



Screening Varieties of *Phaseolus vulgaris* for North Coastal Andhra Pradesh

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A field experiment was carried out for three consecutive years (from 2002-2004) at RARS, Chintapalle, A.P. to screen a suitable Rajmah variety for agency areas of North Coastal Andhra Pradesh. Among the 12 entries studied, CTP-1 was found to be the best with highest values for no. of pods per plant (7.31), pod length (11.57 cm), test weight (42.33 g) and the yield (15.87 t ha⁻¹) followed by PDR-188 (13.22 t ha⁻¹). Studies on character association revealed a positive association of pods per plant, seeds in a pod and the test weight with the yield indicating the importance of these traits for selection in French bean.

Key words: Rajmah, varieties, Andhra Pradesh

Rajmah beans (*Phaseolus vulgaris* L.) is one of the commercial crops grown as dry pulse in High Altitude and Tribal (HAT) area of Andhra Pradesh (AP) during *rabi*. The dry seed is largely marketed internally in northern states of the country. Local cultivar 'Chitra' is largely grown by the tribal farmers of North Coastal A.P. and varying in seed coat colour. This cultivar is an average yielder with an yield potential of 10-12 t ha⁻¹ and susceptible to diseases like seedling rot. Varieties have been reported to perform differently under different agroclimatic zones (Joshi and Mehra, 1984). Hence, there is need to identify a high yielding variety. Keeping in view of the potential for the crop and also the large area under its cultivation, an experiment was initiated in the year 2002 to identify a high yielding variety with field resistance to diseases for tribal areas of north coastal A.P.

Materials and Methods

The trial was carried out for three consecutive years (2002-2004) at Regional Agricultural Research Station, Chintapalle, Visakhapatnam (dt.), A.P. including twelve varieties (CTP-1, CTP-2, CTP-3, CTP-4, CTP-5, PDR-20, PDR-22, PDR-43, PDR-43, PDR-188, PDR-90-8, HUR-

15, HUR-139) in a randomized block design replicated thrice. Standard cultural practices including fertilization were followed. Seeds were sown during *rabi* every year with a spacing of 25 x 10 cm in a plot of 10 sq.m. Data on plant height (cm), pods per plant, pod length, pod width, seeds per pod were recorded on pods from ten randomly selected plants while test weight (g) was recorded on hundred randomly selected seeds from each plot. Yield per ha was worked out from the yields recorded in each plot. Data were statistically analysed as per the standard procedures (Panse and Sukhatme, 1984).

Results and Discussion

The data (Table 1) revealed significant differences among varieties with regard to different characters studied.

Among the 12 entries studied, CTP-3 recorded maximum mean plant height (65 cm) while the shortest plants were observed in PDR-43 (25.0 cm). CTP-1 recorded the highest values for the traits no. of pods per plant (7.31), pod length (11.57 cm) and test weight (42.33 g). Pod width was maximum in PDR-90-8 (3.06 cm) whereas CTP-3 produced fruits with maximum no. of seeds per pod (5.27) followed by CTP-5 (4.88). However, yield was the highest in CTP-1 (15.87 t ha⁻¹) followed by

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Table 1. Performance of Rajmah (*Phaseolus vulgaris* L.) varieties during the period from 2002-2004 in the agency areas of North Coastal A.P.

Variety	Plant Height (cm)				Pods/plant				Pod length (cm)				Pod width (cm)			
	2002	2003	2004	Pooled mean	2002	2003	2004	Pooled mean	2002	2003	2004	Pooled mean	2002	2003	2004	Pooled mean
CTP-1	60.00	58.00	64.00	60.67	6.40	10.87	6.85	7.31	10.70	12.33	12.03	11.57	2.70	2.90	2.86	2.82
CTP-2	28.00	25.00	25.00	26.00	4.80	8.60	5.61	6.02	9.96	9.66	9.60	9.42	2.50	2.30	2.76	2.52
CTP-3	62.00	65.00	68.00	65.00	4.00	6.93	5.20	5.29	9.86	9.00	8.53	8.79	2.60	2.60	2.50	2.56
CTP-4	58.00	62.00	65.00	61.67	5.16	8.87	3.46	5.77	9.80	8.33	8.06	8.62	2.70	2.60	2.56	2.62
CTP-5	32.00	30.00	25.00	29.00	5.00	7.47	4.20	5.52	8.30	7.33	8.20	8.17	2.60	2.60	2.66	2.62
PDR-20	30.00	28.00	26.00	28.00	4.26	7.67	5.80	6.91	10.60	10.00	10.83	10.48	2.80	2.83	3.06	2.94
PDR-22	28.00	25.00	27.00	26.67	4.03	9.67	4.46	6.06	10.00	10.00	10.10	10.03	2.50	2.55	2.70	2.57
PDR-43	25.00	25.00	25.00	25.00	5.90	9.20	6.23	6.98	9.63	10.33	11.13	10.03	2.60	2.70	2.56	2.62
PDR-188	25.00	26.00	26.00	25.67	4.30	7.67	6.33	6.07	10.26	10.33	11.46	10.79	2.80	2.80	2.86	2.82
PDR-90-8	28.00	30.00	29.00	29.00	5.00	9.40	5.00	6.44	9.33	9.66	9.80	9.56	3.00	3.10	3.10	3.06
HUR-15	30.00	28.00	26.00	28.00	5.10	10.40	4.86	6.77	10.46	10.60	11.06	10.68	2.70	2.80	2.70	2.79
HUR-139	32.00	35.00	34.00	33.67	5.80	9.13	5.85	6.89	9.90	11.00	10.78	10.46	2.80	3.00	3.06	2.95
SEd				1.25				0.41				0.33				0.10
C.D. (0.05)				2.49				0.82				0.66				0.21

