



ISSN (E): 2277- 7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2021; 10(11): 1374-1382  
© 2021 TPI  
[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 14-08-2021  
Accepted: 23-09-2021

**S Nanthakumar**  
ICAR-KVK, Virinjipuram,  
Tamil Nadu Agricultural  
University, Tamil Nadu, India

**D Udhaya Kumar**  
ICAR-KVK, Virinjipuram,  
Tamil Nadu Agricultural  
University, Tamil Nadu, India

**M Paramasivam**  
ICAR-KVK, Virinjipuram,  
Tamil Nadu Agricultural  
University, Tamil Nadu, India

## Screening of dolichos bean (*Dolichos lablab* L.) genotypes for growth and yield performance under Tamil Nadu

**S Nanthakumar, D Udhaya Kumar and M Paramasivam**

### Abstract

Twenty genotypes of dolichos bean (*Dolichos lablab* L.) were evaluated for growth and yield parameters under Tamil Nadu condition. The data indicated the significant differences with respect to growth and yield among the various genotypes of dolichos bean. The results of the experiment showed that the mean performance of growth parameters like plant height, number of primary branches per plant, days to 50% flowering, leaf area index at 50% flowering, total biomass at 50% flowering, number of racemes per plant, racemes length, number of flowers per plant and total biomass at last harvest were ranged from 83.89 to 135.28 cm, 3.30 to 6.36, 37.40 to 50.16 days, 46.20 to 58.13, 32.03 to 47.49, 1.30 to 3.52 g, 3.53 to 6.46, 20.92 to 33.15 cm, 16.30 to 33.70 and 4.82 to 8.56g, respectively. The yield parameters viz., days to first harvest, number of pods per plant, pod length, pod width, pod weight, number of seeds per pod, green pod yield per plan and total green pod yield were ranged from 48.73 to 65.23 days, 39.18 to 142.21, 4.56 to 12.45 cm, 1.21 to 2.77 cm, 2.08 to 4.47 g, 2.53 to 4.33, 74.10 to 467.33 g and 2.03 to 12.83 t/ha, respectively. Based on their per se performance, higher yield recorded in both the seasons showed that Ankur Goldy, CO (Gb) 14 and Dhoni as the top three ranking genotypes. Ankur Goldy, which recorded the maximum yield also possessed high mean performance for number of racemes per plant, number of pods per plant and pod weight in both seasons. The genotype Panruti local recorded higher plant height and earlier flowering was observed in CO (Gb) 14. Genotypes having high *per se* performance under the Tamil Nadu condition all the genotypes could be selected as parents for hybridization programme except Tindivanam, Cuddalore and Salem local.

**Keywords:** Dolichos bean, growth, yield, genotypes

### Introduction

Dolichos bean (*Dolichos lablab* L.) belongs to the family Fabaceae and it is an important leguminous vegetable crop grown throughout the India. It is commonly called as Sem, Hyacinth bean, Bonavist bean, Indian bean, Field bean, Egyptian bean and Australian pea. In India, two botanical varieties are recognized and are sometimes considered as distinct species. They are *Dolichos lablab* var. *typicus* (Prain), is a twining herb treated as an annual and *Dolichos lablab* var. *lignosus* (L) Prain, a bushy perennial (Minde *et al.*, 2021) [14]. There are two distinct groups based on growth habit, one is pole type and the other is bush type. The vegetable crop is being grown throughout the country especially in Madhya Pradesh, Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka and North Eastern states (Kumar *et al.*, 2021) [11]. It is one of the most ancient crop among the cultivated plants grown as either pure or mixed with other crops, such as finger millet, groundnut, castor, corn or sorghum (Kumar *et al.*, 2021) [11]. It is also grown in homestead. It is a multipurpose crop grown as a pulse, for green pods and tender leaves.

Dolichos beans constitute an important source of nutritional (minerals and vitamins) and economic importance (Basu *et al.*, 2002; Singh and Abhilash, 2019) [4, 27]. The dried seeds contain appreciable amount of protein (21.5%) in diets cooked in different kind of forms as green pods, dry seeds and leaves as green vegetables (Miah *et al.*, 2017; Sarma *et al.*, 2010) [13, 23]. Dolichos bean is a drought tolerant crop grown in dry lands with limited rainfall, but can be grown in any kinds of soil. The crop prefers relatively cool season and sowing is done in July-August. It starts fruiting in winter and continues indeterminately in spring (Savitha, 2008) [24]. There are many local types particularly in Eastern and Southern India. Despite having many horticultural and nutritional importances, the crop has remained unexploited owing to low productivity, long duration, photosensitivity and indeterminate growth habit. The efforts of improving the crop by utilizing indigenous and exotic germplasm have been useful in breaking

**Corresponding Author:**  
**S Nanthakumar**  
ICAR-KVK, Virinjipuram,  
Tamil Nadu Agricultural  
University, Tamil Nadu, India

the yield barriers (Shivashankar and Kulkarni, 1989; Shivashankar *et al.*, 1993) [25, 26] resulting in compact plant type, reduced duration and photo-insensitive types. The evaluation of the existing varieties for the breeding value is very essential to use them as parents in future crop improvement programmes. The observed variability is a combined measure of genetic and environmental causes. A successful breeding programme is associated with genetic diversity of parents used in hybridization. More the diversity of parents, better the chances of improving the economic characters. Hence, this attempt has been made to know the extent of genetic parameters for yield attributing traits as well as to measure the genetic diversity among available dolichos bean genotypes.

