the flowering time. Average maturity period was the earliest at Almora (72.48 days) followed by at Ranichauri (107.75 days). On the basis of average over the locations, no accession was found superior to the best check variety.

3.1.3 CHENOPODS (*Chenopodium* spp.)

Twenty five genotypes were planned for screening at three locations viz. NBPGR, Shimla; CSK HPKV, Palampur and GBPUA&T, Ranichauri along with local checks. Data were received from two centres only. The list of promising lines for all the characters have been presented in table 135 and mean and range in table 136.

Twenty five genotypes along with three local checks were evaluated for 10 qualitative (Table 137) and eight quantitative characters at Shimla. Early flowering (76 days) was observed in the genotype IC 540831. No entry was superior to best check in maturity. Highest inflorescence length (54.26 cm) was recorded in the genotype NIC 22496 followed by IC 540836 (53.20 cm). The genotype EC 507733 (50.05 g) was recorded as the top yielding line as well as having highest test weight (1.20 g). Genotype IC 363733 was the tallest entry (333.55 cm).

A total of twenty five genotypes was evaluated for six yield related characters at GBPUA&T, Ranichauri. The genotype IC 540836 was found superior to the check varieties for early flowering (53 days) and early maturity (119

days). Maximum plant height (92.00 cm) was found in the genotype IC 540842 followed by IC 540831 (90.00 days). The longest inflorescence length (8.00 cm) was observed in the genotypes IC 540842, IC 540836, NIC 22498 and IC 201680. Highest seed yield was recorded (4.90 q/ha) in the genotype IC 540837 followed by IC 540831 (3.68 q/ha).

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

The average plant height of the entries was the highest at Shimla (264.85 cm) followed by at Ranichauri (53.12 cm). Based on the average over two locations, IC 109731 had the highest plant height (289.25 cm).

Flowering time varied widely at both the centres but mean flowering time was the earliest at Ranichauri (61.41 days) followed by at Shimla (96.46 days). On the basis of average over two locations the accession IC 540836 (65.50 days) was found superior to the best check.

The longest inflorescence length was observed at Shimla (43.86 cm) and very low at Ranichauri (6.59 cm). On the basis of average over two locations the genotype NIC 22496 (54.25 cm) was found to have longest inflorescence length.

3.1.4 ADZUKI BEAN (*Vigna angularis*)

A set of 25 accessions supplied by NBPGR, Shimla was planned to be evaluated along with local check 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 138 and the mean and range in table 139.

At Ranichauri twenty five accessions including exotics were evaluated along with check HPU 51 for nine yield related characters. Genotype EC 018256 was recorded as early flowering and EC 018254 as early maturing type with 47 days and 98 days, respectively. EC 340254 was found to be the highest seed yielder (6.03 q/ha) followed by genotype EC 240246 (5.30 q/ha). The longest pod was observed in the genotypes EC 018257 and EC 108080 (8.00 cm) followed by EC 281186 (7.40 cm). The maximum plant height (46.00 cm) was found in the genotype EC 340240 followed by EC 018257 (44.80 cm).

A total of 25 genotypes was evaluated along with checks HPU 51 and Totru local in an Augmented Design at NBPGR, Shimla for qualitative (Table 140) and quantitative characters. The tallest plant (84.70 cm) was found in the genotype IC 341949. Early flowering (64 days) was recorded in the genotypes, EC 120460, EC 281186 and IC 341961 whereas early maturity (102 days) was recorded in the genotypes IC 341944 and IC 341952 followed by IC 341949 (108 days). Maximum number of pods per plant (34.00) was found in the genotype, EC 240246 followed by EC 340244 (31.00). The genotype EC 340254 was observed as the highest seed yielder (67.74 g/plant).

At Palampur twenty four accessions were evaluated along with checks HPU 51 and Totru local for five yield related characters. Genotype EC 000372 was recorded as early flowering (48 days). EC 018257 and IC 341957 were found to be the highest seed yielder (30.00 q/ha) followed by genotype EC 087895 (28.34 q/ha). The maximum plant height (84.00 cm) was found in the genotype EC 340244 followed by IC 341944 (73.00 cm).

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

Flowering time varied from 64 to 83 days at Shimla, from 48 to 62 days at Palampur and from 47 to 72 days at Ranichauri. Mean flowering time was the earliest at Palampur (42.44 days) followed by at Ranichauri (58.03 days). On the basis of average over three locations, the entry EC 120460 was the earliest in flowering (45.33 days).

Average maturity period was the earliest at Palampur (85.21 days) and longest at Shimla (114.57 days). The genoptype IC 341952 was superior to the check variety based on average over three locations.

Average plant height was recorded to be the highest at Palampur (58.95 cm) followed by at Ranichauri (43.13 cm) and Shimla (43.06 cm). Based on average over three locations, the entry EC 340244 was the tallest (66.13 cm) entry.

Average seed yield was recorded to be the highest at Palampur (17.80 q/ha) and very low at Ranichauri (2.75 q/ha). The details of qualitative characters recorded at Shimla have been presented in table 140.

Based on average over two locations, the entry EC 018257 was the highest seed yielder (16.20 q/ha).

3.1.5 FABA BEAN (*Vicia faba*)

Germpalsm screening nursery consisting of 30 accessions supplied by CCS HAU, Hisar was planned to be evaluated at two locations viz. Ranichauri and Palampur. The results were received from only one location. The checks used were PRT-12 and Vikrant. The list of promising genotypes has been presented in table 141.

At Ranichauri, a set of 32 germplasm lines including the checks were evaluated for six quantitative characters. The genotype EC 249851 (86.00 days) was earlier in flowering and maturity (181.00 days). Maximum plant height (61.00 cm) was observed in the genotype EC 248945, followed by EC 025058 (54.00 cm). The entry EC 329668 (49.68 g) had the highest 100 seed weight while the genotype IC 243709 (34.66 q/ha) had the highest seed yield. The statistical parameters for all the characters have been given in table 142.

3.1.6 JOB'S TEAR (*Coix lacryma*-jobi)

Germplasm lines comprising 25 accessions were planned to be evaluated at four locations viz. Shillong, Ranichauri, Bhowali and Palampur. However, the results have been received from Ranichauri and Palampur. The list of promising genotypes of the two centres have been presented in table 143.

Six yield related characters were recorded at GBPUA&T, Ranichauri. The mean seed yield was found to be 1.67 q/ha in the genotype IC 521342. Highest no. of tillers per plant was found in the genotype IC 089387 (3.60) followed by IC 521340 (3.20). The genotype IC 340015 (113 days) and IC 416868 (114 days) were found early flowering while IC 416868 was observed to be early maturing (164.00 days). The highest plant height was found in the genotype IC 089387 (233.40 cm) followed by IC 416897 (216.40 cm).

Four yield related characters were recorded at Palampur. The mean seed yield was found to be 1.06 q/ha in the genotype IC 416829. The genotype IC 416824 (76.00 days) has shown early flowering followed by IC 089384 (78.67 days). The entry IC 524631 was observed to be early in maturity (111.00 days).

The highest plant height was found in the genotype IC 416831 (167.00 cm) followed by IC 416829 (166.33 cm).

The performance of the entries based on two centres (Palapmur and Ranichauri) has been given as under. The statistical parameters for all the characters have been given in table 144.

Flowering time was the earliest at Palampur (86.10 days) and quite delayed at Ranichauri (124.68 days). On the basis of average over two locations, no entry was early in flowering as compared to the check.

Average maturity period was the earliest at Palampur (118.98 days) and longest at Ranichauri (183.80 days). No entry was superior to the check based on average over two locations.

Average plant height was recorded to be the highest at Ranichauri (177.20 cm) followed by at Palampur (149.35 cm). Based on average over two locations, the line IC 089387 was the tallest (188.03 cm) entry.

Average seed yield was recorded to be the highest at Ranichauri (1.23 q/ha) and very low at Palampur (0.63 q/ha).

3.1.7 BHANGJIRA (*Perilla frutescense*)

Germplasm line of Perilla were planned to be evaluated at three locations viz. Shillong, Bhowali and Ranichauri. Results have been received only from Bhowali centre. The list of promising accessions for all the characters has been presented in table 145. Mean and range of the entries are presented in table 146.

A total of 65 genotypes including local check was evaluated for quantitative and qualitative characters (Table 146) at Bhowali centre. The entry IC 383371 was found earliest in flowering (125.00 days) and IC 538004 in maturity (215.00 days). The maximum plant height was observed in the genotype IC 521285 (168.00 cm) followed by IC 526701 (165.00 cm). The highest seed weight was recorded in the genotype IC 526684 (0.25 g) followed by IC 211608 (0.23 g).

Table 129. Promising lines in Grain Amaranth germplasm for various characters at various locations (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Ranichauri (Accessions 50)				
1.	Days to 50% flowering	48.00-73.00	EC519549, EC519554, IC547372, IC547375, EC519543, IC415297, IC415314, IC423537, IC540870, IC540890, IC547387 (< 54.67 days)	Durga (54.67 days)
2.	Days to maturity	114.00-139.00	IC415314, IC415272, IC415282, IC415318, IC547397, IC415284, IC415290, IC415418, IC547395,IC547372, IC547375, IC415297, IC415258, IC415264, IC415266, IC547381, IC547393, IC415426 (< 124.0 days)	Durga (124.00 days)
3.	Plant height (cm)	47.50-192.66	IC540890, IC540870, IC540812, IC540900, IC415220, IC540835, IC423408, IC540847 (> 155.44 cm)	PRA-2 (155.44 cm)
4.	Inflorescence length (cm)	16.33-61.66	IC540812, IC415220, IC540890, IC540892, IC540870, IC415232, IC540900, IC415243, IC415266, IC540835, IC423408, IC423468, IC415250, IC423537, IC415287, IC415222, IC423400, IC540847 (> 45.11 cm)	PRA-2 (45.11 cm)
5.	Leaf length (cm)	3.66-15.66	IC415220, EC519554, IC423408, IC540812, IC540870, IC421885, IC540890, IC423537, IC540847, IC415250, IC540900, IC540835, IC415260 (> 10.78 cm)	PRA-3 (10.78 cm)
6.	Leaf width (cm)	2.00-7.66	IC415220, IC423408, EC519554, IC540812, IC423537, IC540870, IC421885, IC540847, IC540900, IC540835, IC415250, IC415260, IC415232 (> 5.22 cm)	PRA-3 (5.22 cm)
7.	Petiole length (cm)	6.00-17.33	IC415220, IC415243, IC540890, IC415232, IC423537, IC423408, EC519554, IC540812, IC415266, IC540835, IC540870, IC415287, IC415222, IC421885, IC540892, IC415262 (> 13.11 cm)	PRA-2 (13.11 cm)
8.	No. of finger per inflorescence	16.50-52.33	IC540890, IC423408, IC423468, IC540812, IC423448, IC423400, IC415222, IC423537, IC415228, IC415224, IC415220, IC540870, IC540847, IC540892, IC415250 (> 38.89)	PRA-2 (38.89)
9.	Yield per plant (g)	4.99-36.75	IC415220, IC423408, IC415224, IC415232, EC519554, IC415228, IC415266, IC415250, IC540812, IC540835, IC415222, IC421885, IC415284, IC540900, IC423468 (> 18.40 g)	Annapurna (18.40 g)
10.	Test weight (g/10 ml)	12.14-14.00	IC415418, IC415426, IC415272, IC415266, IC415222, IC423468, IC415318, IC415250, IC547375, EC519549, IC415243, IC540900, IC415232, IC415282, IC547387 (> 13.27 g/10 ml)	PRA-2 (13.27 g/10 ml)

Sangla (Accessions 50)				
1.	Days to 50% flowering	62.00-76.00	EC519522, EC519549, IC457397, IC540870, IC547387, EC519543, EC519554, IC423537, IC547375, IC547381, IC547395, IC547379, IC547393, IC415287, IC547372 (< 67.33 days)	Durga (67.33 days)
2.	Days to maturity	130.00-142.00	EC519522, IC547381, IC547387, IC547375, IC415250 (> 133.33 days)	Durga (133.33 days)
3.	Plant height (cm)	25.60-171.00	IC540890, EC519549, EC519522, IC457397, IC423468, IC540835, IC423537, IC415272, IC415266, EC519554, IC423448, IC415284, IC540812, IC415318, IC540847, EC519543, IC415243, IC547379, IC415264, IC423400, IC547381, IC547395, IC547393, IC415254, IC540870, IC415287, IC547387, IC415258, IC415297 (> 83.33 cm)	Annapurna (83.33 cm)
4.	Paniculum girth (cm)	5.00-16.60	IC415220, IC457397, IC540835, IC547395, IC415228, IC415318, IC415264, IC415222, IC540890, EC519522, IC423468, IC540870, IC415243, IC547379, IC415232, IC423537, IC415224 (> 9.20 cm)	Annapurna (9.20 cm)
5.	Yield (q/ha)	9.33-19.01	IC457397, IC423448, IC540835, IC423408, IC540812, IC423537, IC415284, IC547379, IC415264, IC415220, IC415282, EC519522, IC415297, IC540870, IC547381, EC519543, IC415290, IC415426 (> 12.11 q/ha)	Annapurna (12.11 q/ha)
Shimla (Accessions 50)				
1.	Days to 50% flowering	80.00-113.00	IC415258, IC415264, EC519522 (< 91.80 days)	Durga (91.80 days)
2.	Days to maturity	142.00-166.00	IC415264 (< 143.20 days)	Durga (143.20 days)
3.	Plant height (cm)	171.70-321.35	IC415262, IC415224, IC547387, IC415290, IC540900, IC540812, IC415264, EC515454, IC540892, IC540847 (> 307.96 cm)	PRA-2 (307.96 cm)
4.	Inflorescence length (cm)	44.25-106.45	IC415262, IC415264, IC415224, IC415250, IC415448, IC423537, IC423468, IC547393, EC519549, IC415258, IC415128, IC547381, IC415290, IC415243, IC540890, IC415297, IC415222 (> 75.45 cm)	PRA-2 (75.45 cm)
5.	Leaf length (cm)	13.50-27.00	IC415297, IC421885 (> 25.28 cm)	Durga (25.28 cm)
6.	Yield per plant (g)	26.96-96.20	IC415448, IC415128, IC415232, IC415254 (> 82.40 g)	Annapurna (82.40 g)
7.	Lateral spikelet length (cm)	5.85-17.00	IC415318, IC415287, IC415297, IC415220, IC415262, IC415290, IC415266 (> 14.99 cm)	PRA-3 (14.99 cm)
8.	Test weight (g/10 ml)	5.00-8.00	IC415314, IC415290, IC415264, IC547393, EC519522, EC519549, IC540835, IC415222 (> 7.40 g/10 ml)	Durga (7.40 g/10 ml)

Almora (Accessions 50)				
1.	Days to 50% flowering	54.00-84.00	EC519543, IC547372, EC519549, IC547387, IC547393, EC519522, EC519554 (< 56.60 days)	VL-44 (56.60 days)
2.	Days to maturity	89.00-123.00	EC519554 (< 91.0 days)	VL44 (91.00 days)
3.	Plant height (cm)	90.00-230.00	IC423448, IC415282, IC415296, IC415220, IC415297, IC423400, IC547395, EC519554, IC415284, IC415418, IC415272, EC519522, IC415228, IC540892, IC415314, IC415318, IC415287, IC423468 (> 171.80 cm)	IC-35407 (171.80 cm)
4.	Inflorescence length (cm)	27.00-90.00	IC423448, IC423400, IC540869, IC415296, IC415287, IC415220, IC415297, IC547393, IC415282, IC415272, EC519522, EC519549, IC547372, IC415314, IC423408, IC423468, IC540892, IC547395, IC415228, IC415254, IC547387, IC415318 (> 62.60 cm)	VL-44 (62.60 cm)
5.	Leaf length (cm)	11.20-21.60	IC540847, IC415228, IC547395, IC415282, IC415272 (> 19.06 cm)	IC-35407 (19.06 cm)
6.	Leaf width (cm)	5.00-10.50	IC540847, IC547395, IC415282, IC415418, IC415287 (> 9.22 cm)	VL-44 (9.22 cm)
7.	Petiole length (cm)	4.10-13.90	IC547395, EC519554, IC540847 (> 11.76 cm)	VL-44 (11.76 cm)
8.	No. of finger per inflorescence	36.00-99.00	IC415282, EC519554, IC415287, IC423400, IC540869, IC415254, IC540870, IC547395, IC415418, IC415272, IC547393 (> 67.00)	IC-35407 (67.00)
9.	Yield per plant (g)	1.00-60.00	IC423448, IC547395, EC519554 (> 31.88 g)	VL-44 (31.88 g)
10.	Test weight (g/10 ml)	4.00-9.00	IC540847, IC415264 (> 8.00 g/10 ml)	IC-35407 (8.00 g/10 ml)
Best entries over locations				
1.	Inflorescence length (cm)	41.97-69.17	IC423468, IC423400, IC415290, IC415220, IC415297, IC423537, IC423448, IC415287, IC540890, IC415262, IC415250, IC415258, IC415228, IC415232, IC415222 (> 62.60 cm)	VL-44 (62.60 cm)
2.	Petiole length (cm)	7.86-14.53	EC519554 (> 13.92 cm)	PRA-3 (13.92 cm)
3.	No. of finger per inflorescence	32.00-62.67	EC519554, IC415282, IC423400, IC540870, IC540869, IC423408, IC540847, IC415228, IC415250, IC415287, IC540890 (> 50.44)	IC-35407 (Durga) (50.44)
4.	Test weight (g/10 ml)	7.85-9.72	IC415264 (> 9.66 g/10 ml)	PRA-3 (9.66 g/10 ml)

Table 130. Multilocational evaluation of germplasm lines in grain amaranth at various locations - Hills (2007)

S. No.	Accession No.	Days to 50% flowering					Days to maturity				
		Almora	Ranchauri	Sangla	Shimla	Mean	Almora	Ranchauri	Sangla	Shimla	Mean
1	EC519522	56	58	62	91	**66.75**	97	129	130	146	**125.50**
2	EC519543	54	53	65	92	**66.00**	93	124	138	144	**124.75**
3	EC519549	55	48	64	95	**65.50**	95	129	134	148	**126.50**
4	EC519554	56	48	65	97	**66.50**	89	134	138	144	**126.25**
5	IC415220	69	73	75	98	**78.75**	101	134	138	164	**134.25**
6	IC415222	71	68	74	103	**79.00**	103	129	136	166	**133.50**
7	IC415224	73	68	76	104	**80.25**	103	139	142	164	**137.00**
8	IC415228	71	68	75	103	**79.25**	102	139	140	163	**136.00**
9	IC415232	72	63	74	105	**78.50**	112	129	137	164	**135.50**
10	IC415243	64	63	75	103	**76.25**	112	129	141	166	**137.00**
11	IC415250	69	68	72	113	**80.50**	102	139	132	165	**134.50**
12	IC415254	61	63	70	109	**75.75**	97	124	134	161	**129.00**
13	IC415258	61	58	75	80	**68.50**	109	119	142	151	**130.25**
14	IC415260	73	68	74	107	**80.50**	109	139	139	161	**137.00**
15	IC415262	69	63	74	110	**79.00**	112	134	140	164	**137.50**
16	IC415264	71	63	73	90	**74.25**	112	119	139	142	**128.00**
17	IC415266	72	63	76	107	**79.50**	109	119	142	164	**133.50**
18	IC415272	60	58	74	108	**75.00**	101	114	139	164	**129.50**
19	IC415282	60	58	71	100	**72.25**	100	114	136	150	**125.00**
20	IC415284	61	63	73	105	**75.50**	101	114	134	160	**127.25**
21	IC415287	60	58	67	113	**74.50**	109	124	136	163	**133.00**
22	IC415290	69	63	71	113	**79.00**	112	114	139	160	**131.25**
23	IC415297	71	53	69	109	**75.50**	108	119	138	163	**132.00**
24	IC415314	60	53	71	108	**73.00**	100	114	140	162	**129.00**
25	IC415318	60	58	72	107	**74.25**	100	114	136	159	**127.25**
26	IC415418	72	63	74	100	**77.25**	103	114	138	155	**127.50**
27	IC415426	71	68	75	107	**80.25**	103	119	142	156	**130.00**
28	IC415448	74	63	71	103	**77.75**	103	129	140	156	**132.00**
29	IC421885	70	58	72	103	**75.75**	103	124	137	155	**129.75**
30	IC423400	71	58	73	99	**75.25**	109	129	139	146	**130.75**

Table 130. Multilocational e

S. No.	Accession No.	Plant height (cm)					Inflorescence length (cm)				Leaf length (cm)			
		Almora	Ranchauri	Sangla	Shimla	Mean	Almora	Ranchauri	Shimla	Mean	Almora	Ranchauri	Shimla	Mean
1	EC519522	175.00	55.00	122.20	233.25	**146.36**	70.00	17.33	74.00	**53.78**	15.50	4.66	19.10	**13.09**
2	EC519543	157.00	128.33	93.80	265.30	**161.11**	54.00	26.00	62.85	**47.62**	16.00	7.66	17.00	**13.55**
3	EC519549	132.00	109.33	131.80	257.40	**157.63**	70.00	27.33	89.80	**62.38**	12.80	9.33	17.35	**13.16**
4	EC519554	182.00	154.00	96.80	310.25	**185.76**	57.00	41.33	59.40	**52.58**	18.90	12.66	21.50	**17.69**
5	IC415220	198.00	170.00	77.60	262.50	**177.03**	78.00	60.00	66.75	**68.25**	18.30	15.66	21.45	**18.47**
6	IC415222	132.00	144.66	78.20	274.25	**157.28**	62.00	46.66	80.05	**62.90**	12.50	8.33	24.60	**15.14**
7	IC415224	132.00	120.66	73.60	316.50	**160.69**	44.00	40.33	97.00	**60.44**	11.50	8.00	22.85	**14.12**
8	IC415228	175.00	116.00	79.20	297.85	**167.01**	64.00	37.66	87.60	**63.09**	21.00	8.33	23.40	**17.58**
9	IC415232	164.00	148.66	75.80	294.55	**170.75**	62.00	52.66	74.10	**62.92**	15.50	10.66	22.70	**16.29**
10	IC415243	145.00	148.66	93.00	276.45	**165.78**	48.00	51.33	83.80	**61.04**	16.30	10.00	22.15	**16.15**
11	IC415250	130.00	125.00	77.80	275.45	**152.06**	52.00	48.66	92.80	**64.49**	15.50	11.66	22.30	**16.49**
12	IC415254	151.00	120.00	84.80	256.50	**153.08**	64.00	26.66	73.75	**54.80**	16.00	8.66	24.10	**16.25**
13	IC415258	140.00	123.00	83.60	281.50	**157.03**	60.00	42.33	89.10	**63.81**	14.30	9.00	20.30	**14.53**
14	IC415260	108.00	111.00	53.40	250.35	**130.69**	42.00	37.00	62.40	**47.13**	12.30	11.00	24.10	**15.80**
15	IC415262	140.00	130.33	63.60	321.35	**163.82**	44.00	45.00	106.45	**65.15**	15.70	9.00	24.00	**16.23**
16	IC415264	100.00	111.66	92.20	311.25	**153.78**	27.00	35.66	97.65	**53.44**	15.10	8.66	24.45	**16.07**
17	IC415266	109.00	138.00	97.00	293.50	**159.38**	54.00	51.00	70.15	**58.38**	14.90	9.33	21.30	**15.18**
18	IC415272	177.00	148.00	99.60	217.70	**160.58**	72.00	42.00	68.25	**60.75**	19.40	8.33	21.15	**16.29**
19	IC415282	212.00	99.00	83.00	228.45	**155.61**	73.00	31.66	66.50	**57.05**	19.40	8.00	24.30	**17.23**
20	IC415284	182.00	128.00	95.60	235.40	**160.25**	60.00	44.33	64.40	**56.24**	16.40	9.00	21.90	**15.77**
21	IC415287	173.00	135.33	84.20	208.85	**150.35**	80.00	47.66	69.85	**65.84**	18.80	8.66	22.40	**16.62**
22	IC415290	210.00	127.00	78.40	311.70	**181.78**	82.00	39.66	84.55	**68.74**	18.40	10.00	24.15	**17.52**
23	IC415297	192.00	132.33	83.40	291.60	**174.83**	77.00	43.33	82.80	**67.71**	16.90	8.00	27.00	**17.30**
24	IC415314	173.00	59.33	81.60	258.40	**143.08**	69.00	37.66	60.75	**55.80**	18.20	7.33	24.25	**16.59**
25	IC415318	173.00	133.66	94.80	290.40	**172.97**	63.00	40.00	72.75	**58.58**	18.10	10.00	24.80	**17.63**
26	IC415418	178.00	118.66	71.00	249.60	**154.32**	55.00	31.66	67.85	**51.50**	17.30	6.66	24.00	**15.99**
27	IC415426	90.00	130.66	68.20	261.45	**137.58**	42.00	38.33	70.05	**50.13**	11.20	8.33	20.30	**13.28**
28	IC415448	147.00	118.66	65.80	225.25	**139.18**	42.00	32.66	92.75	**55.80**	13.70	7.66	24.05	**15.14**
29	IC421885	110.00	123.00	80.00	225.70	**134.68**	60.00	44.66	69.20	**57.95**	16.70	12.33	26.30	**18.44**
30	IC423400	192.00	144.66	90.20	255.40	**170.57**	88.00	46.66	72.30	**68.99**	15.20	10.00	20.30	**15.17**

Table 130. Multilocational e

S. No.	Accession No.	Leaf width (cm)			Petiole length (cm)				Number of finger/inflorescence		
		Almora	Ranchauri	Mean	Almora	Ranchauri	Shimla	Mean	Almora	Ranchauri	Mean
1	EC519522	7.30	2.00	**4.65**	8.50	6.33	13.70	**9.51**	58.00	21.66	**39.83**
2	EC519543	7.10	3.66	**5.38**	10.70	8.66	13.45	**10.94**	48.00	35.00	**41.50**
3	EC519549	5.20	4.33	**4.77**	7.90	11.33	12.00	**10.41**	64.00	30.00	**47.00**
4	EC519554	9.00	6.00	**7.50**	13.10	15.00	15.50	**14.53**	87.00	38.33	**62.67**
5	IC415220	8.20	7.66	**7.93**	9.10	17.33	11.00	**12.48**	44.00	41.66	**42.83**
6	IC415222	5.60	4.33	**4.97**	7.40	14.00	10.30	**10.57**	55.00	43.66	**49.33**
7	IC415224	6.60	4.33	**5.47**	6.50	7.66	14.35	**9.50**	51.00	42.33	**46.67**
8	IC415228	8.60	4.00	**6.30**	10.30	6.66	14.25	**10.40**	61.00	42.66	**51.83**
9	IC415232	6.90	5.33	**6.12**	9.50	15.66	13.00	**12.72**	53.00	35.00	**44.00**
10	IC415243	7.10	4.66	**5.88**	8.70	16.66	16.25	**13.87**	48.00	36.66	**42.33**
11	IC415250	6.60	5.33	**5.97**	7.00	13.00	16.15	**12.05**	64.00	39.00	**51.50**
12	IC415254	7.10	3.66	**5.38**	8.00	12.66	12.40	**11.02**	71.00	25.00	**48.00**
13	IC415258	5.70	4.33	**5.02**	7.00	10.33	14.15	**10.49**	54.00	31.66	**42.83**
14	IC415260	6.80	5.33	**6.07**	4.70	9.66	13.70	**9.35**	60.00	33.33	**46.67**
15	IC415262	8.20	4.33	**6.27**	8.10	13.66	17.00	**12.92**	47.00	30.00	**38.50**
16	IC415264	6.60	4.00	**5.30**	6.70	11.33	18.15	**12.06**	36.00	28.00	**32.00**
17	IC415266	7.60	4.66	**6.13**	7.60	14.66	12.65	**11.64**	43.00	31.00	**37.00**
18	IC415272	8.00	4.33	**6.17**	8.60	11.00	16.60	**12.07**	68.00	27.66	**47.83**
19	IC415282	9.40	3.66	**6.53**	10.70	7.00	15.15	**10.95**	99.00	21.66	**60.33**
20	IC415284	7.60	4.00	**5.80**	8.70	12.66	15.60	**12.32**	62.00	27.66	**44.83**
21	IC415287	9.30	3.66	**6.48**	10.30	14.00	12.00	**12.10**	75.00	27.66	**51.33**
22	IC415290	7.80	4.33	**6.07**	6.60	11.66	12.55	**10.27**	60.00	30.66	**45.33**
23	IC415297	7.90	4.33	**6.12**	8.50	12.33	16.30	**12.38**	62.00	31.66	**46.83**
24	IC415314	8.40	3.66	**6.03**	8.10	11.66	16.50	**12.09**	49.00	30.00	**39.50**
25	IC415318	8.60	5.00	**6.80**	10.20	10.00	15.25	**11.82**	60.00	26.00	**43.00**
26	IC415418	9.40	3.66	**6.53**	10.10	10.33	16.30	**12.24**	69.00	27.66	**48.33**
27	IC415426	6.30	4.33	**5.32**	4.80	11.33	16.00	**10.71**	63.00	32.33	**47.67**
28	IC415448	7.30	4.00	**5.65**	9.70	10.00	16.15	**11.95**	67.00	26.66	**46.83**
29	IC421885	7.20	5.66	**6.43**	10.50	14.00	12.50	**12.33**	58.00	35.00	**46.50**
30	IC423400	6.60	4.66	**5.63**	6.70	7.66	15.30	**9.89**	75.00	45.00	**60.00**

Table 130. Multilocational e

S. No.	Accession No.	Grain yield per plant (g)				Test weight (g/10 ml)				Sangla		Shimla		
		Almora	Ranchauri	Shimla	Mean	Almora	Ranchauri	Shimla	Mean	Paniculum girth	Yield (q/ha)	Stem thickness (cm)	Lateral spikelet length (cm)	Ranchauri (Leaves/ plant)
1	EC519522	7.80	7.75	43.46	**19.67**	7.00	13.15	8.00	**9.38**	10.00	12.67	2.42	5.85	13..3
2	EC519543	20.00	7.98	30.12	**19.37**	7.00	13.14	7.00	**9.05**	7.00	12.34	2.55	5.90	14.33
3	EC519549	16.40	10.39	37.90	**21.56**	7.00	13.55	8.00	**9.52**	8.80	12.00	2.62	9.80	14.33
4	EC519554	34.40	25.58	52.30	**37.43**	7.00	12.87	7.00	**8.96**	7.40	9.67	2.79	14.15	25.00
5	IC415220	12.80	36.75	36.74	**28.76**	7.00	12.48	7.00	**8.83**	16.60	13.20	2.69	16.30	20.60
6	IC415222	1.20	22.57	35.83	**19.87**	6.00	13.71	7.80	**9.17**	10.20	11.34	2.63	13.15	16.66
7	IC415224	4.80	26.28	62.16	**31.08**	5.00	12.98	6.00	**7.99**	9.40	10.67	2.87	13.35	16.66
8	IC415228	9.00	24.31	89.05	**40.79**	6.00	12.55	6.50	**8.35**	10.70	11.00	2.77	8.30	14.33
9	IC415232	11.00	26.24	85.25	**40.83**	7.00	13.48	6.20	**8.89**	9.60	11.40	3.20	11.80	16.66
10	IC415243	5.80	17.24	71.75	**31.60**	6.00	13.52	7.00	**8.84**	9.80	12.00	3.56	13.15	17.66
11	IC415250	6.40	23.77	63.42	**31.20**	6.00	13.65	6.00	**8.55**	8.20	11.50	2.97	10.40	17.66
12	IC415254	8.80	4.99	84.54	**32.78**	8.00	13.10	7.00	**9.37**	8.60	11.67	2.76	13.10	13.33
13	IC415258	8.00	13.98	50.65	**24.21**	6.00	12.19	6.50	**8.23**	6.80	10.50	3.32	14.80	19.33
14	IC415260	8.00	11.62	40.12	**19.91**	6.00	12.55	5.00	**7.85**	6.00	10.00	3.53	13.15	16.60
15	IC415262	15.40	12.98	42.58	**23.65**	8.00	12.73	7.00	**9.24**	5.20	9.67	3.33	16.25	21.00
16	IC415264	10.00	14.67	80.20	**34.96**	9.00	12.16	8.00	**9.72**	10.20	13.50	3.52	12.30	12.33
17	IC415266	10.60	24.02	54.45	**29.69**	7.00	13.75	6.00	**8.92**	7.00	12.00	2.92	15.00	21.66
18	IC415272	12.00	17.80	65.62	**31.81**	7.00	13.81	7.00	**9.27**	7.80	11.67	3.80	10.50	12.33
19	IC415282	18.00	11.68	43.31	**24.33**	8.00	13.48	7.00	**9.49**	7.00	13.00	2.70	9.10	13.66
20	IC415284	8.20	21.54	78.70	**36.15**	8.00	13.17	5.00	**8.72**	7.00	14.34	2.77	8.00	13.00
21	IC415287	8.00	16.00	70.66	**31.55**	7.00	13.19	7.00	**9.06**	8.20	11.00	2.56	16.65	15.66
22	IC415290	17.60	13.37	57.87	**29.61**	8.00	12.14	8.00	**9.38**	6.00	12.34	3.22	16.25	15.66
23	IC415297	11.60	14.76	57.96	**28.11**	7.00	12.68	7.00	**8.89**	6.80	12.50	3.42	16.30	15.66
24	IC415314	10.80	13.90	61.28	**28.66**	7.00	12.48	8.00	**9.16**	6.20	12.00	3.02	13.65	12.00
25	IC415318	11.20	10.94	40.22	**20.79**	7.00	13.65	7.00	**9.22**	10.20	10.30	3.06	17.00	15.66
26	IC415418	9.20	14.10	56.35	**26.55**	6.00	14.00	7.00	**9.00**	9.20	9.67	3.00	8.55	20.00
27	IC415426	4.00	12.87	57.33	**24.73**	6.00	13.83	7.00	**8.94**	7.40	12.20	2.84	11.15	17.33
28	IC415448	2.60	17.80	96.20	**38.87**	6.00	12.45	7.00	**8.48**	8.40	9.33	3.53	7.70	20.00
29	IC421885	4.00	21.98	75.24	**33.74**	7.00	12.56	7.00	**8.85**	8.20	10.00	2.85	11.00	21.00
30	IC423400	5.00	8.87	68.50	**27.46**	5.00	12.78	7.00	**8.26**	8.40	9.50	3.08	7.60	14.00

S. No.	Accession No.	Days to 50% flowering					Days to maturity				
		Almora	Ranchauri	Sangla	Shimla	Mean	Almora	Ranchauri	Sangla	Shimla	Mean
31	IC423408	61	58	71	105	**73.75**	100	134	138	155	**131.75**
32	IC423448	84	63	74	100	**80.25**	123	134	140	145	**135.50**
33	IC423468	84	63	71	100	**79.50**	123	139	135	145	**135.50**
34	IC423537	60	53	65	100	**69.50**	97	139	134	160	**132.50**
35	IC540812	71	58	64	100	**73.25**	103	134	135	159	**132.75**
36	IC540835	71	63	71	107	**78.00**	103	129	139	160	**132.75**
37	IC540847	71	63	70	97	**75.25**	103	129	137	158	**131.75**
38	IC540869	71	68	73	103	**78.75**	103	134	139	146	**130.50**
39	IC540870	59	53	75	100	**71.75**	97	124	142	147	**127.50**
40	IC540890	61	53	64	107	**71.25**	97	124	138	160	**129.75**
41	IC540892	61	58	71	108	**74.50**	100	124	140	159	**130.75**
42	IC540900	74	63	73	109	**79.75**	103	129	142	160	**133.50**
43	IC547372	54	48	72	103	**69.25**	92	119	138	159	**127.00**
44	IC547375	58	48	67	108	**70.25**	97	119	135	160	**127.75**
45	IC547379	58	63	65	110	**74.00**	95	134	132	158	**129.75**
46	IC547381	58	63	66	95	**70.50**	97	119	138	150	**126.00**
47	IC547387	55	53	65	97	**67.50**	97	124	131	151	**125.75**
48	IC547393	55	63	64	97	**69.75**	97	119	132	148	**124.00**
49	IC547395	59	63	66	95	**70.75**	93	114	137	150	**123.50**
50	IC547397	59	58	65	97	**69.75**	99	114	136	151	**125.00**
Mean for check varieties											
	Annapurna (C)	71.60	69.67	75.33	104.40	**80.25**	109.80	129.00	140.33	160.20	**134.83**
	IC-35407 (Durga) (C)	57.40	54.67	67.33	91.80	**67.80**	93.00	124.00	133.33	143.20	**123.38**
	PRA-2 (C)	72.40	71.33	-	106.60	**83.44**	111.60	124.00	-	160.20	**131.93**
	PRA-3 (C)	-	69.67	-	103.80	**86.73**	-	124.00	-	158.20	**141.10**
	VL-44 (C)	56.60	-	-	-	**56.60**	91.00	-	-	-	**91.00**
	Minimum	**54.00**	**48.00**	**62.00**	**80.00**	**65.50**	**89.00**	**114.00**	**130.00**	**142.00**	**123.38**
	Maximum	**84.00**	**73.00**	**76.00**	**113.00**	**86.73**	**123.00**	**139.00**	**142.00**	**166.00**	**141.10**
	Mean	**65.15**	**60.56**	**70.51**	**102.34**	**74.92**	**102.47**	**125.67**	**137.46**	**156.09**	**130.64**
	CD (0.05)	**4.28**	**-**	**-**	**12.47**	**-**	**6.37**	**-**	**-**	**7.39**	**-**
	CV (%) Error	**2.83**	**-**	**-**	**4.59**	**-**	**2.62**	**-**	**-**	**1.78**	**-**
	CV (%) Phenotypic	**11.62**	**10.31**	**5.73**	**6.40**	**-**	**7.10**	**6.33**	**2.24**	**4.55**	**-**

S. No.	Accession No.	Plant height (cm)					Inflorescence length (cm)				Leaf length (cm)			
		Almora	Ranchauri	Sangla	Shimla	Mean	Almora	Ranchauri	Shimla	Mean	Almora	Ranchauri	Shimla	Mean
31	IC423408	151.00	161.66	78.40	245.25	**159.08**	69.00	50.66	65.55	**61.74**	16.80	12.33	25.10	**18.08**
32	IC423448	230.00	130.00	96.80	171.70	**157.13**	90.00	39.33	70.15	**66.49**	12.10	10.00	14.15	**12.08**
33	IC423468	173.00	139.00	110.80	241.10	**165.98**	67.00	49.00	91.50	**69.17**	12.90	9.33	19.35	**13.86**
34	IC423537	142.00	148.33	101.80	241.05	**158.30**	62.00	48.00	92.35	**67.45**	16.80	11.66	19.00	**15.82**
35	IC540812	115.00	181.00	120.00	311.30	**181.83**	47.00	61.66	56.75	**55.14**	13.70	12.33	23.75	**16.59**
36	IC540835	123.00	162.22	95.00	291.70	**167.98**	50.00	51.00	60.10	**53.70**	13.60	11.66	21.50	**15.59**
37	IC540847	160.00	160.00	102.80	308.25	**182.76**	57.00	46.33	66.30	**56.54**	21.60	11.66	23.75	**19.00**
38	IC540869	168.00	112.00	94.60	266.45	**160.26**	83.00	26.66	70.80	**60.15**	14.80	10.66	23.45	**16.30**
39	IC540870	139.00	183.00	56.00	258.60	**159.15**	62.00	53.66	72.00	**62.55**	16.70	12.33	15.15	**14.73**
40	IC540890	135.00	192.66	84.60	263.45	**168.93**	55.00	58.33	83.50	**65.61**	14.20	12.00	15.90	**14.03**
41	IC540892	174.00	155.33	171.00	308.50	**202.21**	65.00	56.00	56.75	**59.25**	15.70	10.66	13.50	**13.29**
42	IC540900	153.00	179.33	63.00	311.70	**176.76**	57.00	52.00	71.75	**60.25**	16.90	11.66	19.75	**16.10**
43	IC547372	108.00	89.33	42.80	268.60	**127.18**	70.00	23.66	51.20	**48.29**	12.10	7.00	21.15	**13.42**
44	IC547375	110.00	109.33	25.60	300.40	**136.33**	53.00	28.00	62.95	**47.98**	12.00	8.66	21.40	**14.02**
45	IC547379	142.00	65.00	75.40	276.85	**139.81**	59.00	24.00	63.25	**48.75**	16.30	3.66	18.40	**12.79**
46	IC547381	129.00	92.00	92.80	280.25	**148.51**	54.00	29.66	87.30	**56.99**	15.80	7.33	22.50	**15.21**
47	IC547387	135.00	89.00	89.80	313.10	**156.73**	64.00	24.50	70.90	**53.13**	17.50	5.00	23.10	**15.20**
48	IC547393	131.00	47.50	83.60	273.35	**133.86**	74.00	17.50	91.45	**60.98**	16.40	5.00	17.80	**13.07**
49	IC547395	185.00	49.33	85.80	293.00	**153.28**	64.00	16.33	66.00	**48.78**	19.80	4.33	25.15	**16.43**
50	IC547397	110.00	90.66	87.60	270.25	**139.63**	54.00	27.66	44.25	**41.97**	14.10	5.33	22.45	**13.96**
Mean for check varieties														
	Annapurna (C)	125.20	138.77	83.33	277.56	**156.22**	49.80	43.11	71.64	**54.85**	17.14	9.55	21.42	**16.04**
	IC-35407 (Durga) (C)	171.80	132.22	60.40	206.31	**142.68**	54.60	33.33	65.91	**51.28**	19.06	9.44	25.28	**17.93**
	PRA-2 (C)	140.00	155.44	-	307.96	**201.13**	55.60	45.11	75.45	**58.72**	15.80	10.55	21.24	**15.86**
	PRA-3 (C)	-	153.99	-	277.28	**215.64**	-	39.53	72.56	**56.05**	-	10.78	24.82	**17.80**
	VL-44 (C)	167.40	-	-	-	**167.40**	62.60	-	-	**62.60**	19.00	-	-	**19.00**
	Minimum	**90.00**	**47.50**	**25.60**	**171.70**	**127.18**	**27.00**	**16.33**	**44.25**	**41.97**	**11.20**	**3.66**	**13.50**	**12.08**
	Maximum	**230.00**	**192.66**	**171.00**	**321.35**	**215.64**	**90.00**	**61.66**	**106.45**	**69.17**	**21.60**	**15.66**	**27.00**	**19.00**
	Mean	**151.79**	**127.22**	**85.62**	**270.41**	**160.12**	**60.99**	**39.86**	**73.89**	**58.21**	**15.97**	**9.26**	**21.79**	**15.67**
	CD (0.05)	**50.86**	**-**	**-**	**72.49**	**-**	**19.26**	**-**	**22.70**	**-**	**3.68**	**-**	**5.60**	**-**
	CV (%) Error	**11.38**	**-**	**-**	**10.16**	**-**	**11.52**	**-**	**11.91**	**-**	**7.25**	**-**	**9.04**	**-**
	CV (%) Phenotypic	**20.55**	**25.86**	**25.84**	**12.16**	**-**	**20.48**	**27.94**	**17.42**	**-**	**15.50**	**25.89**	**13.91**	**-**

S. No.	Accession No.	Leaf width (cm)			Petiole length (cm)				Number of finger/inflorescence		
		Almora	Ranchauri	Mean	Almora	Ranchauri	Shimla	Mean	Almora	Ranchauri	Mean
31	IC423408	6.50	6.33	**6.42**	7.10	15.00	16.70	**12.93**	63.00	48.33	**55.67**
32	IC423448	5.20	4.66	**4.93**	4.60	9.33	9.65	**7.86**	48.00	45.00	**46.50**
33	IC423468	5.20	5.00	**5.10**	4.10	9.00	17.00	**10.03**	51.00	48.33	**49.67**
34	IC423537	6.20	6.00	**6.10**	8.40	15.33	8.90	**10.88**	48.00	43.33	**45.67**
35	IC540812	6.60	6.00	**6.30**	7.00	14.66	13.50	**11.72**	53.00	45.00	**49.00**
36	IC540835	7.20	5.66	**6.43**	9.30	14.66	15.15	**13.04**	64.00	36.66	**50.33**
37	IC540847	10.50	5.66	**8.08**	12.60	12.33	14.40	**13.11**	62.00	41.66	**51.83**
38	IC540869	5.80	3.66	**4.73**	8.10	9.00	12.00	**9.70**	74.00	37.66	**55.83**
39	IC540870	8.50	5.66	**7.08**	10.60	14.33	11.00	**11.98**	70.00	41.66	**55.83**
40	IC540890	6.40	5.00	**5.70**	8.40	16.33	9.80	**11.51**	49.00	52.33	**50.67**
41	IC540892	7.80	5.00	**6.40**	7.20	13.66	9.65	**10.17**	45.00	40.00	**42.50**
42	IC540900	7.70	5.66	**6.68**	8.80	11.66	13.80	**11.42**	59.00	38.33	**48.67**
43	IC547372	6.00	3.00	**4.50**	8.60	8.33	16.10	**11.01**	46.00	24.33	**35.17**
44	IC547375	5.00	4.00	**4.50**	7.00	12.00	14.50	**11.17**	47.00	36.66	**41.83**
45	IC547379	7.00	2.50	**4.75**	8.70	6.00	13.75	**9.48**	67.00	17.50	**42.25**
46	IC547381	6.40	3.66	**5.03**	8.70	7.66	17.15	**11.17**	52.00	24.33	**38.17**
47	IC547387	7.90	2.50	**5.20**	7.70	7.00	16.65	**10.45**	62.00	24.00	**43.00**
48	IC547393	7.00	2.00	**4.50**	8.60	6.00	13.10	**9.23**	68.00	16.50	**42.25**
49	IC547395	9.70	2.00	**5.85**	13.90	7.00	17.45	**12.78**	69.00	22.00	**45.50**
50	IC547397	5.70	2.33	**4.02**	6.30	8.00	15.10	**9.80**	52.00	19.33	**35.67**
Mean for check varieties											
	Annapurna (C)	7.90	4.44	**6.17**	7.84	12.99	14.95	**11.93**	43.60	37.77	**40.69**
	IC-35407 (Durga) (C)	8.92	4.55	**6.74**	11.04	10.44	19.13	**13.54**	67.00	33.89	**50.44**
	PRA-2 (C)	7.28	4.77	**6.03**	7.58	13.11	13.67	**11.45**	52.40	38.89	**45.64**
	PRA-3 (C)	-	5.22	**5.22**	-	12.78	15.07	**13.92**	-	38.11	**38.11**
	VL-44 (C)	9.22	-	**9.22**	11.76	-	-	**11.76**	42.40	-	**42.40**
	Minimum	**5.00**	**2.00**	**4.02**	**4.10**	**6.00**	**8.90**	**7.86**	**36.00**	**16.50**	**32.00**
	Maximum	**10.50**	**7.66**	**8.08**	**13.90**	**17.33**	**19.13**	**14.53**	**99.00**	**52.33**	**62.67**
	Mean	**7.33**	**4.42**	**5.83**	**8.49**	**11.39**	**14.30**	**11.40**	**58.62**	**33.82**	**46.18**
	CD (0.05)	**2.03**	**-**	**-**	**4.25**	**-**	**3.28**	**-**	**28.49**	**-**	**-**
	CV (%) Error	**8.26**	**-**	**-**	**13.53**	**-**	**7.83**	**-**	**25.17**	**-**	**-**
	CV (%) Phenotypic	**17.40**	**26.30**	**-**	**27.64**	**26.56**	**16.36**	**-**	**20.06**	**24.81**	**-**

S. No.	Accession No.	Grain yield per plant (g)				Test weight (g/10 ml)				Sangla		Shimla		
		Almora	Ranchauri	Shimla	Mean	Almora	Ranchauri	Shimla	Mean	Paniculum girth	Yield (q/ha)	Stem thickness (cm)	Lateral spikelet length (cm)	Ranchauri (Leaves/ plant)
31	IC423408	1.60	31.15	55.38	**29.38**	7.00	12.48	7.00	**8.83**	7.20	16.20	3.26	11.60	17.66
32	IC423448	60.00	9.11	52.53	**40.55**	4.00	13.10	7.00	**8.03**	6.80	18.01	3.35	12.35	19.33
33	IC423468	5.60	20.06	61.62	**29.09**	5.00	13.71	7.00	**8.57**	10.00	11.00	3.26	13.00	18.66
34	IC423537	9.60	14.30	45.09	**23.00**	7.00	13.19	7.00	**9.06**	9.40	15.00	3.03	12.80	17.00
35	IC540812	6.00	22.80	54.20	**27.67**	6.00	13.15	7.00	**8.72**	12.20	19.01	3.06	8.50	12.33
36	IC540835	1.00	22.69	26.96	**16.88**	6.00	12.48	8.00	**8.83**	5.00	16.00	3.09	9.55	20.00
37	IC540847	16.00	15.12	72.18	**34.43**	9.00	12.82	7.00	**9.61**	11.00	16.33	3.08	14.15	19.00
38	IC540869	1.40	7.70	52.16	**20.42**	5.00	13.19	7.00	**8.40**	9.00	12.00	2.33	6.75	11.33
39	IC540870	4.80	14.38	30.96	**16.71**	7.00	12.91	6.00	**8.64**	6.40	9.67	2.17	9.80	16.33
40	IC540890	7.40	17.65	70.02	**31.69**	8.00	12.99	7.00	**9.33**	10.00	12.34	3.27	10.60	18.33
41	IC540892	11.80	14.92	58.60	**28.44**	7.00	13.11	7.00	**9.04**	10.00	10.67	3.00	11.58	17.33
42	IC540900	8.00	21.27	55.14	**28.14**	8.00	13.48	7.00	**9.49**	8.00	9.67	3.05	13.50	17.33
43	IC547372	1.00	10.25	30.44	**13.90**	7.00	12.17	7.00	**8.72**	5.20	9.33	2.88	12.10	12.00
44	IC547375	3.40	7.61	49.65	**20.22**	6.00	13.55	7.00	**8.85**	5.40	9.33	2.83	13.30	16.66
45	IC547379	4.20	7.80	31.18	**14.39**	7.00	12.55	7.00	**8.85**	7.80	11.67	2.54	13.50	12.50
46	IC547381	8.00	7.65	30.57	**15.41**	8.00	13.26	6.00	**9.09**	9.60	14.20	2.51	10.40	12.33
47	IC547387	5.00	7.74	31.90	**14.88**	7.00	13.33	7.00	**9.11**	8.00	12.34	2.32	11.45	10.00
48	IC547393	12.40	6.72	43.35	**20.82**	6.00	12.91	8.00	**8.97**	9.20	9.67	2.49	13.10	10.00
49	IC547395	39.60	8.69	35.16	**27.82**	7.00	12.78	7.00	**8.93**	8.60	11.34	2.10	10.50	10.66
50	IC547397	4.60	7.49	27.53	**13.21**	5.00	12.83	7.00	**8.28**	10.80	12.00	2.55	11.50	9.33
Mean for check varieties														
	Annapurna (C)	9.52	18.40	82.40	**36.77**	6.60	12.86	7.00	**8.82**	9.20	12.11	2.91	10.15	19.33
	IC-35407 (Durga) (C)	31.16	15.86	77.93	**41.65**	8.00	12.60	7.40	**9.33**	8.13	11.00	2.90	7.61	17.88
	PRA-2 (C)	10.64	17.96	73.26	**33.95**	7.00	13.27	7.20	**9.16**	-	-	3.31	14.13	19.77
	PRA-3 (C)	-	15.89	68.86	**42.38**	-	12.72	6.60	**9.66**	-	-	4.40	14.99	19.22
	VL-44 (C)	31.88	-	-	**31.88**	7.00	-	-	**7.00**	-	-	-	-	-
	Minimum	**1.00**	**4.99**	**26.96**	**13.21**	**4.00**	**12.14**	**5.00**	**7.85**	**5.00**	**9.33**	**2.10**	**5.85**	**9.33**
	Maximum	**60.00**	**36.75**	**96.20**	**42.38**	**9.00**	**14.00**	**8.00**	**9.72**	**16.60**	**19.01**	**4.40**	**17.00**	**25.00**
	Mean	**11.24**	**15.74**	**55.68**	**27.62**	**6.75**	**13.02**	**6.95**	**8.92**	**8.45**	**11.96**	**2.96**	**11.80**	**16.20**
	CD (0.05)	**16.3**	**-**	**28.59**	**-**	**2.2**	**-**	**1.54**	**-**	**-**	**-**	**4.26**	**5.91**	**-**
	CV (%) Error	**19.16**	**-**	**14.16**	**-**	**11.59**	**-**	**8.19**	**-**	**-**	**-**	**47.23**	**18.87**	**-**
	CV (%) Phenotypic	**94.58**	**43.20**	**32.36**	**-**	**15.20**	**3.71**	**9.27**	**-**	**24.04**	**18.35**	**14.28**	**24.18**	**21.38**

Table 131. Characterization of germplasm lines in grain amaranth at Shimla - Hills (2007)

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 shattering	Seed transparency	Seed colour
1	EC515454	3	1	5	10	5	1	2	4	2	7	1	1
2	EC519522	3	1	5	10	5	1	2	4	2	7	1	1
3	EC519543	3	1	5	10	5	1	2	4	2	7	1	1
4	EC519549	3	1	5	11	5	1	2	4	2	3	1	1
5	IC415128	3	1	5	9	5	6	2	4	4	3	2	1
6	IC415220	3	1	5	11	5	1	2	4	4	3	2	1
7	IC415222	3	1	5	11	5	1	2	4	4	3	2	1
8	IC415224	3	1	5	9	5	5	2	4	4	3	2	1
9	IC415232	3	1	5	11	5	2	2	4	4	3	2	1
10	IC415243	3	1	5	11	5	2	2	4	4	3	2	1
11	IC415250	3	1	5	9	5	6	2	4	4	3	2	1
12	IC415254	3	1	5	11	5	1	2	4	4	3	2	1
13	IC415258	3	1	5	2	5	1	2	4	4	3	1	1
14	IC415260	3	1	5	9	5	6	2	4	4	5	2	1
15	IC415262	3	1	5	6	5	6	2	4	4	3	2	1
16	IC415264	3	1	5	11	5	1	2	4	4	3	1	1
17	IC415266	3	1	5	11	5	1	2	4	4	3	2	1
18	IC415272	3	1	5	11	5	1	2	4	4	3	2	1
19	IC415282	3	1	5	2	5	1	2	4	4	3	1	1
20	IC415287	3	1	5	9	5	5	2	4	4	3	2	1
21	IC415290	3	1	5	11	5	2	2	4	4	3	2	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 shattering	Seed transparency	Seed colour
22	IC415297	3	1	5	6	5	1	2	4	4	3	2	1
23	IC415314	3	1	5	2	5	1	2	4	4	3	2	1
24	IC415318	3	1	5	2	5	1	2	4	4	3	1	1
25	IC415418	3	1	5	11	5	1	2	4	4	3	2	1
26	IC415426	3	1	5	11	5	1	2	4	4	3	2	1
27	IC415448	3	1	5	6	5	1	2	4	2	5	1	1
28	IC418284	3	1	5	11	5	1	2	4	4	3	2	1
29	IC421885	3	1	5	11	5	1	2	4	4	3	2	1
30	IC423400	3	3	5	2	5	1	2	3	2	7	1	4
31	IC423408	3	1	5	6	5	6	2	4	4	3	2	1
32	IC423448	3	1	5	9	5	1	2	3	2	7	1	4
33	IC423468	3	1	5	9	5	1	2	3	2	7	1	4
34	IC423537	3	1	5	6	5	4	2	4	4	3	2	1
35	IC540812	2	1	5	4	5	1	2	4	4	3	2	1
36	IC540835	2	1	5	4	5	1	2	4	2	5	2	1
37	IC540847	2	1	5	4	5	1	2	4	2	3	1	1
38	IC540869	2	3	5	11	5	1	2	3	2	7	1	4
39	IC540870	2	1	5	11	5	1	2	4	4	3	1	1
40	IC540890	2	1	5	9	5	4	2	4	4	3	2	1
41	IC540892	2	1	5	11	5	4	2	4	4	3	2	1
42	IC540900	2	1	5	11	5	1	2	4	2	5	2	1
43	IC547372	2	1	5	11	5	1	2	4	4	3	1	1
44	IC547375	3	1	5	9	5	6	2	4	2	3	2	1
45	IC547379	3	1	5	2	5	1	2	4	4	3	1	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 shattering	Seed transparency	Seed colour
46	IC547381	3	1	5	2	5	1	2	4	4	3	1	1
47	IC547387	3	1	5	9	5	5	2	4	4	3	2	1
48	IC547393	3	1	5	2	5	1	2	4	4	3	1	1
49	IC547395	3	1	5	11	5	1	2	4	4	3	1	1
50	IC547397	3	1	5	11	5	1	2	4	4	7	1	1
	Mean for check varieties												
	Annapurna (C)	3	1	5	11	5	1	2	4	2	5	2	1
	Durga (C)	3	1	5	6	5	1	2	4	2	7	1	1
	PRA-2 (C)	3	1	5	11	5	1	2	4	4	3	1	1
	PRA-3 (C)	3	1	5	11	5	1	2	4	4	3	1	1
	Minimum	**2**	**1**	**5**	**2**	**5**	**1**	**2**	**3**	**2**	**3**	**1**	**1**
	Maximum	**3**	**3**	**5**	**11**	**5**	**6**	**2**	**4**	**4**	**7**	**2**	**4**

Qualitative Descriptors: 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, 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 (pubescent), 2-glabrous, 3-prickly, 4-spiny, 99-others; Seed shattering: 3-low (%), 5-intermediate (10-50%), 7-high (50%), 99-others; Seed transparency: 1-translucent, 2-opaque, 99-others; Seed colour: 1-white, 2-creamish, 3-pale yellow, 4-pink, 5-red, 6-brown, 7-black, 8-golden, 99-others.

Table 132. Promising lines in Buckwheat germplasm for various characters at various locations (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Ranichauri (Accessions 25)				
1.	Days to 50% flowering	32.00-68.00	EC104484, IC540851, IC540853, IC547385 (< 37.0 days)	Shimla -B1 (37.00 days)
2.	Plant height (cm)	51.80-113.60	EC104484 (> 101.80 cm)	PRB-1 (101.80 cm)
3.	Number of primary branches	1.00-1.60	IC540859, IC540855, EC018300, EC099948, IC013140, EC097262, EC012537, IC547384, IC547390 (> 1.07)	Shimla -B1 (1.07)
4.	No. of leaves per plant	8.60-15.20	EC037289, EC099946, IC341653, IC547390, EC012537, IC013140, EC104484, EC018629, EC099948 (> 12.47)	PRB-1 (12.47)
5.	Yield per plant (g)	14.60-49.58	IC016579, IC017370 (> 45.83 g)	Himpriya (45.83 g)
6.	100 seed weight (g)	1.70-2.00	IC540853, IC540855, IC017370, IC540859, IC547385, IC540856, EC018300, IC547388, EC104484, EC099948, EC099945, EC018629, IC013140 (> 17.36 g)	Himpriya (17.36 g)
7.	Yield (q/ha)	1.62-7.48	EC097262, IC016579, IC017370 (> 5.09 q/ha)	Himpriya (5.09 q/ha)
Almora (Accessions 26)				
1.	Days to 50% flowering	20.00-43.00	IC018664, EC104484 (< 21.50 days)	VL-ugal 7 (21.50 days)
2.	Plant height (cm)	94.00-152.00	IC341653, EC104484, EC009726, EC001537, IC540853, EC037289, IC547385, IC540855, EC016580, EC018300, EC018282 (> 126.0 cm)	Himpriya (126.00 cm)
3.	No. of leaves per plant	47.00-291.00	EC001537, EC037289, EC104484, IC547384, EC016580, EC099946, IC016580, IC547388 (> 209)	Himpriya (209.00)
4.	Leaf length (cm)	3.40-6.50	IC540853, EC104484, IC547385 (> 5.55 cm)	VL-ugal 7 (5.55 cm)
5.	Leaf width (cm)	2.70-5.20	EC104484, IC540853, IC341653 (> 4.65 cm)	VL-ugal 7 (4.65 cm)
6.	Petiole length (cm	1.70-4.60	EC001537, IC540853, IC341653, EC018300, EC018629, EC099945, IC547385, IC017370, IC547388 (> 2.75 cm)	Himpriya (2.75 cm)
7.	Cyme length (cm)	1.70-5.90	EC104484, IC547385, IC540853, EC099948 (> 3.60 cm)	VL-ugal 7 (3.60 cm)

8.	No. of nodes per plant	10.50-22.00	IC017370, IC540851, IC547384 (> 21)	Himpriya (21.00)
9.	No. of inflorescence per plant	50.00-22.00	EC037289, EC001537, EC104484, EC099946, IC547388, EC016580, IC016580, IC547385, IC547384 (> 145.50)	Himpriya (145.50)
10.	Yield per plant (g)	1.20-13.20	EC037289, EC001537, EC099948, IC016580, IC013140 (> 6.93 g)	VL-ugal 7 (6.93 g)
11.	100 seed weight (g)	1.30-3.20	IC547385 (> 2.97 g)	VL-ugal 7 (2.97 g)
Shimla (Accessions 26)				
1.	Plant height (cm)	92.35-203.60	IC341653 (> 201.35 cm)	PRB-1 (201.35 cm)
2.	No. of leaves per plant	15.50-23.00	EC099948, IC540856, EC099945, EC018629, IC018664, EC037289, IC540851, IC540853, IC013140, EC018282 (> 18.50)	Himpriya (18.50)
3.	Leaf length (cm)	4.40-12.05	IC540853, EC099945, IC016579, IC547385, IC341653, EC037289, IC540855, EC104484, IC013140 (> 8.35 cm)	Himpriya (8.35 cm)
4.	Leaf width (cm)	3.50-12.15	IC016579, IC540853 (> 10.85 cm)	Himpriya (10.85 cm)
5.	Petiole length (cm	2.60-8.65	IC540853 (> 8.30 cm)	PRB-1 (8.30 cm)
6.	Cyme length (cm)	2.80-12.25	EC018300, IC540853 (> 9.65 cm)	PRB-1 (9.65 cm)
7.	No. of primary branches	2.50-7.00	IC016579, IC017370, IC540856, IC016580 (> 6.10)	Himpriya (6.10)
8.	No. of internodes	15.00-22.50	EC099948, EC018629, IC018664, EC037289, IC540856, EC099945, IC540851, IC540853, IC013140, EC018282 (> 18.0)	Himpriya (18.0)
9.	Yield per plant (g)	8.96-34.46	IC016579, IC017370, EC037289, EC099945, EC018629, EC018282, IC013140, IC341653, EC016580, EC099948, EC099946, EC012537, IC018664 (> 15.92 g)	PRB-1 (15.92 q)
Sangla (Accessions 25)				
1.	Days to 50% flowering	51.00-74.00	EC018300, EC018629, EC099946, EC104484, EC037289, EC097262, EC012537, IC547384 (< 55.0 days)	Shimla B-1 (55.00 days)
2.	Plant height (cm)	89.00-153.00	EC018629 (> 135.50 cm)	Himpriya (135.50 cm)
3.	Yield per plant (g)	2.60-9.00	IC540851, IC013140, EC018629, EC099945, IC017370, EC012537, IC018664, EC018300, EC016580, IC540859, EC097262, IC547388, IC540855 (> 4.80 g)	Shimla B-1 (4.80 g)

4.	Yield (q/ha)	7.22-32.18	IC540851, IC013140, IC540859, EC018629, EC099945, EC018300, IC018664, IC017370, EC099946, EC037289, EC012537, IC547388, EC099948, EC097262, IC016579, IC540856 (> 13.60 q/ha)	Shimla B-1 (13.60 q/ha)
Best entries over locations				
1.	No. of leaves per plant	12.62-118.75	IC016580, EC012537, EC037289, EC104484, IC547384, EC099946, EC016580, IC547388 (> 79.54)	Himpriya (79.54)
2.	Leaf length (cm)	4.00-9.28	IC540853, IC547385 (> 7.50 cm)	PRB-1 (7.50 cm)
3.	Leaf width (cm)	3.50-8.18	IC540853, IC016579 (> 7.43 cm)	Himpriya (7.43 cm)
4.	No. of inflorescence per plant	25.00-120.50	EC037289, EC012537, EC104484, IC547388, EC099946, EC016580, IC016580, IC547385, IC547384 (> 84.25)	Himpriya (84.25)
5.	No. of primary branches	2.25-7.25	IC016580 (> 5.70)	Himpriya (5.70)
6.	Yield (q/ha)	3.80-17.26	IC540851, IC013140, EC018629, IC540859, IC017370, EC097262, EC018300, EC099945, EC099948, IC016579, IC018664, EC099946, EC037289 (> 9.02 q/ha)	Shimla B1 (9.02 q/ha)

Table 133. Multilocation evaluation of germplasm lines in buckwheat - Hills (2007)

S. No.	Accession No.	Days to 50% flowering					Leaf Length (cm)			Leaf width (cm)		
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Shimla	Mean	Almora	Shimla	Mean
1	EC012537	40	46	54	48	**47.00**	4.90	5.35	**5.13**	4.50	6.30	**5.40**
2	EC016580	38	42	58	47	**46.25**	4.20	8.30	**6.25**	3.70	7.95	**5.83**
3	EC018282	38	53	62	51	**51.00**	4.40	7.10	**5.75**	4.30	8.80	**6.55**
4	EC018300	39	47	51	51	**47.00**	5.50	7.50	**6.50**	4.40	9.05	**6.73**
5	EC018629	38	53	51	50	**48.00**	4.80	8.10	**6.45**	4.50	8.50	**6.50**
6	EC037289	37	53	52	50	**48.00**	5.20	9.25	**7.23**	4.60	9.70	**7.15**
7	EC097262	37	47	53	48	**46.25**	4.90	5.50	**5.20**	3.40	5.80	**4.60**
8	EC099945	39	68	56	51	**53.50**	4.10	9.80	**6.95**	3.60	10.60	**7.10**
9	EC099946	40	68	51	52	**52.75**	3.50	7.50	**5.50**	3.80	10.10	**6.95**
10	EC099948	39	47	63	48	**49.25**	4.60	6.45	**5.53**	3.80	7.10	**5.45**
11	EC104484	21	32	51	42	**36.50**	6.20	8.60	**7.40**	5.20	6.35	**5.78**
12	IC013140	39	53	68	50	**52.50**	5.10	8.45	**6.78**	4.50	9.05	**6.78**
13	IC016579	38	68	69	51	**56.50**	4.40	9.55	**6.98**	4.20	12.15	**8.18**
14	IC016580	34	-	-	46	**40.00**	4.70	6.35	**5.53**	3.90	6.30	**5.10**
15	IC017370	40	68	74	38	**55.00**	4.40	7.55	**5.98**	4.40	9.40	**6.90**
16	IC018664	20	68	69	52	**52.25**	3.50	5.85	**4.68**	3.00	7.40	**5.20**
17	IC341653	32	47	57	52	**47.00**	5.50	9.35	**7.43**	4.90	7.40	**6.15**
18	IC540851	41	32	68	46	**46.75**	3.60	6.45	**5.03**	3.30	6.85	**5.08**
19	IC540853	22	32	57	47	**39.50**	6.50	12.05	**9.28**	5.00	11.35	**8.18**
20	IC540855	30	53	59	53	**48.75**	5.10	8.65	**6.88**	3.60	9.45	**6.53**
21	IC540856	43	58	67	52	**55.00**	4.10	6.00	**5.05**	3.60	7.00	**5.30**
22	IC540859	41	68	58	52	**54.75**	3.40	7.70	**5.55**	3.20	8.75	**5.98**

Table 133. Multilocation evalua

S. No.	Accession No.	Petiole length (cm)			No. of primary branches				No. of inflorescence per plant		
		Almora	Shimla	Mean	Almora	Ranichauri	Shimla	Mean	Almora	Shimla	Mean
1	EC012537	4.60	4.10	**4.35**	8.0	1.2	3.0	**4.07**	202.00	19.00	**110.50**
2	EC016580	2.40	3.70	**3.05**	9.0	1.0	2.5	**4.17**	171.00	23.50	**97.25**
3	EC018282	2.20	3.10	**2.65**	10.0	1.0	3.5	**4.83**	102.00	25.00	**63.50**
4	EC018300	3.90	3.75	**3.83**	8.0	1.2	4.0	**4.40**	130.00	30.00	**80.00**
5	EC018629	3.30	4.35	**3.83**	8.0	1.0	4.5	**4.50**	131.00	25.00	**78.00**
6	EC037289	2.60	4.25	**3.43**	9.0	1.0	6.0	**5.33**	220.00	21.00	**120.50**
7	EC097262	2.40	3.30	**2.85**	9.0	1.2	4.0	**4.73**	112.00	21.00	**66.50**
8	EC099945	3.30	5.60	**4.45**	9.0	1.0	4.5	**4.83**	143.00	21.00	**82.00**
9	EC099946	2.50	4.50	**3.50**	9.0	1.0	5.0	**5.00**	174.00	23.00	**98.50**
10	EC099948	2.70	2.60	**2.65**	5.0	1.2	5.0	**3.73**	88.00	22.50	**55.25**
11	EC104484	2.50	2.60	**2.55**	6.0	1.0	3.0	**3.33**	177.00	24.00	**100.50**
12	IC013140	1.90	6.45	**4.18**	9.0	1.2	4.5	**4.90**	128.00	27.00	**77.50**
13	IC016579	2.10	7.75	**4.93**	9.0	1.0	7.0	**5.67**	88.00	25.50	**56.75**
14	IC016580	2.10	2.60	**2.35**	8.0	-	6.5	**7.25**	169.00	25.00	**97.00**
15	IC017370	3.10	4.50	**3.80**	9.0	1.0	6.5	**5.50**	111.00	26.00	**68.50**
16	IC018664	1.70	4.80	**3.25**	9.0	1.0	4.5	**4.83**	145.00	17.50	**81.25**
17	IC341653	3.90	4.30	**4.10**	7.0	1.0	6.0	**4.67**	118.00	29.00	**73.50**
18	IC540851	2.10	4.35	**3.23**	7.0	1.0	4.0	**4.00**	102.00	22.50	**62.25**
19	IC540853	4.10	8.65	**6.38**	5.0	1.0	3.5	**3.17**	123.00	18.50	**70.75**
20	IC540855	2.30	4.15	**3.23**	6.0	1.4	5.0	**4.13**	128.00	20.50	**74.25**
21	IC540856	1.70	4.15	**2.93**	8.0	1.0	6.5	**5.17**	116.00	26.00	**71.00**
22	IC540859	2.00	7.15	**4.58**	10.0	1.6	5.0	**5.53**	136.00	21.50	**78.75**

Table 133. Multilocation evalua

S. No.	Accession No.	Cyme length (cm)			Plant height (cm)				
		Almora	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
1	EC012537	3.30	3.00	**3.15**	139.00	64.00	106.00	125.45	**108.61**
2	EC016580	3.20	8.40	**5.80**	130.00	59.40	125.00	157.30	**117.93**
3	EC018282	1.70	4.05	**2.88**	127.00	61.80	120.00	172.40	**120.30**
4	EC018300	2.30	12.25	**7.28**	129.00	53.00	131.00	176.50	**122.38**
5	EC018629	2.10	3.30	**2.70**	121.00	58.80	153.00	177.10	**127.48**
6	EC037289	3.60	5.10	**4.35**	135.00	65.20	123.00	175.65	**124.71**
7	EC097262	2.90	4.70	**3.80**	141.00	55.20	120.00	107.40	**105.90**
8	EC099945	3.00	2.80	**2.90**	105.00	89.60	130.00	150.45	**118.76**
9	EC099946	2.90	4.35	**3.63**	108.00	69.40	128.00	156.45	**115.46**
10	EC099948	3.80	6.55	**5.18**	112.00	94.00	118.00	140.00	**116.00**
11	EC104484	5.90	7.30	**6.60**	142.00	113.60	98.00	169.30	**130.73**
12	IC013140	2.30	4.40	**3.35**	109.00	56.60	94.00	127.40	**96.75**
13	IC016579	2.30	7.30	**4.80**	108.00	81.80	120.00	132.95	**110.69**
14	IC016580	2.30	8.35	**5.33**	115.00	-	-	165.50	**140.25**
15	IC017370	3.20	4.45	**3.83**	112.00	88.20	122.00	157.35	**119.89**
16	IC018664	2.10	3.25	**2.68**	100.00	69.20	133.00	92.35	**98.64**
17	IC341653	2.80	6.55	**4.68**	152.00	100.00	119.00	203.60	**143.65**
18	IC540851	2.50	3.50	**3.00**	124.00	89.60	122.00	118.30	**113.48**
19	IC540853	5.20	11.00	**8.10**	136.00	87.40	115.00	197.50	**133.98**
20	IC540855	2.80	8.70	**5.75**	134.00	62.20	101.00	157.50	**113.68**
21	IC540856	2.00	4.35	**3.18**	103.00	54.40	105.00	109.30	**92.93**
22	IC540859	2.10	3.25	**2.68**	102.00	53.80	124.00	111.70	**97.88**

Table 133. Multilocation evalua

S. No.	Accession No.	Days to maturity					Seed yield per plant (g)				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
1	EC012537	76	104	134	109	**105.75**	8.00	21.51	5.20	17.82	**13.13**
2	EC016580	77	99	138	108	**105.50**	5.60	17.50	5.00	21.06	**12.29**
3	EC018282	74	99	144	108	**106.25**	5.20	17.31	4.00	21.89	**12.10**
4	EC018300	74	99	134	108	**103.75**	5.20	29.64	5.00	15.60	**13.86**
5	EC018629	72	104	134	107	**104.25**	4.00	23.01	6.00	21.91	**13.73**
6	EC037289	74	109	136	109	**107.00**	13.20	17.64	4.00	22.21	**14.26**
7	EC097262	76	104	136	108	**106.00**	6.00	37.30	5.00	10.05	**14.59**
8	EC099945	76	109	144	120	**112.25**	4.00	21.25	6.00	22.18	**13.36**
9	EC099946	75	104	134	120	**108.25**	5.60	20.39	4.20	18.36	**12.14**
10	EC099948	68	119	140	120	**111.75**	7.60	43.10	4.00	19.49	**18.55**
11	EC104484	72	109	134	109	**106.00**	4.00	16.04	4.00	10.81	**8.71**
12	IC013140	68	99	134	103	**101.00**	7.20	25.58	7.00	21.48	**15.32**
13	IC016579	67	134	142	118	**115.25**	5.20	49.58	4.00	34.46	**23.31**
14	IC016580	67	-	-	102	**84.50**	7.20	-	-	11.72	**9.46**
15	IC017370	70	119	142	118	**112.25**	2.40	49.16	6.00	25.42	**20.75**
16	IC018664	67	109	142	102	**105.00**	5.20	14.60	5.00	16.57	**10.34**
17	IC341653	74	119	142	116	**112.75**	4.40	22.15	4.00	21.28	**12.96**
18	IC540851	78	104	134	116	**108.00**	2.40	21.09	9.00	10.63	**10.78**
19	IC540853	67	104	134	111	**104.00**	5.20	17.21	4.00	12.14	**9.64**
20	IC540855	67	109	134	109	**104.75**	4.00	15.74	5.00	12.77	**9.38**
21	IC540856	77	99	134	117	**106.75**	2.00	23.50	4.00	10.80	**10.08**
22	IC540859	78	109	134	108	**107.25**	2.40	20.75	5.00	10.70	**9.71**

Table 133. Multilocation evalua

S. No.	Accession No.	100 seed weight (g)				Seed yield (q/ha)			Number of leaves per plant			
		Almora	Ranichauri	Shimla	Mean	Ranichauri	Sangla	Mean	Almora	Ranichauri	Shimla	Mean
1	EC012537	2.40	1.71	1.79	**1.97**	2.39	15.54	**8.97**	291	13.60	16.50	**107.03**
2	EC016580	2.20	1.72	1.60	**1.84**	1.94	12.40	**7.17**	223	11.00	16.50	**83.50**
3	EC018282	2.40	1.72	1.92	**2.01**	1.92	11.60	**6.76**	175	11.60	19.50	**68.70**
4	EC018300	1.60	1.76	1.30	**1.55**	3.29	18.20	**10.75**	174	10.40	17.00	**67.13**
5	EC018629	1.70	1.74	2.37	**1.94**	2.56	19.96	**11.26**	173	13.20	21.00	**69.07**
6	EC037289	2.10	1.72	2.31	**2.04**	1.96	16.21	**9.09**	265	15.20	20.50	**100.23**
7	EC097262	1.90	1.72	1.73	**1.78**	7.48	14.20	**10.84**	153	11.40	15.50	**59.97**
8	EC099945	1.30	1.74	1.65	**1.56**	2.36	18.65	**10.51**	195	12.20	21.00	**76.07**
9	EC099946	1.90	1.74	1.92	**1.85**	2.27	16.65	**9.46**	220	14.60	18.50	**84.37**
10	EC099948	1.50	1.75	1.74	**1.66**	4.80	14.99	**9.90**	109	13.00	23.00	**48.33**
11	EC104484	2.30	1.75	1.96	**2.00**	1.78	12.88	**7.33**	250	13.60	16.50	**93.37**
12	IC013140	1.80	1.74	1.49	**1.68**	2.84	28.89	**15.87**	177	13.60	19.50	**70.03**
13	IC016579	1.70	1.71	1.75	**1.72**	5.51	13.88	**9.70**	121	10.40	17.00	**49.47**
14	IC016580	2.10	-	1.68	**1.89**	-	-	**-**	219	-	18.50	**118.75**
15	IC017370	2.20	1.77	2.20	**2.06**	5.46	16.65	**11.06**	166	12.20	17.00	**65.07**
16	IC018664	2.10	1.70	1.75	**1.85**	1.62	17.43	**9.53**	159	9.20	21.00	**63.07**
17	IC341653	2.70	1.70	1.84	**2.08**	2.46	11.10	**6.78**	132	14.60	17.00	**54.53**
18	IC540851	2.00	1.73	1.71	**1.81**	2.34	32.18	**17.26**	135	11.60	20.50	**55.70**
19	IC540853	2.80	2.00	2.10	**2.30**	1.91	7.22	**4.57**	136	11.00	19.50	**55.50**
20	IC540855	2.90	1.80	2.22	**2.31**	1.69	11.99	**6.84**	127	10.80	16.50	**51.43**
21	IC540856	1.90	1.76	1.55	**1.74**	2.61	13.75	**8.18**	168	10.40	22.00	**66.80**
22	IC540859	2.00	1.76	1.63	**1.80**	2.31	19.98	**11.15**	197	9.00	16.50	**74.17**

Table 133. Multilocation evalua

S. No.	Accession No.	No. of secondary branches	Number of node per plant	Shimla	
		Ranichauri	Almora	No of internodes	No. of seed/infl.
1	EC012537	3.20	21	15.50	8.0
2	EC016580	2.80	21	15.50	5.0
3	EC018282	2.20	20	18.50	8.0
4	EC018300	3.00	19	16.50	10.0
5	EC018629	3.20	18	20.50	8.0
6	EC037289	2.40	21	20.50	8.0
7	EC097262	2.80	20	15.50	8.0
8	EC099945	2.20	20	20.00	6.0
9	EC099946	3.40	17	17.00	6.0
10	EC099948	2.40	11	22.50	4.0
11	EC104484	2.60	20	15.50	6.0
12	IC013140	2.60	17	18.50	8.0
13	IC016579	2.40	19	16.50	6.0
14	IC016580	-	21	17.50	5.5
15	IC017370	2.80	22	16.00	8.0
16	IC018664	1.60	19	20.50	7.0
17	IC341653	2.20	19	16.00	6.0
18	IC540851	2.60	22	20.00	10.0
19	IC540853	3.00	17	19.00	5.5
20	IC540855	2.80	17	15.00	6.0
21	IC540856	3.00	20	20.00	7.5
22	IC540859	2.60	21	15.50	8.0

S. No.	Accession No.	Days to 50% flowering					Leaf Length (cm)			Leaf width (cm)		
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Shimla	Mean	Almora	Shimla	Mean
23	IC547384	43	68	54	43	**52.00**	3.40	4.60	**4.00**	3.10	5.80	**4.45**
24	IC547385	23	32	57	42	**38.50**	6.00	9.45	**7.73**	4.60	8.35	**6.48**
25	IC547388	25	68	60	51	**51.00**	3.60	4.40	**4.00**	2.70	6.20	**4.45**
26	IC547390	42	68	56	44	**52.50**	3.40	6.10	**4.75**	2.90	7.10	**5.00**
	Mean for check varieties											
	Himpriya (C)	36.50	68.00	67.50	54.00	**56.50**	4.15	8.35	**6.25**	4.00	10.85	**7.43**
	PRB-1 (C)	-	58.00	-	49.00	**53.50**	-	7.50	**7.50**	-	7.30	**7.30**
	Shimla B1 (C)	-	37.00	55.00	38.00	**43.33**	-	4.50	**4.50**	-	3.50	**3.50**
	VL-7 (C)	21.50	-	**-**	36.00	**28.75**	5.55	6.50	**6.03**	4.65	7.10	**5.88**
	Minimum	**20.00**	**32.00**	**51.00**	**36.00**	**28.75**	**3.40**	**4.40**	**4.00**	**2.70**	**3.50**	**3.50**
	Maximum	**43.00**	**68.00**	**74.00**	**54.00**	**56.50**	**6.50**	**12.05**	**9.28**	**5.20**	**12.15**	**8.18**
	Mean	**34.89**	**53.64**	**59.17**	**47.80**	**48.32**	**4.60**	**7.43**	**6.06**	**3.98**	**8.05**	**6.06**
	CV (%) Phenotypic	**21.26**	**24.39**	**11.42**	**10.02**	**13.45**	**19.40**	**24.08**	**20.08**	**17.07**	**23.34**	**19.98**

S. No.	Accession No.	Petiole length (cm)			No. of primary branches				No. of inflorescence per plant		
		Almora	Shimla	Mean	Almora	Ranichauri	Shimla	Mean	Almora	Shimla	Mean
23	IC547384	2.70	2.70	**2.70**	8.0	1.2	4.5	**4.57**	149.00	20.50	**84.75**
24	IC547385	3.10	4.65	**3.88**	6.0	1.0	4.0	**3.67**	160.00	17.50	**88.75**
25	IC547388	2.80	3.25	**3.03**	8.0	1.0	4.0	**4.33**	173.00	26.50	**99.75**
26	IC547390	2.60	4.40	**3.50**	8.0	1.2	5.5	**4.90**	83.00	23.00	**53.00**
	Mean for check varieties										
	Himpriya (C)	2.75	4.80	**3.78**	10.00	1.00	6.10	**5.70**	145.50	23.00	**84.25**
	PRB-1 (C)	-	8.30	**8.30**	-	1.00	3.50	**2.25**	-	31.00	**31.00**
	Shimla B1 (C)	-	3.50	**3.50**	-	1.07	4.00	**2.53**	-	25.00	**25.00**
	VL-7 (C)	1.75	5.25	**3.50**	5.00	-	3.00	**4.00**	50.00	21.50	**35.75**
	Minimum	**1.70**	**2.60**	**2.35**	**5.00**	**1.00**	**2.50**	**2.25**	**50.00**	**17.50**	**25.00**
	Maximum	**4.60**	**8.65**	**8.30**	**10.00**	**1.60**	**7.00**	**7.25**	**220.00**	**31.00**	**120.50**
	Mean	**2.68**	**4.59**	**3.74**	**7.93**	**1.09**	**4.62**	**4.52**	**134.80**	**23.40**	**75.54**
	CV (%) Phenotypic	**28.06**	**35.45**	**31.95**	**19.09**	**13.55**	**26.09**	**22.06**	**28.03**	**14.64**	**29.35**

S. No.	Accession No.	Cyme length (cm)			Plant height (cm)				
		Almora	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
23	IC547384	2.00	2.80	**2.40**	104.00	55.40	89.00	110.40	**89.70**
24	IC547385	5.50	6.05	**5.78**	135.00	89.20	98.00	186.00	**127.05**
25	IC547388	1.80	4.10	**2.95**	94.00	52.60	112.00	120.75	**94.84**
26	IC547390	2.30	4.40	**3.35**	97.00	51.80	107.00	121.00	**94.20**
	Mean for check varieties								
	Himpriya (C)	3.10	6.25	**4.68**	126.00	81.93	**135.50**	128.55	**118.00**
	PRB-1 (C)	-	9.65	**9.65**	-	101.80	**-**	201.35	**151.58**
	Shimla B1 (C)	-	9.60	**9.60**	-	87.80	**129.00**	181.75	**132.85**
	VL-7 (C)	3.60	5.35	**4.48**	109.50	-	**-**	159.00	**134.25**
	Minimum	**1.70**	**2.80**	**2.40**	**94.00**	**51.80**	**89.00**	**92.35**	**89.70**
	Maximum	**5.90**	**12.25**	**9.65**	**152.00**	**113.60**	**153.00**	**203.60**	**151.58**
	Mean	**2.95**	**5.84**	**4.62**	**119.63**	**73.13**	**117.69**	**149.68**	**117.08**
	CV (%) Phenotypic	**36.52**	**44.27**	**43.23**	**13.33**	**24.89**	**12.28**	**20.78**	**13.74**

S. No.	Accession No.	Days to maturity					Seed yield per plant (g)				
		Almora	Ranichauri	Sangla	Shimla	Mean	Almora	Ranichauri	Sangla	Shimla	Mean
23	IC547384	78	99	134	107	**104.50**	2.00	23.26	4.00	10.79	**10.01**
24	IC547385	78	104	134	109	**106.25**	2.40	22.91	2.60	10.43	**9.59**
25	IC547388	78	99	134	110	**105.25**	2.00	14.82	5.00	11.09	**8.23**
26	IC547390	78	99	134	109	**105.00**	1.20	22.40	4.00	8.96	**9.14**
	Mean for check varieties										
	Himpriya (C)	74.50	134.00	**139.00**	117.00	**116.13**	5.07	45.83	**4.60**	10.72	**16.55**
	PRB-1 (C)	-	119.00	**-**	118.00	**118.50**	-	34.22	**-**	15.92	**25.07**
	Shimla B1 (C)	-	99.00	**114.50**	61.00	**91.50**	-	39.96	**4.80**	10.09	**18.28**
	VL-7 (C)	49.00	-	**-**	70.00	**59.50**	6.93	-	**-**	10.82	**8.88**
	Minimum	**49.00**	**99.00**	**114.50**	**61.00**	**59.50**	**1.20**	**14.60**	**2.60**	**8.96**	**8.23**
	Maximum	**78.00**	**134.00**	**144.00**	**120.00**	**118.50**	**13.20**	**49.58**	**9.00**	**34.46**	**25.07**
	Mean	**72.48**	**107.75**	**135.91**	**108.23**	**104.83**	**4.84**	**25.98**	**4.83**	**15.94**	**13.14**
	CV (%) Phenotypic	**8.52**	**9.25**	**4.14**	**11.88**	**10.25**	**51.89**	**41.39**	**25.31**	**38.50**	**33.37**

S. No.	Accession No.	100 seed weight (g)				Seed yield (q/ha)			Number of leaves per plant			
		Almora	Ranichauri	Shimla	Mean	Ranichauri	Sangla	Mean	Almora	Ranichauri	Shimla	Mean
23	IC547384	2.00	1.70	1.65	**1.78**	2.64	11.10	**6.87**	236	9.80	18.50	**88.10**
24	IC547385	3.20	1.76	2.12	**2.36**	2.55	13.32	**7.94**	198	10.20	16.50	**74.90**
25	IC547388	2.10	1.75	1.76	**1.87**	1.65	15.54	**8.60**	214	8.60	18.00	**80.20**
26	IC547390	2.10	1.70	0.90	**1.57**	2.49	11.10	**6.80**	115	14.40	18.50	**49.30**
	Mean for check varieties											
	Himpriya (C)	1.93	1.74	1.91	**1.86**	5.09	**12.76**	**8.92**	209.00	11.13	18.50	**79.54**
	PRB-1 (C)	-	1.71	2.09	**1.90**	3.80	**-**	**3.80**	-	12.47	17.50	**14.98**
	Shimla B1 (C)	-	1.71	1.80	**1.75**	4.44	**13.60**	**9.02**	-	8.73	16.50	**12.62**
	VL-7 (C)	2.97	-	2.71	**2.84**	-	**-**	**-**	47.00	-	17.00	**32.00**
	Minimum	**1.30**	1.70	0.90	**1.55**	**1.62**	**7.22**	**3.80**	**47.00**	**8.60**	**15.50**	**12.62**
	Maximum	**3.20**	2.00	2.71	**2.84**	**7.48**	**32.18**	**17.26**	**291.00**	**15.20**	**23.00**	**118.75**
	Mean	**2.14**	1.74	1.84	**1.91**	**3.01**	**15.62**	**9.10**	**178.00**	**11.71**	**18.38**	**67.13**
	CV (%) Phenotypic	**21.12**	**3.19**	**18.70**	**14.10**	**48.68**	**33.58**	**31.24**	**29.89**	**16.21**	**10.66**	**35.24**

S. No.	Accession No.	No. of secondary branches	Number of node per plant	Shimla	
		Ranichauri	Almora	No of internodes	No. of seed/infl.
23	IC547384	2.40	22	18.00	5.5
24	IC547385	2.20	17	16.00	7.5
25	IC547388	2.20	18	16.50	6.0
26	IC547390	4.20	18	16.50	7.0
	Mean for check varieties				
	Himpriya (C)	2.20	21.00	18.00	7.00
	PRB-1 (C)	2.60	-	17.00	8.00
	Shimla B1 (C)	1.73	-	15.00	10.00
	VL-7 (C)	-	10.50	17.00	4.50
	Minimum	**1.60**	**10.50**	**15.00**	**4.00**
	Maximum	**4.20**	**22.00**	**22.50**	**10.00**
	Mean	**2.62**	**18.88**	**17.53**	**7.00**
	CV (%) Phenotypic	**20.02**	**14.94**	**11.58**	**22.12**

Table 134. Characterization of germplasm lines in buckwheat at Shimla - Hills (2007)

S. No.	Accession No.	Early plant vigour	Plant growth habit	Flower colour	Leaf Colour	Leaf margin colour	Leaf blade shape	Stem colour	Seed shape	Seed colour	Seed Shattering
1	EC012537	3	3	1	3	5	2	7	1	3	3
2	EC016580	3	3	1	3	5	2	7	2	5	3
3	EC018282	3	3	1	3	5	2	7	3	5	3
4	EC018300	3	3	1	3	5	2	7	2	5	3
5	EC018629	3	3	1	3	5	2	7	1	3	3
6	EC037289	3	3	1	3	5	2	7	2	3	3
7	EC097262	3	3	1	3	5	2	7	2	3	3
8	EC099945	3	3	1	3	5	3	7	3	7	3
9	EC099946	3	3	1	3	5	3	7	2	3	3
10	EC099948	3	3	1	3	5	3	7	3	7	3
11	EC104484	3	3	5	3	5	2	7	1	5	3
12	IC013140	3	3	1	3	5	2	7	1	3	3
13	IC016579	3	3	1	3	5	2	7	1	3	3
14	IC016580	3	3	1	3	5	2	7	3	5	3
15	IC017370	3	3	1	3	5	2	7	3	5	3
16	IC018664	3	3	1	3	5	2	7	3	7	3
17	IC341653	3	3	5	3	5	2	7	1	5	3
18	IC540851	3	3	1	3	5	2	7	1	3	3
19	IC540853	3	3	5	3	5	2	7	3	5	3
20	IC540855	3	3	5	3	5	2	7	3	5	3
21	IC540856	3	3	1	3	5	2	7	2	5	3
22	IC540859	3	3	1	3	5	2	7	3	2	3
23	IC547384	3	3	1	3	5	2	7	3	3	3
24	IC547385	3	3	5	3	5	2	7	1	5	3
25	IC547388	3	3	1	3	5	2	7	2	5	3
26	IC547390	3	3	1	3	5	2	7	2	3	3

S. No.	Accession No.	Early plant vigour	Plant growth habit	Flower colour	Leaf Colour	Leaf margin colour	Leaf blade shape	Stem colour	Seed shape	Seed colour	Seed Shattering
	Mean for check varieties										
	Himpriya (C)	3	3	1	3	5	2	7	3	7	3
	PRB-1 (C)	3	3	5	3	5	2	7	2	5	3
	Shimla B1 (C)	3	3	1	3	5	2	3	1	3	7
	VL-7 (C)	3	3	1	3	5	2	7	1	7	7
	Minimum	**3**	**3**	**1**	**3**	**5**	**2**	**3**	**1**	**2**	**3**
	Maximum	**3**	**3**	**5**	**3**	**5**	**3**	**7**	**3**	**7**	**7**

Qualitative Descriptors: 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-cordate, 99-others; Stem colour: 3- green, 5-pink, 7-red, 99-others; Seed shattering: 0-non-shattering, 3-low, 5-intermediate, 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.

