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Assessment of genetic variability and mean performance for pod yield and quality traits in dolichos bean (*Lablab purpureus* L.)

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Abstract
The present investigation was undertaken to evaluate the genetic variability and mean performance of dolichos bean (*Lablab purpureus* L.) genotypes for pod yield, yield components and quality traits. The experiment was conducted during *Rabi* 2021-2022 at the PG Research Block, College of Horticulture, Mojerla, Telangana. A total of forty-five genotypes, including the check variety *Arka Adarsh*, were evaluated in a Randomized Block Design with two replications. Observations were recorded on sixteen characters comprising growth, yield, yield-attributing and quality traits.

Analysis of variance revealed highly significant differences among genotypes for all the characters studied, indicating the presence of substantial genetic variability. Vine length varied from 217.50 to 429.35 cm with a mean of 366.55 cm, while the number of primary branches per plant ranged from 2.88 to 4.77 with a mean of 3.64. Days to 50 per cent flowering ranged from 51.06 to 102.50 days and days to first harvest from 82.96 to 135.92 days, indicating wide variation in earliness among genotypes. The number of pods per plant showed considerable variation, ranging from 43.00 to 149.50, with a mean of 65.64. Pod length and pod width ranged from 4.86 to 13.47 cm and 0.79 to 4.74 cm, respectively. Pod yield per plant varied widely from 189.45 to 702.67 g, with a mean of 343.98 g, indicating significant yield potential among the genotypes. The genotype IC-598467 recorded the highest pod yield per plant (702.67 g), while IC-261004 also showed superior yield (648.45 g) compared to the check (633.50 g). Quality traits also exhibited wide variability. Protein content ranged from 14.54 to 20.29%, reducing sugars from 0.41 to 1.26% and total sugars from 0.71 to 1.50%. The genotype IC-261004 recorded the highest protein content (20.29%), while IC-546387 recorded the highest total sugar content (1.50%).

Overall, the study identified IC-598467 as a promising genotype for pod yield and yield-attributing traits, while IC-261004 was superior for protein content. These genotypes can be effectively utilized in future dolichos bean improvement programmes.

Keywords: Dolichos bean (*Lablab purpureus* L.), genetic variability, mean performance, pod yield, yield attributes, quality traits, germplasm evaluation

Introduction
Dolichos bean (*Lablab purpureus* L.), commonly known as Indian bean or hyacinth bean, is an important traditional legume vegetable cultivated widely in India. Archaeobotanical evidence suggests its origin in the Indian subcontinent, indicating its long history of domestication (Fuller, 2003) [8]. The crop is valued for its adaptability to semi-arid conditions, nitrogen-fixing ability and multiple uses as a vegetable, pulse, fodder and green manure. The pods are nutritionally rich, containing appreciable amounts of proteins, carbohydrates, minerals and vitamins (Naeem *et al*., 2009) [14].

Despite its economic and nutritional importance, dolichos bean remains underutilized due to low yield potential, photosensitivity, long duration, and indeterminate growth habit. In regions like Telangana, cultivation is largely confined to local landraces and farmer selections, resulting in wide variability in growth, yield and pod characteristics. Improvement in pod yield is challenging because it is a complex trait governed by several yield-contributing characters and influenced by environmental factors.

Genetic variability and diversity within germplasm are essential for effective crop improvement. The success of any breeding programme depends on the extent of genetic divergence among genotypes, as diverse parents are more likely to produce superior

recombinants (Parmar *et al*., 2013) [15]. Mahalanobis D^2 analysis is a useful tool to assess genetic divergence and classify genotypes into distinct clusters, aiding in the selection of suitable parents for hybridization (Ismunadji and Arsyad, 1990) [11].

Correlation and path coefficient analyses provide insight into the association and direct contribution of yield-related traits towards pod yield. While correlation indicates the relationship among traits, path analysis helps in identifying traits with true direct effects on yield, thereby improving selection efficiency (Al-Jibouri *et al*., 1958) [1]. Estimates of heritability and genetic advance further assist in understanding the inheritance pattern of traits and predicting response to selection (Burton *et al*., 1953) [2].

Materials and Methods

The present investigation was conducted during *Rabi* 2021-2022 at the PG Research Block, College of Horticulture, Mojerla, Wanaparthy, Telangana to study genetic variability, genetic divergence, correlation and path coefficient analysis for pod yield and yield attributes in dolichos bean (*Lablab purpureus* L.).

