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## Evaluation of dolichos genotypes (*Dolichos lablab* L.) under north eastern dry zone of Karnataka

■ K. RAVINAIK<sup>1</sup>, C.N. HANCHINAMANI, M.G. PATIL<sup>1</sup> AND S.J. IMAMSAHEB<sup>1</sup>

**Members of the Research Forum**

**Associated Authors:**

<sup>1</sup>Department of Vegetable Science,  
College of Horticulture, Halladkari  
Farm Hyderabad Road, BIDAR  
(KARNATAKA) INDIA

**Author for correspondence :**

C.N. HANCHINAMANI

Department of Vegetable Science,  
College of Horticulture, Halladkari  
Farm Hyderabad Road, BIDAR  
(KARNATAKA) INDIA  
Email : imamjath@gmail.com

**ABSTRACT :** Nine genotypes of dolichos bean were assessed for performance at Main Agriculture Research Station, Raichur. The experiment was laid out by adopting Randomized Block Design with three replications. Highly significant differences were observed in the genotypes for all the characters under study viz., The plant height of dolichos bean genotypes differed significantly with each other at all the growth stages. At all the growth stages, PD-31 showed maximum height (108.87, 185.33 and 196.27 cm, respectively). Pod yield per plant showed significant difference between genotypes. The number of pods per cluster. Maximum number of pods per cluster was observed in PD-31 (20.27). Pod yield per plant was maximum in PD-31 (3.27 kg) followed by PD-22 (3.18 kg) and PD-15 (3.10 kg), whereas, least pod yield per plant was recorded in PD-20 (2.39 kg).

**KEY WORDS :** Dolichos bean, Genotypes

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It is essential to evaluate high yielding genotypes since a superior genotype may exhibit its potentiality when grown under a set of agro climatic conditions. As yield being a complex trait, is collectively influenced by various yield attributes, which are polygenically inherited and influenced by environmental variations. The effective selection for improvement of these traits is determined by magnitude and nature of interaction between genotypic and phenotypic variability. Dolichos bean, *Dolichos lablab* L. (2n = 2x = 22) is also known as field bean, kidney bean, garden bean or Indian bean, is one of the most important leguminous vegetables grown for its tender fleshy green pods, shelled green seeds and also dry beans. It has anti-diabetic property and is good for natural cure of bladder burns and cardiac problems, diarrhoea, sciatica and tenesmus. It is a nutritive

vegetable, rich in protein (1.7 g), calcium (132 mg), thiamin (0.08 mg) and vitamin C (24 mg per 100 g of edible pods). It could spread to Europe during 16<sup>th</sup> and 17<sup>th</sup> centuries and reached England by 1594. The statistics with respect to this crop is very deficient owing to the small area of production. However, in India the major field bean growing states are Karnataka, Tamil Nadu and Andhra Pradesh. In Karnataka, it occupies an area of 0.60 lakh hectares with production of 0.26 lakh tonnes and productivity of 438 kg/ha (Anonymous, 2008).

A wide range of variations exist for the plant and pod characters amongst the accessions grown all over the country. The success of any breeding programme in general and improvement of specific trait through selection in particular, totally depends upon the genetic variability present in the available germplasm of a

particular crop (Parmar *et al.*, 2013a and b). Since, many of the plant characters are governed by polygenes and greatly influenced by environmental conditions; the progress of breeding is, however, conditioned by the magnitude, nature and interrelationship of genotypic and non-genotypic variation. Among the quantitative characters, yield is a complex character, which is dependent on a number of yield contributing characters (Savitha, 2008).

Despite having many good attributes, the crop has remained unexploited owing to low productivity, long duration, photosensitivity and indeterminate growth habit. The consumer preference also varies with pod size, shape and colour. The efforts of improving the crop by utilizing indigenous and exotic germplasm have been useful in breaking the yield barriers resulting in compact plant type, reduced duration and photo-insensitive types. Hence, comprehensive germplasm collection and evaluation, identification of suitable genotypes for North Eastern Dry Zone of Karnataka.

## RESEARCH METHODS

The investigation was carried out during *Kharif* season of 2010. It consisted of nine genotypes collected from different sources. The experiment was laid out by adopting Randomised Block Design with three replications. The experimental field was brought to fine tilth by repeated ploughing and harrowing. Twenty-five tonnes of FYM and recommended dose of fertilizers (15-20:20:0 NPK/ha) were incorporated in the soil. Ridges were prepared at a distance of 100 cm. The seeds of different genotypes were sown on September 16<sup>th</sup>, 2010 by dibbling two to three seeds per hill at a distance of 60 cm on one side of the ridges. The plots were irrigated immediately after the completion of sowing. Thinning of excess seedlings and gap filling was undertaken one week after germination. Plant protection practices were undertaken by spraying of rynaxypyr (0.3ml/ lit) and bivestin (1g/ lit) to control pod borer and anthracnose, respectively. The observations were recorded from 5 randomly selected plants from each genotype in each replication for days to 50 per cent flowering, plant height, number of branches per plant, number of flowers per cluster, number of pod per cluster, number of pod per plant, pod length, pod width, average weight of pod, number of seeds per pod, pod yield per plant, pod yield per hectare and shelf-life.