Table 135. Promising lines in Chenopodium germplasm for various characters at various locations (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Shimla (Accessions 25)				
1.	Days to 50% flowering	76.00-115.00	IC540831, NIC22506, EC507733, IC540836, NIC22496, IC540811, IC540823, IC540834, IC540842, IC201680, IC363733, NIC22498, NIC22517 (< 98.0 days)	EC507741 (98.0 days)
2.	Plant height (cm)	171.00-333.55	IC363733, IC540837, IC258332, NIC22531, IC109731, IC201680, IC415393, IC341696, IC382222, IC540831, IC469276, IC341707, IC341699, IC540811, IC540823, NIC22506 (> 268.45 cm)	NIC22503 (268.45 cm)
3.	Inflorescence length (cm)	26.25-54.25	NIC22496, IC540836, IC109731, IC363733, IC540834, IC540842, NIC22517, IC540831, IC540837, IC201680, NIC22506, NIC22498, IC540811, IC540823, EC507733, IC382222 (> 43.80 cm)	EC507741 (43.80 cm)
4.	Leaf length (cm)	5.15-16.65	IC469276, IC540837, IC540834, IC341707, IC363733, IC540842, IC415393, IC540831, EC507733, IC540811, IC201680, EC359445 (> 13.30 cm)	NIC22503 (13.30 cm)
5.	Leaf width (cm)	1.30-14.60	IC415393, IC469276, IC341707 (> 13.40 cm)	PRC9801 (13.40 cm)
6.	Seed yield per plant (g)	2.51-29.24	EC507733, IC540831, NIC22506, IC540811, IC447575, IC469276, IC382222, IC540842, IC540823, IC415393, IC363733, IC540836, IC540834, IC201680, IC341699, IC540837 (> 9.12 g)	EC507741 (9.12 g)
7.	1000 seed weight (g)	0.40-1.20	EC507733, NIC22506, IC540811, IC540823 (> 0.90 g)	EC507741 (0.90 g)
Ranichauri (Accessions 25)				
1.	Days to 50% maturity	53.00-68.00	IC540836 (< 58 days)	NIC-22503 (58.00 days)
2.	Days to maturity	119.00-134.00	IC540836 (< 124 days)	EC507741 (124.00 days)
3.	Plant height (cm)	34.00-92.00	IC540842, IC540831, IC540836, IC540837, IC341696, IC341707, NIC-22531 (> 124.0 cm)	PRC-9801 (48.50 cm)
4.	Inflorescence length (cm)	4.00-8.00	IC540842, IC540836, NIC-22498, IC201680 (> 7.00 cm)	EC507741 (7.00 cm), NIC-22503 (7.00 cm)

5.	Seed yield (q/ha)	1.35-4.90	IC540837, IC540831, IC540836, IC540842, NIC-22498 (> 1.73 q/ha)	EC507741 (1.73 q/ha)
Best entries over locations				
1.	Days to 50% flowering	65.50-111.00	IC540836, IC540831, IC540842, IC201680, NIC22498, NIC22506, EC507733, IC363733, NIC22496, NIC22531 (< 80.50 days)	EC507741 (80.50 days)
2.	Plant height (cm)	107.00-289.25	IC109731, IC415393, IC382222, IC469276, IC540811, NIC22506, IC540823, IC447575, IC540834, NIC22496, EC507733, NIC22517, IC540837, IC540831, IC363733, IC258332, IC540842, NIC22531, IC341696, IC341707, IC201680, IC341699, IC540836 (> 151.73 cm)	NIC22503 (151.73 cm)
3.	Inflorescence length (cm)	16.31-54.25	NIC22496, IC109731, IC540834, NIC22517, NIC22506, IC540811, IC540823, EC507733, IC382222, IC447575, IC415393, IC469276, IC540836, IC540842, IC363733, IC540831, IC201680, IC540837, NIC22498 (> 25.40 cm)	EC507741 (25.40 cm)

Table 136. Multilocation evaluation of germplasm lines in Chenopodium - Hills (2007)

S. No.	Accession No.	Days to 50% flowering			Infloroscence length (cm)			Plant height (cm)		
		Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean
1	EC359445	68	100	**84.00**	5.00	36.35	**20.68**	44.00	259.35	**151.68**
2	EC507733	-	78	**78.00**	-	44.85	**44.85**	-	226.30	**226.30**
3	IC109731	-	105	**105.00**	-	50.45	**50.45**	-	289.25	**289.25**
4	IC201680	59	88	**73.50**	8.00	46.60	**27.30**	36.00	287.00	**161.50**
5	IC258332	68	115	**91.50**	4.00	41.00	**22.50**	39.00	317.05	**178.03**
6	IC341696	68	113	**90.50**	6.00	43.15	**24.58**	56.00	281.50	**168.75**
7	IC341699	58	113	**85.50**	6.37	26.25	**16.31**	45.43	271.35	**158.39**
8	IC341707	58	113	**85.50**	6.00	39.25	**22.63**	54.00	271.70	**162.85**
9	IC363733	68	89	**78.50**	6.00	49.30	**27.65**	34.00	333.55	**183.78**
10	IC382222	-	111	**111.00**	-	44.25	**44.25**	-	281.25	**281.25**
11	IC415393	-	110	**110.00**	-	38.45	**38.45**	-	282.00	**282.00**
12	IC447575	-	105	**105.00**	-	43.75	**43.75**	-	264.45	**264.45**
13	IC469276	-	105	**105.00**	-	33.25	**33.25**	-	276.25	**276.25**
14	IC540811	-	84	**84.00**	-	46.25	**46.25**	-	271.25	**271.25**
15	IC540823	-	84	**84.00**	-	45.85	**45.85**	-	270.40	**270.40**
16	IC540831	58	76	**67.00**	7.00	47.60	**27.30**	90.00	280.15	**185.08**
17	IC540834	-	84	**84.00**	-	49.15	**49.15**	-	254.45	**254.45**
18	IC540836	53	78	**65.50**	8.00	53.20	**30.60**	80.00	229.15	**154.58**

Table 136. Multilocatior

S. No.	Accession No.	Days to 80% maturity			Shimla				Ranichauri	
		Ranichauri	Shimla	Mean	Leaf length (cm)	Leaf width (cm)	Seed yield /plant (g)	1000 seed wt. (g)	No. of leaves/ plant	Seed yield (q/ha)
1	EC359445	129.00	150	**139.50**	13.55	13.15	3.40	0.50	4.00	1.40
2	EC507733	-	149	**149.00**	14.15	8.15	5.05	1.20	-	-
3	IC109731	-	154	**154.00**	11.30	10.15	4.38	0.40	-	-
4	IC201680	134.00	143	**138.50**	13.70	9.25	10.75	0.70	5.00	1.42
5	IC258332	134.00	159	**146.50**	10.55	9.30	5.95	0.60	6.00	1.35
6	IC341696	124.00	150	**137.00**	9.60	6.10	5.14	0.70	4.00	1.55
7	IC341699	124.00	154	**139.00**	12.60	11.60	10.32	0.70	4.38	1.59
8	IC341707	129.00	159	**144.00**	16.20	14.15	5.70	0.40	5.00	1.42
9	IC363733	129.00	153	**141.00**	15.25	12.25	13.64	0.70	8.00	1.42
10	IC382222	-	156	**156.00**	10.60	7.30	17.52	0.60	-	-
11	IC415393	-	157	**157.00**	14.50	14.60	13.78	0.70	-	-
12	IC447575	-	154	**154.00**	12.30	12.15	19.05	0.60	-	-
13	IC469276	-	163	**163.00**	16.65	14.15	17.70	0.80	-	-
14	IC540811	-	157	**157.00**	13.90	11.40	26.31	0.90	-	-
15	IC540823	-	157	**157.00**	13.10	12.85	14.36	0.90	-	-
16	IC540831	124.00	119	**121.50**	14.25	8.45	29.24	0.80	10.00	3.68
17	IC540834	-	144	**144.00**	16.25	10.45	11.73	0.70	-	-
18	IC540836	119.00	146	**132.50**	5.15	1.30	11.76	0.40	5.00	2.67

S. No.	Accession No.	Days to 50% flowering			Infloroscence length (cm)			Plant height (cm)		
		Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean
19	IC540837	64	108	**86.00**	7.00	47.45	**27.23**	65.00	320.65	**192.83**
20	IC540842	58	86	**72.00**	8.00	48.65	**28.33**	92.00	261.00	**176.50**
21	NIC22496	-	79	**79.00**	-	54.25	**54.25**	-	239.75	**239.75**
22	NIC22498	63	90	**76.50**	8.00	46.30	**27.15**	38.00	177.80	**107.90**
23	NIC22506	-	77	**77.00**	-	46.30	**46.30**	-	270.40	**270.40**
24	NIC22517	-	91	**91.00**	-	47.65	**47.65**	-	218.75	**218.75**
25	NIC22531	58	102	**80.00**	6.00	40.50	**23.25**	50.00	300.15	**175.08**
	Mean for check varieties									
	EC507741	63.00	98.00	**80.50**	7.00	43.80	**25.40**	43.00	171.00	**107.00**
	NIC22503	58.00	105.00	**81.50**	7.00	35.00	**21.00**	35.00	268.45	**151.73**
	PRC9801	60.50	114.00	**87.25**	6.00	39.30	**22.65**	48.50	241.40	**144.95**
	Minimum	**53.00**	**76.00**	**65.50**	**4.00**	**26.25**	**16.31**	**34.00**	**171.00**	**107.00**
	Maximum	**68.00**	**115.00**	**111.00**	**8.00**	**54.25**	**54.25**	**92.00**	**333.55**	**289.25**
	Mean	**61.41**	**96.46**	**85.65**	**6.59**	**43.86**	**33.54**	**53.12**	**264.85**	**203.75**
	CV (%) Phenotypic	**7.67**	**13.96**	**-**	**17.38**	**14.15**	**-**	**35.83**	**13.96**	**-**

S. No.	Accession No.	Days to 80% maturity			Shimla				Ranichauri	
		Ranichauri	Shimla	Mean	Leaf length (cm)	Leaf width (cm)	Seed yield /plant (g)	1000 seed wt. (g)	No. of leaves/ plant	Seed yield (q/ha)
19	IC540837	134.00	154	**144.00**	16.35	12.15	9.40	0.50	5.00	4.90
20	IC540842	129.00	141	**135.00**	14.50	9.10	15.69	0.80	4.00	2.03
21	NIC22496	-	141	**141.00**	10.35	6.65	5.40	0.70	-	-
22	NIC22498	125.00	150	**137.50**	8.15	7.15	5.85	0.50	9.00	1.87
23	NIC22506	-	128	**128.00**	10.15	5.75	28.40	1.10	-	-
24	NIC22517	-	150	**150.00**	8.50	6.15	6.85	0.60	-	-
25	NIC22531	129.00	155	**142.00**	12.40	11.80	3.22	0.70	10.00	1.63
	Mean for check varie									
	EC507741	124.00	113	**118.50**	5.80	2.80	9.12	0.90	5.00	1.73
	NIC22503	134.00	159	**146.50**	13.30	9.35	2.51	0.40	15.00	1.66
	PRC9801	126.50	159	**142.75**	12.60	13.40	3.75	0.40	6.00	1.61
	Minimum	**119.00**	**113.00**	**118.50**	**5.15**	**1.30**	**2.51**	**0.40**	**4.00**	**1.35**
	Maximum	**134.00**	**163.00**	**163.00**	**16.65**	**14.60**	**29.24**	**1.20**	**15.00**	**4.90**
	Mean	**127.97**	**149.07**	**143.42**	**12.35**	**9.68**	**11.28**	**0.68**	**6.59**	**2.00**
	CV (%) Phenotypic	**3.53**	**7.99**	**-**	**24.51**	**35.28**	**67.37**	**30.61**	**46.41**	**49.02**

Table 137. Characterization of germplasm lines in Chenopodium at Shimla - Hills (2007)

S. No.	Accession No.	Early plant vigour	Plant growth habit	Infl. Colour	Infl. Shape	Stem branching	Stem Colour	Leaf Colour	Leaf tip	Leaf Shape	Seed colour
1	EC359445	3	1	1	1	-	1	1	2	1	3
2	EC507733	3	1	1	1	2	3	1	2	2	4
3	IC109731	3	1	3	1	2	3	1	1	1	4
4	IC201680	3	1	2	1	-	3	1	2	2	3
5	IC258332	3	1	1	1	1	3	1	1	5	4
6	IC341696	3	1	1	1	2	3	1	2	5	4
7	IC341699	3	1	1	1	2	3	1	2	1	3
8	IC341707	3	1	1	1	2	3	1	2	1	3
9	IC363733	3	1	2	1	-	3	1	2	1	4
10	IC382222	3	1	1	1	2	3	1	2	5	4
11	IC415393	3	1	1	1	-	3	1	2	1	4
12	IC447575	3	1	1	1	2	3	1	2	1	4
13	IC469276	3	1	1	1	-	3	1	2	1	3
14	IC540811	3	1	1	1	-	1	1	2	1	3
15	IC540823	3	1	1	1	-	1	1	2	1	3
16	IC540831	3	1	1	1	2	1	1	2	2	4
17	IC540834	3	1	2	1	-	3	1	2	2	3
18	IC540836	3	1	1	1	-	3	1	2	2	3
19	IC540837	3	1	1	1	-	3	1	2	1	3
20	IC540842	3	1	2	1	2	3	1	2	2	3
21	NIC22496	3	1	1	1	2	1	1	2	2	4
22	NIC22498	3	1	2	1	2	3	1	2	5	4
23	NIC22506	3	1	1	1	2	3	1	2	6	4
24	NIC22517	3	1	1	1	2	3	1	2	5	4
25	NIC22531	3	1	3	1	2	3	1	2	1	4
	Mean for check varieties										
	EC507741 (C)	3	1	1	1	2	3	1	2	2	1
	NIC22503 (C)	3	1	1	1	1	1	1	2	1	3
	PRC9801 (C)	3	1	1	1	2	2	1	2	1	4
	Minimum	**3**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
	Maximum	**3**	**1**	**3**	**1**	**2**	**3**	**1**	**2**	**6**	**4**

Table 138. Promising lines in Adzukibean germplasm for various characters at various locations (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Ranichauri (Accessions 25)				
1.	Days to 50% flowering	47.00-72.00	EC018256, IC089957, EC018257, EC057459, EC080850, EC108080, EC120460, EC340244 (< 53.67 days)	HPU -51 (53.67 days)
2.	Days to maturity	98.00-118.00	EC018256, IC089957, EC018257, EC057459, EC080850, EC108080, EC120460, EC340244, IC024522 (< 104.67 days)	HPU -51 (104.67 days)
3.	Plant height (cm)	39.00-46.00	EC340240, EC018257, EC108080, EC240246, IC469173, EC057459, EC080850, IC024522, IC024105, IC341953, EC000372, EC087895, EC000248, IC341944, IC089957, EC120460, EC018256, IC341961, IC341952, IC341949 (> 42.53 cm)	HPU -51 (42.53 cm)
4.	100 seed weight (g)	25.15-36.33	EC340240, EC087895, EC340254, IC469173, EC281186, IC341949, EC340244, EC057459, EC340267, EC000248, EC240246, IC024105, EC187898, IC341944, IC341961 (> 28.96 g)	HPU -51 (28.96 g)
5.	Pod length (cm)	5.20-8.00	EC018257, EC108080, EC281186, EC018256, IC341952, IC341944, EC340244, EC240246 (> 6.67 cm)	HPU -51 (6.67 cm)
6.	No. of pods per plant	3.60-6.60	IC341944, EC120460, IC341953, EC057459, EC018257, EC108080 (> 5.80)	HPU -51 (5.80)
7.	No. of leaves per plant	6.00-13.40	EC000372, IC341961, EC340244, EC340240 (> 11.45)	HPU -51 (11.45)
8.	No. of seeds per pod	3.20-7.00	EC187898, IC341961, EC340240, IC024105, IC341953, EC000248, IC341952, EC108080, EC080850, EC087895, IC341949, IC341944, IC024522, EC340244, EC340254, EC240246, EC018257, EC057459 (> 4.47)	HPU -51 (4.47)
9.	Seed yield (q/ha)	1.51-6.03	EC340254, EC240246, IC341952, EC340244 (> 3.30 q/ha)	HPU -51 (3.30 q/ha)
Shimla (Accessions 25)				
1.	Days to 50% flowering	64.00-83.00	EC120460, EC281186, IC341961, EC057459, EC080850, EC108080, IC341944 (< 65.50 days)	HPU-51 (65.50 days)
2.	Days to maturity	102.00-122.00	IC341944, IC341952, IC341949, IC341953, IC024522, IC341961, EC018257, EC340240, EC057459 (< 114.0 days)	HPU-51 (114.00 days)
3.	Plant height (cm)	25.40-84.70	IC341949, EC340244, EC120460, EC240246, EC018257, EC340240, EC340254, EC281186, EC187898 (> 45.28 cm)	HPU-51 (45.28 cm)

4.	No. of primary branches	1.50-3.50	EC080850, EC087895, EC240246, EC340244, EC018257, EC120460, EC281186, IC089957, IC341949 (> 2.50)	HPU-51 (2.50)
5.	No. of cluster per plant	2.00-11.00	EC240246, EC120460, EC087895 (> 9.00)	HPU-51 (9.00)
6.	No. of pods per plant	6.50-34.00	EC240246, EC340244, EC281186, EC018257, EC340240 (> 24.00)	HPU-5 (24.00)
7.	100 seed weight (g)	4.21-19.24	EC087895, EC000248, IC341949, EC340254, EC340240, IC469173, EC281186, IC024522, IC089957, IC341953, EC018256, EC018257, IC341952, EC340267, EC080850, EC340244, EC057459, IC341944, EC240246 (> 9.67 g)	HPU-51 (9.67 g)
8.	No. of seeds per pod	3.00-10.00	EC000248, EC340240, EC018256, EC018257, EC080850, EC340244, EC000372, EC087895, EC057459 (> 9.61)	HPU-51 (9.61)
9.	Seed yield per plant (g)	10.70-67.74	EC340254, EC340244, EC240246, EC087895, EC340240, IC469173, EC281186, EC340267, EC108080, IC341949, EC187898, IC024522, IC024105, EC120460, EC018256, EC018257, IC341961 (> 36.25 g)	HPU-51 (36.25 g)
Palampur (Accessions 24)				
1.	Days to 50% flowering	48.00-62.00	EC000372 (< 48.67 days)	HPU-51 (48.67 days) Totru (48.67 days)
2.	Plant height (cm)	44.00-84.00	EC340244, IC341944, IC341952, EC000248, IC341949, EC240246, EC108080, EC018257, IC024522, IC024105, EC187898, EC057459, EC340267 (> 58.33 cm)	Totru (58.33 cm)
3.	Seed yield (q/ha)	2.78-30.00	EC018257, IC341953, EC087895, IC089957, IC024522, EC187898, EC057459, EC281186 (> 22.87 q/ha)	HPU-51 (22.87 q/ha)
Best entries over locations				
1.	Days to 50% flowering	55.33-69.33	EC120460, IC089957, EC057459 (< 55.94 days)	HPU-51 (55.94 days)
2.	Days to maturity	97.67-112.50	IC341952, IC341944, IC089957, IC024522, EC057459 (< 100.08 days)	Totru Local (100.08 days)
3.	Plant height (cm)	37.00-66.13	EC340244, IC341949, EC240246, EC018257, IC024105, IC024522, EC120460, EC000248, IC341944, EC108080, EC340267, EC187898, EC057459, IC089957, EC340254 (> 47.40 cm)	Totru Local (47.40 cm)

4.	100 seed weight (g)	4.21-27.19	EC087895, EC340240, EC000248, IC341949, EC340254, IC469173, EC281186, EC340267, EC340244, IC024522, EC057459, IC089957, EC240246, IC341953, IC341944, EC018256, IC341961, EC187898 (> 19.32 g)	HPU-51 (19.32 g)
5.	No. of pods per plant	6.35-19.60	EC240246, EC340244, EC281186, EC018257, EC340240 (> 19.40)	HPU-51 (14.90)
6.	Seed yield (q/ha)	2.44-16.20	EC018257, IC341953, EC087895, IC089957, EC187898, IC024522, EC057459 (> 13.08 q/ha)	HPU-51 (13.08 q/ha)

Table 139. Multilocation evaluation of germplasm lines in Adzuki bean - Hills (2007)

S. No.	Accession No.	Days to 50% flowering				No. of pods/plant			Plant height (cm)			
		Pamapur	Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Pamapur	Ranichauri	Shimla	Mean
1	EC000248	56	67	66	**63.00**	4.00	17.00	**10.50**	68.00	43.60	36.30	**49.30**
2	EC000372	48	57	67	**57.33**	5.40	13.50	**9.45**	54.00	43.60	39.15	**45.58**
3	EC018256	54	47	70	**57.00**	4.60	18.00	**11.30**	53.00	43.00	32.00	**42.67**
4	EC018257	53	52	71	**58.67**	6.00	27.50	**16.75**	64.00	44.80	54.15	**54.32**
5	EC057459	50	52	65	**55.67**	6.20	14.00	**10.10**	59.00	44.00	40.27	**47.76**
6	EC080850	55	52	65	**57.33**	4.80	22.50	**13.65**	49.00	44.00	25.75	**39.58**
7	EC087895	57	57	66	**60.00**	5.20	21.00	**13.10**	58.00	43.60	28.88	**43.49**
8	EC108080	54	52	65	**57.00**	6.00	11.00	**8.50**	64.00	44.80	37.15	**48.65**
9	EC120460	50	52	64	**55.33**	6.60	23.00	**14.80**	47.00	43.20	59.50	**49.90**
10	EC187898	50	62	67	**59.67**	3.60	20.50	**12.05**	59.00	39.00	45.30	**47.77**
11	EC240246	51	57	67	**58.33**	5.20	34.00	**19.60**	65.00	44.40	55.15	**54.85**
12	EC281186	49	57	64	**56.67**	5.10	29.00	**17.05**	47.00	42.40	46.00	**45.13**
13	EC340240	51	57	68	**58.67**	4.20	27.00	**15.60**	44.00	46.00	51.50	**47.17**
14	EC340244	54	52	70	**58.67**	4.60	31.00	**17.80**	84.00	39.80	74.60	**66.13**
15	EC340254	54	72	67	**64.33**	4.80	23.00	**13.90**	51.00	40.40	51.25	**47.55**
16	EC340267	56	57	68	**60.33**	5.60	24.00	**14.80**	59.00	40.80	44.25	**48.02**

Table 139. Multilocation evalu

S. No.	Accession No.	Days to maturity				Seed yield (q/ha)			100 seed weight (g)		
		Pamapur	Ranichauri	Shimla	Mean	Pamapur	Ranichauri	Mean	Ranichauri	Shimla	Mean
1	EC000248	93	113	116	**107.33**	21.11	2.45	**11.78**	30.12	15.96	**23.04**
2	EC000372	84	108	114	**102.00**	11.67	3.21	**7.44**	28.49	9.04	**18.77**
3	EC018256	89	98	116	**101.00**	21.67	2.97	**12.32**	28.21	10.80	**19.51**
4	EC018257	86	103	112	**100.33**	30.00	2.40	**16.20**	26.21	10.56	**18.39**
5	EC057459	84	103	112	**99.67**	24.45	2.96	**13.70**	30.21	10.02	**20.12**
6	EC080850	84	103	116	**101.00**	2.78	2.82	**2.80**	27.91	10.24	**19.08**
7	EC087895	96	108	117	**107.00**	28.34	3.10	**15.72**	35.14	19.24	**27.19**
8	EC108080	84	103	118	**101.67**	22.22	2.21	**12.22**	25.15	8.32	**16.74**
9	EC120460	84	103	118	**101.67**	13.33	1.62	**7.48**	26.30	9.08	**17.69**
10	EC187898	84	113	116	**104.33**	26.67	3.13	**14.90**	29.45	9.20	**19.33**
11	EC240246	84	108	120	**104.00**	20.56	5.30	**12.93**	29.90	9.80	**19.85**
12	EC281186	85	108	122	**105.00**	23.34	1.91	**12.62**	30.70	12.00	**21.35**
13	EC340240	83	108	112	**101.00**	11.11	2.22	**6.67**	36.33	14.08	**25.21**
14	EC340244	89	103	122	**104.67**	5.83	3.41	**4.62**	30.30	10.16	**20.23**
15	EC340254	84	118	118	**106.67**	5.56	6.03	**5.79**	31.48	14.20	**22.84**
16	EC340267	85	108	121	**104.67**	6.67	1.55	**4.11**	30.18	10.44	**20.31**

Table 139. Multilocation evalu

S. No.	Accession No.	No. of seeds/pod			Shimla				Ranichauri	
		Ranichauri	Shimla	Mean	Seed yield/plant (g)	No. of primary branches	No. of cluster/plant	No. of pods /cluster	Pod length (cm)	No. of leaves/plant
1	EC000248	5.60	10.0	**7.80**	30.20	2.50	5.00	2.50	6.00	9.00
2	EC000372	4.00	10.0	**7.00**	35.80	1.50	4.50	4.00	6.60	13.40
3	EC018256	4.40	10.0	**7.20**	41.60	2.00	2.50	3.00	7.20	10.60
4	EC018257	4.80	10.0	**7.40**	40.71	3.50	9.00	3.00	8.00	6.00
5	EC057459	4.60	9.8	**7.20**	26.21	2.00	6.50	4.00	6.40	9.00
6	EC080850	5.40	10.0	**7.70**	10.70	3.50	8.00	3.50	5.60	10.40
7	EC087895	5.40	9.9	**7.65**	55.11	3.50	10.00	2.50	5.40	8.40
8	EC108080	5.60	7.8	**6.70**	46.20	1.50	4.50	2.50	8.00	6.40
9	EC120460	4.00	9.1	**6.55**	43.12	3.00	10.50	2.50	6.60	9.00
10	EC187898	7.00	9.1	**8.05**	45.80	2.00	8.50	2.50	5.20	11.00
11	EC240246	4.80	8.5	**6.65**	59.70	3.50	11.00	3.50	6.80	8.40
12	EC281186	4.00	9.0	**6.50**	51.12	3.00	8.50	3.50	7.40	10.00
13	EC340240	5.80	10.0	**7.90**	54.26	2.50	8.50	3.00	5.20	11.80
14	EC340244	4.80	10.0	**7.40**	64.70	3.50	9.00	3.50	6.80	12.20
15	EC340254	4.80	9.5	**7.15**	67.74	2.50	8.00	3.00	6.40	10.40
16	EC340267	4.20	8.9	**6.55**	47.47	1.20	7.50	3.00	6.20	11.00

S. No.	Accession No.	Days to 50% flowering				No. of pods/plant			Plant height (cm)			
		Pamapur	Ranichauri	Shimla	Mean	Ranichauri	Shimla	Mean	Pamapur	Ranichauri	Shimla	Mean
17	IC024105	62	62	83	**69.00**	5.60	21.00	**13.30**	63.00	44.00	44.30	**50.43**
18	IC024522	51	57	67	**58.33**	5.60	17.00	**11.30**	63.00	44.00	43.25	**50.08**
19	IC089957	51	47	68	**55.33**	5.00	20.00	**12.50**	56.00	43.20	43.50	**47.57**
20	IC341944	50	57	65	**57.33**	6.60	17.50	**12.05**	73.00	43.40	30.40	**48.93**
21	IC341949	54	72	69	**65.00**	5.00	11.50	**8.25**	66.00	42.60	84.70	**64.43**
22	IC341952	50	57	82	**63.00**	5.60	10.00	**7.80**	69.00	42.80	25.40	**45.73**
23	IC341953	53	72	83	**69.33**	6.20	6.50	**6.35**	47.00	44.00	27.30	**39.43**
24	IC341961	53	72	64	**63.00**	4.40	19.00	**11.70**	58.00	43.00	31.25	**44.08**
25	IC469173		57	73	**65.00**	5.80	9.00	**7.40**		44.40	29.60	**37.00**
	Mean for check varieties											
	HPU-51 (C)	48.67	53.67	65.50	55.94	5.80	24.00	14.90	54.33	42.53	45.28	47.38
	Totru Local (C)	48.67		66.00	57.33		12.50	12.50	58.33		36.48	47.40
	Minimum	**48.00**	**47.00**	**64.00**	**55.33**	**3.60**	**6.50**	**6.35**	**44.00**	**39.00**	**25.40**	**37.00**
	Maximum	**62.00**	**72.00**	**83.00**	**69.33**	**6.60**	**34.00**	**19.60**	**84.00**	**46.00**	**84.70**	**66.13**
	Mean	**52.44**	**58.03**	**68.72**	**59.87**	**5.29**	**19.41**	**12.48**	**58.95**	**43.13**	**43.06**	**48.16**
	CV (%) Phenotypic	**6.09**	**12.82**	**7.98**		**14.73**	**36.05**		**15.49**	**3.71**	**32.97**	

S. No.	Accession No.	Days to maturity				Seed yield (q/ha)			100 seed weight (g)		
		Pamapur	Ranichauri	Shimla	Mean	Pamapur	Ranichauri	Mean	Ranichauri	Shimla	Mean
17	IC024105	86	113	116	**105.00**	21.67	1.72	**11.69**	29.60	6.56	**18.08**
18	IC024522	85	103	111	**99.67**	27.22	1.51	**14.37**	28.50	11.92	**20.21**
19	IC089957	83	98	116	**99.00**	27.78	2.10	**14.94**	28.29	11.72	**20.01**
20	IC341944	85	108	102	**98.33**	13.61	1.76	**7.68**	29.41	10.00	**19.71**
21	IC341949	84	118	108	**103.33**	8.33	3.30	**5.82**	30.35	15.48	**22.92**
22	IC341952	83	108	102	**97.67**	17.22	4.13	**10.68**	26.47	10.56	**18.52**
23	IC341953	82	118	108	**102.67**	30.00	1.69	**15.84**	28.32	11.16	**19.74**
24	IC341961	85	118	111	**104.67**	11.11	2.31	**6.71**	29.29	9.52	**19.41**
25	IC469173		108	117	**112.50**		2.44	**2.44**	31.47	12.80	**22.14**
	Mean for check varieties										
	HPU-51 (C)	82.67	104.67	114.00	100.44	22.87	3.30	13.08	28.96	9.67	19.32
	Totru Local (C)	81.67		118.50	100.08	7.59		7.59		4.21	4.21
	Minimum	**81.67**	**98.00**	**102.00**	**97.67**	**2.78**	**1.51**	**2.44**	**25.15**	**4.21**	**4.21**
	Maximum	**96.00**	**118.00**	**122.00**	**112.50**	**30.00**	**6.03**	**16.20**	**36.33**	**19.24**	**27.19**
	Mean	**85.21**	**107.87**	**114.57**	**102.79**	**17.80**	**2.75**	**10.08**	**29.49**	**10.99**	**19.77**
	CV (%) Phenotypic	**3.82**	**5.44**	**4.54**		**48.28**	**40.09**		**8.28**	**27.13**	

S. No.	Accession No.	No. of seeds/pod			Shimla				Ranichauri	
		Ranichauri	Shimla	Mean	Seed yield/plant (g)	No. of primary branches	No. of cluster/plant	No. of pods /cluster	Pod length (cm)	No. of leaves/plant
17	IC024105	5.60	6.0	**5.80**	43.40	2.50	7.00	3.50	5.60	10.80
18	IC024522	5.00	8.0	**6.50**	45.10	2.50	6.00	2.50	5.80	8.80
19	IC089957	3.20	8.0	**5.60**	25.28	3.00	6.50	3.50	5.20	10.80
20	IC341944	5.00	8.0	**6.50**	16.90	1.50	6.00	3.50	7.00	10.00
21	IC341949	5.00	7.0	**6.00**	45.90	2.60	4.00	3.50	5.60	10.08
22	IC341952	5.60	7.0	**6.30**	34.19	2.50	5.00	2.00	7.20	8.40
23	IC341953	5.60	3.0	**4.30**	35.70	2.00	2.00	2.00	6.60	9.20
24	IC341961	5.80	9.0	**7.40**	40.70	2.00	6.00	3.50	5.80	12.40
25	IC469173	3.80	9.0	**6.40**	54.16	2.50	5.00	2.00	5.20	10.00
	Mean for check varieties									
	HPU-51 (C)	4.47	9.61	7.04	36.25	2.50	9.00	4.00	6.67	11.45
	Totru Local (C)		9.35	9.35	11.48	2.00	5.25	3.00		
	Minimum	**3.20**	**3.00**	**4.30**	**10.70**	**1.20**	**2.00**	**2.00**	**5.20**	**6.00**
	Maximum	**7.00**	**10.00**	**9.35**	**67.74**	**3.50**	**11.00**	**4.00**	**8.00**	**13.40**
	Mean	**4.93**	**8.72**	**6.91**	**41.09**	**2.47**	**6.79**	**3.06**	**6.33**	**9.96**
	CV (%) Phenotypic	**16.50**	**18.10**		**35.39**	**27.38**	**34.47**	**19.96**	**13.31**	**17.18**

Table 140. Characterization of germplasm lines in Adzuki bean at Shimla - Hills (2007)

S. No.	Accession No.	Early plant vigour	Plant habit	Plant growth habit	Leaf colour	Leaf surface	Leaflet shape	Flower colour	Stem colour	Stem surface	Pod angle	Pod surface	Seed coat colour
1	EC000248	3	2	1	2	2	1	2	3	2	1	1	3
2	EC000372	3	2	1	2	2	1	2	3	2	1	1	3
3	EC018256	2	2	1	2	2	1	2	3	2	1	1	3
4	EC018257	3	2	1	2	2	1	2	3	2	1	1	3
5	EC057459	2	2	1	2	2	1	2	3	2	1	1	3
6	EC080850	2	2	1	2	2	1	2	3	2	1	1	3
7	EC087895	3	2	1	2	2	1	2	3	2	1	1	3
8	EC108080	2	2	1	2	2	1	2	3	2	1	1	3
9	EC120460	3	2	1	2	2	1	2	3	2	1	1	3
10	EC187898	3	2	1	2	2	1	2	3	2	1	1	3
11	EC240246	3	2	1	2	2	1	2	3	2	1	1	3
12	EC281186	3	2	1	2	2	1	2	3	2	1	1	3
13	EC340240	3	2	1	2	2	1	2	3	2	1	1	3
14	EC340244	3	2	1	2	2	1	2	3	2	1	1	3
15	EC340254	3	2	1	2	2	1	2	3	2	1	1	3
16	EC340267	3	2	1	2	2	1	2	3	2	1	1	3
17	IC024105	3	2	1	2	2	1	1	3	2	1	1	2
18	IC024522	3	2	1	2	2	1	1	3	2	1	1	4
19	IC089957	3	2	1	2	2	1	1	3	2	1	1	4

S. No.	Accession No.	Early plant vigour	Plant habit	Plant growth habit	Leaf colour	Leaf surface	Leaflet shape	Flower colour	Stem colour	Stem surface	Pod angle	Pod surface	Seed coat colour
20	IC341944	2	2	1	2	2	1	1	3	2	1	1	4
21	IC341949	2	2	1	2	2	1	1	3	2	1	1	3
22	IC341952	1	2	1	2	2	1	1	3	2	1	1	3
23	IC341953	2	2	1	2	2	1	2	3	2	1	1	3
24	IC341961	3	2	1	2	2	1	2	3	2	1	1	4
25	IC469173	2	2	1	2	2	1	2	3	2	1	1	4
	Mean for check varieties												
	HPU-51 (C)	3	2	1	2	2	1	2	3	2	1	1	3
	Totru Local (C)	2	2	1	2	2	1	2	3	2	1	1	99
	Minimum	**1**	**2**	**1**	**2**	**2**	**1**	**1**	**3**	**2**	**1**	**1**	**2**
	Maximum	**3**	**2**	**1**	**2**	**2**	**1**	**2**	**3**	**2**	**1**	**1**	**99**

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 141. Promising lines in Faba bean germplasm for various characters at Ranichauri (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Ranichauri (Accessions 30)				
1.	Days to 50% flowering	86.00-117.00	EC249851, EC329715, EC117842, EC249947, EC329725, IC243709, IC331587 (< 96.0 days)	Vikrant (96.0 days)
2.	Days to maturity	181.00-244.00	EC249851, EC329715, IC243709, IC331587, EC117842, EC249947, EC329725 (< 191.0 days)	Vikrant (191.0 days)
3.	Plant height (cm)	24.40-61.00	EC248945, EC025058, EC117753, EC243755, EC243860, EC243596, EC243791, EC267648, EC025085, EC243377, EC243637, IC361496, IC331587, IC361427, EC243895, IC331549, IC243709 (> 44.80 cm)	PRT-12 (44.80 cm)
4.	Ear length (cm)	4.00-5.80	EC243895, IC361496, EC329715, EC025058 (> 5.20 cm)	Vikrant (5.20 cm)
5.	100 seed weight (g)	41.30-49.68	EC329668, EC117749, IC243709, EC243755 (> 46.43 g)	PRT-12 (46.43 g)
6.	Seed yield (q/ha)	7.53-34.66	IC243709, EC243596, IC361496, EC243860 , EC329679, IC331549, EC329673, EC329812, EC243791, EC117753, EC329668, EC243755, EC25085, EC248945 (> 15.04 q/ha)	PRT-12 (15.04 q/ha)

Table 142 . Evaluation of germplasm lines in Faba bean at Ranichauri - Hills (2007)

Sl.No.	Accessions	Days to 50% flowering	Days to 80% maturity	Plant height (cm)	Test weight (g)	Ear length (cm)	Seed yield (q/ha)
1	EC010719	96.00	191.00	39.20	41.30	4.20	9.84
2	EC025058	117.00	211.00	54.00	44.58	5.40	13.51
3	EC025085	112.00	206.00	47.60	45.64	5.00	15.94
4	EC117749	102.00	196.00	41.60	48.48	4.00	7.53
5	EC117753	107.00	201.00	53.60	42.56	5.20	17.79
6	EC117842	91.00	186.00	44.60	43.86	5.00	11.82
7	EC243377	107.00	201.00	47.20	42.53	5.00	13.21
8	EC243596	96.00	191.00	49.00	43.56	5.00	30.39
9	EC243637	107.00	201.00	47.00	44.12	5.00	8.68
10	EC243755	107.00	201.00	50.60	48.04	4.60	16.05
11	EC243791	107.00	201.00	48.80	41.89	4.40	19.28
12	EC243860	112.00	206.00	49.20	42.91	4.80	26.10
13	EC243895	117.00	211.00	45.80	43.51	5.80	10.17
14	EC248945	112.00	206.00	61.00	45.19	5.20	15.72
15	EC249851	86.00	181.00	40.60	41.95	4.20	14.26
16	EC249947	91.00	186.00	38.00	45.12	4.60	10.45
17	EC267648	117.00	244.00	48.40	44.29	4.40	10.93
18	EC329003	107.00	201.00	35.40	44.58	4.80	11.01
19	EC329668	102.00	196.00	41.20	49.68	4.60	16.17
20	EC329673	96.00	191.00	35.80	42.64	4.40	23.96
21	EC329679	101.00	197.00	42.40	45.43	4.40	24.72
22	EC329715	86.00	181.00	38.60	42.19	5.60	8.84
23	EC329725	91.00	186.00	24.40	43.72	5.00	10.27
24	EC329812	101.00	195.00	43.80	45.59	4.60	20.99
25	IC243709	91.00	185.00	45.00	48.12	5.00	34.66
26	IC243781	101.00	195.00	43.60	46.42	4.50	9.43
27	IC331549	96.00	191.00	45.60	44.58	4.60	24.66
28	IC331587	91.00	185.00	46.20	45.64	4.60	13.73
29	IC361427	96.00	191.00	46.00	42.12	4.80	10.83
30	IC361496	107.00	201.00	46.60	44.54	5.60	27.38
	Mean for check varieties						
	PRT-12 (C)	117.00	211.00	44.80	46.43	4.20	15.04
	Vikrant (C)	96.00	191.00	43.80	45.21	5.20	8.85
	Minimum	**86.00**	**181.00**	**24.40**	**41.30**	**4.00**	**7.53**
	Maixmum	**117.00**	**244.00**	**61.00**	**49.68**	**5.80**	**34.66**
	Mean	**101.97**	**197.41**	**44.67**	**44.58**	**4.80**	**16.01**
	CV (%) Phenotypic	**9.17**	**6.13**	**14.51**	**4.64**	**9.23**	**44.38**

Table 143. Promising lines in Job's tear germplasm for various characters at different locations (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Ranichauri (Accessions 25)				
1.	Days to 50% flowering	113.00-133.00	IC340015, IC416868, IC416897, IC089381, IC521338, IC521339, IC521342, IC524631 (< 123.0 days)	
2.	Days to maturity	164.00-194.00	IC416868, IC416897 (< 179.0 days)	
3.	Plant height (cm)	98.00-233.40	IC089387, IC416897, IC204184, IC521340, IC089392, IC417053 (> 200.20 cm)	
4.	Tiller per plant	1.20-3.60	IC089387, IC521340, IC521339, IC416897, IC204184, IC089392, IC089381, IC419466 (> 2.20)	
5.	Finger weight (g)	1.20-5.00	IC204184, IC521342, IC521339, IC089387, IC417053, IC089392, IC419466 (> 2.80 g)	
6.	Yield (q/ha)	0.10-1.67	IC521342, IC521339, IC089382, IC419466, IC340015, IC334314 (> 1.40 q/ha)	
Palampur (Accessions 25)				
1.	Days to 50% flowering	76.00-90.33	IC416824, IC089384, IC089381, IC524631, IC416868, IC089387, IC089391, IC419466, IC417053, IC521339, IC521340, IC521343 (< 87.67 days)	Mayuen (87.67 days)
2.	Days to maturity	111.00-123.33	IC524631, IC416868, IC089391, IC521339, IC416824, IC419466, IC089392, IC416897, IC089381, IC089387 (< 118.33 days)	Mayuen (118.33 days)
3.	Plant height (cm)	130.33-167.00	IC416831, IC416829, IC340015, IC521342 (> 157.67 cm)	Mayuen (157.67 cm)
4.	Yield (q/ha)	0.39-1.06	IC416829, IC521340 (> 1.0 q/ha)	Mayuen (1.00 q/ha)
Best entries over locations				
1.	Plant height (cm)	121.67-188.03	IC089387, IC416897, IC521340, IC204184, IC089392, IC417053, IC416829, IC416824, IC521342, IC416868, IC521339, IC340015, IC089381, IC521343, IC089391, IC089384, IC416884 (> 157.67 cm)	Mayuen (157.67 cm)
2.	Yield (q/ha)	0.29-1.20	IC521342, IC340015, IC521340, IC334314, IC416829, IC521338, IC521339 (> 1.00 q/ha)	Mayuen (1.00 q/ha)

Table 144. Multilocation evaluation of germplasm lines in Job's tear at various location

S.No.	Accession No.	Days to Flowering			Days to maturity			Plant height (cm)			Seed yield (q/ha)			Ranichauri	
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Tillers/ plant	Finger weight (g)
1	IC089381	78.67	118.00	**98.33**	118.00	179.00	**148.50**	143.00	184.80	**163.90**	0.43	1.04	**0.74**	2.40	1.90
2	IC089382	89.00	133.00	**111.00**	122.00	194.00	**158.00**	145.33	98.00	**121.67**	0.43	1.56	**1.00**	1.20	2.25
3	IC089384	78.67	128.00	**103.33**	120.00	179.00	**149.50**	130.33	194.80	**162.57**	0.47	1.01	**0.74**	1.60	1.55
4	IC089387	82.00	133.00	**107.50**	118.00	194.00	**156.00**	142.67	233.40	**188.03**	0.50	1.33	**0.92**	3.60	3.55
5	IC089391	82.67	133.00	**107.83**	114.67	194.00	**154.33**	142.00	184.20	**163.10**	0.47	1.17	**0.82**	1.40	1.50
6	IC089392	87.67	123.00	**105.33**	117.00	184.00	**150.50**	149.33	202.40	**175.87**	0.70	1.24	**0.97**	2.40	3.05
7	IC204184	89.67	133.00	**111.33**	119.00	194.00	**156.50**	142.33	211.80	**177.07**	0.67	1.32	**0.99**	2.60	5.00
8	IC334314	88.67	128.00	**108.33**	121.33	179.00	**150.17**	144.00	157.20	**150.60**	0.66	1.50	**1.08**	1.20	2.60
9	IC340015	87.67	113.00	**100.33**	121.67	179.00	**150.33**	162.33	165.60	**163.97**	0.89	1.51	**1.20**	1.40	1.80
10	IC360719	90.00	133.00	**111.50**	122.00	194.00	**158.00**	142.33	173.00	**157.67**	0.39	1.02	**0.71**	2.00	1.95
11	IC416824	76.00	128.00	**102.00**	115.67	189.00	**152.33**	142.67	200.20	**171.43**	0.49	1.29	**0.89**	2.00	1.45
12	IC416829	88.67	128.00	**108.33**	122.00	179.00	**150.50**	166.33	179.00	**172.67**	1.06	1.07	**1.07**	1.80	1.60
13	IC416831	90.00	128.00	**109.00**	122.00	179.00	**150.50**	167.00	135.40	**151.20**	0.59	0.94	**0.77**	1.40	1.20
14	IC416868	81.67	114.00	**97.83**	113.67	164.00	**138.83**	147.67	187.80	**167.73**	0.69	1.08	**0.89**	2.20	1.50
15	IC416884	90.00	123.00	**106.50**	123.00	184.00	**153.50**	149.67	173.20	**161.43**	0.47	0.10	**0.29**	1.80	1.80
16	IC416897	90.00	114.00	**102.00**	117.33	169.00	**143.17**	151.67	216.40	**184.03**	0.61	1.17	**0.89**	2.60	2.60
17	IC417053	85.33	128.00	**106.67**	119.00	189.00	**154.00**	145.00	201.20	**173.10**	0.63	1.37	**1.00**	2.00	3.50

S.No.	Accession No.	Days to Flowering			Days to maturity			Plant height (cm)			Seed yield (q/ha)			Ranichauri	
		Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Palampur	Ranichauri	Mean	Tillers/ plant	Finger weight (g)
18	IC419466	84.00	133.00	**108.50**	116.67	194.00	**155.33**	154.67	158.40	**156.53**	0.50	1.51	**1.00**	2.40	2.85
19	IC521338	90.33	118.00	**104.17**	119.33	179.00	**149.17**	155.67	134.80	**145.23**	0.71	1.40	**1.06**	1.60	2.80
20	IC521339	85.33	118.00	**101.67**	115.33	179.00	**147.17**	156.67	172.80	**164.73**	0.43	1.59	**1.01**	3.00	3.80
21	IC521340	85.67	123.00	**104.33**	121.00	184.00	**152.50**	152.33	210.60	**181.47**	1.03	1.30	**1.17**	3.20	2.75
22	IC521342	88.33	118.00	**103.17**	120.33	179.00	**149.67**	160.00	176.60	**168.30**	0.73	1.67	**1.20**	1.40	4.30
23	IC521343	86.00	123.00	**104.50**	118.67	184.00	**151.33**	150.67	175.80	**163.23**	0.61	1.17	**0.89**	2.20	1.35
24	IC524599	89.33	128.00	**108.67**	122.00	194.00	**158.00**	143.33	156.60	**149.97**	0.60	1.20	**0.90**	1.40	1.75
25	IC524631	81.33	118.00	**99.67**	111.00	179.00	**145.00**	140.67	146.00	**143.33**	0.41	1.09	**0.75**	1.20	1.60
	Mean for check varieties														
	Mayuen (C)	87.67		**87.67**	118.33		**118.33**	157.67		**157.67**	1.00		**1.00**		
	Pollin (C)	90.33		**90.33**	123.33		**123.33**	147.00		**147.00**	0.76		**0.76**		
	Minimum	**76.00**	**113.00**	**87.67**	**111.00**	**164.00**	**118.33**	**130.33**	**98.00**	**121.67**	**0.39**	**0.10**	**0.29**	**1.20**	**1.20**
	Maximum	**90.33**	**133.00**	**111.50**	**123.33**	**194.00**	**158.00**	**167.00**	**233.40**	**188.03**	**1.06**	**1.67**	**1.20**	**3.60**	**5.00**
	Mean	**86.10**	**124.68**	**104.07**	**118.98**	**183.80**	**149.06**	**149.35**	**177.20**	**162.35**	**0.63**	**1.23**	**0.91**	**2.00**	**2.40**
	CD (0.05)	**4.79**			**4.60**			**33.20**			**0.34**				
	CV (%) Error	**3.48**			**2.42**			**13.89**			**34.26**				
	CV (%) Ph.	**4.79**	**5.41**		**2.61**	**4.48**		**5.75**	**16.87**		**30.56**	**25.27**		**32.91**	**42.13**

Table 145. Promising lines in Perilla germplasm for various characters at Bhowali (Hills)

S.No.	Characters	Range	Promising lines	Value of best check
Bhowali (Accessions 61)				
1.	Days to 50% flowering	125.00-260.00	IC383371, IC538007, IC524600, IC526684, IC548619, IC003708, IC006440, IC521287, IC524473, IC524546, IC524551 (< 81.60 days)	Almora (181.60 days)
2.	Days to maturity	215.00-265.00	IC538007, IC526701, IC526674, IC524622, IC524600, IC521283, IC003708, IC526419, IC526684, IC524473, IC521281, IC521292, IC003913, IC006440, IC211608, IC003955, IC538084, IC548614 (< 228.60 days)	Almora (228.60 days)
3.	Plant height (cm)	65.00-168.00	IC521285, IC526701, IC330441, IC281713, IC521290, IC526674, IC524622, IC526437, IC538084 (> 156.06 cm)	Shillong (156.06 cm)
4.	Leaf length (cm)	11.00-28.00	IC524600, IC526674, IC526419, IC524473, IC526684, IC006440, IC524546, IC526701, IC538084, IC526638, IC335408 (> 23.30 cm)	Shillong (23.30 cm)
5.	Leaf width (cm)	7.00-17.00	IC524600, IC524546, IC524622, IC526674, IC538084, IC524473, IC524551, IC526701, IC526604, IC526437, IC521286, IC526638, IC538007, IC521285, IC526512, IC006444, IC526719, IC526771 (> 13.60 cm)	Almora (13.60 cm)
6.	No. of primary branches	1.00-27.00	IC526674, IC003865, IC526419, IC521285, IC526684, IC538007, IC538084, IC524546, IC521281, IC526701, IC526719, IC524622, IC524473, IC526638, IC526771, IC281713, IC003708, IC521283, IC383371, IC361361, IC521292, IC419598, IC548620 (> 18.80)	Shillong (18.80)
7.	Petiole length (cm)	2.60-9.50	IC526684, IC524473, IC524546, IC526701, IC526719, IC524600, IC526686, IC521281, IC281713, IC335408, IC524605, IC419564, IC419706, IC524551, IC361361, IC526638, IC526419, IC538084, IC526512, IC526604 (> 7.10 cm)	Bhowali (7.10 cm)
8.	Inflorescence length (cm)	2.00-13.00	IC524600, IC419706, IC538007, IC526701, IC006444, IC524622 (> 10.10 cm)	Pithoragarh (10.10 cm)
9.	100 seed weight (g)	0.02-0.15	IC526684, IC211608, IC521284, IC524600, IC526701 (> 0.20 g)	Pithoragarh (0.20 g)

Table 146 . Characterization evaluation of germplasm lines in Perilla at Bhowali - Hills (2007)

S.No.	Block No.	Accession No.	Qualitative characters					Quantitative characters								
			Early plant vigour	Flower colour	Leaf shape	Leaf margin	Leaf pubescence	Days to 50% flowering	Leaf length (cm)	Leaf width (cm)	No. of primary branches	Petiole length (cm)	Inflorescence length (cm)	Plant height (cm)	Days to 80% maturity	100 seed weight (g)
1	1	EC216268	3	1	4	3	5	195	19.30	11.50	11	6.50	5.00	116.00	245	0.12
2	1	IC003708	3	1	4	3	5	180	23.00	12.00	20	6.50	9.00	147.00	220	0.03
3	1	IC003865	3	1	4	3	5	185	19.00	12.00	27	6.00	7.00	115.00	230	0.19
4	1	IC003913	1	1	4	3	5	185	14.50	9.50	3	4.50	7.00	90.00	220	0.17
5	1	IC003942	1	1	4	2	5	185	16.00	9.00	1	5.00	5.50	80.00	230	--
6	1	IC003955	1	1	4	3	5	185	11.00	7.50	1	2.80	7.00	65.00	220	0.14
7	1	IC006440	2	1	4	3	7	180	24.50	13.50	14	5.00	5.50	90.00	220	0.11
8	1	IC006441	2	1	4	3	7	255	19.00	12.50	6	6.00	5.00	110.00	--	--
9	1	IC006444	2	1	4	3	5	260	21.50	14.00	13	7.00	12.00	140.00	--	--
10	1	IC006447	2	1	4	3	5	260	18.00	12.50	7	4.50	5.00	111.00	230	0.08
11	1	IC012640	2	1	4	3	5	188	21.00	10.50	9	7.00	7.00	110.00	242	0.18
12	1	IC211608	1	1	4	3	5	185	11.00	7.00	1	2.60	6.00	71.00	220	0.23
13	2	IC281713	3	1	4	3	5	255	21.50	13.50	20	8.00	6.00	165.00	--	--
14	2	IC316240	1	1	4	3	5	205	17.00	11.00	1	4.00	4.00	70.00		--
15	2	IC330441	1	1	4	2	5	215	19.50	11.50	12	6.00	6.50	165.00	260	--
16	2	IC335408	1	1	4	3	7	200	23.50	12.00	13	8.00	9.30	135.00	260	0.2
17	2	IC361361	3	1	4	3	5	255	22.00	13.00	19	7.40	8.50	147.00	--	--
18	2	IC369349	2	1	4	3	5	190	17.00	10.50	7	5.50	6.50	112.00	240	0.15
19	2	IC374313	2	1	4	3	5	190	23.00	13.00	9	5.50	6.00	145.00	235	0.02
20	2	IC374609	3	1	4	3	5	205	19.00	10.50	10	6.00	5.00	123.00	265	--
21	2	IC383371	3	1	4	3	5	125	22.50	13.60	19	7.00	8.00	150.00	--	--
22	2	IC419477	2	1	4	3	5	210	18.00	12.50	15	5.50	10.00	128.00	--	--

S.No.	Block No.	Accession No.	Qualitative characters					Quantitative characters								
			Early plant vigour	Flower colour	Leaf shape	Leaf margin	Leaf pubescence	Days to 50% flowering	Leaf length (cm)	Leaf width (cm)	No. of primary branches	Petiole length (cm)	Inflorescence length (cm)	Plant height (cm)	Days to 80% maturity	100 seed weight (g)
23	2	IC419564	1	1	4	3	5	210	21.00	10.00	16	7.50	8.00	100.00	265	--
24	2	IC419598	3	1	4	3	5	215	21.50	12.00	19	5.50	7.00	115.00	--	--
25	3	IC419706	1	1	4	3	5	215	19.50	13.20	14	7.50	13.00	108.00	--	--
26	3	IC521281	3	1	4	2	7	190	20.50	13.00	22	8.00	9.50	123.00	220	0.02
27	3	IC521282	3	1	4	2	5	188	18.50	11.00	12	5.50	6.00	130.00	230	0.07
28	3	IC521283	3	1	4	3	5	188	19.50	12.00	20	6.00	6.50	148.00	220	0.06
29	3	IC521284	3	1	4	2	7	188	19.00	11.50	11	5.50	7.00	123.00	230	0.23
30	3	IC521285	2	1	4	3	5	188	22.50	14.00	25	6.50	8.00	168.00	230	--
31	3	IC521286	3	1	4	3	7	205	21.00	14.50	11	5.00	6.00	118.60	245	0.14
32	3	IC521287	2	1	4	3	7	180	13.00	8.50	7	6.00	5.50	105.00	235	--
33	3	IC521289	3	1	4	3	7	188	19.50	11.00	12	6.00	6.00	117.00	235	--
34	3	IC521290	2	1	4	3	5	190	20.00	13.00	14	7.00	7.00	160.00	260	0.08
35	3	IC521292	2	1	4	3	5	185	19.00	13.00	19	6.50	7.00	123.00	220	0.07
36	3	IC524473	3	1	4	2	7	180	26.00	15.50	20	9.00	9.30	125.00	220	0.16
37	4	IC524546	2	1	4	2	7	180	24.50	17.00	22	8.50	10.00	100.00	235	0.12
38	4	IC524551	2	1	4	3	5	180	21.50	15.50	11	7.50	8.00	126.00	255	--
39	4	IC524600	3	1	4	2	7	170	28.00	17.00	17	8.50	13.00	150.00	220	0.22
40	4	IC524605	3	1	4	3	3	188	21.00	13.00	17	7.50	8.50	150.00	235	0.14
41	4	IC524622		1	4	3	5	188	23.00	17.00	20	7.00	10.50	158.00	220	0.2
42	4	IC526419	3	1	4	3	7	200	26.50	13.20	26	7.20	6.00	140.00	220	0.09
43	4	IC526437	3	1	4	3	5	255	23.00	14.60	16	7.00	7.50	158.00	--	--
44	4	IC526512	3	1	4	3	5	200	22.00	14.00	17	7.20	6.50	140.00	--	--
45	4	IC526604	2	1	4	3	5	210	21.20	15.00	15	7.20	7.50	126.60	--	--
46	4	IC526638	2	1	4	3	5	205	23.60	14.30	20	7.30	8.00	123.00	260	0.2
47	4	IC526643	2	1	4	3	5	227	21.20	13.00	15	7.00	5.00	125.00	260	--

S.No.	Block No.	Accession No.	Qualitative characters					Quantitative characters								
			Early plant vigour	Flower colour	Leaf shape	Leaf margin	Leaf pubescence	Days to 50% flowering	Leaf length (cm)	Leaf width (cm)	No. of primary branches	Petiole length (cm)	Inflorescence length (cm)	Plant height (cm)	Days to 80% maturity	100 seed weight (g)
48	4	IC526674	1	1	4	3	5	185	27.50	16.20	27	7.00	8.00	158.30	220	0.13
49	5	IC526684	3	1	4	3	5	175	24.50	13.00	25	9.50	7.00	133.30	220	0.25
50	5	IC526686	3	1	4	3	7	200	21.00	13.60	14	8.50	9.00	150.00	260	0.13
51	5	IC526690	1	1	4	2	5	185	20.00	12.20	12	7.00	5.50	98.30	235	0.12
52	5	IC526701	2	1	4	2	5	188	24.50	15.00	21	8.50	12.50	165.00	220	0.21
53	5	IC526719	2	1	4	3	5	195	21.00	14.00	21	8.50	9.00	128.00	260	--
54	5	IC526771	2	1	4	3	5	210	18.20	14.00	20	6.50	7.50	114.00	260	--
55	5	IC538007	3	1	4	3	5	195	16.60	14.30	24	6.50	9.20	156.00	--	--
56	5	IC538007	2	1	4	2	3	130	20.50	12.50	15	5.50	13.00	112.00	215	0.2
57	5	IC538084	3	1	4	3	5	200	24.20	16.00	23	7.20	10.00	156.60	228	0.15
58	5	IC548614	3	1	6	3	3	185	14.30	8.50	17	4.00	8.00	130.00	228	0.17
59	5	IC548619	2	1	6	3	3	175	22.00	11.00	17	3.50	2.00	135.00	--	--
60	5	IC548620	3	1	6	3	3	210	20.00	11.50	19	5.00	9.00	120.00	--	--
61	5	IC548649	3	1	4	3	3	235	22.50	12.50	17	6.00	8.00	130.00	230	0.17
		Mean for check varieties														
		Almora	3	1	4	3	5	181.60	22.40	13.60	13.60	6.80	8.80	131.46	228.60	0.13
		Bhowali	3	1	4	3	5	203.00	20.90	12.90	12.80	7.10	5.90	144.92	240.00	0.13
		Pithoragarh	2	1	4	3	5	195.60	21.40	13.12	17.60	6.54	10.10	141.60	249.00	0.20
		Shillong	3	1	4	3	5	209.00	23.30	12.72	18.80	6.90	8.64	156.06	231.00	0.15
		Minimum	**1**	**1**	**4**	**2**	**3**	**125.00**	**11.00**	**7.00**	**1.00**	**2.60**	**2.00**	**65.00**	**215.00**	**0.02**
		Maximum	**3**	**1**	**6**	**3**	**7**	**260.00**	**28.00**	**17.00**	**27.00**	**9.50**	**13.00**	**168.00**	**265.00**	**0.25**
		Mean						**197.90**	**20.64**	**12.69**	**15.25**	**6.47**	**7.67**	**127.78**	**235.53**	**0.14**
		CD (0.05)						**59.84**	**6.12**	**4.73**	**14.36**	**2.68**	**7.45**	**50.80**	**46.88**	**0.19**
		CV (%) Error						**11.36**	**10.42**	**13.54**	**34.27**	**14.68**	**33.36**	**13.26**	**7.40**	**47.08**
		CV (%) Phenotypic						**12.88**	**16.47**	**16.81**	**42.11**	**21.92**	**28.82**	**19.05**	**6.58**	**41.68**

3.2 PLAINS

3.2.1 Multilocation Germplasm Evaluation

Multilocational germplasm evaluation was planned to be conducted on grain amaranth and rice bean. The germplasm accessions were evaluated in augmented design with standard check cultivars.

3.2.1.1 Grain Amaranth (Rabi 2005-06)

Germplasm screening nursery consisting of 50 lines was planned to be evaluated at five locations viz. NBPGR New Delhi; RAU Mandor, HAU Hisar, OUAT Bhubaneswar and GAU S.K. Nagar. The results were received from all the locations. The checks used were Annapurna, GA-1 and GA-2 and Suvarna at all locations. The list of promising for all characters have been presented in table 147 and mean and range presented in table 148.

A set of 54 accessions including checks were evaluated for eight quantitative characters at S.K. Nagar. Genotype BGA-05 (23.50 g/plant, 29.38 q/ha) was observed highest yielder. The maximum plant height (178.50 cm) was observed in the accession IC423448. The highest no. of branches was recorded in accession IC038127 (7.50) followed by IC038312 (7.35). The longest inflorescence (104.50 cm) was recorded in the genotype IC423448 followed by BGA-18 (93.00 cm). The statistical parameter for all the characters have been given in table 148. Genotype IC415264 (28.00 days) was earliest in flowering and early maturing (80.50 days).

A total of 54 accessions including checks were also evaluated at OAU&T, Bhubaneswar for seven quantitative characters. Statistical parameters have been given in table 148. Genotypes IC037316 (36 days) was earliest in flowering and IC423117 (78 days) was earliest in maturity. The maximum plant height (125.40 cm) was observed in the genotypes EC519544. The longest panicle length was found in BGA-23 (68.6 cm) followed by BGA-1 (64.00 cm). The entry BGA-6 (8.20 g) followed by IC415262 (8.19 g) had the highest test weight. The highest grain yield per plant was observed in genotype BGA-5 (23.20 g) followed

by BGA-4 (21.58 g). The highest seed yield was observed in genotypes BGA-7 (27.08 q/ha) followed by BGA-6 (26.04 q/ha).

A set of 54 genotypes including four checks were screened for six yield related attributes at RAU, Mandor. Entries IC415232 (41 days) was found earlier to the check variety in flowering and IC415272 (94 days) was earliest for maturity. The maximum height (149.00 cm) was found in the genotype IC423448 followed by EC519554 (144.80 cm), and EC 519554 was also found superior to the check for yield per plant (43.80 g). The highest test weight (8.60 g) was observed in the genotype IC415232. The mean and range for all characters have been given in table 148.

A set of 54 genotypes with four check varieties were screened for nine yield related attributes at NBPGR, New Delhi. Entries IC415252 (60 days) was found earlier to the check variety in flowering and IC038127 (149 days) was earliest for maturity. The maximum height (102.00 cm) was found in the genotype EC519522 followed by EC519526 (94.80 cm). The EC519544 was superior to the check for grain yield (22.22 q/ha). The highest test weight (9.15 g) was observed in the genotype IC423117. The highest panicle length (70.40 cm) was found in the genotype IC423448. The mean and range for all characters have been given in table 148.

A total of 54 accessions including checks were also evaluated at CCS HAU, Hisar for eight quantitative characters. Statistical parameters have been given in table 148. Genotypes IC038127 (62 days) was earliest in flowering and BGA-01 (134 days) was earliest in maturity. The maximum plant height (134.00 cm) was observed in the genotypes EC519522. The longest panicle length was found in IC423448 (49.10 cm) followed by BGA-11 (38.00 cm). The entries BGA-05, BGA-12 (6.90 g) were found promising for test weight followed by BGA-24 and IC415448 (6.80 g). The highest grain yield per plant was observed in genotype BGA-14 (32.60 g) followed by IC423448 (32.50 g).

Based on average over the locations, the best entry for different characters have been given as below.

Flowering time was the earliest at S.K. Nagar (40.48 days) followed by Bhubaneswar (45.61 days), while it was moderate at Mandor (52.46 days) and

delayed at Hisar centre (75.31 days). The entry IC415262 showed early flowering (46.70 days) and maturity (115.30 days) in genotype IC423408 as compared to checks based on the average over all the five locations.

The plant height was highest at S.K. Nagar (106.74 cm) and lowest at Delhi (54.00 cm). Based on the average over the locations, the entry IC423448 (128.50 cm) had the highest plant height followed by EC519526 (121.68 cm).

The length of inflorescence was highest at S.K. Nagar (70.63 cm) and lowest at Hisar (24.26 cm). Based on the average over two locations, the entry IC423448 (76.80 cm) had longest inflorescence followed by BGA-11 (64.00 cm).

Grain yield per plant was highest at Mandor (23.45 g) and lowest at Bhubaneswar (10.20 g). Based on the average over four locations, the entry BGA-04 (26.42 g) was superior to the check variety for grain yield per plant.

The test weight was recorded at four locations. Based on the average over four locations, the genotype IC423117 had the highest test weight (7.81 g) followed by IC415252 (7.79 g).

3.2.1.2 Grain Amaranth (Kahrif 2007)

Germplam screening nursery consisting with 50 accessions supplied by N.B.P.G.R., Shimla was to be evaluated at two locations viz. UAS Bangalore and TNAU Mettupalayam. The data were received from both the centres. The checks used were as Annapurna, Durga, GA1, GA2 and Suvarna. The list of promising accessions for all the characters have been presented in table 149 and the range and mean in table 150.

At Bangalore, a set of 50 genotypes were evaluated for five quantitative characters. The genotype IC004200 (155.00 cm) was found superior as compared to check variety GA-1 (145.70 cm) for plant height. The longest inflorescence (62.00 cm) was also recorded in the genotype IC004200 followed by IC007836 (59.00 cm). IC341604 (30.00 days) was earliest in flowering and none entry was found superior to the check variety in maturity. The highest yield

per plant (7.96 g) was observed in the genotype IC007836 followed by IC004200 (6.26 g).

A total of 50 genotypes were also evaluated at Mettupalayam for five yield attributes. IC017932 (36 days) was earliest in flowering. No. entry was found superior to check variety in plant height and seed yield per plant. The highest panicle length (65.40 cm) was observed in the genotype IC007836 followed by IC363767 (63.80 cm). The entry IC017932 (65 days) was earliest in maturity as compared to check varieties.

Based on average over the locations, the best entry for different characters have been given as below.

Flowering time was the earliest at Mettupalayam (40.73 days) followed by Bangalore (49.61 days). The entry IC341604 showed early flowering (34.00 days) and IC017934 (68.50) was earliest for maturity.

The plant height was highest at Mettupalayam (110.96 cm) and lowest at Bangalore (104.70 cm). Based on the average over the locations, no entry was found superior to the check variety.

The length of inflorescence of the entries was highest at Mettupalayam (48.96 cm) and lowered at Bangalore (42.92 cm). Based on the average over two locations, the entry IC007836 (62.20 cm) had longest inflorescence.

Grain yield per plant was highest at Mettupalayam and lowest at Bangalore. Based on the average over two locations, the entry IC004200 (8.13 g) was superior to the check entry for grain yield per plant.

3.2.3 Rice bean (*Vigna umbellata*)

In rice bean 101 genotypes including four checks supplied by PAU Ludhiana were planned to be evaluated at seven locations viz. PAU Ludhiana; OUA&T Bhubaneshwar; UAS, Bangalore; NBPGR, New Delhi; CCS HAU, Hisar; BAU Ranchi and TNAU, Mettupalayam. The list of promising for all characters have been presented in table 151 and statistical parameters for all the characters of different locations have been presented in table 152.

A total of 97 genotypes and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were screened for 11 characters in Augmented Design at OUA&T Bubaneswar. The entries were statistically significant for nine characters out of the eleven characters. All the genotypes flowered in 41.00 – 58.00 days and matured in 87.00 - 106.00 days. The maximum plant height (115.0 cm) was observed in LRB 300 followed by LRB 441 (114.00 cm). The entries LRB 419 (6.00)and LRB 402 (520) had the highest number of branches per plant, while entry LRB 339 (47.80) had the highest number of pods per plant. The longest pod was recorded in genotype LRB 314 (9.60 cm) followed by LRB 443 (9.00 cm). The entry LRB 323 (7.09 g) had the maximum 100 seed weight. The highest seed yield per plant (16.07 g) was recorded in the genotype LRB 340.

At Bangalore, a set of 97 genotypes were evaluated for six characters. The maximum plant height (57.00 cm) was observed in the genotype LRB 416 followed by LRB 441 (52.00 cm). The entries LRB 440 (3.20) and LRB 314 (2.40) had the highest number of branches per plant, while entry LRB 443 (38.60) had the maximum number of pods per plant. The entry LRB 340 (40.00 days) was superior to check variety in flowering and LRB417 (81.00 days) for maturity.

At Delhi, a set of 97 genotypes and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were evaluated in Augmented Design for 13 characters. The entries of seven characters out of thirteen characters was found non-significant. LRB 308 (86.00 days) was found to be early flowering. Entry LRB 33 (10.92 cm) had longer pod than the check. The no. of branches was recorded in the genotype LRB 313 (9.20) followed by LRB 376 (9.00). The entries LRB 411 (137 days) were earlier in maturity. Maximum plant height (236.40 cm) was observed in the genotype LRB 305 followed by LRB 313 (225.20 cm). The entry LRB 423 (35.00 g) had the highest seed yield per plant. Bold seed was recorded in the genotypes LRB 401 and LRB 330 (8.50 g). Maximum number of pods per plant was observed in LRB 305 (236.40) followed by LRB 313 (188.60), while LRB 412 (8.20) and LRB (8.00) had the maximum number of pods per cluster.

A set of 97 accessions and three checks RBL-1, RBL-6 and RBL-35 were evaluated in Augmented Design for eight yield related attributes at PAU, Ludhiana. Five entries viz. LRB317, LRB318, LRB338, LRB360 and LRB383 (56 days) had flowered earlier than check variety and the entry LRB308 (102 days)

was observed early maturity to check variety. The maximum plant height (119.00 cm) was recorded in the genotype LRB 379 followed by LRB 363 (114.00 cm). The entries LRB 338 (7.12 g) and LRB 323 (6.97 g) had the bold seeds, while LRB 371 (34.10 g/plant) was the top yielder genotype.

A set of 97 accessions and three checks were evaluated in Augmented Design for six characters at TNAU, Mettupalayam. Entries LRB 341 and LRB 329 was earliest in flowering (44 days), while LRB 329, LRB 307 and LRB 429 (75 days) had the earliest in maturity. The maximum height (75.00 cm) was recorded in the genotypes LRB 339. The top yielder accessions were LRB 364 (13.00 g/plant).

A total of 97 accessions along with four checks were screened for nine characters in Augmented Design at BAU Ranchi. Entry LRB 435 (64 days) was earliest in flowering and in maturity LRB 383 (109 days). The maximum plant height (180.00 cm) was observed in LRB 371 followed by LRB 323 (160.30 cm). The genotype LRB 380 (5.40) had the highest number of branches, while LRB 330 (31.00) and LRB 329 (29.60) had the highest number of pods per plant. The maximum number of seeds per pod was recorded in the genotype LRB 380, LRB 433 (10.50) followed by LRB 409 (10.20). The longest pod (11.00 cm) was observed in the genotypes LRB 333, LRB 415 and LRB380. The entry LRB 421 (7.80 g) was superior to check in test weight. The top yielder per plant accession were LRB 409 (9.80 g) and LRB 329 (9.50 g).

A total of 97 accessions and four checks viz. RBL-1, RBL-2, RBL-35 and RBL-50 were screened for ten characters in Augmented Design at CCS HAU Hisar. Entries LRB 308 (51 days) was earliest in flowering while no entries was found superior to maturity. The maximum plant height (219.60 cm) was observed in LRB 440 followed by LRB 439 (188.00 cm). The genotype LRB 427 (9.00) had the highest number of branches, while LRB 349 (239.00) and LRB 334 (231.00) had the highest number of pods per plant. The maximum number of seeds per pods was recorded in the genotype LRB 362 (12.00) followed by LRB 319 (11.00). The longest pod (11.50 cm) was observed in the genotype LRB 340. The top yielder accessions per plant were LRB 424 (135.00 g) and LRB 425 (111.00 g).

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

The mean flowering time was the earliest at Bangalore (43.23 days) followed by Mettupalayam (48.47 days), while it was very late at Delhi (94.15 days). On the basis of average over seven locations, the entry LRB 370 (57.71 days) was superior to the check varieties in flowering.

Maturity period was the earliest at Mettupalayam (79.81 days) and delayed at Delhi (144.31 days). There was a difference of about 64 days between Mettupalayam and Delhi. Based on the average over seven locations no entry was the earliest in maturity.

Mean plant height was highest at Delhi (144.41 cm) followed by Hisar (136.00 cm) and very low at Bangalore (34.56 cm). Based on the average over the locations the entry LRB 305 (110.11 cm) and LRB 440 (108.80 cm) had the maximum plant height.

The number of primary branches was highest at Hisar (5.47) followed by Delhi (5.15). Based on the average over the locations the entry LRB 401 (5.14) had the highest number of branches.

The grain yield per plant recorded at seven locations showed that Hisar centre had the highest seed yield per plant (53.07 g) followed by Delhi (21.05 g). Based on average over the seven locations, the entry LRB 424 (27.61 g) and LRB 425 (26.05 g) had the highest grain yield per plant.

The number of pods per plant was highest at Hisar (105.35) followed by Delhi (92.13) and very low at Bangalore (18.31). Based on data over the locations the entry LRB 349 (79.35) had the highest number of pods per plant followed by LRB 380 (73.93).

The number of seeds per plant recorded at five locations revealed that it was highest at Ranchi (9.01) followed by Delhi (8.53). LRB 396, LRB 423 and LRB 323 (8.90) had highest number of seeds per plant on the basis of all locations.

The mean pod length was recorded in five locations. It was highest at Hisar (9.36 cm) followed by Ranchi (9.18 cm). Based on the average over a locations the entry LRB 333 (9.60 cm) had the longest pod length.

100 seed weight was observed at four locations. It showed that highest seed weight was at Delhi (6.65 g) followed by Ranchi (5.77 g). Based on average over locations, the entry LRB 323 (7.09 g).

3.2.2 Germplasm Evaluation at different centres

3.2.2.1 Grain Amaranth (Rabi 2005-06)

Germplasm screening nursery consisting of different lines was evaluated at three locations viz. NBPGR New Delhi; OUAT Bhubaneswar and NDUAT, Faizabad. The list of promising for all characters have been presented in table 153.

A total of 35 accessions including checks were also evaluated at OAU&T, Bhubaneswar for seven quantitative characters. Statistical parameters have been given in table 154. No genotypes was earliest in flowering and maturity. The maximum plant height (122.20 cm) was observed in the genotypes BGA-54. The longest panicle length was found in BGA-42 (68.00 cm) followed by BGA-53 (63.00 cm). The entry BGA-10 (8.67 g) followed by BGA-35 (8.09 g) had the highest test weight. The highest grain yield per plant was observed in genotype BGA-15 (23.66 g) followed by BGA-53 (22.14 g). The highest seed yield was observed in genotypes BGA-10 (23.96 q/ha) followed by BGA-15 (22.92 q/ha).

A set of 63 genotypes including four checks were screened for nine yield related attributes at NBPGR, New Delhi. Entry IC021941 (58 days) was found earlier to the check variety in flowering and IC396955 (134 days) was earliest for maturity. The maximum height (150.00 cm) was found in the genotype IC386984 followed by IC324041 (94.80 cm). The IC325877 was superior to the check for grain yield (18.77 q/ha). The highest test weight (9.30 g) was observed in the genotype IC469676. The highest panicle length (65.00 cm) was found in the genotype IC423460. The mean and range for all characters have been given in table 155.

A set of 57 genotypes including three checks were screened for six yield related attributes at NDUAT, Faizabad. Entries IC519526 (34 days) was found earlier to the check variety in flowering and IC415271 (84 days) was earliest for maturity. The maximum height (113.40 cm) was found in the genotype EC519524 followed by EC519557 (110.40 cm). The EC519558 was superior to the check for yield per plant (16.20 g). The mean and range for all characters have been given in table 156.

3.2.2.2 Rice bean (*Vigna umbellata*) – Kharif 2007

Different accessions of rice bean were evaluated at three centres viz. OUA&T Bhubaneshwar; NBPGR, New Delhi and CCS HAU, Hisar. The list of promising for all characters have been presented in table 157.

A total of 47 genotypes and four checks RBL-1, RBL-6, RBL-35 and RBL-50 were screened for 11 characters in Augmented Design at OUA&T Bubaneswar (Table 158). The entry BRB23 (41 days) was earliest in flowering and maturity (87 days). The maximum plant height (110.00 cm) was observed in BRB 18 followed by BRB 11 (104.00 cm). The entry BRB 1 (5.20) had the highest number of branches per plant, while entry BRB 14-2 (54.00) had the highest number of pods per plant. The longest pod was recorded in genotype BRB 9 (8.80 cm) followed by BRB 32 (8.60 cm). No entries was superior in 100 seed weight to the check variety. The highest seed yield per plant (16.06 g) was recorded in the genotype BRB 20.

At Hisar, a set of 89 genotypes and four checks were evaluated for ten characters (Table 159). The maximum plant height (177.30 cm) was observed in the genotype ST-02 followed by RBH-28 (175.30 cm). The entries ST-02 (8.00) had the highest number of branches per plant, while entry LRB 493 (154.00) had the maximum number of pods per plant. The entry RBH-24 (49.00 days) was superior to check variety in flowering and Selection-3 (108.00 days) for maturity.

At Delhi, a set of 117 genotypes along with three checks RBL-6, RBL-35 and RBL-50 were evaluated in Augmented Design for 13 characters (Table 160). LRB 142 (85.00 days) was found to early flowering and LRB 161 (121.00 days) in maturity. Entry LRB 276 (10.28 cm) had longer pod than the check. The no.

of branches was recorded in the genotype LRB 185 (11.00) followed by NRB-31 (8.50). Maximum plant height (191.00 cm) was observed in the genotype LRB 138 followed by DPRR-54 (171.80 cm). The entry LRB 202 (25.00g) had the highest seed yield per plant. Bold seed was recorded in the genotypes LRB 245 and LRB 262 (9.00 g). Maximum number of pods per plant was observed in LRB 198 (116.80) followed by LRB 196 (114.20), while LRB 194 and LRB 187 (6.00) had the higher number of pods per cluster.

3.2.2.3 Faba bean (*Vicia feba*)

Germpalsm 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-12, PRT-7 and Vikrant and the list of promising genotypes of the all centres have been presented in table 161.

At CCS HAU, Hisar, a set of 271 including checks were evaluated for twelve quantitative characters. The genotype Mutant-1 (50.00 days) were earlier in flowering and maturity (140.00 days). Maximum plant height (160.00 cm) was observed in the genotype HB-44 followed by Mutant-2 (155.10 cm). The entry Mutant-1 (17.00) and Mutant-2 (12.00) had the highest number of branches per plant, while Mutant-1 had the highest number of cluster per plant and pods per plant. The longest pod (7.70 cm) was recorded in Mutant-2 followed by Mutant-1 (6.90 cm). The entries HB 37 (39.90 g) and EC117745 (39.60 g) had the highest 100 seed weight while the genotype EC329588 (71.50 g) had the highest seed yield per plant. The statistical parameters for all characters have been given in table 162.

A total of 151 genotypes including three checks were evaluated in Augmented Design at N.B.P.G.R., New Delhi for thirteen quantitative characters. Early flowering was observed (52.0 days) in the genotypes EC329724 whereas early maturity was observed (99.0 days) in the genotypes EC025192, EC329762 and EC117705. Highest pods per plant (124.00) was observed in the genotype EC354951 and EC010845 (111.40). Maximum plant height (98.40 cm) was recorded in the genotype EC034710 followed by EC243808 (96.20 cm). The entries EC010845 (9.80) had the highest number of branches per plant, while entry EC299713 had the highest number of grains per pod (4.0). The maximum

seed yield (51.90 q/ha) was produced by the genotype EC329672 followed by EC329668 (50.00 q/ha). The boldest seed was recorded in the genotype EC55902 (72.79 g) followed by VKG-18/46 (58.79 g). The means and ranges for various characters have been presented in table 163.

At Faizabad, a set of 80 including checks were evaluated for eight quantitative characters. The genotypes EC299313 (56.00 days) were earlier in flowering, while EC382423 (153.0 days) and EC247696 (157.0 days) were earlier in maturity. Maximum plant height (74.8 cm) was observed in the genotype EC267641 followed by EC243784 (72.4 cm). The entries EC267641 and EC243529 (6.00) had the highest number of branches per plant and EC361427 (60.20) pods per plant. The genotype EC248945 (35.10 g) had the highest 100 seed weight while the genotype EC299313 (26.52 q/ha) had the highest seed yield. The statistical parameters for all the characters have been given in table 164.

3.2.2.4 Winged bean (*Psophocarpus tetragonlogus*)

Germpalsm screening nursery was to be evaluated at one location at Ambikapur. List of promising genotypes of the centre has been presented in table 165.

At IGKV, Ambikapur, a set of 17 accessions were evaluated without check variety in four quantitative characters. The genotype EC027886-A2 was observed superior for flowering (74.50 days) and maturity (157.00 days). Maximum pod length (18.00 cm) was observed in the genotype IC112417 followed by IC112416 (17.40 cm) while the genotype IC112416 (15.28 q/ha) had the highest dry seed yield. The statistical parameters for all characters have been given in table 166.

3.2.2.5 Kalingada

At GAU, S.K. Nagar, a set of 24 genotypes along with check GK-1 were evaluated for twelve characters. The promising genotypes and statistical parameters for all the characters have been presented in tables 167 and 168, respectively. The early flowering was observed in the genotype SKNK-012

(41.00 days). The genotype SKNK-001 had the highest fruit yield (166.67 q/ha) while the genotype Vadavas-2 had the highest seed yield (6.50 q/ha).

3.2.2.6 Jatropha

Jatropha accessions consisting of 157 genotypes along with one check at Hisar and 22 genotypes at Karnal centre were evaluated. The list of promising genotypes for various characters for various locations has been presented in table 169.