The experimental material consisted of **f**orty-five dolichos bean genotypes, including the standard check Arka Adarsh, obtained from the National Bureau of Plant Genetic Resources (NBPGR), Regional Station, Hyderabad and IIHR, Bengaluru. The experiment was laid out in a Randomized Block Design (RBD) with two replications. Each genotype was represented by eight plants per replication, planted at a spacing of 2.0 m × 0.5 m and the crop was trained on a pandal system following recommended agronomic practices.

Observations were recorded on sixteen quantitative characters related to growth, yield, yield attributes and quality parameters. The recorded traits included vine length, number of primary branches per plant, days to 50 per cent flowering, days to first harvest, pod length, pod width, number of pods per plant, number of seeds per pod, seed length, seed width, 100-seed fresh weight, 100-seed dry weight, pod yield per plant, protein content, reducing sugars and total sugars. The collected data were subjected to analysis of variance (ANOVA) to test the significance of differences among genotypes as per standard statistical procedures. The mean performance of genotypes for all the studied characters was computed replication-wise and expressed as treatment means. Genotypes were compared based on their mean values to identify superior performers for pod yield and important yield-attributing traits

Results and Discussion

Analysis of variance

Analysis of variance revealed significant differences among the genotypes for all the characters studied at one percent and five percent level of significance. Highly significant differences among the genotypes were observed which indicates the presence of sufficient amount of variability among all the genotypes studied.

The analysis of variance for yield and yield attributes under study are presented in Table 1. The mean sum of squares for genotypes was found to be significant for all the characters *viz*., vine length (cm), number of primary branches per plant, number of pods per plant, pod yield per plant (g), number of seeds per pod, 100-seed fresh weight (g), 100-seed dry weight (g), pod length (cm), pod width (cm), seed length (cm), seed width (cm), days to 50% flowering, days to first harvest, protein content (%), reducing sugars (%) and total sugars (%).

Mean performance of genotypes

The average performance of the genotypes for each specific character serves as a crucial criterion for eliminating the unwanted genotypes in any selection method. This suggests that studies of germplasm could serve as a possible source and provide opportunities for choosing genotypes with high yields and favourable horticultural characteristics.

The mean performance of 45 genotypes of dolichos bean in respect of various pod yield and yield attributes are described character wise below. Mean performances of the genotypes for the thirteen biometric and three qualitative characters are furnished in the Table 2.

Vine length (cm)

Vine length of genotypes ranged from 217.50 cm to 429.35 cm with a mean of 366.55 cm. The genotype IC-427456 recorded the maximum vine length (429.35 cm), while IC-412977 recorded the minimum (217.50 cm). Three genotypes, IC-427456 (429.35 cm), IC-598467 (421.56 cm) and IC-426983 (416.56 cm), showed higher vine length compared to the check Arka Adarsh (412.50 cm). These results are in agreement with the findings of Chaitanya *et al*. (2014) [3] and Reddy *et al*. (2018) [19] in dolichos bean.

Number of primary branches per plant

The number of primary branches per plant ranged from 2.88 to 4.77 with a mean of 3.64. The genotype IC-598467 recorded the highest number of primary branches (4.77), while IC-446587 recorded the lowest (2.88). Several genotypes, namely IC-598467 (4.77), IC-372119 (4.68), IC-412977 (4.65), IC-427423 (4.38), IC-261005 (4.35), IC-446575 (4.25), IC-384066 (4.23), IC-427425 (4.18), IC-546387 (4.16) and IC-426694 (4.15), recorded a higher number of primary branches compared to the check Arka Adarsh (4.11). These findings are in agreement with the results reported by Mohan *et al*. (2014) [13] and Reddy *et al*. (2018) [19] in dolichos bean.

Days to 50 per cent flowering

Days to 50% flowering ranged from 51.06 to 102.50 days. The minimum days to 50% flowering were recorded in IC-261004 (51.06 days), while the maximum was observed in IC-598467 (102.50 days). The genotypes IC-261004 (51.06), IC-384066 (53.00), IC-382830 (55.31), IC-446571 (57.91) and IC-446568 (58.85) flowered earlier than the check Arka Adarsh (60.00 days). These results are in accordance with the findings of Singh *et al*. (2015) [24] and Ganapathi *et al*. (2020) [9] in dolichos bean.