## Statistical analysis :

The obtained data was analyzed by statistical significant at  $P < 0.05$  level, S.E. and C.D. at 5 per cent level by the procedure given by (Gomez and Gomez, 1984).

## RESEARCH FINDINGS AND DISCUSSION

The comparison of dolichos bean varieties indicated that they differed significantly in pod yield per plant. Pod yield per plant showed significant difference between genotypes. Pod yield per plant was maximum in PD-31 (3.27 kg) followed by PD-22 (3.18 kg) and PD-15 (3.10 kg), whereas, least pod yield per plant was recorded in PD-20 (2.39 kg). Thus, these four genotypes may be replace safely for other genotypes whose yield was much lower (Table 2). This result agrees the findings of Singh *et al.* (2004).

PD-16 recorded minimum number of days (48.67) for 50 per cent flowering, whereas, Hebbal Avare-3 recorded maximum number of days for 50 per cent flowering of 53.00 days (Table 1). Similar findings pertaining to different traits including weight of 10 green pods and days to maturity in dolichos bean is found Borah and Shadeque (1992) and Ali *et al.* (2005).

Irrespective of genotypes, number of branches per plant were increased from 30 to 90 DAS. The maximum number of branches per plant were recorded in PD-31 (16.27) followed by PD-22 (15.20) and PD-05 (14.47), whereas, minimum number of branches per plant were recorded in PD-20 (11.90) at 90 DAS. The plant height of dolichos bean genotypes differed significantly with each other at all the growth stages. At all the growth stages, PD-31 showed maximum height (108.87, 185.33 and 196.27cm), followed by PD-22 (106.43, 179.73 and 194.27cm, respectively). The least plant height was recorded in Hebbal Avare-3 (84.00, 102.33 and 140.33 cm). at 30, 60 and 90 DAS. The result confirm with the finding of Parmar *et al.*, 2013a and b.

There was significant difference between genotypes for number of flowers per cluster. Maximum number of flowers per cluster was noticed in PD-31 (24.80) followed by PD-22 (24.13), whereas, minimum number of flowers per cluster was observed in Hebbal Avare-3 (19.00) (Table 1). There was significant difference between genotypes for number of pods per cluster. Maximum number of pods per cluster was observed in PD-31 (20.27). PD-20 (14.73) recorded minimum number of pods per cluster (Table 2). The

results are in conformity with the findings of Parmar *et al.* (2013a and b) and Priyanka *et al.* (2014).

From the present investigation, it can be concluded that the difference in yield may be attributed mainly to the difference in their plant height, number of branches per plant, pod length, number of pods per plant, pod weight, number of seeds per pod. In the present

investigation, number of branches per plant, number of pods per plant, pod length, pod width, average weight of pod and number of seeds per pod showed significant difference among the genotypes. Among several genotypes tested, the yield under PD-31 might be due to improved characters which is in conformity with the studies of Dilbag Singh *et al.* (2004), Upadhyay and

**Table 1 : Performance of dolichos bean genotypes for growth parameters**

Genotypes	Plant growth parameters						
	Plant height (cm) at 30 days	Plant height (cm) at 60 days	Plant height(cm) at 90 days	Number of branches per plant at 30 days	Number of branches per plant at 60 days	Number of branches per plant at 90 days	Days to 50 per cent flowering (days)
Hebbal avare-3	84.00	102.33	140.33	6.53	11.43	12.83	53.00
PD-31	108.87	185.33	196.27	6.60	12.00	16.27	53.33
PD-05	99.60	169.93	178.37	5.33	13.27	14.47	52.00
PD-10	94.73	176.30	183.13	5.93	12.13	12.93	53.67
PD-15	96.40	169.57	180.33	5.47	13.33	13.93	54.00
PD-16	96.67	174.93	190.53	5.40	12.40	13.67	48.67
PD-22	106.43	179.73	194.27	6.17	14.60	15.20	53.33
PD-20	93.33	164.83	170.00	4.93	11.53	11.90	51.00
PD-12	104.00	175.67	189.00	5.60	13.07	13.73	54.33
Mean	95.88	166.24	182.85	5.29	13.17	13.65	53.02
S.E. ±	3.00	5.03	5.31	0.28	0.40	0.59	1.62
C.D. (P=0.05)	8.58	14.41	15.19	0.80	1.15	1.51	4.65