A set of 157 genotypes including check was evaluated at Hisar. Statistical parameters for all the characters have been presented in table 170a. The maximum plant height (358.70 cm) was recorded in the genotype JH-52. The entry JH-6 (28.0) had the highest number of branches followed by JH-1 (23.0). The highest stem girth was observed in the genotypes JH-46 (50.60 cm). The highest seed weight per plant were 720.00 g, longest seed size in 1.79 cm and number of pods per plant (690.0) were observed in the genotype JH-1.

A set of 22 genotypes were evaluated for semi-reclaimed soil at CSSRI Farm, Karnal for six yield attributes characters. The maximum number of branches (19.00) was recorded in the genotypes Raipur. The entry Cutting (374.33) had the highest number of fruits per plant followed by Raipur (370.33). The longest fruit size (2.70 cm) was observed in the genotype S.K.N. Big and followed by Hisar J-1 (2.67). The highest seed yield and fruit yield per plant were observed in Cutting. The entry S.K.N. Big had the highest fruit size width (2.33 cm) (Table 170b).

3.2.2.7 Simarouba

Simarouba genotypes were planned for maintaining the germplasm at Rahuri centre. The list of promising genotypes for all the characters have been presented in table 171.

A set of 54 genotypes was maintained at Rahuri. The maximum plant height (4.80 m) was observed in the genotypes PS-43 followed by PS-31 (4.75 m). The entries PS-54 (13.00) and PS-40 (12.00) had the highest number of branches per plant. The highest stem girth (55.0 cm) was recorded in the genotypes PS-40 (Table 172).

Table 147. Promising lines in grain amaranth germplasm (Rabi, 2006-07) for various characters at different locations (Plains)

S.No.	Characters	Range	Promising lines	Value of best check
S.K. Nagar (Accessions 50)				
1.	Days to maturity	80.50-112.50	IC415264, IC415426, IC415262, IC415290, IC415266, IC423408, IC415258, IC037316, IC038127, IC038312, IC415222, IC415448, IC415252 (< 86.00 days)	GA-1 (86.00 days)
2.	Plant height (cm)	64.00-178.50	IC423448 (> 166.00 cm)	GA-1 (166.00 cm)
3.	Inflorescence length (cm)	42.00-104.50	IC423448, BGA-18, BGA-23, BGA-11, BGA-01, BGA-07, BGA-20, BGA-04, BGA-14, BGA-17, IC415282 (> 80.00 cm)	GA-2 (80.00 cm)
4.	No. of primary branches per plant	2.25-7.50	IC038127, IC038312, IC415252 (> 7.10)	Annapurna (7.10)
5.	Seed yield per plant (g)	8.90-23.50	BGA-05, IC415258, BGA-23, BGA-20, BGA-21, IC415232, IC415426, EC519549, IC415282, IC038127, IC415264, EC519526, IC423408, IC415318, EC519522, IC415297, IC415290, BGA-09, BGA-19, BGA-24, EC519554, BGA-01, IC415266, BGA-16 (> 14.60 g)	GA-1 (13.50 g)
6.	Seed yield (q/ha)	11.13-29.38	BGA-05, IC415258, BGA-23, BGA-20, BGA-21, IC415232, IC415426, EC519549, IC415282, IC038127, IC415264, EC519526, IC423408, IC415318, EC519522, IC415297, IC415290, BGA-09, BGA-19, BGA-24, EC519554, BGA-01, IC415266, BGA-16 (> 18.25 q/ha))	GA-1 (16.88 q/ha)
Bhubaneswar (Accessions 50)				
1.	Days to 50% flowering	36.00-58.00	IC 037316 (< 36.50 days)	Annapurna (36.50 days)
2.	Days to maturity	78.00-105.00	IC 423117, IC 415266 (< 79.50 days)	Annapurna (79.50 days)
3.	Plant height (cm)	47.20-125.40	EC 519544, EC 519526, BGA 4 (> 114.50 cm)	GA 1 (114.50 cm)
4.	Panicle length (cm)	27.80-68.60	BGA 23, BGA 1, BGA 7, BGA 9, BGA 5, BGA 4, BGA 28, BGA 3, BGA 6, BGA 25 (> 54.35 cm)	GA 1 (54.35 cm)
5.	Grain yield per plant (g)	3.02-23.20	BGA 5, BGA 4, BGA 7, BGA 23, BGA 22, BGA 3, BGA 1, BGA 6, BGA 8, BGA 26, BGA 11, BGA 13, BGA 14, BGA 12, BGA 24, BGA 25, BGA 28, BGA 20, IC 423448 (> 11.13 g)	Suvarna (11.13 g)

6.	Grain yield (q/ha)	6.25-27.08	BGA 7, BGA 6, BGA 5, BGA 3, BGA 12, BGA 1, BGA 9, BGA 4, BGA 11, BGA 23, BGA 8, BGA 22, BGA 26, BGA 20, BGA 19, BGA 27, BGA 17, BGA 24, BGA 18, EC 519554, IC 415318 (> 15.89 q/ha)	Suvarna (15.89 q/ha)
7.	Seed weight (g/10ml)	7.18-8.20	BGA 6, IC 415262, EC 519554, BGA 7, BGA 8, IC 038312, BGA 28, BGA 27, BGA 13, BGA 21, BGA 22, IC 415252, BGA 3, BGA 1, BGA 18, IC415222, BGA 9, BGA 4, BGA 24, BGA 12, BGA 20, BGA 25, IC038127, IC415232, BGA 11, IC415318, IC415290, BGA 16, BGA 5, EC519544, IC415264 (> 7.91 g/10ml)	GA 1 (7.91 g/10ml)
Mandor (Accessions 50)				
1.	Days to 50% flowering	41.00-61.00	IC415232, IC037316, IC415222, IC415262, IC415318, IC415272, IC415290, IC038127, IC415258, IC415264, IC415266, IC415282, IC415297, IC415426, IC415448, IC423408 (< 45.00 days)	Annapurna (45.00 days)
2.	Days to maturity	94.00-127.00	IC415272, IC415252, EC519544 (< 95.00 days)	Annapurna (95.00 days)
3.	Plant height (cm)	46.60-149.00	IC423448, EC519554, EC519526, EC519522 (> 132.78 cm)	GA 1 (132.78 cm)
4.	Seed weight (g/10ml)	7.60-8.60	IC415232, BGA 13, BGA 17, IC423117, IC423408, IC415290, BGA 11, IC415282, IC037316, BGA 18, BGA 14 (> 8.30 g/10ml)	Annapurna (8.12 g/10ml)
5.	Grain yield per plant (g)	2.50-43.80	EC519554, BGA 4, BGA 12, BGA 24, BGA 28, BGA 1, EC519549, BGA 9, BGA 27, BGA 26, BGA 13, BGA 11 (>36.66 g)	Suvarna (36.66 g)
Delhi (Accessions 50)				
1.	Days to 50% flowering	60.00-93.00	IC415252, IC415262, IC415297, IC415282, IC415264, IC415318, IC415232, IC415448, IC423408 (< 65.00 days)	Annapurna (65.10 days)
2.	Days to maturity	149.00-175.00	IC038127, IC415222, IC037316, IC415318, IC415232, EC519549, IC038312, IC423408, BGA 22, IC415272, IC415426, BGA 23, BGA 28, IC415264, BGA 21, BGA 26, IC415252, IC415290, IC423117, EC519522, IC415262, IC415448, BGA 12, BGA 25, BGA 20 IC415297, IC415282, EC519526 (< 162.00 days)	GA-2 (162.30 days)
3.	Plant height (cm)	12.00-102.00	EC519522, EC519526 (> 90.60 cm)	Suvarna (90.60 cm)
4.	Leaf length (cm)	5.86-16.62	BGA 1, BGA 6, BGA 8 (> 15.68 cm)	Suvarna (15.68 cm)
5.	Panicle length (cm)	20.20-70.40	IC423448, BGA 5, EC519526 (> 46.40 cm)	GA-1 (46.40 cm)

6.	Grain yield (q/ha)	2.07-22.22	EC519544, IC423448, EC519522, IC423117, IC415282, BGA 9, IC415264, IC038127, IC038312, BGA 16, BGA 6, BGA 14, IC415448, BGA 13, EC519526, IC415272, IC415318, BGA 22, BGA 24, BGA 20, IC415232, IC415258, BGA 23, IC415426, EC519554, BGA 19, BGA 11, BGA 12, IC415262, BGA 3, BGA 4, BGA 1, BGA 7, IC415290, IC415222, BGA 25, IC415252 (> 5.63 q/ha)	GA-1 (5.63 q/ha)
7.	Seed weight (g/10ml)	5.60-9.15	IC423117, EC519526, IC415318, IC415258, EC519554, IC415252, IC415272, IC415262, EC519522, IC415264, IC038127, IC415222, IC415448, IC038312, IC415297, IC037316, IC415290, IC415426, IC415282, IC415266, EC519549, IC423448, BGA 17, BGA 25, BGA 18, IC423408, BGA 12, IC415232 (> 7.40 g/10ml)	Annapurna (7.40 g/10 ml)
8.	Dry matter yield (q/ha)	9.20-48.15	BGA 14, BGA 16, EC519544, IC423448, BGA 9, BGA 7, BGA 6, EC519522, BGA 11, IC415264, BGA 8, IC415282, BGA 13, BGA 5, BGA 3, IC423117, IC038127, BGA 26, IC415262, IC415426, BGA 4, EC519526, BGA 23, IC415222, BGA 28, BGA 22, IC415272, BGA 24, IC415318, BGA 25, IC415448, IC415266, IC415232, IC038312, EC519549, BGA 18 (> 19.12 q/ha)	GA-1 (19.12 q/ha)
Hisar (Accessions 50)				
1.	Days to 50% flowering	62.00-85.00	IC038127, IC415266, IC423117 (< 63.50 days)	Suvarna (63.50 days)
2.	Days to maturity	134.00-203.00	BGA-01, BGA-07, BGA-17, IC430408 (< 159.50 days)	Suvarna (159.50 days)
3.	Plant height (cm)	4.10-134.00	EC519522, IC423448, EC519526, IC415252 (> 103.70 cm)	GA-2 (103.70 cm)
4.	No. of primary branches per plant	4.00-10.20	EC519544, IC415232, IC415426, IC415222, IC415252, BGA-14, IC423117, IC415282, IC430408, BGA-28, BGA-05, BGA-20, BGA-27, IC415290, IC415262, EC519559, BGA-17, BGA-26, BGA-23, BGA-25, BGA-11, IC037316, IC415318, IC415448, IC423448, BGA-13, BGA-24, IC415264 (> 6.00)	GA-1 (6.00)
5.	Panicle length (cm)	13.20-49.10	IC423448, BGA-11 (> 30.85 cm)	GA-1 (30.85 cm)
6.	Seed weight (g/10ml)	4.40-6.90	BGA-05, BGA-12, BGA-24, IC415448, IC423117 (> 6.35 g/10ml)	Suvarna (6.35 g/10 ml)
7.	Seed yield per plant (g)	3.60-32.60	BGA-14, IC423448, BGA-04, IC415252, BGA-24, IC415290, IC415282, BGA-05, BGA-21, BGA-23, BGA-07, BGA-22, BGA-26, BGA-20, BGA-01,	Suvarna (13.50 g)

			BGA-13, BGA-28, BGA-17, BGA-25, BGA-06, BGA-03, IC415222, BGA-16, IC038312, EC519526, IC430408, IC415258, IC415264 (> 13.50 g)	
Best entries over locations				
1.	Days to 50% flowering	46.70-67.30	IC415262, IC037316, IC415266, IC038127, IC415232, IC423408, IC415290, IC415297, IC415282, IC415222, IC415448, IC423117, IC415426, IC415264, IC415258, IC038312, IC415318, IC415272, EC519549 (< 52.12 days)	Annapurna (52.12 days)
2.	Days to maturity	115.30-140.60	IC423408, IC415426, IC038127, IC038312, IC415266, IC423117, IC415448, IC415252, IC037316, IC415282, IC415222, IC415272, IC415290, IC415318, IC415258, IC415262, IC415297, IC415232, IC415264, BGA-17, BGA-01 (< 123.80 days)	Annapurna (123.80 days)
3.	Plant height (cm)	47.02-128.50	IC423448, EC519526, EC519522 (> 117.98 cm)	GA-1 (117.98 cm)
4.	Inflorescence length (cm)	33.60-76.80	IC423448, BGA-11, BGA-23, BGA-01, BGA-07, BGA-14, BGA-18, BGA-17 (> 54.68 cm)	GA-1 (54.68 cm)
5.	No. of primary branches per plant	4.00-10.20	EC519544, IC415252, IC423117, BGA-27, BGA-05, EC519549, IC415232, IC038312 (> 6.55)	Annapurna (6.55)
6.	Seed yield per plant (g)	6.33-26.42	BGA-04, BGA-05, BGA-23, BGA-24, BGA-01, BGA-26, BGA-13, BGA-14, BGA-21, BGA-28, BGA-07, BGA-06, BGA-03, BGA-20, BGA-12, BGA-22, EC519549 (> 18.65 g)	Suvarna (18.65 g)
7.	Seed yield (q/ha)	7.52-19.24	BGA-05, BGA-23, BGA-09, BGA-20, BGA-07, BGA-06, IC038127, IC415426, IC415282, BGA-01, EC519522, IC415264, IC415318, BGA-12, IC415258, EC519544, EC519526, IC415232, BGA-19, BGA-24, BGA-21, EC519554, BGA-14, BGA-16, BGA-03, BGA-11, BGA-22, BGA-04, BGA-13, IC423408, BGA-17, IC415290, IC038312, BGA-26, BGA-08, BGA-18, IC423448 (> 12.28 q/ha)	GA-1 (12.28 q/ha)
8.	Seed weight (g/10ml)	6.70-7.81	IC423117, IC415252, IC415262, IC415318, IC415448, IC415222, IC415264, IC038127, BGA-12, IC415290, IC038312, IC415272, EC519554, IC415258, IC415297, IC415426, IC415282, IC415232, EC519526, IC415266, EC519549, IC423408, IC037316, BGA-18, IC423448, BGA-17, BGA-20, BGA-24, BGA-14, BGA-07, BGA-13, BGA-25, EC519522 (> 7.22 g/10ml)	Suvarna (7.22 g/10ml)
9.	Panicle length (cm)	25.90-57.80	IC423448, BGA-05, BGA-01, BGA-09, BGA-04 (> 50.38 cm)	GA-1 (50.38 cm)

Table 148. Multilocation evaluation of germplasm lines in grain amaranth at Bhubaneswar, Delhi, Hisar, Mandor and S.K. Nagar - Rabi 2006 (Plains)

S. No.	Accession No.	Days to 50% flowering						Days to maturity					
		Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean	Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean
1	BGA-01	45.00	73.00	78.00	60.00	45.00	**60.20**	93.00	163.00	134.00	121.00	104.00	**123.00**
2	BGA-03	48.00	76.00	78.00	59.00	46.50	**61.50**	98.00	165.00	165.00	123.00	109.00	**132.00**
3	BGA-04	44.00	73.00	79.00	58.00	45.50	**59.90**	90.00	163.00	160.00	120.00	106.00	**127.80**
4	BGA-05	52.00	92.00	81.00	60.00	51.50	**67.30**	102.00	165.00	176.00	122.00	109.00	**134.80**
5	BGA-06	46.00	73.00	85.00	57.00	51.00	**62.40**	98.00	167.00	170.00	120.00	111.50	**133.30**
6	BGA-07	46.00	76.00	74.00	59.00	43.00	**59.60**	98.00	163.00	137.00	124.00	110.50	**126.50**
7	BGA-08	53.00	84.00	85.00	57.00	46.50	**65.10**	98.00	163.00	167.00	120.00	110.50	**131.70**
8	BGA-09	52.00	80.00	85.00	58.00	44.50	**63.90**	96.00	164.00	172.00	120.00	110.50	**132.50**
9	BGA-11	44.00	84.00	78.00	48.00	43.00	**59.40**	93.00	163.00	174.00	117.00	107.50	**130.90**
10	BGA-12	45.00	83.00	82.00	60.00	43.00	**62.60**	92.00	158.00	171.00	120.00	105.50	**129.30**
11	BGA-13	45.00	78.00	81.00	60.00	44.50	**61.70**	90.00	167.00	174.00	122.00	101.00	**130.80**
12	BGA-14	46.00	73.00	82.00	52.00	42.00	**59.00**	91.00	165.00	178.00	121.00	111.00	**133.20**
13	BGA-16	49.00	77.00	85.00	58.00	45.50	**62.90**	92.00	167.00	165.00	119.00	109.50	**130.50**
14	BGA-17	45.00	86.00	79.00	58.00	46.50	**62.90**	90.00	162.00	137.00	120.00	105.00	**122.80**
15	BGA-18	43.00	80.00	85.00	58.00	43.50	**61.90**	88.00	164.00	182.00	119.00	108.50	**132.30**
16	BGA-19	44.00	77.00	84.00	61.00	42.50	**61.70**	92.00	165.00	183.00	120.00	111.50	**134.30**
17	BGA-20	46.00	83.00	83.00	60.00	44.50	**63.30**	92.00	159.00	189.00	124.00	109.50	**134.70**
18	BGA-21	45.00	87.00	81.00	58.00	42.50	**62.70**	93.00	156.00	185.00	123.00	111.00	**133.60**
19	BGA-22	53.00	65.00	80.00	54.00	43.00	**59.00**	103.00	155.00	183.00	125.00	104.50	**134.10**
20	BGA-23	56.00	67.00	85.00	60.00	45.50	**62.70**	103.00	155.00	203.00	121.00	108.50	**138.10**

Table 148. Multilocatio
S.K. Nagar

S. No.	Accession No.	Plant height (cm)						Inflorescence length (cm)			No. of primary branches / plant			Seed yield/plant (g)				
		Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean	Hisar	S.K. Nagar	Mean	Hisar	S.K. Nagar	Mean	Bhubaneswar	Hisar	Mandor	S.K. Nagar	Mean
1	BGA-01	112.60	82.00	71.20	77.00	109.00	**90.36**	30.20	87.50	**58.85**	6.00	-	**6.00**	17.80	24.40	41.30	15.50	**24.75**
2	BGA-03	110.20	59.00	88.00	76.00	111.00	**88.84**	26.00	62.00	**44.00**	5.10	-	**5.10**	19.28	18.50	35.70	9.40	**20.72**
3	BGA-04	117.60	84.20	75.10	99.80	132.50	**101.84**	25.10	84.00	**54.55**	6.00	-	**6.00**	21.58	30.50	43.50	10.10	**26.42**
4	BGA-05	106.40	86.20	103.10	130.00	124.00	**109.94**	25.10	46.00	**35.55**	7.00	-	**7.00**	23.20	29.50	28.80	23.50	**26.25**
5	BGA-06	109.00	83.60	74.00	90.00	119.50	**95.22**	24.20	78.00	**51.10**	6.00	2.25	**4.13**	17.72	20.50	36.30	9.80	**21.08**
6	BGA-07	91.80	63.20	87.20	81.00	126.50	**89.94**	27.00	85.50	**56.25**	5.20	-	**5.20**	20.90	26.90	23.00	13.80	**21.15**
7	BGA-08	101.00	82.00	90.00	94.60	119.50	**97.42**	23.00	69.50	**46.25**	5.10	-	**5.10**	16.48	8.50	29.20	10.10	**16.07**
8	BGA-09	98.00	77.40	89.00	108.00	123.50	**99.18**	23.20	77.00	**50.10**	6.00	-	**6.00**	9.32	4.30	41.00	15.70	**17.58**
9	BGA-11	87.20	62.00	78.10	90.40	125.50	**88.64**	38.00	90.00	**64.00**	6.20	4.27	**5.24**	15.91	6.10	38.20	9.70	**17.48**
10	BGA-12	87.00	48.00	89.00	82.00	118.00	**84.80**	21.20	73.50	**47.35**	5.20	-	**5.20**	15.14	8.20	42.90	13.80	**20.01**
11	BGA-13	86.20	66.60	87.00	74.80	105.00	**83.92**	25.20	73.00	**49.10**	6.10	-	**6.10**	15.57	23.20	38.20	13.00	**22.49**
12	BGA-14	98.00	81.00	92.00	97.00	119.50	**97.50**	29.00	83.00	**56.00**	7.20	4.30	**5.75**	15.54	32.60	24.20	14.60	**21.74**
13	BGA-16	89.80	82.40	97.00	90.20	129.00	**97.68**	25.20	79.50	**52.35**	5.20	-	**5.20**	9.31	16.80	23.30	15.00	**16.10**
14	BGA-17	105.00	49.20	92.10	90.20	112.50	**89.80**	28.10	82.50	**55.30**	6.20	4.40	**5.30**	8.00	20.80	28.20	13.90	**17.73**
15	BGA-18	102.00	48.20	67.20	90.40	132.00	**87.96**	18.20	93.00	**55.60**	5.10	4.70	**4.90**	9.71	6.90	19.00	12.10	**11.93**
16	BGA-19	91.00	88.60	98.20	86.00	107.00	**94.16**	25.20	74.50	**49.85**	5.00	-	**5.00**	10.31	4.30	25.00	15.60	**13.80**
17	BGA-20	105.60	73.60	89.10	97.80	120.00	**97.22**	21.10	85.00	**53.05**	7.00	4.98	**5.99**	11.86	25.20	23.80	21.00	**20.47**
18	BGA-21	112.40	48.00	65.00	75.60	130.00	**86.20**	23.00	71.50	**47.25**	5.20	-	**5.20**	8.52	29.10	28.60	20.60	**21.71**
19	BGA-22	84.00	56.00	81.00	86.60	123.00	**86.12**	27.10	77.00	**52.05**	5.20	-	**5.20**	20.18	25.40	23.80	10.00	**19.85**
20	BGA-23	109.60	63.20	83.20	99.40	138.00	**98.68**	28.20	91.00	**59.60**	6.20	-	**6.20**	20.86	28.90	31.60	21.50	**25.72**

Table 148. Multilocatio
S.K. Nagar

S. No.	Accession No.	Seed yield (q/ha)				Seed weight (g/10ml)					Panicle length (cm)			Delhi				
		Bhubaneswar	Delhi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Hisar	Mandor	Mean	Bhubaneswar	Delhi	Mean	Leaf length (cm)	Leaf width (cm)	Dry matter yield(q/ha)	Seed colour	Leaf colour
1	BGA-01	22.33	6.17	19.38	**15.96**	8.00	6.95	5.60	8.30	**7.21**	64.00	42.40	**53.20**	16.62	5.62	17.28	2	5
2	BGA-03	22.92	6.67	11.75	**13.78**	8.02	6.78	5.20	8.20	**7.05**	56.40	37.60	**47.00**	11.22	6.26	24.69	2	5
3	BGA-04	21.88	6.42	12.63	**13.64**	7.99	6.58	5.50	8.20	**7.07**	58.40	42.60	**50.50**	9.94	5.68	23.46	2	99
4	BGA-05	22.92	5.43	29.38	**19.24**	7.93	6.05	6.90	7.60	**7.12**	59.80	47.80	**53.80**	12.98	7.16	27.16	2	5
5	BGA-06	26.04	11.11	12.25	**16.47**	8.20	5.60	5.10	8.10	**6.75**	56.40	38.80	**47.60**	16.48	7.92	30.86	2	5
6	BGA-07	27.08	6.17	17.25	**16.84**	8.14	6.70	6.20	8.10	**7.29**	61.60	38.00	**49.80**	10.82	5.42	32.10	2	99
7	BGA-08	20.83	3.95	12.63	**12.47**	8.09	5.78	5.20	8.10	**6.79**	52.40	36.40	**44.40**	15.96	8.32	28.40	2	5
8	BGA-09	22.08	13.58	19.63	**18.43**	7.99	6.38	5.00	8.00	**6.84**	60.80	43.20	**52.00**	12.74	6.56	33.33	2	99
9	BGA-11	21.88	7.16	12.13	**13.72**	7.95	7.24	4.90	8.50	**7.15**	46.40	43.80	**45.10**	10.38	5.48	29.63	2	99
10	BGA-12	22.92	7.16	17.25	**15.78**	7.98	7.52	6.90	8.30	**7.68**	54.20	36.60	**45.40**	10.28	5.28	14.81	2	5
11	BGA-13	14.58	9.75	16.25	**13.53**	8.06	6.92	5.50	8.60	**7.27**	53.40	34.00	**43.70**	10.36	5.28	27.16	2	5
12	BGA-14	13.54	10.62	18.25	**14.14**	7.77	7.38	5.60	8.40	**7.29**	51.40	44.20	**47.80**	11.26	5.62	48.15	2	5
13	BGA-16	12.50	11.11	18.75	**14.12**	7.94	6.97	4.90	8.30	**7.03**	42.60	42.00	**42.30**	11.62	5.72	43.21	2	99
14	BGA-17	17.71	5.31	17.38	**13.46**	7.81	7.66	5.30	8.60	**7.34**	45.80	34.60	**40.20**	8.30	4.48	16.05	2	99
15	BGA-18	16.67	5.43	15.13	**12.41**	8.00	7.60	5.40	8.40	**7.35**	46.60	32.80	**39.70**	8.64	4.70	19.75	2	99
16	BGA-19	17.92	7.16	19.50	**14.86**	7.88	7.32	5.20	8.30	**7.18**	46.40	44.80	**45.60**	11.84	6.32	18.02	2	99
17	BGA-20	18.75	8.15	26.25	**17.72**	7.96	7.31	5.80	8.20	**7.32**	51.40	36.80	**44.10**	11.02	5.68	17.04	2	99
18	BGA-21	13.54	4.44	25.75	**14.58**	8.06	6.62	5.60	8.10	**7.10**	52.60	39.80	**46.20**	10.58	5.60	17.53	2	99
19	BGA-22	19.79	8.64	12.50	**13.64**	8.03	7.23	5.40	8.20	**7.22**	42.60	35.20	**38.90**	10.02	5.08	21.73	2	99
20	BGA-23	20.83	7.65	26.88	**18.45**	7.87	6.29	5.10	8.00	**6.82**	68.60	29.00	**48.80**	11.90	5.94	22.47	2	5

S. No.	Accession No.	Days to 50% flowering						Days to maturity					
		Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean	Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean
21	BGA-24	49.00	91.00	80.00	58.00	40.50	**63.70**	98.00	162.00	172.00	100.00	103.50	**127.10**
22	BGA-25	48.00	87.00	84.00	58.00	45.00	**64.40**	100.00	158.00	178.00	102.00	109.00	**129.40**
23	BGA-26	48.00	90.00	77.00	54.00	46.00	**63.00**	98.00	156.00	180.00	100.00	110.50	**128.90**
24	BGA-27	50.00	93.00	82.00	58.00	44.50	**65.50**	98.00	163.00	190.00	98.00	105.50	**130.90**
25	BGA-28	52.00	81.00	85.00	60.00	44.00	**64.40**	98.00	155.00	173.00	103.00	107.00	**127.20**
26	EC519522	58.00	81.00	82.00	61.00	52.50	**66.90**	105.00	157.00	165.00	121.00	109.50	**131.50**
27	EC519526	54.00	85.00	81.00	60.00	54.00	**66.80**	103.00	160.00	167.00	95.00	111.50	**127.30**
28	EC519544	54.00	83.00	83.00	57.00	54.50	**66.30**	103.00	163.00	175.00	94.00	111.00	**129.20**
29	EC519549	40.00	65.00	74.00	47.00	34.00	**52.00**	93.00	153.00	177.00	118.00	89.00	**126.00**
30	EC519554	56.00	84.00	83.00	60.00	51.50	**66.90**	103.00	165.00	183.00	126.00	112.50	**137.90**
31	IC037316	36.00	65.00	66.00	42.00	28.50	**47.50**	84.00	151.00	170.00	98.00	84.00	**117.40**
32	IC038127	40.00	65.00	62.00	44.00	28.50	**47.90**	82.00	149.00	168.00	95.00	84.00	**115.60**
33	IC038312	40.00	65.00	66.00	47.00	29.50	**49.50**	84.00	154.00	160.00	96.00	84.00	**115.60**
34	IC415222	40.00	65.00	69.00	42.00	28.50	**48.90**	84.00	150.00	175.00	95.00	84.50	**117.70**
35	IC415232	41.00	64.00	64.00	41.00	30.50	**48.10**	87.00	153.00	175.00	95.00	95.50	**121.10**
36	IC415252	42.00	60.00	65.00	47.00	58.00	**54.40**	89.00	157.00	160.00	94.00	85.00	**117.00**
37	IC415258	40.00	65.00	66.00	44.00	31.50	**49.30**	84.00	162.00	173.00	96.00	83.50	**119.70**
38	IC415262	39.00	60.00	64.00	42.00	28.50	**46.70**	80.00	158.00	185.00	95.00	82.00	**120.00**
39	IC415264	40.00	63.00	71.00	44.00	28.00	**49.20**	84.00	156.00	190.00	97.00	80.50	**121.50**
40	IC415266	38.00	65.00	62.00	44.00	29.00	**47.60**	79.00	162.00	160.00	96.00	82.50	**115.90**
41	IC415272	40.00	65.00	67.00	43.00	34.00	**49.80**	84.00	155.00	170.00	94.00	86.00	**117.80**
42	IC415282	39.00	61.00	68.00	44.00	31.50	**48.70**	80.00	160.00	160.00	99.00	88.50	**117.50**
43	IC415290	41.00	66.00	64.00	43.00	28.00	**48.40**	84.00	157.00	175.00	95.00	82.50	**118.70**
44	IC415297	40.00	60.00	67.00	44.00	31.50	**48.50**	83.00	160.00	175.00	96.00	89.00	**120.60**

S. No.	Accession No.	Plant height (cm)						Inflorescence length (cm)			No. of primary branches / plant			Seed yield/plant (g)				
		Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean	Hisar	S.K. Nagar	Mean	Hisar	S.K. Nagar	Mean	Bhubaneswar	Hisar	Mandor	S.K. Nagar	Mean
21	BGA-24	109.00	49.00	61.20	84.40	125.00	**85.72**	30.20	73.50	**51.85**	6.10	-	**6.10**	13.51	29.90	42.90	15.60	**25.48**
22	BGA-25	113.80	68.20	82.20	89.20	99.50	**90.58**	29.00	62.50	**45.75**	6.20	4.90	**5.55**	12.86	20.80	16.80	10.50	**15.24**
23	BGA-26	98.00	35.20	90.20	77.00	124.50	**84.98**	25.20	78.00	**51.60**	6.20	-	**6.20**	15.95	25.40	39.50	13.40	**23.56**
24	BGA-27	113.60	43.20	79.00	80.80	106.00	**84.52**	22.00	73.00	**47.50**	7.00	-	**7.00**	8.21	8.90	40.00	9.10	**16.55**
25	BGA-28	112.00	74.50	55.20	100.20	122.50	**92.88**	25.20	77.50	**51.35**	7.10	3.10	**5.10**	12.03	21.40	42.40	9.60	**21.36**
26	EC519522	107.00	102.00	134.00	136.00	122.50	**120.30**	21.00	51.50	**36.25**	4.00	-	**4.00**	5.00	10.40	11.60	16.90	**10.98**
27	EC519526	124.20	94.80	108.10	142.80	138.50	**121.68**	28.10	59.50	**43.80**	5.10	-	**5.10**	6.48	15.60	16.70	18.40	**14.30**
28	EC519544	125.40	38.60	67.20	127.20	126.00	**96.88**	25.20	42.00	**33.60**	10.20	-	**10.20**	5.66	7.10	24.00	10.00	**11.69**
29	EC519549	70.00	31.60	50.10	96.00	85.00	**66.54**	19.00	52.00	**35.50**	7.00	-	**7.00**	6.63	7.40	41.10	19.95	**18.77**
30	EC519554	112.00	56.00	101.20	144.80	140.50	**110.90**	21.00	48.50	**34.75**	4.00	-	**4.00**	5.35	3.90	43.80	15.60	**17.16**
31	IC037316	60.00	27.60	47.20	55.40	71.50	**52.34**	24.00	54.50	**39.25**	6.20	4.50	**5.35**	8.60	12.40	11.40	10.70	**10.78**
32	IC038127	67.00	38.80	33.00	63.20	87.50	**57.90**	13.20	75.00	**44.10**	5.20	7.50	**6.35**	5.72	7.90	7.50	19.70	**10.21**
33	IC038312	53.20	30.00	52.00	56.60	74.00	**53.16**	19.10	62.00	**40.55**	6.00	7.35	**6.68**	5.64	16.40	8.90	14.60	**11.39**
34	IC415222	61.60	46.40	60.00	55.30	83.50	**61.36**	23.00	69.50	**46.25**	8.00	4.90	**6.45**	4.64	18.00	16.70	14.60	**13.49**
35	IC415232	54.40	39.20	44.10	67.80	81.00	**57.30**	15.00	63.50	**39.25**	8.20	5.55	**6.88**	3.02	5.80	12.50	20.40	**10.43**
36	IC415252	63.40	30.60	107.10	67.20	72.50	**68.16**	27.00	59.00	**43.00**	7.20	7.25	**7.23**	4.63	30.10	21.70	9.10	**16.38**
37	IC415258	52.80	34.20	65.00	57.00	71.50	**56.10**	27.20	61.50	**44.35**	5.10	3.90	**4.50**	3.46	14.20	14.30	21.80	**13.44**
38	IC415262	59.00	36.00	51.10	78.60	83.00	**61.54**	19.20	75.00	**47.10**	7.00	3.65	**5.33**	3.27	7.80	15.40	13.70	**10.04**
39	IC415264	58.20	39.60	56.00	66.60	70.50	**58.18**	23.00	56.00	**39.50**	6.10	3.55	**4.83**	5.83	14.10	15.70	18.90	**13.63**
40	IC415266	54.00	29.20	63.00	56.80	83.00	**57.20**	25.20	66.00	**45.60**	5.20	6.85	**6.03**	4.00	9.20	5.90	15.10	**8.55**
41	IC415272	55.40	36.20	4.10	62.40	77.00	**47.02**	17.10	61.00	**39.05**	6.00	2.45	**4.23**	4.93	4.00	2.50	13.90	**6.33**
42	IC415282	47.20	31.20	49.10	46.60	76.50	**50.12**	23.20	81.50	**52.35**	7.20	5.25	**6.23**	5.91	29.80	4.60	19.90	**15.05**
43	IC415290	55.80	26.40	66.20	64.60	83.50	**59.30**	26.20	70.00	**48.10**	7.00	4.45	**5.73**	5.13	29.90	10.00	15.70	**15.18**
44	IC415297	55.60	12.00	54.00	61.40	77.00	**52.00**	21.10	70.50	**45.80**	6.00	5.25	**5.63**	3.66	4.90	6.70	16.50	**7.94**

S. No.	Accession No.	Seed yield (q/ha)				Seed weight (g/10ml)					Panicle length (cm)			Delhi				
		Bhubaneswar	Delhi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Hisar	Mandor	Mean	Bhubaneswar	Delhi	Mean	Leaf length (cm)	Leaf width (cm)	Dry matter yield(q/ha)	Seed colour	Leaf colour
21	BGA-24	16.67	8.15	19.50	**14.77**	7.99	6.26	6.80	8.20	**7.31**	46.80	44.00	**45.40**	12.20	5.70	21.23	2	5
22	BGA-25	15.63	5.68	13.13	**11.48**	7.96	7.63	5.20	8.20	**7.25**	54.80	40.40	**47.60**	9.28	5.26	20.49	2	99
23	BGA-26	19.79	2.96	16.75	**13.17**	7.81	7.03	5.00	8.10	**6.99**	51.00	39.80	**45.40**	8.60	3.82	23.70	2	5
24	BGA-27	17.71	3.46	11.38	**10.85**	8.06	6.48	4.40	8.20	**6.79**	53.30	33.20	**43.25**	8.86	4.68	12.35	2	5
25	BGA-28	12.50	5.19	12.00	**9.90**	8.08	6.75	5.10	8.20	**7.03**	58.20	38.20	**48.20**	12.00	6.64	22.22	2	5
26	EC519522	12.50	14.20	21.13	**15.94**	7.74	8.49	4.80	7.90	**7.23**	30.60	45.40	**38.00**	12.80	7.32	29.63	2	5
27	EC519526	12.50	9.38	23.00	**14.96**	7.88	8.86	5.10	8.00	**7.46**	46.40	47.60	**47.00**	14.80	8.06	22.72	2	5
28	EC519544	10.42	22.22	12.50	**15.05**	7.93	6.37	4.60	7.90	**6.70**	46.60	36.40	**41.50**	8.54	5.20	40.49	2	5
29	EC519549	6.25	4.94	24.94	**12.04**	7.83	7.82	6.10	8.00	**7.44**	42.60	34.00	**38.30**	8.84	3.82	19.75	2	5
30	EC519554	16.67	7.28	19.50	**14.48**	8.16	8.62	5.60	7.90	**7.57**	44.60	42.00	**43.30**	9.06	5.10	15.80	2	5
31	IC037316	12.50	4.44	13.38	**10.11**	7.79	8.14	5.20	8.40	**7.38**	35.20	33.70	**34.45**	7.90	3.72	12.35	2	5
32	IC038127	11.46	12.59	24.63	**16.23**	7.96	8.42	6.10	8.30	**7.70**	38.80	41.00	**39.90**	8.24	4.20	24.20	2	99
33	IC038312	10.42	11.60	18.25	**13.42**	8.09	8.32	5.80	8.30	**7.63**	32.20	35.40	**33.80**	7.04	3.60	19.75	2	99
34	IC415222	10.42	5.93	18.25	**11.53**	8.00	8.42	6.20	8.30	**7.73**	40.00	31.60	**35.80**	9.52	4.96	22.22	2	5
35	IC415232	11.46	7.65	25.50	**14.87**	7.96	7.49	5.90	8.60	**7.49**	34.00	32.20	**33.10**	8.64	4.46	20.25	2	5
36	IC415252	13.54	5.68	11.38	**10.20**	8.03	8.61	6.30	8.20	**7.79**	34.60	32.40	**33.50**	9.92	5.04	16.05	2	5
37	IC415258	10.42	7.65	27.25	**15.11**	7.85	8.62	5.60	8.20	**7.57**	32.40	30.20	**31.30**	9.06	4.60	14.81	2	5
38	IC415262	9.38	7.16	17.13	**11.22**	8.19	8.53	6.10	8.30	**7.78**	31.60	35.40	**33.50**	9.52	4.92	23.46	2	5
39	IC415264	11.46	12.59	23.63	**15.89**	7.92	8.42	6.20	8.30	**7.71**	31.00	41.20	**36.10**	8.72	4.12	28.40	2	5
40	IC415266	7.29	5.43	18.88	**10.53**	7.87	7.89	5.70	8.30	**7.44**	27.80	28.00	**27.90**	8.08	3.66	20.25	2	5
41	IC415272	8.33	9.14	17.38	**11.61**	7.57	8.54	5.90	8.30	**7.58**	30.40	32.80	**31.60**	7.90	4.46	21.23	2	5
42	IC415282	9.38	13.83	24.88	**16.03**	7.61	7.95	6.10	8.40	**7.52**	28.60	28.60	**28.60**	7.90	3.62	27.90	2	5
43	IC415290	14.58	6.17	19.63	**13.46**	7.95	8.08	6.00	8.50	**7.63**	36.00	28.20	**32.10**	6.58	3.18	18.52	2	5
44	IC415297	8.33	3.95	20.63	**10.97**	7.65	8.20	6.00	8.30	**7.54**	33.00	27.20	**30.10**	6.28	3.38	9.88	2	5

S. No.	Accession No.	Days to 50% flowering						Days to maturity					
		Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean	Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean
45	IC415318	42.00	63.00	71.00	42.00	30.50	**49.70**	87.00	153.00	175.00	95.00	86.00	**119.20**
46	IC415426	39.00	65.00	68.00	44.00	29.00	**49.00**	85.00	155.00	160.00	96.00	81.50	**115.50**
47	IC415448	40.00	64.00	66.00	44.00	30.50	**48.90**	83.00	158.00	160.00	97.00	85.00	**116.60**
48	IC423117	38.00	67.00	62.00	45.00	32.50	**48.90**	78.00	157.00	160.00	98.00	89.00	**116.40**
49	IC423408	40.00	64.00	64.00	44.00	29.00	**48.20**	84.00	155.00	158.00	96.00	83.50	**115.30**
50	IC423448	53.00	86.00	79.00	54.00	49.00	**64.20**	103.00	167.00	195.00	127.00	111.00	**140.60**
	Mean for check varieties												
	Annapurna (C)	36.50	65.10	68.50	45.00	45.50	**52.12**	79.50	163.00	172.00	95.00	109.50	**123.80**
	GA-1 (C)	55.50	86.10	83.00	60.00	28.00	**62.52**	105.00	163.50	170.00	119.00	86.00	**128.70**
	GA-2 (C)	53.75	85.20	79.50	56.00	53.00	**65.49**	97.25	162.30	169.00	121.00	111.50	**132.21**
	Suvarna (C)	53.25	91.40	63.50	59.60	47.50	**63.05**	98.50	175.50	159.50	124.00	106.50	**132.80**
	Minimum	**36.00**	**60.00**	**62.00**	**41.00**	**28.00**	**46.70**	**78.00**	**149.00**	**134.00**	**94.00**	**80.50**	**115.30**
	Maximum	**58.00**	**93.00**	**85.00**	**61.00**	**58.00**	**67.30**	**105.00**	**175.50**	**203.00**	**127.00**	**112.50**	**140.60**
	Mean	**45.61**	**74.68**	**75.31**	**52.46**	**40.48**	**57.71**	**91.84**	**159.89**	**171.10**	**109.02**	**99.52**	**126.27**
	CD(0.05)	**4.67**	**13.28**	**-**	**4.81**	**3.00**	**-**	**5.16**	**8.59**	**-**	**4.75**	**2.26**	**-**
	CV (%) error	**3.49**	**6.74**	**-**	**3.26**	**3.78**	**-**	**2.03**	**2.15**	**-**	**1.55**	**1.16**	**-**
	CV (%) Phenotypic	**13.13**	**13.81**	**10.77**	**13.91**	**21.76**	**12.42**	**8.62**	**3.25**	**7.64**	**11.64**	**11.90**	**5.67**

S. No.	Accession No.	Plant height (cm)						Inflorescence length (cm)			No. of primary branches / plant			Seed yield/plant (g)				
		Bhubaneswar	Delhi	Hisar	Mandor	S.K. Nagar	Mean	Hisar	S.K. Nagar	Mean	Hisar	S.K. Nagar	Mean	Bhubaneswar	Hisar	Mandor	S.K. Nagar	Mean
45	IC415318	50.60	33.40	46.00	70.80	81.00	**56.36**	16.20	72.50	**44.35**	6.20	4.70	**5.45**	4.82	7.80	11.80	17.30	**10.43**
46	IC415426	54.80	20.60	48.10	54.40	82.00	**51.98**	18.00	70.50	**44.25**	8.10	2.25	**5.18**	4.49	3.60	5.90	20.40	**8.60**
47	IC415448	56.20	23.20	42.10	55.40	80.00	**51.38**	20.00	66.00	**43.00**	6.20	3.75	**4.98**	8.75	5.40	10.00	10.40	**8.64**
48	IC423117	56.40	34.20	52.10	53.80	64.00	**52.10**	23.00	45.50	**34.25**	7.20	6.83	**7.01**	9.40	9.10	14.60	9.00	**10.53**
49	IC423408	58.60	25.40	84.00	55.60	77.50	**60.22**	19.00	63.50	**41.25**	7.10	4.68	**5.89**	5.39	14.30	13.30	17.90	**12.72**
50	IC423448	107.40	74.60	133.00	149.00	178.50	**128.50**	49.10	104.50	**76.80**	6.10	-	**6.10**	11.73	32.50	15.80	10.00	**17.51**
	Mean for check varieties																	
	Annapurna (C)	59.75	16.48	67.30	72.84	64.50	**56.17**	19.15	56.50	**37.83**	6.00	7.10	**6.55**	7.82	9.15	14.58	8.90	**10.11**
	GA-1 (C)	114.50	75.57	101.05	132.78	166.00	**117.98**	30.85	78.50	**54.68**	6.00	-	**6.00**	10.12	10.55	24.90	13.50	**14.77**
	GA-2 (C)	97.15	87.26	103.70	116.28	139.50	**108.78**	29.10	80.00	**54.55**	5.55	-	**5.55**	10.07	11.80	20.40	13.30	**13.89**
	Suvarna (C)	97.35	90.60	94.75	122.68	124.00	**105.88**	22.85	70.50	**46.68**	6.00	-	**6.00**	11.13	13.50	36.66	13.30	**18.65**
	Minimum	**47.20**	**12.00**	**4.10**	**46.60**	**64.00**	**47.02**	**13.20**	**42.00**	**33.60**	**4.00**	**2.25**	**4.00**	**3.02**	**3.60**	**2.50**	**8.90**	**6.33**
	Maximum	**125.40**	**102.00**	**134.00**	**149.00**	**178.50**	**128.50**	**49.10**	**104.50**	**76.80**	**10.20**	**7.50**	**10.20**	**23.20**	**32.60**	**43.80**	**23.50**	**26.42**
	Mean	**85.92**	**54.00**	**74.98**	**85.89**	**106.74**	**81.51**	**24.26**	**70.63**	**47.44**	**6.18**	**4.81**	**5.74**	**10.20**	**15.99**	**23.45**	**14.56**	**16.05**
	CD(0.05)	**11.16**	**32.82**	**-**	**14.84**	**8.05**	**-**	**-**	**9.00**	**-**	**-**	**0.31**	**-**	**3.59**	**-**	**8.55**	**1.31**	**-**
	CV (%) error	**4.49**	**20.23**	**-**	**5.00**	**3.85**	**-**	**-**	**6.50**	**-**	**-**	**6.36**	**-**	**12.54**	**-**	**13.27**	**4.59**	**-**
	CV (%) Phenotypic	**28.79**	**44.13**	**32.78**	**30.74**	**25.22**	**27.52**	**23.34**	**18.47**	**17.20**	**17.39**	**31.41**	**17.45**	**54.91**	**58.70**	**53.26**	**27.78**	**33.06**

S. No.	Accession No.	Seed yield (q/ha)				Seed weight (g/10ml)					Panicle length (cm)			Delhi				
		Bhubaneswar	Delhi	S.K. Nagar	Mean	Bhubaneswar	Delhi	Hisar	Mandor	Mean	Bhubaneswar	Delhi	Mean	Leaf length (cm)	Leaf width (cm)	Dry matter yield(q/ha)	Seed colour	Leaf colour
45	IC415318	16.67	9.14	21.63	**15.81**	7.95	8.85	6.10	8.20	**7.78**	28.80	27.60	**28.20**	8.48	4.46	20.49	2	5
46	IC415426	15.63	7.41	25.50	**16.18**	7.73	8.05	6.20	8.10	**7.52**	31.60	20.20	**25.90**	6.64	3.42	23.46	2	5
47	IC415448	11.46	10.62	13.00	**11.69**	7.79	8.41	6.80	8.10	**7.78**	32.00	28.40	**30.20**	7.56	4.10	20.25	2	5
48	IC423117	10.42	14.07	11.25	**11.91**	7.18	9.15	6.40	8.50	**7.81**	35.60	35.60	**35.60**	8.42	4.95	24.44	2	99
49	IC423408	12.50	5.56	22.38	**13.48**	7.79	7.54	5.70	8.50	**7.38**	34.20	26.00	**30.10**	7.47	3.78	15.06	2	5
50	IC423448	7.29	17.28	12.50	**12.36**	7.88	7.72	5.80	8.00	**7.35**	45.20	70.40	**57.80**	11.14	5.84	33.33	5	5
	Mean for check varieties																	
	Annapurna (C)	9.38	2.07	11.13	**7.52**	7.79	7.40	5.40	8.12	**7.18**	32.55	25.87	**29.21**	5.86	2.43	9.20	2	5
	GA-1 (C)	14.32	5.63	16.88	**12.28**	7.91	6.52	5.40	8.04	**6.97**	54.35	46.40	**50.38**	14.13	7.05	19.12	2	5
	GA-2 (C)	13.28	5.15	16.63	**11.68**	7.91	6.81	5.40	8.12	**7.06**	53.85	42.81	**48.33**	14.33	6.66	15.41	2	5
	Suvarna (C)	15.89	3.44	16.63	**11.98**	7.83	6.78	6.35	7.92	**7.22**	41.85	44.90	**43.37**	15.68	8.57	10.63	2	5
	Minimum	**6.25**	**2.07**	**11.13**	**7.52**	**7.18**	**5.60**	**4.40**	**7.60**	**6.70**	**27.80**	**20.20**	**25.90**	**5.86**	**2.43**	**9.20**	**2**	**5**
	Maximum	**27.08**	**22.22**	**29.38**	**19.24**	**8.20**	**9.15**	**6.90**	**8.60**	**7.81**	**68.60**	**70.40**	**57.80**	**16.62**	**8.57**	**48.15**	**5**	**99**
	Mean	**14.83**	**7.96**	**18.20**	**13.74**	**7.91**	**7.48**	**5.66**	**8.21**	**7.32**	**44.49**	**37.18**	**40.83**	**10.24**	**5.24**	**22.44**		
	CD(0.05)	**3.78**	**3.65**	**1.64**	**-**	**0.21**	**1.67**	**-**	**0.44**	**-**	**7.47**	**13.40**	**-**	**4.32**	**1.97**	**13.36**		
	CV (%) error	**10.00**	**37.34**	**4.59**	**-**	**0.98**	**10.12**	**-**	**2.05**	**-**	**5.85**	**13.93**	**-**	**14.37**	**13.24**	**40.91**		
	CV (%) Phenotypic	**34.65**	**48.28**	**27.78**	**17.60**	**2.43**	**11.80**	**10.29**	**2.44**	**4.13**	**24.48**	**21.28**	**19.49**	**26.03**	**26.18**	**35.06**		

Table 149. Promising lines in grain amaranth germplasm (Kharif, 2007) for different characters at various locations (Plains)

S.No.	Characters	Range	Promising lines	Value of best check
Banglore (Accessions 50)				
1.	Plant height (cm)	52.80-155.00	IC004200 (> 145.70 cm)	GA- 1 (145.70 cm)
2.	Panicle length (cm)	20.40-62.00	IC004200, IC007836, IC004201, IC005917, IC017926, IC017928, IC005527, IC007916, IC005564, IC017930, IC003560, IC004028, IC017933, IC017923, IC005916, IC017934, IC017931, IC006645, IC467891, IC017436, IC004202, IC017927 (> 45.00 cm)	GA- 1 (36.20 cm)
3.	Days to 50% flowering	30.00-64.00	IC341604 (< 31 days)	Annapurna (31.00 days)
4.	Seed yield per plant (g)	0.26-7.96	IC007836, IC004200, IC017933, IC005917, IC006645, IC017930, IC004028, IC017927, IC467891, IC005916 (> 4.37 g)	Durga (4.37 g)
Mettupalayam (Accessions 50)				
1.	Panicle length (cm)	29.40-65.40	IC007836, IC363767, IC006645, IC361603 (> 60.60 cm)	GA-2 (60.60 cm)
2.	Days to 50% flowering	36.00-52.00	IC017932, IC381556, IC006646, IC017447, IC017931, IC467891, IC004201, IC017928, IC017929, IC361603, IC341604, IC004208, IC004207, IC017933, IC017935, IC005565, IC017436, IC017923, IC361878, IC005575 (< 39.00 days)	Annapurna (45.00 days)
3.	Days to maturity	65.00-85.00	IC017932, IC381556, IC006646, IC017447, IC017931, IC467891, IC004201, IC017928, IC017929, IC004207, IC017436, IC361878, IC005616, IC007916, IC004204 (< 70.0 days)	Suvarna (75.00 days)
Best entries over locations				
1.	Panicle length (cm)	28.80-62.20	IC007836 (> 60.60 cm)	GA-2 (60.60 cm)
2.	Days to 50% flowering	34.00-52.00	IC341604, IC361878 (< 38.00 days)	Annapurna (38.00 days)

Table 150. Multilocation evaluation of germplasm lines in grain amaranth at Bangalore and Mettupalayam - Kharif 2007 (Plains)

S. No.	Accessions	Plant height (cm)			Pancile length (cm)			Days to 50% flowering			Days to 80% maturity			Grain yield/ plant (g)		
		Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
1	IC000385	109.00	85.80	**97.40**	39.60	35.80	**37.70**	47.00	39.00	**43.00**	90.00	70.00	**80.00**	1.24	6.70	**3.97**
2	IC001733	75.00	91.20	**83.10**	36.00	33.40	**34.70**	50.00	40.00	**45.00**	96.00	70.00	**83.00**	1.46	8.20	**4.83**
3	IC003560	119.00	82.80	**100.90**	51.00	44.00	**47.50**	50.00	40.00	**45.00**	95.00	70.00	**82.50**	2.98	9.30	**6.14**
4	IC003599	111.00	132.00	**121.50**	42.00	41.20	**41.60**	50.00	41.00	**45.50**	95.00	80.00	**87.50**	1.08	7.80	**4.44**
5	IC004200	155.00	91.40	**123.20**	62.00	35.60	**48.80**	50.00	40.00	**45.00**	97.00	70.00	**83.50**	6.26	10.00	**8.13**
6	IC004201	122.00	104.20	**113.10**	58.00	49.20	**53.60**	51.00	37.00	**44.00**	98.00	65.00	**81.50**	3.32	10.50	**6.91**
7	IC004202	130.00	127.40	**128.70**	46.00	59.40	**52.70**	51.00	39.00	**45.00**	99.00	70.00	**84.50**	1.60	9.00	**5.30**
8	IC004204	96.00	132.40	**114.20**	37.00	56.20	**46.60**	50.00	41.00	**45.50**	95.00	65.00	**80.00**	0.48	8.00	**4.24**
9	IC004207	117.00	102.60	**109.80**	43.00	54.60	**48.80**	51.00	38.00	**44.50**	98.00	65.00	**81.50**	1.60	7.00	**4.30**
10	IC004208	136.00	113.80	**124.90**	50.00	57.40	**53.70**	48.00	38.00	**43.00**	90.00	70.00	**80.00**	4.90	8.10	**6.50**
11	IC005527	133.00	145.80	**139.40**	55.00	34.80	**44.90**	49.00	50.00	**49.50**	91.00	80.00	**85.50**	2.92	6.50	**4.71**
12	IC005564	109.00	127.60	**118.30**	52.00	60.20	**56.10**	50.00	39.00	**44.50**	95.00	70.00	**82.50**	1.38	7.80	**4.59**
13	IC005565	90.00	99.40	**94.70**	41.00	52.40	**46.70**	52.00	38.00	**45.00**	100.00	70.00	**85.00**	2.56	7.90	**5.23**
14	IC005569	81.00	126.20	**103.60**	35.00	53.00	**44.00**	50.00	39.00	**44.50**	96.00	70.00	**83.00**	0.95	6.50	**3.73**
15	IC005574	54.00	126.80	**90.40**	35.00	31.60	**33.30**	52.00	52.00	**52.00**	98.00	70.00	**84.00**	0.40	7.00	**3.70**
16	IC005575	60.00	108.40	**84.20**	23.00	48.80	**35.90**	51.00	38.00	**44.50**	95.00	70.00	**82.50**	0.68	7.60	**4.14**
17	IC005576	93.00	105.60	**99.30**	32.00	53.80	**42.90**	47.00	50.00	**48.50**	90.00	70.00	**80.00**	2.12	7.10	**4.61**
18	IC005616	114.00	103.40	**108.70**	49.00	53.60	**51.30**	48.00	39.00	**43.50**	92.00	65.00	**78.50**	4.46	7.30	**5.88**
19	IC005621	60.00	98.20	**79.10**	23.00	42.00	**32.50**	50.00	39.00	**44.50**	94.00	75.00	**84.50**	1.56	6.50	**4.03**
20	IC005627	106.00	142.40	**124.20**	45.00	40.80	**42.90**	49.00	39.00	**44.00**	91.00	70.00	**80.50**	2.98	6.90	**4.94**

S. No.	Accessions	Plant height (cm)			Pancile length (cm)			Days to 50% flowering			Days to 80% maturity			Grain yield/ plant (g)		
		Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
21	IC005917	126.00	103.00	**114.50**	56.00	51.60	**53.80**	52.00	40.00	**46.00**	98.00	70.00	**84.00**	5.82	7.40	**6.61**
22	IC006645	125.00	117.20	**121.10**	47.00	61.80	**54.40**	57.00	39.00	**48.00**	105.00	70.00	**87.50**	5.56	7.20	**6.38**
23	IC006646	105.00	110.00	**107.50**	39.00	53.80	**46.40**	49.00	37.00	**43.00**	92.00	65.00	**78.50**	1.66	7.40	**4.53**
24	IC007220	91.00	143.60	**117.30**	27.00	33.80	**30.40**	54.00	41.00	**47.50**	100.00	70.00	**85.00**	0.72	7.30	**4.01**
25	IC007836	115.00	147.60	**131.30**	59.00	65.40	**62.20**	50.00	41.00	**45.50**	95.00	70.00	**82.50**	7.96	8.00	**7.98**
26	IC007916	137.00	108.20	**122.60**	53.00	49.60	**51.30**	64.00	39.00	**51.50**	110.00	65.00	**87.50**	3.42	7.40	**5.41**
27	IC007972	114.00	116.60	**115.30**	42.00	48.80	**45.40**	51.00	39.00	**45.00**	95.00	70.00	**82.50**	3.20	7.80	**5.50**
28	IC017009	106.00	126.40	**116.20**	43.00	60.60	**51.80**	52.00	39.00	**45.50**	98.00	71.00	**84.50**	2.90	7.90	**5.40**
29	IC017436	114.00	90.00	**102.00**	47.00	51.60	**49.30**	50.00	38.00	**44.00**	95.00	65.00	**80.00**	3.30	6.50	**4.90**
30	IC017447	108.00	96.00	**102.00**	45.00	53.80	**49.40**	51.00	37.00	**44.00**	96.00	65.00	**80.50**	2.32	7.00	**4.66**
31	IC017920	100.00	107.00	**103.50**	43.80	29.40	**36.60**	52.00	39.00	**45.50**	95.00	72.00	**83.50**	2.48	7.20	**4.84**
32	IC017923	104.00	101.80	**102.90**	50.00	51.20	**50.60**	50.00	38.00	**44.00**	94.00	72.00	**83.00**	3.22	7.30	**5.26**
33	IC017925	95.00	111.80	**103.40**	43.60	51.40	**47.50**	51.00	49.00	**50.00**	96.00	72.00	**84.00**	1.26	7.40	**4.33**
34	IC017926	116.00	91.00	**103.50**	56.00	48.20	**52.10**	50.00	39.00	**44.50**	93.00	73.00	**83.00**	4.12	8.00	**6.06**
35	IC017927	118.00	100.40	**109.20**	46.00	46.80	**46.40**	61.00	40.00	**50.50**	105.00	72.00	**88.50**	4.82	8.10	**6.46**
36	IC017928	93.00	82.40	**87.70**	56.00	49.00	**52.50**	51.00	37.00	**44.00**	95.00	65.00	**80.00**	2.98	6.90	**4.94**
37	IC017929	76.00	85.80	**80.90**	42.00	46.20	**44.10**	45.00	37.00	**41.00**	90.00	65.00	**77.50**	0.80	6.80	**3.80**
38	IC017931	110.00	94.00	**102.00**	47.40	53.00	**50.20**	61.00	37.00	**49.00**	106.00	65.00	**85.50**	1.52	6.70	**4.11**
39	IC017932	135.00	80.40	**107.70**	51.00	51.60	**51.30**	49.00	36.00	**42.50**	91.00	65.00	**78.00**	5.34	6.90	**6.12**
40	IC017933	129.00	114.80	**121.90**	50.00	54.40	**52.20**	59.00	38.00	**48.50**	103.00	72.00	**87.50**	6.14	7.30	**6.72**
41	IC017934	131.00	89.20	**110.10**	48.00	51.40	**49.70**	51.00	39.00	**45.00**	65.00	72.00	**68.50**	4.14	7.40	**5.77**
42	IC017935	90.00	108.20	**99.10**	33.00	52.60	**42.80**	53.00	38.00	**45.50**	98.00	70.00	**84.00**	2.68	6.30	**4.49**
43	IC017938	90.00	74.20	**82.10**	41.40	44.40	**42.90**	50.00	39.00	**44.50**	94.00	70.00	**82.00**	2.18	6.80	**4.49**
44	IC170906	108.00	134.00	**121.00**	43.00	34.60	**38.80**	49.00	52.00	**50.50**	91.00	72.00	**81.50**	3.60	7.20	**5.40**

S. No.	Accessions	Plant height (cm)			Pancile length (cm)			Days to 50% flowering			Days to 80% maturity			Grain yield/ plant (g)		
		Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean	Bangalore	Mettupalayam	Mean
45	IC341604	67.00	123.40	**95.20**	29.00	59.40	**44.20**	30.00	38.00	**34.00**	70.00	70.00	**70.00**	0.26	6.20	**3.23**
46	IC361603	87.00	121.60	**104.30**	39.00	61.40	**50.20**	51.00	38.00	**44.50**	95.00	70.00	**82.50**	0.78	7.20	**3.99**
47	IC361878	88.00	95.40	**91.70**	39.40	51.20	**45.30**	35.00	38.00	**36.50**	75.00	65.00	**70.00**	1.86	7.30	**4.58**
48	IC363767	91.00	91.00	**91.00**	37.00	63.80	**50.40**	51.00	39.00	**45.00**	96.00	70.00	**83.00**	2.94	6.10	**4.52**
49	IC381556	101.00	91.00	**96.00**	42.60	45.80	**44.20**	50.00	36.00	**43.00**	94.00	65.00	**79.50**	1.86	7.10	**4.48**
50	IC467891	119.00	90.40	**104.70**	47.00	49.80	**48.40**	50.00	37.00	**43.50**	93.00	65.00	**79.00**	4.52	7.40	**5.96**
Mean for Check varieties																
	Annapurna (C)	52.80	84.60	**68.70**	20.40	44.60	**32.50**	31.00	45.00	**38.00**	61.00	76.00	**68.50**	2.75	10.00	**6.38**
	Durga (C)	105.60	136.60	**121.10**	35.70	33.40	**34.55**	45.00	49.00	**47.00**	85.00	80.00	**82.50**	4.37	7.50	**5.94**
	GA-1 (C)	145.70	175.00	**160.35**	36.20	60.00	**48.10**	42.00	52.00	**47.00**	90.00	85.00	**87.50**	3.67	6.50	**5.09**
	GA-2 (C)	-	197.60	**197.60**	-	60.60	**60.60**	-	52.00	**52.00**	-	85.00	**85.00**	-	7.20	**7.20**
	Suvarna (C)	90.50	115.40	**102.95**	27.40	30.20	**28.80**	36.00	52.00	**44.00**	78.00	75.00	**76.50**	4.25	12.00	**8.13**
	Minimum	**52.80**	**74.20**	**68.70**	**20.40**	**29.40**	**28.80**	**30.00**	**36.00**	**34.00**	**61.00**	**65.00**	**68.50**	**0.26**	**6.10**	**3.23**
	Maximum	**155.00**	**197.60**	**197.60**	**62.00**	**65.40**	**62.20**	**64.00**	**52.00**	**52.00**	**110.00**	**85.00**	**88.50**	**7.96**	**12.00**	**8.13**
	Mean	**104.70**	**110.96**	**108.67**	**42.92**	**48.96**	**46.10**	**49.61**	**40.73**	**45.19**	**93.19**	**70.35**	**81.69**	**2.86**	**7.53**	**5.24**
	CV%(Phenotypic)	**21.94**	**21.48**		**21.68**	**19.05**		**11.71**	**11.75**		**9.43**	**6.82**		**60.56**	**14.56**	

Table 151. Promising lines in rice bean germplasm (Kharif, 2007) for various characters at different locations (Plains).

S.No.	Characters	Range	Promising lines	Highest value of best check
Bhubaneswar (Accessions 97)				
1.	Days to 50% flowering	41.00-58.00	LRB318, LRB323, LRB320, LRB321, LRB369, LRB371, LRB368, LRB370, LRB324, LRB416, LRB316, LRB308, LRB314, LRB317, LRB415, LRB427, LRB432, LRB439, LRB307, LRB312, LRB313, LRB315, LRB378, LRB408, LRB425, LRB426, LRB428, LRB435, LRB438, LRB443, LRB377, LRB379, LRB407, LRB429, LRB442, LRB383, LRB403, LRB417, LRB423, LRB431, LRB372, LRB380, LRB385, LRB424, LRB441, LRB360, LRB363, LRB367, LRB375, LRB410, LRB412, LRB418, LRB440 (< 53.00 days)	RBL 6 (55.75 days)
2.	Days to maturity	87.00-106.00	LRB318, LRB321, LRB369, LRB370, LRB320, LRB371, LRB323, LRB368, LRB316, LRB308, LRB314, LRB317, LRB307, LRB312, LRB313 (< 97.00 days)	RBL 35 (101.38 days)
3.	Plant height (cm)	29.00-115.00	LRB333, LRB441, LRB443, LRB338, LRB334 (> 109.00 cm)	RBL 6 (102.38 cm)
4.	Primary branches per plant	1.00-6.00	LRB419, LRB402, LRB349, LRB412 (> 4.63)	RBL 35 (4.63)
5.	Clusters per plant	6.00-24.00	LRB385, LRB408, LRB412, LRB339, LRB410, LRB418, LRB375, LRB433, LRB414, LRB334, LRB415, LRB359, LRB336, LRB340, LRB402, LRB396, LRB380, LRB439, LRB337, LRB409, LRB314, LRB341, LRB343, LRB338, LRB383, LRB423, LRB333, LRB379, LRB326, LRB378, LRB417, LRB362, LRB431, LRB361, LRB411, LRB403, LRB347, LRB349, LRB381, LRB315, LRB422 (> 17.40)	RBL 6 (14.05)
6.	Pods per plant	10.00-47.80	LRB339, LRB402, LRB409 (> 43.80)	RBL 50 (33.89)
7.	Pod length (cm)	6.30-9.60	LRB314, LRB443 (> 8.80)	RBL 50 (8.26 cm)
8.	Seeds per pod	4.00-8.00	LRB443, LRB401, LRB396, LRB385, LRB305, LRB360, LRB355, LRB370, LRB434 (> 7.50)	RBL 6 (7.43)
9.	100 seed weight (g)	3.78-7.09	LRB323 (> 6.98 g)	RBL 35 (6.98 g)
10.	Seed yield per plant (g)	4.25-16.07	LRB340, LRB377, LRB414, LRB411, LRB409, LRB433, LRB423, LRB401, LRB375, LRB337, LRB396, LRB415, LRB347, LRB379, LRB378, LRB418 (> 12.57 g)	RBL 6 (10.49 g)

11.	Seed yield (q/ha)	4.17-23.06	LRB381, LRB339, LRB396, LRB378, LRB410, LRB421, LRB403, LRB333, LRB336, LRB380, LRB383, LRB407, LRB401 (> 15.28 q/ha)	RBL 6 (12.85 q/ha)
Bangalore (Accessions 97)				
1.	Days to 50% flowering	40.00-47.00	LRB340, LRB363, LRB333 (< 42.00 days)	RBL 50 (42.00 days)
2.	Days to maturity	81.00-93.00	LRB417 (< 82.00 days)	RBL 50 (82.00 days)
3.	Plant height (cm)	22.00-57.00	LRB416, LRB441, LRB420, LRB402, LRB427, LRB363, LRB410, LRB412, LRB428, LRB385, LRB317, LRB330, LRB365, LRB409, LRB438, LRB440, LRB343, LRB411, LRB422, LRB439 (> 40.00 cm)	RBL 35 (39.00 cm)
4.	Primary branches per plant	0.80-3.20	LRB440, LRB314, LRB378, LRB416, LRB441, LRB414, LRB312, LRB376 (> 2.00)	RBL 6 (2.00)
5.	Pods per plant	4.00-38.60	LRB443, LRB420, LRB409, LRB412, LRB414, LRB364, LRB416, LRB441, LRB402, LRB340, LRB432, LRB442, LRB411, LRB421, LRB401, LRB383 (> 30.00)	RBL 50 (29.00)
6.	Seed yield per plant (g)	0.10-3.00	LRB442, LRB412, LRB441, LRB409, LRB414, LRB411, LRB443, LRB364, LRB421 (> 2.50 g)	RBL 50 (2.10 g)
Delhi (Accessions 97)				
1.	Days to 50% flowering	86.00-101.00	LRB308, LRB318, LRB411, LRB427 (< 90.00 days)	RBL 35 (90.64 days)
2.	Days to maturity	137.00-153.00	LRB411, LRB422, LRB317, LRB435, LRB307 (< 138.73 days)	RBL 35 (138.73 days)
3.	Plant height (cm)	92.20-236.40	LRB305, LRB313, LRB409, LRB365, LRB334, LRB440, LRB379, LRB381, LRB323, LRB418, LRB353, LRB380, LRB372, LRB338, LRB363, LRB424, LRB434, LRB320, LRB432, LRB341 (> 168.20 cm)	RBL 50 (147.33 cm)
4.	Primary branches per plant	2.60-9.20	LRB313, LRB376, LRB401, LRB423, LRB364, LRB366, LRB419, LRB340, LRB379, LRB312, LRB377, LRB371, LRB417 (> 7.00)	RBL 35 (5.25)
5.	Pods per cluster	3.00-8.20	LRB412, LRB323, LRB370, LRB368, LRB369, LRB372, LRB380, LRB433, LRB320, LRB402, LRB312, LRB330 (> 5.00)	RBL 35 (3.73)
6.	Pods per plant	41.40-236.40	LRB305, LRB313, LRB380, LRB341, (> 155.80)	RBL 50 (83.05)
7.	Pod length (cm)	5.84-10.92	LRB333, LRB367, LRB381, LRB433, LRB337, LRB432, LRB334, LRB396, LRB383, LRB361, LRB315, LRB372 (> 10.00 cm)	RBL 50 (8.84 cm)
8.	Seeds per pod	6.20-11.00	LRB337, LRB433, LRB381, LRB383, LRB361, LRB315, LRB347, LRB438, LRB360, LRB423, LRB432, LRB334, LRB396, LRB421, LRB442, LRB367, LRB439, LRB329, LRB305 (> 9.80)	RBL 50 (8.93)

9.	100 seed weight (g)	4.50-8.50	LRB401, LRB330, LRB329, LRB323, LRB365, LRB335, LRB321, LRB437, LRB415, LRB313, LRB429, LRB314, LRB378, LRB385, LRB408, LRB353, LRB320, LRB411, LRB403, LRB363, LRB343, LRB357 (> 7.00 g)	RBL 35 (6.41 g)
10.	Seed yield per plant (g)	6.00-35.00	LRB423, LRB380, LRB402, LRB438, LRB316, LRB440, LRB417, LRB396, LRB360, LRB340, LRB327, LRB430, LRB343, LRB441, LRB409, LRB408, LRB375 (> 30.00 g)	RBL 50 (19.91 g)
11.	Seed yield (q/ha)	1.48-14.81	LRB380, LRB402, LRB316, LRB440, LRB438, LRB360, LRB327, LRB430, LRB441, LRB409, LRB423, LRB417, LRB340, LRB343 (> 12.22 q/ha)	RBL 50 (8.05 q/ha)
12.	Dry matter yield per plant (g)	80.00-266.00	LRB353, LRB410, LRB335, LRB378, LRB419, LRB403, LRB314, LRB343, LRB429, LRB321, LRB421, LRB379, LRB367, LRB340, LRB436 (> 205.00 g)	RBL 50 (192.09 g)
13.	Dry matter yield (q/ha)	0.02-0.10	LRB442, LRB425, LRB357, LRB335, LRB410 (> 0.08 q/ha)	RBL 50 (0.06 q/ha)
Ludhiana (Accessions 97)				
1.	Days to 50% flowering	56.00-65.00	LRB317, LRB318, LRB338, LRB360, LRB383 (< 56.63 days)	RBL 6 (56.63 days)
2.	Days to maturity	102.00-112.00	LRB308, LRB317, LRB318, LRB315, LRB316, LRB372, LRB369, LRB361, LRB425, LRB430, LRB364 (< 105.00 days)	RBL 6 (106.50 days)
3.	Plant height (cm)	70.00-119.00	LRB379, LRB363, LRB412, LRB419, LRB343, LRB347, LRB421, LRB334, LRB372, LRB349, LRB337, LRB377, LRB368, LRB338, LRB380, LRB375, LRB341 (> 100.00 cm)	RBL 1 (90.25 cm)
4.	Primary branches per plant	2.00-5.80	LRB362, LRB408, LRB412, LRB377, LRB401, LRB378, LRB428, LRB379, LRB407, LRB312, LRB364, LRB305, LRB360, LRB357 (> 4.80)	RBL 6 (4.08)
5.	Pod length (cm)	6.00-11.40	LRB327, LRB411, LRB407, LRB424, LRB419, LRB418, LRB367, LRB369, LRB423, LRB429, LRB417, LRB408 (> 9.20 cm)	RBL 6 (8.35 cm)
6.	Seeds per pod	5.00-9.60	LRB366, LRB323, LRB407, LRB423, LRB355, LRB419, LRB341, LRB421, LRB422, LRB418, LRB385, LRB403, LRB434, LRB414, LRB426, LRB327, LRB416, LRB347, LRB411, LRB424 (> 8.00)	RBL 1 (7.40)
7.	100 seed weight (g)	3.81-7.13	LRB338, LRB323, LRB381, LRB337, LRB326, LRB327, LRB329, LRB312, LRB334, LRB430, LRB439, LRB401, LRB380 (> 6.30 g)	RBL 1 (5.67 g)
8.	Seed yield per plant (g)	5.60-34.10	LRB371, LRB401, LRB362, LRB347, LRB425, LRB375, LRB379, LRB376, LRB357, LRB370, LRB361, LRB407, LRB396, LRB414, LRB349 (> 21.00 g)	RBL 6 (15.59 g)
Mettupalayam (Accessions 97)				
1.	Days to 50% flowering	44.00-54.00	LRB341, LRB329, LRB340, LRB366, LRB425, LRB308, LRB333, LRB347, LRB430, LRB315, LRB365 (< 46.00 days)	RBL 35 (48.00 days)

2.	Days to maturity	75.00-84.00	LRB329, LRB307, LRB429, LRB366, LRB425, LRB308, LRB430, LRB365, LRB343, LRB361, LRB326, LRB313, LRB341, LRB333, LRB426, LRB364, LRB367, LRB362, LRB324, LRB431, LRB305 (< 78.00 days)	RBL 6 & RBL 35 (80.00 days)
3.	Plant height (cm)	21.20-75.00	LRB339 (> 70.00 cm)	RBL 35 (70.00 cm)
4.	Seed yield per plant (g)	5.00-13.00	LRB364 (> 11.30 g)	RBL 1 (11.3 g)
Ranchi (Accessions 97)				
1.	Days to 50% flowering	64.00-91.00	LRB 435 (< 64.50 days)	RBL 35 (64.50 days)
2.	Days to maturity	109.00-151.00	LRB383, LRB334, LRB401, LRB385, LRB364 (< 116.00 days)	RBL 35 (119.33 days)
3.	Plant height (cm)	67.80-180.00	LRB371, LRB323, LRB359, LRB385, LRB372, LRB429, LRB408, LRB355, LRB402, LRB337, LRB357, LRB338, LRB364, LRB327, LRB363, LRB403, LRB375, LRB419, LRB401, LRB330, LRB426, LRB409, LRB407, LRB423, LRB421, LRB343, LRB362, LRB308, LRB432, LRB418, LRB333, LRB415, LRB326, LRB340, LRB336, LRB312, LRB329, LRB380, LRB339, LRB347, LRB412, LRB414, LRB370, LRB428, LRB341, LRB417, LRB335, LRB437, LRB410, LRB396, LRB434, LRB440, LRB365, LRB425, LRB422, LRB368, LRB416, LRB383, LRB411, LRB433, LRB381, LRB431, LRB349, LRB420, LRB378 (> 125.60 cm)	RBL 6 (102.68 cm)
4.	Primary branches per plant	2.00-5.40	LRB380, LRB416, LRB423, LRB313, LRB383, LRB401, LRB396, LRB427, LRB429, LRB318, LRB315, LRB414, LRB421, LRB433, LRB438, LRB432, LRB409 (> 4.30)	RBL 50 (3.77)
5.	Pods per plant	9.30-31.00	LRB330, LRB329, LRB410, LRB429, LRB315, LRB314, LRB317, LRB336, LRB316, LRB357, LRB402, LRB323 (> 25.00)	RBL 6 (22.98)
6.	Pod length (cm)	6.50-11.00	LRB333, LRB415, LRB380, LRB409, LRB305 (> 10.30 cm)	RBL 6 (9.42 cm)
7.	Seeds per pod	6.30-10.50	LRB380, LRB433, LRB409, LRB415, LRB305, LRB372, LRB427, LRB432, LRB339, LRB425, LRB402, LRB423 (> 9.80)	RBL 1 (9.55)
8.	100 seed weight (g)	4.00-7.80	LRB421, LRB435, LRB353, LRB338 (> 7.09 g)	RBL 6 (7.07 g)
9.	Seed yield per plant (g)	2.50-9.80	LRB409, LRB329, LRB427, LRB431, LRB432, LRB422, LRB337, LRB411, LRB307, LRB414, LRB421, LRB316, LRB338, LRB381, LRB314 (> 8.50 g)	RBL 35 (7.62 g)

Hisar (Accessions 97)				
1.	Days to 50% flowering	51.00-75.00	LRB308, LRB340, LRB341, LRB372, LRB385, LRB357, LRB370, LRB417, LRB307, LRB365, LRB381, LRB418, LRB426, LRB335, LRB360, LRB312, LRB339, LRB359, LRB371, LRB376, LRB380, LRB412, LRB414, LRB422 (< 57.00 days)	RBL 50 (65.60 days)
2.	Plant height (cm)	94.00-219.60	LRB440, LRB439, LRB317, LRB360, LRB377, LRB312, LRB349, LRB420, LRB326, LRB343, LRB372, LRB423, LRB368, LRB435, LRB340, LRB375, LRB418, LRB414, LRB320, LRB307, LRB333, LRB357, LRB359, LRB329, LRB379, LRB339, LRB411, LRB318, LRB442, LRB417, LRB421, LRB315, LRB361 (> 142.00 cm)	RBL 1 (121.84 cm)
3.	Primary branches per plant	2.00-9.00	LRB427, LRB377, LRB376, LRB403, LRB363, LRB381, LRB378, LRB369, LRB367, LRB401, LRB370, LRB380 (> 7.00)	RBL 50 (5.80)
4.	Clusters per plant	6.00-51.00	LRB334, LRB349, LRB377, LRB340, LRB333, LRB363, LRB416, LRB308 (> 31.00)	RBL 3523.20
5.	Pods per plant	40.00-239.00	LRB349, LRB334, LRB340, LRB377, LRB412, LRB381, LRB440, LRB432, LRB359, LRB333, LRB368, LRB336, LRB422, LRB416, LRB308, LRB372, LRB411, LRB370, LRB363, LRB380, LRB409, LRB317, LRB434, LRB312, LRB401, LRB407, LRB428, LRB385, LRB321 (> 117.00)	RBL 35 (89.40)
6.	Pod length (cm)	7.20-11.50	LRB340, LRB335, LRB349, LRB337, LRB318, LRB312, LRB321, LRB326, LRB316, LRB441, LRB339, LRB327, LRB363, LRB380, LRB442, LRB315, LRB407, LRB423, LRB396, LRB323, LRB378, LRB402, LRB355 (> 10.00 cm)	RBL 6 (7.60 cm)
7.	Seeds per pod	7.00-12.00	LRB362, LRB316, LRB340, LRB349, LRB337, LRB312, LRB326, LRB339, LRB327, LRB380, LRB396, LRB323 (> 9.00)	RBL 6 (8.40)
8.	Seed yield per plant (g)	15.90-135.00	LRB424, LRB425, LRB418, LRB414, LRB379, LRB369, LRB359, LRB412, LRB372, LRB336, LRB333, LRB329, LRB360, LRB339, LRB438, LRB371, LRB385, LRB316, LRB368, LRB308, LRB440 (> 71.50 g)	RBL 6 (51.84 g)
9.	Seed yield per line (g)	150.00-750.00	LRB439, LRB424, LRB425, LRB369, LRB412, LRB438, LRB385, LRB368, LRB418, LRB379, LRB371, LRB441 (> 700.00 g)	RBL 35 (548.00 g)
Best entries over locations				
1.	Days to 50% flowering	57.71-68.75	LRB370, LRB371, LRB308, LRB340, LRB360, LRB318, LRB369, LRB435, LRB372 (< 60.14 days)	RBL 1 (60.87 days)
2.	Plant height (cm)	78.69-110.11	LRB305, LRB440, LRB409, LRB343, LRB340, LRB338, LRB363 (> 104.50 cm)	RBL 50 (100.23 cm)

3.	Primary branches per plant	2.81-5.14	LRB401, LRB396, LRB377, LRB376, LRB423, LRB379, LRB313, LRB419, LRB380, LRB440, LRB412, LRB340, LRB414, LRB417, LRB403, LRB427, LRB409 (> 4.13)	RBL 35 (3.98)
4.	Clusters per plant	8.10-36.60	LRB334, LRB340, LRB349, LRB333, LRB336, LRB416, LRB412, LRB377, LRB359, LRB380, LRB409, LRB308, LRB363, LRB385, LRB411 (> 22.00)	RBL 35 (17.61)
5.	Pods per plant	33.52-79.35	LRB349, LRB380, LRB412, LRB341, LRB377, LRB440, LRB340, LRB381, LRB409, LRB422, LRB343, LRB313, LRB305, LRB370, LRB312, LRB359, LRB372, LRB334 (> 60.62)	RBL 50 (48.46)
6.	Pod length (cm)	7.63-9.60	LRB333, LRB315, LRB380, LRB337, LRB349, LRB318, LRB327, LRB335, LRB421, LRB424, LRB396, LRB316, LRB423, LRB347, LRB381 (> 9.00 cm)	RBL 6 (8.35 cm)
7.	Seeds per pod	6.90-8.90	LRB396, LRB423, LRB323, LRB433, LRB339, LRB347, LRB421, LRB426, LRB337, LRB340, LRB349, LRB315, LRB355, LRB378 (> 8.40)	RBL 50 (8.21)
8.	100 seed weight (g)	4.55-7.09	LRB323, LRB421, LRB435, LRB329, LRB338, LRB353, LRB321, LRB326, LRB376, LRB365 (> 6.36 g)	RBL 35 (6.36 g)
9.	Seed yield per plant (g)	7.82-27.61	LRB424, LRB425, LRB414, LRB418, LRB359, LRB379, LRB440, LRB360, LRB423, LRB343, LRB369, LRB412, LRB438, LRB337 (> 19.85 g)	RBL 6 (16.11 g)
10.	Seed yield (q/ha)	3.10-15.74	LRB380, LRB381, LRB340, LRB402, LRB409, LRB410, LRB407, LRB396, LRB421, LRB378, LRB343, LRB403 (> 12.50 q/ha)	RBL 1 (11.22 q/ha)

Table 152. Multilocation evaluation of germplasm lines in rice bean at Bhubaneswar, Hisar, Bangalore, Delhi, Ludhiana, Mettupalayam and Ranchi - 2007 (Plains)

S. No.	Genotype	Days to 50% flowering								Days to maturity							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
1	LRB 305	55	63	43	93	61	49	91	**65.00**	103	128	83	153	107	77	136	**112.43**
2	LRB 306	53	59	43	90	57	50	89	**63.00**	103	133	83	142	107	80	135	**111.86**
3	LRB 307	48	54	44	94	59	46	78	**60.43**	95	129	87	137	107	75	138	**109.71**
4	LRB 308	47	51	45	86	60	45	81	**59.29**	95	121	87	145	102	76	137	**109.00**
5	LRB 312	48	56	42	94	62	46	88	**62.29**	96	139	87	146	108	78	136	**112.86**
6	LRB 313	48	59	44	90	61	48	83	**61.86**	96	126	82	147	108	76	135	**110.00**
7	LRB 314	47	62	42	93	60	48	87	**62.71**	95	129	85	141	108	79	134	**110.14**
8	LRB 315	48	62	45	93	60	45	88	**63.00**	97	127	86	146	103	78	137	**110.57**
9	LRB 316	46	59	42	98	60	46	90	**63.00**	95	130	86	141	103	79	132	**109.43**
10	LRB 317	47	69	42	93	56	47	73	**61.00**	95	125	87	137	103	80	133	**108.57**
11	LRB 318	41	61	42	89	56	48	79	**59.43**	87	127	86	147	103	79	135	**109.14**
12	LRB 320	42	63	42	98	61	48	74	**61.14**	88	127	89	148	105	78	135	**110.00**
13	LRB 321	42	64	44	92	61	49	77	**61.29**	87	125	85	141	105	80	134	**108.14**
14	LRB 323	41	63	44	96	61	47	74	**60.86**	89	128	87	144	110	78	130	**109.43**
15	LRB 324	44	63	42	97	62	46	77	**61.57**	97	122	86	144	110	77	131	**109.57**
16	LRB 326	57	64	43	96	60	47	72	**62.71**	105	128	87	141	106	76	129	**110.29**
17	LRB 327	55	65	44	98	59	47	72	**62.86**	103	127	92	142	106	79	139	**112.57**
18	LRB 329	55	61	42	91	59	44	71	**60.43**	103	129	91	142	106	75	128	**110.57**
19	LRB 330	57	67	42	98	61	46	75	**63.71**	105	132	83	139	106	78	125	**109.71**
20	LRB 333	57	64	41	92	60	45	76	**62.14**	104	130	83	139	105	77	127	**109.29**
21	LRB 334	56	62	42	93	58	49	74	**62.00**	105	132	82	147	105	81	110	**108.86**
22	LRB 335	56	55	45	97	62	48	83	**63.71**	104	134	82	142	105	80	120	**109.57**
23	LRB 336	54	69	44	90	60	48	78	**63.29**	103	132	85	141	109	80	121	**110.14**
24	LRB 337	57	63	42	92	59	48	83	**63.43**	103	131	85	149	106	80	121	**110.71**
25	LRB 338	57	58	43	97	56	48	71	**61.43**	104	132	83	146	109	81	125	**111.43**
26	LRB 339	56	56	43	93	64	49	71	**61.71**	104	134	86	139	110	82	124	**111.29**
27	LRB 340	53	52	40	93	62	45	70	**59.29**	103	129	86	148	109	78	122	**110.71**