Days to first harvest

Days to first harvest ranged from 82.96 to 135.92 days with a mean of 101.53 days. The minimum days to first harvest were recorded in IC-261004 (82.96 days), while the maximum was observed in IC-598467 (135.92 days). The genotypes IC-261004 (82.96), IC-446566 (85.80), IC-446568 (86.64), IC-446573 (87.07) and IC-261311 (88.26) recorded earlier first harvest compared to the check Arka Adarsh (89.20 days). These findings are in agreement with the reports of Singh *et al*. (2015) [24] and Ganapathi *et al*. (2020) [9] in dolichos bean.

Number of pods per plant
The number of pods per plant ranged from 43.00 to 149.50 with a mean of 65.64. The genotype IC-598467 recorded the maximum number of pods per plant (149.50), while the minimum was observed in IC-426632 (43.00). The genotype IC-598467 (149.50) also recorded a higher number of pods per plant compared to the check Arka Adarsh (128.45). These results are in conformity with the findings of Chattopadhyay and Dutta (2010) [5] and Chaitanya *et al*. (2014) [3] in dolichos bean.

Pod length (cm)
Pod length ranged from 4.86 to 13.47 cm with a mean of 9.55 cm. The genotype IC-427423 recorded the maximum pod length (13.47 cm), while the minimum was observed in IC-426632 (4.86 cm). Several genotypes, namely IC-427423 (13.47 cm), IC-446574 (12.82 cm), IC-261010 (12.51 cm), IC-427462 (12.47 cm), IC-427414 (12.36 cm), IC-446573 (11.99 cm), IC-426987 (11.95 cm), IC-427456 (11.91 cm), IC-427436 (11.71 cm), IC-427424 (11.59 cm), IC-427417 (10.99 cm), IC-446575 (10.90 cm) and IC-426991 (10.88 cm) recorded higher pod length compared to the check Arka Adarsh (10.88 cm). These findings are in agreement with Singh *et al*. (2015) [24] in dolichos bean.

Pod width (cm)
Pod width at marketable maturity ranged from 0.79 to 4.74 cm with a mean of 1.81 cm. The genotype IC-382830 recorded the maximum pod width (4.74 cm), while the minimum was observed in IC-446561 (0.79 cm). The genotypes IC-382830 (4.74 cm), IC-426987 (2.41 cm), IC-427429 (2.40 cm) and IC-427424 (2.30 cm) recorded greater pod width compared to the check Arka Adarsh (2.23 cm). These results are in agreement with the findings of Reddy *et al*. (2018) [19] in dolichos bean.

Number of seeds per pod
The number of seeds per pod ranged from 3.20 to 5.70 with a mean of 4.56. The genotype IC-598467 recorded the maximum number of seeds per pod (5.70), while the minimum was observed in IC-426694 (3.20). Two genotypes, IC-546387 (5.40) and IC-446575 (5.40), recorded values equal to the check Arka Adarsh (5.40). These results are in agreement with the findings of Reddy *et al*. (2018) [19] and Ganapathi *et al*. (2020) [9] in dolichos bean.

Seed length (mm)
Seed length at marketable maturity ranged from 0.62 to 1.15 cm with a mean of 0.89 cm. The maximum seed length was recorded in IC-384066 (1.15 cm), while the minimum was observed in IC-598467 (0.62 cm). Several genotypes, including IC-384066 (1.15 cm), IC-372119 (1.12 cm), IC-427436 (1.06 cm), IC-426983 (1.04 cm), IC-427414 (1.03 cm), IC-427462 (1.03 cm), IC-426987 (1.00 cm) and many others, recorded higher seed length compared to the check Arka Adarsh (0.79 cm). These results are in agreement with the findings of Reddy *et al*. (2018) [19] in dolichos bean.

Seed width (cm)
Seed width ranged from 0.63 to 1.12 cm with a mean of 0.87 cm. The maximum seed width was recorded in IC-384066 (1.12 cm), while the minimum was observed in IC-446575 (0.63 cm). Several genotypes, including IC-384066 (1.12 cm), IC-372119 (1.09 cm), IC-427436 (1.04 cm), IC-427414 (1.03 cm), IC-426957 (1.00 cm), IC-427462 (0.99 cm), IC-426987 (0.99 cm), IC-427424 (0.98 cm) and others, recorded higher seed width compared to the check Arka Adarsh (0.81 cm). These results are in accordance with Reddy *et al*. (2018) [19] in dolichos bean.