Table 1. Contd.

Variety	No. of seeds/pod				Test weight(g)				Yield (t ha ⁻¹)			
	2002	2003	2004	Pooled mean	2002	2003	2004	Pooled mean	2002	2003	2004	Pooled mean
CTP-1	4.40	4.33	5.20	4.64	41.70	42.30	43.00	42.33	15.00	17.67	14.93	15.87
CTP-2	4.00	4.00	3.93	3.98	27.80	38.33	25.67	30.61	8.12	11.00	11.33	10.16
CTP-3	6.00	6.33	3.47	5.27	24.13	33.33	26.33	27.96	8.27	11.33	9.33	9.64
CTP-4	5.00	5.33	3.87	4.73	18.40	31.33	24.63	24.91	14.10	14.00	10.67	12.92
CTP-5	4.90	5.67	4.06	4.88	19.40	31.33	25.33	25.47	7.80	10.00	9.50	9.10
PDR-20	3.23	3.67	4.67	3.66	39.20	38.33	34.00	37.18	7.22	13.00	10.33	10.18
PDR-22	3.73	4.00	4.00	3.91	36.40	40.00	36.00	37.47	8.93	13.67	11.83	11.48
PDR-43	3.50	3.67	5.00	4.06	36.40	33.33	40.33	36.69	8.90	14.33	13.67	12.30
PDR-188	3.60	4.33	4.87	4.27	29.00	31.67	37.33	32.67	10.67	16.67	12.33	13.22
PDR-90-8	3.20	4.00	4.27	3.82	31.80	38.33	36.67	35.60	7.67	10.67	10.67	9.67
HUR-15	3.90	3.67	4.73	4.09	30.30	38.33	33.67	34.10	7.17	11.67	10.33	9.72
HUR-139	3.80	4.00	4.40	4.07	26.30	43.33	38.67	36.10	14.50	12.00	11.33	12.61
SEd				0.35				1.65				0.68
C.D. (0.05)				0.69				3.28				1.36

Table 2. Mean Correlation matrix between various characters of Rajmah beans

Character	Plant height	Pods/plant	Pod length	Pod width	No. of seeds/pod	Test weight	Yield
Plant height	1.000						
Pods/plant	0.067	1.000					
Pod length	-0.017	0.165	1.000				
Pod width	-0.193	0.136	0.195	1.000			
No. of seeds/pod	-0.402	0.009	-0.054	-0.150	1.000		
Test weight	0.147	0.506	0.507*	0.229	-0.131	1.000	
Yield	0.233	0.525*	0.388*	0.045	0.158	0.319*	1.000

*Significant at $p = 0.05$

PDR-188 (13.22 t ha⁻¹). Though the no. of seeds per pod was relatively low in CTP-1 (4.64) its yield was the highest which can be attributed to its test weight, such varietal variations under different agroclimatic conditions have been reported by earlier workers (Joshi and Mehra, 1984).

Data on character association (Table 2) revealed a significant positive correlation of yield with no. of pods per plant, pod length, no. of seeds per pod and test weight. Pod length was positively associated with test weight whereas pod width was negatively correlated with no. of seeds in a pod. However, plant height was negatively correlated with some of the yield attributing characters such as pod length, pod width and seeds per pod. The positive association of yield with pods per plant, seeds per pod and test weight observed in the present study is supported by the earlier findings of Singh and Garcia-Salinas (1983), Saha *et al.* (1990), Singh (1993) and Pandey *et al.* (2004) who suggested number of pods, seeds in a pod and

the test weight as important characters for selection in French bean.

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