Table 152. Multilo
Ludhia

S. No.	Genotype	Plant height (cm)								No of primary branches							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
1	LRB 305	96.0	137.40	28.00	236.40	90	58.0	125.00	**110.11**	4.0	4.00	1.60	4.60	5.00	3.0	4.00	**3.74**
2	LRB 306	101.0	112.00	29.00	136.40	81	49.0	115.00	**89.06**	3.4	6.00	1.60	4.40	3.50	2.8	3.30	**3.57**
3	LRB 307	78.4	152.00	26.00	111.80	81	51.0	88.90	**84.16**	2.8	5.00	1.80	3.00	3.30	2.2	3.00	**3.01**
4	LRB 308	86.0	125.60	24.00	121.20	98	62.0	138.00	**93.54**	4.0	5.00	2.00	5.40	4.00	3.2	4.00	**3.94**
5	LRB 312	86.0	172.30	31.00	150.60	94	60.0	135.00	**104.13**	3.8	4.00	2.20	7.40	5.00	3.0	3.20	**4.09**
6	LRB 313	87.0	138.30	26.00	225.20	72	62.0	67.80	**96.90**	4.0	4.00	1.80	9.20	4.30	3.1	4.80	**4.46**
7	LRB 314	90.0	128.30	37.00	101.00	88	45.2	90.80	**82.90**	4.2	4.00	2.40	5.20	3.30	3.0	4.00	**3.73**
8	LRB 315	78.8	143.30	30.00	114.20	98	57.0	123.50	**92.11**	3.2	3.00	2.00	4.40	3.00	2.9	4.60	**3.30**
9	LRB 316	74.6	141.30	33.00	143.20	99	52.0	69.80	**87.56**	2.6	6.00	2.00	5.60	3.00	2.2	3.40	**3.54**
10	LRB 317	75.0	186.60	42.00	100.00	94	51.0	120.50	**95.59**	3.0	4.00	2.00	4.00	4.00	2.1	3.60	**3.24**
11	LRB 318	51.6	145.60	29.00	154.00	94	42.0	125.40	**91.66**	2.2	4.00	1.40	3.20	3.30	2.2	4.60	**2.99**
12	LRB 320	50.8	152.00	39.00	172.20	89	48.0	118.70	**95.67**	1.6	3.00	1.40	6.40	4.00	2.4	4.00	**3.26**
13	LRB 321	58.0	136.60	37.00	161.00	79	39.0	124.80	**90.77**	2.4	4.00	1.60	4.60	3.30	2.5	3.60	**3.14**
14	LRB 323	61.4	108.00	26.00	186.80	85	21.2	160.30	**92.67**	1.2	4.00	1.00	7.00	3.00	2.0	3.00	**3.03**
15	LRB 324	54.2	135.00	28.00	123.60	89	22.4	98.60	**78.69**	1.0	4.00	1.80	5.20	2.50	1.8	3.50	**2.83**
16	LRB 326	72.2	164.60	31.00	105.00	95	28.5	135.60	**90.27**	2.6	4.00	1.60	4.00	4.00	2.0	3.00	**3.03**
17	LRB 327	88.2	137.60	31.00	159.60	98	41.6	146.30	**100.33**	2.4	3.00	1.00	6.20	3.00	3.1	3.60	**3.19**
18	LRB 329	108.0	147.30	31.00	142.80	93	32.0	135.00	**98.44**	3.4	4.00	1.40	5.00	2.00	3.1	3.00	**3.13**
19	LRB 330	103.0	116.60	42.00	121.80	94	37.6	143.00	**94.00**	4.6	5.00	1.60	5.20	3.00	3.2	3.50	**3.73**
20	LRB 333	115.0	151.30	35.00	127.60	90	36.7	137.30	**98.99**	3.0	5.00	1.40	7.00	2.50	3.1	4.00	**3.71**
21	LRB 334	110.0	137.00	22.00	201.00	107	38.2	114.80	**104.29**	3.4	6.00	1.60	5.60	3.00	3.1	3.00	**3.67**
22	LRB 335	96.0	116.60	23.00	152.80	76	37.2	131.60	**90.46**	4.6	4.00	1.40	3.80	4.00	3.3	3.00	**3.44**
23	LRB 336	84.0	135.60	24.00	126.00	85	38.1	135.00	**89.67**	4.0	5.00	1.00	3.20	3.50	3.2	4.30	**3.46**
24	LRB 337	109.0	116.00	38.00	145.00	105	34.0	147.60	**99.23**	4.0	4.00	1.20	6.20	3.80	3.1	3.00	**3.61**
25	LRB 338	110.0	134.60	27.00	179.80	103	36.5	146.60	**105.36**	4.2	4.00	1.40	3.40	3.30	3.3	3.00	**3.23**
26	LRB 339	105.0	146.60	40.00	126.80	100	75.0	134.30	**103.96**	3.6	5.00	1.40	3.80	3.00	3.2	3.30	**3.33**
27	LRB 340	108.0	155.30	35.00	154.60	90	65.0	135.60	**106.21**	4.0	7.00	1.80	7.60	3.00	3.3	3.00	**4.24**

Table 152. Multilo
Ludhia

S. No.	Genotype	Clusters per plant			Pods per plant							Pod length (cm)					
		Bhubaneswar	Hisar	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean
1	LRB 305	12.2	17.00	**14.60**	30.40	50.00	8.00	236.40	27.00	23.50	**62.55**	8.70	8.70	9.50	7.20	10.60	**8.94**
2	LRB 306	12.6	14.00	**13.30**	27.60	71.00	16.60	74.60	29.00	25.00	**40.63**	8.50	9.50	10.00	6.60	9.80	**8.88**
3	LRB 307	10.0	25.00	**17.50**	19.60	93.00	25.50	55.40	28.00	21.00	**40.42**	8.60	9.50	6.82	7.00	9.50	**8.28**
4	LRB 308	14.8	34.00	**24.40**	34.00	162.00	10.00	77.60	38.00	24.00	**57.60**	8.50	9.80	8.16	6.80	9.30	**8.51**
5	LRB 312	16.6	18.00	**17.30**	37.00	130.00	16.00	125.00	35.00	24.60	**61.27**	8.80	10.50	9.00	6.00	9.50	**8.76**
6	LRB 313	17.4	14.00	**15.70**	39.40	77.00	8.60	188.60	40.00	22.00	**62.60**	8.60	9.20	7.72	8.40	10.00	**8.78**
7	LRB 314	20.6	15.00	**17.80**	36.80	72.00	16.00	94.80	45.00	26.60	**48.53**	9.60	9.80	8.68	7.60	9.20	**8.98**
8	LRB 315	18.0	10.00	**14.00**	32.20	50.00	7.20	107.80	38.00	26.80	**43.67**	8.10	10.30	10.10	8.90	9.80	**9.44**
9	LRB 316	11.0	23.00	**17.00**	21.20	89.00	16.80	106.00	28.00	25.60	**47.77**	8.50	10.50	9.74	6.60	10.00	**9.07**
10	LRB 317	11.8	20.00	**15.90**	23.40	141.00	28.00	69.60	29.00	26.40	**52.90**	7.70	9.30	7.66	8.40	9.60	**8.53**
11	LRB 318	8.4	15.00	**11.70**	16.20	90.00	7.60	75.80	35.00	24.90	**41.58**	8.30	10.60	9.30	8.80	9.50	**9.30**
12	LRB 320	8.0	19.00	**13.50**	13.20	116.00	10.00	96.20	30.00	24.50	**48.32**	7.80	8.00	8.92	6.80	8.00	**7.90**
13	LRB 321	7.6	21.00	**14.30**	14.80	120.00	8.00	97.20	35.00	22.60	**49.60**	8.20	10.50	9.28	6.80	8.80	**8.72**
14	LRB 323	6.2	10.00	**8.10**	10.00	77.00	13.60	155.80	15.00	25.20	**49.43**	8.10	10.20	8.50	8.60	9.50	**8.98**
15	LRB 324	6.2	17.00	**11.60**	14.00	82.00	7.00	97.40	15.00	20.00	**39.23**	8.50	9.60	8.40	8.00	9.60	**8.82**
16	LRB 326	19.2	18.00	**18.60**	26.40	97.00	11.00	94.00	27.00	24.00	**46.57**	6.80	10.50	8.82	7.80	8.60	**8.50**
17	LRB 327	14.4	13.00	**13.70**	28.20	71.00	9.00	57.60	23.00	23.00	**35.30**	6.80	10.50	8.32	11.40	9.40	**9.28**
18	LRB 329	14.4	19.00	**16.70**	32.40	97.00	18.00	57.20	39.00	29.60	**45.53**	6.30	8.60	9.40	7.20	8.50	**8.00**
19	LRB 330	12.8	19.00	**15.90**	25.40	83.00	15.40	87.00	35.00	31.00	**46.13**	7.70	9.50	8.28	7.60	8.70	**8.36**
20	LRB 333	19.4	36.00	**27.70**	33.20	168.00	8.00	81.20	38.00	24.70	**58.85**	7.90	10.00	10.92	8.20	11.00	**9.60**
21	LRB 334	22.2	51.00	**36.60**	32.80	231.00	4.00	41.40	33.00	22.10	**60.72**	7.60	10.00	10.18	7.40	8.50	**8.74**
22	LRB 335	9.6	19.00	**14.30**	36.60	92.00	13.00	77.20	36.00	23.60	**46.40**	7.80	11.30	8.72	8.80	9.60	**9.24**
23	LRB 336	21.8	31.00	**26.40**	43.80	164.00	13.40	55.60	37.00	26.30	**56.68**	7.50	9.60	9.74	8.00	9.30	**8.83**
24	LRB 337	20.8	18.00	**19.40**	36.80	108.00	6.00	131.60	42.00	22.40	**57.80**	7.20	10.60	10.28	8.60	10.30	**9.40**
25	LRB 338	20.2	17.00	**18.60**	41.40	84.00	10.00	122.00	45.00	20.80	**53.87**	7.70	9.60	8.92	8.40	9.30	**8.78**
26	LRB 339	23.6	17.00	**20.30**	47.80	74.00	11.20	65.40	22.00	19.80	**40.03**	7.80	10.50	8.16	8.40	8.80	**8.73**
27	LRB 340	21.2	37.00	**29.10**	33.80	218.00	15.00	74.20	40.00	20.40	**66.90**	7.90	11.50	9.80	7.60	8.00	**8.96**

Table 152. Multilo
Ludhia

S. No.	Genotype	Seeds per pod						100 seed weight (g)				
		Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean	Bhubaneswar	Delhi	Ludhiana	Ranchi	Mean
1	LRB 305	7.80	8.00	10.00	5.80	10.00	**8.32**	6.02	7.00	4.94	5.40	**5.84**
2	LRB 306	7.30	8.00	9.80	5.60	9.20	**7.98**	5.43	6.50	6.30	5.10	**5.83**
3	LRB 307	7.00	8.00	7.60	5.40	9.00	**7.40**	4.90	7.00	6.28	5.60	**5.95**
4	LRB 308	6.70	8.00	8.00	7.60	8.60	**7.78**	4.35	6.00	5.24	5.10	**5.17**
5	LRB 312	7.40	10.00	8.00	5.60	8.50	**7.90**	5.20	5.00	6.43	5.10	**5.43**
6	LRB 313	6.50	9.00	7.00	6.80	9.60	**7.78**	4.52	8.00	5.87	5.50	**5.97**
7	LRB 314	7.50	9.00	9.60	5.20	9.80	**8.22**	5.35	7.50	5.98	5.10	**5.98**
8	LRB 315	6.00	9.00	10.40	8.00	8.80	**8.44**	5.31	5.50	4.55	5.90	**5.32**
9	LRB 316	5.80	11.00	9.20	5.60	9.60	**8.24**	5.39	7.00	5.03	5.20	**5.66**
10	LRB 317	6.40	9.00	9.20	7.00	9.00	**8.12**	6.03	5.50	5.84	4.70	**5.52**
11	LRB 318	7.50	9.00	9.00	6.80	9.00	**8.26**	5.37	7.00	5.06	5.10	**5.63**
12	LRB 320	6.20	8.00	8.00	6.40	9.60	**7.64**	6.40	7.50	5.27	4.90	**6.02**
13	LRB 321	6.40	9.00	8.00	5.00	9.60	**7.60**	6.27	8.00	5.84	5.60	**6.43**
14	LRB 323	6.50	10.00	9.40	9.60	9.00	**8.90**	7.09	8.00	6.97	6.30	**7.09**
15	LRB 324	7.40	9.00	9.00	5.20	9.00	**7.92**	5.69	6.00	5.85	5.70	**5.81**
16	LRB 326	4.00	10.00	9.20	6.20	9.60	**7.80**	6.55	7.00	6.54	5.40	**6.37**
17	LRB 327	5.80	10.00	9.00	8.20	9.00	**8.40**	5.31	6.00	6.52	4.70	**5.63**
18	LRB 329	5.50	9.00	10.00	6.00	9.30	**7.96**	5.70	8.00	6.44	5.80	**6.49**
19	LRB 330	6.10	8.00	8.00	6.20	9.50	**7.56**	5.03	8.50	5.82	5.50	**6.21**
20	LRB 333	5.50	9.00	8.40	6.00	8.30	**7.44**	5.65	7.00	5.15	5.90	**5.93**
21	LRB 334	5.60	9.00	10.00	6.60	9.60	**8.16**	5.75	7.00	6.42	4.80	**5.99**
22	LRB 335	5.80	9.00	8.00	7.00	9.00	**7.76**	5.47	8.00	5.87	5.80	**6.29**
23	LRB 336	6.30	9.00	9.60	7.00	9.00	**8.18**	4.88	7.00	5.34	4.90	**5.53**
24	LRB 337	6.00	10.00	11.00	7.00	8.60	**8.52**	5.93	6.00	6.64	4.80	**5.84**
25	LRB 338	5.50	9.00	8.00	8.00	9.00	**7.90**	5.42	6.00	7.13	7.30	**6.46**
26	LRB 339	7.50	10.00	8.00	8.00	10.00	**8.70**	5.49	7.00	6.13	5.10	**5.93**
27	LRB 340	7.30	10.00	9.20	6.80	9.30	**8.52**	5.11	5.50	5.39	7.00	**5.75**

Table 152. Multilc
Ludhia

S. No.	Genotype	Seed yield per plant (g)								Seed yield (q/ha)			Delhi		
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Delhi	Mean	Pods per cluster	Dry matter yield per plant (g)	Dry matter yield (q/ha)
1	LRB 305	10.08	31.20	0.90	8.00	13.90	6.00	5.32	**10.77**	11.11	2.78	**6.94**	4.00	190.00	0.07
2	LRB 306	9.01	42.40	1.70	11.00	8.90	5.10	5.10	**11.89**	8.33	4.26	**6.30**	3.00	130.00	0.03
3	LRB 307	5.37	50.50	2.10	10.00	8.00	5.20	9.06	**12.89**	12.50	3.89	**8.19**	3.00	80.00	0.02
4	LRB 308	8.60	75.10	1.60	26.00	12.00	10.10	5.22	**19.80**	11.11	9.63	**10.37**	5.00	135.00	0.04
5	LRB 312	11.37	30.40	1.60	22.00	7.40	6.10	6.60	**12.21**	9.72	8.52	**9.12**	5.80	200.00	0.07
6	LRB 313	10.06	66.70	0.69	22.00	15.10	6.50	6.40	**18.21**	9.72	8.70	**9.21**	5.00	165.00	0.05
7	LRB 314	8.59	35.10	1.30	24.00	12.10	11.10	8.56	**14.39**	11.11	9.07	**10.09**	4.00	220.00	0.07
8	LRB 315	9.48	55.20	0.50	16.00	11.70	7.00	6.24	**15.16**	11.11	6.85	**8.98**	3.20	190.00	0.04
9	LRB 316	6.95	75.10	1.40	34.00	6.80	6.00	8.70	**19.85**	9.72	13.70	**11.71**	3.00	160.00	0.05
10	LRB 317	8.12	70.10	2.50	12.00	10.30	5.90	6.00	**16.42**	11.11	5.93	**8.52**	4.80	190.00	0.04
11	LRB 318	6.73	38.60	0.40	23.00	16.70	6.50	6.50	**14.06**	6.11	8.89	**7.50**	3.00	195.00	0.06
12	LRB 320	5.31	45.30	0.50	23.00	15.10	7.00	4.50	**14.39**	6.11	8.70	**7.41**	6.00	150.00	0.04
13	LRB 321	5.32	55.20	0.60	18.00	8.20	7.20	7.00	**14.50**	4.17	7.04	**5.60**	5.00	215.00	0.06
14	LRB 323	4.63	50.50	1.00	23.00	7.30	5.50	5.60	**13.93**	8.33	8.70	**8.52**	8.00	180.00	0.06
15	LRB 324	5.06	48.90	0.20	29.00	9.00	5.00	5.78	**14.71**	6.94	11.11	**9.03**	4.00	155.00	0.04
16	LRB 326	6.53	60.50	0.80	18.00	14.60	6.00	4.30	**15.82**	4.44	7.31	**5.88**	3.40	190.20	0.05
17	LRB 327	6.86	62.20	0.50	32.00	9.30	10.20	3.40	**17.78**	11.11	13.15	**12.13**	3.00	120.00	0.05
18	LRB 329	10.09	79.10	1.60	13.00	5.60	9.10	9.50	**18.28**	11.11	5.00	**8.06**	4.00	90.00	0.03
19	LRB 330	12.17	33.10	1.40	9.00	9.20	6.90	6.08	**11.12**	12.50	3.33	**7.92**	5.80	170.00	0.04
20	LRB 333	11.97	79.50	0.70	15.00	9.70	7.20	6.13	**18.60**	16.67	5.19	**10.93**	4.00	95.00	0.03
21	LRB 334	10.84	50.20	0.50	27.00	8.70	7.50	8.50	**16.18**	11.11	10.74	**10.93**	3.00	175.00	0.04
22	LRB 335	11.58	70.10	0.90	26.00	13.70	7.10	7.50	**19.55**	11.11	9.26	**10.19**	3.00	240.00	0.09
23	LRB 336	11.08	80.40	1.00	8.00	8.60	7.20	6.48	**17.54**	16.67	3.33	**10.00**	3.60	150.00	0.03
24	LRB 337	12.94	70.20	0.40	28.00	12.10	7.40	9.20	**20.03**	11.67	11.11	**11.39**	5.00	120.00	0.05
25	LRB 338	11.23	45.30	0.50	24.00	12.00	7.00	8.63	**15.52**	11.11	9.26	**10.19**	3.00	155.00	0.04
26	LRB 339	11.40	75.60	1.50	12.00	6.80	6.80	6.25	**17.19**	17.22	4.07	**10.65**	3.00	125.00	0.04
27	LRB 340	16.07	50.40	1.10	32.00	8.70	8.00	6.50	**17.54**	15.28	12.41	**13.84**	3.00	210.00	0.07

S. No.	Genotype	Days to 50% flowering								Days to maturity							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
28	LRB 341	54	52	44	94	59	44	74	**60.14**	105	129	87	153	108	77	124	**111.86**
29	LRB 343	53	58	45	97	62	46	74	**62.14**	103	128	87	147	108	76	121	**110.00**
30	LRB 347	55	67	45	94	62	45	70	**62.57**	103	130	88	146	110	79	123	**111.29**
31	LRB 349	58	65	42	95	62	52	69	**63.29**	104	136	86	142	105	82	124	**111.29**
32	LRB 353	57	62	43	90	59	48	68	**61.00**	105	136	83	146	105	79	121	**110.71**
33	LRB 355	54	58	44	96	60	49	70	**61.57**	103	136	87	141	105	80	125	**111.00**
34	LRB 357	53	53	44	97	61	48	74	**61.43**	105	132	87	145	105	82	127	**111.86**
35	LRB 359	56	56	42	97	61	49	74	**62.14**	104	127	87	142	108	82	120	**110.00**
36	LRB 360	52	55	43	91	56	48	70	**59.29**	102	134	82	147	105	78	121	**109.86**
37	LRB 361	53	63	43	93	59	46	69	**60.86**	101	134	82	142	104	76	118	**108.14**
38	LRB 362	55	64	43	92	60	46	68	**61.14**	101	136	82	145	105	77	119	**109.29**
39	LRB 363	52	67	41	91	60	48	71	**61.43**	101	136	87	142	108	79	118	**110.14**
40	LRB 364	54	57	42	90	60	46	72	**60.14**	102	136	88	153	104	77	115	**110.71**
41	LRB 365	55	54	45	93	62	45	70	**60.57**	103	136	86	149	106	76	117	**110.43**
42	LRB 366	54	59	47	93	60	45	66	**60.57**	102	136	85	142	106	76	136	**111.86**
43	LRB 367	52	67	47	96	60	46	67	**62.14**	101	134	89	142	107	77	137	**112.43**
44	LRB 368	43	69	44	94	60	49	68	**61.00**	89	136	90	146	107	79	135	**111.71**
45	LRB 369	42	65	44	90	58	48	70	**59.57**	87	132	89	146	104	82	132	**110.29**
46	LRB 370	43	53	43	95	57	48	65	**57.71**	87	132	88	146	106	82	130	**110.14**
47	LRB 371	42	56	43	96	57	47	71	**58.86**	88	130	87	151	105	81	128	**110.00**
48	LRB 372	51	52	42	93	57	48	76	**59.86**	103	129	86	146	104	82	130	**111.43**
49	LRB 375	52	71	43	101	62	49	71	**64.14**	103	131	87	144	110	83	123	**111.57**
50	LRB 376	55	56	43	93	59	49	76	**61.57**	104	130	88	146	110	83	124	**112.14**
51	LRB 377	49	59	45	94	60	49	72	**61.14**	104	135	82	145	110	82	126	**112.00**
52	LRB 378	48	74	45	92	61	49	71	**62.86**	103	131	82	146	110	82	129	**111.86**
53	LRB 379	49	65	43	93	58	48	74	**61.43**	102	133	82	142	109	79	127	**110.57**
54	LRB 380	51	56	43	95	61	52	73	**61.57**	102	130	82	151	110	82	125	**111.71**
55	LRB 381	53	54	43	99	59	50	83	**63.00**	103	131	82	144	107	80	126	**110.43**
56	LRB 383	50	57	42	98	56	49	71	**60.43**	103	129	88	145	107	82	109	**109.00**
57	LRB 385	51	52	44	97	61	51	74	**61.43**	102	130	87	147	107	82	112	**109.57**

S. No.	Genotype	Plant height (cm)								No of primary branches							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
28	LRB 341	95.0	123.30	29.00	172.20	101	38.0	132.30	**98.69**	3.8	4.00	1.40	4.20	3.50	3.2	3.00	**3.30**
29	LRB 343	108.0	163.30	41.00	150.00	108	39.0	138.30	**106.80**	4.0	4.00	1.60	6.80	3.80	3.2	3.30	**3.81**
30	LRB 347	80.4	110.30	36.00	141.80	108	34.0	134.00	**92.07**	3.0	5.00	1.60	3.60	4.30	3.1	3.30	**3.41**
31	LRB 349	100.0	170.30	37.00	112.00	105	39.0	127.60	**98.70**	4.8	5.00	1.20	5.40	4.80	3.2	4.00	**4.06**
32	LRB 353	72.0	118.00	31.00	182.60	84	31.6	111.30	**90.07**	3.2	4.00	1.60	4.40	4.50	3.2	3.30	**3.46**
33	LRB 355	86.4	119.30	33.00	122.40	88	34.3	149.60	**90.43**	3.8	6.00	1.20	2.80	3.30	3.2	4.00	**3.47**
34	LRB 357	89.0	149.00	34.00	117.00	80	35.0	147.00	**93.00**	3.4	6.00	1.60	3.80	5.00	3.2	3.30	**3.76**
35	LRB 359	106.0	147.60	30.00	129.20	78	34.0	155.30	**97.16**	4.0	6.00	1.80	3.80	3.80	3.1	2.60	**3.59**
36	LRB 360	103.0	176.60	31.00	129.00	88	36.0	118.60	**97.46**	3.8	5.00	1.40	6.20	5.00	3.2	3.30	**3.99**
37	LRB 361	62.0	143.00	38.00	140.20	96	31.5	123.00	**90.53**	3.0	7.00	1.80	6.20	4.50	3.0	2.60	**4.01**
38	LRB 362	99.0	130.00	40.00	154.20	92	33.1	138.30	**98.09**	3.2	6.00	1.40	4.40	5.80	2.6	2.60	**3.71**
39	LRB 363	81.0	138.00	45.00	172.80	114	40.0	146.00	**105.26**	3.8	8.00	1.60	5.60	3.00	3.2	3.00	**4.03**
40	LRB 364	59.0	135.00	38.00	157.40	90	37.1	146.50	**94.71**	2.0	5.00	1.80	8.40	5.00	2.6	2.30	**3.87**
41	LRB 365	54.0	94.00	42.00	201.20	88	33.6	130.00	**91.83**	2.8	5.00	2.00	4.40	3.80	2.5	3.00	**3.36**
42	LRB 366	62.0	119.60	30.00	132.20	84	38.0	105.60	**81.63**	2.6	7.00	1.40	7.80	3.80	3.3	2.00	**3.99**
43	LRB 367	72.0	122.60	30.00	126.40	84	34.5	110.30	**82.83**	1.6	8.00	0.80	6.60	3.30	2.6	2.60	**3.64**
44	LRB 368	62.4	157.60	35.00	132.80	103	29.0	129.00	**92.69**	1.8	5.00	1.00	3.80	3.50	2.0	2.60	**2.81**
45	LRB 369	29.0	123.30	24.00	143.20	90	65.0	107.00	**83.07**	1.0	8.00	1.20	6.40	4.00	3.4	3.00	**3.86**
46	LRB 370	44.0	119.00	25.00	100.20	100	50.0	133.30	**81.64**	2.2	8.00	1.20	4.60	4.80	3.2	2.30	**3.76**
47	LRB 371	52.6	119.00	30.00	141.60	100	29.4	180.00	**93.23**	1.4	6.00	1.60	7.20	4.50	2.3	3.30	**3.76**
48	LRB 372	52.4	158.60	25.00	182.20	106	56.0	151.30	**104.50**	2.6	6.00	1.40	6.40	3.50	3.2	4.00	**3.87**
49	LRB 375	82.0	155.00	23.00	143.80	102	42.0	144.60	**98.91**	4.2	5.00	1.80	4.60	3.30	3.2	3.30	**3.63**
50	LRB 376	90.0	139.30	27.00	119.60	86	43.0	98.60	**86.21**	2.8	8.00	2.20	9.00	3.30	3.2	3.30	**4.54**
51	LRB 377	95.0	175.30	32.00	162.80	105	46.0	89.50	**100.80**	3.8	8.00	2.00	7.40	5.30	3.2	3.30	**4.71**
52	LRB 378	93.0	129.00	31.00	133.80	94	42.1	126.00	**92.70**	4.2	8.00	2.40	3.20	5.30	3.2	2.60	**4.13**
53	LRB 379	87.0	146.60	27.00	195.80	119	40.1	96.40	**101.70**	4.2	5.00	1.80	7.60	5.00	3.5	4.30	**4.49**
54	LRB 380	83.0	116.30	34.00	182.60	103	41.5	134.50	**99.27**	4.0	8.00	2.00	3.40	4.30	3.4	5.40	**4.36**
55	LRB 381	94.0	130.60	25.00	192.20	89	41.2	128.50	**100.07**	3.4	8.00	1.60	5.00	3.50	3.4	4.00	**4.13**
56	LRB 383	101.0	118.00	32.00	108.00	100	43.2	128.90	**90.16**	4.0	4.00	1.80	5.20	3.50	3.5	4.60	**3.80**
57	LRB 385	99.0	124.30	43.00	125.80	94	44.4	154.00	**97.79**	4.4	7.00	1.80	3.80	4.30	3.2	3.60	**4.01**

S. No.	Genotype	Clusters per plant			Pods per plant							Pod length (cm)					
		Bhubaneswar	Hisar	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean
28	LRB 341	20.6	21.00	**20.80**	42.80	109.00	35.00	172.20	35.00	18.40	**68.73**	7.80	8.20	7.92	8.60	9.30	**8.36**
29	LRB 343	20.4	22.00	**21.20**	41.60	117.00	16.00	146.20	36.00	21.20	**63.00**	8.10	8.70	7.52	8.60	9.40	**8.46**
30	LRB 347	18.2	10.00	**14.10**	38.00	56.00	20.00	63.40	40.00	17.80	**39.20**	7.40	9.60	9.92	8.60	9.60	**9.02**
31	LRB 349	18.0	39.00	**28.50**	33.40	239.00	22.00	119.80	42.00	19.90	**79.35**	8.20	10.60	9.54	9.20	9.30	**9.37**
32	LRB 353	13.4	6.00	**9.70**	38.60	40.00	4.00	110.00	39.00	18.30	**41.65**	7.30	8.30	8.28	6.60	9.00	**7.90**
33	LRB 355	14.0	11.00	**12.50**	31.40	62.00	14.00	97.00	40.00	18.90	**43.88**	8.20	10.10	6.50	8.60	10.00	**8.68**
34	LRB 357	15.2	25.00	**20.10**	28.40	108.00	26.00	56.80	42.00	25.40	**47.77**	8.10	9.80	8.28	7.40	9.50	**8.62**
35	LRB 359	21.8	28.00	**24.90**	37.20	172.00	11.60	84.40	40.00	20.40	**60.93**	8.00	9.20	8.62	8.40	9.00	**8.64**
36	LRB 360	13.8	8.00	**10.90**	42.20	45.00	9.50	63.80	28.00	12.60	**33.52**	8.50	9.20	9.80	6.60	8.30	**8.48**
37	LRB 361	18.6	22.00	**20.30**	35.40	112.00	10.00	120.00	23.00	15.60	**52.67**	7.80	8.50	10.12	9.00	8.00	**8.68**
38	LRB 362	18.8	23.00	**20.90**	37.60	112.00	10.00	65.80	38.00	13.30	**46.12**	7.80	9.80	7.64	7.60	8.30	**8.23**
39	LRB 363	12.0	35.00	**23.50**	22.20	144.00	30.00	86.40	39.00	12.60	**55.70**	7.50	10.30	7.04	8.00	8.00	**8.17**
40	LRB 364	11.8	19.00	**15.40**	20.80	95.00	36.00	114.60	41.00	10.00	**52.90**	7.50	9.50	8.16	8.00	8.50	**8.33**
41	LRB 365	13.6	18.00	**15.80**	23.80	93.00	11.00	45.20	45.00	9.30	**37.88**	6.90	9.20	8.70	8.00	8.00	**8.16**
42	LRB 366	9.8	27.00	**18.40**	18.80	86.00	6.00	111.60	42.00	12.60	**46.17**	7.30	9.20	7.04	7.40	7.60	**7.71**
43	LRB 367	12.0	21.00	**16.50**	27.80	110.00	20.00	95.00	42.00	11.00	**50.97**	7.70	9.00	10.78	10.00	7.30	**8.96**
44	LRB 368	6.0	20.00	**13.00**	13.40	165.00	20.00	101.00	26.00	14.00	**56.57**	6.90	9.20	8.80	7.00	9.30	**8.24**
45	LRB 369	9.1	22.00	**15.55**	28.20	81.00	10.00	147.20	35.00	16.30	**52.95**	6.90	8.00	9.08	10.00	7.00	**8.20**
46	LRB 370	7.0	28.00	**17.50**	13.60	152.00	8.00	142.80	36.00	18.00	**61.73**	7.90	8.20	5.84	8.60	7.60	**7.63**
47	LRB 371	9.2	16.00	**12.60**	17.00	86.00	18.40	141.60	15.00	24.30	**50.38**	7.50	9.00	8.62	8.60	8.80	**8.50**
48	LRB 372	11.4	27.00	**19.20**	18.20	158.00	10.20	119.40	35.00	24.80	**60.93**	6.50	8.20	10.02	9.20	10.00	**8.78**
49	LRB 375	22.6	19.00	**20.80**	36.60	78.00	18.00	63.40	34.00	20.50	**41.75**	7.10	9.80	8.28	8.60	9.60	**8.68**
50	LRB 376	16.0	17.00	**16.50**	32.40	91.00	4.00	91.00	36.00	21.70	**46.02**	7.60	9.20	9.60	8.40	10.00	**8.96**
51	LRB 377	12.0	38.00	**25.00**	43.60	208.00	10.10	80.00	40.00	21.00	**67.12**	7.60	9.80	9.16	8.40	9.60	**8.91**
52	LRB 378	19.0	16.00	**17.50**	34.20	75.00	10.00	104.60	42.00	19.60	**47.57**	7.90	10.20	9.04	8.40	8.60	**8.83**
53	LRB 379	19.2	12.00	**15.60**	36.80	90.00	20.00	93.60	28.00	17.00	**47.57**	7.80	9.20	7.08	9.20	6.50	**7.96**
54	LRB 380	21.0	28.00	**24.50**	42.60	144.00	22.80	182.60	32.00	19.60	**73.93**	8.20	10.30	9.30	8.20	11.00	**9.40**
55	LRB 381	18.0	23.00	**20.50**	39.20	181.00	10.20	120.80	25.00	24.70	**66.82**	7.50	9.20	10.52	8.40	9.50	**9.02**
56	LRB 383	20.2	7.00	**13.60**	40.40	40.00	31.00	58.20	35.00	23.60	**38.03**	8.10	9.20	10.14	7.80	9.40	**8.93**
57	LRB 385	24.4	22.00	**23.20**	36.60	120.00	22.00	64.60	40.00	20.50	**50.62**	8.20	9.30	9.32	9.20	9.00	**9.00**

S. No.	Genotype	Seeds per pod						100 seed weight (g)				
		Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean	Bhubaneswar	Delhi	Ludhiana	Ranchi	Mean
28	LRB 341	7.50	8.00	7.00	8.60	9.00	**8.02**	5.05	7.00	6.12	5.20	**5.84**
29	LRB 343	6.70	8.00	6.80	7.60	9.60	**7.74**	5.95	7.50	4.81	7.00	**6.32**
30	LRB 347	6.70	9.00	10.40	8.20	8.50	**8.56**	5.71	7.00	5.19	6.10	**6.00**
31	LRB 349	7.30	10.00	9.60	6.60	8.80	**8.46**	4.14	6.00	5.20	6.00	**5.34**
32	LRB 353	6.00	7.00	8.00	5.80	8.00	**6.96**	5.30	7.50	5.47	7.50	**6.44**
33	LRB 355	7.80	9.00	7.00	8.80	9.60	**8.44**	5.18	6.00	5.74	5.00	**5.48**
34	LRB 357	7.30	8.00	8.00	5.60	9.00	**7.58**	5.27	7.40	4.52	6.00	**5.80**
35	LRB 359	6.80	8.00	8.00	8.00	9.00	**7.96**	4.96	6.50	4.84	6.80	**5.78**
36	LRB 360	7.80	9.00	10.00	6.00	8.00	**8.16**	5.57	6.00	6.07	5.60	**5.81**
37	LRB 361	6.80	8.00	10.60	6.20	7.30	**7.78**	5.64	6.50	5.33	6.30	**5.94**
38	LRB 362	6.20	12.00	8.20	7.00	7.60	**8.20**	5.98	7.00	5.08	4.50	**5.64**
39	LRB 363	6.40	9.00	7.00	7.20	7.60	**7.44**	5.34	7.50	5.17	6.50	**6.13**
40	LRB 364	6.20	8.00	8.00	5.80	8.00	**7.20**	5.88	6.00	5.17	5.70	**5.69**
41	LRB 365	6.50	9.00	9.00	6.20	7.30	**7.60**	6.11	8.00	4.96	6.40	**6.37**
42	LRB 366	6.00	8.00	7.00	6. 0	6.60	**6.90**	5.42	7.00	4.67	5.40	**5.62**
43	LRB 367	5.60	8.00	10.00	7.80	7.00	**7.68**	6.21	6.00	4.81	5.80	**5.71**
44	LRB 368	6.20	9.00	7.60	6.60	8.60	**7.60**	5.57	7.00	5.20	5.90	**5.92**
45	LRB 369	5.80	7.00	9.00	7.20	6.30	**7.06**	5.94	6.00	5.06	6.10	**5.78**
46	LRB 370	7.80	7.00	7.00	7.40	9.30	**7.70**	5.80	6.50	4.53	5.80	**5.66**
47	LRB 371	6.10	8.00	8.00	8.00	8.90	**7.80**	5.66	7.00	5.42	5.90	**6.00**
48	LRB 372	5.80	8.00	9.00	7.80	10.00	**8.12**	5.02	6.00	4.82	4.20	**5.01**
49	LRB 375	7.20	9.00	8.00	7.80	9.30	**8.26**	4.87	5.50	4.71	5.10	**5.05**
50	LRB 376	5.70	8.00	8.40	7.60	9.00	**7.74**	6.86	6.00	5.61	7.00	**6.37**
51	LRB 377	6.60	9.00	9.00	7.60	9.00	**8.24**	5.25	5.50	5.34	5.80	**5.47**
52	LRB 378	7.50	9.00	9.00	8.00	8.60	**8.42**	5.09	7.50	5.75	5.50	**5.96**
53	LRB 379	6.80	9.00	6.20	8.00	9.00	**7.80**	4.58	7.00	5.28	7.00	**5.97**
54	LRB 380	5.70	10.00	9.00	6.40	10.50	**8.32**	5.25	5.50	6.36	5.80	**5.73**
55	LRB 381	6.10	8.00	11.00	7.20	9.00	**8.26**	5.60	6.00	6.77	6.20	**6.14**
56	LRB 383	6.50	8.00	10.80	6.60	9.60	**8.30**	4.86	6.00	5.98	6.20	**5.76**
57	LRB 385	7.90	8.00	9.00	8.40	8.60	**8.38**	4.41	7.50	6.23	6.60	**6.19**

S. No.	Genotype	Seed yield per plant (g)								Seed yield (q/ha)			Delhi		
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Delhi	Mean	Pods per cluster	Dry matter yield per plant (g)	Dry matter yield (q/ha)
28	LRB 341	11.63	30.90	2.40	8.00	14.20	7.50	6.82	**11.64**	12.50	2.74	**7.62**	4.00	150.00	0.04
29	LRB 343	10.03	71.10	1.50	32.00	16.30	7.60	7.50	**20.86**	13.06	12.41	**12.73**	3.00	220.00	0.08
30	LRB 347	12.81	35.60	1.10	14.00	26.40	8.00	7.12	**15.00**	8.33	5.46	**6.90**	3.00	160.00	0.03
31	LRB 349	11.21	65.30	2.10	7.00	21.10	7.90	6.30	**17.27**	9.72	1.48	**5.60**	5.00	190.00	0.04
32	LRB 353	11.96	55.20	0.10	25.00	16.30	6.90	6.98	**17.49**	14.44	9.26	**11.85**	4.00	266.00	0.07
33	LRB 355	12.35	30.10	0.50	21.00	17.60	6.80	7.00	**13.62**	11.11	8.52	**9.81**	3.00	188.00	0.05
34	LRB 357	10.32	60.00	2.40	23.00	24.00	7.10	6.80	**19.09**	9.72	8.70	**9.21**	5.00	160.00	0.09
35	LRB 359	11.04	88.00	1.40	22.00	19.40	7.20	8.40	**22.49**	14.72	8.33	**11.53**	4.00	180.00	0.04
36	LRB 360	12.57	75.90	0.40	32.00	17.30	6.20	4.83	**21.31**	8.61	13.33	**10.97**	4.00	160.00	0.03
37	LRB 361	10.00	65.00	0.70	25.00	23.70	7.50	5.15	**19.58**	8.33	9.26	**8.80**	4.00	170.00	0.06
38	LRB 362	9.42	40.30	0.50	26.00	29.60	9.00	5.60	**17.20**	8.33	10.09	**9.21**	4.00	155.00	0.04
39	LRB 363	6.28	50.20	2.10	25.00	19.60	7.80	5.08	**16.58**	7.50	9.81	**8.66**	3.00	160.00	0.06
40	LRB 364	5.83	55.90	2.60	30.00	16.50	13.00	3.67	**18.21**	4.44	12.22	**8.33**	3.20	160.00	0.05
41	LRB 365	6.30	50.40	0.70	22.00	16.30	9.20	4.93	**15.69**	4.17	8.52	**6.34**	3.00	190.00	0.07
42	LRB 366	4.66	30.30	0.80	23.00	10.90	8.80	7.03	**12.21**	7.50	8.80	**8.15**	3.00	205.00	0.05
43	LRB 367	4.45	70.00	1.20	16.00	15.30	6.90	3.08	**16.70**	6.11	6.30	**6.20**	4.40	210.00	0.06
44	LRB 368	4.69	75.10	1.60	15.00	12.70	9.50	3.27	**17.41**	6.94	4.81	**5.88**	6.80	100.00	0.03
45	LRB 369	8.96	90.10	0.50	20.00	16.00	6.30	2.98	**20.69**	6.94	7.78	**7.36**	6.60	200.00	0.05
46	LRB 370	4.67	70.00	0.40	22.00	23.90	7.30	5.65	**19.13**	6.94	7.59	**7.27**	7.00	110.00	0.03
47	LRB 371	7.91	75.30	0.70	10.00	34.10	6.00	4.10	**19.73**	7.50	4.26	**5.88**	5.00	200.00	0.07
48	LRB 372	4.25	85.00	0.40	15.00	19.70	7.20	3.42	**19.28**	4.17	5.19	**4.68**	6.20	182.00	0.05
49	LRB 375	12.98	35.90	1.10	31.00	26.30	6.50	5.65	**17.06**	5.56	12.22	**8.89**	5.00	200.00	0.06
50	LRB 376	9.77	31.40	0.30	30.00	25.60	7.00	3.27	**15.33**	9.44	11.39	**10.42**	4.00	125.00	0.05
51	LRB 377	14.03	35.00	0.60	20.00	15.10	7.50	2.50	**13.53**	11.11	7.78	**9.44**	3.00	180.00	0.06
52	LRB 378	12.76	45.10	0.40	24.00	20.20	7.60	3.88	**16.28**	16.94	9.22	**13.08**	3.00	240.00	0.06
53	LRB 379	12.81	90.50	1.20	14.00	25.70	8.30	4.25	**22.39**	14.17	5.37	**9.77**	3.00	210.00	0.06
54	LRB 380	10.93	25.40	2.00	35.00	15.60	8.40	3.82	**14.45**	16.67	14.81	**15.74**	6.00	150.00	0.06
55	LRB 381	11.99	30.50	0.50	26.00	10.00	8.10	8.60	**13.67**	17.22	10.74	**13.98**	4.60	180.00	0.05
56	LRB 383	10.54	32.60	2.30	21.00	20.20	9.00	6.43	**14.58**	16.67	8.33	**12.50**	3.00	105.00	0.03
57	LRB 385	9.34	75.20	1.10	6.00	21.00	9.50	6.08	**18.32**	11.11	2.31	**6.71**	4.00	190.00	0.04

S. No.	Genotype	Days to 50% flowering								Days to maturity							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
58	LRB 396	53	67		92	64	52	84	**68.67**	105	132		148	105	82	116	**114.67**
59	LRB 401	57	69	44	97	62	50	83	**66.00**	104	129	87	147	106	80	111	**109.14**
60	LRB 402	57	71	44	95	64	52	69	**64.57**	104	135	93	146	110	82	117	**112.43**
61	LRB 403	50	65	45	99	61	53	81	**64.86**	102	133	89	142	110	83	121	**111.43**
62	LRB 407	49	67	43	92	64	54	80	**64.14**	102	132	90	140	112	84	127	**112.43**
63	LRB 408	48	68	44	93	61	51	78	**63.29**	101	134	90	144	111	81	129	**112.86**
64	LRB 409	56	65	43	93	62	52	79	**64.29**	106	135	90	145	112	82	135	**115.00**
65	LRB 410	52	59	43	94	61	51	87	**63.86**	100	136	89	146	110	81	143	**115.00**
66	LRB 411	55	71	43	89	60	48	83	**64.14**	103	134	88	137	109	79	142	**113.14**
67	LRB 412	52	56	44	95	59	51	84	**63.00**	100	130	87	142	109	81	140	**112.71**
68	LRB 414	53	56	43	98	62	52	86	**64.29**	100	128	87	142	110	82	141	**112.86**
69	LRB 415	47	65	43	93	57	52	88	**63.57**	100	125	88	146	110	83	139	**113.00**
70	LRB 416	45	69	44	94	60	53	79	**63.43**	100	132	89	145	110	82	142	**114.29**
71	LRB 417	50	53	44	98	61	50	90	**63.71**	100	134	81	142	110	81	138	**112.29**
72	LRB 418	52	54	42	94	61	51	89	**63.29**	103	129	88	149	109	81	139	**114.00**
73	LRB 419	53	59	44	95	62	52	88	**64.71**	102	133	89	142	112	82	137	**113.86**
74	LRB 420	58	71	43	91	60	51	88	**66.00**	102	134	90	145	112	81	146	**115.71**
75	LRB 421	55	62	43	95	62	51	87	**65.00**	103	134	91	145	112	81	144	**115.71**
76	LRB 422	53	56	43	90	61	52	85	**62.86**	102	133	89	137	112	83	150	**115.14**
77	LRB 423	50	60	42	95	65	53	74	**62.71**	101	135	82	148	112	84	151	**116.14**
78	LRB 424	51	71	44	95	59	47	75	**63.14**	101	132	83	146	112	79	135	**112.57**
79	LRB 425	48	67	43	90	59	45	73	**60.71**	100	134	87	147	104	76	134	**111.71**
80	LRB 426	48	54	46	97	61	46	79	**61.57**	100	134	88	146	106	77	136	**112.43**
81	LRB 427	47	60	46	89	59	46	88	**62.14**	100	136	89	145	105	78	120	**110.43**
82	LRB 428	48	65	44	98	59	47	74	**62.14**	102	130	90	146	105	79	135	**112.43**
83	LRB 429	49	69	43	98	62	47	73	**63.00**	103	135	89	139	105	75	134	**111.43**
84	LRB 430	53	57	43	97	59	45	75	**61.29**	103	131	87	142	104	76	122	**109.29**
85	LRB 431	50	60	43	94	60	49	86	**63.14**	100	135	88	142	107	77	129	**111.14**
86	LRB 432	47	75	43	99	61	50	88	**66.14**	100	136	87	149	108	81	128	**112.71**
87	LRB 433	53	73	44	93	60	47	78	**64.00**	104	132	83	147	105	82	126	**111.29**

S. No.	Genotype	Plant height (cm)								No of primary branches							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
58	LRB 396	98.0	132.60		130.00	89	45.1	130.40	**104.18**	4.0	7.00		5.60	4.30	3.4	4.60	**4.82**
59	LRB 401	94.0	120.30	38.00	126.20	94	38.1	143.30	**93.41**	4.6	8.00	1.60	8.80	5.30	3.1	4.60	**5.14**
60	LRB 402	100.0	95.60	50.00	129.00	70	36.5	148.60	**89.96**	5.2	6.00	1.60	3.20	4.00	3.3	4.30	**3.94**
61	LRB 403	87.0	138.30	35.00	127.40	79	38.2	145.30	**92.89**	3.6	8.00	1.20	5.20	4.30	3.3	4.00	**4.23**
62	LRB 407	86.0	104.00	33.00	126.80	98	39.6	141.00	**89.77**	3.0	2.00	1.20	5.60	5.00	3.4	4.30	**3.50**
63	LRB 408	94.0	126.30	39.00	128.00	77	36.2	150.00	**92.93**	3.8	6.00	1.40	2.60	5.70	3.2	4.00	**3.81**
64	LRB 409	93.0	141.00	42.00	204.40	94	37.2	141.00	**107.51**	3.8	7.00	1.40	4.60	4.30	3.5	4.50	**4.16**
65	LRB 410	103.0	138.30	45.00	142.80	95	39.1	130.50	**99.10**	4.2	5.00	1.60	6.00	3.70	3.3	4.30	**4.01**
66	LRB 411	79.6	146.00	41.00	131.40	95	35.1	128.70	**93.83**	3.4	5.00	1.40	5.60	3.70	3.4	4.00	**3.79**
67	LRB 412	83.0	120.60	45.00	168.20	109	36.5	133.60	**99.41**	4.8	6.00	1.60	4.80	5.50	3.0	4.30	**4.29**
68	LRB 414	80.0	152.30	39.00	131.80	91	37.8	133.30	**95.03**	4.0	6.00	2.20	5.40	4.30	3.2	4.60	**4.24**
69	LRB 415	98.0	109.60	33.00	126.00	95	42.0	137.00	**91.51**	4.0	6.00	1.60	4.20	3.50	3.2	4.00	**3.79**
70	LRB 416	92.0	131.60	57.00	122.60	86	43.2	128.90	**94.47**	2.8	6.00	2.20	3.40	4.30	3.3	5.00	**3.86**
71	LRB 417	93.6	144.30	37.00	152.20	94	42.1	132.00	**99.31**	4.0	6.00	1.80	7.20	3.70	3.4	3.60	**4.24**
72	LRB 418	80.0	153.30	35.00	182.80	96	44.2	137.60	**104.13**	3.2	5.00	1.40	5.00	3.50	3.3	4.00	**3.63**
73	LRB 419	97.0	133.30	38.00	155.80	109	46.1	144.00	**103.31**	6.0	5.00	1.20	7.80	3.30	3.4	4.30	**4.43**
74	LRB 420	81.0	169.30	51.00	135.20	94	38.4	127.00	**99.41**	3.0	7.00	1.40	6.00	3.30	3.2	3.60	**3.93**
75	LRB 421	87.0	143.60	39.00	143.40	108	36.3	138.30	**99.37**	3.8	4.00	1.60	5.60	4.00	3.4	4.60	**3.86**
76	LRB 422	105.0	131.00	41.00	125.80	91	35.1	129.00	**93.99**	3.0	4.00	1.80	5.00	4.00	3.2	3.60	**3.51**
77	LRB 423	91.0	158.60	28.00	143.40	96	36.6	138.60	**98.89**	3.6	5.00	1.60	8.60	4.50	3.4	5.00	**4.53**
78	LRB 424	44.0	142.00	31.00	172.80	99	34.7	116.00	**91.36**	3.0	5.00	1.80	6.00	3.00	3.1	4.00	**3.70**
79	LRB 425	107.5	118.60	25.00	144.20	83	35.2	129.30	**91.83**	4.0	4.00	1.40	3.40	3.70	3.3	4.30	**3.44**
80	LRB 426	52.0	127.00	34.00	153.20	76	34.2	143.00	**88.49**	2.4	5.00	2.00	6.40	4.30	3.1	4.00	**3.89**
81	LRB 427	81.0	116.00	49.00	162.80	93	42.0	120.50	**94.90**	2.6	9.00	1.80	4.00	3.70	3.6	4.60	**4.19**
82	LRB 428	68.0	105.60	45.00	111.20	86	43.3	132.30	**84.49**	3.0	6.00	2.00	3.00	5.30	3.5	3.60	**3.77**
83	LRB 429	67.0	134.60	37.00	145.80	76	44.2	151.00	**93.66**	3.4	6.00	1.80	3.60	3.70	3.3	4.60	**3.77**
84	LRB 430	59.0	140.60	37.00	153.60	80	45.2	103.50	**88.41**	3.0	6.00	1.80	4.40	2.70	3.0	3.00	**3.41**
85	LRB 431	63.0	104.00	29.00	117.80	81	42.6	128.50	**80.84**	4.0	6.00	1.60	5.00	2.70	3.2	4.00	**3.79**
86	LRB 432	77.0	122.30	35.00	172.20	93	43.2	138.00	**97.24**	2.6	6.00	1.20	3.60	3.30	4.5	4.50	**3.67**
87	LRB 433	61.0	135.30	29.00	121.20	85	44.1	128.50	**86.30**	4.2	4.00	1.60	3.00	4.70	3.6	4.50	**3.66**

S. No.	Genotype	Clusters per plant			Pods per plant							Pod length (cm)					
		Bhubaneswar	Hisar	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean
58	LRB 396	21.0	17.00	**19.00**	41.00	99.00		66.00	45.00	23.20	**54.84**	7.50	10.20	10.16	8.00	9.60	**9.09**
59	LRB 401	17.2	12.00	**14.60**	34.60	127.00	32.00	65.00	42.00	19.50	**53.35**	7.70	9.80	7.92	9.00	9.60	**8.80**
60	LRB 402	21.0	11.00	**16.00**	46.80	62.00	35.00	74.00	38.00	25.20	**46.83**	8.20	10.20	7.92	8.40	8.40	**8.62**
61	LRB 403	18.2	18.00	**18.10**	33.40	114.00	12.00	74.80	39.00	22.50	**49.28**	6.40	9.00	8.28	8.60	9.50	**8.36**
62	LRB 407	14.2	22.00	**18.10**	30.00	126.00	10.60	70.40	42.00	21.00	**50.00**	8.20	10.20	7.04	10.20	8.60	**8.85**
63	LRB 408	24.4	18.00	**21.20**	38.00	98.00	16.00	84.00	40.00	24.00	**50.00**	7.80	8.50	8.40	9.40	8.60	**8.54**
64	LRB 409	20.8	28.00	**24.40**	46.00	144.00	37.60	99.40	45.00	23.00	**65.83**	7.60	9.80	7.22	7.00	10.60	**8.44**
65	LRB 410	23.4	16.00	**19.70**	32.00	73.00	10.80	41.80	42.00	27.80	**37.90**	7.00	9.20	8.60	8.40	10.30	**8.70**
66	LRB 411	18.4	28.00	**23.20**	39.80	154.00	33.00	74.60	38.00	24.30	**60.62**	8.00	8.20	7.66	10.40	10.00	**8.85**
67	LRB 412	23.6	27.00	**25.30**	38.60	182.00	37.40	125.40	32.00	18.50	**72.32**	8.10	8.00	8.30	8.40	9.30	**8.42**
68	LRB 414	22.4	18.00	**20.20**	31.00	102.00	37.00	73.00	36.00	16.80	**49.30**	7.40	9.50	7.70	9.00	9.60	**8.64**
69	LRB 415	22.0	21.00	**21.50**	28.00	103.00	29.80	78.60	36.00	24.80	**50.03**	7.40	9.30	7.44	7.20	11.00	**8.47**
70	LRB 416	17.4	35.00	**26.20**	35.60	162.00	35.00	51.60	38.00	20.60	**57.13**	7.10	9.10	6.50	7.80	9.60	**8.02**
71	LRB 417	18.8	18.00	**18.40**	34.20	101.00	22.40	102.40	39.00	17.80	**52.80**	7.00	9.50	7.04	9.40	9.00	**8.39**
72	LRB 418	23.2	14.00	**18.60**	23.20	61.00	25.00	83.00	42.00	14.50	**41.45**	7.60	9.20	6.72	10.00	8.90	**8.48**
73	LRB 419	12.0	16.00	**14.00**	34.20	88.00	15.20	64.60	43.00	18.70	**43.95**	7.30	8.80	6.40	10.00	9.40	**8.38**
74	LRB 420	16.8	17.00	**16.90**	29.20	75.00	38.00	84.40	40.00	22.00	**48.10**	7.00	8.50	9.28	8.40	9.50	**8.54**
75	LRB 421	15.8	13.00	**14.40**	31.00	73.00	32.00	75.40	45.00	21.00	**46.23**	8.10	9.50	9.88	8.80	9.60	**9.18**
76	LRB 422	17.8	23.00	**20.40**	38.80	163.00	30.00	99.00	40.00	24.00	**65.80**	8.20	8.80	8.58	9.00	9.30	**8.78**
77	LRB 423	20.0	20.00	**20.00**	38.00	113.00	23.00	89.60	43.00	20.00	**54.43**	7.50	10.20	9.60	9.60	8.40	**9.06**
78	LRB 424	9.4	17.00	**13.20**	14.00	95.00	30.00	116.40	46.00	21.00	**53.73**	8.10	9.20	9.08	10.20	9.30	**9.18**
79	LRB 425	13.5	18.00	**15.75**	32.80	76.00	7.40	91.20	40.00	23.20	**45.10**	7.60	8.50	7.88	7.80	8.60	**8.08**
80	LRB 426	7.2	21.00	**14.10**	14.60	76.00	14.00	57.20	42.00	21.50	**37.55**	7.60	9.20	9.50	8.60	10.00	**8.98**
81	LRB 427	7.8	28.00	**17.90**	21.20	104.00	30.00	78.80	46.00	24.50	**50.75**	8.00	9.20	7.90	8.60	10.00	**8.74**
82	LRB 428	13.2	23.00	**18.10**	27.80	120.00	12.00	91.20	48.00	21.50	**53.42**	8.20	9.00	8.39	8.00	8.60	**8.44**
83	LRB 429	16.2	8.00	**12.10**	33.40	55.00	18.60	78.40	46.00	27.80	**43.20**	7.90	8.20	6.92	9.60	9.60	**8.44**
84	LRB 430	13.4	14.00	**13.70**	21.80	91.00	20.00	105.80	40.00	18.00	**49.43**	7.20	9.20	7.92	8.20	8.50	**8.20**
85	LRB 431	18.6	18.00	**18.30**	36.60	114.00	17.00	57.40	42.00	21.50	**48.08**	6.40	8.00	6.80	8.20	9.50	**7.78**
86	LRB 432	10.6	31.00	**20.80**	19.80	173.00	35.00	72.00	36.00	23.50	**59.88**	7.90	9.00	10.22	7.40	9.50	**8.80**
87	LRB 433	22.4	14.00	**18.20**	24.80	66.00	20.00	118.80	42.00	20.50	**48.68**	7.60	9.50	10.48	7.80	8.70	**8.82**

S. No.	Genotype	Seeds per pod						100 seed weight (g)				
		Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean	Bhubaneswar	Delhi	Ludhiana	Ranchi	Mean
58	LRB 396	8.00	10.00	10.00	7.20	9.30	**8.90**	3.99	6.00	4.76	6.50	**5.31**
59	LRB 401	8.00	8.00	9.00	7.00	9.00	**8.20**	6.07	8.50	6.36	4.50	**6.36**
60	LRB 402	6.40	9.00	8.00	8.00	10.00	**8.28**	4.07	6.50	5.43	6.90	**5.73**
61	LRB 403	5.00	8.00	7.60	8.40	9.60	**7.72**	5.29	7.50	5.88	4.50	**5.79**
62	LRB 407	7.50	9.00	7.00	9.20	8.00	**8.14**	4.60	7.00	5.01	5.50	**5.53**
63	LRB 408	7.30	8.00	8.00	6.40	9.50	**7.84**	5.20	7.50	5.08	6.00	**5.95**
64	LRB 409	6.60	8.00	7.00	6.40	10.20	**7.64**	5.02	4.50	5.89	5.50	**5.23**
65	LRB 410	4.90	9.00	8.00	7.40	9.30	**7.72**	5.62	7.00	4.83	7.00	**6.11**
66	LRB 411	6.90	8.00	8.00	8.20	9.60	**8.14**	4.76	7.50	5.06	6.70	**6.01**
67	LRB 412	7.20	7.00	7.40	8.00	8.60	**7.64**	3.78	5.00	3.81	5.60	**4.55**
68	LRB 414	6.60	8.00	7.00	8.40	9.00	**7.80**	3.85	7.00	5.14	5.90	**5.47**
69	LRB 415	6.40	9.00	7.40	6.40	10.00	**7.84**	4.09	8.00	5.61	4.90	**5.65**
70	LRB 416	6.50	8.00	6.20	8.20	9.30	**7.64**	4.66	7.00	5.42	6.50	**5.90**
71	LRB 417	6.40	8.00	7.40	7.60	8.60	**7.60**	5.78	7.00	5.32	4.10	**5.55**
72	LRB 418	7.50	8.00	7.00	8.60	9.60	**8.14**	3.93	5.50	5.68	5.60	**5.18**
73	LRB 419	6.30	7.00	7.00	8.80	9.50	**7.72**	4.81	7.00	5.17	6.80	**5.95**
74	LRB 420	6.00	8.00	8.20	8.00	9.60	**7.96**	5.33	6.00	5.47	6.90	**5.93**
75	LRB 421	7.10	8.00	10.00	8.60	9.00	**8.54**	6.07	7.00	6.05	7.80	**6.73**
76	LRB 422	6.20	8.00	9.00	8.60	8.60	**8.08**	6.34	7.00	6.01	4.80	**6.04**
77	LRB 423	6.50	9.00	10.00	9.00	10.00	**8.90**	5.49	6.50	5.47	5.00	**5.62**
78	LRB 424	5.90	8.00	8.00	8.20	9.00	**7.82**	4.48	6.00	4.45	4.50	**4.86**
79	LRB 425	7.10	7.00	8.00	6.40	10.00	**7.70**	5.04	7.00	5.27	6.90	**6.05**
80	LRB 426	6.70	9.00	9.00	8.40	9.60	**8.54**	5.85	7.00	4.73	4.00	**5.40**
81	LRB 427	6.90	8.00	9.20	7.80	10.00	**8.38**	5.65	6.00	5.18	4.80	**5.41**
82	LRB 428	6.00	7.00	9.00	7.20	9.50	**7.74**	5.27	6.50	5.31	4.70	**5.45**
83	LRB 429	7.20	7.00	7.00	7.00	9.00	**7.44**	5.71	8.00	5.77	5.50	**6.25**
84	LRB 430	6.30	8.00	9.00	7.00	8.50	**7.76**	5.08	6.00	6.42	5.60	**5.78**
85	LRB 431	5.50	7.00	7.00	7.40	9.00	**7.18**	4.84	6.00	4.79	4.50	**5.03**
86	LRB 432	6.50	8.00	10.00	6.60	10.00	**8.22**	5.23	5.50	6.29	6.50	**5.88**
87	LRB 433	7.20	8.00	11.00	7.20	10.50	**8.78**	5.06	7.00	5.01	6.90	**5.99**

S. No.	Genotype	Seed yield per plant (g)								Seed yield (q/ha)			Delhi		
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Delhi	Mean	Pods per cluster	Dry matter yield per plant (g)	Dry matter yield (q/ha)
58	LRB 396	12.86	30.50		32.00	22.50	9.20	4.17	**18.54**	16.94	9.26	**13.10**	5.00	100.00	0.02
59	LRB 401	13.04	35.90	2.50	23.00	29.60	8.60	5.40	**16.86**	16.11	8.80	**12.45**	4.00	180.00	0.03
60	LRB 402	12.36	31.90	2.10	35.00	12.80	8.40	7.57	**15.73**	13.89	13.70	**13.80**	6.00	190.00	0.06
61	LRB 403	12.18	25.10	1.40	22.00	20.10	8.10	6.72	**13.66**	16.67	8.70	**12.69**	5.00	230.00	0.08
62	LRB 407	9.96	33.20	0.90	24.00	22.70	9.50	8.50	**15.54**	16.67	9.63	**13.15**	3.00	130.00	0.03
63	LRB 408	11.66	30.50	1.70	31.00	15.20	9.00	5.80	**14.98**	12.50	12.22	**12.36**	3.00	125.00	0.04
64	LRB 409	13.70	21.60	2.70	32.00	15.10	9.50	9.80	**14.91**	13.89	12.96	**13.43**	4.00	170.00	0.05
65	LRB 410	11.47	25.90	1.30	25.00	14.40	8.50	4.80	**13.05**	16.94	9.44	**13.19**	3.00	245.00	0.09
66	LRB 411	13.73	31.40	2.70	10.00	13.90	8.00	9.17	**12.70**	11.67	3.70	**7.69**	4.00	205.00	0.05
67	LRB 412	11.28	85.60	2.80	15.00	15.30	7.80	6.92	**20.67**	13.89	5.46	**9.68**	8.20	195.00	0.06
68	LRB 414	13.84	91.80	2.70	20.00	21.80	7.90	8.80	**23.83**	12.50	7.59	**10.05**	5.00	195.00	0.05
69	LRB 415	12.85	30.20	1.30	15.00	18.80	7.80	7.73	**13.38**	6.94	5.37	**6.16**	4.00	125.00	0.03
70	LRB 416	8.05	35.40	2.40	19.00	13.90	8.10	7.50	**13.48**	9.72	7.22	**8.47**	3.00	170.00	0.06
71	LRB 417	11.08	36.10	1.50	33.00	8.60	8.50	6.50	**15.04**	11.11	12.59	**11.85**	3.80	190.00	0.06
72	LRB 418	12.69	95.90	1.20	30.00	10.60	9.00	6.20	**23.66**	13.89	11.07	**12.48**	3.00	170.00	0.05
73	LRB 419	9.38	39.80	0.90	24.00	8.20	8.80	7.00	**14.01**	11.11	9.07	**10.09**	3.00	235.00	0.06
74	LRB 420	10.09	37.40	2.20	23.00	12.50	7.80	6.50	**14.21**	9.72	8.89	**9.31**	4.00	185.00	0.06
75	LRB 421	11.46	55.50	2.60	22.00	8.30	10.20	8.70	**16.97**	16.94	9.26	**13.10**	5.00	215.00	0.06
76	LRB 422	10.41	30.10	2.00	7.00	14.50	9.50	9.20	**11.82**	11.94	2.78	**7.36**	3.00	125.00	0.03
77	LRB 423	13.14	65.40	1.20	35.00	19.70	8.90	4.80	**21.16**	11.11	12.59	**11.85**	4.00	200.00	0.07
78	LRB 424	5.56	135.00	2.20	16.00	18.10	9.60	6.80	**27.61**	6.94	6.11	**6.53**	4.60	160.00	0.04
79	LRB 425	6.07	111.00	0.50	25.00	26.40	7.60	5.80	**26.05**	5.83	10.37	**8.10**	5.00	90.00	0.09
80	LRB 426	5.06	25.60	0.80	7.00	13.70	8.50	7.50	**9.74**	4.17	2.04	**3.10**	5.00	189.00	0.03
81	LRB 427	6.95	30.00	2.30	8.00	17.50	9.40	9.50	**11.95**	5.00	2.96	**3.98**	3.00	100.00	0.02
82	LRB 428	7.21	55.40	1.20	15.00	17.00	10.00	6.88	**16.10**	7.50	5.93	**6.71**	4.00	160.00	0.04
83	LRB 429	5.12	35.80	1.30	14.00	15.30	9.60	5.42	**12.36**	8.61	4.91	**6.76**	3.00	216.00	0.06
84	LRB 430	5.82	31.90	1.50	32.00	6.70	8.50	6.85	**13.32**	6.11	13.15	**9.63**	3.60	180.00	0.06
85	LRB 431	9.52	45.60	1.40	8.00	11.90	7.80	9.50	**13.39**	8.06	2.69	**5.37**	5.00	105.00	0.03
86	LRB 432	5.94	50.10	2.50	30.00	12.20	8.20	9.43	**16.91**	5.56	11.39	**8.47**	3.00	200.00	0.06
87	LRB 433	13.61	45.40	1.00	30.00	19.00	9.50	7.40	**17.99**	4.17	10.93	**7.55**	6.00	130.00	0.03

S. No.	Genotype	Days to 50% flowering								Days to maturity							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
88	LRB 434	53	71	43	97	59	48	70	**63.00**	104	134	85	144	107	81	129	**112.00**
89	LRB 435	48	59	44	95	58	49	64	**59.57**	103	129	83	137	107	80	125	**109.14**
90	LRB 436	55	69	43	95	60	49	66	**62.43**	105	130	88	139	107	81	120	**110.00**
91	LRB 437	54	61	42	95	57	48	85	**63.14**	106	131	83	148	109	82	122	**111.57**
92	LRB 438	48	68	42	97	57	49	75	**62.29**	100	136	84	142	105	83	127	**111.00**
93	LRB 439	47	63	43	95	60	47	76	**61.57**	100	131	86	149	107	80	123	**110.86**
94	LRB 440	52	67	43	92	61	50	71	**62.29**	100	132	88	147	107	81	123	**111.14**
95	LRB 441	51	62	42	98	61	50	78	**63.14**	102	134	89	144	107	82	119	**111.00**
96	LRB 442	49	69	42	93	58	51	72	**62.00**	101	132	87	147	105	83	135	**112.86**
97	LRB 443	48	66	43	93	61	50	70	**61.57**	103	131	87	145	105	81	119	**110.14**
Mean for check varieties																	
	RBL 1(C)	56.75	67.00	-	-	60.25	49	71.33	**60.87**	102.88	127.40	-	-	106.88	81	124.83	**108.60**
	RBL 6 (C)	55.75	65.80	42.00	91.45	56.63	50	70.50	**61.73**	101.50	125.80	84.00	140.18	106.50	80	123.33	**108.76**
	RBL 35 (C)	56.00	68.20	42.00	90.64	61.75	48	64.50	**61.58**	101.38	121.00	83.00	138.73	109.38	80	119.33	**107.54**
	RBL 50 (C)	56.25	65.60	42.00	95.55	-	-	84.33	**68.75**	103.63	119.60	82.00	140.45	-	-	131.00	**115.34**
	Minimum	**41.00**	**51.00**	**40.00**	**86.00**	**56.00**	**44.00**	**64.00**	**57.71**	**87.00**	**119.60**	**81.00**	**137.00**	**102.00**	**75.00**	**109.00**	**107.54**
	Maximum	**58.00**	**75.00**	**47.00**	**101.00**	**65.00**	**54.00**	**91.00**	**68.75**	**106.00**	**139.00**	**93.00**	**153.00**	**112.00**	**84.00**	**151.00**	**116.14**
	Mean	**51.30**	**62.13**	**43.23**	**94.15**	**60.05**	**48.47**	**76.58**	**62.33**	**100.75**	**131.26**	**86.27**	**144.31**	**107.29**	**79.81**	**128.50**	**111.25**
	CD (0.05)	**2.75**	**9.22**	**-**	**7.85**	**3.38**	**-**	**6.52**	**-**	**5.07**	**17.96**	**-**	**10.06**	**4.86**	**-**	**3.58**	**-**
	CV (%) error	**1.99**	**5.18**	**-**	**3.36**	**2.15**	**-**	**3.49**	**-**	**2.01**	**5.45**	**-**	**2.85**	**1.72**	**-**	**1.12**	**-**
	CV (%) Phen.	**8.48**	**8.53**	**2.82**	**3.55**	**3.19**	**4.77**	**9.25**	**-**	**4.87**	**5.52**	**3.18**	**4.27**	**2.35**	**2.91**	**6.76**	**-**

S. No.	Genotype	Plant height (cm)								No of primary branches							
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean
88	LRB 434	37.0	126.00	37.00	172.20	81	46.2	130.40	**89.97**	1.8	6.00	1.40	4.40	2.70	3.4	3.60	**3.33**
89	LRB 435	60.0	156.00	29.00	111.40	76	45.2	119.00	**85.23**	2.8	4.00	2.00	3.80	2.70	3.3	3.50	**3.16**
90	LRB 436	50.0	119.30	33.00	94.20	98	44.8	123.50	**80.40**	3.0	6.00	1.80	3.20	4.30	3.2	3.50	**3.57**
91	LRB 437	62.0	131.00	28.00	163.60	92	46.1	131.00	**93.39**	2.8	5.00	1.80	3.20	2.70	3.6	4.00	**3.30**
92	LRB 438	70.0	117.30	42.00	114.00	73	47.3	125.60	**84.17**	2.5	5.00	1.80	3.60	4.30	3.5	4.50	**3.60**
93	LRB 439	84.0	188.00	41.00	129.60	80	38.2	119.60	**97.20**	3.8	7.00	1.80	5.20	3.70	3.0	4.00	**4.07**
94	LRB 440	48.0	219.60	42.00	197.60	86	38.4	130.00	**108.80**	2.6	7.00	3.20	6.20	4.70	3.1	3.60	**4.34**
95	LRB 441	114.0	136.00	52.00	146.40	89	36.5	120.30	**99.17**	3.6	6.00	2.20	5.20	4.50	3.3	4.00	**4.11**
96	LRB 442	85.0	144.60	40.00	115.00	92	39.6	118.00	**90.60**	2.8	4.00	1.60	5.40	2.50	3.2	4.00	**3.36**
97	LRB 443	113.0	136.00	40.00	92.20	78	39.4	114.30	**87.56**	3.0	5.00	1.80	4.00	2.70	3.1	3.00	**3.23**
Mean for check varieties																	
	RBL 1(C)	94.38	121.84	-	-	90.25	63.0	102.47	**94.39**	2.75	5.00	-	-	3.64	3.6	3.75	**3.75**
	RBL 6 (C)	102.38	119.24	28.00	138.44	87.25	62.1	102.68	**91.44**	3.31	4.80	2.00	5.16	4.08	4.5	3.48	**3.90**
	RBL 35 (C)	89.90	118.12	39.00	145.18	88.00	70.0	90.77	**91.57**	4.63	5.40	1.60	5.25	3.06	4.5	3.40	**3.98**
	RBL 50 (C)	99.94	121.40	31.00	147.33	-	-	101.50	**100.23**	3.46	5.80	1.20	5.07	-	-	3.77	**3.86**
	Minimum	**29.00**	**94.00**	**22.00**	**92.20**	**70.00**	**21.20**	**67.80**	**78.69**	**1.00**	**2.00**	**0.80**	**2.60**	**2.00**	**1.80**	**2.00**	**2.81**
	Maximum	**115.00**	**219.60**	**57.00**	**236.40**	**119.00**	**75.00**	**180.00**	**110.11**	**6.00**	**9.00**	**3.20**	**9.20**	**5.80**	**4.50**	**5.40**	**5.14**
	Mean	**82.59**	**136.00**	**34.56**	**144.41**	**91.69**	**42.11**	**127.90**	**94.38**	**3.34**	**5.47**	**1.64**	**5.15**	**3.85**	**3.13**	**3.69**	**3.76**
	CD (0.05)	**7.51**	**20.61**	**-**	**61.04**	**20.94**	**-**	**23.10**	**-**	**0.97**	**1.60**	**-**	**4.55**	**2.05**	**-**	**0.63**	**-**
	CV (%) error	**3.15**	**6.43**	**-**	**16.86**	**8.93**	**-**	**9.04**	**-**	**11.12**	**11.40**	**-**	**34.96**	**21.50**	**-**	**6.85**	**-**
	CV (%) Phen.	**22.30**	**17.97**	**20.70**	**16.64**	**10.72**	**22.83**	**14.43**	**-**	**25.13**	**23.49**	**21.82**	**29.40**	**21.10**	**14.68**	**18.39**	**-**

S. No.	Genotype	Clusters per plant			Pods per plant							Pod length (cm)					
		Bhubaneswar	Hisar	Mean	Bhubaneswar	Hisar	Bangalore	Delhi	Mettupalayam	Ranchi	Mean	Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean
88	LRB 434	7.4	22.00	**14.70**	13.00	140.00	10.00	90.40	43.00	24.00	**53.40**	7.80	9.20	6.78	9.00	9.00	**8.36**
89	LRB 435	13.4	8.00	**10.70**	24.80	49.00	15.00	78.80	43.00	17.80	**38.07**	7.80	9.00	8.06	8.80	9.00	**8.53**
90	LRB 436	16.6	18.00	**17.30**	28.20	99.00	14.00	64.40	45.00	21.40	**45.33**	7.50	9.30	6.88	7.00	9.00	**7.94**
91	LRB 437	14.4	11.00	**12.70**	31.40	63.00	9.00	127.80	48.00	23.30	**50.42**	7.30	9.80	9.12	7.80	8.50	**8.50**
92	LRB 438	14.7	14.00	**14.35**	30.30	60.00	8.60	51.40	45.00	21.40	**36.12**	8.10	9.00	9.90	7.60	9.50	**8.82**
93	LRB 439	21.0	23.00	**22.00**	39.60	101.00	18.40	84.00	39.00	20.40	**50.40**	8.00	8.80	9.34	8.40	9.00	**8.71**
94	LRB 440	12.8	30.00	**21.40**	27.80	180.00	20.00	108.20	41.00	24.50	**66.92**	8.50	9.20	9.28	8.00	9.50	**8.90**
95	LRB 441	14.4	18.00	**16.20**	32.80	81.00	35.00	64.20	38.00	23.20	**45.70**	7.80	10.50	7.52	7.60	9.50	**8.58**
96	LRB 442	15.0	13.00	**14.00**	27.60	58.00	34.00	148.60	40.00	20.40	**54.77**	8.20	10.30	9.22	7.40	9.50	**8.92**
97	LRB 443	11.4	7.00	**9.20**	20.60	41.00	38.60	57.80	42.00	18.80	**36.47**	9.00	10.00	6.76	7.40	9.60	**8.55**
Mean for check varieties																	
	RBL 1(C)	9.93	18.20	**14.06**	33.30	72.20	-	-	45.00	22.62	**43.28**	7.84	7.26	-	8.30	9.03	**8.11**
	RBL 6 (C)	14.05	17.00	**15.53**	30.54	62.40	20.00	74.67	43.00	22.98	**42.27**	7.89	7.60	8.49	8.35	9.42	**8.35**
	RBL 35 (C)	12.03	23.20	**17.61**	31.88	89.40	17.00	69.93	55.00	19.55	**47.13**	8.05	7.22	8.79	8.18	9.20	**8.29**
	RBL 50 (C)	11.10	19.20	**15.15**	33.89	78.40	29.00	83.05	-	17.93	**48.46**	8.26	7.20	8.84	-	8.67	**8.24**
	Minimum	**6.00**	**6.00**	**8.10**	**10.00**	**40.00**	**4.00**	**41.40**	**15.00**	**9.30**	**33.52**	**6.30**	**7.20**	**5.84**	**6.00**	**6.50**	**7.63**
	Maximum	**24.40**	**51.00**	**36.60**	**47.80**	**239.00**	**38.60**	**236.40**	**55.00**	**31.00**	**79.35**	**9.60**	**11.50**	**10.92**	**11.40**	**11.00**	**9.60**
	Mean	**15.61**	**20.03**	**17.82**	**30.66**	**105.35**	**18.31**	**92.13**	**37.55**	**21.23**	**50.91**	**7.77**	**9.36**	**8.59**	**8.28**	**9.18**	**8.63**
	CD (0.05)	**3.61**	**10.54**	**-**	**10.49**	**29.62**	**-**	**76.10**	**-**	**5.03**	**-**	**0.61**	**3.31**	**2.05**	**1.97**	**1.14**	**-**
	CV (%) error	**12.41**	**20.35**	**-**	**13.12**	**14.68**	**-**	**39.78**	**-**	**9.41**	**-**	**3.11**	**16.93**	**9.33**	**9.02**	**4.87**	**-**
	CV (%) Phen.	**28.19**	**50.02**	**-**	**26.70**	**43.54**	**53.35**	**41.99**	**19.33**	**19.13**	**-**	**6.73**	**8.84**	**12.76**	**11.58**	**8.63**	**-**

S. No.	Genotype	Seeds per pod						100 seed weight (g)				
		Bhubaneswar	Hisar	Delhi	Ludhiana	Ranchi	Mean	Bhubaneswar	Delhi	Ludhiana	Ranchi	Mean
88	LRB 434	7.60	8.00	7.00	8.40	8.70	**7.94**	4.72	5.00	5.51	7.00	**5.56**
89	LRB 435	6.20	8.00	8.00	8.00	7.90	**7.62**	5.53	7.00	6.22	7.60	**6.59**
90	LRB 436	6.50	8.00	7.00	6.60	8.50	**7.32**	5.87	5.50	5.84	6.50	**5.93**
91	LRB 437	7.30	9.00	8.00	7.00	8.00	**7.86**	6.07	8.00	5.89	4.90	**6.22**
92	LRB 438	6.40	8.00	10.00	5.60	8.50	**7.70**	5.24	6.50	6.14	5.50	**5.85**
93	LRB 439	6.50	7.00	10.00	7.80	8.80	**8.02**	4.80	6.00	6.37	5.50	**5.67**
94	LRB 440	6.80	8.00	8.80	7.00	9.00	**7.92**	5.43	7.00	6.27	6.00	**6.18**
95	LRB 441	6.80	9.00	7.00	7.60	9.50	**7.98**	6.13	7.00	5.34	5.30	**5.94**
96	LRB 442	6.40	9.00	10.00	6.00	9.00	**8.08**	5.65	7.00	5.11	5.50	**5.82**
97	LRB 443	8.00	9.00	8.60	6.20	9.30	**8.22**	5.91	6.00	5.37	4.50	**5.45**
Mean for check varieties												
	RBL 1(C)	7.09	7.80	-	7.40	9.55	**7.96**	6.09	-	5.67	6.15	**5.97**
	RBL 6 (C)	7.43	8.40	8.56	7.33	9.25	**8.19**	6.14	6.00	5.64	7.07	**6.21**
	RBL 35 (C)	6.91	8.00	8.49	7.20	8.77	**7.87**	6.98	6.41	5.01	7.03	**6.36**
	RBL 50 (C)	7.21	8.20	8.93	-	8.52	**8.21**	5.43	5.59	-	6.68	**5.90**
	Minimum	**4.00**	**7.00**	**6.20**	**5.00**	**6.30**	**6.90**	**3.78**	**4.50**	**3.81**	**4.00**	**4.55**
	Maximum	**8.00**	**12.00**	**11.00**	**9.60**	**10.50**	**8.90**	**7.09**	**8.50**	**7.13**	**7.80**	**7.09**
	Mean	**6.62**	**8.50**	**8.53**	**7.20**	**9.01**	**7.97**	**5.38**	**6.65**	**5.54**	**5.77**	**5.83**
	CD (0.05)	**0.99**	**1.64**	**2.39**	**2.84**	**1.50**	**-**	**0.83**	**1.95**	**1.35**	**1.34**	**-**
	CV (%) error	**5.62**	**7.56**	**10.96**	**14.72**	**6.47**	**-**	**5.45**	**12.90**	**9.46**	**7.75**	**-**
	CV (%) Phen.	**12.59**	**11.04**	**14.12**	**14.08**	**8.56**	**-**	**11.27**	**18.18**	**11.34**	**14.94**	**-**

S. No.	Genotype	Seed yield per plant (g)								Seed yield (q/ha)			Delhi		
		Bhubaneswar	Hisar	Bangalore	Delhi	Ludhiana	Mettupalayam	Ranchi	Mean	Bhubaneswar	Delhi	Mean	Pods per cluster	Dry matter yield per plant (g)	Dry matter yield (q/ha)
88	LRB 434	4.37	15.90	0.80	8.00	7.80	9.60	8.27	**7.82**	7.78	3.52	**5.65**	3.80	145.00	0.03
89	LRB 435	8.18	34.00	0.90	16.00	8.10	9.70	7.82	**12.10**	5.83	5.83	**5.83**	3.20	200.00	0.06
90	LRB 436	10.21	30.40	0.80	23.00	19.50	9.90	6.88	**14.38**	8.33	8.52	**8.43**	3.20	210.00	0.06
91	LRB 437	7.52	65.20	0.50	10.00	6.10	10.20	4.93	**14.92**	5.56	3.70	**4.63**	4.00	117.00	0.03
92	LRB 438	7.43	75.40	1.00	34.00	9.50	10.50	6.50	**20.62**	11.67	13.33	**12.50**	3.00	200.00	0.07
93	LRB 439	11.62	60.00	1.20	16.00	8.90	9.80	8.00	**16.50**	9.72	6.30	**8.01**	4.00	200.00	0.07
94	LRB 440	5.89	75.10	1.70	33.00	20.40	8.40	5.55	**21.43**	9.72	13.70	**11.71**	3.00	190.00	0.06
95	LRB 441	9.61	62.20	2.80	32.00	13.40	7.80	7.80	**19.37**	8.33	12.96	**10.65**	3.00	150.00	0.06
96	LRB 442	8.21	66.10	3.00	20.00	7.60	8.60	5.12	**16.95**	11.94	8.15	**10.05**	3.00	110.00	0.10
97	LRB 443	9.21	71.50	2.60	12.00	10.20	8.20	4.83	**16.93**	13.61	4.81	**9.21**	3.60	180.00	0.05
Mean for check varieties															
	RBL 1(C)	8.50	37.22	-	-	13.20	11.30	5.47	**15.14**	11.22	-	**11.22**	-	-	-
	RBL 6 (C)	10.49	51.84	1.70	16.18	15.59	10.60	6.39	**16.11**	12.85	5.82	**9.33**	3.64	147.29	0.05
	RBL 35 (C)	9.88	47.92	1.50	18.36	11.88	11.00	7.62	**15.45**	9.93	6.71	**8.32**	3.73	124.09	0.04
	RBL 50 (C)	9.06	34.08	2.10	19.91	-	-	6.80	**14.39**	10.97	8.05	**9.51**	3.38	192.09	0.06
	Minimum	**4.25**	**15.90**	**0.10**	**6.00**	**5.60**	**5.00**	**2.50**	**7.82**	**4.17**	**1.48**	**3.10**	**3.00**	**80.00**	**0.02**
	Maximum	**16.07**	**135.00**	**3.00**	**35.00**	**34.10**	**13.00**	**9.80**	**27.61**	**23.06**	**14.81**	**15.74**	**8.20**	**266.00**	**0.10**
	Mean	**9.51**	**53.07**	**1.34**	**21.05**	**15.01**	**8.14**	**6.42**	**16.41**	**11.79**	**8.11**	**9.27**	**4.07**	**169.67**	**0.05**
	CD (0.05)	**2.17**	**38.32**	**-**	**16.84**	**14.95**	**-**	**3.88**	**-**	**2.78**	**9.01**	**-**	**1.65**	**130.84**	0.03
	CV (%) error	**9.30**	**33.56**	**-**	**36.80**	**40.74**	**-**	**22.96**	**-**	**10.02**	**52.15**	**-**	**18.25**	**33.60**	**26.53**
	CV (%) Phen.	**28.54**	**60.33**	**56.38**	**45.26**	**40.19**	**18.34**	**26.91**	**-**	**37.00**	**48.27**	**-**	**28.76**	**43.32**	**53.32**

Table 153. Promising lines in grain amaranth germplasm (Rabi, 2006-07) for various characters at different locations (Plains)

S.No.	Characters	Range	Promising lines	Highest value of best check
Bhubaneswar (Accessions 30)				
1.	Plant height (cm)	54.40-122.20	BGA 54, BGA 43, BGA 47, BGA 52, BGA 40, BGA 48, BGA 34 (> 114.50 cm)	GA 1 (114.50 cm)
2.	Panicle length (cm)	32.55-68.00	BGA 42, BGA 53, BGA 40, BGA 43, BGA 29 (> 56.65 cm)	BGA 2 (Kapilasa) (56.65 cm)
3.	Seed yield per plant (g)	7.60-23.66	BGA 15, BGA 53, BGA 42, BGA 43, BGA 38, BGA 10, BGA 45, BGA 39, BGA 40, BGA 46 (> 14.43 g)	BGA 2 (Kapilasa) (14.43 g)
4.	See yield (q/ha)	6.25-27.08	BGA 10, BGA 15, BGA 46, BGA 52, BGA 31 (> 17.97 q/ha)	BGA 2 (Kapilasa) (17.97 q/ha)
5.	Seed weight (g/10ml)	7.42-8.67	BGA 10, BGA 35 (> 8.06 g/10ml)	BGA 2 (Kapilasa) (8.06 g/10ml)
Delhi (Accessions 59)				
1.	Days to 50% flowering	58.00-97.00	IC021941, IC333241, IC469805, IC396971, IC396972, IC095353, IC146495, IC396973, NC058615 (< 65.00 days)	Annapurna (65.10 days)
2.	Days to maturity	134.00-182.00	IC396955, IC396956, IC021941, NC058615, IC333241, IC396971, IC146511, IC153062, IC396954, IC396961, IC396988, IC415591, IC415592, NC058609, IC333161, IC396972, IC469805, IC333173, IC354367, IC396963 (< 160.00 days)	GA-2 (162.30 days)
3.	Plant height (cm)	14.80-150.00	IC386984, IC324041, IC396970, IC469674 (> 90.60 cm)	Suvarna (90.60 cm)
4.	Leaf length (cm)	3.56-17.00	IC386984, IC324011 (> 15.68 cm)	Suvarna (15.68 cm)
5.	Panicle length (cm)	14.20-65.00	IC423460, IC398213, IC415592, IC324043, IC396972, IC325877 (> 46.40 cm)	GA-1 (46.40 cm)
6.	Seed yield (q/ha)	0.49-18.77	IC325877, IC333241, IC396973, IC146495, IC333173, IC324041, IC415592, IC396970, IC469805, IC324011, IC325880, IC396983, IC333211, IC396988, IC396992, IC396971, IC354367, IC398213,	GA-1 (5.63 q/ha)