100-seed fresh weight (g)
The 100-seed fresh weight ranged from 34.10 to 85.25 g with a mean of 61.30 g. The highest 100-seed fresh weight was recorded in IC-384066 (85.25 g), while the lowest was observed in IC-427428 (34.10 g). Several genotypes, namely IC-384066 (85.25 g), IC-546387 (83.95 g), IC-426966 (81.00 g), IC-372119 (80.30 g), IC-427414 (79.80 g), IC-426957 (77.40 g), IC-427417 (77.00 g), IC-426694 (75.90 g), IC-426970 (74.65 g), IC-427436 (70.50 g), IC-598467 (70.15 g), IC-446574 (67.90 g), IC-446561 (67.10 g), IC-446585 (66.35 g), IC-413709 (65.70 g), IC-446571 (65.20 g), IC-413710 (64.90 g) and IC-446575 (64.55 g) recorded higher 100-seed fresh weight compared to the check Arka Adarsh (64.35 g). These findings are in agreement with Sankaran *et al*. (2008) [21] and Reddy *et al*. (2018) [19] in dolichos bean.

100-seed dry weight (g)
The 100-seed dry weight ranged from 22.93 to 34.35 g with a mean of 29.31 g. The genotype IC-598467 recorded the highest 100-seed dry weight (34.35 g), while the lowest was observed in IC-446566 (22.93 g). The genotypes IC-598467 (34.35 g) and IC-427414 (33.50 g) recorded higher 100-seed dry weight compared to the check Arka Adarsh (33.50 g). These results are in agreement with the findings of Reddy *et al*. (2018) [19] in dolichos bean.

Pod yield per plant (g)
Pod yield per plant ranged from 189.45 to 702.67 g with a mean of 343.98 g. The genotype IC-598467 recorded the highest pod yield per plant (702.67 g), while the lowest was observed in IC-261010 (189.45 g). Two genotypes, IC-598467 (702.67 g) and IC-261004 (648.45 g), recorded higher pod yield per plant compared to the check Arka Adarsh (633.50 g). These findings are in agreement with the reports of Chaitanya *et al*. (2014) [3], Sharma *et al*. (2014) [22] and Reddy *et al*. (2018) [19] in dolichos bean.

Protein content (%)
Protein content ranged from 14.54% to 20.29% with a mean of 17.62%. The genotype IC-261004 recorded the highest protein content (20.29%), while the lowest was observed in IC-427436 (14.54%). Several genotypes, namely IC-261004 (20.29%), IC-446585 (19.67%), IC-427429 (19.59%), IC-427424 (19.34%), IC-446583 (19.26%), IC-446566 (19.06%), IC-261311 (18.96%), IC-427423 (18.74%), IC-427456 (18.55%), IC-446573 (18.52%), IC-446584 (18.44%), IC-413709 (18.41%), IC-426957 (18.34%), IC-598467 (18.10%) and IC-546387 (18.71%) recorded higher protein content compared to the check Arka Adarsh (18.03%). These results are in agreement with Reddy *et al*. (2018) [19] in dolichos bean.

Reducing sugars (%)
Reducing sugars ranged from 0.41% to 1.26% with a mean of 0.82%. The genotype IC-426988 recorded the highest reducing sugar content (1.26%), while the lowest was

observed in IC-426694 (0.41%). Several genotypes, including IC-426988 (1.26%), IC-427436 (1.14%), IC-446571 (1.06%), IC-426966 (1.05%), IC-426632 (1.03%), IC-261010 (1.01%), IC-446566 (1.00%), IC-412977 (0.99%), IC-427456 (0.99%), IC-446561 (0.98%), IC-413709 (0.98%), IC-446574 (0.95%), IC-413710 (0.95%), IC-427428 (0.92%), IC-598467 (0.92%), IC-426970 (0.90%), IC-446581 (0.90%) and IC-261004 (0.88%) recorded higher reducing sugar content compared to the check Arka Adarsh (0.88%). These results are in agreement with the findings of Mahesh *et al*. (2019) [12] in dolichos bean.