**Table 2: Performance of dolichos bean genotypes for Yield parameters**

Genotypes	No. of flowers per cluster	No. of pods per cluster	No. of pods per plant	Pod length (cm)	Pod width (mm)	Average weight of pod (g)	No. of seeds per pod	Yield of pods per plant (kg)	Yield per hectare (t)
Hebbal avare-3	19.00	19.40	1018.32	4.00	12.24	2.56	4.00	2.94	44.88
PD-31	24.80	20.27	1547.33	4.90	20.39	3.46	5.00	3.27	58.45
PD-05	21.20	16.47	1175.74	4.37	18.62	2.33	4.00	2.88	54.01
PD-10	20.73	15.20	1251.90	4.74	16.48	3.06	4.00	2.85	48.06
PD-15	23.00	15.40	1028.77	4.69	18.43	2.86	4.00	3.10	49.72
PD-16	23.80	17.13	980.23	4.17	17.25	2.86	4.00	2.58	48.17
PD-22	24.13	19.27	1322.05	4.87	20.00	3.13	5.00	3.18	57.67
PD-20	19.87	14.73	950.86	4.13	13.75	2.00	3.00	2.39	44.77
PD-12	23.53	18.20	1140.00	4.17	15.75	2.86	5.00	2.86	48.11
Mean	22.42	17.29	967.06	4.44	16.66	2.59	4.35	2.755	47.23
S.E.±	0.66	0.77	133.61	0.15	0.74	1.68	0.20	2.54	1.38
C.D. (P=0.05)	1.89	2.22	382.52	0.44	2.13	0.40	0.58	7.27	3.95

Mehta (2010) and Singh *et al.* (2010).

## REFERENCES

**Ali, F., Sikdar, B., Roy, A.K. and Joarder, O.I. (2005).** Correlation and genetic variation of different genotypes of lablab bean, *Lablab purpureus* (L.) Sweet. *Bangl. J. Bot.*, **34**(2) : 125-128.

Anonymous (2008). *Agricultural statistics at a glance*, Published by Directorate of Economics and Statistics, Ministry of Agriculture, Government of India, NEW DELHI, INDIA.

**Borah, P. and Shadeque, A. (1992).** Studies on genetic variability of common Dolichos bean. *Indian J. Hort.*, **49** : 270-273.

**Gomez, K.A. and Gomez, A.A. (1984).** *Statistical procedures for Agricultural Research*. A Willey International Publication, John Willey and Sons, NEW YORK, U.S.A.

**Parmar, A.M., Singh, A. P., Dhillon N. P. S and Jamwal, M. (2013a).** Genetic variability of morphological and yield traits in Dolichos bean (*Lablab purpureus* L.). *African J. Agric. Res.*, **8**(12) : 1022-1027.

**Parmar, A.M., Singh, A. P., Dhillon, N.P.S. and Jamwal, M. (2013b).** Genetic variability studies for morphological and yield

traits in Dolichos bean (*Lablab purpureus* L.) *World J. Agric. Sci.*, **9** (1) : 24-28.

**Priyanka, K.M., Pugalendhi, L. and Nirmalakumar, A. (2014).** Evaluation of dolichos bean (*Dolichos lablab* L.) for yield and quality, *National Seminar on Challenges and Innovative Approaches in Crop Improvement*, Tamil Nadu Agricultural University, Coimbatore, T. N. (INDIA).

**Savitha, B.N.(2008).** Characterization of avare [*Lablab purpureus* (L.) Sweet] local collections for genetic variability. M.Sc. (Ag.) Thesis, University of Agricultural Sciences, Bangalore, KARNATAKA (INDIA).

**Singh, B.K., Singh, B.P. and Ram, H. H. (2000).** Variability and correlation studies in bush type french bean (*Phaseolus vulgaris* L.) in relation to green pod yield. *Prog. Hort.*, **32** (2): 176-182.

**Singh, Dilbag, Dhillon, N. P. S., Singh, Gulshanjit and Dhaliwal, H.S. (2004).** Evaluation of semphali (*Dolichos lablab* L.) germplasm under rainfed condition. *Haryana J. Hort. Sci.*, **33** (3-4) : 267-268

**Upadhyay, D. and Mehta, N. (2010).** Biometrical studies in Dolichos bean (*Dolichos lablab* L.) for Chhattisgarh plains. *Res. J. Agric. Sci.*, **1** (4): 441-447.

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