			IC324043, IC396997, IC396972, IC398217, IC415591, IC398241, NC058609, IC396991, IC095355, IC333161, NC058615 (> 8.77 q/ha)	
7.	Seed weight (g/10ml)	3.64-9.30	IC469676, IC333241, IC396955, NC058615, IC095353, IC423460, IC396949, IC146495, IC396953, IC095355, IC396961, IC325877, IC021941, IC396972, IC153062 (> 8.00 g/10ml)	Annapurna (7.40 g/10ml)
8.	Dry matter yield (q/ha)	3.70-65.43	IC396949, IC146495, IC324041, IC325880, IC325877, IC333241, IC536655-A, IC415592, IC396973, IC469674, IC396991 (> 32.10 q/ha)	GA-1 (19.12 q/ha)
Faizabad (Accessions 44)				
1.	Days to 50% flowering	34.00-52.00	EC519526, EC519527, IC421885, EC519522, IC415453, IC423408, EC519554, IC415271, IC415272, IC415282, IC415290, IC415218, IC415448 (< 38.00 days)	Annapurna (38.50 days)
2.	Days to maturity	84.00-101.00	IC415271, IC415387, EC519557, IC415448, IC415268, IC415284, IC415282, EC519526, IC415272, EC519542, IC415297, EC519549, IC415331, EC519543 (< 90.00 days)	GA-1 (93.13 days)
3.	Plant height (cm)	56.00-113.60	EC519524, EC519557, EC519536, EC519520, IC415284, IC415272, IC415214, IC415216, IC415282, IC415217, EC519552, EC519522 (> 78.40 cm)	GA-1 (78.40 cm)
4.	No. of primary branches per plant	31.40-75.00	EC519524, EC519512, EC519549, IC415268, EC519554, IC423408, IC433544, EC519554, IC415331, EC519527 (> 52.00)	GA-2 (48.43)
5.	Inflorescence length (cm)	7.39-9.12	EC519531, EC519554, IC415331, EC519548, EC519524, EC519554, EC519536, IC 415290, EC519543, EC519520, EC519517, EC519526, IC415216, EC519552, EC519564, EC519522, EC519543 (> 8.00 cm)	GA-2 (7.96 cm)
6.	Seed yield per plant (g)	5.40-16.00	EC519558, EC519566, EC519554, EC519527, EC519554 (> 14.25 g)	GA-2 (14.25 g)

Table 154. Multilocation evaluation of germplasm lines in Grain Amaranth at Bhubaneswar - Rabi 2007 (Plain)

S. No.	Genotype	Days to 50% flowering	Days to maturity	Plant height (cm)	Panicle length (cm)	Seed yield per plant (g)	Seed yield (q/ha)	Seed volume weight (g/10ml)
1	BGA 10	46	95	79.0	55.0	18.35	23.96	8.67
2	BGA 15	44	89	87.2	46.4	23.66	22.92	8.03
3	BGA 29	49	98	88.4	56.8	8.20	11.46	7.94
4	BGA 30	50	96	93.0	43.6	8.66	17.71	7.42
5	BGA 31	48	98	92.2	50.6	7.63	18.75	7.91
6	BGA 32	48	96	99.4	53.0	8.49	13.54	8.04
7	BGA 33	47	95	113.2	48.6	10.77	12.50	7.65
8	BGA 34	44	93	115.4	54.0	8.65	11.46	7.76
9	BGA 35	47	98	106.8	49.6	9.89	17.71	8.09
10	BGA 36	53	103	93.6	42.8	11.12	14.58	7.81
11	BGA 37	51	98	105.6	44.8	9.73	16.67	7.89
12	BGA 38	56	90	93.0	53.2	18.87	11.46	7.61
13	BGA 39	49	98	96.4	50.0	16.60	9.38	7.75
14	BGA 40	47	95	116.6	62.4	15.23	10.42	7.95
15	BGA 41	48	98	89.0	50.6	9.45	10.42	7.85
16	BGA 42	53	100	54.4	68.0	19.92	16.67	7.86
17	BGA 43	50	97	121.0	62.2	19.17	15.63	7.89
18	BGA 44	53	97	111.0	55.6	13.90	12.50	7.79
19	BGA 45	51	98	104.0	56.0	17.82	14.58	7.57
20	BGA 46	54	103	112.0	49.4	15.15	21.88	7.68
21	BGA 47	49	100	119.8	55.6	9.11	10.42	7.67
22	BGA 48	53	103	116.6	45.8	10.10	12.50	7.85
23	BGA 49	49	102	90.0	44.8	9.17	14.17	7.60
24	BGA 50	50	103	105.2	46.6	8.96	13.54	7.92
25	BGA 51	48	98	113.2	46.6	8.72	13.54	8.03
26	BGA 52	49	97	117.6	56.6	9.95	18.75	7.71
27	BGA 53	46	98	108.0	63.0	22.14	10.42	7.72
28	BGA 54	50	103	122.2	56.6	10.53	10.42	8.04
29	BGA 55	48	97	85.4	53.0	7.60	12.50	7.89
30	BGA 56	49	96	92.0	47.0	10.77	9.38	7.89
	Mean for check varieties							
	Annapurna (C)	36.50	79.50	59.75	32.55	7.82	9.38	7.79
	BGA 2(Kapilasa) (C)	51.50	95.25	96.85	56.65	14.43	17.97	8.06
	GA 1(C)	55.50	105.00	114.50	54.35	10.12	14.32	7.91
	GA 2 (C)	53.75	97.25	97.15	53.85	10.07	13.28	7.91
	Suvarna (C)	53.25	98.50	97.35	41.85	11.13	15.89	7.83
	Minimum	**36.50**	**79.50**	**54.40**	**32.55**	**7.60**	**6.25**	**7.42**
	Maximum	**56.00**	**105.00**	**122.20**	**68.00**	**23.66**	**27.08**	**8.67**
	Mean	**49.41**	**97.36**	**100.19**	**51.64**	**12.34**	**14.83**	**7.86**
	CD (0.05)	**4.67**	**5.16**	**11.16**	**7.47**	**3.59**	**3.78**	**0.21**
	CV (%) Error	**3.49**	**2.03**	**4.49**	**5.85**	**12.54**	**10.00**	**0.98**
	CV (%) Phenotypic	**11.42**	**7.66**	**24.94**	**21.48**	**48.63**	**31.93**	**2.43**

Table 155. Multilocation evaluation of germplasm lines in Grain Amaranth at Delhi - Rabi 2007 (Plain)

S. No.	Accessions No.	Quantitative characters								
		Days to flowering	Days to maturity	Plant height (cm)	Leaf length (cm)	Leaf width (cm)	Pencile length (cm)	Seed yield (q/ha)	10 ml seed weight (g)	Dry matter yield(q/ha)
1	EC035940	87	165	64.60	12.90	6.76	35.60	2.59	6.10	8.64
2	IC146495	64	160	38.40	8.64	4.44	35.60	17.28	8.31	65.43
3	IC146511	65	155	71.00	11.44	6.34	36.80	6.54	4.65	11.85
4	IC153062	65	155	33.80	8.02	3.18	33.60	3.09	8.10	15.31
5	IC021941	58	153	29.60	8.54	4.00	39.00	8.77	8.16	18.02
6	IC289406	87	165	87.00	13.22	7.16	42.00	3.70	6.96	24.20
7	IC324011	76	163	71.00	16.04	6.70	38.60	15.06	6.17	28.40
8	IC324041	80	167	94.80	11.56	5.62	35.00	16.54	6.98	46.42
9	IC324043	78	165	50.00	12.80	6.12	49.00	11.36	7.27	27.16
10	IC324046	68	160	43.40	12.54	5.44	42.80	8.40	6.95	18.52
11	IC325877	67	160	55.00	11.18	6.16	47.40	18.77	8.22	45.19
12	IC325880	67	160	27.80	7.66	4.12	26.20	14.07	7.28	45.93
13	IC333108	87	163	29.60	10.56	5.00	42.00	4.32	7.67	15.31
14	IC333161	78	156	46.80	9.08	4.92	37.80	9.75	7.50	30.86
15	IC333173	80	158	68.80	14.16	6.60	41.80	17.04	7.75	31.48
16	IC333211	76	163	50.60	9.70	4.86	36.20	13.95	7.29	26.67
17	IC333241	59	155	74.00	15.56	6.28	37.40	18.02	8.89	41.98
18	IC354367	80	158	56.40	13.46	5.72	34.40	11.60	7.46	28.40
19	IC386984	76	160	150.00	17.00	8.16	39.80	4.20	6.16	27.16
20	IC396949	80	163	32.00	8.38	3.88	33.60	7.65	8.38	17.78
21	IC396953	84	165	43.80	9.16	5.90	42.00	7.90	8.28	13.83
22	IC396954	65	155	50.00	9.66	4.90	37.80	7.16	7.72	18.02
23	IC396955	80	134	32.80	8.78	4.40	44.20	6.67	8.83	11.36
24	IC396956	83	137	24.40	9.60	4.94	33.00	4.32	7.45	12.59
25	IC396961	65	155	34.80	6.48	3.08	31.00	7.28	8.24	15.80
26	IC396963	81	158	43.20	6.80	3.30	38.00	3.95	7.48	12.35
27	IC396970	87	160	94.50	11.32	6.60	29.60	15.80	6.13	31.85
28	IC396971	62	155	31.20	8.42	4.34	37.00	11.60	7.62	27.16
29	IC396972	63	157	37.80	9.30	4.76	48.40	10.86	8.15	22.22
30	IC396973	64	160	57.00	13.12	6.50	38.00	17.53	5.56	39.51
31	IC396983	78	165	54.00	12.70	5.86	36.60	13.95	6.97	30.86
32	IC396988	65	155	61.40	11.86	6.06	42.40	11.85	7.36	29.63
33	IC396991	80	165	34.40	12.92	5.42	39.00	10.17	7.52	32.84
34	IC396992	78	160	51.40	10.42	5.12	43.80	11.73	7.06	20.74
35	IC396997	76	163	49.80	11.34	6.14	38.20	11.11	6.87	23.70
36	IC398213	84	160	52.00	11.64	4.98	52.60	11.48	7.18	30.86
37	IC398215	84	160	58.40	13.12	5.76	40.80	7.78	7.51	24.20
38	IC398216	87	163	64.60	14.74	5.52	37.00	7.65	7.26	27.16
39	IC398217	84	165	47.20	11.30	4.88	43.60	10.62	7.47	21.73
40	IC398218	67	160	42.40	8.98	4.60	33.20	8.52	7.71	14.81
41	IC398233	91	165	29.80	7.40	4.00	36.00	5.31	7.78	11.36
42	IC398237	87	163	33.60	9.56	4.96	34.40	4.69	8.00	11.11
43	IC398241	87	163	72.80	11.36	5.18	46.20	10.37	6.98	27.16
44	IC415591	65	155	59.00	10.00	4.94	42.40	10.62	7.36	16.05
45	IC415592	65	155	68.20	12.94	6.32	50.40	15.80	7.70	41.73

S. No.	Accessions No.	Quantitative characters								
		Days to flowering	Days to maturity	Plant height (cm)	Leaf length (cm)	Leaf width (cm)	Pencile length (cm)	Seed yield (q/ha)	10 ml seed weight (g)	Dry matter yield(q/ha)
46	IC423460	87	165	56.80	11.18	5.80	65.00	6.54	8.40	16.67
47	IC469674	91	165	93.40	13.64	6.86	39.60	1.85	3.64	33.33
48	IC469676	87	163	85.00	9.00	4.80	37.00	4.94	9.30	9.38
49	IC469805	60	158	27.60	10.52	5.94	35.40	15.43	6.23	29.63
50	IC523792	81	160	42.00	11.40	5.40	29.00	1.23	6.15	4.94
51	IC536655-A	97	182	82.50	10.00	5.00	32.00	0.49	5.94	41.98
52	IC536681	85	165	29.00	9.35	4.50	20.50	1.60	5.60	6.17
53	IC541206	87	163	47.50	12.75	6.35	45.50	0.74	7.29	4.94
54	IC095353	63	160	34.00	9.86	4.88	28.40	7.41	8.48	22.72
55	IC095355	80	163	49.00	11.46	5.39	40.40	10.12	8.25	19.75
56	NC058608	85	160	56.20	7.46	3.90	21.00	2.72	4.79	18.52
57	NC058609	65	155	42.80	7.00	2.54	34.80	10.37	7.83	24.69
58	NC058615	64	154	22.80	6.34	3.30	23.60	9.38	8.72	32.10
59	NC059928	65	160	14.80	3.56	1.78	14.20	0.99	7.71	3.70
	Mean for check varieties									
	Annapurna (C)	65.10	163.00	16.48	5.86	2.43	25.87	2.07	7.40	9.20
	GA-1 (C)	86.10	163.50	75.57	14.13	7.05	46.40	5.63	6.52	19.12
	GA-2 (C)	85.20	162.30	87.26	14.33	6.66	42.81	5.15	6.81	15.41
	Suvarna (C)	91.40	175.50	90.60	15.68	8.57	44.90	3.44	6.78	10.63
	Minimum	**58.00**	**134.00**	**14.80**	**3.56**	**1.78**	**14.20**	**0.49**	**3.64**	**3.70**
	Maximum	**97.00**	**182.00**	**150.00**	**17.00**	**8.57**	**65.00**	**18.77**	**9.30**	**65.43**
	Mean	**76.43**	**160.23**	**53.28**	**10.78**	**5.26**	**37.88**	**8.50**	**7.27**	**23.27**
	CD (0.05%)	**13.28**	**8.59**	**32.82**	**4.32**	**1.97**	**13.40**	**3.65**	**1.67**	**13.36**
	CV (%) error	**6.74**	**2.15**	**20.23**	**14.37**	**13.24**	**13.93**	**37.34**	**10.12**	**40.91**
	CV (%) Phenotypic	**13.41**	**4.16**	**44.86**	**25.37**	**25.04**	**21.40**	**58.49**	**14.39**	**51.77**

Table 156. Multilocation evaluation of germplasm lines in Grain Amaranth at Faizabad - Rabi 2007 (Plain)

S. No.	Accession No.	Days to flowering	Days to maturity	Plant height (cm)	No. of branches per plant	Inflorescence length (cm)	Grain yield per plant (g)
1	EC519512	41	98	77.60	69.20	7.99	10.20
2	EC519517	41	95	59.40	51.80	8.12	5.60
3	EC519520	47	90	97.20	36.40	8.20	8.40
4	EC519522	36	90	80.00	42.60	8.09	6.20
5	EC519524	43	97	113.40	75.00	8.20	12.40
6	EC519526	34	88	77.60	49.00	8.11	9.50
7	EC519527	35	100	77.20	52.80	7.99	15.00
8	EC519531	42	97	64.20	36.20	9.12	8.00
9	EC519532	40	90	70.90	31.60	7.92	10.20
10	EC519536	51	94	97.80	46.20	8.20	13.20
11	EC519542	38	88	69.77	52.00	7.80	11.50
12	EC519543	39	89	65.27	40.20	8.06	10.20
13	EC519544	52	99	72.00	40.80	8.20	12.20
14	EC519548	42	97	57.20	37.50	8.34	6.50
15	EC519549	41	88	63.20	62.30	7.92	5.40
16	EC519550	44	98	69.60	49.60	8.00	13.30
17	EC519552	45	99	80.60	44.66	8.10	9.00
18	EC519554	42	95	57.20	55.20	8.50	14.80
19	EC519557	40	85	110.40	42.00	8.00	10.50
20	EC519558	42	94	74.60	48.50	7.90	13.20
21	EC519564	38	93	77.00	38.00	8.10	10.50
22	EC519566	39	92	77.60	46.33	8.00	16.00
23	IC415214	38	95	88.40	35.00	7.70	8.20
24	IC415216	40	94	83.50	47.00	8.10	6.20
25	IC415217	42	96	81.20	46.00	7.90	12.80
26	IC415218	37	95	77.80	40.80	8.00	9.80
27	IC415268	47	85	76.00	56.00	7.60	10.00
28	IC415271	37	84	76.40	35.60	7.40	13.20
29	IC415272	37	88	93.00	46.50	7.80	12.20
30	IC415282	37	87	83.40	47.40	8.00	13.20
31	IC415284	38	86	93.80	31.40	7.90	14.00
32	IC415290	37	98	77.00	44.20	8.20	8.00
33	IC415297	39	88	56.00	36.20	7.80	10.20
34	IC415320	38	93	77.60	49.80	7.70	11.20
35	IC415331	45	88	74.23	54.40	8.40	8.00
36	IC415387	42	84	59.90	38.00	7.80	14.00
37	IC415448	41	85	68.20	39.00	8.00	12.00
38	IC415453	36	94	67.97	35.40	7.88	10.00
39	IC415462	38	91	70.70	36.40	8.00	10.12
40	IC421885	35	92	68.70	46.50	7.39	9.60
41	IC423398	39	98	65.50	40.50	7.40	8.40
42	IC423408	36	99	67.50	55.00	7.90	9.60

S. No.	Accession No.	Days to flowering	Days to maturity	Plant height (cm)	No. of branches per plant	Inflorescence length (cm)	Grain yield per plant (g)
43	IC423410	42	98	67.90	47.00	7.60	11.40
44	IC433544	38	101	60.50	54.50	7.40	10.10
	Mean for check varieties						
	Annapurna (C)	38.50	96.25	69.75	44.64	7.90	14.10
	GA-1 (C)	40.00	93.13	78.40	45.24	7.95	13.75
	GA-2 (C)	39.38	95.38	68.76	48.43	7.96	14.25
	Minimum	**34.00**	**84.00**	**56.00**	**31.40**	**7.39**	**5.40**
	Maximum	**52.00**	**101.00**	**113.40**	**75.00**	**9.12**	**16.00**
	Mean	**40.19**	**92.76**	**75.36**	**45.72**	**7.97**	**10.77**
	CD (0.05)	**12.19**	**14.51**	**37.19**	**17.37**	**0.89**	**5.74**
	CV (%) Error	**11.79**	**5.81**	**19.53**	**14.31**	**4.25**	**15.54**
	CV (%) Phenotypic	**9.48**	**5.36**	**16.70**	**19.27**	**3.83**	**25.16**

Table 157. Promising lines in rice bean germplasm (Kharif, 2007) for various characters at different locations (Plains).

S.No.	Characters	Range	Promising lines	Value of best check
Bhubaneswar (Accessions 47)				
1.	Days to 50% flowering	41.00-56.75	BRB 23, BRB 3, BRB 24, BRB 11, BRB 25, BRB 5, BRB 7-1, BRB 13, BRB 14-2, BRB 16, BRB 5, BRB 7, BRB 8-1, BRB 15, BRB 18, BRB 19, BRB 19-1, BRB 30, BRB 33, BRB 34 (< 48.00 days)	RBL 6 (55.75 days)
2.	Days to maturity	87.00-103.63	BRB 23, BRB 24, BRB 25, BRB-4-1, BRB 3, BRB 11, BRB 7-1, BRB 12, BRB 5, BRB 13, BRB 16, BRB 5, BRB 14-2, BRB 7, BRB 8-1, BRB 18, BRB 19, BRB 19-1, BRB 30, BRB 15-1, BRB 15-2, BRB 20-1, BRB 21, BRB 31, BRB 32, BRB 15, BRB 33, BRB 34, BRB -1, BRB 8-2, BRB 17, BRB 19-2, BRB 20, BRB 26, BRB 38, BRB 10 (< 97.00 days)	RBL 35 (101.38 days)
3.	Plant height (cm)	40.00-110.00	BRB 18, BRB 11, BRB 31, BRB 8, BRB 12 (> 102.38 cm)	RBL 6 (102.38 cm)
4.	Primary branches per plant	1.80-5.20	BRB -1 (> 4.63)	RBL 35 (4.63)
5.	Clusters per plant	9.93-25.20	BRB 17, BRB 15-1, BRB 16, BRB 14-2, BRB 27, BRB 15, BRB-4-1, BRB 15-2, BRB 39, BRB 33, BRB 18, BRB 26, BRB 8-1, BRB 3, BRB 12, BRB 5, BRB 31, BRB 32, BRB 19-1, BRB -1, BRB 13, BRB 7, BRB 10, BRB 21, BRB 22, BRB 8-2, BRB 8, BRB 30, BRB 34 (> 17.60)	RBL 6 (14.05)
6.	Pods per plant	19.60-54.00	BRB 14-2, BRB 27, BRB 33, BRB 15, BRB 26, BRB 8 (> 43.40)	RBL 50 (33.89)
7.	Pod length (cm)	7.00-8.80	BRB 9, BRB 32, BRB 19, BRB 20, BRB 5, BRB 39, BRB 12, BRB 20-1, BRB 31, BRB 3, BRB 15-2, BRB 18 (> 8.26 cm)	RBL 50 (8.26 cm)
8.	Seeds per pod	6.20-8.90	BRB 26, BRB 15-2, BRB 25-1, BRB 39, BRB 10, BRB 31, BRB 7, BRB 28, BRB 3, BRB 5, BRB 29, BRB 17 (> 8.00)	RBL 6 (7.43)
9.	Seed yield per plant (g)	6.78-16.06	BRB 20, BRB 22, BRB 27, BRB 15-2, BRB 33, BRB-4-1, BRB 19-2, BRB 15-1, BRB 14-2, BRB 7, BRB 15, BRB 20-1, BRB 19-1, BRB 24, BRB 30, BRB 8-2, BRB 23, BRB 31, BRB 5 (> 12.64 g)	RBL 6 (10.49 g)
10.	Seed yield (q/ha)	8.33-23.06	BRB 15-2, BRB 15-1, BRB 20, BRB 19, BRB 15, BRB 5, BRB 18, BRB 13, BRB 9, BRB 11, BRB 3, BRB 17, BRB 22 (> 15.28 q/ha)	RBL 6 (12.85 q/ha)
Hisar (Accessions 89)				
1.	Days to 50% flowering	49.00-71.00	RBH-24, RBL-488, ST-07, ST-06, ST-08, RBL-467, ST-05, RBH-03, RBL-309, RBH-28, Selection-7, RBH-23, RBL-446, RBL-464, RBL-470, RBL-485, RBL-490, ST-09, RBH-16, RBL-228, RBL-236, RBL-296, RBL-444,	RBL-50 (65.60 days)

			RBL-448, ST-01 (< 62.00 days)	
2.	Days to maturity	108.00-138.00	Selection-3, PRR-9302, RBL-488, RBH-28, RBL-452, ST-06, ST-08, ST-09, ST-12, ST-10, RBL-462, RBL-303, ST-11, RBL-485, RBL-448, ST-14, ST-07, ST-13, ST-04, RBL-447 (< 117.00 days)	RBL-50 (119.60 days)
2.	Plant height (cm)	59.60-177.30	ST-02, RBH-28, RBH-17, RBL-226, RBL-160, LRB-493, RBL-354, RBL-497, RBH-30, Selection-6, RBH-23, RBL-487, RBL-460, RBL-487, RBL-358, RBL-228, HBR-04, RBL-35-1, RBL-457 (> 141.00 cm)	RBL-1 (121.84 cm)
3.	Primary branches per plant	4.00-8.00	ST-02, RBL-160, RBL-497, RBL-457, BR-05, RBL-156, ST-15 (> 6.00)	RBL-50 (5.80)
4.	Clusters per plant	5.00-39.00	LRB-493, RBL-358, GP-08, RBL-228, RBL-497 (> 24.00)	RBL-35 (23.20)
5.	Pods per plant	34.00-154.00	LRB-493, RBL-497, GP-08, RBL-358, RBL-160, RBH-15, RBL-156, Selection-6, RBL-495, Selection-2, RBH-17, RBH-12, ST-02, LRB-03 (> 100.00)	RBL-35 (89.40)
6.	Pod length (cm)	7.20-10.60	Selection-5, RBL-303, Selection-6, RBH-12, RBH-23, RBL-493, RBL-451, ST-02, RBH-28, RBL-446, RBL-461, Selection-2, Selection-1, ST-01, RBL-488, RBL-494, RBL-99, RBL-450 (> 9.50 cm)	RBL-6 (7.60 cm)
7.	Seeds per pod	6.00-10.00	Selection-5, RBL-303, RBH-28 (> 9.00)	RBL-6 (8.40)
8.	Seed yield per plant (g)	2.90-69.80	RBL-494, Selection-6, RBL-492, RBL-228, RBH-28, RBL-457, RBL-459, RBL-449, RBL-467 (> 51.84 g)	RBL-6 (51.84 g)
9.	Seed yield per line (g)	50.00-800.00	Selection-6, RBL-228, RBH-28, RBL-494, RBL-492, RBL-457, RBL-459, RBL-449, RBL-467, RBL-358, RBL-448, RBH-23 (> 600.00 g)	RBL-35 (548.00 g)
Delhi (Accessions 117)				
1.	Days to 50% flowering	85.00-98.00	LRB-142, LRB-203, LRB-238, LRB-157, LRB-160, LRB-161, LRB-247, DRS-1, DRS-2, DRS-5, LRB-140, LRB-152, LRB-184, LRB-206, LRB-233, LRB-269 (< 88.00 days)	RBL-35 (90.64 days)
2.	Days to maturity	121.00-145.00	LRB-161, LRB-162, DPRR-59, DPRR-54, DPRR-57, RSR/AKS-7, DPRR-25, DPRR-53, DPRR-10, LRB-304, LRB-157, LRB-160, LRB-184, LRB-190, LRB-180, LRB-188, LRB-183, LRB-187 (< 134.00 days)	RBL-35 (138.73 days)
3.	Plant height (cm)	101.00-191.00	LRB-138, DPRR-54, LRB-195, LRB-272, LRB-279, LRB-241, LRB-198, LRB-266, LRB-148, LRB-223, LRB-237, LRB-262, LRB-190, LRB-163, LRB-298, LRB-247, LRB-175, LRB-140, LRB-160, LRB-290 (> 152.80 cm)	RBL-50 (147.33 cm)

4.	Primary branches per plant	2.67-11.00	LRB-185, NRB-31, DRS-5, LRB-177, LRB-184, LRB-135, LRB-141, LRB-190, LRB-195, LRB-170, DRS-3, LRB-198 (> 7.00)	RBL-35 (5.25)
5.	Pods per cluster	2.00-6.00	LRB-194, LRB-187, LRB-137, LRB-123, LRB-264, LRB-220, LRB-169, DPRR-40, LRB-233, DPRR-25, LRB-257, LRB-241, LRB-279, LRB-304, LRB-238, DPRR-54, LRB-202, LRB-175, LRB-84 (> 4.00)	RBL-35 (3.73)
6.	Pods per plant	4.50-116.80	LRB-198, LRB-196, LRB-197, LRB-239, LRB-272, DPRR-57, DPRR-40, LRB-245, LRB-195, LRB-200, LRB-183, LRB-286, LRB-242 (> 94.00)	RBL-50 (83.05)
7.	Pod length (cm)	5.10-10.28	LRB-276, LRB-286, LRB-196, LRB-275, DRS-3, LRB-301, LRB-237, LRB-290, LRB-279, LRB-238, LRB-273, LRB-185, LRB-194, LRB-183, LRB-200, LRB-187, LRB-258, LRB-205 (> 9.40 cm)	RBL-50 (8.84 cm)
8.	Seeds per pod	4.60-11.00	LRB-276, LRB-286, LRB-301, DPRR-54, LRB-273, LRB-198, LRB-241, LRB-196, LRB-279, DPRR-25, LRB-194, LRB-137, LRB-123, LRB-290, LRB-136, LRB-258, LRB-120, LRB-141-1, LRB-139, LRB-304, LRB-187, LRB-72-1, LRB-142, LRB-237, LRB-200, LRB-168 (> 9.00)	RBL-50 (8.93)
9.	100 seed weight (g)	3.50-9.00	LRB-245, LRB-262, LRB-200, DRS-6, DPRR-40, LRB-230, LRB-298, LRB-301, LRB-290, LRB-139, LRB-202, LRB-239, LRB-271, LRB-283, LRB-300, LRB-272, LRB-242, LRB-172, LRB-278, LRB-260, LRB-266 (> 6.50 g)	RBL-35 (6.41 g)
10.	Seed yield per plant (g)	5.00-25.00	LRB-202, DPRR-54, LRB-273, DPRR-40, LRB-236, LRB-237, LRB-200, RSR/AKS-7, LRB-198 (> 20.00 g)	RBL-50 (19.91 g)
11.	Seed yield (q/ha)	0.74-10.09	DPRR-54, LRB-202, LRB-273, DPRR-40, LRB-237, LRB-200, LRB-198, LRB-281, LRB-236 (> 8.05 q/ha)	RBL-50 (8.05 q/ha)
12.	Dry matter yield per plant (g)	45.00-320.00	LRB-257, LRB-254, LRB-220, NRB-31, LRB-242, LRB-248, NRB-27, LRB-243, DRS-4, LRB-265, DRS-2, LRB-273, LRB-241, LRB-244 (> 220.00 g)	RBL-50 (192.09 g)
13.	Dry matter yield (q/ha)	0.02-0.36	LRB-301, DRS-4, NRB-31, DRS-2, LRB-242, LRB-257, DRS-1, LRB-254, NRB-27, LRB-241, DRS-3, LRB-214, LRB-205, LRB-215, LRB-273, DRS-6 (> 0.06 q/ha)	RBL-50 (0.06 q/ha)

Table 158. Multilocation evaluation of germplasm lines in rice bean at Bhubaneswar - 2007 (Plains)

S. No.	Genotype	Days to 50% flowering	Days to maturity	Plant height (cm)	Branches per plant	Clusters per plant	Pods per plant	Pod length (cm)	Seeds per pod	100 seed weight (g)	Seed yield/plant (g)	Seed yield (q/ha)
1	BRB -1	48	96	73.0	5.2	19.0	40.0	8.1	7.6	4.88	11.00	9.72
2	BRB 5	47	94	98.0	3.0	17.4	32.0	7.6	7.3	4.95	12.79	12.50
3	BRB 3	42	93	98.0	3.8	20.4	19.6	8.4	8.3	5.94	11.62	19.44
4	BRB-4-1	48	91	94.0	3.8	22.6	39.0	8.2	7.3	4.82	15.13	15.28
5	BRB 5	45	94	93.4	4.0	20.0	38.4	8.5	8.2	5.58	12.54	20.83
6	BRB 7	47	95	92.0	3.0	19.0	41.2	8.2	8.4	4.75	14.27	15.28
7	BRB 7-1	45	93	78.0	3.4	17.6	39.8	7.9	7.6	5.01	11.48	12.50
8	BRB 8	48	97	104.0	3.6	18.4	44.4	8.2	7.6	4.72	11.65	15.28
9	BRB 8-1	47	95	96.0	4.2	20.4	41.0	8.2	8.0	5.15	12.43	12.50
10	BRB 8-2	48	96	101.0	4.4	18.6	38.4	8.0	8.0	5.33	13.22	15.28
11	BRB 9	49	97	70.0	3.4	16.8	34.4	8.8	7.6	5.50	10.35	20.28
12	BRB 10	50	96	80.6	3.2	18.8	41.2	8.0	8.5	5.19	11.16	11.67
13	BRB 11	44	93	104.0	3.6	17.2	38.8	8.2	7.4	6.18	12.38	19.72
14	BRB 12	55	93	103.0	3.2	20.2	42.4	8.4	7.8	5.09	8.88	15.28
15	BRB 13	45	94	87.0	3.6	19.0	39.6	7.6	6.2	4.98	10.62	20.28
16	BRB 14-2	46	95	98.0	4.4	23.8	54.0	8.2	7.7	4.74	14.41	13.89
17	BRB 15	47	96	84.0	3.6	23.4	47.6	8.2	7.5	6.52	14.04	21.39
18	BRB 15-1	48	95	87.0	3.2	24.8	32.8	8.1	7.8	5.71	14.85	22.50
19	BRB 15-2	48	95	85.0	4.0	22.4	36.6	8.3	8.7	6.21	15.80	23.06
20	BRB 16	46	94	82.4	3.4	24.6	33.6	7.8	7.2	5.80	9.38	15.28
21	BRB 17	48	96	75.0	3.6	25.2	31.6	8.1	8.1	5.78	8.33	19.44
22	BRB 18	47	95	110.0	3.8	21.2	35.8	8.3	7.7	6.27	11.23	20.28
23	BRB 19	47	95	85.6	4.0	13.0	36.6	8.6	7.8	5.53	10.76	22.22
24	BRB 19-1	47	95	90.0	3.0	19.2	33.4	8.1	8.0	5.24	13.73	11.67
25	BRB 19-2	48	96	99.0	4.0	16.4	34.4	7.9	7.9	5.59	14.99	9.72
26	BRB 20	48	96	69.0	2.8	15.2	39.4	8.5	8.0	5.90	16.06	22.22
27	BRB 20-1	48	95	93.0	4.0	16.8	38.4	8.4	7.5	5.87	13.75	11.67
28	BRB 21	48	95	40.0	2.6	18.8	33.8	7.8	7.6	5.65	12.64	11.39
29	BRB 22	49	97	75.0	2.4	18.8	35.0	7.5	7.8	5.54	16.03	17.22
30	BRB 23	41	87	51.6	2.4	13.2	37.6	7.8	7.9	5.88	13.07	14.17
31	BRB 24	42	88	42.2	1.8	15.0	39.0	8.2	7.7	6.93	13.42	12.50
32	BRB 25	44	89	43.6	1.8	16.4	24.2	8.2	7.6	5.71	9.85	14.17
33	BRB 25-1	48	97	74.0	2.2	16.4	30.6	7.8	8.6	5.71	9.47	12.50
34	BRB 26	48	96	79.0	2.8	21.0	47.4	7.6	8.9	5.54	12.17	9.72
35	BRB 27	50	98	94.0	4.2	23.4	53.8	7.9	7.8	5.51	15.81	13.89
36	BRB 28	48	97	83.0	4.0	15.6	38.4	7.0	8.4	5.70	9.12	11.11
37	BRB 29	49	97	80.6	2.8	17.0	43.4	7.2	8.2	5.69	10.77	15.28
38	BRB 30	47	95	96.0	4.0	18.2	39.0	7.8	7.0	5.66	13.42	15.28
39	BRB 31	48	95	104.0	3.6	19.6	34.8	8.4	8.4	5.68	12.85	13.89
40	BRB 32	48	95	89.0	3.4	19.2	42.4	8.6	7.6	5.78	12.18	9.72
41	BRB 33	47	96	102.0	4.4	21.8	50.6	7.9	7.8	5.47	15.75	8.61
42	BRB 34	47	96	95.4	4.0	18.2	39.2	7.8	7.6	6.05	12.12	13.89
43	BRB 35	49	97	86.0	3.0	12.8	30.0	8.0	7.9	5.79	10.70	13.89
44	BRB 36	50	98	81.0	3.0	16.0	29.6	7.6	7.0	5.54	9.39	9.72
45	BRB 37	50	98	100.4	3.0	14.4	31.0	7.4	7.5	5.75	9.77	8.33

S. No.	Genotype	Days to 50% flowering	Days to maturity	Plant height (cm)	Branches per plant	Clusters per plant	Pods per plant	Pod length (cm)	Seeds per pod	100 seed weight (g)	Seed yield/plant (g)	Seed yield (q/ha)
46	BRB 38	48	96	87.0	3.4	14.2	33.4	8.2	7.8	5.56	8.97	9.72
47	BRB 39	54	103	90.0	3.4	22.2	34.2	8.5	8.5	5.40	6.78	9.72
	Mean for check varieties											
	RBL 1(C)	56.75	102.88	94.38	2.75	9.93	33.30	7.84	7.09	6.09	8.50	11.22
	RBL 6 (C)	55.75	101.50	102.38	3.31	14.05	30.54	7.89	7.43	6.14	10.49	12.85
	RBL 35 (C)	56.00	101.38	89.90	4.63	12.03	31.88	8.05	6.91	6.98	9.88	9.93
	RBL 50 (C)	56.25	103.63	99.94	3.46	11.10	33.89	8.26	7.21	5.43	9.06	10.97
	Minimum	**41.00**	**87.00**	**40.00**	**1.80**	**9.93**	**19.60**	**7.00**	**6.20**	**4.72**	**6.78**	**8.33**
	Maximum	**56.75**	**103.63**	**110.00**	**5.20**	**25.20**	**54.00**	**8.80**	**8.90**	**6.98**	**16.06**	**23.06**
	Mean	**48.15**	**95.67**	**86.48**	**3.44**	**18.25**	**37.28**	**8.04**	**7.76**	**5.62**	**11.94**	**14.49**
	CD (0.05)	**2.75**	**5.07**	**7.51**	**0.97**	**3.61**	**10.49**	**0.61**	**0.99**	**0.83**	**2.17**	**2.78**
	CV (%) Error	**1.99**	**2.01**	**3.15**	**11.12**	**12.41**	**13.12**	**3.11**	**5.62**	**5.45**	**9.30**	**10.02**
	CV (%) Phenotypic	**7.02**	**3.34**	**18.36**	**20.26**	**19.90**	**17.49**	**4.51**	**6.51**	**8.88**	**19.47**	**28.95**

Table 159. Multilocation evaluation of germplasm lines in rice bean at Hisar - 2007 (Plains)

S. No.	Genotype	Days to 50% flowering	Days to maturity	Plant height (cm)	Branches/plant	Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	Seed yield/plant (g)	Seed yield/line (g)
1	BR-05	66.00	136.00	135.60	7.00	18.00	96.00	9.00	8.00	31.40	500.00
2	GP-08	63.00	122.00	113.30	4.00	27.00	133.00	9.00	7.00	10.10	100.00
3	HBR-04	70.00	131.00	144.60	5.00	20.00	89.00	9.20	8.00	18.70	400.00
4	LRB-03	62.00	131.00	131.60	5.00	15.00	103.00	8.50	8.00	41.40	600.00
5	LRB-493	67.00	119.00	154.30	6.00	39.00	154.00	9.30	8.00	25.20	250.00
6	PRR-9302	66.00	109.00	88.60	4.00	5.00	36.00	8.20	7.00	20.10	490.00
7	RBH-03	57.00	124.00	69.60	4.00	6.00	55.00	8.20	7.00	6.00	50.00
8	RBH-12	67.00	137.00	115.60	6.00	12.00	104.00	10.50	9.00	20.80	300.00
9	RBH-15	62.00	138.00	94.00	4.00	11.00	119.00	8.50	8.00	19.40	300.00
10	RBH-16	61.00	120.00	128.00	5.00	9.00	64.00	9.20	8.00	30.20	400.00
11	RBH-17	69.00	137.00	169.60	6.00	13.00	106.00	8.80	8.00	30.90	500.00
12	RBH-23	60.00	130.00	149.00	5.00	13.00	87.00	10.50	9.00	41.20	650.00
13	RBH-24	49.00	123.00	86.60	4.00	8.00	62.00	9.50	9.00	4.50	50.00
14	RBH-28	59.00	112.00	175.30	5.00	12.00	88.00	10.20	10.00	65.40	800.00
15	RBH-30	68.00	135.00	149.30	4.00	8.00	76.00	9.20	8.00	39.90	550.00
16	RBL-02	65.00	126.00	133.00	6.00	17.00	88.00	9.30	8.00	13.90	250.00
17	RBL-35-1	63.00	120.00	144.00	4.00	16.00	91.00	8.30	7.00	45.40	600.00
18	RBL-99	64.00	119.00	110.30	4.00	11.00	76.00	9.60	8.00	15.10	250.00
19	RBL-126	64.00	119.00	112.00	5.00	9.00	80.00	9.20	8.00	15.40	400.00
20	RBL-129	68.00	130.00	141.00	4.00	13.00	89.00	9.50	9.00	29.80	500.00
21	RBL-156	66.00	132.00	124.60	7.00	19.00	117.00	9.20	8.00	18.00	250.00
22	RBL-160	63.00	131.00	155.00	7.00	21.00	122.00	9.20	8.00	30.80	300.00
23	RBL-216	68.00	133.00	121.60	5.00	6.00	60.00	9.20	9.00	33.20	600.00
24	RBL-226	64.00	124.00	156.00	5.00	11.00	62.00	7.20	7.00	10.80	200.00
25	RBL-228	61.00	130.00	145.00	6.00	26.00	89.00	9.00	7.00	67.40	800.00
26	RBL-236	61.00	132.00	127.60	5.00	9.00	73.00	9.20	8.00	33.90	520.00
27	RBL-296	61.00	117.00	117.00	5.00	8.00	56.00	8.50	7.00	39.10	500.00
28	RBL-297	67.00	124.00	125.00	5.00	8.00	66.00	9.20	8.00	14.10	200.00
29	RBL-303	67.00	114.00	125.60	6.00	10.00	53.00	10.60	10.00	17.20	200.00
30	RBL-309	58.00	128.00	138.60	6.00	15.00	83.00	8.30	7.00	21.90	350.00
31	RBL-354	63.00	127.00	153.30	5.00	11.00	78.00	9.30	8.00	30.50	500.00
32	RBL-358	64.00	137.00	145.30	6.00	28.00	123.00	8.80	8.00	49.60	700.00
33	RBL-444	61.00	122.00	116.30	6.00	7.00	72.00	9.30	8.00	12.50	250.00
34	RBL-446	60.00	130.00	119.60	4.00	9.00	67.00	10.20	9.00	45.10	600.00
35	RBL-447	71.00	116.00	94.30	4.00	9.00	56.00	8.60	7.00	11.80	200.00
36	RBL-448	61.00	115.00	116.30	5.00	6.00	56.00	9.20	8.00	45.40	650.00
37	RBL-449	67.00	134.00	107.60	5.00	7.00	47.00	9.50	8.00	61.40	700.00
38	RBL-450	63.00	129.00	122.30	6.00	9.00	61.00	9.60	9.00	21.90	390.00
39	RBL-451	67.00	127.00	117.60	4.00	13.00	89.00	10.30	9.00	45.00	600.00
40	RBL-452	68.00	113.00	96.00	4.00	7.00	51.00	8.00	7.00	10.80	250.00
41	RBL-453	65.00	119.00	99.30	5.00	16.00	99.00	8.80	7.00	8.40	100.00
42	RBL-457	69.00	124.00	143.00	7.00	19.00	100.00	9.50	8.00	65.40	700.00
43	RBL-458	70.00	129.00	70.30	4.00	7.00	35.00	9.50	8.00	22.40	370.00
44	RBL-459	64.00	129.00	133.00	4.00	11.00	81.00	9.00	8.00	65.40	700.00
45	RBL-460	67.00	126.00	147.00	5.00	7.00	53.00	9.00	7.00	35.10	600.00
46	RBL-461	65.00	133.00	124.00	4.00	5.00	42.00	10.20	9.00	38.90	400.00
47	RBL-462	66.00	114.00	100.60	4.00	8.00	55.00	9.50	8.00	11.90	200.00
48	RBL-463	67.00	117.00	110.30	6.00	8.00	64.00	9.20	8.00	20.90	300.00

S. No.	Genotype	Days to 50% flowering	Days to maturity	Plant height (cm)	Branches/plant	Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	Seed yield/plant (g)	Seed yield/line (g)
49	RBL-464	60.00	117.00	117.00	4.00	7.00	42.00	8.20	7.00	13.90	250.00
50	RBL-465	68.00	136.00	106.30	5.00	9.00	63.00	8.80	8.00	13.40	350.00
51	RBL-467	56.00	137.00	123.30	4.00	11.00	66.00	9.20	8.00	55.00	700.00
52	RBL-470	60.00	124.00	119.30	4.00	8.00	64.00	9.20	8.00	19.80	300.00
53	RBL-474	66.00	135.00	89.00	4.00	8.00	49.00	8.80	8.00	21.40	350.00
54	RBL-478	64.00	119.00	124.00	5.00	12.00	92.00	9.20	8.00	22.90	400.00
55	RBL-482	68.00	134.00	80.30	4.00	7.00	58.00	9.50	8.00	20.10	550.00
56	RBL-485	60.00	115.00	138.60	4.00	17.00	84.00	7.80	7.00	21.10	250.00
57	RBL-486	62.00	130.00	70.00	6.00	7.00	53.00	8.20	7.00	3.80	50.00
58	RBL-487	68.00	132.00	148.00	4.00	5.00	34.00	8.80	8.00	30.10	500.00
59	RBL-487	67.00	129.00	146.30	5.00	12.00	83.00	9.20	8.00	22.10	300.00
60	RBL-488	51.00	110.00	108.60	5.00	11.00	58.00	9.80	9.00	35.10	500.00
61	RBL-490	60.00	124.00	132.00	6.00	18.00	76.00	8.80	8.00	33.00	430.00
62	RBL-492	68.00	137.00	128.60	5.00	8.00	60.00	9.20	8.00	67.90	700.00
63	RBL-493	68.00	138.00	116.00	6.00	11.00	71.00	10.50	9.00	15.20	250.00
64	RBL-494	63.00	133.00	124.00	5.00	16.00	80.00	9.60	9.00	69.80	700.00
65	RBL-495	68.00	135.00	139.60	4.00	7.00	41.00	9.50	8.00	21.40	400.00
66	RBL-495	63.00	124.00	118.00	5.00	18.00	107.00	8.80	8.00	43.20	600.00
67	RBL-497	69.00	127.00	152.30	7.00	25.00	138.00	8.50	7.00	45.40	600.00
68	Selection-1	69.00	126.00	130.30	5.00	15.00	79.00	9.90	9.00	33.40	600.00
69	Selection-2	64.00	121.00	130.30	5.00	15.00	107.00	10.00	9.00	25.40	350.00
70	Selection-3	67.00	108.00	59.60	4.00	7.00	46.00	7.80	7.00	7.30	150.00
71	Selection-4	66.00	124.00	138.00	5.00	9.00	60.00	8.20	8.00	3.50	50.00
72	Selection-5	67.00	131.00	131.30	5.00	14.00	61.00	10.60	10.00	25.90	400.00
73	Selection-6	68.00	136.00	149.30	5.00	15.00	108.00	10.50	9.00	69.50	800.00
74	Selection-7	59.00	124.00	117.30	5.00	6.00	49.00	8.20	7.00	20.10	300.00
75	ST-01	61.00	132.00	117.00	5.00	13.00	76.00	9.80	8.00	14.10	400.00
76	ST-02	67.00	133.00	177.30	8.00	24.00	103.00	10.20	9.00	13.00	300.00
77	ST-03	63.00	117.00	108.00	4.00	9.00	53.00	9.20	8.00	9.40	200.00
78	ST-04	67.00	116.00	102.30	5.00	9.00	62.00	8.30	7.00	11.70	350.00
79	ST-05	56.00	118.00	100.00	4.00	10.00	55.00	9.20	8.00	5.50	100.00
80	ST-06	53.00	114.00	115.30	5.00	7.00	46.00	9.00	8.00	3.40	50.00
81	ST-07	51.00	116.00	99.30	4.00	7.00	46.00	8.20	7.00	19.90	300.00
82	ST-08	53.00	114.00	109.30	6.00	10.00	56.00	7.50	6.00	4.50	100.00
83	ST-09	60.00	114.00	106.30	5.00	10.00	51.00	9.20	8.00	2.90	50.00
84	ST-10	63.00	114.00	90.00	4.00	7.00	45.00	7.20	6.00	3.10	50.00
85	ST-11	67.00	114.00	85.00	6.00	7.00	43.00	8.20	7.00	7.20	150.00
86	ST-12	62.00	114.00	97.60	5.00	9.00	57.00	8.50	7.00	15.40	210.00
87	ST-13	66.00	116.00	123.00	5.00	8.00	58.00	8.60	7.00	4.20	50.00
88	ST-14	62.00	115.00	117.30	5.00	10.00	70.00	8.80	8.00	13.90	250.00
89	ST-15	65.00	117.00	124.00	7.00	17.00	58.00	8.60	8.00	5.80	100.00
	Mean for check vareities										
	RBL-1 (C)	67.00	127.40	121.84	5.00	18.20	72.20	7.26	7.80	37.22	468.40
	RBL-35 (C)	68.20	121.00	118.12	5.40	23.20	89.40	7.22	8.00	47.92	548.00
	RBL-6 (C)	65.80	125.80	119.24	4.80	17.00	62.40	7.60	8.40	51.84	542.00
	RBL-50 (C)	65.60	119.60	121.40	5.80	19.20	78.40	7.20	8.20	34.08	412.00
	Minimum	**49.00**	**108.00**	**59.60**	**4.00**	**5.00**	**34.00**	**7.20**	**6.00**	**2.90**	**50.00**
	Maximum	**71.00**	**138.00**	**177.30**	**8.00**	**39.00**	**154.00**	**10.60**	**10.00**	**69.80**	**800.00**
	Mean	**63.82**	**124.60**	**121.37**	**5.02**	**12.20**	**73.29**	**9.00**	**7.95**	**26.65**	**382.05**
	CD (0.05)	**9.22**	**17.96**	**20.61**	**1.60**	**10.54**	**29.62**	**3.31**	**1.64**	**38.32**	**376.80**
	CV (%) error	**5.18**	**5.45**	**6.43**	**11.40**	**20.35**	**14.68**	**16.93**	**7.56**	**33.56**	**28.65**
	CV (%) Phenotypic	**8.53**	**5.52**	**17.97**	**23.49**	**50.02**	**43.54**	**8.84**	**11.04**	**60.33**	**106.54**

Table 160. Multilocation evaluation of germplasm lines in rice bean at Delhi - 2007 (Plains)

S. No.	Accessions	Days to 50% flowering	No. of parimary branches/plant	Days to 80% maturity	Plant height (cm)	Pods/plant	Pod /cluster	Pod length (cm)	Seed yield /plant(g)	Seed yield (q/ha)	No.of seed/ pod	100 seed weight (g)	Dry matter yield / plant (g)	Dry matter yield (q/ha)
1	DPRR-10	95.00	4.40	129.00	122.60	62.20	3.00	6.70	16.00	5.83	6.60	4.00	190.00	0.04
2	DPRR-25	95.00	4.60	129.00	135.00	88.80	5.00	8.60	13.00	6.11	10.00	4.00	125.00	0.03
3	DPRR-40	97.00	6.00	137.00	118.40	101.00	5.00	7.18	24.00	8.70	8.80	7.50	140.00	0.03
4	DPRR-53	97.00	4.60	129.00	141.80	70.60	4.00	8.04	14.00	6.67	8.00	5.00	185.00	0.04
5	DPRR-54	95.00	5.80	129.00	171.80	68.60	5.00	8.50	25.00	10.09	10.00	4.00	150.00	0.04
6	DPRR-57	91.00	5.00	129.00	120.00	102.00	4.00	6.90	17.00	6.57	8.40	4.00	100.00	0.04
7	DPRR-59	93.00	6.00	129.00	107.00	60.80	4.00	8.40	18.00	6.85	8.00	4.00	180.00	0.05
8	DRS-1	87.00	5.00	-	111.80	22.60	2.00	7.36	-	-	5.40	-	160.00	0.07
9	DRS-2	87.00	6.80	-	121.80	12.00	2.40	6.72	-	-	5.00	-	230.00	0.08
10	DRS-3	89.00	7.40	-	143.20	29.20	3.00	9.86	-	-	6.80	-	210.00	0.07
11	DRS-4	89.00	5.20	-	107.60	10.20	3.00	6.16	-	-	4.60	-	240.00	0.09
12	DRS-5	87.00	8.40	-	134.20	19.00	3.00	5.90	-	-	-	-	-	0.06
13	DRS-6	98.00	5.20	142.00	140.80	83.60	4.00	9.28	8.00	2.59	9.00	7.50	180.00	0.07
14	LRB-120	96.00	5.80	134.00	115.80	61.00	3.80	9.28	11.00	4.44	10.00	5.00	100.00	0.05
15	LRB-123	90.00	3.60	134.00	125.40	35.40	5.60	9.34	12.00	4.63	10.00	6.00	90.00	0.05
16	LRB-131	92.00	5.20	134.00	140.60	78.40	3.60	8.50	7.00	2.22	8.60	6.00	65.00	0.04
17	LRB-135	97.00	8.20	134.00	111.60	43.40	3.80	7.40	6.00	2.31	8.00	6.00	60.00	0.04
18	LRB-136	94.00	5.00	134.00	115.00	63.80	3.80	9.28	11.20	4.44	10.00	4.50	100.00	0.05
19	LRB-137	92.00	6.80	134.00	128.80	39.80	5.60	9.34	12.00	4.63	10.00	4.00	90.00	0.05
20	LRB-138	88.00	6.20	134.00	191.00	41.40	3.80	7.40	6.00	2.31	8.00	4.50	60.00	0.04
21	LRB-139	94.00	6.40	134.00	136.00	78.20	3.60	9.32	5.00	1.85	10.00	7.00	85.00	0.04
22	LRB-140	87.00	6.00	134.00	155.80	37.20	3.00	7.50	7.00	2.96	8.00	4.50	110.00	0.05
23	LRB-141	93.00	8.00	134.00	127.80	51.20	3.60	8.58	6.00	2.22	8.80	6.00	130.00	0.05
24	LRB-141-1	92.00	5.40	134.00	137.80	26.60	3.60	8.40	10.00	3.70	10.00	4.50	50.00	0.03
25	LRB-142	85.00	5.20	134.00	119.20	63.60	3.80	9.32	7.00	2.59	9.40	6.00	80.00	0.04
26	LRB-148	89.00	3.00	134.00	159.80	71.80	3.40	8.44	10.00	4.44	9.00	5.00	120.00	0.03
27	LRB-152	87.00	4.00	134.00	152.80	36.80	3.60	9.36	5.00	1.85	8.80	4.00	125.00	0.03

S. No.	Accessions	Days to 50% flowering	No. of parimary branches/plant	Days to 80% maturity	Plant height (cm)	Pods/plant	Pod /cluster	Pod length (cm)	Seed yield /plant(g)	Seed yield (q/ha)	No.of seed/ pod	100 seed weight (g)	Dry matter yield / plant (g)	Dry matter yield (q/ha)
28	LRB-157	86.00	4.20	131.00	138.40	39.40	3.00	8.32	6.00	2.04	9.00	4.50	75.00	0.03
29	LRB-160	86.00	2.67	131.00	154.33	34.33	2.00	7.27	12.00	0.74	7.00	6.00	60.00	0.03
30	LRB-161	86.00	5.00	121.00	115.00	15.00	2.00	8.50	10.00	-	8.00	-	160.00	-
31	LRB-162	96.00	3.50	121.00	109.50	22.50	2.00	7.35	18.00	0.74	7.50	-	160.00	0.06
32	LRB-163	89.00	5.60	134.00	157.20	63.20	4.00	8.58	10.00	3.89	8.00	4.50	70.00	0.03
33	LRB-164	88.00	3.80	134.00	121.80	55.20	3.00	8.60	12.00	2.59	7.80	6.00	105.00	0.02
34	LRB-166	89.00	4.20	134.00	128.40	69.20	3.00	9.04	15.00	5.19	9.00	5.00	125.00	0.03
35	LRB-168	91.00	3.00	134.00	139.20	43.00	4.00	9.32	11.00	4.44	9.20	5.00	135.00	0.03
36	LRB-169	92.00	3.80	134.00	108.40	56.60	5.20	9.16	15.00	5.93	7.40	5.50	90.00	0.05
37	LRB-170	94.00	7.60	134.00	126.80	66.80	3.00	9.40	12.00	4.81	8.00	5.00	80.00	0.04
38	LRB-172	91.00	6.00	136.00	143.20	85.80	3.00	7.50	15.00	5.56	8.00	7.00	100.00	0.05
39	LRB-173	92.00	3.80	136.00	127.40	55.00	4.00	8.40	16.00	5.74	9.00	5.00	90.00	0.03
40	LRB-174	93.00	4.80	134.00	121.60	54.60	3.00	8.32	11.00	4.35	8.00	5.50	80.00	0.03
41	LRB-175	95.00	6.60	134.00	156.40	54.20	5.00	8.41	12.00	4.35	7.20	6.00	140.00	0.04
42	LRB-177	88.00	8.40	134.00	114.00	71.80	3.00	7.46	8.00	3.33	8.00	4.50	170.00	0.04
43	LRB-180	91.00	7.00	132.00	141.80	60.80	2.00	8.28	13.00	4.81	8.00	5.50	65.00	0.03
44	LRB-183	93.00	5.20	132.00	118.20	97.20	4.00	9.50	10.00	4.04	9.00	5.50	70.00	0.03
45	LRB-184	87.00	8.20	132.00	134.00	72.60	3.00	8.28	10.00	4.63	8.00	5.00	75.00	0.04
46	LRB-185	93.00	11.00	134.00	144.00	55.80	3.00	9.58	10.00	3.89	9.00	5.00	75.00	0.04
47	LRB-186	94.00	3.20	134.00	134.60	42.80	2.00	7.50	11.00	4.07	9.00	4.00	110.00	0.04
48	LRB-187	94.00	4.80	132.00	141.80	64.40	6.00	9.46	13.00	5.19	9.60	4.00	90.00	0.03
49	LRB-188	92.00	5.80	132.00	124.20	45.00	2.00	8.28	8.00	3.15	7.40	4.50	65.00	0.04
50	LRB-189	96.00	3.20	134.00	148.60	34.60	2.00	7.40	7.00	2.59	7.00	4.00	80.00	0.03
51	LRB-190	91.00	7.80	132.00	157.40	72.80	4.00	8.28	9.00	3.24	9.00	4.00	110.00	0.02
52	LRB-193	96.00	5.60	135.00	137.00	77.80	3.00	9.36	15.00	5.19	9.00	6.00	100.00	0.04
53	LRB-194	92.00	4.80	135.00	136.00	71.80	6.00	9.54	13.00	4.81	10.00	5.50	90.00	0.04
54	LRB-195	94.00	7.80	135.00	166.40	99.40	4.00	9.28	20.00	7.78	9.00	6.00	150.00	0.06
55	LRB-196	93.00	6.80	135.00	138.20	114.20	4.00	10.04	18.00	7.41	10.00	6.50	125.00	0.05
56	LRB-197	94.00	5.80	135.00	130.60	108.80	3.00	7.40	15.00	5.56	7.00	5.50	100.00	0.04
57	LRB-198	90.00	7.40	135.00	162.20	116.80	4.00	8.74	21.00	8.52	10.00	6.00	140.00	0.06

S. No.	Accessions	Days to 50% flowering	No. of parimary branches/plant	Days to 80% maturity	Plant height (cm)	Pods/plant	Pod /cluster	Pod length (cm)	Seed yield /plant(g)	Seed yield (q/ha)	No.of seed/ pod	100 seed weight (g)	Dry matter yield / plant (g)	Dry matter yield (q/ha)
58	LRB-200	89.00	6.40	135.00	145.80	97.80	4.00	9.48	22.00	8.52	9.20	7.50	130.00	0.05
59	LRB-202	91.00	4.80	135.00	125.20	63.20	5.00	8.78	25.00	9.44	9.00	7.00	130.00	0.06
60	LRB-203	85.00	5.80	135.00	147.40	94.00	4.00	7.58	18.00	7.04	7.20	5.50	85.00	0.03
61	LRB-205	95.00	6.80	145.00	132.80	84.40	3.00	9.42	11.00	3.98	8.80	6.00	100.00	0.07
62	LRB-206	87.00	4.80	135.00	141.60	80.80	3.00	8.46	15.00	5.93	8.00	5.50	90.00	0.03
63	LRB-214	97.00	3.80	145.00	149.20	66.40	4.00	7.53	8.00	3.33	8.00	6.00	150.00	0.07
64	LRB-215	91.00	5.60	145.00	117.60	57.20	4.00	9.40	9.00	3.70	9.00	6.50	125.00	0.07
65	LRB-217	89.00	7.00	135.00	138.40	78.80	4.00	8.46	15.00	5.74	8.00	6.00	60.00	0.03
66	LRB-218	95.00	4.60	135.00	127.60	66.20	3.00	8.98	12.00	4.17	8.00	6.00	75.00	0.05
67	LRB-220	94.00	5.00	135.00	152.80	61.20	5.40	7.48	13.00	5.09	7.00	5.00	275.00	0.03
68	LRB-223	93.00	5.60	135.00	158.00	68.60	4.00	8.40	12.00	4.72	8.00	6.50	55.00	0.02
69	LRB-228	95.00	3.60	135.00	134.80	45.40	2.00	9.40	8.00	3.52	9.00	4.50	45.00	0.02
70	LRB-229	90.00	4.60	135.00	138.60	50.80	3.00	8.35	8.00	3.33	8.00	5.00	50.00	0.02
71	LRB-230	91.00	6.40	135.00	125.80	76.20	3.00	9.28	10.00	3.61	8.60	7.50	80.00	0.03
72	LRB-232	88.00	5.60	145.00	136.20	72.60	3.00	9.28	16.00	5.74	8.40	6.00	170.00	0.04
73	LRB-233	87.00	4.40	145.00	147.80	92.20	5.00	8.72	10.00	3.98	8.00	5.00	175.00	0.04
74	LRB-234	90.00	2.80	145.00	128.40	38.00	3.00	7.60	20.00	7.78	7.40	4.00	130.00	0.04
75	LRB-236	91.00	5.00	145.00	141.00	90.40	4.00	8.28	23.00	8.15	9.00	3.50	180.00	0.05
76	LRB-237	94.00	6.20	145.00	158.00	74.60	4.00	9.72	22.00	8.52	9.20	4.00	150.00	0.04
77	LRB-238	85.00	5.00	145.00	117.80	70.00	5.00	9.58	13.00	5.19	9.00	6.50	210.00	0.06
78	LRB-239	96.00	4.20	145.00	127.60	104.40	3.00	8.92	19.00	7.41	9.00	7.00	205.00	0.06
79	LRB-241	92.00	3.60	145.00	162.80	82.60	5.00	9.28	20.00	7.59	10.00	5.50	230.00	0.07
80	LRB-242	93.00	5.20	145.00	137.40	96.60	3.00	8.28	17.00	6.67	8.00	7.00	260.00	0.08
81	LRB-243	97.00	3.00	145.00	147.40	38.40	3.00	7.50	18.00	6.67	7.20	6.50	250.00	0.06
82	LRB-244	98.00	4.00	145.00	124.00	66.20	3.00	7.08	10.00	4.07	8.00	3.50	225.00	0.04
83	LRB-245	92.00	5.20	145.00	142.80	99.60	3.00	8.40	15.00	5.93	8.00	9.00	210.00	0.05
84	LRB-247	86.00	4.80	145.00	156.60	82.00	4.00	7.18	15.00	5.56	7.00	6.50	220.00	0.06
85	LRB-248	94.00	4.20	145.00	147.80	66.40	3.00	7.64	15.00	3.89	8.00	6.50	260.00	0.04
86	LRB-254	95.00	5.00	145.00	126.60	66.00	4.00	8.28	15.00	4.26	9.00	6.50	280.00	0.07
87	LRB-257	96.00	6.20	145.00	135.40	88.00	5.00	7.52	17.00	6.11	8.00	5.50	320.00	0.08

S. No.	Accessions	Days to 50% flowering	No. of parimary branches/plant	Days to 80% maturity	Plant height (cm)	Pods/plant	Pod /cluster	Pod length (cm)	Seed yield /plant(g)	Seed yield (q/ha)	No.of seed/ pod	100 seed weight (g)	Dry matter yield / plant (g)	Dry matter yield (q/ha)
88	LRB-258	94.00	4.20	145.00	128.00	82.20	3.00	9.46	11.00	4.44	10.00	6.00	160.00	0.04
89	LRB-260	89.00	5.80	142.00	116.40	58.80	3.00	6.92	9.00	3.52	7.40	7.00	210.00	0.05
90	LRB-262	91.00	3.40	145.00	157.80	67.80	3.00	6.96	6.00	2.13	7.60	9.00	220.00	0.06
91	LRB-263	90.00	6.60	145.00	132.00	43.20	3.00	9.28	8.00	3.33	9.00	5.50	200.00	0.04
92	LRB-264	93.00	3.20	141.00	134.60	66.40	5.40	7.08	13.00	4.91	8.00	6.00	160.00	0.04
93	LRB-265	92.00	6.60	141.00	146.20	92.20	4.00	8.46	15.00	5.93	9.00	6.50	240.00	0.05
94	LRB-266	92.00	4.20	141.00	161.20	47.60	3.00	7.80	14.00	5.00	7.20	7.00	150.00	0.04
95	LRB-269	87.00	4.00	135.00	132.60	68.80	3.00	6.76	16.00	5.74	7.00	6.50	170.00	0.04
96	LRB-270	97.00	3.00	135.00	141.00	51.00	2.00	7.28	17.00	6.20	8.00	6.00	200.00	0.05
97	LRB-271	91.00	5.20	141.00	152.80	74.20	4.00	9.16	16.00	5.74	9.00	7.00	220.00	0.06
98	LRB-272	93.00	6.40	141.00	166.40	103.20	3.00	8.28	19.00	7.22	8.00	7.00	205.00	0.05
99	LRB-273	91.00	3.40	139.00	134.60	70.80	4.00	9.58	24.00	8.70	10.00	6.00	230.00	0.07
100	LRB-275	96.00	2.80	139.00	123.40	41.60	3.00	10.00	14.00	4.44	9.00	6.00	180.00	0.06
101	LRB-276	95.00	4.40	141.00	120.40	71.40	3.00	10.28	15.00	5.93	11.00	6.00	160.00	0.04
102	LRB-278	88.00	6.40	139.00	110.00	90.80	3.00	8.32	15.00	5.19	8.00	7.00	130.00	0.04
103	LRB-279	94.00	5.20	139.00	162.80	82.40	5.00	9.70	16.00	6.48	10.00	6.50	145.00	0.05
104	LRB-281	89.00	3.00	141.00	127.80	71.20	3.00	7.16	20.00	8.52	7.00	6.00	155.00	0.05
105	LRB-283	94.00	4.00	141.00	142.80	45.60	3.00	9.28	12.00	4.44	9.00	7.00	150.00	0.03
106	LRB-286	95.00	6.80	135.00	126.20	97.00	3.00	10.16	15.00	5.19	11.00	6.00	130.00	0.03
107	LRB-290	97.00	5.60	135.00	153.60	69.80	3.00	9.72	14.00	4.56	10.00	7.00	120.00	0.05
108	LRB-297	95.00	4.40	141.00	134.20	60.00	4.00	8.28	10.00	2.96	8.00	6.00	120.00	0.05
109	LRB-298	93.00	5.80	139.00	157.20	73.80	3.00	7.16	12.00	4.81	8.00	7.50	135.00	0.04
110	LRB-300	91.00	2.80	139.00	133.60	36.60	3.00	9.16	10.00	3.33	9.00	7.00	130.00	0.03
111	LRB-301	92.00	4.00	141.00	142.80	67.40	4.00	9.80	7.00	2.78	10.20	7.00	90.00	0.36
112	LRB-304	92.00	3.80	129.00	112.00	77.00	5.00	8.60	10.00	3.89	9.80	5.50	90.00	0.03
113	LRB-72-1	95.00	5.20	134.00	134.00	30.00	3.20	8.20	8.00	2.96	9.60	4.50	65.00	0.02
114	LRB-84	95.00	3.80	134.00	116.60	26.60	4.40	7.76	9.00	2.96	7.40	4.50	45.00	0.03
115	NRB-27	89.00	5.50	-	104.00	6.50	2.00	5.10	-	-	5.00	-	250.00	0.07
116	NRB-31	89.00	8.50	-	101.00	4.50	2.00	6.65	-	-	5.00	-	260.00	0.08
117	RSR/AKS-7	97.00	4.80	129.00	127.80	73.60	4.00	7.40	22.00	7.69	8.00	5.50	200.00	0.04

S. No.	Accessions	Days to 50% flowering	No. of parimary branches/plant	Days to 80% maturity	Plant height (cm)	Pods/plant	Pod /cluster	Pod length (cm)	Seed yield /plant(g)	Seed yield (q/ha)	No.of seed/ pod	100 seed weight (g)	Dry matter yield / plant (g)	Dry matter yield (q/ha)
	Mean for check varieties													
	RBL-6 (C)	91.45	5.16	140.18	138.44	74.67	3.64	8.49	16.18	5.82	8.56	6.00	147.29	0.05
	RBL-35 (C)	90.64	5.25	138.73	145.18	69.93	3.73	8.79	18.36	6.71	8.49	6.41	124.09	0.04
	RBL-50 (C)	95.55	5.07	140.45	147.33	83.05	3.38	8.84	19.91	8.05	8.93	5.59	192.09	0.06
	Minimum	**85.00**	**2.67**	**121.00**	**101.00**	**4.50**	**2.00**	**5.10**	**5.00**	**0.74**	**4.60**	**3.50**	**45.00**	**0.02**
	Maximum	**98.00**	**11.00**	**145.00**	**191.00**	**116.80**	**6.00**	**10.28**	**25.00**	**10.09**	**11.00**	**9.00**	**320.00**	**0.36**
	Mean	**91.93**	**5.23**	**136.83**	**135.90**	**63.99**	**3.55**	**8.40**	**13.35**	**4.96**	**8.42**	**5.70**	**140.74**	**0.05**
	CD (0.05)	**7.85**	**4.55**	**10.06**	**61.04**	**76.10**	**1.65**	**2.05**	**16.84**	**9.01**	**2.39**	**1.95**	**130.84**	**0.03**
	CV (%) error	**3.36**	**34.96**	**2.85**	**16.86**	**39.78**	**18.25**	**9.33**	**36.80**	**52.15**	**10.96**	**12.90**	**33.60**	**26.53**
	CV (%) Phenotypic	**3.60**	**29.29**	**3.92**	**11.94**	**36.57**	**26.76**	**11.90**	**35.78**	**39.06**	**14.20**	**19.51**	**43.84**	**69.15**

Table 161. Promising lines in Faba bean germplasm for various characters at different locations (Plains)

S.No.	Characters	Range	Promising lines	Value of best check
Hisar (Accessions 268)				
1.	Days to 50% flowering	50.00-92.00	Mutant-1, EC329723, EC267649, IC34710, EC267679, EC329662, HB-95, Selection-1, IC361490, Mutant-2, EC117361, EC324677, EC343855 (< 60.00 days)	PRT-7 (64.15 days)
2.	Days to maturity	140.00-199.00	Mutant-1, Selection-1, EC267649, IC34710, HB-95, EC117361, HB-104, EC329723, EC329662, EC117718, EC343855, EC267641, Mutant-2, EC324677, EC243860, EC117753, HB-91, EC329713, EC329681, EC361485, EC351999, EC374735, EC329728, EC243608, EC329667, HB-94, EC108908, EC243594, EC361497 (< 160.00 days)	PRT-7 (163.23 days)
3.	Plant height (cm)	43.90-160.00	EC329677, HB-44, Mutant-2, HB-75, Mutant-1, HB-17, HB-7, HB-77, HB-79, HB-31, HB-58, EC329812, HB-20, HB-100, HB-82, HB-67, HB-42, HB-54, HB-56, HB-62 (> 117.00 cm)	Vikrant (88.20 cm)
4.	No. of primary branches per plant	2.00-17.00	Mutant-1, Mutant-2, HB-91, HB-86, HB-4, HB-10, HB-55, HB-83, EC322967, HB-17, HB-21, HB-79, HB-87, IC34710, EC361438 (> 7.00)	Vikrant (5.31)
5.	No. of cluster per plant	4.00-97.00	Mutant-1, EC117842, Mutant-2, EC117784, EC329691, HB-91, EC329690, EC117765, EC117745, EC117726, EC243791, EC243756, EC243786, EC361438, EC243588, EC243626, EC117795, EC243860, EC25085, EC329528, HB-16, EC361470 (> 25.00)	PRT-7 (16.62)
6.	No. of pods per plant	11.00-165.00	Mutant-1, EC117842, EC117784, HB-86, Mutant-2, HB-91, HB-82, EC267640, HB-71, HB-99, EC5864, EC117795, EC117705, EC5873, HB-79, EC117765, EC243756, EC117745, HB-90, HB-45, EC117726, EC322967, HB-17, HB-49, HB-7, EC354985, EC361438, HB-32, EC243791, EC249947, EC3279, HB-16, EC329588, HB-76, HB-97 (> 56.00)	Vikrant (41.08)
7.	Pod length (cm)	4.00-7.70	Mutant-2, Mutant-1, HB-91, EC329692, HB-45, HB-57, EC117842, EC25085, HB-67, HB-59, HB-77, HB-18, HB-79, HB-17, EC267679, EC354951, EC329675, HB-3, HB-106, HB-74, HB-12 (> 5.50 cm)	PRT-7 (5.15 cm)
8.	No. of seeds per pod	3.00-4.00	Mutant-1 (> 3.08)	Vikrant (3.08)
9.	100 seed weight (g)	21.20-39.90	HB-37, EC117745, EC267649, HB-22, HB-53, HB-44, EC361498, EC243786, HB-3, EC329662, IC276939, HB-56, EC117753, HB-38,	PRT-7 (27.59 g)

			EC361485, HB-39, EC329679, EC117718, HB-80, Mutant-1, HB-55, EC248945, EC243691, EC329683, EC329730, HB-50, EC243755, EC321549, EC243782, HB-13, EC329729, EC249891, EC329677, HB-2, HB-32, HB-28, HB-94, EC10845, EC361438, EC243781, EC243594, HB-29, EC278710, EC359685, Selection-1, EC331564, HB-69, HB-100, HB-95, EC243860, EC329708, EC329638, HB-41, HB-77, EC248952, HB-74, EC361426, HB-34, EC243624, EC329707, EC117727, HB-73, EC243529, HB-11, EC243637, EC346272, EC329692, HB-64, HB-84, HB-12, EC329528, EC329728, EC329677, HB-43, EC329672, HB-18, HB-10, EC329680, HB-67, HB-106, HB-70, EC25192, HB-89, HB-6, EC331587 (> 30.70 g)	
10.	Seed yield per plant (g)	3.50-71.50	EC329588, HB-41, HB-17, HB-21, HB-10, EC243626, HB-31, EC332138, EC10845, HB-76, HB-73, EC329672, EC249947, IC276939, EC332102, HB-38, HB-52, EC267640, HB-16, EC243764, Mutant-1, HB-37, EC299313, HB-4, EC10719, EC354951, HB-86, EC367914, EC329692 (> 35.00 g)	Vikrant (18.65 g)
Delhi (Accessions 148)				
1.	Days to 50% flowering	52.00-86.00	EC-329724 (< 60.00 days)	Vikrant (60.00 days)
2.	Days to maturity	99.00-113.00	EC025192, EC329662, EC117705, EC117809, EC243631, EC243637, EC243761, EC267641, EC117795, EC243594, IC424614, BGR-82, EC243895, EC329812, EC329711 (< 102.00 days)	Vikrant (104.00 days)
3.	Plant height (cm)	32.60-98.40	EC034710, EC243808, EC108908, EC299713, EC117741, EC329812, EC117818, EC117705, EC329707, EC025072, EC117792, EC329713, BL/MKS-7, EC243786, EC329667, EC243770, EC117744 (> 83.40 cm)	PRT-7 (77.1 cm)
4.	No. of primary branches per plant	0.80-9.80	EC010845, EC243709, EC117741, EC329679, EC243756, EC359685, EC329668, EC299713, EC243631, EC329725, EC329724, EC117705, EC354951, EC243786, EC117758 (> 8.00)	PRT-12 (6.40)
5.	No. of pods per plant	10.15-124.00	EC354951, EC010845, EC329707, EC248951, EC359685, EC329679, JBT-46/55, IC424900, EC329668, EC243709, EC243770, EC117818, EC299713, EC329725, VKS-17/110, EC117705, EC329643, EC032790, EC343808, EC243529, VKS-17/26, EC117361, EC117741, EC025192, EC329691, IC447906, EC025072, EC243631, IC447902, EC329724, IC332114, EC246860, IC361496, EC243895, IC447901 (> 70.00)	PRT-7 (66.40

6.	No. of seeds per pod	1.00-4.00	EC299713, EC329725, EC032790, EC117361, EC399712, EC117748, EC343793, IC332101, EC329711, VKS/17/30, VKG-18/46, EC556903, EC343855, EC343749, EC556902 (> 3.60)	PRT-7 (3.10)
7.	100 seed weight (g)	18.10-72.79	EC556902, VKG-18/46, IC322949, EC329679, IC447897, EC323731, EC329608, EC361494, MKS/AKS-272, EC343749, EC010719, EC243594 (> 40.00 g)	PRT-12 (32.58 g)
8.	Seed yield (q/ha)	0.10-51.90	EC329672, EC329668, EC329662, EC243770, EC243637, EC032790, IC348948, EC117705, EC329679, EC117753, EC248951, EC354985, EC117748, EC247592, EC299713, EC329687, EC329725, EC331561, EC343855 (> 40.00 q/ha)	PRT-12 (36.00 q/ha)
9.	Dry matter yield (q/ha)	5.56-148.15	IC361496, IC348948, IC276939, IC361499, EC329672, IC332102, IC332138, EC329725, IC424900, EC243036, EC267649, EC117753, EC343808, IC346272, IC447906, EC331561, IC329680 (> 88.89 q/ha)	PRT-12 (81.89 q/ha)
10.	No. of leaflet per root	4.00-8.00	EC025192, EC323731, EC267649, EC246860, EC117842, EC329711, EC243709, VKG-34/77, JBT-46/14 (> 5.70)	PRT-7 (5.70)
11.	No. of flowers per cluster	1.00-4.00	IC332138, SPO-22-03, EC117705, EC243895, IC348948 (> 2.00)	PRT-7 (2.00)
12.	No. of pods per cluster	1.00-3.00	IC332138, IC348948, EC267649, EC354951, IC329680, VKS/17/30. BGR-82 (> 2.10)	PRT-7 (2.10)
13.	Pod length (cm)	3.56-9.86	EC556903, EC556902, VKG-18/46, IC322949, IC447894, EC354985, EC343808, EC263624 (> 5.56 cm)	PRT-12 (5.56 cm)
Faizabad (Accessions 77)				
1.	Days to 50% flowering	56.00-87.00	EC299313, EC243791, EC243860, EC025192, EC005864, IC361498, EC117753, EC243626, EC329715, EC329812, EC243755 (< 65.00 days)	Vikrant (65.13 days)
2.	Days to maturity	153.00-172.00	EC382423, EC247696, EC324677, EC025085, EC243895, EC117744, EC322967, EC243791, EC243860, EC331587, EC117734, EC329679, EC343808, EC329724, EC243786, EC361470, EC243525A, EC117842, EC329677 (< 162.00 days)	Vikrant (164.00 days)
3.	Plant height (cm)	44.20-74.80	EC267641, EC243784, EC361427, EC324677, EC025192, EC329707, EC243529, EC329677, EC117818, EC329627, EC025085, EC329724, EC329700, EC243782, EC253588, EC117724, EC243895, EC348948, EC361470, EC010179, EC329715, EC248945, EC243596, EC329003, EC243781 (> 60.80 cm)	PRT-7 (58.88 cm)

4.	No. of primary branches per plant	2.20-6.00	EC267641, EC243529, EC117749, EC025058, EC243525A, EC117842, EC117745, EC025192, EC329724, EC243782, EC243709, EC243637, EC329605, EC374131, IC361498, EC329668, EC322967 (> 4.80)	Vikrant (4.15)
5.	No. of pods per plant	16.80-60.20	EC361427, EC331587, EC329677, EC323731, EC243637, EC117818, EC249851, EC361470, EC025085, EC299313, EC329668, EC324677, EC331549, EC243529, EC322967, EC243709, EC243895 (> 45.00)	PRT-12 (41.46)
6.	No. of seeds per pod	2.00-5.40	EC243709, EC117842, EC025192, EC329707, EC117749, EC348948, EC243781, EC329668, EC243782, EC329675, EC329627, EC243525A, EC354951, EC243596, EC243772, EC329673, EC243761, EC243770, EC005864 (> 3.20)	Vikrant (3.18)
7.	100 seed weight (g)	21.00-35.10	EC248945, EC329725, EC117724, EC329714, EC117727, EC243596, EC351999, EC323731, EC243626 (> 31.50 g)	Vikrant (30.90 g)
8.	Seed yield (q/ha)	5.33-26.52	EC299313, EC267641, EC329605, EC329724, EC343808, EC267648, EC324677, EC329683, EC247696, EC329677, EC243791, EC025058, EC248945, EC329812, EC329673 (> 19.47 q/ha)	Vikrant (17.47 q/ha)

Table 162. Multilocational evaluation of germplasm lines in faba bean at Hisar -2007 (Plains)

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
1	1	EC-003279	61.00	162.00	85.00	47.82	6.00	5.74	19.00	59.00	5.10	3.00	23.10	22.07	18.40	26.94	108.40	233.29
2	1	EC-005864	64.00	161.00	81.50	123.02	5.00	3.08	23.00	72.00	4.60	3.00	29.20	29.54	16.30	8.24	393.60	433.03
3	1	EC-005873	69.00	177.00	76.80	118.32	6.00	4.08	24.00	70.00	5.10	3.00	27.30	27.64	15.40	7.34	350.40	389.83
4	1	EC-010719	66.00	183.00	66.80	-10.68	6.00	5.08	11.00	53.00	4.50	3.00	28.40	27.31	35.60	16.97	300.00	138.13
5	1	EC-010720	67.00	176.00	78.30	0.82	6.00	5.08	18.00	43.00	4.90	3.00	29.20	28.11	22.20	3.57	200.00	38.13
6	1	EC-010845	63.00	175.00	86.60	9.12	4.00	3.08	12.00	29.00	4.90	3.00	33.10	32.01	45.40	26.77	350.00	188.13
7	1	EC-024312	62.00	160.00	76.30	34.22	4.00	5.41	17.00	30.00	4.90	3.00	25.70	24.51	21.70	29.71	110.20	169.56
8	1	EC-025058	79.00	180.00	76.50	61.72	4.00	4.74	19.00	45.00	4.80	3.00	26.90	27.81	30.10	25.84	240.00	164.63
9	1	EC-025085	81.00	183.00	64.30	49.52	6.00	6.74	26.00	55.00	5.70	3.00	27.10	28.01	20.40	16.14	310.20	234.83
10	1	EC-025192	74.00	168.00	95.30	80.52	4.00	4.74	18.00	41.00	4.60	3.00	30.90	31.81	20.30	16.04	285.00	209.63
11	1	EC-036427	66.00	162.00	106.00	147.52	4.00	2.08	5.00	22.00	4.30	3.00	26.90	27.24	15.50	7.44	150.00	189.43
12	1	EC-107842	65.00	173.00	85.30	7.82	5.00	4.08	21.00	38.00	4.70	3.00	29.00	27.91	10.50	-8.13	100.00	-61.87
13	1	EC-108908	62.00	159.00	68.60	-8.88	5.00	4.08	19.00	51.00	5.20	3.00	28.80	27.71	35.00	16.37	275.60	113.73
14	1	EC-117361	58.00	150.00	75.10	-2.38	6.00	5.08	17.00	41.00	4.50	3.00	30.00	28.91	22.00	3.37	200.00	38.13
15	1	EC-117705	60.00	167.00	95.00	17.52	5.00	4.08	25.00	70.00	5.20	3.00	26.80	25.71	20.00	1.37	400.00	238.13
16	1	EC-117718	60.00	151.00	80.00	2.52	6.00	5.08	15.00	40.00	4.90	3.00	34.90	33.81	28.50	9.87	150.00	-11.87
17	1	EC-117720	74.00	173.00	65.00	-12.48	4.00	3.08	19.00	43.00	5.10	3.00	30.20	29.11	25.00	6.37	400.00	238.13
18	1	EC-117724	71.00	170.00	68.00	-9.48	4.00	3.08	23.00	35.00	4.60	3.00	28.70	27.61	25.00	6.37	250.00	88.13
19	1	EC-117726	62.00	160.00	68.60	-8.88	6.00	5.08	31.00	64.00	4.40	3.00	25.10	24.01	25.50	6.87	350.00	188.13
20	1	EC-117727	65.00	174.00	73.20	-4.28	5.00	4.08	18.00	40.00	4.60	3.00	31.70	30.61	30.20	11.57	250.00	88.13
21	2	EC-117734	66.00	176.00	73.00	-4.48	6.00	5.08	13.00	37.00	5.10	3.00	25.60	24.51	15.80	-2.83	195.00	33.13
22	2	EC-117739	68.00	175.00	66.00	-11.48	6.00	5.08	25.00	21.00	5.10	3.00	29.10	28.01	10.50	-8.13	100.00	-61.87
23	2	EC-117741	71.00	174.00	73.10	-4.38	6.00	5.08	18.00	40.00	4.90	3.00	22.70	21.61	8.90	-9.73	100.00	-61.87
24	2	EC-117744	65.00	168.00	86.30	8.82	6.00	5.08	22.00	44.00	5.20	3.00	27.00	25.91	25.00	6.37	250.00	88.13
25	2	EC-117745	68.00	173.00	56.00	-21.48	7.00	6.08	31.00	65.00	4.70	3.00	39.60	38.51	24.50	5.87	250.00	88.13
26	2	EC-117748	73.00	184.00	64.60	-12.88	5.00	4.08	12.00	30.00	5.10	3.00	24.20	23.11	15.40	-3.23	100.00	-61.87
27	2	EC-117749	64.00	169.00	65.20	-12.28	4.00	3.08	17.00	48.00	5.20	3.00	26.60	25.51	22.50	3.87	200.00	38.13
28	2	EC-117753	68.00	155.00	85.30	7.82	4.00	3.08	12.00	32.00	5.30	3.00	36.00	34.91	27.00	8.37	250.00	88.13

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
29	2	EC-117755	70.00	169.00	66.60	24.52	4.00	5.41	9.00	22.00	4.60	3.00	27.50	26.31	19.00	27.01	100.00	159.36
30	2	EC-117758	72.00	184.00	75.20	33.12	3.00	4.41	15.00	40.00	5.20	3.00	29.10	27.91	25.00	33.01	200.00	259.36
31	2	EC-117765	72.00	184.00	72.30	30.22	5.00	6.41	31.00	67.00	5.20	3.00	24.80	23.61	20.00	28.01	250.00	309.36
32	2	EC-117784	72.00	184.00	74.00	31.92	6.00	7.41	40.00	111.00	4.60	3.00	27.10	25.91	29.00	37.01	500.00	559.36
33	2	EC-117792	72.00	184.00	75.00	32.92	5.00	6.41	6.00	24.00	5.10	3.00	28.60	27.41	5.00	13.01	50.00	109.36
34	2	EC-117795	74.00	184.00	63.10	21.02	5.00	6.41	27.00	71.00	4.80	3.00	29.70	28.51	27.00	35.01	250.00	309.36
35	2	EC-117842	71.00	173.00	46.30	4.22	6.00	7.41	43.00	125.00	5.70	3.00	27.80	26.61	30.60	38.61	650.00	709.36
36	2	EC-243036	65.00	164.00	68.90	26.82	3.00	4.41	13.00	22.00	5.10	3.00	29.80	28.61	25.30	33.31	135.80	195.16
37	2	EC-243443	70.00	169.00	80.10	38.02	3.00	4.41	13.00	36.00	5.20	3.00	28.30	27.11	22.50	30.51	105.20	164.56
38	2	EC-243525A	73.00	181.00	67.80	25.72	5.00	6.41	25.00	55.00	5.40	3.00	26.30	25.11	25.60	33.61	220.50	279.86
39	2	EC-243529	60.00	164.00	77.20	35.12	3.00	4.41	19.00	32.00	5.20	3.00	31.50	30.31	23.50	31.51	117.20	176.56
40	2	EC-243584	83.00	185.00	87.30	45.22	4.00	5.41	23.00	39.00	5.20	3.00	28.20	27.01	22.00	30.01	210.50	269.86
41	3	EC-243588	70.00	168.00	80.10	38.02	6.00	7.41	28.00	33.00	4.80	3.00	29.00	27.81	23.90	31.91	250.30	309.66
42	3	EC-243594	63.00	159.00	68.90	26.82	4.00	5.41	20.00	35.00	4.90	3.00	32.80	31.61	32.30	40.31	138.20	197.56
43	3	EC-243596	81.00	184.00	69.20	27.12	3.00	4.41	19.00	39.00	4.50	3.00	28.20	27.01	21.20	29.21	145.40	204.76
44	3	EC-243608	65.00	158.00	63.50	21.42	5.00	6.41	21.00	46.00	5.00	3.00	24.80	23.61	22.50	30.51	230.00	289.36
45	3	EC-243624	72.00	173.00	76.00	33.92	4.00	5.41	13.00	37.00	5.10	3.00	31.80	30.61	35.00	43.01	151.00	210.36
46	3	EC-243626	83.00	194.00	68.70	26.62	4.00	5.41	28.00	30.00	5.00	3.00	27.80	26.61	50.40	58.41	216.00	275.36
47	3	EC-243637	71.00	173.00	66.80	24.72	3.00	4.41	12.00	28.00	4.70	3.00	31.50	30.31	25.30	33.31	125.30	184.66
48	3	EC-243691	83.00	190.00	70.10	27.62	5.00	5.08	21.00	39.00	4.90	3.00	34.40	34.54	24.30	24.71	155.60	160.23
49	3	EC-243709	81.00	187.00	63.40	20.92	4.00	4.08	22.00	38.00	5.20	3.00	27.10	27.24	25.10	25.51	165.00	169.63
50	3	EC-243755	77.00	170.00	66.90	24.42	4.00	4.08	23.00	51.00	5.10	3.00	33.90	34.04	21.00	21.41	110.60	115.23
51	3	EC-243756	83.00	186.00	68.80	26.32	6.00	6.08	29.00	66.00	4.50	3.00	28.00	28.14	30.60	31.01	260.20	264.83
52	3	EC-243761	84.00	190.00	73.40	30.92	4.00	4.08	15.00	36.00	4.90	3.00	25.70	25.84	15.50	15.91	120.50	125.13
53	3	EC-243764	77.00	170.00	61.80	19.32	6.00	6.08	21.00	38.00	4.80	3.00	27.50	27.64	37.50	37.91	186.20	190.83
54	3	EC-243770	71.00	175.00	72.00	29.52	5.00	5.08	25.00	45.00	5.50	3.00	27.90	28.04	30.40	30.81	225.50	230.13
55	3	EC-243781	77.00	163.00	58.90	16.42	3.00	3.08	18.00	39.00	5.00	3.00	32.80	32.94	21.50	21.91	150.00	154.63
56	3	EC-243782	82.00	186.00	65.50	23.02	3.00	3.08	12.00	30.00	4.50	3.00	33.80	33.94	18.00	18.41	150.00	154.63
57	3	EC-243784	78.00	170.00	69.30	26.82	5.00	5.08	16.00	32.00	4.00	3.00	28.80	28.94	30.20	30.61	180.50	185.13
58	3	EC-243786	85.00	195.00	58.30	15.82	3.00	3.08	29.00	39.00	5.00	3.00	36.60	36.74	16.50	16.91	205.00	209.63
59	3	EC-243791	80.00	183.00	73.20	30.72	6.00	6.08	30.00	59.00	4.90	3.00	21.30	21.44	25.20	25.61	275.60	280.23
60	3	EC-243793	71.00	185.00	74.20	31.72	5.00	5.08	18.00	31.00	4.60	3.00	30.30	30.44	18.00	18.41	170.80	175.43