Total sugars (%)

Total sugar content ranged from 0.71% to 1.50% with a mean of 1.06%. The genotype IC-546387 recorded the highest total sugars (1.50%), while the lowest was observed in IC-426694 (0.71%). Several genotypes, including IC-546387 (1.50%), IC-427436 (1.36%), IC-427424 (1.33%), IC-426966 (1.32%), IC-446561 (1.29%), IC-427428 (1.26%), IC-426988 (1.25%), IC-446566 (1.23%), IC-261010 (1.21%) and many others, recorded higher total sugar content compared to the check Arka Adarsh (1.02%). These results are in agreement with the findings of Mahesh *et al*. (2019) [12] in dolichos bean.

Table 1: Analysis of variance of 16 yield and yield contributing traits in dolichos bean genotypes

S. No	Character	Mean sum of squares		
		Replication (df=1)	Treatments (df=44)	Error (df=44)
1	Vine length (cm)	705.04	3340.99***	268.248
2	Number of primary branches per plant	0.01	0.473***	0.029
3	Days to 50% flowering	23.58	248.98***	6.343
4	Days to first harvest	1.31	264.89***	7.173
5	Number of pods per plant	37.47	37.469***	27.027
6	Pod length (cm)	3.02	3.025***	1.163
7	Pod width (cm)	0.12	0.646***	0.064
8	Number of seeds per pod	0.18	0.489***	0.128
9	Seed length (cm)	0.00	0.0259***	0.001
10	Seed width (cm)	0.00	0.0268***	0.002
11	100-seed fresh weight (g)	10.61	437.217***	16.500
12	100-seed dry weight (g)	1.93	16.878***	1.963
13	Pod yield per plant (g)	754.81	29896.157***	801.999
14	Protein content (%)	0.19	2.9018***	0.070
15	Reducing sugars (%)	0.00	0.0641***	0.001
16	Total sugars (%)	0.00	0.0525***	0.001

* and ** significant at P = 0.05 and P = 0.01 level of significance respectively

Table 2: Mean performance of 16 pod yield and associated characters in forty five genotypes of dolichos bean

Genotype	Vine length (cm)	Number of primary branches per plant	Days to 50% flowering	Days to first harvest	Number of pods per plant	Pod length (cm)	Pod width (cm)	Number of seeds per pod
IC-261004	406.44	3.80	51.06	82.96	119.00	9.81	1.46	4.30
IC-261005	368.88	4.35	80.84	111.18	56.00	9.82	1.60	4.70
IC-261010	360.00	3.39	75.38	92.09	52.50	12.51	1.46	5.00
IC-261311	222.50	3.84	65.79	88.26	93.65	5.96	1.88	3.90
IC-372119	398.49	4.68	77.23	107.84	67.30	8.86	2.02	4.80
IC-382830	376.12	3.64	55.31	91.08	58.50	10.27	4.74	3.30
IC-384066	344.85	4.23	53.00	92.13	54.00	8.34	1.35	4.70
IC-412977	217.50	4.65	79.81	111.16	59.80	6.30	2.15	4.00
IC-413709	353.24	3.22	71.40	106.56	57.00	7.25	1.35	4.70
IC-413710	367.21	3.69	72.13	101.49	80.65	9.38	2.02	4.80
IC-426632	380.71	3.08	68.54	101.62	43.00	4.86	1.79	3.60
IC-426957	394.67	3.59	75.04	106.23	52.50	9.62	1.95	4.60
IC-426966	398.32	3.54	87.39	116.93	64.50	8.15	2.08	4.60
IC-426970	320.41	3.57	84.26	115.14	53.50	9.62	1.35	4.80
IC-426980	377.05	3.61	86.78	109.80	66.00	9.59	1.84	4.60
IC-426983	416.56	3.84	83.90	111.14	55.30	9.03	1.86	4.30
IC-426987	380.46	3.84	88.33	119.10	57.50	11.95	2.41	5.00
IC-426988	393.74	3.51	73.60	97.15	64.00	7.63	1.58	4.20
IC-426991	352.44	3.09	74.66	107.86	49.50	10.88	1.74	5.10
IC-426694	382.06	4.15	88.00	125.85	52.50	5.36	2.01	3.20
IC-427414	386.52	3.25	76.32	106.92	43.65	12.36	1.89	4.80
IC-427417	328.86	3.53	73.73	106.71	50.50	10.99	1.69	4.60
IC-427423	373.81	4.38	83.40	98.80	45.50	13.47	2.09	4.30
IC-427424	362.59	3.36	84.28	106.88	45.34	11.59	2.30	4.50
IC-427425	397.30	4.18	81.42	104.84	66.15	9.96	2.17	4.40
IC-427428	404.91	3.18	86.49	106.76	48.00	9.52	2.05	4.60
IC-427429	375.02	2.94	68.64	97.98	57.80	10.12	2.40	4.80
IC-427436	372.05	3.13	66.00	91.41	62.00	11.71	1.91	4.40