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
61	4	EC-243794	81.00	192.00	56.30	13.82	3.00	3.08	14.00	30.00	5.40	3.00	28.50	28.64	25.90	26.31	197.60	202.23
62	4	EC-243808	84.00	180.00	67.30	24.82	6.00	6.08	19.00	43.00	5.30	3.00	25.20	25.34	20.50	20.91	270.40	275.03
63	4	EC-243820	80.00	177.00	64.30	21.82	4.00	4.08	24.00	55.00	5.00	3.00	27.40	27.54	25.00	25.41	294.60	299.23
64	4	EC-243860	67.00	155.00	58.60	16.12	4.00	4.08	27.00	38.00	4.80	3.00	32.40	32.54	23.90	24.31	251.30	255.93
65	4	EC-243895	74.00	164.00	76.80	34.32	5.00	5.08	18.00	39.00	4.20	3.00	27.10	27.24	20.50	20.91	285.00	289.63
66	4	EC-247646	92.00	195.00	63.50	21.02	3.00	3.08	18.00	38.00	5.10	3.00	28.90	29.04	15.00	15.41	250.00	254.63
67	4	EC-248945	83.00	181.00	84.40	41.92	4.00	4.08	15.00	30.00	4.80	3.00	34.50	34.64	24.50	24.91	270.50	275.13
68	4	EC-248952	75.00	167.00	65.00	50.22	3.00	3.74	19.00	47.00	5.20	3.00	32.00	32.91	20.00	15.74	295.00	219.63
69	4	EC-249891	76.00	167.00	62.60	47.82	3.00	3.74	9.00	29.00	4.80	3.00	28.50	29.41	25.00	20.74	110.80	35.43
70	4	EC-249891	72.00	185.00	65.10	50.32	5.00	5.74	15.00	43.00	4.80	3.00	33.40	34.31	25.00	20.74	315.00	239.63
71	4	EC-249947	70.00	167.00	65.20	50.42	5.00	5.74	20.00	38.00	4.90	3.00	28.00	28.91	25.60	21.34	288.00	212.63
72	4	EC-249947	82.00	177.00	64.30	49.52	7.00	7.74	21.00	59.00	4.60	3.00	30.70	31.61	40.30	36.04	325.00	249.63
73	4	EC-251014	86.00	183.00	70.50	55.72	4.00	4.74	18.00	41.00	4.60	3.00	27.70	28.61	25.40	21.14	254.00	178.63
74	4	EC-267640	75.00	170.00	76.80	62.02	6.00	6.74	19.00	81.00	5.10	3.00	27.60	28.51	39.00	34.74	390.60	315.23
75	4	EC-267641	60.00	153.00	64.30	49.52	4.00	4.74	12.00	30.00	5.00	3.00	28.80	29.71	28.00	23.74	200.00	124.63
76	4	EC-267648	62.00	163.00	63.30	48.52	4.00	4.74	16.00	36.00	4.80	3.00	27.20	28.11	21.50	17.24	185.00	109.63
77	4	EC-267649	55.00	150.00	76.20	61.42	4.00	4.74	16.00	30.00	5.10	3.00	39.40	40.31	30.50	26.24	181.00	105.63
78	4	EC-267675	89.00	185.00	65.50	50.72	5.00	5.74	15.00	32.00	5.00	3.00	28.50	29.41	10.50	6.24	185.00	109.63
79	4	EC-267679	56.00	160.00	73.20	58.42	4.00	4.74	21.00	56.00	5.60	3.00	28.40	29.31	25.50	21.24	270.60	195.23
80	4	EC-278710	88.00	198.00	65.60	50.82	5.00	5.74	11.00	25.00	4.60	3.00	32.80	33.71	15.90	11.64	176.80	101.43
81	5	EC-299313	74.00	177.00	53.30	38.52	3.00	3.74	14.00	44.00	4.80	3.00	28.80	29.71	35.70	31.44	267.20	191.83
82	5	EC-321549	70.00	175.00	66.80	52.02	4.00	4.74	19.00	39.00	4.70	3.00	33.90	34.81	25.40	21.14	300.00	224.63
83	5	EC-322967	71.00	175.00	76.90	62.12	9.00	9.74	25.00	64.00	4.90	3.00	28.10	29.01	20.50	16.24	350.00	274.63
84	5	EC-323731	77.00	178.00	79.60	64.82	4.00	4.74	18.00	44.00	5.10	3.00	28.40	29.31	15.20	10.94	350.00	274.63
85	5	EC-324677	58.00	155.00	86.20	49.02	4.00	3.74	14.00	49.00	4.20	3.00	28.30	27.27	30.20	38.74	150.00	274.89
86	5	EC-329003	71.00	165.00	86.30	49.12	5.00	4.74	19.00	53.00	4.60	3.00	28.30	27.27	25.00	33.54	350.00	474.89
87	5	EC-329528	78.00	179.00	56.90	19.72	7.00	6.74	26.00	52.00	4.90	3.00	31.30	30.27	15.40	23.94	410.64	535.53
88	5	EC-329588	72.00	177.00	56.00	18.82	6.00	5.74	23.00	58.00	5.10	3.00	30.20	29.17	71.50	80.04	305.20	430.09
89	5	EC-329605	81.00	190.00	64.00	26.82	5.00	4.74	15.00	38.00	4.30	3.00	29.70	28.67	15.10	23.64	350.00	474.89
90	5	EC-329609	77.00	173.00	67.30	30.12	2.00	1.74	12.00	29.00	4.90	3.00	29.30	28.27	8.90	17.44	100.00	224.89
91	5	EC-329627	80.00	186.00	69.60	32.42	3.00	2.74	20.00	45.00	5.10	3.00	23.10	22.07	12.50	21.04	250.00	374.89
92	5	EC-329631	78.00	171.00	64.00	26.82	4.00	3.74	14.00	51.00	4.40	3.00	27.50	26.47	15.00	23.54	300.00	424.89

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
93	5	EC-329638	70.00	175.00	76.30	39.12	3.00	2.74	25.00	38.00	4.80	3.00	32.30	31.27	35.00	43.54	600.00	724.89
94	5	EC-329648	75.00	170.00	96.10	58.92	3.00	2.74	17.00	31.00	4.90	3.00	28.60	27.57	15.10	23.64	200.00	324.89
95	5	EC-329662	56.00	151.00	52.60	15.42	3.00	2.74	7.00	22.00	4.80	3.00	36.50	35.47	30.00	38.54	150.60	275.49
96	5	EC-329667	68.00	158.00	43.90	6.72	5.00	4.74	13.00	30.00	4.60	3.00	27.00	25.97	10.90	19.44	200.00	324.89
97	5	EC-329668	84.00	191.00	53.70	16.52	4.00	3.74	21.00	45.00	4.20	3.00	26.20	25.17	10.40	18.94	200.00	324.89
98	5	EC-329672	65.00	161.00	65.60	28.42	5.00	4.74	15.00	35.00	4.90	3.00	31.20	30.17	40.80	49.34	240.50	365.39
99	5	EC-329673	70.00	173.00	68.40	31.22	4.00	3.74	17.00	39.00	4.40	3.00	26.90	25.87	25.40	33.94	150.00	274.89
100	5	EC-329675	71.00	173.00	107.30	70.12	6.00	5.74	15.00	50.00	5.60	3.00	29.90	28.87	8.10	16.64	100.00	224.89
101	6	EC-329677	72.00	181.00	86.20	49.02	3.00	2.74	15.00	22.00	5.10	3.00	33.30	32.27	11.20	19.74	120.00	244.89
102	6	EC-329677	75.00	178.00	109.00	71.82	5.00	4.74	12.00	33.00	5.50	3.00	31.20	30.17	33.80	42.34	266.50	391.39
103	6	EC-329679	63.00	163.00	85.30	48.12	5.00	4.74	12.00	39.00	5.10	3.00	35.20	34.17	22.90	31.44	200.00	324.89
104	6	EC-329680	75.00	178.00	45.30	69.42	3.00	2.41	12.00	29.00	4.50	3.00	31.10	32.01	10.20	14.21	150.00	221.26
105	6	EC-329681	62.00	157.00	68.50	92.62	4.00	3.41	10.00	30.00	4.90	3.00	30.50	31.41	15.50	19.51	150.00	221.26
106	6	EC-329682	73.00	175.00	66.30	90.42	4.00	3.41	14.00	51.00	4.80	3.00	28.10	29.01	15.00	19.01	350.00	421.26
107	6	EC-329683	81.00	178.00	75.10	99.22	5.00	4.41	21.00	35.00	5.00	3.00	34.10	35.01	19.40	23.41	200.00	271.26
108	6	EC-329690	74.00	173.00	76.10	100.22	6.00	5.41	32.00	40.00	4.80	3.00	27.30	28.21	15.00	19.01	130.00	201.26
109	6	EC-329691	91.00	185.00	66.90	91.02	6.00	5.41	35.00	45.00	4.40	3.00	26.40	27.31	26.00	30.01	200.00	271.26
110	6	EC-329692	80.00	171.00	115.00	139.12	7.00	6.41	16.00	36.00	6.00	3.00	31.40	32.31	35.10	39.11	200.00	271.26
111	6	EC-329693	86.00	191.00	83.50	107.62	4.00	3.41	20.00	41.00	5.20	3.00	28.10	29.01	3.50	7.51	50.00	121.26
112	6	EC-329696	74.00	168.00	83.10	107.22	5.00	4.41	15.00	25.00	4.90	3.00	27.00	27.91	18.80	22.81	200.00	271.26
113	6	EC-329707	71.00	177.00	60.50	84.62	4.00	3.41	12.00	28.00	4.50	3.00	31.80	32.71	20.00	24.01	100.00	171.26
114	6	EC-329708	74.00	168.00	68.60	92.72	6.00	5.41	18.00	41.00	4.90	3.00	32.30	33.21	25.10	29.11	200.00	271.26
115	6	EC-329712	72.00	181.00	102.60	126.72	5.00	4.41	8.00	29.00	5.40	3.00	29.00	29.91	15.10	19.11	175.00	246.26
116	6	EC-329713	60.00	157.00	66.40	90.52	4.00	3.41	14.00	35.00	4.20	3.00	27.60	28.51	27.00	31.01	200.00	271.26
117	6	EC-329714	64.00	160.00	74.30	98.42	4.00	3.41	25.00	37.00	5.00	3.00	26.70	27.61	8.50	12.51	100.00	171.26
118	6	EC-329715	67.00	160.00	55.60	79.72	3.00	2.41	13.00	30.00	5.10	3.00	27.30	28.21	4.50	8.51	50.00	121.26
119	6	EC-329723	54.00	151.00	58.20	82.32	5.00	4.41	16.00	26.00	4.60	3.00	27.90	28.81	8.90	12.91	100.00	171.26
120	6	EC-329724	75.00	183.00	65.90	90.02	3.00	2.41	21.00	32.00	4.90	3.00	30.60	31.51	10.00	14.01	100.00	171.26
121	7	EC-329728	60.00	158.00	65.30	89.42	3.00	2.41	19.00	45.00	4.60	3.00	31.30	32.21	30.50	34.51	200.00	271.26
122	7	EC-329729	77.00	179.00	70.50	94.62	5.00	4.41	13.00	30.00	5.10	3.00	33.60	34.51	25.00	29.01	200.00	271.26
123	7	EC-329730	82.00	199.00	102.30	126.42	4.00	3.41	7.00	24.00	5.00	3.00	34.10	35.01	15.40	19.41	110.00	181.26
124	7	EC-329760	70.00	175.00	73.20	92.92	5.00	6.41	15.00	33.00	5.00	3.00	28.50	28.51	32.50	29.57	200.00	256.43

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
125	7	EC-329812	61.00	160.00	121.30	141.02	4.00	5.41	9.00	35.00	5.20	3.00	27.00	27.01	10.80	7.87	150.00	206.43
126	7	EC-331561	75.00	175.00	69.90	89.62	5.00	6.41	13.00	34.00	5.20	3.00	24.50	24.51	20.60	17.67	150.00	206.43
127	7	EC-331564	61.00	161.00	75.20	94.92	5.00	6.41	18.00	32.00	5.10	3.00	32.50	32.51	13.50	10.57	150.00	206.43
128	7	EC-331571	60.00	160.00	69.60	89.32	3.00	4.41	19.00	37.00	5.50	3.00	26.30	26.31	15.10	12.17	150.00	206.43
129	7	EC-331587	74.00	175.00	68.50	88.22	5.00	6.41	23.00	50.00	4.60	3.00	30.80	30.81	25.00	22.07	400.00	456.43
130	7	EC-332102	75.00	173.00	66.60	86.32	4.00	5.41	12.00	31.00	5.10	3.00	27.20	27.21	40.20	37.27	150.00	206.43
131	7	EC-332138	70.00	175.00	73.20	92.92	5.00	6.41	11.00	39.00	4.90	3.00	29.00	29.01	45.50	42.57	175.80	232.23
132	7	EC-343691	74.00	179.00	80.30	100.02	4.00	5.41	10.00	25.00	5.10	3.00	30.60	30.61	30.60	27.67	155.00	211.43
133	7	EC-343749	69.00	160.00	64.80	84.52	4.00	5.41	14.00	31.00	5.00	3.00	28.70	28.71	25.10	22.17	175.60	232.03
134	7	EC-343808	70.00	168.00	75.30	95.02	5.00	6.41	20.00	53.00	5.40	3.00	28.20	28.21	15.60	12.67	271.30	327.73
135	7	EC-343855	58.00	152.00	108.30	128.02	4.00	5.41	8.00	38.00	4.90	3.00	30.10	30.11	23.60	20.67	250.00	306.43
136	7	EC-346272	77.00	178.00	57.90	77.62	4.00	5.41	17.00	30.00	4.60	3.00	31.50	31.51	20.00	17.07	210.40	266.83
137	7	EC-351999	66.00	157.00	56.50	76.22	5.00	6.41	17.00	31.00	5.50	3.00	25.60	25.61	20.50	17.57	250.00	306.43
138	7	EC-354951	71.00	168.00	70.60	90.32	4.00	5.41	18.00	54.00	5.60	3.00	30.30	30.31	35.50	32.57	355.00	411.43
139	7	EC-354985	72.00	179.00	50.60	70.32	5.00	6.41	19.00	62.00	5.40	3.00	30.30	30.31	21.10	18.17	380.50	436.93
140	7	EC-354989	69.00	177.00	64.40	84.12	2.00	3.41	7.00	21.00	4.30	3.00	24.30	24.31	17.00	14.07	80.90	137.33
141	8	EC-359685	65.00	162.00	95.00	114.72	3.00	4.41	11.00	30.00	4.60	3.00	32.70	32.71	15.00	12.07	165.40	221.83
142	8	EC-361426	70.00	167.00	58.80	78.52	6.00	7.41	23.00	49.00	5.10	3.00	31.90	31.91	25.00	22.07	350.00	406.43
143	8	EC-361438	64.00	160.00	53.40	73.12	8.00	9.41	28.00	61.00	4.90	3.00	32.90	32.91	25.50	22.57	600.00	656.43
144	8	EC-361470	73.00	183.00	76.60	118.12	7.00	5.08	26.00	55.00	5.30	3.00	27.40	27.74	20.00	11.94	600.00	639.43
145	8	EC-361485	63.00	157.00	53.80	95.32	4.00	2.08	12.00	33.00	4.50	3.00	35.50	35.84	25.00	16.94	200.00	239.43
146	8	EC-361487	73.00	187.00	58.60	100.12	4.00	2.08	17.00	39.00	4.50	3.00	25.10	25.44	20.50	12.44	200.00	239.43
147	8	EC-361494	65.00	165.00	68.30	109.82	5.00	3.08	20.00	56.00	5.10	3.00	30.50	30.84	17.20	9.14	350.00	389.43
148	8	EC-361496	71.00	165.00	64.80	106.32	4.00	2.08	15.00	36.00	4.90	3.00	23.90	24.24	13.50	5.44	200.00	239.43
149	8	EC-361497	64.00	159.00	68.60	110.12	5.00	3.08	8.00	23.00	4.40	3.00	25.20	25.54	3.50	-4.56	50.00	89.43
150	8	EC-361498	75.00	190.00	94.30	135.82	6.00	4.08	9.00	26.00	5.30	3.00	36.80	37.14	5.50	-2.56	50.00	89.43
151	8	EC-361499	70.00	190.00	65.50	107.02	4.00	2.08	7.00	22.00	4.30	3.00	25.80	26.14	15.30	7.24	150.00	189.43
152	8	EC-367914	82.00	195.00	66.20	107.72	3.00	1.08	15.00	37.00	4.90	3.00	29.60	29.94	35.20	27.14	200.00	239.43
153	8	EC-374735	68.00	157.00	59.20	100.72	4.00	2.08	10.00	33.00	4.70	3.00	30.50	30.84	25.90	17.84	195.60	235.03
154	8	EC-374931	69.00	184.00	76.50	118.02	5.00	3.08	11.00	38.00	4.40	3.00	30.70	31.04	30.00	21.94	205.00	244.43
155	8	HB-001	64.00	168.00	86.50	128.02	5.00	3.08	18.00	34.00	5.10	3.00	22.60	22.94	16.10	8.04	180.00	219.43
156	8	HB-002	77.00	170.00	111.60	155.52	6.00	5.74	11.00	30.00	4.90	3.00	33.20	33.07	12.00	9.77	50.00	56.29

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
157	8	HB-003	83.00	184.00	115.00	182.22	4.00	3.74	15.00	39.00	5.60	3.00	36.50	35.04	25.20	34.67	200.00	274.73
158	8	HB-004	70.00	171.00	78.60	145.82	9.00	8.74	18.00	50.00	5.10	3.00	29.70	28.24	35.60	45.07	350.00	424.73
159	8	HB-005	65.00	172.00	98.40	73.82	7.00	6.41	14.00	45.00	4.90	3.00	25.30	24.54	28.00	27.71	300.00	166.59
160	8	HB-006	69.00	166.00	87.30	62.72	6.00	5.41	12.00	42.00	5.10	3.00	30.80	30.04	19.60	19.31	250.00	116.59
161	9	HB-007	62.00	165.00	133.00	134.81	6.00	6.41	20.00	62.00	5.50	3.00	27.80	28.94	21.00	25.74	250.00	235.69
162	9	HB-008	71.00	173.00	62.60	64.41	6.00	6.41	11.00	35.00	4.30	3.00	25.50	26.64	20.00	24.74	200.00	185.69
163	9	HB-009	82.00	186.00	110.60	150.82	5.00	5.74	7.00	30.00	5.50	3.00	24.20	26.44	18.90	20.14	200.00	147.93
164	9	HB-010	68.00	171.00	92.60	134.12	9.00	7.08	16.00	49.00	5.20	3.00	31.10	31.44	55.30	47.24	400.00	439.43
165	9	HB-011	74.00	164.00	117.00	160.92	5.00	4.74	13.00	42.00	4.90	3.00	31.50	31.37	20.40	18.17	250.00	256.29
166	9	HB-012	64.00	170.00	107.00	150.92	4.00	3.74	6.00	26.00	5.60	3.00	31.30	31.17	20.90	18.67	200.00	206.29
167	9	HB-013	62.00	165.00	110.50	154.42	5.00	4.74	14.00	35.00	5.30	3.00	33.70	33.57	11.60	9.37	150.00	156.29
168	9	HB-014	71.00	172.00	82.30	126.22	6.00	5.74	12.00	28.00	5.50	3.00	29.00	28.87	15.80	13.57	200.00	206.29
169	9	HB-015	65.00	160.00	99.90	143.82	4.00	3.74	10.00	25.00	5.20	3.00	30.20	30.07	17.10	14.87	200.00	206.29
170	9	HB-016	66.00	172.00	92.60	136.52	6.00	5.74	26.00	58.00	5.30	3.00	27.90	27.77	37.50	35.27	300.00	306.29
171	9	HB-017	65.00	173.00	133.60	177.52	8.00	7.74	25.00	63.00	5.60	3.00	30.70	30.57	60.20	57.97	400.00	406.29
172	9	HB-018	68.00	177.00	90.30	134.22	5.00	4.74	8.00	30.00	5.70	3.00	31.10	30.97	25.40	23.17	200.00	206.29
173	9	HB-019	70.00	168.00	115.60	159.52	5.00	4.74	9.00	24.00	4.90	3.00	29.00	28.87	19.20	16.97	100.00	106.29
174	9	HB-020	85.00	185.00	120.80	164.72	5.00	4.74	11.00	30.00	5.30	3.00	29.40	29.27	25.10	22.87	160.00	166.29
175	9	HB-021	70.00	162.00	103.00	146.92	8.00	7.74	19.00	30.00	4.80	3.00	22.60	22.47	60.20	57.97	600.00	606.29
176	9	HB-022	66.00	170.00	93.30	137.22	6.00	5.74	6.00	26.00	5.50	3.00	39.00	38.87	35.00	32.77	250.00	256.29
177	9	HB-023	65.00	165.00	74.00	117.92	2.00	1.74	4.00	11.00	4.60	3.00	29.30	29.17	22.20	19.97	200.00	206.29
178	9	HB-024	60.00	160.00	64.00	107.92	3.00	2.74	5.00	24.00	4.80	3.00	24.80	24.67	25.00	22.77	200.00	206.29
179	9	HB-025	70.00	172.00	69.60	113.52	2.00	1.74	5.00	23.00	4.60	3.00	28.40	28.27	15.10	12.87	150.00	156.29
180	9	HB-026	64.00	170.00	75.60	119.52	4.00	3.74	8.00	19.00	4.90	3.00	22.20	22.07	10.40	8.17	50.00	56.29
181	9	HB-027	66.00	166.00	101.40	145.32	5.00	4.74	7.00	25.00	5.20	3.00	28.50	28.37	8.90	6.67	50.00	56.29
182	10	HB-028	74.00	183.00	93.00	160.22	4.00	3.74	5.00	27.00	5.00	3.00	33.10	31.64	12.90	22.37	200.00	274.73
183	10	HB-029	72.00	185.00	115.20	182.42	4.00	3.74	10.00	28.00	4.80	3.00	32.80	31.34	8.50	17.97	100.00	174.73
184	10	HB-030	71.00	170.00	68.60	135.82	3.00	2.74	5.00	21.00	5.30	3.00	30.10	28.64	7.40	16.87	100.00	174.73
185	10	HB-031	66.00	165.00	128.00	195.22	6.00	5.74	20.00	50.00	5.10	3.00	27.20	25.74	49.80	59.27	400.00	474.73
186	10	HB-032	70.00	176.00	105.00	172.22	7.00	6.74	21.00	60.00	5.30	3.00	33.10	31.64	21.00	30.47	200.00	274.73
187	10	HB-033	66.00	165.00	62.60	129.82	4.00	3.74	7.00	25.00	5.30	3.00	27.90	26.44	25.10	34.57	100.00	174.73
188	10	HB-034	67.00	170.00	68.00	135.22	3.00	2.74	8.00	23.00	5.00	3.00	31.90	30.44	15.20	24.67	100.00	174.73

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
189	10	HB-035	68.00	165.00	75.60	142.82	3.00	2.74	9.00	31.00	5.20	3.00	27.80	26.34	21.00	30.47	200.00	274.73
190	10	HB-036	70.00	170.00	91.00	158.22	5.00	4.74	11.00	45.00	5.30	3.00	29.10	27.64	10.40	19.87	180.00	254.73
191	10	HB-037	66.00	166.00	100.00	167.22	5.00	4.74	17.00	50.00	4.90	3.00	39.90	38.44	35.90	45.37	350.00	424.73
192	10	HB-038	71.00	169.00	95.30	162.52	6.00	5.74	7.00	30.00	5.50	3.00	35.60	34.14	40.00	49.47	350.00	424.73
193	10	HB-039	65.00	165.00	66.80	134.02	4.00	3.74	9.00	26.00	5.10	3.00	35.40	33.94	5.80	15.27	50.00	124.73
194	10	HB-040	72.00	170.00	78.20	145.42	6.00	5.74	10.00	33.00	4.90	3.00	24.30	22.84	10.50	19.97	150.00	224.73
195	10	HB-041	69.00	165.00	98.30	165.52	6.00	5.74	18.00	27.00	4.90	3.00	32.20	30.74	68.20	77.67	700.00	774.73
196	10	HB-042	70.00	172.00	119.00	186.22	5.00	4.74	16.00	54.00	5.40	3.00	23.80	22.34	25.40	34.87	400.00	474.73
197	10	HB-043	70.00	175.00	105.60	172.82	3.00	2.74	6.00	39.00	5.10	3.00	31.20	29.74	22.00	31.47	350.00	424.73
198	10	HB-044	69.00	169.00	160.00	227.22	4.00	3.74	16.00	50.00	5.30	3.00	36.90	35.44	20.00	29.47	250.00	324.73
199	10	HB-045	68.00	167.00	117.00	92.42	6.00	5.41	12.00	65.00	5.90	3.00	28.80	28.04	18.80	18.51	200.00	66.59
200	10	HB-046	68.00	167.00	91.00	66.42	3.00	2.41	5.00	25.00	5.00	3.00	29.80	29.04	17.00	16.71	250.00	116.59
201	11	HB-047	69.00	167.00	107.70	83.12	4.00	3.41	6.00	24.00	5.00	3.00	29.50	28.74	10.20	9.91	150.00	16.59
202	11	HB-048	69.00	167.00	78.60	54.02	5.00	4.41	11.00	35.00	5.30	3.00	26.60	25.84	10.00	9.71	200.00	66.59
203	11	HB-049	66.00	167.00	104.60	80.02	7.00	6.41	19.00	63.00	5.20	3.00	22.90	22.14	25.00	24.71	450.00	316.59
204	11	HB-050	68.00	167.00	110.00	85.42	6.00	5.41	14.00	46.00	5.20	3.00	34.00	33.24	30.00	29.71	300.00	166.59
205	11	HB-051	68.00	167.00	95.90	71.32	5.00	4.41	10.00	31.00	4.80	3.00	28.90	28.14	22.80	22.51	110.00	-23.41
206	11	HB-052	70.00	182.00	97.00	72.42	4.00	3.41	7.00	31.00	4.40	3.00	24.50	23.74	39.20	38.91	250.00	116.59
207	11	HB-053	65.00	163.00	106.60	82.02	7.00	6.41	6.00	25.00	5.40	3.00	37.50	36.74	14.00	13.71	150.00	16.59
208	11	HB-054	67.00	173.00	119.00	94.42	5.00	4.41	10.00	35.00	5.30	3.00	27.90	27.14	12.00	11.71	150.00	16.59
209	11	HB-055	81.00	186.00	109.00	84.42	9.00	8.41	9.00	41.00	4.90	3.00	34.50	33.74	15.20	14.91	350.00	216.59
210	11	HB-056	71.00	166.00	118.30	93.72	4.00	3.41	14.00	23.00	5.30	3.00	36.30	35.54	14.00	13.71	260.00	126.59
211	11	HB-057	68.00	160.00	106.60	82.02	6.00	5.41	14.00	51.00	5.80	3.00	22.40	21.64	25.00	24.71	310.00	176.59
212	11	HB-058	66.00	180.00	127.60	103.02	5.00	4.41	13.00	39.00	5.50	3.00	27.40	26.64	15.00	14.71	250.00	116.59
213	11	HB-059	65.00	160.00	105.00	80.42	4.00	3.41	8.00	35.00	5.70	3.00	29.60	28.84	29.80	29.51	260.00	126.59
214	11	HB-060	87.00	190.00	79.30	54.72	4.00	3.41	4.00	21.00	5.30	3.00	27.40	26.64	25.40	25.11	200.00	66.59
215	11	HB-061	72.00	175.00	110.60	86.02	6.00	5.41	18.00	53.00	5.50	3.00	28.20	27.44	5.90	5.61	100.00	-33.41
216	11	HB-062	66.00	164.00	117.40	92.82	5.00	4.41	13.00	45.00	5.20	3.00	28.10	27.34	15.40	15.11	200.00	66.59
217	11	HB-063	65.00	165.00	80.20	82.01	3.00	3.41	11.00	40.00	4.80	3.00	29.30	30.44	25.00	29.74	350.00	335.69
218	11	HB-064	70.00	165.00	112.60	114.41	4.00	4.41	10.00	42.00	5.20	3.00	31.40	32.54	10.40	15.14	100.00	85.69
219	11	HB-065	85.00	165.00	87.40	89.21	5.00	5.41	14.00	55.00	5.10	3.00	30.70	31.84	15.20	19.94	150.00	135.69
220	11	HB-066	72.00	185.00	103.60	105.41	4.00	4.41	6.00	27.00	4.80	3.00	23.20	24.34	22.80	27.54	200.00	185.69

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
221	12	HB-067	88.00	164.00	119.30	121.11	5.00	5.41	16.00	50.00	5.70	3.00	30.90	32.04	10.00	14.74	400.00	385.69
222	12	HB-068	70.00	180.00	82.30	84.11	4.00	4.41	7.00	29.00	5.00	3.00	21.20	22.34	12.50	17.24	150.00	135.69
223	12	HB-069	85.00	190.00	84.00	85.81	3.00	3.41	5.00	17.00	4.70	3.00	32.50	33.64	8.90	13.64	100.00	85.69
224	12	HB-070	66.00	165.00	94.60	96.41	5.00	5.41	6.00	29.00	4.90	3.00	30.90	32.04	15.40	20.14	150.00	135.69
225	12	HB-071	74.00	169.00	105.00	106.81	7.00	7.41	15.00	78.00	5.10	3.00	28.40	29.54	35.00	39.74	600.00	585.69
226	12	HB-072	78.00	169.00	79.60	81.41	6.00	6.41	14.00	49.00	4.90	3.00	28.90	30.04	29.40	34.14	200.00	185.69
227	12	HB-073	70.00	184.00	111.00	112.81	5.00	5.41	9.00	39.00	5.00	3.00	31.60	32.74	43.50	48.24	300.00	285.69
228	12	HB-074	82.00	190.00	93.30	95.11	4.00	4.41	10.00	31.00	5.60	3.00	31.90	33.04	25.40	30.14	200.00	185.69
229	12	HB-075	65.00	163.00	140.40	142.21	5.00	5.41	15.00	49.00	5.10	3.00	26.70	27.84	25.00	29.74	400.00	385.69
230	12	HB-076	71.00	169.00	106.60	108.41	6.00	6.41	21.00	57.00	4.90	3.00	29.30	30.44	45.00	49.74	500.00	485.69
231	12	HB-077	66.00	164.00	129.60	131.41	5.00	5.41	11.00	33.00	5.70	3.00	32.10	33.24	15.40	20.14	150.00	135.69
232	12	HB-078	65.00	166.00	94.30	96.11	4.00	4.41	12.00	25.00	5.20	3.00	28.30	29.44	35.00	39.74	300.00	285.69
233	12	HB-079	71.00	165.00	128.30	130.11	8.00	8.41	19.00	70.00	5.60	3.00	27.30	28.44	25.00	29.74	400.00	385.69
234	12	HB-080	83.00	189.00	90.60	92.41	5.00	5.41	8.00	32.00	5.40	3.00	34.80	35.94	32.20	36.94	250.00	235.69
235	12	HB-081	66.00	189.00	78.50	80.31	5.00	5.41	15.00	51.00	5.10	3.00	26.90	28.04	15.00	19.74	300.00	285.69
236	12	HB-082	66.00	170.00	119.50	121.31	7.00	7.41	21.00	83.00	5.40	3.00	27.00	28.14	35.00	39.74	650.00	635.69
237	12	HB-083	62.00	160.00	80.30	82.11	9.00	9.41	9.00	17.00	5.30	3.00	26.40	27.54	25.00	29.74	250.00	235.69
238	12	HB-084	66.00	166.00	85.80	87.61	5.00	5.41	10.00	35.00	4.80	3.00	31.40	32.54	15.90	20.64	210.00	195.69
239	12	HB-085	66.00	171.00	100.40	140.62	7.00	7.74	12.00	43.00	5.20	3.00	30.60	32.84	20.20	21.44	200.00	147.93
240	12	HB-086	73.00	181.00	115.00	155.22	9.00	9.74	19.00	110.00	5.40	3.00	27.90	30.14	35.40	36.64	800.00	747.93
241	12	HB-087	64.00	167.00	86.80	127.02	8.00	8.74	18.00	55.00	5.50	3.00	28.30	30.54	30.00	31.24	750.60	698.53
242	12	HB-088	70.00	173.00	82.30	122.52	4.00	4.74	7.00	29.00	5.00	3.00	29.40	31.64	20.00	21.24	110.50	58.43
243	12	HB-089	71.00	176.00	115.60	155.82	5.00	5.74	11.00	41.00	5.20	3.00	30.80	33.04	15.20	16.44	150.00	97.93
244	12	HB-090	85.00	183.00	91.00	131.22	7.00	7.74	15.00	65.00	5.40	3.00	27.80	30.04	25.00	26.24	195.40	143.33
245	13	HB-091	64.00	156.00	87.30	127.52	10.00	10.74	33.00	85.00	6.30	3.00	26.70	28.94	31.50	32.74	455.00	402.93
246	13	HB-092	65.00	160.00	66.50	106.72	5.00	5.74	9.00	31.00	5.20	3.00	27.30	29.54	5.00	6.24	55.60	3.53
247	13	HB-093	65.00	166.00	69.00	109.22	3.00	3.74	5.00	17.00	4.50	3.00	27.90	30.14	25.90	27.14	139.00	86.93
248	13	HB-094	60.00	159.00	101.60	141.82	5.00	5.74	10.00	31.00	4.90	3.00	33.10	35.34	11.80	13.04	120.40	68.33
249	13	HB-095	56.00	150.00	90.50	130.72	6.00	6.74	12.00	45.00	5.10	3.00	32.40	34.64	8.70	9.94	100.00	47.93
250	13	HB-096	65.00	174.00	79.60	119.82	4.00	4.74	9.00	20.00	4.90	3.00	21.80	24.04	10.40	11.64	90.80	38.73
251	13	HB-097	61.00	174.00	110.90	151.12	5.00	5.74	15.00	57.00	5.50	3.00	29.10	31.34	11.70	12.94	250.50	198.43
252	13	HB-098	74.00	173.00	84.00	124.22	4.00	4.74	4.00	18.00	4.90	3.00	25.40	27.64	5.50	6.74	30.40	-21.67

S. No.	Block No.	Genotypes	Days to 50% flowering	Days to maturity	Plant height (cm)		Primary branches / plant		Clusters/plant	Pods/plant	Pod length (cm)	Seeds/pod	100-seed weight (g)		Seed yield/plant (g)		Seed yield/line (g)	
					Obs.	Adj	Obs.	Adj					Obs.	Adj	Obs.	Adj	Obs.	Adj
253	13	HB-099	71.00	175.00	115.60	155.82	7.00	7.74	18.00	74.00	5.10	3.00	30.40	32.64	15.00	16.24	285.00	232.93
254	13	HB-100	67.00	168.00	120.40	161.92	5.00	3.08	10.00	35.00	5.20	3.00	32.40	32.74	10.40	2.34	70.20	109.63
255	13	HB-101	65.00	169.00	115.40	156.92	7.00	5.08	12.00	43.00	4.90	3.00	28.40	28.74	11.50	3.44	101.50	140.93
256	13	HB-102	64.00	161.00	90.60	132.12	6.00	4.08	10.00	35.00	4.90	3.00	30.20	30.54	6.80	-1.26	80.60	120.03
257	13	HB-103	74.00	184.00	67.00	108.52	3.00	1.08	10.00	27.00	4.90	3.00	25.90	26.24	10.50	2.44	150.00	189.43
258	13	HB-104	63.00	150.00	75.00	118.92	4.00	3.74	4.00	16.00	5.40	3.00	29.40	29.27	5.00	2.77	70.00	76.29
259	13	HB-105	66.00	175.00	101.50	145.42	5.00	4.74	9.00	29.00	5.50	3.00	28.10	27.97	10.40	8.17	130.50	136.79
260	13	HB-106	68.00	171.00	91.80	135.72	6.00	5.74	10.00	34.00	5.60	3.00	30.90	30.77	11.80	9.57	151.00	157.29
261	13	IC-034710	55.00	150.00	73.70	113.92	8.00	8.74	25.00	53.00	4.80	3.00	27.70	29.94	25.40	26.64	300.00	247.93
262	13	IC-276939	83.00	184.00	63.90	104.12	4.00	4.74	16.00	22.00	4.60	3.00	36.40	38.64	40.20	41.44	248.60	196.53
263	13	IC-348948	73.00	184.00	74.20	114.42	6.00	6.74	19.00	37.00	4.60	3.00	30.10	32.34	25.60	26.84	225.50	173.43
264	13	IC-361490	57.00	165.00	61.00	101.22	3.00	3.74	21.00	43.00	4.90	3.00	24.10	26.34	29.60	30.84	200.00	147.93
265	13	MLMKS-7	90.00	185.00	106.00	146.22	4.00	4.74	10.00	26.00	5.20	3.00	27.80	30.04	25.00	26.24	250.00	197.93
266	13	Mutant-1	50.00	140.00	140.30	180.52	17.00	17.74	97.00	165.00	6.90	4.00	34.50	36.74	37.10	38.34	215.50	163.43
267	13	Mutant-2	57.00	155.00	155.10	195.32	12.00	12.74	41.00	98.00	7.70	3.00	30.10	32.34	31.90	33.14	110.00	57.93
268	13	Selection-1	56.00	148.00	65.00	105.22	6.00	6.74	19.00	37.00	5.10	3.00	32.60	34.84	15.50	16.74	290.50	238.43
		Mean for check varieties																
		PRT-7 (C)	64.15	163.23	79.54		5.08		16.62	37.23	5.15	3.00	27.59		18.19		194.83	
		PRT-12 (C)	66.31	166.54	78.68		4.85		11.62	31.08	4.83	3.00	26.71		18.37		182.75	
		Vikrant (C)	66.08	164.38	88.20		5.31		13.00	41.08	4.79	3.08	27.22		18.65		186.81	
		Minimum	**50.00**	**140.00**	**43.90**		**2.00**		**4.00**	**11.00**	**4.00**	**3.00**	**21.20**		**3.50**		**30.40**	
		Maximum	**92.00**	**199.00**	**160.00**		**17.00**		**97.00**	**165.00**	**7.70**	**4.00**	**39.90**		**71.50**		**800.00**	
		Mean	**70.45**	**171.54**	**82.91**		**4.94**		**15.81**	**40.72**	**5.03**	**3.00**	**29.38**		**22.37**		**228.13**	
		CD(0.05)	**9.18**	**16.26**	**28.89**		**2.53**		**15.13**	**28.42**	**1.06**	**0.40**	**3.17**		**16.35**		**187.53**	
		CV (%) error	**5.67**	**4.00**	**14.25**		**20.22**		**44.61**	**31.58**	**8.72**	**5.29**	**4.72**		**35.99**		**40.38**	
		CV (%) Pheno.	**10.83**	**6.22**	**25.38**		**33.39**		**53.75**	**43.45**	**8.18**	**2.03**	**11.67**		**48.14**		**54.95**	

Table 163. Multilocational evaluation of germplasm lines in faba bean at Delhi - 2007 (Plains)

S.No.	Accession No.	Flower /cluster	Pods/cluster	Days to flowering	Days to maturity	No. of primary branches /plant	Pods/plant	Grains /pod	Dry matter yield(q/ha)	Pod length (cm)	100seed weight (g)	No.of leaflet/root	Seed yield(q/ha)	Plant height(cm)
1	BGR-82	2.0	3.0	82	100	4.0	56.75	3.3	70.37	6.01	28.72	6.0	29.6	47.8
2	BL/MKS-7	2.0	2.0	63	108	6.6	68.0	3.0	85.19	4.90	31.65	5.6	37.0	84.8
3	EC-005864	2.0	2.0	64	103	4.2	40.6	3.6	31.48	5.60	31.02	6.8	20.7	73.6
4	EC-010719	2.0	1.0	62	104	3.6	36.8	2.0	27.78	5.96	40.55	6.0	9.6	67.0
5	EC-010720	1.2	2.0	61	105	5.8	74.2	3.0	50.00	5.06	32.83	6.0	40.0	80.4
6	EC-010845	2.0	2.0	63	102	9.8	111.4	3.0	53.70	6.20	30.69	5.0	31.1	65.2
7	EC-025072	2.0	2.0	61	102	7.8	80.8	2.4	77.78	6.50	30.55	5.0	37.0	87.4
8	EC-025192	2.0	2.0	57	99	5.2	82.6	3.0	64.81	6.40	31.34	8.0	40.0	70.0
9	EC-032790	2.0	2.0	62	103	6.6	86.0	4.0	74.07	6.10	33.41	6.0	43.0	65.6
10	EC-034710	2.0	2.0	84	104	7.6	71.0	3.6	37.04	5.80	24.63	6.0	23.0	98.4
11	EC-108908	2.0	1.0	58	103	7.0	46.6	2.0	56.30	5.56	35.75	6.0	22.2	96.0
12	EC-117361	2.0	2.0	61	108	5.6	85.0	4.0	81.48	5.88	30.40	5.0	25.2	65.2
13	EC-117705	3.0	2.0	63	99	8.2	88.6	2.8	77.78	5.80	34.80	4.8	42.2	88.8
14	EC-117724	2.0	2.0	62	104	6.6	71.6	3.0	61.11	5.60	32.65	5.0	24.4	81.0
15	EC-117726	2.0	2.0	62	107	5.2	69.4	3.6	70.37	5.32	32.91	5.0	37.8	71.6
16	EC-117741	2.0	2.0	86	107	9.2	84.8	2.4	49.26	6.50	35.85	5.0	27.4	92.2
17	EC-117744	2.0	2.0	59	104	6.6	61.0	3.6	55.56	6.28	35.72	6.0	33.3	84.2
18	EC-117748	2.0	2.0	84	103	5.8	70.6	4.0	85.19	6.10	40.00	5.0	40.7	63.0
19	EC-117753	2.0	2.0	66	105	6.0	76.2	3.0	94.44	5.80	27.90	6.0	41.5	76.8
20	EC-117755	2.0	2.0	64	110	6.4	68.4	3.0	83.33	5.03	33.78	5.2	28.1	76.6
21	EC-117758	2.0	2.0	64	109	8.2	67.4	3.0	55.56	6.04	36.50	6.0	25.9	75.2
22	EC-117765	2.0	2.0	60	106	4.2	44.6	3.0	46.30	5.14	32.81	5.4	21.5	66.0
23	EC-117792	2.0	2.0	59	102	5.2	64.2	3.0	48.15	5.42	34.29	6.0	27.4	86.0

S.No.	Accession No.	Flower /cluster	Pods/cluster	Days to flowering	Days to maturity	No. of primary branches /plant	Pods/plant	Grains /pod	Dry matter yield(q/ha)	Pod length (cm)	100seed weight (g)	No.of leaflet/root	Seed yield(q/ha)	Plant height(cm)
24	EC-117795	2.0	2.0	64	100	4.6	46.4	3.0	46.30	6.44	30.10	6.0	25.9	81.8
25	EC-117809	2.0	2.0	59	100	4.6	54.0	2.2	51.85	5.96	32.12	6.8	24.4	71.4
26	EC-117818	2.0	2.0	61	113	7.0	97.0	3.0	70.37	5.54	31.90	6.0	28.9	90.2
27	EC-117842	2.0	2.0	63	102	7.4	66.2	3.0	70.37	6.12	30.03	7.0	28.1	72.4
28	EC-243036	2.0	1.0	64	108	5.6	63.6	3.0	98.15	6.24	37.25	6.0	39.3	62.4
29	EC-243525A	2.0	2.0	59	106	6.6	71.8	3.6	85.19	5.30	37.68	6.6	40.0	83.4
30	EC-243529	2.0	2.0	64	106	6.0	85.8	2.0	53.70	5.18	22.05	6.2	32.6	67.8
31	EC-243584	2.0	2.0	57	104	7.2	49.6	3.0	53.70	4.70	39.66	5.0	34.1	71.8
32	EC-243594	2.0	2.0	64	100	4.6	61.6	3.0	55.56	5.66	40.05	6.4	38.5	83.4
33	EC-243608	2.0	2.0	62	104	5.0	61.4	2.8	62.96	6.10	35.98	6.2	37.0	76.8
34	EC-243631	2.0	2.0	62	100	8.6	79.4	3.2	55.56	6.00	38.79	5.2	34.8	82.6
35	EC-243637	2.0	2.0	62	100	5.2	68.8	3.0	72.22	5.76	36.07	5.0	44.4	74.0
36	EC-243709	2.0	2.0	62	109	9.6	97.4	3.0	48.15	6.22	27.76	7.0	29.6	65.4
37	EC-243756	2.0	2.0	63	103	8.8	70.8	3.0	55.56	6.08	30.72	6.4	26.7	75.2
38	EC-243761	2.0	2.0	63	100	3.4	30.2	3.0	22.22	6.16	26.54	4.0	3.7	47.4
39	EC-243770	2.0	2.0	62	105	8.0	97.4	3.0	81.48	6.20	22.73	6.0	47.4	84.2
40	EC-243772	1.0	2.0	57	107	5.4	58.4	3.0	48.15	6.78	26.97	6.0	17.8	73.2
41	EC-243786	2.0	2.0	60	107	8.2	63.0	3.0	74.07	6.18	34.55	6.6	34.8	84.4
42	EC-243808	2.0	2.0	64	104	7.8	74.8	2.6	51.85	6.56	34.25	6.0	36.3	96.2
43	EC-243860	2.0	1.0	64	102	3.6	40.0	2.0	24.07	5.80	30.75	5.4	8.1	72.8
44	EC-243895	3.0	2.0	60	101	7.2	77.2	3.0	85.19	5.80	28.29	6.2	29.6	79.4
45	EC-246860	2.0	2.0	64	103	7.6	77.6	2.0	66.67	6.00	36.00	7.0	37.8	75.2
46	EC-247592	2.0	2.0	61	110	7.2	75.0	3.0	87.04	5.46	35.17	6.2	40.7	79.0
47	EC-248951	2.0	2.0	64	103	5.4	107.8	3.4	66.67	6.74	33.28	6.0	41.5	82.4
48	EC-263624	2.0	2.0	86	108	5.4	49.2	3.0	23.33	7.00	38.80	6.0	12.6	66.2
49	EC-267641	2.0	1.0	63	100	4.8	57.0	2.0	64.81	5.92	35.04	6.0	39.3	74.6
51	EC-267648	2.0	2.0	59	104	5.0	65.2	3.4	48.15	5.10	31.56	5.4	3.3	62.2

S.No.	Accession No.	Flower /cluster	Pods/cluster	Days to flowering	Days to maturity	No. of primary branches /plant	Pods/plant	Grains /pod	Dry matter yield(q/ha)	Pod length (cm)	100seed weight (g)	No.of leaflet/root	Seed yield(q/ha)	Plant height(cm)
50	EC-267649	2.0	3.0	58	109	7.4	76.8	2.4	98.15	6.46	37.30	7.0	38.1	78.4
52	EC-299313	2.0	2.0	59	109	8.8	93.6	4.0	88.89	6.36	39.14	6.2	40.7	94.4
53	EC-323731	2.0	2.0	86	102	3.4	54.8	3.0	44.44	6.28	43.32	7.0	11.9	79.6
54	EC-324677	2.0	1.0	63	108	5.4	68.6	3.0	48.15	6.04	32.80	5.4	26.7	77.0
55	EC-329588	2.0	2.0	59	106	6.4	68.4	2.0	85.19	6.04	32.90	5.0	40.0	70.6
56	EC-329605	2.0	2.0	63	102	4.2	47.2	3.0	18.52	5.54	43.22	5.0	14.1	66.6
57	EC-329628	2.0	2.0	64	107	5.4	54.6	3.6	24.07	5.48	31.34	6.4	3.7	74.6
58	EC-329643	2.0	2.0	58	105	5.6	87.4	2.0	50.00	4.90	28.38	5.0	28.9	63.4
59	EC-329662	2.0	2.0	58	99	5.6	55.0	2.6	66.67	5.96	34.91	6.0	48.1	76.4
60	EC-329667	2.0	2.0	64	102	3.6	40.0	2.6	35.19	5.48	37.36	6.2	24.4	84.4
61	EC-329668	2.0	2.0	64	108	8.8	97.8	2.0	81.48	6.28	28.34	6.4	50.0	77.6
62	EC-329672	1.2	1.0	62	105	7.6	67.2	2.0	109.26	6.10	31.88	6.0	51.9	69.4
63	EC-329677	2.0	2.0	80	107	3.4	38.2	3.0	27.78	5.04	26.45	5.6	5.2	59.4
64	EC-329679	2.0	2.0	60	102	9.0	104.2	2.4	85.19	6.00	44.78	6.0	42.2	80.2
65	EC-329681	2.0	2.0	62	109	5.0	54.8	3.0	33.33	6.06	35.93	5.0	18.5	72.6
66	EC-329682	2.0	1.0	59	108	5.2	58.8	2.6	72.22	4.90	32.15	6.2	39.3	69.0
67	EC-329687	2.0	2.0	60	105	6.8	76.8	3.0	77.78	5.58	38.08	6.0	40.7	76.2
68	EC-329691	2.0	2.0	62	102	5.4	82.4	3.0	66.67	6.02	37.70	5.0	24.4	76.6
69	EC-329696	2.0	2.0	62	104	4.2	44.6	3.0	27.78	5.12	33.84	5.0	17.8	74.0
70	EC-329707	2.0	2.0	63	108	7.8	110.6	3.6	48.15	6.00	33.98	5.0	34.8	88.8
71	EC-329711	2.0	2.0	86	101	5.0	60.2	4.0	88.89	6.00	29.80	7.0	25.2	72.8
72	EC-329713	2.0	1.2	62	105	0.8	40.2	3.0	24.07	5.28	32.62	5.0	18.5	85.0
73	EC-329715	2.0	2.0	59	105	7.0	70.4	3.0	40.74	6.30	33.53	6.0	28.1	74.4
74	EC-329724	2.0	2.0	52	111	8.4	77.6	2.6	77.78	6.20	34.90	6.0	35.6	80.8
75	EC-329725	2.0	2.0	64	103	8.4	93.4	4.0	101.85	5.52	31.17	6.0	40.7	74.4
76	EC-329812	2.0	2.0	63	101	6.6	71.0	2.0	44.44	6.44	34.29	5.6	29.6	91.4
77	EC-329812	2.0	2.0	63	108	3.2	31.2	2.0	44.44	5.24	33.40	6.0	6.7	63.8

S.No.	Accession No.	Flower /cluster	Pods/cluster	Days to flowering	Days to maturity	No. of primary branches /plant	Pods/plant	Grains /pod	Dry matter yield(q/ha)	Pod length (cm)	100seed weight (g)	No.of leaflet/root	Seed yield(q/ha)	Plant height(cm)
78	EC-331561	2.0	2.0	64	105	6.0	69.4	2.0	92.59	4.88	33.55	6.0	40.7	73.4
79	EC-343749	2.0	2.0	59	109	5.6	55.2	3.8	61.11	5.38	40.82	6.0	32.6	69.4
80	EC-343793	2.0	2.0	58	102	6.2	67.4	4.0	59.26	5.82	30.76	5.0	34.1	72.0
81	EC-343808	2.0	2.5	62	109	6.8	85.8	3.0	92.59	7.00	30.80	6.2	25.9	83.4
82	EC-343855	2.2	1.4	62	105	6.6	59.8	3.8	70.37	5.72	34.20	6.4	40.7	73.8
83	EC-354951	2.0	3.0	62	104	8.2	124.0	3.0	64.81	4.64	29.45	6.6	32.6	77.3
84	EC-354984	2.0	2.0	61	109	4.0	57.2	2.0	77.78	5.80	27.90	5.8	20.0	65.0
85	EC-354985	2.2	2.2	62	103	5.2	57.6	3.0	66.67	7.08	36.46	6.0	41.5	72.2
86	EC-359685	2.0	2.0	61	108	8.8	106.6	3.0	51.85	6.18	35.17	6.2	31.9	73.4
87	EC-361494	2.0	2.0	59	111	6.8	64.0	3.0	61.11	5.90	42.67	5.6	39.3	72.2
88	EC-399712	2.0	2.0	63	106	7.0	77.0	4.0	46.30	5.74	26.02	6.0	34.1	70.0
89	EC-550179	2.0	2.0	60	102	5.8	74.4	2.6	40.74	5.58	24.98	5.0	19.3	64.8
90	EC-556902	1.0	1.0	58	107	6.8	49.4	3.8	40.74	8.94	72.79	6.2	11.9	82.2
91	EC-556903	2.0	1.0	82	106	5.2	72.0	4.0	50.00	9.86	29.30	5.2	3.0	32.6
92	IC-276939	2.0	2.0	64	109	5.8	52.0	2.0	118.52	5.36	33.80	6.0	36.3	74.6
93	IC-322949	1.0	2.0	77	104	5.6	43.0	3.6	40.74	8.60	47.43	6.0	7.4	61.4
94	IC-329680	2.0	3.0	62	109	5.2	58.0	3.0	90.74	5.52	34.10	5.6	4.4	75.4
95	IC-332101	2.0	2.0	59	104	7.4	61.2	4.0	64.81	5.42	32.51	5.0	34.1	67.0
96	IC-332102	2.4	2.0	66	107	5.6	40.0	3.6	107.41	5.30	25.57	6.0	32.6	59.8
97	IC-332114	2.0	2.0	64	109	8.0	77.6	3.0	9.26	4.50	22.37	6.0	2.2	59.2
98	IC-332138	4.0	3.0	63	109	4.4	58.2	3.0	103.70	6.16	35.01	6.2	8.1	63.4
99	IC-346272	2.0	2.0	64	107	4.8	63.2	3.0	92.59	4.92	21.65	6.0	3.7	67.2
100	IC-348948	3.0	3.0	59	111	4.0	53.6	2.0	133.33	6.26	39.14	6.0	43.0	74.6
101	IC-361470	2.0	2.0	63	107	3.8	50.2	3.0	77.78	5.68	29.81	6.0	31.1	66.6
102	IC-361496	2.0	1.8	64	109	7.2	77.4	2.8	148.15	5.42	32.16	4.4	32.2	73.4
103	IC-361499	2.0	2.0	62	105	5.2	65.8	2.8	111.11	4.86	23.75	6.0	24.4	60.2
104	IC-371771	2.0	2.0	68	107	6.0	56.4	3.0	55.56	6.40	21.76	6.0	18.5	70.2

S.No.	Accession No.	Flower /cluster	Pods/cluster	Days to flowering	Days to maturity	No. of primary branches /plant	Pods/plant	Grains /pod	Dry matter yield(q/ha)	Pod length (cm)	100seed weight (g)	No.of leaflet/root	Seed yield(q/ha)	Plant height(cm)
105	IC-382200	2.0	2.0	64	105	6.2	63.4	2.4	59.26	5.58	26.50	6.0	22.2	61.0
106	IC-417593	2.0	2.0	66	105	6.6	61.0	3.0	55.56	5.52	30.88	5.6	17.8	71.2
107	IC-417598	2.0	2.0	66	105	3.2	22.6	2.6	5.56	5.92	35.75	5.0	2.2	37.0
108	IC-424614	2.0	2.0	76	100	2.6	23.0	2.6	8.33	3.58	28.20	5.0	2.2	52.8
109	IC-424900	2.0	2.0	64	102	4.8	102.6	3.0	100.00	4.28	18.75	5.0	22.2	69.1
110	IC-447894	2.0	1.0	64	107	2.0	34.0	2.0	37.00	7.10	27.40	4.3	0.1	39.32
111	IC-447895	2.0	1.0	63	105	2.6	26.2	1.0	42.59	6.00	22.80	6.0	26.7	36.4
112	IC-447896	2.0	2.0	67	109	3.2	35.0	2.0	9.26	3.56	21.60	5.6	0.7	50.6
113	IC-447897	2.0	2.0	66	104	3.2	37.6	2.0	44.44	4.52	44.13	5.0	34.8	39.6
114	IC-447900	2.0	2.0	64	103	5.2	63.2	2.2	42.59	4.54	20.70	5.0	28.9	55.8
115	IC-447901	2.0	2.0	63	107	6.8	77.2	3.0	55.56	6.16	37.92	5.0	32.6	77.2
116	IC-447902	2.0	2.0	64	103	5.8	78.0	3.0	44.44	5.22	25.09	5.0	11.1	54.4
117	IC-447903	2.0	2.4	63	103	6.4	65.0	3.0	29.63	5.80	19.40	5.2	13.7	47.0
118	IC-447906	2.0	2.0	66	107	6.0	81.8	2.4	92.59	5.10	27.96	6.0	28.1	65.6
119	IC-447907	2.0	2.0	61	102	4.4	58.6	2.4	12.96	4.70	18.10	5.0	2.6	36.8
120	IC-520833	2.0	2.0	59	107	4.4	40.0	2.0	8.33	3.76	19.50	5.0	2.2	39.6
121	IC-520834	2.0	2.0	64	105	4.6	39.4	2.0	11.11	5.50	26.82	5.2	3.0	42.8
122	IC-526384	2.0	2.0	62	105	3.8	40.4	2.0	35.19	3.96	24.80	5.0	13.3	69.0
123	IC-526385	2.0	1.0	67	108	4.2	46.4	2.2	24.07	4.64	22.23	5.0	3.0	51.6
124	IC-526386	2.0	2.0	68	104	3.6	54.0	3.0	14.81	4.10	23.12	5.0	3.0	46.6
125	ISV-10-2	2.0	2.0	64	103	5.0	62.4	3.0	50.00	4.40	24.30	5.8	18.5	60.8
126	JBT/42/RB3/76	2.0	2.0	68	103	4.8	47.6	3.0	50.00	6.10	31.65	5.0	5.2	62.4
127	JBT-46/10	2.0	2.0	58	108	6.0	55.8	3.0	19.26	5.44	24.96	6.2	14.1	54.0
128	JBT-46/13	2.0	2.0	62	105	4.4	45.2	2.0	44.44	6.20	25.19	6.0	25.2	61.2
129	JBT-46/14	2.0	2.0	59	102	3.8	34.0	2.0	24.07	4.70	23.44	7.0	7.4	55.0
130	JBT-46/25	2.0	2.0	58	110	5.0	49.4	2.4	22.22	5.38	26.12	5.8	13.3	58.8
131	JBT-46/3	2.0	2.0	59	105	6.0	69.0	3.0	33.33	6.40	25.67	5.4	21.5	54.8

S.No.	Accession No.	Flower /cluster	Pods/cluster	Days to flowering	Days to maturity	No. of primary branches /plant	Pods/plant	Grains /pod	Dry matter yield(q/ha)	Pod length (cm)	100seed weight (g)	No.of leaflet/root	Seed yield(q/ha)	Plant height(cm)
132	JBT-46/37	2.0	2.0	63	103	4.4	45.0	3.0	70.37	5.18	21.06	6.0	22.2	53.6
133	JBT-46/43	2.0	2.0	57	107	3.8	44.0	3.0	25.93	5.10	26.92	6.0	14.8	60.2
134	JBT-46/46	2.0	2.0	59	103	5.8	63.0	2.0	74.07	5.32	23.28	5.2	3.0	54.0
135	JBT-46/53	2.0	2.0	63	102	7.6	70.6	3.0	62.96	5.90	25.12	5.8	34.1	70.6
136	JBT-46/55	2.0	2.0	61	104	7.0	103.2	3.0	48.15	4.90	28.66	5.2	39.3	60.0
137	JBT-46/6	2.0	2.0	62	102	6.8	64.6	3.0	46.30	6.40	27.61	5.8	24.4	58.4
138	MKS/AKS-272	2.0	1.0	64	108	4.4	40.6	2.2	46.30	5.70	41.31	6.4	17.8	69.6
139	SPO-20-03	2.0	2.0	67	102	3.6	10.5	3.0	12.96	4.46	20.48	4.2	1.1	40.6
140	SPO-21-03	2.0	1.0	77	111	3.4	44.6	2.2	16.67	4.90	24.48	5.0	7.4	42.0
141	SPO-22-03	3.8	2.0	62	102	3.8	53.2	2.4	62.96	4.28	19.00	5.2	3.7	44.4
142	VKG-02	2.0	2.0	68	107	3.0	24.2	2.4	37.00	4.44	30.00	5.4	0.4	54.0
143	VKG-18/46	2.0	1.0	80	107	5.0	25.8	4.0	24.07	8.90	58.78	6.0	10.4	58.2
144	VKG-34/77	2.0	2.0	62	104	5.0	53.0	3.6	50.00	6.06	25.90	7.0	22.2	55.0
145	VKS/17/30	2.0	3.0	58	103	8.0	58.8	4.0	85.19	6.66	32.80	6.2	36.3	73.2
146	VKS-17/110	2.0	2.0	64	104	4.8	93.4	3.0	70.37	4.40	23.10	5.0	31.1	67.4
147	VKS-17/26	1.0	1.4	61	107	7.8	85.6	3.2	81.48	5.52	33.15	6.0	36.3	75.3
148	VKS-18/46	2.0	2.0	64	105	3.4	43.8	3.0	48.15	4.74	29.53	6.0	9.6	64.0
Mean for checks varieties														
	PRT-7 (C)	2.0	2.1	60	106	5.7	66.4	3.1	70.16	5.44	31.89	5.7	24.4	77.1
	PRT-12 (C)	1.9	2.0	60	105	6.4	65.3	2.9	81.89	5.56	32.58	5.4	36.0	75.5
	Vikrant (C)	1.9	2.0	60	104	5.2	57.8	2.9	77.10	5.53	28.54	5.7	24.5	73.8
	Minimum	**1.00**	**1.00**	**52.00**	**99.00**	**0.80**	**10.45**	**1.00**	**5.56**	**3.56**	**18.1**	**4.00**	**0.1**	**32.6**
	Maximum	**4.00**	**3.00**	**86.00**	**113.00**	**9.80**	**124.00**	**4.00**	**148.15**	**9.86**	**72.79**	**8.00**	**51.9**	**98.4**
	Mean	**2.01**	**1.93**	**63.71**	**105.02**	**5.73**	**63.45**	**2.87**	**58.08**	**5.70**	**31.51**	**5.74**	**24.98**	**68.76**
	CD (0.05)	**0.61**	**0.73**	**4.85**	**6.34**	**3.94**	**57.97**	**1.52**	**80.28**	**1.30**	**6.32**	**1.20**	**42.20**	**35.02**
	CV (%) error	**12.14**	**13.87**	**3.13**	**2.34**	**26.58**	**35.57**	**19.91**	**40.73**	**9.13**	**7.90**	**8.32**	**57.73**	**17.99**
	CV (%) Phen.	**2.6**	**2.8**	**54.81**	**97.55**	**10.29**	**124.32**	**4.63**	**162.17**	**6.86**	**38.90**	**6.87**	**78.25**	**112.13**

Table 164. Multilocational evaluation of germplasm lines in faba bean at Faizabad - 2007 (Plains)

S.No.	Block No.	Accession No.	Days to flowering	Days to maturity	Plant height (cm)	No. of branches/ plant	No. of pods/plant	No. of grain/pod	100 seed weight (g)	Yield (q/ha)
1	1	EC005864	61	162	45.00	4.00	33.00	3.30	25.00	18.00
2	1	EC010179	70	172	63.60	4.00	27.00	2.80	21.20	10.04
3	1	EC025058	74	164	49.60	5.80	38.20	3.20	23.90	21.93
4	1	EC025085	68	159	67.00	3.80	52.00	2.40	21.00	14.35
5	1	EC025192	59	169	69.00	5.00	24.20	3.80	22.10	9.22
6	1	EC117724	78	171	67.00	4.20	33.80	3.00	33.50	10.20
7	1	EC117726	78	165	51.40	3.60	37.00	3.20	27.80	18.45
8	1	EC117727	79	166	57.40	3.80	36.80	3.20	33.20	19.47
9	1	EC117734	72	161	50.00	4.80	41.00	3.00	26.00	16.60
10	1	EC117739	68	169	56.60	3.80	33.00	3.20	24.50	17.01
11	2	EC117744	70	160	59.00	4.80	37.00	2.40	29.30	13.37
12	2	EC117745	79	168	59.40	5.20	35.50	2.80	30.20	17.22
13	2	EC117749	76	168	54.60	5.80	38.80	3.60	26.10	19.27
14	2	EC117753	63	170	55.40	4.00	35.60	3.20	26.90	14.76
15	2	EC117818	72	166	67.80	3.00	53.80	3.00	31.20	15.37
16	2	EC117842	79	161	59.00	5.40	16.80	5.40	22.20	15.58
17	2	EC243525 A	78	161	60.80	5.60	39.60	3.40	30.60	15.58
18	2	EC243529	72	162	68.60	6.00	50.00	2.80	28.40	10.25
19	2	EC243596	74	172	61.80	3.20	36.40	3.40	32.60	11.27
20	2	EC243626	63	165	53.60	3.60	36.40	3.00	31.70	10.25
21	3	EC243637	70	166	57.80	5.00	54.00	2.60	24.10	10.25
22	3	EC243709	70	164	60.20	5.00	46.00	5.40	22.90	9.22
23	3	EC243743	70	168	54.40	4.60	26.60	2.80	24.50	11.27
24	3	EC243755	64	162	54.20	3.20	33.80	3.20	28.50	12.30
25	3	EC243761	71	163	59.40	3.00	29.40	3.40	26.30	12.20
26	3	EC243770	78	167	48.00	3.20	42.20	3.30	30.90	5.33
27	3	EC243772	71	162	57.80	3.00	36.20	3.40	26.60	6.15
28	3	EC243781	75	169	61.00	4.40	35.20	3.60	30.20	19.47
29	3	EC243782	75	170	67.00	5.00	45.00	3.40	29.30	17.42
30	3	EC243784	80	168	72.40	4.40	41.00	2.80	26.90	14.26
31	4	EC243786	76	161	55.00	4.60	43.80	3.00	30.90	16.40
32	4	EC243791	58	161	46.20	4.20	35.80	2.60	28.10	22.14
33	4	EC243860	58	161	46.00	4.40	35.00	2.60	25.10	12.71
34	4	EC243895	81	159	66.20	4.20	45.80	3.20	31.50	10.20
35	4	EC247696	81	157	58.60	4.00	38.20	2.80	22.20	22.55
36	4	EC248945	81	170	62.00	4.40	42.00	2.40	35.10	21.52
37	4	EC249851	77	167	56.40	3.20	53.20	2.80	24.60	10.25
38	4	EC249947	70	165	50.00	4.00	28.40	2.40	24.40	17.42
39	4	EC253588	68	171	67.00	3.20	39.80	3.00	31.40	14.35
40	4	EC267641	81	168	74.80	6.00	32.60	3.20	25.60	25.83
41	5	EC267648	67	169	52.60	4.60	34.40	3.00	23.80	23.57
42	5	EC299313	56	169	58.40	4.40	51.60	3.00	25.80	26.52
43	5	EC322967	79	160	44.20	5.00	47.00	3.00	25.60	17.40
44	5	EC323731	78	162	57.40	4.00	54.40	2.80	32.40	10.25
45	5	EC324677	75	158	69.00	2.80	50.40	3.00	27.40	22.55
46	5	EC329003	72	163	61.20	4.40	38.20	3.00	23.90	17.21
47	5	EC329605	67	169	57.40	5.00	42.20	3.00	28.20	25.42

S.No.	Block No.	Accession No.	Days to flowering	Days to maturity	Plant height (cm)	No. of branches/ plant	No. of pods/plant	No. of grain/pod	100 seed weight (g)	Yield (q/ha)
48	5	EC329627	65	169	67.20	3.80	40.20	3.40	26.80	8.20
49	5	EC329662	85	165	59.60	3.60	34.40	2.60	25.40	9.22
50	5	EC329668	78	171	49.60	5.00	51.00	3.40	22.40	15.21
51	6	EC329673	65	169	53.80	3.20	29.80	3.40	21.80	20.09
52	6	EC329675	85	167	60.00	4.40	40.20	3.40	26.10	17.22
53	6	EC329677	85	161	68.00	4.20	54.60	3.20	26.80	22.50
54	6	EC329679	72	161	57.80	4.60	41.00	2.60	31.20	15.37
55	6	EC329683	80	166	60.20	2.40	33.00	2.80	26.30	22.55
56	6	EC329696	87	171	49.60	2.40	33.20	3.20	23.90	10.21
57	6	EC329700	70	167	67.00	4.40	25.20	3.20	21.00	14.76
58	6	EC329707	67	169	69.00	3.60	44.40	3.60	22.10	12.00
59	6	EC329714	75	169	52.40	4.00	43.00	2.80	33.50	8.20
60	6	EC329715	63	164	62.20	4.20	34.60	3.20	31.00	6.15
61	7	EC329724	74	161	67.00	5.00	43.80	3.20	25.20	24.17
62	7	EC329725	80	163	51.40	3.40	33.40	3.00	34.60	6.15
63	7	EC329812	63	169	49.40	3.60	32.80	3.20	31.20	21.11
64	7	EC331549	71	165	55.00	2.20	50.20	2.80	26.10	10.04
65	7	EC331571	81	166	59.60	4.00	28.40	2.00	31.10	14.96
66	7	EC331587	70	161	55.80	3.40	57.60	2.60	22.50	12.30
67	7	EC343696	75	163	57.80	3.20	29.60	2.60	25.50	10.50
68	7	EC343808	73	161	60.80	4.20	43.20	2.40	28.10	23.75
69	7	EC348948	71	165	66.00	4.60	38.20	3.60	23.60	19.47
70	7	EC351999	80	171	55.80	4.80	30.00	3.00	32.60	8.20
71	8	EC354951	65	169	55.00	4.00	37.40	3.40	28.60	7.79
72	8	EC361427	71	164	71.00	3.00	60.20	3.00	23.60	13.37
73	8	EC361470	76	161	65.20	4.00	52.60	2.80	31.40	9.63
74	8	EC361496	77	165	60.20	4.20	42.20	2.80	26.30	12.71
75	8	EC374131	67	166	57.20	5.00	31.00	2.40	23.10	10.50
76	8	EC382423	68	153	55.00	4.00	37.60	3.20	24.60	11.27
77	8	IC361498	61	163	50.00	5.00	33.80	3.20	28.10	19.47
		Mean for check varieties								
		PRT-7 (C)	67.88	165.75	58.88	3.65	35.64	3.03	29.96	14.89
		PRT-12 (C)	71.88	165.50	57.45	4.00	41.46	3.03	29.20	15.90
		Vikrant (C)	65.13	164.00	58.80	4.15	37.85	3.18	30.90	17.47
		Minimum	**56.00**	**153.00**	**44.20**	**2.20**	**16.80**	**2.00**	**21.00**	**5.33**
		Maximum	**87.00**	**172.00**	**74.80**	**6.00**	**60.20**	**5.40**	**35.10**	**26.52**
		Mean	**72.34**	**165.13**	**58.69**	**4.15**	**39.25**	**3.08**	**27.23**	**14.97**
		CD (0.05)	**14.33**	**12.45**	**15.97**	**2.03**	**22.59**	**1.05**	**12.77**	**10.22**
		CV (%) Error	**7.97**	**2.86**	**10.39**	**19.55**	**22.39**	**12.97**	**16.15**	**24.12**
		CV (%) Phenotypic	**9.60**	**2.41**	**11.65**	**19.95**	**21.58**	**16.52**	**13.36**	**35.27**

Table 165. Promising lines in Winged bean germplasm for various characters at various locations (Plains)

S.No.	Characters	Range	Promising lines
Ambikapur (Accessions 17)			
1.	Days to 50% flowering	74.50 - 91.00	EC027886-A2, EC142667, EC178288, IC095222, EC142662, EC142654, EC142654-4, IC112416, EC021904 (< 84.00 days)
2.	Days to maturity	157.00 - 175.50	EC027886-A2, EC142654-4, EC142654, EC178287, EC142667, EC142662, EC116887, EC178288, IC112416, IC112417 (< 165.00 days)
3.	Pod length (cm)	12.10 - 18.00	IC112417, IC112416, IC045229-1, EC021904, IC095222, EC178287, EC116887, EC027885-1, EC142654-4, EC142662, EC027886 (> 14.00 cm)
4.	Dry yield (q/ha)	1.11 - 15.28	IC112416, IC095222, IC045229-1, IC112417, EC142654, IC095236, EC021904, EC178287, EC178288, EC142667 (> 3.89 q/ha)

Table 166. Multilocational evaluation of germplasm in winged bean at Ambikapur - 2007 (Plains)

Sl.No.	Genotype	Days to 50% flowering	Days to maturity	Pod length (cm)	Dry yield (q/ha)
1	EC021904	83.00	166.50	17.20	7.50
2	EC027885-1	88.00	165.00	15.40	3.61
3	EC027886	86.00	170.00	14.70	3.89
4	EC027886-A2	74.50	157.00	12.10	1.11
5	EC116887	84.00	161.00	15.50	3.47
6	EC142654	82.00	159.00	12.60	8.89
7	EC142654-4	82.00	158.00	15.30	3.33
8	EC142662	80.50	161.00	15.20	3.06
9	EC142667	78.50	161.00	14.00	4.94
10	EC178287	87.00	159.00	16.30	5.83
11	EC178288	78.50	163.00	13.90	5.00
12	IC045229-1	91.00	175.50	17.40	10.00
13	IC095222	78.50	175.00	16.60	15.28
14	IC095236	84.00	170.50	13.80	8.06
16	IC112416	82.50	163.00	17.40	15.28
17	IC112417	85.00	163.00	18.00	9.17
	Minimum	**74.50**	**157.00**	**12.10**	**1.11**
	Maximum	**91.00**	**175.50**	**18.00**	**15.28**
	Mean	**82.81**	**164.22**	**15.34**	**6.77**
	CD (0.05)	**6.05**	**5.37**	**2.37**	**1.03**
	CV (%) Error	**3.43**	**1.53**	**7.24**	**7.14**
	CV (%) Phenotypic	**5.04**	**3.53**	**11.45**	**61.66**

Table 167. Promising lines in Kalingada germplasm for various characters at different locations (Plains)

S.No.	Characters	Range	Promising lines	Value of best check
S.K. Nagar (Accessions 24)				
1.	Days to open Ist male flower	41.00-57.00	SKNK-012, SKNK-005, SKNK-013, SKNK-015, SKNK-405, SKNK-017, Mahudi-4, Sidhpur-1, Sidhpur-2, SKNK-018, SKNK-021 (< 45.00 days)	GK-1 (45.00 days)
2.	Days to open Ist female flower	53.00-67.00	SKNK-012, SKNK-405, SKNK-005, SKNK-017, Sidhpur-1, Mahudi-4, Sidhpur-2, SKNK-018, SKNK-021, SKNK-402, SKNK-408 (< 57.00 days)	GK-1 (57.00 days)
3.	Plant stand	1.00-4.00	Motimahudi, SKNK 2004 (> 3.00)	GK-1 (3.00)
4.	Vine length (m)	1.63-3.98	Mahudi-4, SKNK-001, SKNK-018, Motimahudi, SKNK-405, Denap, Sidhpur-1 (> 3.10 cm)	GK-1 (3.10 m)
5.	Fruit diameter (cm)	21.00-43.00	SKNK-012, Tharad KU, Mahudi-4, SKNK-001, SKNK-021, SKNK-005, Sidhpur-2, Motimahudi, Vadvas-2, SKNK-402, Denap, Sidhpur-1, Malivas (> 37.00 cm)	GK-1 (37.00 cm)
6.	Fruit length (cm)	12.00-22.00	SKNK-012, SKNK-021, SKNK-001, SKNK-005, Motimahudi, Vadvas-2, SKNK-402, Malivas, SKNK-004, Mahudi-4, Sidhpur-2 (> 18.00 cm)	GK-1 (18.00 cm)
7.	Fruit yield (q/ha)	40.00-166.67	SKNK-001, SKNK-012, Zalkarza, Magarwada, SKNK-021, Vadvas-2, Malivas, Tharad KU, Motimahudi, SKNK-402, Mahudi-4, Sidhpur-1, SKNK 2004, Denap, SKNK-015 (> 96.67 q/ha)	GK-1 (96.67 q/ha)
8.	Seed yield (q/ha)	0.67-6.50	Vadvas-2, SKNK-001, Malivas, Mahudi-4, Sidhpur-1, SKNK-021, Tharad KU, Denap, Zalkarza, Motimahudi, SKNK-402 (> 4.17 q/ha)	GK-1 (4.17 q/ha)
9.	100 seed weight (g)	6.31-8.62	Motimahudi, Magarwada, SKNK-004, Malivas, SKNK-001, Panchwada, SKNK 2004, Zalkarza, SKNK-013, Tharad KU, Denap, SKNK-005, SKNK-408, Vadvas-2, SKNK-021, Sidhpur-2, SKNK-017, SKNK-015, Sidhpur-1, SKNK-402, SKNK-405 (> 6.40 g)	GK-1 (6.40 g)
11.	Cotyledone ratio	47.55-64.85	Sidhpur-1, SKNK-005, Tharad KU, Denap, SKNK-013, Vadvas-2, SKNK-017, Sidhpur-2, SKNK-015, SKNK-408, SKNK-405, SKNK-018, Panchwada, Motimahudi, Magarwada, SKNK-012, SKNK-001, SKNK-402, SKNK-004, Zalkarza, Mahudi-4, SKNK-021, SKNK 2004 (> 48.51)	GK-1 (48.51)

Table 168. Multilocational evaluation of germplasm lines in Kalingada at S.K. Nagar - 2007 (Plains)

S. No.	Accession No.	Days to open Ist male flower	Days to open Ist female flower	Plant stand	No. of fruits per plot	Vine length (m)	Fruit diameter (cm)	Fruit length (cm)	Fruit yield (q/ha)	Seed yield (q/ha)	100 seed weight (g)	Cotyledon ratio
1	Denap	47.00	58.00	2.00	5.00	3.52	38.00	18.00	106.67	4.40	7.04	61.16
2	Magarwada	55.00	66.00	2.00	5.00	1.74	37.00	17.00	160.00	4.00	8.62	53.48
3	Mahudi-4	44.00	55.00	3.00	5.00	3.98	41.00	19.00	133.33	5.33	6.31	51.61
4	Malivas	57.00	67.00	2.00	5.00	3.07	38.00	20.00	153.33	6.00	7.80	47.55
5	Motimahudi	45.00	57.00	4.00	5.00	3.79	40.00	21.00	136.67	4.33	8.62	53.49
6	Panchwada	53.00	67.00	3.00	2.00	2.10	36.00	15.00	60.00	2.33	7.43	54.05
7	Sidhpur-1	44.00	54.00	2.00	5.00	3.40	38.00	18.00	133.33	4.73	6.57	64.85
8	Sidhpur-2	44.00	55.00	2.00	5.00	1.63	41.00	19.00	66.67	3.33	6.78	56.75
9	SKNK-001	46.00	57.00	3.00	4.00	3.88	41.00	21.00	166.67	6.00	7.49	52.38
10	SKNK-004	52.00	65.00	1.00	2.00	2.30	36.00	20.00	63.33	1.33	7.88	52.27
11	SKNK-005	42.00	54.00	1.00	2.00	1.95	41.00	21.00	40.00	1.20	6.95	61.52
12	SKNK-012	41.00	53.00	3.00	5.00	2.43	43.00	22.00	163.33	3.33	6.34	53.12
13	SKNK-013	42.00	57.00	2.00	2.00	2.15	30.00	15.00	60.00	2.17	7.29	61.11
14	SKNK-015	42.00	57.00	3.00	4.00	2.38	34.00	16.00	100.00	2.80	6.60	56.41
15	SKNK-017	43.00	54.00	3.00	2.00	2.40	35.00	17.00	66.67	1.50	6.70	57.30
16	SKNK-018	44.00	55.00	3.00	2.00	3.84	21.00	12.00	70.00	2.33	6.32	54.28
17	SKNK-021	44.00	56.00	2.00	5.00	2.80	41.00	22.00	156.67	4.67	6.80	51.55
18	SKNK-402	45.00	56.00	2.00	2.00	2.40	39.00	20.00	133.33	4.33	6.55	52.33
19	SKNK-405	42.00	53.00	2.00	1.00	3.78	34.00	12.00	40.00	0.67	6.41	55.10

S. No.	Accession No.	Days to open Ist male flower	Days to open Ist female flower	Plant stand	No. of fruits per plot	Vine length (m)	Fruit diameter (cm)	Fruit length (cm)	Fruit yield (q/ha)	Seed yield (q/ha)	100 seed weight (g)	Cotyledon ratio
20	SKNK-408	45.00	56.00	2.00	2.00	2.90	25.00	14.00	43.33	4.00	6.89	56.33
21	SKNK 2004	55.00	64.00	4.00	1.00	2.20	35.00	16.00	128.33	3.67	7.38	51.00
22	Tharad KU	55.00	63.00	3.00	5.00	2.70	42.00	18.00	140.00	4.67	7.16	61.38
23	Vadvas-2	54.00	65.00	3.00	5.00	2.70	40.00	21.00	156.67	6.50	6.86	60.52
24	Zalkarza	55.00	67.00	2.00	5.00	2.58	37.00	18.00	163.33	4.33	7.31	51.89
Mean for check varieties												
GK-1		45.00	57.00	3.00	5.00	3.10	37.00	18.00	96.67	4.17	6.40	48.51
Minimum		**41.00**	**53.00**	**1.00**	**1.00**	**1.63**	**21.00**	**12.00**	**40.00**	**0.67**	**6.31**	**47.55**
Maximum		**57.00**	**67.00**	**4.00**	**5.00**	**3.98**	**43.00**	**22.00**	**166.67**	**6.50**	**8.62**	**64.85**
Mean		**47.24**	**58.72**	**2.48**	**3.64**	**2.79**	**36.80**	**18.00**	**109.53**	**3.69**	**7.06**	**55.20**
CV (%) Phenotypic		**11.26**	**8.48**	**31.06**	**43.35**	**25.45**	**14.05**	**15.96**	**40.95**	**42.61**	**9.23**	**8.06**

Table 169. Promising lines in Jatropha germplasm for various characters at different locations (Plains)

S.No.	Characters	Range	Promising lines	Value of best check
Hisar (Accessions 156)				
1.	Plant height (cm)	95.70 - 358.70	JH-52, JH-53, JH-64, JH-38, JH-77, JH-40, JH-66, JH-76, JH-61, JH-67, JH-65, JH-68, JH-33, JH-48, JH-60, JH-36, JH-51, JH-59, JH-47, JH-37, JH-18, JH-20, JH-42, JH-62, JH-63, JH-89, JH-55, JH-34, JH-29, JH-26, JH-22, JH-75, JH-49 (> 275.40 cm)	Chhattarpati (195.00 cm)
2.	Stem girth (cm)	10.00 - 50.60	JH-46, JH-60, JH-25, JH-36, JH-28, JH-100, JH-43, JH-95, JH-53, JH-89, JH-34, JH-42, JH-80, JH-40, JH-59, JH-55 (> 40.50 cm)	Chhattarpati (33.10 cm)
3.	No. of primary branches per plant	2.00 - 28.00	JH-6, JH-1 (> 19.00)	Chhattarpati (19.00)
4.	Seed size (cm)	1.65 - 1.79	JH-01, JH-45, JH-46, JH-40, JH-75, JH-34, JH-44, JH-42, JH-43, JH-48, JH-38, JH-130, JH-65, JH-103, JH-84, JH-59, JH-74, JH-32, JH-138, JH-88, JH-41, JH-129, JH-24, JH-37, JH-78, JH-39, JH-120, JH-83, JH-137, JH-112, JH-85, JH-98, JH-124 (> 1.78 cm)	Chhattarpati (1.69 cm)
5.	Clusters per plant	1.00 - 70.00	JH-132, JH-46, JH-40, JH-64, JH-36, JH-20, JH-53, JH-38, JH-33, JH-59, JH-76, JH-26, JH-67, JH-34, JH-52, JH-95, JH-89, JH-42, JH-141, ISJ-01, JH-48, JH-77 (> 42.00)	Chhattarpati (29.00)
6.	Pods per plant	4.00 - 690.00	JH-01, JH-46, JH-36, JH-59, JH-34, JH-20, JH-70, JH-132, JH-95, JH-33, JH-40, JH-38, JH-64, JH-26, JH-67, JH-48, JH-115, JH-76, JH-52, JH-25, JH-47, JH-65, JH-53, JH-42, JH-55, JH-77, JH-18, JH-29, JH-109 (> 315.00)	Chhattarpati (175.00)
7.	Seed yield per plant (g)	4.50 - 720.00	JH-01, JH-36, JH-46, JH-95, JH-132, JH-70, JH-59, JH-20, JH-40, JH-48, JH-26, JH-64, JH-41, JH-76, JH-25, JH-47, JH-51, JH-38, JH-109, JH-65, JH-67, JH-21, JH-141, JH-52 (> 400.00 g)	Chhattarpati (250.00 g)

Karnal, Haryana (Accessions 22)				
1.	No. of branches per plant	8.00 – 19.00	Raipur, TNMC-33, CSMCRT-4, CSMCRT-9, Hissar-J-1, S.K.N.Big, TNMC-4, TNMC-6, TNMC-19, Urlikeendan, Phule J-1, S.K.N.J-2 (> 13.00)	
2.	No. of fruits per plant	26.33 – 374.33	Cutting, Raipur, CSMCRT-9, S.K.N.Big, CSMCRT-4, TNMC-22, Hansraj, Hissar-J-1, S.K.N.J-2, TNMC-33, TNMC-19, TNMC-20 (> 210.00)	
3.	Fruit length (cm)	1.93 – 2.70	S.K.N.Big, Hissar-J-1, TNMC-2, Cutting, Raipur, TNMC-6, TNMC-23, TNMC-20, TNMC-33, CSMCRT-4, Phule J-1 (> 2.33 cm)	
4.	Fruit width (cm)	1.47 – 2.33	S.K.N.Big, Cutting, TNMC-2, TNMC-6, Hissar-J-1, TNMC-20, Raipur, TNMC-23, TNMC-33, S.K.N.J-2, Phule J-1, SDAUJ-1 (> 1.90 cm)	
5.	Fruit yield per plant (g)	137.30 – 1204.15	Cutting, TNMC-33, S.K.N.J-2, Hansraj, TNMC-23, Raipur, TNMC-22, TNMC-20, TNMC-28, TNMC-4, TNMC-19 (> 471.33 g)	
6.	Seed yield per plant (g)	52.20 – 277.21	Cutting, TNMC-33, S.K.N.Big, TNMC-23, Hansraj, CSMCRT-4, Raipur, TNMC-20, S.K.N.J-2, TNMC-28, TNMC-22 (> 270.70 g)	

Table 170a. Multilication evaluation of germplasm lines in Jatropha at Hisar-2007 (Plain)

S. No.	Genotypes	Plant height (cm)	Stem girth (cm)	Primary branches per plant	Seed size (cm)	Clusters per plant	Pods per plant	Seeds per fruit	Seed yield per plant (g)
1	ISJ-1	170.20	28.60	13.00	1.67	47.00	190.00	3.00	280.00
2	JH-1	222.50	38.60	23.00	1.79	35.00	690.00	3.00	720.00
3	JH-2	210.60	29.60	17.00	1.70	19.00	150.00	3.00	280.00
4	JH-3	130.00	25.40	14.00	1.72	32.00	210.00	3.00	310.00
5	JH-4	198.40	30.10	13.00	1.69	19.00	125.00	3.00	270.00
6	JH-5	190.60	20.20	9.00	1.70	12.00	91.00	3.00	150.00
7	JH-6	215.10	29.00	28.00	1.68	28.00	120.00	3.00	275.00
8	JH-7	199.10	32.40	13.00	1.75	27.00	170.00	3.00	350.00
9	JH-8	195.50	30.10	19.00	1.76	30.00	237.00	3.00	320.00
10	JH-9	210.50	40.50	10.00	1.78	35.00	312.00	3.00	350.00
11	JH-10	210.10	10.00	8.00	1.77	6.00	26.00	3.00	20.00
12	JH-11	265.20	20.30	7.00	1.76	18.00	216.00	3.00	300.00
13	JH-12	200.00	30.00	7.00	1.78	14.00	109.00	3.00	214.00
14	JH-13	245.60	30.30	17.00	1.71	17.00	140.00	3.00	250.80
15	JH-14	232.40	40.20	6.00	1.69	12.00	132.00	3.00	155.10
16	JH-15	210.50	30.50	13.00	1.68	25.00	210.00	3.00	280.00
17	JH-16	244.50	30.10	12.00	1.68	22.00	160.00	3.00	200.00
18	JH-17	195.60	30.50	11.00	1.71	16.00	208.00	3.00	290.80
19	JH-18	290.80	20.40	17.00	1.75	22.00	328.00	3.00	375.20
20	JH-19	220.80	30.40	17.00	1.74	10.00	170.00	3.00	210.00
21	JH-20	290.20	30.70	12.00	1.78	60.00	465.00	3.00	550.00
22	JH-21	230.60	20.90	12.00	1.76	35.00	306.00	3.00	415.80
23	JH-22	276.80	30.30	8.00	1.76	22.00	240.00	3.00	240.80
24	JH-23	265.30	30.70	4.00	1.75	16.00	172.00	3.00	160.90
25	JH-24	259.10	40.00	5.00	1.79	32.00	304.00	3.00	400.00
26	JH-25	270.20	50.30	16.00	1.78	42.00	390.00	3.00	490.00
27	JH-26	278.20	30.30	10.00	1.78	53.00	410.00	3.00	500.10
28	JH-27	233.40	30.40	11.00	1.78	30.00	300.00	3.00	370.00
29	JH-28	252.10	50.00	11.00	1.78	31.00	258.00	3.00	210.00
30	JH-29	279.40	30.80	12.00	1.76	40.00	326.00	3.00	320.00
31	JH-30	240.80	20.50	4.00	1.74	16.00	170.00	3.00	200.00
32	JH-31	246.00	30.20	9.00	1.75	21.00	192.00	3.00	225.00
33	JH-32	250.30	30.70	8.00	1.79	18.00	170.00	3.00	180.00
34	JH-33	306.60	40.00	13.00	1.76	55.00	440.00	3.00	330.00
35	JH-34	280.10	40.80	12.00	1.79	52.00	470.00	3.00	258.00
36	JH-35	238.40	20.80	4.00	1.76	12.00	129.00	3.00	100.90
37	JH-36	304.40	50.00	18.00	1.78	60.00	495.00	3.00	650.00
38	JH-37	300.80	30.90	5.00	1.79	31.00	310.00	3.00	250.80
39	JH-38	326.60	40.20	10.00	1.79	58.00	430.00	3.00	450.80
40	JH-39	270.00	20.80	4.00	1.79	37.00	212.00	3.00	260.90
41	JH-40	320.20	40.60	14.00	1.79	62.00	434.00	3.00	530.40
42	JH-41	259.60	30.40	6.00	1.79	38.00	306.00	3.00	490.10
43	JH-42	285.80	40.70	11.00	1.79	48.00	372.00	3.00	380.40
44	JH-43	275.40	45.00	10.00	1.79	32.00	207.00	3.00	290.40
45	JH-44	242.40	20.80	12.00	1.79	25.00	265.00	3.00	305.20
46	JH-45	268.10	40.30	16.00	1.79	29.00	194.00	3.00	260.00
47	JH-46	263.10	50.60	14.00	1.79	65.00	570.00	3.00	630.00

S. No.	Genotypes	Plant height (cm)	Stem girth (cm)	Primary branches per plant	Seed size (cm)	Clusters per plant	Pods per plant	Seeds per fruit	Seed yield per plant (g)
48	JH-47	303.00	40.20	6.00	1.78	38.00	390.00	3.00	485.40
49	JH-48	306.40	40.30	10.00	1.79	45.00	410.00	3.00	520.50
50	JH-49	276.20	40.20	10.00	1.77	34.00	296.00	3.00	245.00
51	JH-50	251.00	30.90	9.00	1.76	22.00	222.00	3.00	260.90
52	JH-51	304.10	40.10	12.00	1.77	28.00	234.00	3.00	470.50
53	JH-52	358.70	40.00	11.00	1.78	52.00	394.00	3.00	410.00
54	JH-53	331.00	40.80	18.00	1.68	59.00	379.00	3.00	250.00
55	JH-54	261.90	40.40	10.00	1.69	25.00	232.00	3.00	385.60
56	JH-55	280.50	40.60	10.00	1.70	12.00	368.00	3.00	390.60
57	JH-56	274.30	40.00	12.00	1.77	16.00	180.00	3.00	210.00
58	JH-57	210.00	20.90	7.00	1.69	14.00	136.00	3.00	180.00
59	JH-58	170.90	20.80	8.00	1.76	8.00	104.00	3.00	150.40
60	JH-59	304.10	40.60	8.00	1.79	54.00	492.00	3.00	550.60
61	JH-60	305.70	50.40	13.00	1.76	31.00	166.00	3.00	200.00
62	JH-61	313.20	40.30	11.00	1.77	42.00	314.00	3.00	350.00
63	JH-62	285.30	40.20	15.00	1.77	32.00	292.00	3.00	380.00
64	JH-63	282.50	40.50	13.00	1.78	40.00	315.00	3.00	300.00
65	JH-64	330.00	40.30	7.00	1.78	62.00	412.00	3.00	490.50
66	JH-65	311.00	40.40	9.00	1.79	37.00	384.00	3.00	440.00
67	JH-66	319.00	40.30	11.00	1.73	36.00	260.00	3.00	290.00
68	JH-67	311.10	40.30	8.00	1.74	53.00	410.00	3.00	430.00
69	JH-68	310.40	30.70	8.00	1.75	38.00	280.00	3.00	200.00
70	JH-69	167.50	20.20	7.00	1.69	16.00	150.00	3.00	175.00
71	JH-70	210.70	30.40	11.00	1.68	40.00	465.00	3.00	575.00
72	JH-71	229.90	30.40	8.00	1.65	37.00	226.00	3.00	305.00
73	JH-72	226.80	20.60	6.00	1.68	12.00	108.00	3.00	150.00
74	JH-73	234.00	30.00	10.00	1.69	17.00	160.00	3.00	215.00
75	JH-74	227.00	40.20	8.00	1.79	37.00	275.00	3.00	330.00
76	JH-75	276.80	30.70	14.00	1.79	40.00	248.00	3.00	340.00
77	JH-76	317.50	40.00	10.00	1.78	53.00	395.00	3.00	490.00
78	JH-77	324.50	30.00	6.00	1.78	44.00	332.00	3.00	400.00
79	JH-78	259.50	30.20	4.00	1.79	22.00	205.00	3.00	295.00
80	JH-79	210.50	20.90	7.00	1.65	25.00	230.00	3.00	270.00
81	JH-80	146.50	40.70	4.00	1.69	10.00	95.00	3.00	130.50
82	JH-81	224.20	20.60	5.00	1.70	39.00	226.00	3.00	270.10
83	JH-82	210.00	20.70	4.00	1.76	5.00	27.00	3.00	25.40
84	JH-83	200.40	20.40	4.00	1.79	21.00	209.00	3.00	229.40
85	JH-84	190.10	20.60	9.00	1.79	22.00	215.00	3.00	232.00
86	JH-85	228.70	20.40	3.00	1.79	24.00	236.00	3.00	245.00
87	JH-86	230.20	20.60	4.00	1.76	4.00	19.00	3.00	25.50
88	JH-87	190.50	20.00	4.00	1.77	1.00	4.00	3.00	4.50
89	JH-88	166.90	20.60	8.00	1.79	2.00	9.00	3.00	10.20
90	JH-89	280.70	40.80	8.00	1.78	49.00	256.00	3.00	350.00
91	JH-90	210.30	20.20	3.00	1.68	23.00	144.00	3.00	201.00
92	JH-91	217.00	20.40	8.00	1.69	7.00	52.00	3.00	75.20
93	JH-92	182.00	20.70	6.00	1.70	7.00	52.00	3.00	79.00
94	JH-93	150.90	20.10	4.00	1.70	3.00	10.00	3.00	12.40
95	JH-94	178.10	30.10	7.00	1.70	8.00	41.00	3.00	69.60
96	JH-95	226.40	40.90	4.00	1.71	51.00	456.00	3.00	608.20
97	JH-96	155.00	20.30	2.00	1.75	2.00	12.00	3.00	15.20
98	JH-97	260.60	30.40	8.00	1.78	34.00	299.00	3.00	385.90

S. No.	Genotypes	Plant height (cm)	Stem girth (cm)	Primary branches per plant	Seed size (cm)	Clusters per plant	Pods per plant	Seeds per fruit	Seed yield per plant (g)
99	JH-98	152.90	20.20	3.00	1.79	7.00	42.00	3.00	79.60
100	JH-99	168.00	20.30	10.00	1.65	7.00	65.00	3.00	55.50
101	JH-100	210.70	50.00	14.00	1.69	14.00	172.00	3.00	230.60
102	JH-101	168.30	40.00	7.00	1.68	5.00	40.00	3.00	45.80
103	JH-102	142.80	20.10	3.00	1.75	3.00	14.00	3.00	19.20
104	JH-103	205.90	20.70	9.00	1.79	15.00	102.00	3.00	91.80
105	JH-104	190.80	20.50	7.00	1.73	8.00	72.00	3.00	135.40
106	JH-105	195.30	26.70	8.00	1.72	12.00	96.00	3.00	245.40
107	JH-106	155.30	20.70	4.00	1.72	4.00	28.00	3.00	35.10
108	JH-107	135.30	20.00	5.00	1.72	5.00	27.00	3.00	30.80
109	JH-108	200.00	20.30	6.00	1.72	18.00	139.00	3.00	190.00
110	JH-109	245.10	20.20	9.00	1.72	40.00	326.00	3.00	450.00
111	JH-110	148.50	20.10	4.00	1.72	5.00	32.00	3.00	80.50
112	JH-111	142.40	20.60	4.00	1.76	2.00	9.00	3.00	10.90
113	JH-112	160.30	30.20	3.00	1.79	5.00	36.00	3.00	85.40
114	JH-113	210.20	30.00	8.00	1.75	14.00	105.00	3.00	140.80
115	JH-114	212.30	30.60	9.00	1.78	17.00	132.00	3.00	180.00
116	JH-115	231.40	20.50	6.00	1.76	42.00	396.00	3.00	395.20
117	JH-116	170.50	20.20	5.00	1.69	8.00	60.00	3.00	70.00
118	JH-117	172.00	20.00	5.00	1.69	6.00	34.00	3.00	37.50
119	JH-118	251.60	30.90	6.00	1.69	27.00	245.00	3.00	300.00
120	JH-119	131.70	20.00	6.00	1.68	3.00	13.00	3.00	15.50
121	JH-120	192.90	20.50	4.00	1.79	6.00	42.00	3.00	55.50
122	JH-121	225.70	30.70	11.00	1.78	29.00	224.00	3.00	290.80
123	JH-122	155.40	20.20	4.00	1.73	4.00	28.00	3.00	35.40
124	JH-123	168.40	30.70	5.00	1.75	12.00	70.00	3.00	95.60
125	JH-124	184.40	20.30	2.00	1.79	4.00	24.00	3.00	30.40
126	JH-125	182.40	20.00	4.00	1.69	5.00	31.00	3.00	42.00
127	JH-126	184.40	10.70	3.00	1.70	6.00	40.00	3.00	43.50
128	JH-127	200.50	20.30	4.00	1.75	14.00	104.00	3.00	144.60
129	JH-128	218.60	30.40	7.00	1.76	23.00	196.00	3.00	240.20
130	JH-129	214.70	20.60	6.00	1.79	9.00	70.00	3.00	98.40
131	JH-130	231.50	30.90	10.00	1.79	12.00	131.00	3.00	125.40
132	JH-131	172.50	20.40	4.00	1.78	2.00	5.00	3.00	5.50
133	JH-132	224.20	30.50	13.00	1.73	70.00	460.00	3.00	590.50
134	JH-133	205.20	20.90	6.00	1.70	6.00	32.00	3.00	40.10
135	JH-134	247.70	30.50	8.00	1.71	36.00	206.00	3.00	285.40
136	JH-135	207.00	30.00	5.00	1.75	10.00	52.00	3.00	65.90
137	JH-136	206.70	30.30	4.00	1.76	4.00	23.00	3.00	30.00
138	JH-137	95.70	10.20	4.00	1.79	12.00	40.00	3.00	50.20
139	JH-138	190.90	30.10	8.00	1.79	21.00	176.00	3.00	255.40
140	JH-139	200.20	30.00	5.00	1.68	2.00	6.00	3.00	7.00
141	JH-140	215.40	30.50	13.00	1.65	20.00	114.00	3.00	120.20
142	JH-141	245.30	40.50	16.00	1.69	47.00	304.00	3.00	410.50
143	JH-142	255.50	30.50	12.00	1.73	38.00	296.00	3.00	390.00
144	JH-143	236.50	30.00	9.00	1.78	9.00	62.00	3.00	78.80
145	JH-144	190.60	20.50	7.00	1.68	11.00	72.00	3.00	99.40
146	JH-145	200.70	20.30	4.00	1.71	16.00	124.00	3.00	155.00
147	JH-146	190.90	20.50	6.00	1.78	3.00	16.00	3.00	22.50
148	JH-147	233.90	20.80	9.00	1.68	7.00	34.00	3.00	49.10
149	JH-148	200.90	20.00	9.00	1.75	6.00	40.00	3.00	50.20

S. No.	Genotypes	Plant height (cm)	Stem girth (cm)	Primary branches per plant	Seed size (cm)	Clusters per plant	Pods per plant	Seeds per fruit	Seed yield per plant (g)
150	JH-149	253.70	20.90	5.00	1.71	7.00	36.00	3.00	48.60
151	JH-150	220.30	20.80	6.00	1.76	10.00	42.00	3.00	51.40
152	Phule J-1	200.10	30.40	15.00	1.68	18.00	93.00	3.00	140.00
153	SKNA-1	220.00	33.90	17.00	1.68	31.00	170.00	3.00	270.00
154	SKN (Big)	225.00	36.20	13.00	1.73	22.00	187.00	3.00	225.00
155	SKNA-4	130.50	25.90	19.00	1.69	25.00	101.00	3.00	129.00
156	Urlikanchan	217.80	27.90	15.00	1.66	37.00	199.00	3.00	295.00
	Mean for check varieties								
	Chhattarpati (C)	195.00	33.10	19.00	1.69	29.00	175.00	3.00	250.00
	Minimum	**95.70**	**10.00**	**2.00**	**1.65**	**1.00**	**4.00**	**3.00**	**4.50**
	Maximum	**358.70**	**50.60**	**28.00**	**1.79**	**70.00**	**690.00**	**3.00**	**720.00**
	Mean	**228.54**	**29.40**	**8.91**	**1.74**	**24.10**	**194.82**	**3.00**	**238.12**
	CV (%) Phenotypic	**22.39**	**30.61**	**50.81**	**2.46**	**70.14**	**73.21**	**0.00**	**68.65**

Table 170b. Multilication evaluation of germplasm lines in Jatropha at Kanal, Haryana - 2007 (Plain)

S. No.	Genotype	No.of branches / plant	No.of Fruit / plant	Fruit length (cm)	Fruit width (cm)	Fruit yield / plant (g)	Seed yield / plant (g)
1	CSMCRT-4	16.67	270.00	2.37	1.87	442.37	322.17
2	CSMCRT-9	15.33	320.67	1.93	1.63	420.07	239.27
3	Cutting	9.33	374.33	2.50	2.33	1204.15	540.43
4	Hansraj	11.67	263.67	2.20	1.47	612.50	331.07
5	Hissar-J-1	15.33	255.67	2.67	2.20	392.37	257.53
6	Phule J-1	13.33	205.67	2.37	1.93	449.77	202.27
7	Raipur	19.00	370.33	2.50	2.07	565.67	306.33
8	S.K.N.Big	15.33	271.00	2.70	2.33	393.83	383.03
9	S.K.N.J-2	13.33	246.67	2.30	1.97	628.67	281.83
10	SDAUJ-1	8.00	32.67	2.33	1.93	137.30	52.20
11	TNMC-19	13.67	238.33	2.30	1.90	479.63	262.57
12	TNMC-2	8.00	26.33	2.57	2.23	339.40	174.40
13	TNMC-20	11.00	212.67	2.47	2.10	539.13	295.63
14	TNMC-22	9.67	264.67	2.33	1.77	541.23	274.53
15	TNMC-23	10.00	182.00	2.50	1.97	612.10	348.35
16	TNMC-28	13.00	156.67	2.17	1.57	533.63	277.67
17	TNMC-33	17.33	245.33	2.43	1.97	744.37	400.83
18	TNMC-4	14.00	95.00	2.07	1.70	490.70	260.20
19	TNMC-5	13.00	210.00	2.10	1.50	433.53	217.07
20	TNMC-6	14.00	190.00	2.50	2.23	471.33	270.70
21	TNMC-7	10.00	64.33	2.30	1.70	425.60	190.80
22	Urlikeendan	13.67	193.00	2.07	1.60	376.03	209.77
	Minimum	8.00	26.33	1.93	1.47	137.30	52.20
	Maximum	19.00	374.33	2.70	2.33	1204.15	540.43
	Mean	**12.94**	**213.14**	**2.35**	**1.91**	**510.61**	**277.21**
	CD (0.05)	**1.40**	**41.65**	**NS**	**0.04**	**NS**	**NS**
	CV (%) Error	**28.50**	**35.00**	**11.90**	**16.20**	**45.80**	**45.16**
	CV (%) Phen.	**23.00**	**44.32**	**8.52**	**13.96**	**38.76**	**34.47**

Table 171. Promising lines in Simarouba germplasm for various characters at different locations (Plains)

S.No.	Characters	Range	Promising lines
Rahuri (Accessions 54)			
1.	Plant height (cm)	1.55 - 4.80	PS 43, PS 31, PS 45, PS 53, PS 54, PS 34, PS 41, PS 50, PS 44, PS 42, PS 40, PS 48, PS 02, PS 05, PS 10, PS 19 (> 4.00 cm)
2.	Plant spread (cm)	1.05 - 4.70	PS 15, PS 41, PS 05, PS 44, PS 48, PS 42, PS 40, PS 20, PS 10, PS 35, PS 51, PS 30, PS 34, PS 28, PS 49, PS 32, PS 21, PS 16, PS 13 (> 3.25 cm)
3.	No. of branches	3.00 - 13.00	PS 54, PS 40, PS 38, PS 05, PS 44, PS 20, PS 13, PS 31, PS 53, PS 33, PS 18, PS 34, PS 32, PS 43, PS 04, PS 50 (> 9.00)
4.	Stem girth (cm)	12.00 - 55.00	PS 40, PS 31, PS 53, PS 42, PS 35, PS 38, PS 33, PS 43, PS 41, PS 48, PS 51, PS 50, PS 45, PS 05, PS 44, PS 20, PS 30, PS 19, PS 09, PS 54, PS 32, PS 10, PS 28 (> 40.00 cm)

Table 172. Multilocation evaluation of germplasm lines in Simarouba at Rahuri - 2007 (Plains)

S.No.	Accession No.	Plant height (cm)	Plant spread (m)	No. of branches	Stem girth (cm)
1	PS 1	3.60	2.80	5	30
2	PS 2	4.10	3.10	7	40
3	PS 3	3.85	3.00	8	35
4	PS 4	3.00	2.80	10	38
5	PS 5	4.10	4.10	11	45
6	PS 6	2.35	1.80	9	26
7	PS 7	1.70	1.20	3	13
8	PS 8	2.90	1.60	5	30
9	PS 9	3.55	3.15	7	45
10	PS 10	4.10	3.60	7	42
11	PS 11	2.55	2.40	7	22
12	PS 12	2.40	1.80	7	27
13	PS 13	3.59	3.30	11	26
14	PS 14	2.10	1.70	7	20
15	PS 15	3.70	4.70	6	40
16	PS 16	3.90	3.30	8	40
17	PS 17	3.57	2.50	8	35
18	PS 18	3.25	2.40	11	35
19	PS 19	4.10	2.30	9	45
20	PS 20	3.90	3.70	11	45
21	PS 21	3.95	3.40	7	40
22	PS 22	3.25	2.20	6	28
23	PS 23	3.55	3.25	6	38
24	PS 24	3.00	2.10	6	30
25	PS 25	1.55	1.05	6	12
26	PS 26	2.60	2.40	5	28
27	PS 27	3.60	3.20	7	40
28	PS 28	3.70	3.50	4	42
29	PS 29	2.30	2.65	5	26

S.No.	Accession No.	Plant height (cm)	Plant spread (m)	No. of branches	Stem girth (cm)
30	PS 30	3.65	3.55	9	45
31	PS 31	4.75	3.00	11	55
32	PS 32	3.60	3.45	10	42
33	PS 33	4.00	2.50	11	50
34	PS 34	4.40	3.50	10	40
35	PS 35	3.62	3.60	7	55
36	PS 36	2.70	2.10	5	29
37	PS 37	2.60	3.00	4	35
38	PS 38	3.60	2.60	12	50
39	PS 39	3.20	2.00	3	32
40	PS 40	4.20	3.70	12	55
41	PS 41	4.40	4.10	9	50
42	PS 42	4.25	3.95	9	55
43	PS 43	4.80	3.00	10	50
44	PS 44	4.30	4.00	11	45
45	PS 45	4.50	2.40	8	47
46	PS 46	2.60	1.80	5	25
47	PS 47	2.10	1.50	4	28
48	PS 48	4.15	4.00	7	50
49	PS 49	3.50	3.50	6	35
50	PS 50	4.40	2.70	10	47
51	PS 51	3.50	3.60	6	50
52	PS 52	2.90	2.00	5	35
53	PS 53	4.50	2.50	11	55
54	PS 54	4.45	2.70	13	42
	Minimum	**1.55**	**1.05**	**3.00**	**12.00**
	Maximum	**4.80**	**4.70**	**13.00**	**55.00**
	Mean	**3.49**	**2.85**	**7.72**	**38.24**
	CV (%) Phenotypic	**22.79**	**28.74**	**33.22**	**28.09**

AGRONOMY

IV. AGRONOMY

Fourfteen agronomic experiments, comprising four in grain amaranth, two in buckwheat, six in rice bean and one each in faba bean and Jatropha were conducted at ten centres of the AICRN on Underutilized Crops during 2007. Out of 43 trials allotted, results of 29 experiments were received. Centre-wise details of experiments allotted and conducted are given in table 173. The results of each experiment are given below:

4.1 GRAIN AMARANTH (*Amaranthus hypochondriacus*)

Experiment 1 : Effect of spacing and fertilizer levels on different amaranth genotypes

Year of start : 2005

Objective : To work out spatial and fertilizer requirements of promising amaranth genotypes

Locations : Bangalore, Bhubaneswar, S.K Nagar

Treatments : a) Varieties : BGA-2, GA-1, GA-2, Annapurna and Suvarna

b) Spacing: 30 x 15 cm and 45 x 15 cm

c) Fertilizer doses: R.F. and 75% R.F.

Design : Factorial RBD

Replications : 3

Plot size : 5.0 x 3.6 m^2

Results :

This experiment was conducted at Bhubaneswar and S.K. Nagar during rabi 2006-07 and at Bangalore during kharif 2007. A perusal of data in table 174 revealed that the average grain yield of amaranth was highest at S.K. Nagar (1449 kg/ha) and lowest at Bhubaneswar (1155 kg/ha). Among the varieties (Table 174), it was noted that the variety Annapurna was the lowest yielder at all Bangalore and S.K. Nagar. BGA-2 and Suvarna had higher yield than other three varieties at Bhubaneswar and Bangalore. Closer spacing S_1 (30 cm x 15

cm) gave better yield than wider spacing S_2 (45 cm x 15 cm) at Bhubaneswar and Bangalore centres. Whereas at S.K. Nagar, both spacings gave almost similar yields. Recommended dose of fertilizer (RDF) was better than 75% RDF at all the locations.

Experiment 2 : Integrated nutrient management studies in grain amaranth

Year of start : 2002

Objective : To work out a combination of organic and inorganic fertilizer dose required for grain amaranth

Location : Bangalore, S.K. Nagar

Treatments :

T_1 - Recommended dose of fertilizer ($N_{60}P_{40}$/ha)

T_2 - 100% N through FYM

T_3 - 100% N through castor cake

T_4 - 75% N through fertilizer + 25% N through FYM

T_5 - 75% N through fertilizer + 25% N through FYM+ 40 kg P_2O_5/ha

T_6 - 75% N through fertilizer + 25% N through castor cake

T_7 - 75% N through fertilizer + 25% N through castor cake + 40 kg P_2O_5/ha

T_8 - 50% N through fertilizer + 50% N through FYM

T_9 - 50 % N through fertilizer + 50% N through FYM + 40 Kg P_2O_5/ha

T_{10} - 50% N through fertilizer + 50% N through castor cake

T_{11} - 50% N through fertilizer + 50% N through castor cake+ 40 Kg P_2O_5/ha

T_{12} - 25% N through fertilizer + 75% N through FYM

T_{13} - 25% N through fertilizer + 75% N through FYM + 40 Kg P_2O_5/ha

T_{14} - 25% N through fertilizer + 75% N through castor cake

T_{15} - 25% N through fertilizer + 75% N through castor cake+ 40 Kg P_2O_5/ha

T_{16} - RDF + 20 kg K_20/ha

Design : RBD

Replications : Four

Plot size : 5.4 x 3.6 m^2

Results :

Significant variations were observed amongst different treatments (Table 175). At Bangalore, application of 75% N through fertilizer + 25% N through FYM + 100% P_2O_5 (T_5) resulted in highest grain yield of amaranth. It was followed by application of RDF + 20 kg K_2O/ha (T_{16}). Lowest yield was obtained when fertilizer N was substituted by castor cake as compared to that substituted by FYM. However, at S.K. Nagar, replacement of N fertilizer by castor cake gave better response as compared to FYM. Addition of P fertilizer further enhanced the amaranth yield.

Experiment 3 : Effect of sowing time, spacing and fertilizer doses in grain amaranth

Year of start : 2006

Objective : To standardise amaranth agronomy for late sown conditions

Location : S.K. Nagar

Treatments :

A) Date of sowing :
- 2^{nd} week of November (D_1)
- 4^{th} week of November (D_2)

B) Spacing :
- 22.5 x 10 cm (S_1)
- 45 x 10 cm (S_2)

C) Fertilizer doses :
- 75% RDF (F_1)
- RDF (F_2)

Design : Factorial RBD

Replications : Three

Results :

At S.K. Nagar the grain yield of amaranth was observed to decrease with delay in sowing, increase in spacing and decrease in fertilizer dose (Table 176).

Experiment 4 : Evaluation of organic sources for N management in grain amaranth

Year of start : 2006

Objective : To standardize the dose of vermicompost or a combination of other organic manures for organic farming of grain amaranth

Locations : Bhubaneswar, Ranichauri, Sangla

Treatments :
(i) Control
(ii) Vermicompost @2.5 t/ha
(iii) Vermicompost @5.0 t/ha
(iv) Vermicompost @7.5 t/ha
(v) Chullu cake @2.5 t/ha
(vi) Chullu cake @5.0 t/ha
(vii) Chullu cake @7.5 t/ha
(viii) FYM @ 8.0 t/ha
(ix) Vermicompost @2.5 t/ha + FYM @4.0 t/ha
(x) Chllu cake @2.5 t/ha + FYM @4.0 t/ha
(xi) Vermicompost @2.5 t/ha + Chullu cake @2.5 t/ha
(xii) FYM @4.0 t/ha + Azotobacter
(xiii) Vermicompost @2.5 t/ha + Azotobacter
(xiv) Chullu cake @2.5 t/ha + Azotobacter
(xv) Recommended dose of fertilizer

Note :- Centres in plains may use locally available non-edible oil cakes in place of chullu cake

Design : RBD

Replications : Three

Results :

Application of recommended fertilizer dose (T_{15}) resulted in highest grain yield of amaranth at all the three locations (Table 177). This was followed by the treatment T_9 (vermicompost @2.5 t/ha + FYM @4.0 t/ha), T_4 (vermisompost @7.0 t/ha) and T_8 (FYM @8.0 t/ha). The organic manured treatments were at par amongst themselves.

4.2 BUCKWHEAT (*Fagopyrum* spp.)

Experiment 5 : **Response of promising buckwheat genotypes to fertilizer doses**

Year of start : 2006

Objective : To work out fertilizer requirement of buckwheat genotypes in the pipe line

Locations : Ranichauri, Sangla

Treatments : a) Genotypes : Sangla B_1 (V_1), Sangla B_5 (V_2)
Shimla B_1 (V_3), Himpriya (C) (V_4)

b) Fertilizer doses : F_1 – $N_{15}P_{15}K_{15}$ (Farmer's practice)
F_2 – $N_{40}P_{40}$ (Recommended)
F_3 – $N_{40}P_{40}K_{20}$

Design : Factorial RBD

Replications : 3

Results :

Grain yield of all tatary buckwheat genotypes increased with increase in fertilizer dose, both at Ranichauri and Sangla (Table 178) and the highest grain yield was obtained by applying a fertilizer dose of $N_{40}P_{40}K_{20}$ (F_3) at both the locations. Buckwheat variety Sangla B1 gave the highest grain yield among all the varieties at Sangla, whereas at Ranichauri Himpriya gave the highest grain yield.

Experiment 6 : **Integrated nutrient management studies in buckwheat**

Year of start : 2006

Objective : To standardise the dose of vermicompost or a combination of other organic manures for organic farming in buckwheat

Locations : Ranichauri

Treatments : T_1 – Control
T_2 – Vermicompost @2.5 t/ha
T_3 – Vermicompost @5.0 t/ha
T_4 – Vermicompost @7.5 t/ha
T_5 – Chullu cake @2.5 t/ha

T_6 – Chullu cake @5.0 t/ha
T_7 – Chullu cake @7.5 t/ha
T_8 – FYM @ 8.0 t/ha
T_9 – Vermicompost @2.5 t/ha + FYM @4.0 t/ha
T_{10} – Chllu cake @2.5 t/ha + FYM @4.0 t/ha
T_{11} – Vermicompost @2.5 t/ha + Chullu cake @2.5 t/ha
T_{12} – FYM @4.0 t/ha + Azotobacter
T_{13} – Vermicompost @2.5 t/ha + Azotobacter
T_{14} – Chullu cake @2.5 t/ha + Azotobacter
T_{15} – Recommended dose of fertilizer ($N_{60}P_{40}$)

Design : RBD

Replications : Three

Results :

The highest seed yield in buckwheat was obtained through application of RDF (Table 179). However, amongst the organic manures highest grain yield was obtained through application of treatment T_{11} (vermicompost @2.5 t/ha + Chullu cake @2.5 t/ha). This was followed by application of Chullu cake @7.5 t/ha (T_7) and Chullu cake @2.5 t/ha + FYM @4.0 t/ha (T_{10}). The grain yield obtained under these treatments was statistically at par with the grain yield obtained by applying the recommended dose of fertilizer (T_{15}).

4.3 RICE BEAN (*Vigna umbellatta*)

Experiment 7 : **Performance of rice bean in comparison with prevailing pulse crops**

Year of start : 2005

Objective : To compare the grain/fodder production potential of rice bean with other pulses

Locations : Bangalore, Bhubaneswar, Mettupalayam, Hisar, S.K. Nagar, Ludhiana (Plains), Palampur, Ranichauri (Hills).

Varieties :
a) RBL-6 and RBL-1 : The recommended varieties for plains
b) PRR-2 and BRS-1: The recommended varieties for hills

Design : RBD

Replications : Four

Results :

Data presented in table 180 indicated that rice bean gave more seed yield than black gram and green gram at Bangalore, Ludhiana and Ranichauri. At S.K. Nagar rice bean had the poorest performance. The fodder yield of rice bean was better than cowpea at Ranichauri only. At Bhubaneswar, it was almost at par with cowpea.

Experiment 8 : **Performance of rice bean based crop rotations under varying fertility conditions**

Year of start : 2004

Objectives : (i) To find out suitable crop rotation for rice bean
(ii) To work out fertilizer requirement of rice bean in different crop rotations

Location : Hisar

Treatments : a) Crop rotations
- i) Rice bean – wheat
- ii) Rice bean – mustard
- iii) Rice bean – barley
- iv) Rice bean – berseem
- v) Rice bean – gram

b) Fertilizer dose (for rice bean)
- i) N_0P_0
- ii) $N_{20}P_{20}$
- iii) $N_{20}P_{40}$

Design : Split Plot

Replications : Three

Results :

Seed yield of rice bean (Table 181) was neither affected by crop rotation nor by fertilizer dose.

Experiment 9 : Integrated nutrient management studies in rice bean

Year of start : 2006

Objective : To standardise suitable dose of organic fertilizer for rice bean

Locations : Bangalore, Bhubaneswar, Ranichauri

Treatments :
(i) Control
(ii) Recommended dose of fertilizer ($N_{20}P_{40}$)
(iii) Phosphorus solubilizing bacteria
(iv) Rhizobium culture
(v) 50% RDF + PSB
(vi) 50% RDF + Rhizobium
(vii) 100% RDF + PSB
(viii) 100% RDF + Rhizobium
(ix) PSB + Rhizobium
(x) 50% RDF + PSB + Rhizobium
(xi) 75% RDF + PSB + Rhizobium
(xii) 100% RDF + PSB + Rhizobium

Design : RBD

Replications : Three

Results :

All the integrated nutrient management treatments increased the seed yield of rice bean over control (Table 182). Rice bean seed yields obtained by application of 50% RDF + PSB + Rhizobium were observed to be at par with those obtained by applying the recommended dose of fertilizer at Bangalore and Bhubaneswar. However, at Ranichauri rice bean production under INM treatments could not match those obtained by applying the recommended fertilizer dose.

Experiment 10 : Integrated nutrient management in rice bean – mustard cropping system

Year of start : 2007

Objective : To work out fertilizer requirement of rice bean – mustard cropping system under acidic conditions

Location : Bhubaneswar

Treatments : (A) Main plot (Fertilizer levels)
(i) RDF ($N_{20}P_{40}K_{20}$)
(ii) RDF + mixed bio-fertilizer
(iii) RDF + lime @0.2 LR
(iv) RDF + lime @0.2 LR + mixed bio-fertilizer
(v) RDF + FYM @ 5 t/ha
(vi) RDF + FYM @ 5 t/ha + mixed bio-fertilizer
(vii) RDF + FYM @5 t/ha + lime @0.2 LR
(viii) RDF + FYM @5 t/ha + lime @0.2 LR + mixed bio-fertilizer

(B) Sub-plot (Fertilizer levels to mustard)
(i) RDF ($N_{50}P_{25}K_{25}$)
(ii) 50% RDF + FYM @2.5 t/ha
(iii) 50% RDF

Design : Split-plot

Replications : Three

Results :

Application of M_8 (RDF + FYM + lime + mixed bio-fertilizer) recorded maximum seed yield of rice bean (Table 183) followed by M_7 (RDF + FYM + lime) and M_6 (RDF + FYM + bio-fertilizer). M_4 (RDF + bio-fertilizer + lime) and M_5 (RDF + FYM) were observed to be at par.

Experiment 11 : Intercropping study in rice bean

Year of start : 2007

Objective : To identify suitable intercrop for rice bean

Locations : Bhubaneswar, Bangalore

Treatments : **(A) Bhubaneswar**
(i) Rice bean (Sole crop)
(ii) Maize (Sole crop)
(iii) Arhar (Sole crop)
(iv) Sorghum (Sole crop)
(v) Maize + rice bean (1:2)
(vi) Arhar + rice bean (1:2)
(vii) Sorghum + rice bean (1:2)
(viii) Maize + rice bean (2:4)
(ix) Arhar + rice bean (2:4)
(x) Sorghum + rice bean (2:4)

(B) Bangalore

(i) Rice bean (Sole crop)
(ii) Arhar (Sole crop)
(iii) Ragi (Sole crop)
(iv) Groundnut (Sole crop)
(v) Rice bean + arhar (2:1)
(vi) Rice bean + ragi (2:4)
(vii) Rice bean + groundnut (2:4)
(viii) Rice bean + arhar (2:2)
(ix) Rice bean + ragi (2:8)
(x) Rice bean + groundnut (2:10)

Design : RBD

Replications : Three

Results :

Data in table 184 revealed that at Bhubaneswar intercropping the component crops with rice bean in 2:4 row ratio resulted in higher rice bean equivalent yield and land equivalent ratio (LER) than planting in 1:2 row ratios. Highest values of rice bean equivalent yield and LER were reported in Arhar + rice bean (2:4) intercrop followed by Maize + rice bean (2:4) intercrop.

At Bangalore (Table 185) data on grain yield, LER, rice bean equivalent yield, gross return and B:C ratio showed that grain yield of all the crops were lower when intercropped as compared to their sole crop yields. However, rice bean equivalent yields of intercrops were higher than those of sole crops. The highest value of LER was obtained by growing Rice bean + ragi intercrop in 2:4 row ratio. On the other hand, maximum gross returns were given by the sole crop of groundnut, whereas highest net returns and B:C ratio were obtained from the intercrop Rice bean + groundnut grown in 2:4 row ratio.

Experiment 12 : Response of pre-release rice bean genotypes of different fertilizer doses under rainfed conditions

Year of start : 2007

Objective : To work out fertilizer requirement of rice bean cultivars in the pipe line under rainfed condition

Location : Almora

Treatments	:	a) Genotypes	: (i) VRB – 1 (ii) PRR – 2
		b) Fertilizer doses	: (i) $N_{10}P_{20}K_{10}$ (ii) $N_{20}P_{40}K_{20}$ (iii) $N_{30}P_{60}K_{30}$
Design	:	Factorial RBD	
Replications	:	Four	

Results :

Both the rice bean genotypes responded to fertilizer application upto a dose of $N_{20}P_{40}K_{20}$. Seed yield of VRB-1 was slightly higher than that of cv. PRR-2 (Table 186).

4.4 JATROPHA

Experiment 13	:	**Effect of spacing, nutrients and pruning in Jatropha**
Year of start	:	2003
Objective	:	To workout spatial, fertilizer and pruning requirement of Jatropha
Location	:	S.K. Nagar
Treatments	:	a) Spacings 1 x 1 m, 1.5 x 1.5 m, 2 x 1 m, 2 x 2 m b) Fertilizer doses N_0P_0, $N_{15}P_{10}$, $N_{30}P_{20}$, $N_{45}P_{30}$
Design	:	Split- plot
Replication	:	Three

Results :

An increase in spacing increased the number of primary branches per plant and seed yield whereas an increase in fertilizer dose led to increase in plant height, primary branches per plant, secondary branches per plant, number of capsules per bunch, number of bunches per plant and seed yield (Table 187). Interaction between spacing and fertilizer levels was observed to be significant for plant height, secondary branches per plant, number of bunches per plant and

seed yield. Shelling percentage remained unaffected by the changes in spacing and fertilizer doses.

4.5 FABA BEAN

Experiment 14 : Effect of irrigation and fertilizer levels on seed yield of faba bean under late sown condition

Year of start : 2007

Objective : To work out irrigation and fertilizer requirements of late sown faba bean

Location : Hisar

Treatments :
a) Irrigation levels:
   (i) Pre-sowing irrigation
   (ii) Irrigation at flowering stage
   (iii) Irrigation at pre-flowering and pod development stages
   (iii) Irrigation at pod filling stage

b) Fertilizer doses:
   N_0P_0, $N_{15}P_{20}$, $N_{30}P_{40}$, $N_{45}P_{60}$

Design : Split plot

Replications : Three

Results:

Highest seed yield of faba bean was obtained by irrigating the crop at pod filling stage and applying $N_{45}P_{60}$ dose of fertilizer (Table 188).

Table 173. Centre-wise details of agronomic experiments conducted on underutilized crops during 2007

S.No.	Experiment	Mettupalayam	Bangalore	Bhubaneswar	S.K. Nagar	Hisar	Ranichauri	Sangla	Ludhiana	Almora	Palampur	Total experiments conducted / allotted
1.	Effect of spacing and fertilizer levels on grain amaranth genotypes	-	Y	Y	Y	-	-	-	-	N	-	**3/4**
2.	Integrated nutrient management studies in grain amaranth	-	Y	N	-	N	-	-	-			**1/3**
3.	Effect of sowing time and spacing on grain amaranth	-	-	-	Y	-	-	-	-			**1/1**
4.	Evaluation of organic sources for N-management in grain amaranth	N	-	Y	-	-	Y	Y	-			**3/4**
5.	Popularization of amaranth in the farmer's fields in non-conventional areas	N	N	N	N	-	-	-	-			**0/4**
6.	Response of promising buckwheat genotypes to fertilizer doses	-	-	-	-	-	Y	Y	-			**2/2**
7.	Integrated nutrient management studies in buckwheat	-	-	-	-	-	Y	-	-			**1/1**
8.	Performance of rice bean in comparison with prevailing pulse crops	Y	Y	Y	Y	Y	Y	-	Y	-	N	**7/8**
9.	Performance of rice bean based crop rotations under varying fertility conditions	-	-	-	-	Y	-	-	-			**1/1**
10.	Intercropping study in rice bean	N	Y	Y	-	-	-	-	-	-	Y	**3/4**
11.	Integrated nutrient management studies in rice bean	-	Y	Y	-	N	Y	-	-	N	-	**3/5**
12.	Effect of spacing, nutrients and pruning in *Jatropha*	N	-	-	Y	-	-	-	-			**1/2**
13.	Response of promising genotypes of karingada to N-doses	-	-	-	N	-	-	-	-			**0/1**
14.	Integrated nutrient management in rice bean mutant cropping system	-	-	Y	-	-	-	-	-	-	-	**1/1**
15.	Effect of irrigation and fertilizer levels on seed yield of faba bean under late sown conditions	-	-	-	-	Y	-	-	-	-	-	**1/1**
16.	Response of release rice bean genotypes to levels of N	-	-	-	-	-	-	-	-	Y	-	**1/1**
	Total											**29/43**

Table 174. Effect of spacing and fertilizer doses on grain yield (kg/ha) of amaranth genotypes

S. No.	Treatment	Bangalore	Bhubaneswar	S.K. Nagar	Mean
1	$V_1F_1S_1$	1350	1680	1648.15	1559.38
2	$V_1F_2S_1$	1200	1223	1470.68	1297.89
3	$V_1F_1S_2$	1250	1536	1628.7	1471.57
4	$V_1F_2S_2$	1075	1154	1563.27	1264.09
5	$V_2F_1S_1$	1125	1142	1587.34	1284.78
6	$V_2F_2S_1$	1000	910	1514.2	1141.40
7	$V_2F_1S_2$	975	1055	1645.06	1225.02
8	$V_2F_2S_2$	815	863	1561.73	1079.91
9	$V_3F_1S_1$	1050	1161	1516.97	1242.66
10	$V_3F_2S_1$	950	985	1504.63	1146.54
11	$V_3F_1S_2$	900	1054	1518.52	1157.51
12	$V_3F_2S_2$	825	322	1512.34	886.45
13	$V_4F_1S_1$	800	1091	1217.59	1036.20
14	$V_4F_2S_1$	725	948	1030.86	901.29
15	$V_4F_1S_2$	750	926	1049.38	908.46
16	$V_4F_2S_2$	650	861	1060.18	857.06
17	$V_5F_1S_1$	1470	1602	1524.69	1532.23
18	$V_5F_2S_1$	1275	1148	1442.9	1288.63
19	$V_5F_1S_2$	1215	1490	1530.86	1411.95
20	$V_5F_2S_2$	1000	1062	1456.79	1172.93
	Mean	**1020.00**	**1110.65**	**1449.24**	**1193.30**
	C.D. (0.05)	**NS**	**73.66**	**100.60**	**-**
	CV (%)	**13.70**	**4.14**	**8.40**	**-**
Mean of varieties					
V_1 – BGA-2		1218.75	1398.25	1577.70	1398.23
V_2 – GA-1		978.75	992.50	1577.08	1182.78
V_3 – GA-2		931.25	880.50	1513.12	1108.29
V_4 – Annapurna		731.25	956.50	1089.50	925.75
V_5 – Suvarna		1240.00	1325.50	1488.81	1351.44
Mean of fertility levels					
F_1 – RDF		1088.50	1273.70	1486.73	1282.98
F_2 – 75% of RDF		951.50	947.60	1411.76	1103.62
Mean of spacings					
S_1 – 30cm x 15 cm		1094.50	1189.00	1445.80	1243.10
S_2 – 45cm x 15 cm		945.50	1032.30	1452.68	1143.49

RDF : Recommended dose of fertilizer

Table 175. Grain yield (kg/ha) of amaranth as influenced by integrated nutrient management

Treatment No.	Treatment combinations	Bangalore	S.K. Nagar	Mean
T_1	Recommended dose of fertilizer (RDF) : N_{60} P_2O_5 40 kg/ha	1250.00	1349.39	**1299.70**
T_2	100% N through FYM	870.00	1421.30	**1145.65**
T_3	100% N through castor cake	795.00	1467.90	**1131.45**
T_4	75% RDF + 25% N through FYM	980.00	1444.45	**1212.23**
T_5	75% RDN + 25% N through FYM + 100% P_2O_5	1470.00	1586.42	**1528.21**
T_6	75% RDN + 25% N through castor cake	850.00	1500.00	**1175.00**
T_7	75% RDN + 25% N through castor cake + 100% P_2O_5	1220.00	1648.15	**1434.08**
T_8	50% RDN + 50% N through FYM	725.00	1399.69	**1062.35**
T_9	50% RDN + 50% N through FYM + 100% P_2O_5	1050.00	1530.87	**1290.44**
T_{10}	50% RDN + 50% N through castor cake	715.00	1469.14	**1092.07**
T_{11}	50% RDN + 50% N through castor cake + 100% P_2O_5	925.00	1594.45	**1259.73**
T_{12}	25% RDN + 75% N through FYM	760.00	1407.41	**1083.71**
T_{13}	25% RDN + 75% N through FYM + 100% P_2O_5	1060.00	1611.11	**1335.56**
T_{14}	25% RDN + 75% N through castor cake	700.00	1524.69	**1112.35**
T_{15}	25% RDN + 75% N through castor cake + 100% P_2O_5	935.00	1728.40	**1331.70**
T_{16}	RDF + 20 kg K_2O/ha	1332.00	-	**1332.00**
S.Em ±		**76.01**	**-**	
CD (0.05)		**219.50**	**191.79**	
CV (%) Error		**13.50**	**13.19**	

Table 176. Effect of time of sowing and spacing on growth and yield of grain amaranth cv. Annapurna

Treatment	Grain yield (kg/ha)	Days to 50% flowering	Days to maturity	Plant height (cm)	Inflorescence length (cm)	Straw yield (kg/plots)
$D_1S_1F_1$	1241.21	29.50	77.00	89.75	70.25	3.24
$D_1S_1F_2$	1472.69	30.25	76.25	88.50	69.50	3.49
$D_1S_2F_1$	957.18	27.00	76.00	91.00	77.25	3.09
$D_1S_2F_2$	987.27	30.50	74.75	65.50	64.50	3.13
$D_2S_1F_1$	944.45	31.50	74.75	85.25	60.75	3.59
$D_2S_1F_2$	973.38	31.25	78.25	86.50	68.75	3.38
$D_2S_2F_1$	863.43	33.25	78.25	93.00	72.75	3.46
$D_2S_2F_2$	932.87	31.00	76.75	88.00	65.75	3.04
Mean	**1046.56**	**30.53**	**76.50**	**85.94**	**68.69**	**3.30**
CD (0.05)	**-**	**-**	**-**	**-**	**-**	**-**
CV (%) Error	**8.68**	**7.45**	**3.17**	**17.28**	**7.93**	**8.79**
Mean for date of sowing						
D_1 – 06/11/2006	1164.59	29.31	76.00	83.69	70.38	3.24
D_2 – 24/11/2006	928.53	31.75	77.00	88.19	67.00	3.37
Mean of fertility levels						
F_1 – 75% RDF	1001.57	30.31	76.50	89.75	70.25	3.35
F_2 – 100% RDF	1091.55	30.75	76.50	82.13	67.13	3.26
Mean of spacings						
S_1 – 22.5cm x 10 cm	1157.93	30.63	76.56	87.50	67.31	3.43
S_2 – 45cm x 10 cm	935.19	30.44	76.44	84.38	70.06	3.18

Table 177. Effect of organic sources of nitrogen on grain yield (kg/ha) of amaranth

S. No.	Treatments	Bhubaneswar	Ranichauri	Sangla	Mean
1.	Control	362.0	1351.3	701.0	**804.77**
2.	Vermicompost @2.5 t/ha	874.0	1610.7	929.0	**1137.90**
3.	Vermicompost @5.0 t/ha	1140.0	1629.0	1040.0	**1269.67**
4.	Vermicompost @7.0 t/ha	1285.0	1796.0	1436.0	**1505.67**
5.	Chullucake @2.5 t/ha	673.0	1353.0	664.0	**896.67**
6.	Chullucake @5.0 t/ha	818.0	1703.0	835.0	**1118.67**
7.	Chullucake @7.5 t/ha	965.0	1851.3	951.0	**1255.77**
8.	FYM @8.0 t/ha	1408.0	1814.3	937.0	**1386.43**
9.	Vermicompost @2.5 t/ha + FYM @4.0 t/ha	1344.0	1814.3	1635.0	**1597.77**
10.	Chullucake @2.5 t/ha + FYM @4.0 t/ha	1190.0	1870.0	1045.0	**1368.33**
11.	Vermicompost @2.5 t/ha + Chullucake @2.5 t/ha	1090.0	1888.3	873.0	**1283.77**
12.	FYM @4.0 t/ha + Azotobactor	1036.0	1518.0	1092.0	**1215.33**
13.	Vermicompost @2.5 t/ha + Azotobactor	945.0	1684.7	1160.0	**1263.23**
14.	Chullucake @2.5 t/ha + Azotobactor	793.0	1610.3	868.0	**1090.43**
15.	RDF ($N_{60}P_{40}$ kg/ha)	1684.0	2036.7	1939.0	**1886.57**
	CD (0.05)	**112.86**	**266.50**	**146.00**	
	CV (%) Error	**-**	**9.30**	**8.14**	

Table 178. Effect of different fertility levels on grain yield (q/ha) of buckwheat genotypes

S. No.	Treatments	Ranichauri	Sangla	Mean
1	V_1F_1	10.87	14.37	**12.62**
2	V_2F_1	13.95	11.47	**12.71**
3	V_3F_1	10.25	9.48	**9.87**
4	V_4F_1	15.17	-	**15.17**
5	V_1F_2	12.12	15.69	**13.91**
6	V_2F_2	12.72	15.17	**13.95**
7	V_3F_2	14.58	11.41	**13.00**
8	V_4F_2	12.43	-	**12.43**
9	V_1F_3	17.70	18.22	**17.96**
10	V_2F_3	15.48	16.51	**16.00**
11	V_3F_3	11.18	13.77	**12.48**
12	V_4F_3	19.52	-	**19.52**
	Mean	**13.83**	**14.01**	**14.14**
	CD (0.05)	**2.59**	**1.82**	**-**
	CV (%) Error	**11.00**	**7.39**	**-**
Mean of varieties				
V_1 – Sangla B_1		13.56	16.09	14.83
V_2 – Sangla B_5		14.05	14.38	14.22
V_3 – Shimla B_1		12.00	11.55	11.78
V_4 – Himpriya		15.71	-	15.71
Mean of fertility levels				
F_1 – $N_{15}P_{15}K_{15}$		12.56	11.77	12.59
F_2 – $N_{40}P_{40}$ (RDF)		12.96	14.09	13.32
F_3 – $N_{40}P_{40}K_{20}$		15.97	16.17	16.49

Table 179. Effect of integrated nutrient management on grain yield of buckwheat at Ranichauri

Treatment No.	Treatments	Plant height (cm) at harvest	Grain yield (kg/ha)	Straw yield (kg/ha)
1.	Control	116.1	540.3	10987.0
2.	Vermicompost @2.5 t/ha	125.0	674.0	13493.0
3.	Vermicompost @5.0 t/ha	138.1	810.7	13024.0
4.	Vermicompost @7.0 t/ha	143.9	944.0	13456.0
5.	Chullucake @2.5 t/ha	116.3	582.0	11480.7
6.	Chullucake @5.0 t/ha	144.0	841.3	13271.3
7.	Chullucake @7.5 t/ha	147.3	1175.0	13579.7
8.	FYM @8.0 t/ha	144.9	949.0	13518.0
9.	Vermicompost @2.5 t/ha + FYM @4.0 t/ha	146.3	1072.0	13594.7
10.	Chullucake @2.5 t/ha + FYM @4.0 t/ha	149.5	1190.0	13580.0
11.	Vermicompost @2.5 t/ha + Chullucake @2.5 t/ha	150.5	1233.0	13710.3
12.	FYM @4.0 t/ha + Azotobactor	124.7	627.0	11481.0
13.	Vermicompost @2.5 t/ha + Azotobactor	131.0	748.7	12777.3
14.	Chullucake @2.5 t/ha + Azotobactor	130.0	717.7	12678.7
15.	RDF ($N_{60}P_{40}$ kg/ha)	153.3	1250.0	15833.0
	CD (0.05)	**11.8**	**172.7**	**2051.4**
	CV (%) Error	**15.1**	**11.6**	**9.4**

Table 180. Grain and fodder yield (q/ha) of rice bean and other pulse crops

S. No.	Crops	Mettupalayam	Bangalore	Bhubaneswar	S.K. Nagar	Hisar	Ludhiana	Ranichauri	Mean
1.	Rice bean	5.28	10.95	11.08	0.63	9.11	15.02	13.80	**9.41**
2.	Black gram / Dew gram (Moth)	3.25	6.54	11.32	13.89	7.24	10.20	10.70	**9.02**
3.	Green gram	5.36	5.50	10.27	10.30	11.34	13.07	11.64	**9.64**
4.	Rice bean (fodder)	-	42.65	10.95	59.03	-	141.11	140.53	**78.85**
5.	Cowpea / Dew gram (fodder)	105.60	54.90	10.01	276.62	101.06	266.67	102.45	**131.04**
	CD at 5%	**-**	**10.12**	**1.16**	**13.70**	**2.56**	**1.20 / 36.45**	**10.48**	

Table 181. Effect of fertilizer doses on seed yield (q/ha) of rice bean grown under different crop rotations

S. No.	Crop rotations	Fertilizer dose (kg/ha)	Seed yield (q/ha)
1.	Rice bean - Wheat	N_0P_0	8.25
		$N_{20}P_{20}$	8.32
		$N_{20}P_{40}$	8.39
2.	Rice bean – Barley	N_0P_0	7.80
		$N_{20}P_{20}$	8.17
		$N_{20}P_{40}$	8.54
3.	Rice bean – Oats	N_0P_0	8.24
		$N_{20}P_{20}$	8.42
		$N_{20}P_{40}$	8.64
4.	Rice bean – Gram	N_0P_0	7.99
		$N_{20}P_{20}$	8.29
		$N_{20}P_{40}$	8.59
5.	Rice bean – Berseem	N_0P_0	8.04
		$N_{20}P_{20}$	8.27
		$N_{20}P_{40}$	8.62
6.	Rice bean – Mustard	N_0P_0	8.32
		$N_{20}P_{20}$	8.35
		$N_{20}P_{40}$	8.39
	Mean		**8.31**
	CD (0.05)		**0.35**
	CV (%) Error		**2.64**

Table 182. Effect of different INM treatments on seed yield (q/ha) of rice bean

S.No.	Treatments	Bangalore	Bhubaneswar	Ranichauri	Mean
1.	Control	4.40	3.82	10.11	**6.11**
2.	Recommended dose of fertilizer (RDF)	8.90	9.69	20.73	**13.11**
3.	Phpsphorus solublizing bacteria (PSB)	5.05	4.73	11.10	**6.96**
4.	Rhizobium culture	8.00	5.95	12.09	**8.68**
5.	50% RDF + PSB	8.20	7.78	12.58	**9.52**
6.	50% RDF + Rhizobium	8.40	8.64	12.83	**9.96**
7.	100% RDF + PSB	10.20	10.27	14.07	**11.51**
8.	100% RDF + Rhizobium	10.40	11.16	13.57	**11.71**
9.	PSB + Rhizobium	5.60	6.80	12.34	**8.25**
10.	50% RDF + PSB + Rhizobium	9.40	9.34	14.31	**11.02**
11.	75% RDF + PSB + Rhizobium	11.00	10.45	15.80	**12.42**
12.	100% RDF + PSB + Rhizobium	11.90	11.71	18.26	**13.96**
	CD (0.05)	**1.70**	**0.55**	**2.63**	

Table 183. Effect of integrated nutrient management on seed yield of rice bean at Bhubaneswar

Treatments	Seed yield (kg/ha)
M_1 – RDF recommended dose of fertilizer (20:40:20 NPK kg/ha)	803.0
M_2 – RDF + mixed biofertilizer	866.0
M_3 – RDF + lime @ 0.2 LR	1028.0
M_4 – RDF + lime @ 0.2 LR + mixed biofertilizer	1135.0
M_5 – RDF + FYM @ 5 t/ha	1097.0
M_6 – RDF + FYM @ 5 t/ha + mixed biofertilizer	1172.0
M_7 – RDF + FYM @ 5 t/ha + lime @ 0.2 LR	1215.0
M_8 – RDF + FYM @ 5 t/ha + lime @ 0.2 LR + mixed biofertilizer	1294.0
CD (0.05)	**68.6**

Table 184. Effect of intercropping systems on ricebean equivalent yield and land equivalent ratio at Bhubaneswar

Treatments	Ricebean Equivalent yield (q/ha)	LER
T_1 – Ricebean (sole)	11.5	1.0
T_2 – Maize (sole)	15.9	1.0
T_3 – Arhar (sole)	17.2	1.0
T_4 – Sorghum (sole)	10.5	1.0
T_5 –Maize + ricebean (1:2)	16.8	1.23
T_6 –Arhar + ricebean (1:2)	17.5	1.24
T_7 – Sorghum+ ricebean (1:2)	10.8	1.02
T_8 – Maize + ricebean (2:4)	17.6	1.29
T_9 – Arhar + ricebean (2:4)	18.8	1.33
T_{10} – Sorghum+ ricebean (2:4)	11.1	1.06
CD (0.05)	**1.12**	**-**

Table 185 : Grain yield, LER, ricebean equivalent yield and economics of ricebean based intercropping system at Bangalore

Treatment	Grain yield (kg/ha)		LER	Ricebean equivalent yield (kg/ha)	Gross returns (Rs./ha)	Net returns (Rs./ha)	B : C Ratio
	Ricebean	Intercrop					
T_1 – Sole crop of ricebean	950	-	1.00	950	7961	1511	1.23
T_2 – Sole crop of pigeonpea	-	890	1.00	1780	14454	4604	1.47
T_3 – Sole crop of ragi	-	1940	1.00	1213	13425	4225	1.46
T_4 – Sole crop of groundnut	-	975	1.00	2377	19422	6972	1.56
T_5 – Ricebean + Pigeonpea (2:1)	630	385	1.08	1400	11550	3967	1.52
T_6 – Ricebean + Ragi (2:4)	415	1450	1.18	1322	13436	5153	1.62
T_7 – Ricebean + Groundnut (2:4)	395	695	1.13	2089	17150	6700	1.64
T_8 – Ricebean + Pigeonpea (2:2)	520	505	1.10	1530	12558	4408	1.54
T_9 – Ricebean + Ragi (2:8)	220	1630	1.09	1239	13321	4671	1.54
T_{10} – Ricebean + Groundnut (2:8)	185	825	1.03	2196	17958	6708	1.60
S.Em ±	**57.99**	**64.81**	**0.05**	**85.24**	-	-	-
C.D at 5 %	**178.69**	**194.32**	**NS**	**253.26**	-	-	-
C.V (%)	**21.20**	**10.90**	**8.80**	**9.20**	**-**	**-**	**-**

Table 186 : Grain yield of ricebean as influenced by different levels of fertilizer at Almora

Varieties	Grain yield (q/ha)			
	F_1 (10:20:10)	**F_2 (20:40:20)**	**F_3 (30:60:30)**	**Mean**
V_1 (VRB-1)	10.84	13.64	13.76	**12.75**
V_2 (PRR-2)	10.31	11.89	11.76	**11.32**
Mean	**10.58**	**12.77**	**12.76**	

Table 187 : Effect of different levels of spacing and fertilizer on growth of *Jatropha curcas*

S. No	Treatment combinations	Plant height (cm)	No. of primary branches /plant	No. of sec. branches / plant	No. of capsules / bunch	No. of bunches / plant	Seed yield (kg/ha)	Shelling %
1	S_1F_1	178.33	3.33	11.53	1.20	4.37	3.55	50.03
2	S_1F_2	182.67	4.40	10.13	1.73	5.87	12.04	54.28
3	S_1F_3	184.33	3.87	10.33	1.87	5.47	9.89	50.09
4	S_1F_4	200.00	3.93	18.07	1.70	7.60	28.56	46.68
5	S_2F_1	158.00	4.43	13.87	1.43	3.43	0.75	38.89
6	S_2F_2	172.67	5.13	12.87	1.27	6.67	13.07	47.36
7	S_2F_3	191.33	5.13	13.80	1.47	6.53	37.33	47.74
8	S_2F_4	214.67	5.47	13.00	2.27	11.87	108.45	50.22
9	S_3F_1	172.67	4.20	8.80	1.17	4.93	0.84	34.87
10	S_3F_2	203.00	5.27	16.27	1.33	6.80	11.20	47.80
11	S_3F_3	203.33	5.20	14.07	1.27	5.33	16.43	44.76
12	S_3F_4	207.33	5.53	19.53	1.73	8.47	37.24	47.42
13	S_4F_1	167.67	3.73	8.53	1.13	4.37	15.49	40.83
14	S_4F_2	199.00	5.13	13.20	1.60	9.47	17.08	47.00
15	S_4F_3	208.33	6.20	14.13	1.60	14.07	45.36	49.05
16	S_4F_4	221.67	5.20	26.13	2.43	15.97	60.11	49.24
	Mean	**191.56**	**4.76**	**14.02**	**1.58**	**7.58**	**26.09**	**46.64**
	CD (0.05)							
	Spacing (S)	**NS**	**0.77**	**NS**	**NS**	**NS**	**5.57**	**NS**
	Fertilizer (F)	**8.17**	**0.70**	**2.57**	**0.35**	**8.17**	**7.27**	**NS**
	S × F	**16.33**	**NS**	**5.17**	**NS**	**16.33**	**14.54**	**NS**
	CV (%) Error							
	A	**8.50**	**16.16**	**23.67**	**21.27**	**8.50**	**60.17**	**18.88**
	B	**5.07**	**17.44**	**21.80**	**26.20**	**5.07**	**33.41**	**17.44**
Mean of fertility levels								
F_1 – N_0P_0		169.17	3.92	10.68	1.23	4.28	5.16	41.16
F_2 – $N_{15}P_{10}$		189.34	4.98	13.12	1.48	7.20	13.35	49.11
F_3 – $N_{30}P_{20}$		196.83	5.10	13.08	1.55	7.85	27.25	47.91
F_4 – $N_{45}P_{30}$		210.92	5.03	19.18	2.03	10.98	58.59	48.39
Mean of spacings								
S_1 – 1 x 1 m		186.33	3.88	12.52	1.63	5.83	13.51	50.27
S_2 – 2 x 1 m		184.17	5.04	13.39	1.61	7.13	39.90	46.05
S_3 – 1.5 x 1.5 m		196.58	5.05	14.67	1.38	6.38	16.43	43.71
S_4 – 2 x 2 m		199.17	5.07	15.50	1.69	10.97	34.51	46.53

Table 188 : Effect of irrigation and fertilizer levels on seed yield of faba bean under late sown conditions

S. No.	Main plot treatment	F_1	F_2	F_3	F_4
1.	I_1 – Pre-sowing irrigation to get good germination	4.01	4.05	4.10	4.25
2.	I_2 – Irrigation at flowering stage	3.41	4.57	4.86	5.82
3.	I_3 – Irrigation at pre-flowering stage + pod development stage	4.31	4.62	5.19	5.69
4.	I_4 – Irrigation at pod filling stage	5.09	5.38	5.60	6.34
	CD (0.05)	**0.79**			

QUALITY ANALYSIS

V. QUALITY ANALYSIS

The seed of promising genotypes evaluated in IVT, AVT and germplasm evaluation of the seven underutilized crops from eight locations were planned for quality analysis but due to non-availability of seeds from the centres, quality analysis was done only in three underutilized crops supplied by the two centres. The crop-wise details of quality traits are given below:

5.1 Grain Amaranth

5.1.1 IVT on Grain Amaranth, Hisar

Seeds of fourteen genotypes of grain amaranth were analysed for protein, lysine, ash and moisture content. The range in protein content was 10.9 to 14.4 percent and in lysine content was 5.0 to 6.3 percent with average value of 12.3 and 5.6 percent, respectively. Ash and moisture content ranged from 1.16 to 1.63 and 9.7 to 10.3 percent with average value of 1.51 and 9.9 percent, respectively (Table 189).

The promising genotypes having high protein, lysine and ash content are given below:

Genotypes	Protein (%)	Genotypes	Lysine (g/16gN)	Genotypes	Ash (%)
IC-35399	14.40	IC-35370	6.30	IC-35440	1.63
GA-1	14.30	GA-2004	6.10	IC-35399	1.61
GA-2	14.10	SKNA-601	5.90	RMA-19	1.59
Annapurna (C)	12.20	Annapurna (C)	5.70	Annapurna (C)	1.63

5.1.2 AVT on Grain Amaranth, Hisar

Seeds of nine genotypes in grain amaranth were analysed for protein, lysine, ash and moisture content. Protein content varied from 11.5 to 13.7 percent and lysine content from 5.0 to 6.4 percent with average value of 12.7 and 5.7 percent, respectively. Ash and moisture content ranged from 1.48 to

1.65 and 9.5 to 10.4 percent with an average value of 1.59 and 10.0 percent, respectively (Table 190).

The promising genotypes with high protein, high lysine and high ash content are given below:

Genotypes	Protein (%)	Genotypes	Lysine (g/16gN)	Genotypes	Ash (%)
RMA-8	13.7	PLP-1	6.4	BL-344	1.65
SKNA-21	13.7	Simla-4	6.1	GA-2004	1.65
RMA-4	13.6	RMA-4	5.8	RMA-8	1.65
Annapurna (C)	13.5	Annapurna (C)	5.6	Annapurna (C)	1.30

5.1.3 Germplasm Evaluation in Grain Amaranth, Hisar

Seeds of fifty genotypes of grain amaranth were analysed for protein, lysine, ash and moisture content. Protein content varied from 11.0 to 13.8 percent and lysine content from 4.7 to 6.3 percent with average value of 12.6 and 5.4 percent, respectively. Ash and moisture content ranged from 0.91 to 1.60 and 9.8 to 11.2 percent with average value of 1.39 and 10.3 percent, respectively (Table 191). Best of top 6 promising genotypes for different characters is given below:

Characters	Mean	Range	Promising genotypes
Protein content (%)	12.60	11.00-13.80	IC415222 (13.80), BGA-16 (13.80), IC423448 (13.80), IC519554 (13.60), **Annapurna (C) (13.50)**
Lysine content (%)	5.40	4.70-6.30	IC415266 (6.30), IC415318 (6.20), EC519522 (6.20), IC415290 (6.20), IC038312 (6.10), IC415282 (6.00), **Annapurna (C) (5.60)**
Ash content DM (%)	1.39	0.91-1.60	EC519522 (1.60), EC519526 (1.60), EC519544 (1.56), IC519554 (1.54), BGA-20 (1.52), BGA-24 (1.52), BGA-26 (1.52), **GA-2 (C) (1.39)**
Moisture content (%)	10.30	9.80-11.20	EC519522 (9.8), EC519526 (9.8), EC519544 (9.8), IC315448 (9.9), IC415252 (9.9), **GA-1 (C) (10.20)**

5.2 Faba bean

5.2.1 IVT on Fababean, Hisar and Faizabad

Seeds of fourteen genotypes of Fababean were analysed for protein, vicine-convicine and ash content. At Hisar centre protein, vicine-convicine and ash content varied from 25.0 to 26.3, 0.87 to 0.95 and 1.26 to 1.42 percent with mean value of 25.6, 0.90 and 1.34 percent, respectively. At Faizabad centre protein, vicine-convicine and ash content varied from 25.3 to 26.1, 0.86 to 0.94 and 0.95 to 1.33 percent with mean value of 25.7, 0.91 and 1.14 percent, respectively (Table 192). Only EC243834 was distinct from others in having the high value of ash content (1.38%) than others.

5.2.2 AVT on Fababean, Hisar and Faizabad

Seeds of seven genotypes of Fababean in AVT from Hisar and Faizabad centre were analysed for protein, vicine-convicine and ash content. At Hisar centre protein, vicine-convicine and ash content varied from 24.3 to 26.3, 0.86 to 0.96 and 1.09 to 1.27 percent with mean value of 25.7, 0.90 and 1.22 percent, respectively. At Faizabad centre protein, vicine-convicine and ash content varied from 25.6 to 26.0, 0.88 to 0.96 and 0.99 to 1.29 percent with a mean value of 25.8, 0.92 and 1.14 percent, respectively (Table 193).

5.2.3 Germplasm trial on Fababean, Faizabad

Seeds of seventy five genotypes from Faizabad centre were analyzed for protein, vicine-convicine, ash and moisture content, which ranged from 24.6 to 26.4, 0.84 to 1.04, 0.92 to 1.44 and 10.1 to 12.2 percent with the mean value of 25.8, 0.94, 1.24 and 10.9 percent, respectively (Table 194). The promising genotypes are given below:

Characters	Mean	Range	Promising genotypes
Protein content (%)	25.80	24.60-26.40	EC243626 (26.40), EC243743 (26.40), EC243784 (26.30), EC117727 (26.20), EC243588 (26.20), EC243755 (26.20), EC243786 (26.20), EC323731 (26.20), **PRT-7 (C) (25.70)**
Vicine-convicine (%)	0.94	0.84-1.04	EC251014 (0.84), EC249947 (0.85), EC299713 (0.86), EC382423 (0.86), IC361427 (0.86), **PRT-7 (C) (0.87)**

Ash (%)	1.24	0.92-1.44	EC329715 (1.44), EC243472 (1.38), EC329700 (1.37), EC329675 (1.36), EC331587 (1.36), EC382423 (1.34), **PRT-12 (C) (1.29)**
Moisture (%)	10.90	10.10-12.20	EC329675 (10.10), EC243982 (10.20), EC299713 (10.20), EC117727 (10.40), EC117818 (10.40), EC243626 (10.40), EC249947 (10.40), EC329715 (10.40), EC351919 (10.40), IC331549 (10.40), **Krena (C) (10.70)**

5.2.4 Germplasm trial on Fababean, Hisar

Seeds of two hundred and forty seven genotypes from Hisar centre were analyzed for protein, vicine-convicine, ash and moisture content, which ranged from 20.2 to 28.2, 0.82 to 1.04, 0.84 to 1.49 and 11.0 to 12.7 percent with the mean value of 25.7, 0.92, 1.23 and 12.0 percent, respectively (Table 195). The promising genotypes are given below:

Characters	Mean	Range	Promising genotypes
Protein content (%)	25.70	20.20-28.20	IC361496 (28.20), HB-50 (28.10), EC329729 (28.10), HB-31 (28.00), EC243594 (27.90), EC331564 (27.90), IC361498 (27.70), EC329668 (27.70), HB-80 (27.70), HB-58 (27.70), HB-42 (27.70), IC034710 (27.70), EC117842 (27.70), HB-33 (27.70), HB-73 (27.70), **Vikrant (C) (26.80)**
Vicine-convicine (%)	0.92	0.82-1.04	HB-30 (0.82), HB-68 (0.82), HB-06 (0.82), EC243794 (0.82), EC117739 (0.83), HB-44 (0.84), EC387710 (0.84), HB-55 (0.84), EC249947 (0.84), HB-27 (0.84), HB-09 (0.84), EC243764 (0.84), IC025085 (0.84), HB-44 (0.84), EC117748 (0.84), HB-25 (0.84), IC331571 (0.84), HB-40 (0.84), HB-45 (0.84), HB-14 (0.84), EC267679 (0.84), **PRT-12 (C) (0.88)**
Ash (%)	1.23	0.84-1.49	EC243794 (1.49), HB-23 (1.46), EC387710 (1.44), HB-12 (1.43), HB-26 (1.43), EC117792 (1.43), EC329724 (1.42), HB-25 (1.42), **PRT-12 (C) (1.42)**

5.2.5 PRT on Fababean, Hisar

Seeds of thirty five genotypes from Hisar centre were analyzed for protein, vicine-convicine, ash and moisture content, which ranged from 22.9 to 25.9, 0.86 to 0.98, 1.01 to 1.34 and 10.7 to 11.1 percent with the mean value of 25.2, 0.91, 1.23 and 11.0 percent, respectively (Table 196). The promising genotypes are given below:

Characters	Mean	Range	Promising genotypes
Protein content (%)	25.20	22.90-25.90	PRT-10 (25.9), PRT-23 (25.9), PRT-27 (25.9), PRT-4 (25.8), PRT-33 (25.8), PRT-3 (25.8), PRT-6 (25.7), PRT-25 (25.7), PRT-32 (25.7),Vikrant (25.0)
Vicine-convicine (%)	0.91	0.86-0.98	PRT-24 (0.86), PRT-27 (0.86), PRT-17 (0.87), PRT-35 (0.87), PRT-3 (0.88), PRT-8 (0.88), PRT-26 (0.88), Vikrant (0.87)
Ash (%)	1.23	1.01-1.34	PRT-26 (1.34), PRT-35 (1.34), PRT-22 (1.33), PRT-9 (1.32), PRT-2 (1.32), Vikrant (1.32)

5.2.6 Station trial on Fababean Hisar

Seeds of sixteen genotypes from Hisar centre were analysed for its protein and vicine-convicine, ash and moisture contents which ranged from 25.4–26.3, 0.86–0.98, 1.02–1.34, 10.2–10.5 percent with the mean value of 26.0, 0.91, 1.24 and 10.3 percent respectively (Table 197). Promising genotypes are given below :

Genotypes	Protein (%)	Genotypes	Vicine-convicine (%)	Genotypes	Ash (%)
PRT-6	26.3	PRT-1B	0.86	PRT-1A	1.34
PRT-8	26.2	PRT-16	0.88	PRT-8	1.34
PRT-22	26.2	PRT-18	0.88	PRT-22	1.34
ST-74	26.2	PRT-19	0.88	PRT-1B	1.31
Vikrant	25.8	ST-82	0.88	PTR-23	1.30
		Vikrant	0.88	Vikrant	1.18

5.2.7 FYT on Fababean Hisar Centre

Seeds of eighteen genotypes from Hisar centre were analysed for its protein and vicine-convicine, ash and moisture contents which ranged from 21.0–26.4, 0.86–1.02, 0.79–1.36, 9.3–11.1 percent with the mean value of 25.7, 0.94, 1.27 and 9.6 percent respectively (Table 198). Promising genotypes are given below :

Genotypes	Protein (%)	Genotypes	Vicine-convicine (%)	Genotypes	Ash (%)
ST-75	26.4	ST-81	0.86	ST-78	1.36
ST-78	26.4	ST-62	0.87	ST-39	1.35
ST-11	26.3	ST-71	0.88	ST-64	1.34
ST-51	26.3	ST-84	0.88	ST-75	1.33
ST-73	26.3			ST-40	1.32
ST-80	26.3				
ST-85	26.3				
Vikrant	26.3				

5.3 Jatropha

5.3.1 Samples of Jatropha from Hisar

Kernels of nineteen samples of Jatropha from Hisar centre were analysed for oil content and its fatty acid composition. Oil content ranged from 21.0 to 36.6 percent. Palmitic, stearic, oleic and linoleic acid ranged from 11.6 to 13.5, 0.0 to 5.9, 34.7 to 44.8 and 39.2 to 45.7 percent, respectively. In one sample (Plant No. 22) even a trace of stearic acid was not detected. In future this may be a good variety for quality fuel oil. The promising plant Nos. are giben below:

Sample No.	High Oil (%)	Sample No.	Low Palmitic acid	Sample No.	Low Stearic acid
1	36.6	7	11.6	22	0.0
8	36.6	21	11.7	11	4.7
5	35.2	6	11.8	17	4.8
19	35.2	1	12.1	1	4.9

Sample No.	High Oleic acid	Sample No.	High Linoleic acid
22	44.8	21	45.7
6	40.5	15	44.8
5	40.2	17	44.7
16	38.9	18	44.4

Table 189: IVT Grain Amaranth, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Lysine (%)
1	BGA-10	10.00	1.47	10.90	5.70
2	BGA-15	10.30	1.56	13.50	5.20
3	GA-1	9.80	1.60	14.30	5.20
4	GA-2	9.70	1.59	14.10	5.00
5	IC035370	9.80	1.59	11.10	6.30
6	IC035399	10.00	1.61	14.40	5.60
7	IC035440	9.80	1.63	12.90	5.30
8	IC035675	10.10	1.53	12.00	5.70
9	Phoole-GA-2004	9.80	1.49	11.10	6.10
10	PRA-2004-1	9.80	1.49	11.20	5.80
11	RMA-19	9.70	1.59	12.30	5.40
12	RMA-24	9.90	1.16	11.00	5.80
13	SKNA-601	9.90	1.24	11.60	5.90
14	Annapurna	9.70	1.63	12.20	5.70
Mean		9.90	1.51	12.33	5.62
Range		**9.70-10.30**	**1.16-1.63**	**10.90-14.40**	**5.00-6.30**

Table 190: AVT Grain Amaranth, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Lysine (%)
1	BL-344	9.50	1.65	11.50	5.70
2	Phoole-GA-2004	9.80	1.65	13.10	5.00
3	PLP-1	10.20	1.56	11.90	6.40
4	RMA-3	9.70	1.61	12.50	5.20
5	RMA-4	10.10	1.60	13.60	5.80
6	RMA-7	10.40	1.48	11.70	5.80
7	RMA-8	9.90	1.65	13.70	5.60
8	Simla-4	10.40	1.54	12.30	6.10
9	SKNA-21	9.90	1.61	13.70	5.40
Mean		10.00	1.59	12.70	5.70
Range		**9.50-10.40**	**1.48-1.65**	**11.50-13.70**	**5.00-6.40**

Table 191: Germplasm of Grain Amaranth, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Lysine (%)
1	BGA-01	10.00	1.40	13.10	5.20
2	BGA-03	10.10	1.50	12.00	5.40
3	BGA-04	10.80	1.48	12.70	5.20
4	BGA-05	10.10	1.46	12.20	5.60
5	BGA-06	10.10	1.43	12.80	4.90
6	BGA-07	10.50	1.48	12.30	4.80
7	BGA-08	10.70	1.49	12.80	5.00
8	BGA-09	10.50	1.46	12.70	4.80
9	BGA-11	10.30	1.39	12.50	4.70
10	BGA-12	10.40	1.40	12.70	5.00
11	BGA-13	10.70	1.16	13.10	4.80
12	BGA-14	10.30	1.40	13.40	5.00
13	BGA-16	10.40	1.37	13.80	5.00
14	BGA-17	10.50	1.46	12.30	4.70
15	BGA-18	11.00	1.33	11.10	5.80
16	BGA-19	11.00	1.27	12.60	5.40
17	BGA-20	10.10	1.52	12.70	5.10
18	BGA-22	10.30	1.48	12.30	5.10
19	BGA-23	10.60	1.51	12.00	5.40
20	BGA-24	10.10	1.52	12.20	5.10
21	BGA-25	10.40	1.41	12.10	4.80
22	BGA-26	10.70	1.52	12.30	4.80
23	BGA-27	10.60	1.33	12.70	5.40
24	EC519522	9.80	1.60	12.00	6.20
25	EC519526	9.80	1.60	13.40	5.60
26	EC519544	9.80	1.56	12.10	5.20
27	EC519559	10.30	1.45	12.20	5.80
28	IC037316	10.00	1.36	12.50	5.90
29	IC038127	10.10	1.28	12.70	5.80
30	IC038312	10.50	1.32	11.50	6.10
31	IC315448	9.90	1.41	13.20	5.80
32	IC415222	10.30	1.44	13.80	5.60
33	IC415232	10.20	1.43	12.60	5.80
34	IC415252	9.90	0.91	12.90	5.70
35	IC415264	11.20	1.25	12.20	5.20
36	IC415266	10.00	1.22	12.70	6.30
37	IC415272	10.50	1.36	13.20	5.10
38	IC415282	10.90	1.26	13.20	6.00
39	IC415290	10.20	1.28	11.00	6.20
40	IC415297	10.30	1.26	12.70	5.60
41	IC415318	10.10	1.33	12.80	6.20
42	IC415426	10.70	1.29	13.10	5.80
43	IC423117	10.00	1.33	13.20	5.00
44	IC423448	10.70	1.14	13.80	4.90
45	IC430408	10.20	1.41	12.80	5.40
46	IC519554	10.30	1.54	13.60	5.90
47	MGA-28	10.30	1.39	12.40	4.70
48	Annapurna	10.50	1.30	13.50	5.60
49	GA-1 (C)	10.20	1.38	12.70	5.20
50	GA-2 (C)	10.20	1.39	12.00	5.20
Mean		**10.30**	**1.39**	**12.60**	**5.40**
Range		**9.80-11.20**	**0.91-1.60**	**11.00-13.80**	**4.70-6.30**

Table 192: IVT Fababean, Hisar and Faizabad

S. No.	Genotypes	Protein (%)			Vicine-convicine (%)			Ash content (%)		
		Hisar	Faizabad	Mean	Hisar	Faizabad	Mean	Hisar	Faizabad	Mean
1	BSH-9	25.00	26.00	**25.50**	0.87	0.92	**0.90**	1.36	1.17	**1.27**
2	EC010845	26.20	25.40	**25.80**	0.95	0.86	**0.91**	1.36	1.06	**1.21**
3	EC243575	25.80	25.90	**25.85**	0.88	0.92	**0.90**	1.26	1.15	**1.21**
4	EC243834	25.70	25.50	**25.60**	0.88	0.88	**0.88**	1.42	1.33	**1.38**
5	HB-180	25.20	25.60	**25.40**	0.88	0.90	**0.89**	1.31	1.03	**1.17**
6	HB-410	-	26.10	**26.10**	-	0.94	**0.94**	-	1.11	**1.11**
7	HB-501	-	25.70	**25.70**	-	0.90	**0.90**	-	1.19	**1.19**
8	HB-502	26.30	25.30	**25.80**	0.92	0.88	**0.90**	1.35	0.95	**1.15**
9	HB-503	-	25.90	**25.90**	-	0.92	**0.92**	-	1.18	**1.18**
10	HB-504	25.80	25.70	**25.75**	0.91	0.92	**0.92**	1.38	1.11	**1.25**
11	HB-516	25.00	25.90	**25.45**	0.89	0.94	**0.92**	1.34	1.10	**1.22**
12	HB-518	25.80	25.90	**25.85**	0.88	0.94	**0.91**	1.27	1.25	**1.26**
13	IC331587	25.30	25.70	**25.50**	0.89	0.92	**0.91**	1.37	1.18	**1.28**
14	IC361427	25.80	25.90	**25.85**	0.91	0.92	**0.92**	1.36	1.16	**1.26**
15	Vikrant	25.10	25.70	**25.40**	0.89	0.92	**0.91**	1.32	1.12	**1.22**
Mean		**25.60**	**25.70**	**25.70**	**0.90**	**0.91**	**0.91**	**1.34**	**1.14**	**1.22**
Range		**25.00-26.30**	**25.30-26.10**	**25.40-26.10**	**0.87-0.95**	**0.86-0.94**	**0.88-0.94**	**1.26-1.42**	**0.95-1.33**	**1.11-1.38**

Table 193: AVT Fababean, Hisar and Faizabad Centre

S. No.	Genotypes	Protein (%)			Vicine-convicine (%)			Ash content (%)		
		Hisar	Faizabad	Mean	Hisar	Faizabad	Mean	Hisar	Faizabad	Mean
1	HB-303	26.30	25.90	**26.10**	0.94	0.92	**0.93**	1.26	1.29	**1.28**
2	HB-405	25.50	25.70	**25.60**	0.89	0.88	**0.89**	1.23	0.99	**1.11**
3	HB-416	25.90	-	**25.90**	0.88	-	**0.88**	1.20	-	**1.20**
4	HB-418	25.70	25.90	**25.80**	0.92	0.90	**0.91**	1.22	1.13	**1.18**
5	HB-430	24.30	25.60	**24.95**	0.86	0.92	**0.89**	1.27	1.18	**1.23**
6	BSH-42	26.10	26.00	**26.05**	0.96	0.96	**0.96**	1.27	1.12	**1.20**
7	Vikrant	25.90	25.70	**25.80**	0.87	0.92	**0.90**	1.09	1.12	**1.11**
Mean		**25.70**	**25.80**	**25.74**	**0.90**	**0.92**	**0.91**	**1.22**	**1.14**	**1.18**
Range		**24.30-26.30**	**25.60-26.00**	**24.95-26.10**	**0.86-0.96**	**0.88-0.96**	**0.88-0.96**	**1.09-1.27**	**0.99-1.29**	**1.11-1.28**