IC-427456	429.35	3.20	77.62	91.63	67.80	11.91	1.79	4.60
IC-427462	364.27	3.20	69.18	95.29	75.80	12.47	1.78	4.60
IC-446561	364.20	3.57	74.40	101.43	61.00	9.23	0.79	4.40
IC-446566	380.12	3.35	65.00	85.80	47.50	7.51	1.11	4.40
IC-446568	371.49	3.19	58.85	86.64	82.60	8.99	1.55	4.60
IC-446571	365.04	3.64	57.91	91.01	44.00	8.52	1.89	4.30
IC-446573	365.60	3.31	61.57	87.07	59.15	11.99	1.48	4.20
IC-446574	320.76	3.15	76.73	97.34	43.50	12.82	1.25	5.20
IC-446575	326.31	4.25	76.06	99.45	44.00	10.90	1.29	5.40
IC-446581	345.20	3.11	65.53	95.35	54.50	8.96	1.50	4.40
IC-446583	365.88	3.82	69.42	93.17	103.50	8.61	1.77	4.70
IC-446584	373.26	3.40	73.71	94.30	71.00	9.18	1.48	4.30
IC-446585	372.01	3.62	64.83	95.52	49.30	8.81	1.56	4.40
IC-446587	334.13	2.88	75.00	92.34	80.00	7.06	2.03	4.60
IC-546387	370.36	4.16	97.49	121.43	116.50	6.93	1.62	5.40
IC-598467	421.56	4.77	102.50	135.92	149.50	10.28	1.34	5.70
Arka Adarsh	412.50	4.11	60.00	89.20	128.45	10.88	2.23	5.40
Mean	366.55	3.64	74.19	101.53	65.64	9.55	1.81	4.56
S.E.	11.58	0.12	1.78	1.89	3.68	0.76	0.18	0.25
C.D. 5%	33.01	0.35	5.08	5.40	10.48	2.17	0.51	0.72
C.D. 1%	44.10	0.46	6.78	7.21	14.00	2.90	0.68	0.96
Range Minimum	217.50	2.88	51.06	82.96	43.00	4.86	0.79	3.20
Range Maximum	429.35	4.77	102.50	135.92	149.50	13.47	4.74	5.70
Genotype	**Seed length (cm)**	**Seed width (cm)**	**100-seed weight fresh (g)**	**100-seed dry weight (g)**	**Pod yield per plant (g)**	**Protein content (%)**	**Reducing sugars (%)**	**Total sugars (%)**
IC-261004	0.97	0.97	57.85	32.94	648.45	20.29	0.88	1.06
IC-261005	0.83	0.80	55.70	28.36	315.06	17.94	0.73	1.10
IC-261010	0.83	0.76	50.60	28.17	189.45	17.09	1.01	1.21
IC-261311	0.80	0.64	35.35	25.95	345.17	18.96	0.58	1.04
IC-372119	1.12	1.09	80.30	31.10	600.73	17.24	0.55	0.78
IC-382830	0.88	0.86	27.75	32.13	345.61	16.49	0.63	0.95
IC-384066	1.15	1.12	85.25	29.45	403.00	16.96	0.79	1.06
IC-412977	0.98	0.96	58.20	27.02	253.28	17.30	0.99	1.15
IC-413709	0.70	0.66	65.70	29.05	354.45	18.41	0.98	1.00
IC-413710	0.98	0.98	64.90	29.98	264.78	15.46	0.95	1.15
IC-426632	0.84	0.69	39.60	29.72	269.06	17.54	1.03	1.10
IC-426957	0.99	1.00	77.40	30.28	442.89	18.34	0.84	0.95
IC-426966	0.83	0.83	81.00	29.03	292.50	17.69	1.05	1.32
IC-426970	0.77	0.73	74.65	28.55	245.95	16.14	0.90	1.07
IC-426980	0.93	0.87	63.80	30.62	353.56	16.95	0.77	0.90
IC-426983	1.04	0.98	63.60	30.83	427.00	18.02	0.73	1.09
IC-426987	1.00	0.99	50.95	32.00	254.34	15.54	0.85	1.08
IC-426988	0.86	0.84	61.20	31.67	443.78	17.38	1.26	1.25
IC-426991	0.96	0.91	61.60	31.85	252.34	17.35	0.63	0.85
IC-426694	0.92	0.91	75.90	28.41	264.39	17.33	0.41	0.71
IC-427414	1.03	1.03	79.80	33.50	378.06	15.87	0.68	1.14
IC-427417	0.95	0.91	77.00	30.20	273.33	17.73	0.82	1.14
IC-427423	0.91	0.90	54.60	28.54	272.06	18.74	0.79	0.97
IC-427424	0.95	0.98	57.50	31.13	246.78	19.34	0.66	1.33
IC-427425	0.84	0.86	49.80	26.19	248.00	16.67	0.77	0.85
IC-427428	0.79	0.77	34.10	23.33	268.45	17.28	0.92	1.26
IC-427429	0.92	0.89	53.85	28.23	247.67	19.59	0.77	0.85
IC-427436	1.06	1.04	70.50	27.88	350.56	14.54	1.14	1.36
IC-427456	0.81	0.80	40.75	25.74	244.67	18.55	0.99	1.09
IC-427462	1.03	0.99	57.65	32.98	280.00	17.82	0.78	1.14
IC-446561	0.94	0.91	67.10	32.19	227.89	17.12	0.98	1.29
IC-446566	0.88	0.87	49.65	22.93	273.56	19.06	1.00	1.23
IC-446568	0.88	0.86	60.05	24.21	267.34	16.50	0.84	0.91
IC-446571	0.79	0.78	65.20	24.63	262.34	17.20	1.06	1.03
IC-446573	0.88	0.83	61.50	25.70	424.84	18.52	0.57	1.01
IC-446574	0.78	0.76	67.90	28.24	212.34	17.32	0.95	1.00
IC-446575	0.70	0.63	64.55	27.72	219.50	17.25	0.80	0.88
IC-446581	0.70	0.72	63.85	24.88	393.67	16.99	0.90	1.02
IC-446583	0.87	0.85	65.00	32.95	460.89	19.26	0.54	0.87
IC-446584	0.93	0.87	56.35	28.63	485.56	18.44	0.81	1.03