Table 194: Germplasm of Fababean, Faizabad

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
1	EC005864	10.90	1.16	26.10	0.98
2	EC025085	11.50	1.25	25.70	0.96
3	EC045192	11.60	1.15	26.00	1.04
4	EC117726	10.90	1.33	25.90	0.96
5	EC117727	10.40	1.26	26.20	0.98
6	EC117734	10.70	1.20	26.00	0.98
7	EC117739	11.00	0.92	26.00	1.02
8	EC117744	11.80	1.21	25.70	0.90
9	EC117745	11.70	1.23	25.90	0.88
10	EC117749	10.60	1.28	25.70	0.92
11	EC117753	10.50	1.28	25.90	0.90
12	EC117818	10.40	1.28	26.10	1.02
13	EC117818	11.60	1.22	26.00	0.98
14	EC117847	10.70	1.22	25.70	0.88
15	EC243472	11.10	1.38	25.90	0.94
16	EC243525	11.00	1.24	25.70	0.92
17	EC243529	10.70	1.26	25.80	0.90
18	EC243588	10.80	1.31	26.20	0.96
19	EC243596	10.90	1.26	26.10	0.92
20	EC243626	10.40	1.28	26.40	1.04
21	EC243637	11.40	1.23	26.00	0.98
22	EC243743	11.00	1.17	26.40	1.02
23	EC243755	10.50	1.25	26.20	0.98
24	EC243755	11.70	1.22	25.80	0.92
25	EC243770	11.40	1.23	25.90	1.02
26	EC243781	11.10	1.23	25.90	0.90
27	EC243784	11.30	1.12	26.30	1.02
28	EC243786	10.70	1.13	26.20	0.98
29	EC243791	11.50	1.32	25.90	0.98
30	EC243860	10.70	1.29	26.00	0.98
31	EC243982	10.20	1.32	25.80	0.92
32	EC248945	11.00	1.19	26.10	0.98
33	EC249851	11.20	1.21	25.90	0.96
34	EC249947	10.40	1.19	25.90	0.85
35	EC251014	10.70	1.00	24.80	0.84
36	EC299713	10.20	1.31	25.90	0.86
37	EC322662	11.10	1.30	26.10	0.98
38	EC322725	11.30	1.27	26.00	0.96
39	EC322967	10.70	1.10	26.00	0.96
40	EC323731	10.70	1.19	26.20	1.02
41	EC324677	10.90	1.17	25.00	0.88
42	EC329003	11.70	1.16	25.90	0.97
43	EC329605	12.20	1.15	25.90	0.96
44	EC329668	11.70	1.29	25.90	0.92
45	EC329675	10.10	1.36	25.60	0.96

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
46	EC329677	11.50	1.28	25.90	0.94
47	EC329677	11.60	1.29	26.00	0.94
48	EC329683	10.90	1.18	25.90	0.88
49	EC329700	10.70	1.37	26.00	0.96
50	EC329714	10.70	1.25	25.70	0.92
51	EC329715	10.40	1.44	26.10	0.98
52	EC329724	10.50	1.30	26.10	1.02
53	EC329812	10.70	1.13	25.80	0.94
54	EC329812	11.70	1.31	25.30	0.98
55	EC331587	10.90	1.36	24.60	0.88
56	EC341496	10.50	1.22	25.80	0.88
57	EC343696	10.80	1.11	26.00	0.94
58	EC343808	10.73	1.24	25.67	0.96
59	EC348948	10.70	1.26	26.10	1.02
60	EC351919	10.40	1.14	25.60	0.92
61	EC354951	10.80	1.28	25.80	0.94
62	EC361470	10.50	1.29	25.60	0.88
63	EC361470	10.50	1.13	25.80	0.92
64	EC361498	10.60	1.29	26.00	1.02
65	EC374731	10.90	1.10	25.90	0.88
66	EC382423	10.50	1.34	24.70	0.86
67	IC243703	12.10	1.14	25.50	1.02
68	IC331549	10.40	1.22	25.80	0.92
69	IC331571	10.90	1.27	25.60	0.94
70	IC361427	10.60	1.32	25.30	0.86
71	Krena (C)	10.70	1.27	25.50	0.88
72	PRT-12 (C)	10.90	1.29	25.30	0.88
73	PRT-7 (C)	11.90	1.27	25.70	0.87
Mean		**10.90**	**1.24**	**25.80**	**0.94**
Range		**10.10-12.20**	**0.92-1.44**	**24.6-26.4**	**0.84-1.04**

Table 195: Germplasm of Fababean, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
1	EC003279	12.20	1.04	24.10	0.92
2	EC005864	11.30	1.37	25.10	0.89
3	EC010719	11.70	1.23	26.30	0.89
4	EC010720	11.60	1.24	22.40	0.86
5	EC010845	12.50	1.24	24.50	0.86
6	EC024312	12.30	1.23	23.50	0.86
7	EC025058	12.50	0.90	25.80	0.99
8	EC025192	11.90	1.29	26.50	1.04
9	EC032976	11.70	1.21	27.10	0.98
10	EC107842	12.10	1.30	26.40	0.86
11	EC108908	12.30	1.24	27.50	1.04
12	EC117361	12.50	0.94	26.00	0.91
13	EC117705	12.60	1.09	25.90	0.88
14	EC117720	11.80	1.36	26.90	0.94
15	EC117724	11.70	1.37	25.60	0.86
16	EC117726	11.80	1.36	23.90	0.86
17	EC117727	11.60	1.29	25.50	0.88
18	EC117739	11.50	1.29	21.90	0.83
19	EC117741	12.10	1.33	23.50	0.86
20	EC117744	11.80	1.13	25.50	0.94
21	EC117745	11.70	1.28	27.30	1.02
22	EC117748	11.80	1.23	22.40	0.84
23	EC117749	12.50	0.97	24.70	0.86
24	EC117753	11.90	1.15	25.10	0.90
25	EC117755	11.40	1.13	27.10	0.98
26	EC117758	11.90	1.28	26.60	0.95
27	EC117765	11.50	1.31	27.60	0.94
28	EC117792	12.20	1.43	24.80	0.88
29	EC117795	12.10	1.28	26.60	0.94
30	EC117818	12.40	1.22	26.60	0.92
31	EC117842	12.10	1.22	27.70	0.96
32	EC243036	12.00	1.32	25.80	0.92
33	EC243443	12.20	1.25	27.10	1.04
34	EC243524	11.70	1.36	25.10	0.88
35	EC243529	12.10	1.33	23.20	0.86
36	EC243584	12.40	0.89	26.40	0.93
37	EC243588	11.90	1.28	26.90	0.96
38	EC243594	11.30	1.30	27.90	1.02
39	EC243596	11.80	1.36	26.10	0.92
40	EC243608	11.80	1.23	24.50	0.85
41	EC243624	11.90	1.25	26.60	0.92
42	EC243626	12.40	1.19	25.10	0.88
43	EC243637	12.20	1.22	25.80	0.88
44	EC243691	12.20	1.02	22.50	0.86
45	EC243709	12.10	1.12	27.20	1.04
46	EC243755	12.60	0.93	25.80	0.88
47	EC243756	11.90	1.36	25.90	0.88
48	EC243761	12.00	1.34	25.70	0.96

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
49	EC243764	11.90	1.27	23.30	0.84
50	EC243781	11.80	1.30	26.70	0.98
51	EC243782	12.50	1.27	26.30	0.95
52	EC243784	12.30	1.29	23.90	0.85
53	EC243786	12.30	1.31	22.30	0.86
54	EC243791	12.20	0.96	24.30	0.87
55	EC243793	11.90	1.26	25.30	0.86
56	EC243794	11.40	1.49	21.30	0.82
57	EC243808	12.50	0.95	25.10	0.91
58	EC243820	12.00	1.12	24.80	0.88
59	EC243860	12.30	0.96	25.00	0.92
60	EC243895	12.20	1.35	23.00	0.89
61	EC247640	12.00	1.26	26.80	0.88
62	EC248945	12.10	1.28	27.50	0.92
63	EC248945	12.20	1.36	25.90	0.92
64	EC248952	12.30	0.99	25.70	0.91
65	EC249891	11.30	1.16	26.80	0.91
66	EC249947	11.90	1.30	23.80	0.84
67	EC251014	11.60	1.22	24.10	0.86
68	EC267640	11.90	1.25	27.20	1.02
69	EC267641	12.30	1.25	24.80	0.88
70	EC267648	11.90	1.27	27.60	0.92
71	EC267649	12.20	1.15	27.50	0.98
72	EC267679	11.70	1.34	20.20	0.84
73	EC299313	11.90	1.38	26.60	0.94
74	EC322967	12.30	1.26	25.40	0.88
75	EC322967	11.80	1.29	23.40	0.85
76	EC323731	12.00	1.25	27.20	1.01
77	EC324677	11.70	1.27	26.40	0.96
78	EC329003	11.90	1.19	26.90	0.88
79	EC329083	12.00	1.24	26.60	0.98
80	EC329588	12.50	0.88	25.90	0.87
81	EC329605	11.80	1.20	25.50	0.86
82	EC329609	11.80	1.28	24.00	0.88
83	EC329612	12.20	1.27	26.50	1.02
84	EC329627	12.20	1.28	23.10	0.85
85	EC329631	12.60	1.20	26.80	0.88
86	EC329638	12.60	0.88	25.40	0.87
87	EC329648	12.00	1.29	25.90	0.85
88	EC329662	12.00	0.89	26.40	0.98
89	EC329668	12.50	1.27	27.70	1.02
90	EC329675	12.50	0.94	25.70	0.88
91	EC329677	11.50	1.21	27.40	0.92
92	EC329679	12.40	0.90	24.90	0.98
93	EC329680	12.20	1.22	27.50	1.02
94	EC329681	12.00	1.29	26.90	0.92
95	EC329682	12.10	1.19	27.30	0.98
96	EC329691	12.30	1.21	23.10	0.86
97	EC329692	12.40	1.15	27.30	0.98
98	EC329693	11.80	1.33	24.10	0.86
99	EC329696	12.20	1.15	25.90	0.86
100	EC329707	11.60	1.25	27.00	0.97
101	EC329708	12.50	0.91	25.30	0.87

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
102	EC329713	12.30	1.24	24.80	0.86
103	EC329714	11.90	1.31	23.70	0.86
104	EC329715	11.90	1.21	27.10	0.97
105	EC329723	12.10	1.20	26.50	0.92
106	EC329724	11.70	1.42	23.60	0.88
107	EC329728	11.70	1.32	25.50	0.93
108	EC329729	12.30	1.24	28.10	1.02
109	EC329730	12.40	1.26	26.20	0.94
110	EC329812	12.20	1.08	24.70	0.88
111	EC329812	12.30	1.19	25.80	0.86
112	EC331564	12.00	1.21	27.90	0.98
113	EC343691	12.20	1.20	25.70	0.86
114	EC343749	12.60	0.94	24.40	0.88
115	EC343808	12.00	1.25	26.80	1.02
116	EC343855	12.20	1.23	27.10	0.98
117	EC351999	12.30	1.22	26.30	0.92
118	EC351999	12.40	1.27	24.90	0.88
119	EC354951	12.30	1.29	26.80	0.94
120	EC354985	11.80	1.36	25.70	0.92
121	EC354989	12.10	1.28	25.60	0.88
122	EC359685	11.90	1.23	25.30	0.90
123	EC361426	11.70	1.26	26.80	0.92
124	EC361485	12.00	1.40	26.20	0.95
125	EC361487	12.60	0.86	25.30	0.93
126	EC361494	11.70	1.34	26.50	0.96
127	EC361497	11.90	1.31	26.50	0.98
128	EC374731	11.90	1.29	26.20	0.92
129	EC374735	11.70	1.15	26.00	0.96
130	EC387710	11.80	1.44	23.90	0.84
131	HB-02	12.30	1.21	25.50	0.90
132	HB-03	12.40	1.30	26.70	0.98
133	HB-04	12.20	1.16	25.70	0.87
134	HB-06	12.20	1.26	22.00	0.82
135	HB-07	12.30	0.87	25.90	0.88
136	HB-08	11.70	1.29	27.50	0.98
137	HB-09	12.60	1.18	23.60	0.84
138	HB-10	12.40	0.92	25.90	0.92
139	HB-11	11.80	1.23	27.20	1.02
140	HB-12	11.70	1.43	26.20	0.98
141	HB-13	11.80	1.36	23.40	0.86
142	HB-14	12.30	1.30	21.90	0.84
143	HB-15	11.90	1.24	26.50	0.97
144	HB-16	12.00	1.18	27.00	1.02
145	HB-17	11.80	1.21	26.80	0.90
146	HB-18	12.30	0.97	25.60	0.89
147	HB-19	12.20	1.01	25.30	0.98
148	HB-20	11.70	1.35	27.20	0.96
149	HB-21	12.10	1.19	26.70	0.95
150	HB-22	12.40	0.90	26.70	0.99
151	HB-23	11.60	1.46	22.70	0.85
152	HB-24	11.80	1.39	25.30	0.92
153	HB-25	11.80	1.42	22.30	0.84
154	HB-26	11.80	1.43	24.60	0.86

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
155	HB-26	11.80	1.35	23.40	0.86
156	HB-27	11.60	1.31	23.60	0.84
157	HB-28	12.40	0.92	25.60	0.89
158	HB-28	11.20	1.40	27.10	0.98
159	HB-29	11.40	1.34	26.30	0.92
160	HB-30	11.70	1.33	22.20	0.82
161	HB-31	12.10	1.04	28.00	1.01
162	HB-32	12.40	1.08	26.40	0.88
163	HB-33	12.10	1.19	27.70	1.02
164	HB-34	12.50	0.97	24.40	0.92
165	HB-35	12.00	1.32	26.60	0.92
166	HB-37	12.30	1.10	26.10	0.98
167	HB-38	12.30	1.30	26.70	0.94
168	HB-39	11.90	1.28	24.10	0.92
169	HB-40	12.10	1.36	22.20	0.84
170	HB-41	12.00	1.27	26.90	0.95
171	HB-42	12.00	1.24	27.70	1.04
172	HB-43	11.80	1.20	26.50	0.94
173	HB-43	11.40	1.38	25.90	0.94
174	HB-44	11.70	1.34	24.40	0.84
175	HB-44	11.80	1.35	22.80	0.84
176	HB-45	12.30	1.39	22.10	0.84
177	HB-45	12.20	1.28	23.20	0.88
178	HB-46	12.30	1.30	25.20	0.88
179	HB-47	11.70	1.21	25.60	0.91
180	HB-48	12.30	1.19	27.50	1.02
181	HB-49	12.20	0.95	26.50	0.95
182	HB-50	11.60	1.28	28.10	1.03
183	HB-52	12.00	1.35	26.30	0.98
184	HB-53	11.50	1.30	26.10	0.92
185	HB-54	11.80	1.32	26.50	0.94
186	HB-55	12.40	1.31	23.80	0.84
187	HB-56	12.00	1.23	25.00	0.96
188	HB-57	12.40	1.24	26.10	0.86
189	HB-58	12.00	1.25	27.70	1.02
190	HB-59	12.10	1.26	26.80	0.94
191	HB-60	11.90	1.37	27.00	1.02
192	HB-61	12.00	1.25	25.30	0.89
193	HB-62	11.70	1.20	27.50	0.98
194	HB-64	11.00	1.29	26.80	0.92
195	HB-65	12.00	1.22	26.60	0.96
196	HB-66	12.20	1.16	26.30	0.94
197	HB-67	12.10	1.27	26.30	0.96
198	HB-68	11.70	1.41	22.10	0.82
199	HB-69	12.50	0.87	26.30	0.98
200	HB-70	11.70	1.25	25.60	0.88
201	HB-71	11.90	1.29	27.40	0.98
202	HB-72	12.10	1.23	27.00	0.98
203	HB-73	12.40	1.25	24.80	0.86
204	HB-73	12.00	1.17	27.70	1.02
205	HB-74	11.40	1.13	27.40	0.98
206	HB-75	12.70	0.96	26.30	0.98
207	HB-76	11.90	1.27	26.30	1.01

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
208	HB-77	11.50	1.28	25.40	0.88
209	HB-78	11.40	1.41	26.70	0.93
210	HB-79	12.40	1.16	27.40	1.02
211	HB-80	12.20	1.26	27.70	0.98
212	HB-81	12.00	1.33	23.00	0.85
213	HB-82	12.10	1.33	24.00	0.89
214	HB-83	12.00	1.15	27.10	1.02
215	HB-96	11.70	1.27	24.30	0.92
216	IC025085	12.40	1.08	23.10	0.84
217	IC034710	11.60	1.23	27.70	1.04
218	IC117784	12.00	1.30	26.30	0.88
219	IC243770	12.10	1.23	24.10	0.85
220	IC247646	12.10	1.38	25.70	0.92
221	IC267675	12.50	1.12	26.00	0.98
222	IC276939	12.70	1.27	27.10	0.96
223	IC329667	12.00	1.27	26.00	0.96
224	IC331549	12.40	0.93	25.40	0.97
225	IC331561	12.00	1.37	26.70	0.98
226	IC331571	12.20	1.39	22.20	0.84
227	IC331587	12.50	1.14	25.60	0.92
228	IC332102	12.00	1.23	27.30	0.98
229	IC332138	11.90	1.29	25.30	0.94
230	IC346272	12.60	0.84	25.30	0.95
231	IC348948	12.30	1.33	26.30	0.94
232	IC361427	11.60	1.36	26.80	0.98
233	IC361438	12.30	1.22	25.40	0.96
234	IC361470	11.90	1.30	25.00	0.98
235	IC361485	12.10	1.20	26.60	0.95
236	IC361490	12.00	1.21	25.40	0.87
237	IC361496	11.70	1.33	28.20	1.02
238	IC361498	11.50	1.32	27.70	0.91
239	IC361499	11.80	1.35	26.30	0.85
240	IC367914	11.80	1.22	26.80	0.86
241	MLMKS-7	12.00	1.29	27.40	0.98
242	Mutant-1	12.00	1.16	27.40	1.04
243	ST-41	12.10	1.23	26.20	0.98
244	PRT-07	11.80	1.30	26.30	0.96
245	PRT-12	12.30	1.42	24.80	0.88
246	Vikrant	12.20	1.15	26.80	0.89
Mean		**12.0**	**1.23**	**25.7**	**0.92**
Range		**11.0-12.7**	**0.84-1.49**	**20.2-28.2**	**0.82-1.04**

Table 196: PRT Fababean, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
1	PRT-1	10.90	1.23	25.00	0.89
2	PRT-2	11.00	1.32	25.60	0.96
3	PRT-3	11.00	1.08	25.40	0.88
4	PRT-4	10.90	1.19	25.80	0.95
5	PRT-5	10.90	1.27	24.90	0.89
6	PRT-6	10.90	1.27	25.70	0.92
7	PRT-7	10.90	1.22	25.10	0.87
8	PRT-8	10.80	1.29	23.60	0.88
9	PRT-9	10.90	1.32	25.20	0.91
10	PRT-10	10.90	1.22	24.90	0.91
11	PRT-11	11.00	1.01	25.90	0.98
12	PRT-12	10.70	1.25	25.40	0.92
13	PRT-13	11.00	1.25	25.80	0.95
14	PRT-14	10.90	1.29	24.70	0.89
15	PRT-15	11.10	1.17	24.50	0.92
16	PRT-16	11.10	1.08	25.30	0.89
17	PRT-17	10.70	1.24	24.30	0.87
18	PRT-18	11.10	1.19	25.00	0.92
19	PRT-19	11.00	1.13	25.50	0.96
20	PRT-20	11.10	1.19	25.30	0.92
21	PRT-21	11.00	1.22	25.10	0.88
22	PRT-22	11.00	1.33	25.70	0.91
23	PRT-23	11.00	1.25	25.90	0.95
24	PRT-24	11.10	1.21	24.60	0.86
25	PRT-25	10.90	1.21	25.70	0.96
26	PRT-26	10.80	1.34	25.10	0.88
27	PRT-27	11.00	1.26	25.90	0.86
28	PRT-28	11.00	1.26	25.50	0.90
29	PRT-29	10.90	1.21	25.40	0.91
30	PRT-30	10.90	1.25	25.10	0.90
31	PRT-31	11.10	1.30	25.40	0.91
32	PRT-32	11.10	1.16	25.70	0.98
33	PRT-33	11.00	1.27	25.80	0.92
34	PRT-34	10.90	1.23	25.40	0.93
35	PRT-35	11.00	1.34	22.90	0.87
36	Vikrant	11.00	1.26	25.00	0.87
Mean		**11.0**	**1.23**	**25.2**	**0.91**
Range		**10.7-11.1**	**1.01-1.34**	**22.9-25.9**	**0.86-0.98**

Table 197: Station Trial of Fababean, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
1	PRT-1A	10.40	1.34	26.00	0.91
2	PRT-1B	10.40	1.31	25.50	0.86
3	PRT-6	10.30	1.22	26.30	0.96
4	PRT-8	10.40	1.34	26.20	0.94
5	PRT-14	10.40	1.26	26.00	0.89
6	PRT-16	10.40	1.11	26.20	0.88
7	PRT-18	10.30	1.18	26.10	0.88
8	PRT-19	10.30	1.15	25.70	0.88
9	PRT-22	10.30	1.34	26.20	0.94
10	PRT-23	10.30	1.30	26.10	0.95
11	PRT-30	10.30	1.28	26.00	0.89
12	PRT-31	10.30	1.28	26.10	0.98
13	ST-55	10.30	1.24	25.40	0.92
14	ST-74	10.50	1.26	26.20	0.94
15	ST-82	10.40	1.29	25.80	0.88
16	Mutant-2	10.40	1.02	26.00	0.92
17	Vikrant	10.20	1.18	25.80	0.88
	Mean	**10.3**	**1.24**	**26.0**	**0.91**
	Range	**10.2-10.5**	**1.02-1.34**	**25.4-26.3**	**0.86-0.98**

Table 198: FYT of Fababean, Hisar

S. No.	Genotypes	Moisture	Ash DM	Protein (%)	Vicine-Convicine (%)
1	ST-11	9.50	1.30	26.30	0.99
2	ST-17	9.40	1.28	26.10	0.92
3	ST-26	9.50	1.25	26.20	0.92
4	ST-39	9.40	1.35	26.00	0.98
5	ST-40	9.50	1.32	26.10	0.99
6	ST-48	9.60	1.25	25.80	0.97
7	ST-51	9.40	1.31	26.30	0.98
8	ST-62	11.10	0.79	21.00	0.87
9	ST-64	9.50	1.34	26.00	0.93
10	ST-65	9.60	1.30	25.90	0.91
11	ST-71	9.50	1.26	25.70	0.88
12	ST-73	9.30	1.27	26.30	0.99
13	ST-75	9.70	1.33	26.40	1.02
14	ST-78	9.50	1.36	26.40	0.92
15	ST-80	9.60	1.22	26.30	1.01
16	ST-81	9.60	1.27	25.80	0.86
17	ST-84	9.50	1.27	24.30	0.88
18	ST-85	9.50	1.30	26.30	0.96
Mean		**9.60**	**1.27**	**25.70**	**0.94**
Range		**9.3-11.1**	**0.79-1.36**	**21.0-26.4**	**0.86-1.02**

Table 199: Jatropha, Hisar

Plant No.	Oil (%)	Palmitic (%)	Stearic (%)	Oleic (%)	Linoleic (%)
1	36.6	12.1	4.9	38.6	40.9
2	34.2	13.4	5.5	38.3	41.3
3	31.2	12.8	5.8	38.4	40.9
4	34.7	13.2	5.8	39.2	39.3
5	35.2	12.9	5.9	40.2	39.2
6	27.4	11.8	5.8	40.5	39.9
7	34.3	11.6	5.5	38.5	42.5
8	36.6	13.3	5.2	34.7	44.6
9	33.1	12.9	5.2	38.8	40.9
10	33.5	12.9	5.3	39.0	41.4
11	23.8	12.8	4.7	38.6	40.9
15	30.4	12.5	5.1	36.0	44.8
16	34.0	12.7	5.4	38.9	41.2
17	21.0	12.7	4.8	35.5	44.7
18	28.4	13.5	4.9	35.6	44.4
19	35.2	12.7	5.1	37.0	43.5
20	23.3	12.5	5.4	38.8	42.0
21	24.0	11.7	4.9	35.6	45.7
22	34.2	12.6	0.0	44.8	40.7
Mean	**31.1**	**12.7**	**5.0**	**38.3**	**42.0**
Range	**21.0-36.6**	**11.6-13.5**	**0.0-5.9**	**34.7-44.8**	**39.2-45.7**

CENTRE REPORT

VI. CENTRE REPORT

6.1 HILLS

6.1.1 GBPUAT, Ranichauri

Grain amaranth :

F_1 generation: Twenty four crosses in their F_1 generation along with ten parents were evaluated in a replicated trial. Seed yield of the crosses varied from 50 – 1350 g/plot as compared to 50 – 300 g/plot for the parents. The cross Suvarna x PRA 3 yielded the highest.

F_2 generation: F_2 plants of ten crosses were evaluated. Data on 5 plants per cross were recorded. Seed yield per plant ranged from 11.36 – 69.23 g. Flowering time (52.0 – 78.0 days) and maturity period (122 – 146 days) of the crosses also showed wide variation.

F_3 generation: Twenty F_3 lines of four crosses were evaluated in plant to progeny rows. Seed yield of the lines ranged from 16.46 – 133.81 g per plot.

F_5 generation: Twenty eight lines of 7 crosses were evaluated in a replicated trial along with 3 checks. Seed yield of the lines varied from 7.25 – 18.75 q/ha.

F_6 generation: Fifty five lines of 11 crosses were tested in a replicated trial along with two checks. Seed yield of the lines ranged from 13.75 – 33.42 q/ha.

Station Trial - I: Twelve elite lines derived from various crosses including two check cultivars were tested in a replicated trial. The grain yield level of the entries varied from 7.17 q/ha (Annapurna x PRA 2000) to 30.84 q/ha (PLP 1x PRA1).

Station Trial – II: Eleven elite lines derived from various grain amaranth crosses were evaluated in a replicated trial. The yield level of the entries was low (possibly due to the degraded lands) and ranged from 3.75 to 20.25 q/ha. The cross PLP1 x Suvarna yielded the highest.

Station Trial –III: Thirteen breeding lines including two checks were evaluated in a replicated trial. Many of the entries yielded better than the check variety,

PRA 2 (19.57 q/ha). The seed yield of the entries varied from 10.83 to 28.75 q/ha. PRA 1 x Shimla A2 was the highest yielder followed closely by PLP 1 x Annapurna (28.50 q/ha).

Vegetable amaranth: Ten lines of vegetable amaranth procured from AVRDC were evaluated in single row plots. Plant height of the entries ranged from 75.0 to 175.60 cm.

Field Demonstration: Eight varieties and elite lines were planted for varietal demonstration. Seed yield of the entries varied from 5.00 to 36.0 q/ha.

Rice bean:

F_1 Generation: Thirty F_1 single crosses along with their 16 parents were evaluated. Seed yield per plant of the crosses ranged from 3.89 to 67.30 g. Plant height (35.0 - 133.0 cm) and maturity period (119.0 – 145.0 days) also showed wide variation.

F_2 Generation : Plant to progeny rows of 30 crosses were evaluated along with their parents. Seed yield per plant ranged from 9.41 to 80.56 g. Other plant characters also showed wide variation.

F_3 Generation: Progeny rows of 26 crosses were evaluated along with two checks. Seed yield of the lines ranged from 50.0 to 500 g with other characters showing considerable variation.

F_4 Generation: F_4 lines of twenty five crosses were evaluated along with two check varieties. Seed yield of the lines varied from 150.0 to 750.0 g.

F_5 Generation: F_5 lines of five crosses were tested in a replicated trial along with checks. Seed yield of the lines ranged between 15.28 and 33.33 q/ha and plant height between 146.1 and 207.0 cm.

F_6 Generation : F_6 lines of 14 crosses along with checks were evaluated in a replicated trial. Seed yield of the lines ranged between 11.11 and 29.17 q/ha. Variation in maturity period was also high (124.0 to 145.0 days).

Station Trial - I: Promising breeding lines of eight crosses were evaluated in a replicated trial. Seed yield of the lines varied from 8.78 to 33.89 q/ha. The cross

PRR 2 x RBL 35 produced the highest yield. The cross LRB 224 x PRR2 showed early maturity (108 days) and dwarf plant height (57.20 cm).

Station Trial -II: Breeding lines of ten crosses were tested in a replicated trial along with checks. Seed yield of the lines was low and ranged from 4.98 to 12.42 q/ha.

Station Trial -III: Promising lines of eight crosses were tested in a replicated trial along two checks. Seed yield of the lines varied between 5.33 and 22.22 q/ha.

Station Trial-IV: Promising lines of ten crosses and two checks were tested in a replicated trial. Seed yield of the lines varied between 8.26 and 20.70 q/ha. The entry from cross PRR 2 x PRR 9301-1 and a few other crosses showed early maturity (104 days) and dwarf plant height (34.20 cm).

Station Trial-V: Selected lines from 15 crosses along with two checks were tested in a replicated trial. Seed yield of the entries ranged from 9.03 to 20.36 q/ha. The entries were of medium maturity group.

Field Demonstration: Improved varieties and elite lines were planted in demonstration plots. Seed yield of the entries ranged from 200 to 3450 g plot. Maturity period showed wide variation (124.0 – 150.0 days).

6.1.2 HPKV, Palampur

Adzukibean:

Hybridization programme: Hybridization programme in adzuki bean was initiated to combine early and synchronous maturity in high yielding lines such as HPAB-31 and HPU-51. In addition to this inter-specific crosses of rice bean with adzuki bean were also attempted in this season and F_1 were obtained in the following crosses, Totru local x BRS-1 and Totru local x Naini. In intercropping trials, BRS-1 and BRS-2 rice bean lines were evaluated along with maize and amaranths in various combinations. It was observed that BRS-2 was higher yielder giving higher gross output per unit area with maize and amaranth.

Faba bean:

In faba bean 32 crosses were attempted in a lines x testers design involving 16 lines and 2 testers. The lines were higher yielder and were selected from the coordinated trials conducted over the years. The testers were two well adapted local lines (Local white and local black). All the 32 crosses are being evaluated for seed and green pod yield in the *rabi* season of 2007-08. Of the 72 lines from 8 crosses evaluated in the year 2006-07, 19 lines were selected on the basis of higher yield are also being evaluated in this season. In addition to this 24 plants were selected from F_2 generations of 3 crosses namely HB 193 x HB 430, HB 193 x HB 180 HB 193 x PRT 7.

Grain amaranth:

In amaranth 2 crosses are being evaluated in F_2 generation and 2 more crosses were attempted.

Buckwheat:

In buckwheat 15 crosses were attempted in a half diallel design involving 6 parents namely B 201, B 203, B 208, B 210, B 212 and B 217. The F_1 generated at Palampur under glass house conditions were evaluated at Mountain Research & Extension Centre, Sangla.

FLDs: **A** total of 30 FLDs were conducted in rice bean and adzuki bean each. 5 FLDs in amaranth were also conducted in different parts of Himachal Pradesh

6.2 PLAINS

6.2.1 CCS HAU, Hisar

Faba bean:

Hybridization programme:

Breeding material: The details of the breeding material generated and evaluated is given in the table below:

S. No.	Generation	No. of crosses	Plants selected	Progenies selected
1.	Fresh crosses	25	-	-
2.	F_1 generation	32	-	-
3.	F_2 generation	33	145	-
4.	F_3 generation	32	220	-
5.	F_4 generation	32	185	30
6.	F_5 generation	24	109	22
7.	F_6 generation	20	-	35

Mutation breeding: Two mutants i.e. Mutant-1 and Mutant-2 were developed. Mutant-1 gave seed yield of 204.00 g/plant, whereas Mutant-2 gave seed yield of 95.4 g/plant in comparison to check Vikrant (62.80 g/plant). The mean performance over three years is given below:

Mean, performance of Mutant-1 and Mutant-2 over check Vikrant for 3 years (2004-05, 2005-06 and 2006-07)

Character	Mutant-1	Mutant-2	Vikrant
Days to 50% flowering	62.67	66.67	72.00
Days to maturity	137.00	161.33	162.67
Plant height (cm)	134.07	151.50	68.33
Branches per plant	18.17	7.67	6.27
Pod length (cm)	6.63	7.83	4.57
Clusters per plant	98.33	51.00	22.67
Pods per plant	196.00	104.33	54.00
Internodal distance (cm)	3.74	8.33	4.17
Seeds per pod	4.00	4.00	3.00
Seed yield per plant (g)	204.07	102.13	62.83

Seed Production:

As per requirement the seeds of Faba bean, Amaranth, Ricebean and Jatropha were produced as given below:

S. No.	Crop	Quantity (kg)
1.	Faba bean	4500
2.	Ricebean	900
3.	Grain Amaranth	10
4.	Jatropha	105

6.2.2 UAS, Bangalore:

Winged bean :

Mutation breeding : In winged bean four genotypes namely, Mysore local, AKWB-1, Dwarf mutant and NBRI-Selection were irradiated during 2005 (summer) with gamma rays irradiation (10 kr, 15 kr, 20 kr and 25 kr) at BARC, TROMBAY. The irradiated materials were sown for identification of early and erect plant types. The identified pink flowers mutants in M_1 materials will be advanced in ensuring season.

Rice bean :

Hybridization programme: To evolve genotypes with non-pod shattering and uniform maturity. The crosses of RBL-1, RBL-6, KHRB-1 and KHRB-2 with each parent RBL-410, RBL-426, RBL-431 and RBL-452 were attempted during 2005 and advanced to F_2 generation during 2006. KHRB-1 and KHRB-2 were crossed with RBL-18, RBL-198 and RBL-243 to evolve genotypes for short cooking time.

Grain Amaranth :

Hybridization programme: Ten crosses of Suvarna with BGA-2, BGA-3, MGA-2, IC-21965, RGAS-92-10-1, IC-35377, RMA-4, IC-32195, IC-35696 and IC-95366 attempted in *kharif* 2005 were advanced to F_1 generation during 2007 and F_2 seeds were harvested.

6.2.3 NDUAT, Faizabad:

Faba bean:

Hybridization programme: Twelve crosses were evaluated for seed yield and related characters. The parents used in the programme were HB-416, HB-303, BSH-42, BH-418, HB-420, HB-430, Vikrant and NDF-1. The F_1 generation will grown in Rabi 2007-08. Twenty one crosses of faba bean were made during rabi 2006-07 and sufficient seeds were collected to raise further generations. The parents used in the programme were EC293713, EC323731, EC243860, EC247945, EC243895, EC324677, EC322967, Vikrant, PRT 1 and PRT 12.

Kankoda:

Collection, evaluation and maintenance of germplasm: Five accessions of kankoda (*Momordica dioica*) were collected from the farmer's field of eastern Uttar Pradesh during *kharif* 2007. The Seed of collected germplasm accession will be evaluated during *kharif* 2008.

6.2.4 OUAT, Bhubaneswar:

Rice bean:

F_1 generation evaluation: Fifteen F_1 germplasm were grown during Kharif, 2006 and F_2 germplasm were grown during Kharif, 2007. The seeds harvested from F_2 generations will be grown for F_3 generation during Kharif, 2008.

Mutation breeding – M_4 generation: Rice bean varieties were treated with 40KR Gamma Rays during Kharif, 2004 and M_1 was grown in the same season. M_2 generation was grown during Kharif, 2005 and 175 individual plants were selected on the basis of yield and yield attributing characters. During Kharif 2006 seeds of the individual plants were grown in three replications. Based on yield and yield contributing characters 250 plants have been selected to grow M_4 generation during Kharif, 2007. From F_4 generation, 25 lines have been selected for station trials to be grown during Kharif 2008.

6.2.5 MPKV, Rahuri:

Kankoda:

Hybridization programme: Three crosses were made in Kankoda to obtained more number of fruits with big fruits size. The parents used were RMF-17, RMF-1, RMF-5 and RMF-37.

6.2.6 BAU, Ranchi:

Rice bean:

Hybridization programme: A hybridization programme in ricebean has been started from the last four years at this centre with an objective to get more variability with respect to days to maturity and several yield attributing characters. Altogether 12 crosses succeeded using the parents – RBL- 1, RBL- 6, LRB-123, LRB-138 LRB-148, LRB 167, LRB-177, LRB-278, LRB-285 and LRB-199. Most of the parents were selected on the basis of germplasm evaluation trials.

Some long duration genotypes of rice bean like BRB 10, LRB 330 and RBL 50 were evaluated for their suitability as forage purpose in collaboration with AICRP on forage crops.

Faba bean :

Hybridization programme: Five crosses in fababean were attempted last year with the parents- Vikrant, HB- 603, HB-611, HB-501, HB- 502 and BSH-9. Very few seeds in each cross were obtained. However, they are now being planted to raise F_1 generation.

Multilocation trial: A multilocation trial on Fababean was conducted at various ZRS of the university to get some stable high yielding genotypes for this region. Genotypes were selected on the basis of last year's performance in various IVT & AVT trials at this centre. Highest average seed yield performance was shown by NDF – 1 (14.2 q/ha) followed by Vikrant (13.9 q/ha).

Demonstration in farmers' field : FLDs on faba bean were carried out with the help of Operational Research Project of the University. The entries demonstated were Vikrant, HB- 608, NDF- 1 & NDF-4 for vegetable purposes only. Seeds of faba bean genotypes such as Vikrant, NDF-1 and BSH 42 were supplied to Agronomy Department for spacing and fertilizer trials.

Kankoda:

Germplasm collection: Four germplasm accessions of Kankoda were collected from the local area during the last year and the collected seeds will be planted during the coming season.

6.2.7 RAU, Mandor:

Grain Amaranth:

Mutation Breeding : More than fifty single plants of grain amaranth were selected from EMS treated progenies of Annapurna and Suvarna for advancement and evaluation. Seeds of amaranth varieties GA 2 and Suvarna were treated with colchicine (0.2 and 0.4%) and grown for advancement and evaluation.

Station trials : Two station trials of grain amaranth were conducted each having 14 entries including four checks. Entries RMA 22, RMA 23, RMA 30, RMA 35 and RMA 37 were found promising for grain yield.

***Citrullus* spp.:**

Crossing programme : Interspecific crosses between tumba (*Citrullus colocynthis*) and kalingada (*Citrullus lanatus*) were attempted. Seeds from six crosses i.e. RMT 59 x SKNK 136, RMT 59 x SKNK 679, RMT 6 x SKNK 679, RMT 7 x SKNK 136, RMT 7 x SKNK 679 and GK 1 x RMT 59 were obtained.

6.2.8 GAU, S.K. Nagar:

Grain Amaranth:

Frontline Demonstrations: Five frontline demonstrations ere conducted on farmer's field for amaranth with two varieties viz., GA-1 and GA-2. GA-2 depicted 5.19 percent yield advantage over variety GA-1.

Station trials : One station trial of grain amaranth was conducted with 16 entries including two checks. No entry was superior to check varieties for grain yield.

6.2.9 FCRI, TNAU, Mettupalayam:

Grain Amaranth:

Hybridization Programme: Six crosses were made during Kharif 2007-08 and the seeds were harvested for growing F_1 during Kharif 2008-09 for evaluation.

Germplasm Collection and the Station Trial : Eight accessions of grain amaranth were collected and they were evaluated along with four checks in a station trial during Kharif 2007-08. The yield of all the entries except MGA 507 was lower than that of checks.

Front Line Demonstration : During 2007-08 Kharif, one FLD on grain amaranth was conducted in farmer's field at Vadugapati village of Harur District. Poor yield was obtained due to heavy rains during the flowering stage. In KVK at Kilnelli (Vedapuri Krishi Vigyan Kendra), Kanchipuram (District) two FLD's, one each on grain amaranth varieties Suvarna and BGA-3 giving seed yield of 2.40 and 2.70 q/ha and rice bean varieties LRB-330 and LRB-355 giving seed yield of 5.10 and 4.60 q/ha respectively.

Jatropha:

Hybridization Programme*:* This centre is involved in inter-specific hybridization programme to evolve hybrid lines for higher yield and higher oil content. Attempts were made to develop hybrids of *Jatropha curcas x Jatropha*

integerimma and F_1 populations were obtained. Most of the F_1 hybrids were sterile with a few partially sterile (1-3% fruit set) and few fully fertile. Among them hybrid no. 66, 95 and 97 were found to be the best performing in terms of seed set, growth rate and seed size. F_1 hybrids like no. 75 and 93 almost resembled curcas parent and had large fruits, but with slow growth rate. Back crossing of F_1 hybrids with *J.curcas,* BCF_1 and subsequently BCF_2 populations were generated. Thirty one hybrids have undergone two generations of back crossing to produce BCF_1 and BCF_2, which have already been planted in the field for evaluation. They exhibited wide variation in their morphological characters viz., leaf shape, leaf base, leaf margin, etc. Development of hybrids and their evaluation are under progress.

6.2.10 IGKV, Ambikapur:

Station trials : Two station trials of grain amaranth and faba bean were conducted during 2006-07. In faba bean trial with 13 entries including the local check, entry HB-303 was found highest seed yielder (3.21 q/ha). The grain amaranth trial having 20 entries was conducted and on the plot yield basis, entry IC342567 was found to be a superior genotype.

SUMMARY

VII. SUMMARY

A total of 170 experiments were allotted during 2007 including germplasm evaluation (40), breeding (75), agronomic (40) and quality (15) of underutilized crops at twenty two locations in different agro-climatic zones of the country. Out of these, 139 trials were carried out. A summary of research achievements is given below:

7.1 Plant breeding

Seventy five varietal trials, 29 in hills and 46 in plains, were conducted on fourteen under-utilized 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 1.

Table 1. Best genotypes in different trials conducted at multilocations during 2007

Crop	Trial name	Entries	Locations	Top yielder	Yield (q/ha)	Best check yield (q/ha)
HILLS						
Amaranth	IVT	9	4	IC467901	22.22	Annapurna (19.83)
	AVT-I	5	4	Annapurna (C)	19.83	
	AVT-II	1	4	Annapurna (C)	19.83	
Buckwheat	IVT	10	4	Sangla B-124	11.18	Shimla B1 (10.06)
	AVT-I	3	4	Shimla B1 (C)	10.06	
	AVT-II	2	4	SMLBW-5	11.03	
Chenopodium	IVT	8	2	NIC22506	10.27	NIC22503 (5.50)
	AVT-I	5	2	IC415477	9.92	
	AVT-II	2	2	SMLCP-2	9.74	
Rice bean	IVT	6	6	EC097882	14.55	RBL-01 (14.39)
	AVT-I	7	6	LRB-005	18.03	
	AVT-II	1	6	VRB-1	17.55	
Adzuki bean	IVT	5	3	HPU-51 (C)	14.93	HPU-51 (14.93)
	AVT-I	6	3	HPU-51 (C)	14.93	
Faba bean	IVT	16	2	HB-123	6.91	Vikrant (3.92)

Job's tear	AVT-I	9	3	H-2902	3.69	Pollin (3.64)
Perilla	IVT	16	2	BDS-1644	5.81	BDS-1650 (3.07)
PLAINS						
Amaranth Rabi 2006-07	IVT	12	5	BGA-15	16.68	Suvarna (14.30)
	AVT-I	8	5	Suvarna (C)	15.02	Suvarna (15.02)
	AVT-II	4	5	RMA 4	16.07	
Amaranth Kharif 2007	IVT	11	2	BGA-07	4.47	Suvarna (3.38)
	AVT-I	4	2	SKNA-502	5.30	Suvarna (4.83)
	AVT-II	3	2	Suvarna (C)	4.83	
Rice bean	IVT	16	8	BRB018	10.04	RBL-50 (9.02)
	AVT-I	10	8	RBL-50 (C)	8.76	RBL-50 (8.76)
Faba bean	IVT	13	4	EC243575	28.75	Vikrant (24.62)
	AVT-I	4	4	HB 418	28.88	Vikrant (25.43)
	AVT-II	2	4	HB 430	26.22	
Winged bean	IVT	11	2	EC027885-1	14.83	AKWB-1 (9.63)
	AVT-II	9	4	Dwarf Mutant	8.83	AKWB-1 (6.87)
Kallingda	AVT-I	17	2	SKNK-665	2.83	GK-1 (1.64)
Kankoda	AVT-II	9	4	RMF-37 (C)	10.28	RMF-37 (10.28)
Tumba	IVT	14	1	RMT 407	1.34	RMT-59 (0.89)
Jatropha	IVT	7	3	Chhatrapati (C)	16.06	Chhatrapati (16.06)

Based on the three years data, the best genotype in each crop with respect to yield has been identified and indicated in Table 2. The proposal of these genotypes and others ranking either second or third, whose performances have been given in Annual Report, can be submitted to Variety Identification Committee for consideration of their identification as varieties.

Table 2. 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
Hills				
Grain Amaranth	IC035407 (C)	21.94	122	-
	VL0344	18.52	109	-15.59
Buckwheat	Shimla B-1 (C)	11.08	81	-
Chenopodium	SMLCP-2	8.59	133	10.79
	NIC22503 (C)	7.75	148	-
	PRC-9801 (C)	5.74	130	-
Ricebean	VRB 1	12.89	123	10.35
	PRA-2 (C)	11.68	123	-
	PRA-1 (C)	11.34	124	-
Plains				
Grain Amaranth	SKNA 21	10.86	121	3.01
	RMA 4	10.76	122	2.12
	RMA 3	10.55	124	0.12
	Suvarna (C)	10.54	117	-
	GA 2 (C)	9.43	123	-
Faba bean	HB-405	16.81	132	8.08
	HB 430	16.40	137	5.48
	Vikrant (C)	15.55	138	-
Winged bean	EC178313	8.84	165	27.07
	IC026945	8.81	163	26.64
	EC142665	8.74	163	25.61
	EC178331	8.41	163	20.85
	Dwarf mutant	8.22	161	18.12
	AKWB-1 (C)	6.96	166	-
Kankoda	RMF-37 (C)	13.94	54 (Fruit setting)	-

7.2 Germplasm evaluation

Over 2726 accessions, some of them tested at more than one location, were evaluated at thirty eight locations during 2007. Crop-wise number of accessions, locations and promising accessions have been given in table 3.

Table 3. Performance of germplasm accessions in different crops

Location	Top 5 accessions (Yield)	Top 5 accessions (Days to maturity)
HILLS		
Amaranth (50 Accessions)		
Ranichauri	IC415220, IC423408, IC415224, IC415232, EC519554 (>25.58) **Annapurna (C) (18.40 g/plant)**	IC415314, IC415272, IC415282, IC415318, IC547397 (114) **Durga (C) (124 days)**
Shimla	IC415448, IC415128, IC415232, IC415254 (> 82.40) **Annapurna (C) (82.40 g/plant)**	IC415264 (142) **Durga (C) (143 days)**
Sangla	IC457397, IC423448, IC540835, IC423408, IC540812 (> 15.00) **Annapurna (C) (12.11 q/ha)**	EC519522, IC547381, IC547387, IC547375, IC415250 (< 133) **Durga(C) (133 days)**
Almora	IC423448, IC547395, EC519554 (> 31.88) **VL-44 (C) (31.88 g/plant)**	EC519554 (89) **VL44 (C) (91 days)**
Buckwheat (25 accessions)		
Almora	EC037289, EC001537, EC099948, IC016580, IC013140 (> 6.93) **VL ugal 7 (C) (6.93 g/plant)**	-
Shimla	IC016579, IC017370, EC037289, EC099945, EC018629 (> 21.89) **PRB-1 (C) (15.92 g/plant)**	-
Ranichauri	IC016579, IC017370 (> 45.83) **Himpriya (C) (45.83 g/plant)** EC097262, IC016579, IC017370 (> 5.09) **Himpriya (C) (5.09 q/ha)**	-
Sangla	IC540851, IC013140, EC018629, EC099945, IC017370 (> 5.20) **Shimla B-1 (C) (4.80 g/plant)** IC540851, IC013140, IC540859, EC018629, EC099945 (> 18.20) **Shimla B-1 (13.60 q/ha)**	-
Based on average over two locations	IC540851, IC013140, EC018629, IC540859, IC017370 (> 10.84) **Shimla B1 (C) (9.02 q/ha)**	-
Chenopodium (25 accessions)		
Shimla	EC507733, IC540831, NIC22506, IC540811, IC447575 (> 17.70) **EC507741 (C) (9.12 g/plant)**	-
Ranichauri	IC540837, IC540831, IC540836, IC540842, NIC-22498 (> 1.73) **EC507741 (C) (1.73 q/ha)**	IC540836 (119) **EC507741 (C) (124 days)**
Adzuki bean (25 accessions)		
Shimla	EC340254, EC340244, EC240246, EC087895, EC340240 ((> 54.16) **HPU-51 (C) (36.25 g/plant))**	IC341944, IC341952, IC341949, IC341953, IC024522 (< 112) **HPU-51 (C) (114 days)**

Ranichauri	EC340254, EC240246, IC341952, EC340244 (> 3.30) **HPU -51 (C) (3.30 q/ha)**	EC018256, IC089957, EC018257, EC057459, EC080850 (< 104) **HPU -51 (C) (105 days)**
Palampur	EC018257, IC341953, EC087895, IC089957, IC024522 (> 26.67) **HPU-51 (C) (22.87 q/ha)**	-
Based on average over two locations	EC018257, IC341953, EC087895, IC089957, EC187898 (> 14.37) **HPU-51 (C) (13.08 q/ha)**	IC341952, IC341944,IC089957, IC024522, EC057459 (< 100) **Totru Local (C) (100 days)**
Faba bean (30 accessions)		
Ranichauri	IC243709, EC243596, IC361496, EC243860 , EC329679 (> 24.66) **PRT-12 (C) (15.04 q/ha)**	EC249851, EC329715, IC243709, IC331587, EC117842 (< 191 days) **Vikrant (C) (191 days)**
Job's tear (25 accessions)		
Ranichauri	IC521342, IC521339, IC089382, IC419466, IC340015 (>1.50 q/ha)	IC416868, IC416897 (< 179 days)
Palampur	IC416829, IC521340 (> 1.00) **Mayuen (C) (1.00 q/ha)**	IC524631, IC416868, IC089391, IC521339, IC416824 (< 116.67) **Mayuen (C) (118 days)**
Based on average over two locations	IC521342, IC340015, IC521340, IC334314, IC416829 (> 1.06)	-
Perilla (60 accessions)		
Bhowali	-	IC538007, IC526701, IC526674, IC524622, IC524600 (< 221) **Almora (C) (229 days)**
PLAINS		
Amaranth (Rabi) (50 accessions)		
Hisar	BGA-14, IC423448, BGA-04, IC415252, BGA-24 (> 29.80) **Suvarna (C) (13.50 g/plant)**	BGA-01, BGA-07, BGA-17, IC430408 (< 160 days) **Suvarna (C) (160 days)**
S.K. Nagar	BGA-05, IC415258, BGA-23, BGA-20, BGA-21 (> 20.40) **GA-1 (C) (13.50 g/plant)**	IC415264, IC415426, IC415262, IC415290, IC415266 (< 83) **GA-1 (C) (86 days)**
Bhubaneswar	BGA 5, BGA 4, BGA 7, BGA 23, BGA 22 (> 19.28) **Suvarna (C) (11.13 g/plant)**	IC423117, IC415266 (< 80) **Annapurna (C) (80 days)**
Delhi	EC519544, IC423448, EC519522, IC423117, IC415282 (> 13.58) **GA-1 (C) (5.63 q/ha)**	IC038127, IC415222, IC037316, IC415318, IC415232 (< 154) **GA-2 (C) (162 days)**
Mandor	EC519554, BGA 4, BGA 12, BGA 24, BGA 28 (> 41.30) **Suvarna (C) (36.66 g/plant)**	IC415272, IC415252, EC519544 (< 95) **Annapurna (C) (95 days)**
Based on average over locations	BGA-04, BGA-05, BGA-23, BGA-24, BGA-01 (> 23.56) **Suvarna (C) (18.65 g/plant)**	IC423408, IC415426, IC038127, IC038312, IC415266 (< 116) **Annapurna (C) (124 days)**

Amaranth (Kharif) (50 accessions)		
Bangalore	IC007836, IC004200, IC017933, IC005917, IC006645 (> 5.34) **Durga (C) (4.37 g/plant))**	-
Mettupalayam	-	IC017932, IC381556, IC006646, IC017447, IC017931 (65) **Suvarna (C) (75 days)**
Rice bean (97 accession)		
Ludhiana	LRB371, LRB401, LRB362, LRB347, LRB425 (> 26.30) **RBL 6 (C) (15.59 g/plant)**	LRB308, LRB317, LRB318, LRB315, LRB316 (< 104) **RBL 6 (C) (107 days)**
Bhubaneswar	LRB340, LRB377, LRB414, LRB411, LRB409 (> 13.61) **RBL 6 (C) (10.49 g/plant)**	LRB318, LRB321, LRB369, LRB370, LRB320 (< 89) **RBL 35 (C) (101 days)**
Bangalore	LRB442, LRB412, LRB441, LRB409, LRB414 (> 2.60) **RBL 50 (C) (2.10 g/plant)**	LRB417 (81) **RBL 50 (C) (82 days)**
Hisar	LRB424, LRB425, LRB418, LRB414, LRB379 (> 90.10) **RBL 6 (C) (51.84 g/plant)**	-
Delhi	LRB423, LRB380, LRB402, LRB438, LRB316 (> 33.00) **RBL 50 (C) (19.91 g/plant)**	LRB411, LRB422, LRB317, LRB435, LRB307 (< 138) **RBL 35 (C) (139 days)**
Ranchi	LRB409, LRB329, LRB427, LRB431, LRB432 (> 9.20) **RBL 35 (C) (7.62 g/plant)**	LRB383, LRB334, LRB401, LRB385, LRB364 (< 115) **RBL 35 (C) (119 days)**
Mettupayalam	LRB364 (> 11.30) **RBL 1 (C) (11.3 g/plant)**	LRB329, LRB307, LRB429, LRB366, LRB425 (< 77) **RBL 6& RBL 35 (C) (80 days)**
Based on average over locations	LRB424, LRB425, LRB414, LRB418, LRB359 (> 22.39) **RBL 6 (C) (16.11 g/plant)**	-
Faba bean		
Hisar (268 accessions)	EC329588, HB-41, HB-17, HB-21, HB-10 (> 50.40) **Vikrant (C) (18.65 g/plant)**	Mutant-1, Selection-1, EC267649, IC34710, HB-95 (< 151) **PRT-7 (C) (163 days)**
Delhi (148 accessions)	EC329672, EC329668, EC329662, EC243770, EC243637 (> 43.00) **PRT-12 (C) (36.00 q/ha)**	EC025192, EC329662, EC117705, EC117809, EC243631 (< 101) **Vikrant (C) (104 days)**
Faizabad (77 accessions)	EC299313, EC267641, EC329605, EC329724, EC343808 (> 23.57) **Vikrant (C) (17.47 q/ha)**	EC382423, EC247696, EC324677, EC025085, EC243895 (< 160) **Vikrant (C) (164 days)**
Kalingada (24 accessions)		
S.K. Nagar	Vadvas-2, SKNK-001, Malivas, Mahudi-4, Sidhpur-1 (> 4.67) **GK-1 (C) (4.17 q/ha)**	-
Jatropha		
Hisar (156 accessions)	JH-01, JH-36, JH-46, JH-95, JH-132 (> 575.00) **Chhattarpati (C) (250.00 g/plant)**	-

Karnal, (22 accessions)	TNMC-33, S.K.N.Big, TNMC-23, Hansraj (>322.17 g/plant)	-
Winged bean (17 accessions)		
Ambikapur	IC112416, IC095222, IC045229-1, IC112417, EC142654 (> 8.06 q/ha)	EC027886-A2, EC142654-4, EC142654, EC178287, EC142667 (< 163 days)
Simarouba (54 accessions)		
Rahuri	-	-

7.3 Quality

The seed of promising genotypes evaluated in IVT, AVT and germplasm evaluation of the seven underutilized crops from eight locations were planned for quality analysis but due to non-availability of seeds from some centres, quality analysis was done only in three underutilized crops supplied by the two centres. The crop-wise details of quality traits are given below:

Crops	Best genotypes
Grain Amaranth	
IVT, Hisar	Protein (IC035399: 14.4%, GA-1: 14.3%) Lysine (IC035370: 6.3 g/16gN, GA-2004: 6.1 g/16gN)
AVT, Hisar	Protein (RMA-8: 13.7%, SKNA-21: 13.7%) Lysine (PLP-1: 6.4 g/16gN, Shimla-4: 6.1 g/16gN)
Germplasm, Hisar	Protein (BGA-16: 13.8%, IC415222: 13.8%) Lysine (IC415266: 6.3 g/16gN, EC519522: 6.2 g/16gN)
Faba bean (IVT)	
Hisar	Protein (HB-502: 26.30%, EC010845: 26.20%) Vicine-convicine (BSH-9: 0.87%)
Faizabad	Protein (BSH-9: 26.00%,) Vicine-convicine (EC010845: 0.86%)
Based on two locations	Protein (EC243575, HB-518, IC-361427: 25.85%) Vicine-convicine (EC243834: 0.88%)
Faba bean (AVT)	
Hisar	Protein (HB-302: 26.30%, BSH-42: 26.10%) Vicine-convicine (HB-430: 0.86%, Vikrant: 0.87%)
Faizabad	Protein (BSH-42: 26.00%,) Vicine-convicine (HB-405: 0.88%, HB-418: 0.90%)
Based on two locations	Protein (HB-303: 26.10%, BSH-42: 26.05%) Vicine-convicine (HB-405, HB-430: 0.89%)

Faba bean (Germplasm)	
Hisar	Protein (IC361496: 28.20%, EC329729, HB-50: 28.10%) Vicine-convicine (HB-30: 0.82%, EC117739: 0.83%)
Faizabad	Protein (EC243626: 26.40%, EC243743: 26.40%) Vicine-convicine (EC251014: 0.84%, EC249947: 0.85%)
Jatropha	
Hisar	High Oil (Plant No. 1, 8: 36.60%) Low Palmitic acid (Plant No. 7: 11.6%, Plant No. 21: 11.7%) Low Stearic acid (Plant No. 22: 0.0%, Plant No. 11: 4.70%) High Oleic acid (Plant No. 22: 44.80%, Plant No. 6: 40.50%) High Linoleic acid (Plant No.: 21: 45.70%, Plant No. 15: 44.80%)

7.4 AGRONOMY

Fourteen agronomic experiments, four on grain amaranth, two on buckwheat, six on rice bean and one each on faba bean and Jatropha were conducted during Rabi 2006-07 and Kharif 2007. Out of 43 trials allotted, results of 29 were received. Salient findings are as follows:

S. No.	Experiment	Finding
1.	Effect of spacing and fertilizer levels on different amaranth genotypes	Grain amaranth varieties BGA-2 and Suvarna with 30x15 cm spacing resulted in higher grain yield at Bhubaneswar and Bangalore. Recommended dose of fertilizer (RDF) was better than 75% RDF at all the locations.
2.	Integrated nutrient management studies in grain amaranth	Application of 75% recommended N through fertilizer + 25% N through FYM + 100% P_2O_5 resulted in highest grain yield at Bangalore. On the other hand, use of castor cake in place of FYM gave better response at S.K. Nagar. Addition of P fertilizer further enhanced the amaranth yield.
3.	Effect of sowing time, spacing and fertilizer doses in grain amaranth	At S.K. Nagar the grain yield of amaranth was observed to decrease with delay in sowing, increase in spacing and decrease in fertilizer dose.
4.	Evaluation of organic sources for N management	Use of organic source of N led to decrease in amaranth yield as compared to fertilizer N. Among the organic

	in grain amaranth	manuring treatments, application of vermicompost @2.5 t/ha + FYM @4.0 t/ha, vermicompost @7.0 t/ha and FYM @ 8.0 t/ha gave equally good yield.
5.	Response of promising buckwheat genotypes to fertilizer doses	Highest grain yield of buckwheat was obtained by applying a fertilizer dose of $N_{40}P_{40}K_{20}$ both at Ranichauri and Sangla. Cv. 'Sangla B1' gave the highest grain yield at Sangla while 'Himpriya' was highest yielder at Ranichauri.
6.	Integrated nutrient management studies in buckwheat	Grain yield of buckwheat by applying vermicompost @2.5 t/ha + Chullu cake @2.5 t/ha or Chullu cake @7.5 t/ha or Chullu cake @2.5 t/ha + FYM @4.0 t/ha was observed to be almost equal to that obtained by using recommended fertilizer doses ($N_{60}P_{40}$).
7.	Performance of rice bean in comparison with prevailing pulse crops	Rice bean was reported to give more seed yield than black gram and green gram at Bangalore, Ludhiana and Ranichauri and more fodder yield than cowpea at Ranichauri.
8.	Integrated nutrient management studies in rice bean	Rice bean yield obtained by application of 50% RDF + PSB + Rhizobium was at par with that obtained by applying RDF at Bangalore and Bhubaneswar.
9.	Intercropping study in rice bean	At Bhubaneswar intercropping the component crops and rice bean in 2:4 row ratio resulted in higher rice bean equivalent yield and land equivalent ratio (LER) than planting in 1:2 row ratios. Highest values of rice bean equivalent yield and LER were reported in Arhar + rice bean (2:4) intercrop followed by Maize + rice bean (2:4) intercrop. At Bangalore, the highest value of LER was obtained by growing Rice bean + ragi intercrop in 2:4 row ratio.
10.	Effect of spacing, nutrients and pruning in Jatropha	Increase in spacing and fertilizer dose increased branching and seed yield of Jatropha at S.K. Nagar.
11.	Effect of irrigation and fertilizer levels on seed yield of faba bean under late sown condition	Irrigating the late sown crop of faba bean at pod filling stage and application of $N_{45}P_{60}$ dose of fertilizer resulted in highest seed yield at Hisar.

ANNEXURES

Annexure - I

Weighted mean seed yield (q/ha) of Grain amaranth varieties tested for the last three years : Hill

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Annapurna	IC035407	PRA 2	PRA 3
1	VL0344	17.69	0/5	23.15	0/5	13.77	0/4	18.52	0/14		-7.77	-15.59	1.20	-2.01
2	Annapurna (C)	17.47	5	22.84	5	19.83	3	20.08	13	II	0.00	-8.48	9.73	6.24
3	IC035407 (C)	19.10	5	28.35	5	17.47	4	21.94	14	I	9.25	0.00	19.88	16.07
4	PRA 2 (C)	17.12	5	21.39	5	15.91	4	18.30	14		-8.87	-16.59	0.00	-3.18
5	PRA 3 (C)	18.19	5	21.24	5	16.86	4	18.90	14	III	-5.88	-13.86	3.27	0.00

Annexure - II

Weighted mean maturity days of Grain amaranth varieties tested for the last three years : Hill

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Annapurna	IC035407	PRA 2	PRA 3
1	VL0344	118.00	2/5	109.57	2/5	124.21	0/4	116.76	4/14	I	-12.51	-0.01	-11.50	-12.35
2	Annapurna (C)	130.13	5	131.80	5	141.78	3	133.46	13		0.00	14.28	1.15	0.18
3	IC035407 (C)	117.80	5	109.97	5	124.00	4	116.78	14	II	-12.50	0.00	-11.49	-12.34
4	PRA 2 (C)	127.13	5	130.70	5	139.50	4	131.94	14	III	-1.14	12.98	0.00	-0.96
5	PRA 3 (C)	129.67	5	130.60	5	140.92	4	133.22	14		-0.18	14.07	0.97	0.00

Annexure - III

Weighted mean seed yield (q/ha) of Buckwheat varieties tested for the last three years : Hill

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Himpriya	PRB-1	Shimla B-1	VL 7
1	IC274439	13.52	0/4	6.70	0/3	8.22	0/4	9.73	0/11		-0.28	29.25	-12.16	53.51
2	SMLBW-5	12.66	0/4	6.98	0/3	11.03	2/4	10.52	2/11	II	7.77	39.68	-5.07	65.90
3	Himpriya (C)	12.69	4	8.20	3	7.99	4	9.76	11	III	0.00	29.57	-11.95	53.89
4	PRB-1 (C)	9.90	4	5.32	3	6.83	4	7.53	11		-22.80	0.00	-32.00	18.84
5	Shimla B-1 (C)	14.65	4	7.67	3	10.06	4	11.08	11	I	13.50	47.11	0.00	74.72
6	VL 7 (C)	5.85	4	8.67	3	5.09	4	6.34	11		-35.01	-15.77	-42.76	0.00

Annexure - IV

Weighted mean maturity days of Buckwheat varieties tested for the last three years : Hill

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/decrease over check			
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Himpriya	PRB-1	Shimla B-1	VL 7
1	IC274439	108.67	4/4	124.56	0/3	117.33	0/4	116.15	4/11		-2.54	1.54	43.03	48.17
2	SMLBW-5	109.92	3/4	121.78	0/3	117.33	0/4	115.85	3/11		-2.79	1.28	42.65	47.79
3	Himpriya (C)	116.50	4	125.00	3	117.50	4	119.18	11		0.00	4.19	46.76	52.04
4	PRB-1(C)	111.58	4	120.56	3	112.58	4	114.39	11	III	-4.02	0.00	40.86	45.93
5	Shimla B-1(C)	81.83	4	77.44	3	83.42	4	81.21	11	II	-31.86	-29.01	0.00	3.60
6	VL 7(C)	79.00	4	70.33	3	83.83	4	78.39	11	I	-34.22	-31.47	-3.47	0.00

Annexure - V

Weighted mean seed yield (q/ha) of Chenopodium varieties tested for the last three years : Hill

S. No	Genotypes	2004		2005		2006		2007		Weighted			Per cent increase/decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	EC507741	NIC22503	PRC 9801
1	SMLCP-2	2.13	1/3	10.52	0/1	16.15	2/2	9.74	1/2	8.59	4/8	I	18.92	10.79	49.59
2	SMLCP-5	2.74	1/3	7.22	0/1	11.56	1/2	4.55	0/2	5.96	2/8		-17.49	-23.13	3.79
3	EC507741 (C)					9.07	2	5.36	2	7.22	4	III	0.00	-6.90	25.70
4	NIC22503(C)					9.99	2	5.50	2	7.75	4	II	7.27	0.00	34.93
5	PRC 9801(C)					8.18	2	3.30	2	5.74	4		-20.50	-25.94	0.00

Annexure - VI

Weighted mean maturity days of Chenopodium varieties tested for the last three years : Hill

S. No	Genotypes	2004		2005		2006		2007		Weighted			Per cent increase/decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	EC507741	NIC22503	PRC 9801
1	SMLCP-2	135.22	2/3	133.33	0/1	126.89	0/3	138.33	0/2	132.92	2/9	III	11.85	-10.02	2.16
2	SMLCP-5	139.44	1/3	132.00	0/1	132.56	0/3	128.00	0/2	133.78	1/9		12.57	-9.44	2.82
3	EC507741 (C)					110.00	2	127.67	2	118.84	4	I	0.00	-19.56	-8.67
4	NIC22503 (C)					145.89	3	150.50	2	147.73	5		24.31	0.00	13.55
5	PRC 9801 (C)					103.33	1	143.50	2	130.11	3	II	9.48	-11.93	0.00

Annexure - VII

Weighted mean seed yield (q/ha) of Ricebean varieties tested for the last three years : Hill

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	PRR-1	PRR- 2	RBL-1
1	VRB 1	11.78	0/5	8.52	0/3	17.55	1/4	12.89	1/12	I	13.65	10.35	28.88
2	PRR-1 (C)	10.45	5	8.43	3	13.53	6	11.34	14	III	0.00	-2.94	13.37
3	PRR- 2 (C)	10.54	5	10.17	3	13.39	6	11.68	14	II	3.02	0.00	16.82
4	RBL-1 (C)	7.88	5	8.44	3	12.55	6	10.00	14		-11.80	-14.37	0.00

Annexure - VIII

Weighted mean maturity days of Ricebean varieties tested for the last three years : Hill

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/decrease over check		
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	PRR-1	PRR- 2	RBL-1
1	VRB 1	123.78	0/6	117.13	0/5	127.58	1/4	122.58	1/15	I	-0.96	-0.59	-5.99
2	PRR-1 (C)	125.61	6	118.80	5	126.05	6	123.76	17	III	0.00	0.37	-5.08
3	PRR- 2 (C)	126.67	6	116.65	5	125.46	6	123.30	17	II	-0.38	0.00	-5.44
4	RBL-1 (C)	132.72	6	122.46	5	134.66	6	130.39	17		5.35	5.75	0.00

Annexure - IX

Weighted mean seed yield (q/ha) of Grain amarnth (Rabi & Kharif) varieties tested for the last three years : Plains

S. No.	Genotypes	2003-04		2004		2004-05		2006		2006-07		2007		Weighted			Weighted			Overall Weightage			Per cent increase/decrease over check			
		Rabi		Kharif		Rabi		Kharif		Rabi		Kharif		Rabi			Kharif									
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Mean	Frequency	Rank	Mean	Frequency	Rank	Annapurna	GA 1	GA 2	Suvarna
1	SKNA 21	10.54	3/8	4.63	0/2	12.52	2/8	3.83	0/1	15.84	1/5	2.76	0/2	12.56	6/21	I	3.72	0/5		10.86	6/26	I	24.80	30.50	15.14	3.01
2	RMA 3	9.08	2/8	6.35	0/2	12.54	2/8	4.76	0/1	15.78	1/5	2.52	0/2	11.99	5/21	III	4.50	0/5		10.55	5/26	III	21.29	26.83	11.90	0.12
3	RMA 4	9.61	2/8	6.84	0/2	12.04	2/8	4.55	0/1	16.07	3/5	4.03	1/2	12.07	7/21	II	5.26	1/5	III	10.76	8/26	II	23.71	29.36	14.14	2.12
4	Annapurna (C)	10.60	2	7.10	2	9.58	8	6.03	1	9.71	5	3.70	2	9.76	15		5.53	5	II	8.70	20		0.00	4.58	-7.73	-17.45
5	GA 1 (C)	7.06	7	2.91	1			4.37	1	14.09	5	3.01	2	9.99	12		3.33	4		8.32	16		-4.33	0.00	-11.74	-21.03
6	GA 2 (C)	7.95	7	5.39	2	11.28	8	4.75	1	13.83	5	2.59	2	10.75	20		4.14	5		9.43	25		8.39	13.34	0.00	-10.53
7	Suvarna (C)	10.56	4	9.85	2	10.16	8	8.29	1	15.02	4	4.83	2	11.48	16		7.53	5	I	10.54	21		21.10	26.63	11.73	0.00

Annexure - X

Weighted mean days to maturity of Grain amarnth (Rabi &Kharif)) varieties tested for the last three years : Plains

S. No.	Genotypes	2003-04		2004		2004-05		2006		2006-07		2007		Weighted			Weighted			Overall Weightage			Per cent increase/decrease over check			
		Rabi		Kharif		Rabi		Kharif		Rabi		Kharif		Rabi			Kharif									
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Mean	Frequency	Rank	Mean	Frequency	Rank	Annapurna	GA 1	GA 2	Suvarna
1	SKNA 21	126.71	4/8	87.88	0/2	133.41	0/8	94.83	0/2	123.35	1/5	98.88	0/2	128.46	5/21	II	93.86	0/6		120.77	5/27	III	16.63	-1.18	-2.08	2.81
2	RMA 3	128.98	2/8	102.63	0/2	136.79	0/8	94.58	0/2	125.32	0/5	99.38	0/2	131.08	2/21		98.86	0/6		123.92	2/27		19.68	1.39	0.47	5.49
3	RMA 4	126.50	3/8	100.75	0/2	134.96	0/8	94.92	0/2	125.47	4/5	91.38	0/2	129.48	7/21	III	95.68	0/6		121.97	7/27		17.79	-0.21	-1.11	3.83
4	Annapurna (C)	105.00	2	84.13	2	116.47	8	77.67	2	111.36	5	76.17	2	113.24	15	I	79.32	6	I	103.55	21	I	0.00	-15.28	-16.05	-11.85
5	GA 1 (C)	134.11	7	110.00	1			94.92	2	129.93	5	94.75	2	132.37	12		97.87	5		122.22	17		18.03	0.00	-0.91	4.04
6	GA 2 (C)	130.86	7	88.25	2	134.11	8	94.25	2	132.60	5	95.00	2	132.60	20		92.50	6	III	123.34	26		19.11	0.92	0.00	5.00
7	Suvarna (C)	120.00	4	82.63	2	137.36	8	81.96	2	127.57	4	83.00	2	130.57	16		82.53	6	II	117.47	22	II	13.44	-3.89	-4.76	0.00

Annexure - XI

Weighted mean seed yield (q/ha) of Fababean varieties tested for the last three years :Plains

S. No.	Genotypes	2003-04		2004-05		2005-06		Weighted			Per cent increase/ decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Vikrant
1	HB 405	8.97	2/5	15.76	1/5	25.69	1/5	16.81	4/15	I	8.08
2	HB 430	9.02	2/5	15.93	3/5	26.22	0/4	16.40	5/14	II	5.48
3	Vikrant (C)	6.48	6	14.59	5	25.43	6	15.55	17	III	0.00

Annexure - XII

Weighted mean days to maturity of Fababean varieties tested for the last three years :Plains

S. No.	Genotypes	2003-04		2004-05		2005-06		Weighted			Per cent increase/ decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	Vikrant
1	HB 405	141.93	1/5	137.22	1/6	133.44	3/6	137.27	5/17	I	-0.39
2	HB 430	139.13	2/5	137.99	0/6	135.28	2/6	137.37	4/17	II	0.00
3	Vikrant (C)	140.96	6	136.74	6	135.72	6	137.81	18	III	0.00

Annexure - XIII

Weighted mean seed yield (q/ha) of Wingedbean varieties tested for the last three years :Plains

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/ decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	AKWB-1
1	Dwarft Mutant	6.63	1/5	10.06	1/3	8.83	3/4	8.22	5/12		18.12
2	EC038955	6.26	2/5	9.34	1/3	7.43	1/4	7.42	4/12		6.61
3	EC142665	7.83	3/5	11.92	1/3	7.50	1/4	8.74	5/12	III	25.61
4	EC178271	5.41	2/5	9.55	1/3	6.03	1/4	6.65	4/12		-4.43
5	EC178313	7.92	2/5	11.47	1/3	8.03	2/4	8.84	5/12	I	27.07
6	EC178331	6.82	2/5	10.65	1/3	8.72	2/4	8.41	5/12		20.85
7	IC026945	8.25	2/5	10.64	1/3	8.15	2/4	8.81	5/12	II	26.64
8	Mysore Local	6.71	2/5	8.55	0/3	8.27	2/4	7.69	4/12		10.49
9	NRBI-Sel	6.22	2/5	9.49	1/3	7.59	1/4	7.49	4/12		7.67
10	AKWB-1 (C)	6.07	5	8.57	3	6.87	4	6.96	12		0.00

Annexure - XIV

Weighted mean days to maturity of Wingedbean varieties tested for the last three years :Plains

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/ decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	AKWB-1
1	Dwarft Mutant	158.50	3/5	161.92	2/4	161.70	2/4	160.54	7/13	I	-3.07
2	EC038955	160.70	2/5	165.50	1/4	160.56	2/4	162.13	5/13		-2.11
3	EC142665	162.93	1/5	163.92	1/4	161.33	2/4	162.74	4/13		-1.74
4	EC178271	162.17	1/5	167.67	0/4	165.11	1/4	164.77	2/13		-0.52
5	EC178313	162.00	1/5	166.42	0/4	168.44	1/4	165.34	2/13		-0.17
6	EC178331	161.47	2/5	164.67	1/4	163.22	1/4	162.99	4/13		-1.59
7	IC026945	159.40	2/5	164.67	1/4	166.89	1/4	163.33	4/13		-1.39
8	Mysore Local	157.87	3/5	164.50	1/4	164.56	2/4	161.97	6/13	III	-2.21
9	NRBI-Sel	157.80	1/5	163.83	2/4	162.33	3/4	161.05	6/13	II	-2.77
10	AKWB-1 (C)	163.87	5	166.58	4	166.89	4	165.63	13		0.00

Annexure - XV

Weighted mean fruit yield (q/ha) of Kankoda varieties tested for the last three years :Plains

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/ decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	RMF 37
1	NDM-1	13.53	0/2	10.12	1/4	7.79	0/3	10.10	1/9		-27.54
2	Phule MD 05-1	14.70	0/4	11.42	1/4	9.34	1/3	12.05	2/11		-13.59
3	Phule MD 05-2	14.50	0/3	10.08	0/3	6.42	0/3	10.33	0/9		-25.87
4	RMF-01	12.49	0/4	10.64	0/5	8.75	0/4	10.63	0/13		-23.76
5	RMF-17	15.97	0/4	11.24	0/5	8.40	0/4	11.82	0/13		-15.20
6	RMF-27	18.85	0/4	11.64	0/5	8.47	0/4	12.88	0/13	II	-7.58
7	RMF 05-P-4	16.87	0/4	12.21	1/5	9.33	0/4	12.76	1/13	III	-8.48
8	RMF 07-P-1	12.43	0/4	9.69	0/5	7.77	0/4	9.94	0/13		-28.68
9	SKNA 501	8.91	0/4	8.04	0/4	6.63	0/3	7.97	0/11		-42.81
10	RMF 37 (C)	18.14	4	13.50	5	10.28	4	13.94	13	I	0.00

Annexure - XVI

Weighted mean fruit setting days of Kankoda varieties tested for the last three years :Plains

S. No.	Genotypes	2005		2006		2007		Weighted			Per cent increase/ decrease over check
		Mean	Frequency	Mean	Frequency	Mean	Frequency	Mean	Frequency	Rank	RMF 37
1	NDM-1	67.50	0/2	45.75	0/4	52.22	0/3	52.74	0/9	II	-1.44
2	Phule MD 05-1	62.83	0/4	47.17	0/4	52.22	0/3	54.24	0/11		1.37
3	Phule MD 05-2	60.67	0/3	42.67	0/3	54.22	0/3	52.52	0/9	I	-1.85
4	RMF-1	60.42	0/4	50.80	0/5	56.42	0/4	55.49	0/13		3.70
5	RMF-17	62.42	0/4	51.67	0/5	57.83	0/4	56.87	0/13		6.28
6	RMF-27	61.50	0/4	49.87	0/5	56.08	0/4	55.36	0/13		3.46
7	RMF 05-P-4	64.58	0/4	48.60	0/5	53.75	0/4	55.10	0/13		2.97
8	RMF 07-P-1	63.92	0/4	50.07	0/5	56.50	0/4	56.31	0/13		5.23
9	SKNA 501	64.44	0/3	47.50	0/4	52.44	0/3	54.06	0/10		1.04
10	RMF 37 (C)	62.50	4	47.20	5	52.42	4	53.51	13	III	0.00

Annexure-XVII

Number of trials/activities allotted and conducted at various centers AICRP on Underutilized Crops

S. No.	Name of Centre	Alloted				Conducted				
		Breeding/ Germplasm	Agronomy	Quality	Total	Breeding/ Germplasm	Agronomy	Quality	Total	Percentage
	(A) Hill									
1	Almora	5	2	-	**7**	5	1		**6**	**85.71**
2	Bhowali	4	-	-	**4**	3	-		**3**	**75.00**
3	Palampur	11	2	2	**15**	6	1	0	**7**	**46.67**
4	Ranichauri	15	5	4	**24**	14	5	0	**19**	**79.17**
5	Sangla	4	2	2	**8**	4	2	0	**6**	**75.00**
6	Shillong	5	-	-	**5**	3	-		**3**	**60.00**
7	Shimla	9	-	-	**9**	9	-		**9**	**100.00**
	Total (A)	**53**	**11**	**8**	**72**	**44**	**9**	**0**	**53**	**73.61**
	(B) Plain									
1	Ambikapur	8	-	-	**8**	8	-	-	**8**	**100.00**
2	Bangalore	5	6	1	**12**	5	5	0	**10**	**83.33**
3	Bhubaneswar	6	7	1	**14**	6	6	0	**12**	**85.71**
4	Delhi	3	-	-	**3**	3	-	-	**3**	**100.00**
5	Faizabad	6	-	1	**7**	6	-	1	**7**	**100.00**
6	Hisar	6	4	2	**12**	6	4	2	**12**	**100.00**
7	Ludhiana	3	1	-	**4**	3	1	-	**4**	**100.00**
8	Mandor	3	-	-	**3**	3	-	-	**3**	**100.00**
9	Mattupalayam	4	5	-	**9**	4	1	-	**5**	**55.56**
10	Rahuri	5	-	-	**5**	5	-	-	**5**	**100.00**
11	Ranchi	6	-	-	**6**	6	-	-	**6**	**100.00**
12	S.K. Nagar	7	6	2	**15**	6	4	0	**10**	**66.67**
	Total (B)	**62**	**29**	**7**	**98**	**61**	**21**	**3**	**85**	**86.73**
	Grand Total (A+B)	**115**	**40**	**15**	**170**	**105**	**30**	**3**	**138**	**81.18**
	Percentage of trials conducted					**91.30**	**75.00**	**20.00**	**81.18**	

Annexure-XVIII

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*)
Salt bush (*Atriplex* spp.)

II. FODDER CROPS

Amaranths (*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*)

Annexure-XIX

List of Centres and Names of Scientists working on AICRP Underutilized Crops

		Fax	Phone (O)	Phone (R)
A.	**COORDINATING UNIT**			
1	**National Bureau of Plant Genetic Resources, Pusa, New Delhi – 110 012**			
	Dr. R.P. Dua Nodal Officer	011-25841835 rpdua@nbpgr.ernet.in	011-25841835	0124-2461666 M.-9868896266
	Dr. B.S. Phogat Sr. Scientist (Agronomy)	011-25841835	011-25841835	011-25088241
	Dr. Hanuman Lal Scientist (Sr. Scale) (Statistics)	011-25841835 hlal@nbpgr.ernet.in drhanumanlal@yahoo.co.in	011-25841835	M.-9968271997
	Dr. R.S. Rathi Technical Officer	011-25841835	011-25841835	M.-9868737635
B.	**SAU BASED MAIN CENTRES**			
1	**University of Agricultural Sciences, Hebbal, Bangalore – 560 024**			
	Dr. Chikkadevaiah Prof. & Head of Scheme (UUC)	080-23414848	080-23411483 Ext. 39, 246	09448381748
	Dr. A.P. Nagaraju Professor of Agronomy	080-2351455 npratibha29@rediffmail.com	080-23332897	09449832897
2	**Orissa University of Agriculture & Technology, Bhubaneswar – 751 003**			
	Dr. P.K. Sahu Plant Breeder	0674-2391692 (DOR) drpksahu_uc@ yahoo.co.in	0674-2392818 2402818-131	0674-2564101 09437229450
	Dr. S. N. Jena Jr. Agronomist	0674-2391692 0674-2391780	0674-2392818, 2402818-131	09937282043(M) 0674-2562255
3	**CCS Haryana Agricultural University, Hisar – 125 004**			
	Dr. P.K. Verma Head (MAP & UC)	01662-234952, 234613	01662-237726 Ext. 4283 01662-231171 231173 231172	01662-228308
	Dr. J.S. Hooda Plant Breeder	mauup@hau.ernet.in		09416590652
	Dr. R.S. Karwasara Sr. Agronomist	mauup@hau.ernet.in		01662-226934
	Dr. M. Khabiruddin Jr. Phytochemist	mauup@hau.ernet.in		09416325484

		Fax	Phone (O)	Phone (R)
4.	**Forest College & Research Institute (TNAU), Mettupalayam – 641 301**			
	Dr. K. Kumaran Assoc. Prof. (Forestry)	04254-225064 drkkmail@yahoo.com	04254-222010	M.- 09443377970
	Dr. A. Balasubramanian Assoc. Prof. (Agronomy)	04254-225064	04254-222010	
	Dr. M. Govinda Rao Dean	deanfor@tnau.ac.in	04254-220398	M.- 09442176414
5	**Mahatma Phule Agricultural University, Rahuri – 413 722**			
	Dr. D.B. Lad Plant Breeder	02426-243223 mpkvlibrarian@gmail.com	02426-243249	09422519610
6	**Birsa Agricultural University, Ranchi – 834 006**			
	Dr. Chandra Shekar Mehto Sr. Scientist	0651-2455850 0651- 2450625 csmahto@rediffmail.com	2450625	0651-2450848 09835134007 (M)
7	**College of Forestry & Hill Agriculture (GBPUAT), Ranichauri – 249 199**			
	Dr. M. Dutta Professor Plant Breeding & TPL (Plant Breeding)	01376-252606 manoranjandutta@rediffmail.com, mdutta_52@ yahoo. co .in	01376-252121, 252119	09412437301
	Dr. T.P. Singh Jro.Agronomy Agronomist	01376- 252606	252138,252138	252014 9411184948(M)
8	**Sardar Krushinagar Dantiwada Agri. Univ. (SDAU), Sardar Krushinagar Distt. Banaskantha – 385 506**			
	Dr. S.D. Solanki Assoc. Res. Sci. (Pl.Br.)	02748-278471 02748-278433 sd@sdgu.edu.in sdsolanki@yahoo.co.in	02748-278471	09426515270
	Dr. B.M. Patel Asstt. Res. Sci. (Agronomy)		02748-278471	02742-251268 9879245373
9	**Punjab Agricultural University, Ludhiana – 141 004**			
	Dr. (Mrs.) R.K. Gill	0161-2459065	0161-2401960-70	

		Fax	Phone (O)	Phone (R)
10	**Agricultural Research Station (RAU), Mandor, Jodhpur – 342 304**			
	Dr. Z.S. Solanki Zonal Director Research			0291-2571347, 2572114 M- 09414719751
	Dr. B.R. Choudhary		0291-2547754	M.-09414865317
		choudharybr@yahoo.com		
11	**CSK Himachal Pradesh Krishi Vishwa Vidyalaya, Palampur – 176 062**			
	Dr. Rakesh Chahota Asstt. Prof. Plant Breeding	01894-230511	01894-230391	09418103249
		rkchahota@yahoo.com rkchahota@hillagric.ernet.in		
	Dr. B.C. Sood Head, Deptt. of Plant Breeding			
12	**RMD College of Agri. & Research Centre, P.O. Box No. 3, Post Ajmera (Chattisgarh) (IGKV), Ambikapur – 497 001**			
	Dr. N.K. Motiramani Principal Scientist (Underutilized Crops)	07774-220066 (Private) 07774-230986	07774-230815, 230986, 230056	07774-231820, M.-09424225472
13	**Narendra Dev University of Agriculture & Technology, Faizabad – 224 229**			
	Dr. C.B. Yadav Deptt. of G.P.B Scientist incharge Underutilized Crops	05270-262051	05270-262051	05270-220977 09415370532
C.	**COOPERATING CENTRES**			
	Dr. J.C. Rana Sr. Scientist NBPGR Regional Station Shimla	0177-2235453	0177-2835459, ranajc2003@yahoo.com, headnbpgr@dataone.in	09418104185
	Dr. N.K. Dwivedi Officer incharge NBPGR Regional Station Jodhpur	0291-2740490	0291-2740490	0291-2744162
	Dr. N. Dixit Officer incharge NBPGR Regional Station Akola	0724-2258067	0724-2258067	0724-2421849

		Fax	Phone (O)	Phone (R)
	Dr. D.K. Hore Officer incharge NBPGR Regional Station Shillong	0364-2570651	0364-2570193	0364-2570194
	Dr. K.S. Negi Officer incharge NBPGR Regional Station Bhowali	05942-220027 officerinchargebhowali@yahoo.com	05942-220027	05942-220038
D.	**VOLUNTARY CENTRES**			
1	**National Botanical Research Institute, Lucknow**			
	Dr. R.M. Pandey Head, Cytogenetic Lab	0522-205839, 205836	0522-205831- 35, 205848, 205839	
	Dr. Sudhir Shukla Scientist Deptt. Pl. Br. & Gen.			
2	**Vivekananda Parvatiya Krishi Anusandhan Shala, Almora**			
	Dr. Arun Gupta Sr.Scientist	05962-231539 arung66@yahoo.com	05962-241003, 241005 Ext. 105	09412924877
3	**Himachal Pradesh Krishi Vishwavidyalay, Sangla**			
	Dr. Gopal Katna Mountain Agricultural Research and Extension Centre (CSK HPKV) Sangla – 172106 Kinnaur Distt. (H.P.)	01786-242332		09418155748
4.	**ICAR Complex for NEH, Region, Barapani**			
	Dr. Sanjay Gupta Sr. Scientist Plant Breeding Div. ICAR Complex for NEH Regional, Barapani - 793103	0364-2570364 sanju_in@rediffmail.com		0364-2570006 09436166539