IC-446585	0.97	0.96	66.35	30.65	349.39	19.67	0.57	1.01
IC-446587	0.96	0.91	55.55	31.87	342.17	16.07	0.65	1.06
IC-546387	0.77	0.76	83.95	31.83	448.45	18.71	0.66	1.50
IC-598467	0.62	0.92	70.15	34.35	702.67	18.10	0.92	1.06
Arka Adarsh	0.79	0.81	64.35	33.50	633.50	18.03	0.88	1.02
Mean	0.89	0.87	61.30	29.31	343.98	17.62	0.82	1.06
S.E.	0.03	0.03	2.87	0.99	20.03	0.18	0.03	0.02
C.D. 5%	0.08	0.10	8.19	2.82	57.07	0.53	0.07	0.06
C.D. 1%	0.10	0.13	10.94	3.77	76.24	0.71	0.10	0.09
Range Minimum	0.62	0.63	34.10	22.93	189.45	14.54	0.41	0.71
Range Maximum	1.15	1.12	85.25	34.35	702.67	20.29	1.26	1.50

Conclusion

The present study revealed substantial genetic variability among dolichos bean genotypes for growth, yield, yield-attributing and quality traits, indicating wide scope for selection and crop improvement. Significant differences were observed for all the characters studied, with pod yield per plant showing a wide range, highlighting the differential yield potential of the genotypes. The genotype IC-598467 emerged as the most promising for pod yield and major yield-contributing traits, particularly number of pods per plant and branching habit, while IC-261004 was superior for protein content. The identification of early flowering and early harvesting genotypes further suggests the possibility of developing early-maturing, high-yielding varieties. Overall, the superior genotypes identified in the present investigation can be effectively utilized as parents in future breeding programmes aimed at improving yield and nutritional quality in dolichos bean and their performance should be further validated through multi-location trials.

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