### Materials and Methods

The experiment was conducted out at the college orchard in the Department of Vegetable Science, Adhiparasakthi Horticultural College, Vellore, Tamil Nadu, India. Geographically, Kalavai is located at 12° 46' North latitude, 79° 25' East longitudes and at altitude of 132 m above mean sea level (MSL). The experimental material consisted of 20 genotypes of crop which were collected from different regions of Tamil Nadu (Table 1). The selected genotypes were sown in a randomized block design (RBD) with three replications during kharif and rabi seasons. Each genotype was sown with inter row spacing of 60 cm and inter plant spacing of 30 cm. Five plants were selected from each genotype and from each replication to record the observation and biometrical traits and quality traits. Normal agronomic practice and recommended plant protection measures were followed throughout the crop period.

The observations were made five plants were randomly selected from the net area of each plot, tagged and the following parameters on growth, yield and quality were recorded at different stages. The growth and flowering characters such as plant height (cm), number of primary branches per plant, days to first flowering, days to 50% flowering, leaf area index (LAI) at 50% flowering, total biomass at 50% flowering (g), number of racemes per plant, raceme length (cm), number of flowers per raceme and total biomass at last harvest (g). The yield attributes includes days to first harvest, number of pods per plant, pod length (cm), pod width (cm), pod weight (g), number of seeds per pod, green pod yield per plant (g) and total green pod yield (t/ha.). The data was analysed using ANOVA for all the characters by making use of means of replication, as suggested by Goulden (1959) [8].

### Results and Discussion

#### Growth parameters

Analysis of variance (ANOVA) showed that the seasons were significant for all the traits studied *viz.*, plant height, number of primary branches per plant, days to first flowering, days to 50% flowering, leaf area index at 50% flowering, total biomass at 50% flowering (g), number of raceme per plant, raceme length, number of flowers per raceme, total biomass at last harvest, days to first harvest, number of pods per plant, pod length, pod width, pod weight, number of seeds per pod and green pod yield per plant. Genotypes (treatments) were significantly different for all the characters which indicated that genetic variability was present among the genotypes for all the traits.

#### Plant height

The data showed significant variation among the lablab genotypes under study (Table 2). The plant height ranged from 85.11cm (Cuddalore local) to 142.15cm (Panruti local). Among the twenty genotypes, 11 genotypes exceeded the general mean of 116.69 cm. The maximum plant was recorded in Panruti local (142.15 cm) followed by Salem local (141.67 cm) and Chidambaram local (138.45 cm) whereas the minimum plant height was measured in Cuddalore local (85.11 cm) in kharif season. During rabi season, among the genotypes, the highest plant height was recorded in Panruti local (128.41 cm) followed by Tindivanam local (120.01 cm) and Salem local (117.51cm) (Table 3). The lowest plant height was noticed in Cuddalore local (63.54 cm). Thirteen genotypes exceeded the grand mean value of 102.06 cm. In pooled analysis, among the twenty genotypes screened, eleven genotypes exceeded the general mean of 109.38 cm (Table 6). The genotype Panruti local was found to record the highest plant height (135.28 cm) followed by Salem local (129.59 cm) and Chidambaram local (127.96 cm), while the lowest plant height was recorded in Cuddalore local (74.32 cm). Plant height showed higher portion of genotypic variance in among the selected genotypes since they were cultivated under same environment conditions (Whankate *et al.*, 2021) [31]. The results of present findings are in agreement with the results reported by Whankate *et al.* (2021) [31], who observed the taller plants in Phule Surekha at 30 days after sowing was 22.90 cm, taller plants were noticed in IC-28008 (56.42 and 82.40 cm, respectively).

#### Number of primary branches per plant

The number of primary branches per plant for different genotypes showed statistically significant differences (Table 2). Among the genotypes, the maximum number of primary branches was recorded in Ankur Goldy (8.60) followed by CO(Gb) 14, Dhoni (7.33) and Kumbakonam local (6.93). The minimum number of primary branches per plant was noticed in Cuddalore local (3.53). Ten genotypes exceeded the grand mean value of (5.59) in kharif season. During rabi season, the number of primary branches ranged from 3.00 to 6.47. The genotype Vadalore local was found to record the maximum (6.47) followed by Kumbakonam local (5.80) and Dhoni (5.33), while Trichy local found to record the minimum (3.00). Ten genotypes exceeded the grand mean value of 4.61 (Table 3). Statistically significant differences were observed among the genotypes for this trait in the pooled analysis. The pooled analysis showed that the genotypes, the maximum number of primary branches was recorded in Kumbakonam local (6.36) followed by Dhoni (6.33) and AnkurGoldy (6.30) (Table 6). The minimum number of primary branches per plant was noticed in Trichy local (3.30). Genotypic variance was moderate for number of primary branches per plant indicating meagre influence of the environment. The results of the present findings are in close conformity with findings reported by Pandey *et al.* (2011) [18] and Whankate *et al.* (2021) [31].

#### Days to first flowering

During kharif season, variation was observed among the genotypes for this trait (Table 2). The mean value ranged from 38.20 days to 60.27 days. The genotype CO(Gb) 14 found to flower earlier (38.20 days) followed by Cuddalore local (39.80 days) and lied on par with each other, while the

genotypes Trichy local (60.27 days) showed delayed flowering. The grand mean for this character was 47.08 days. Eleven genotypes recorded values less than the grand mean. In rabi season, significant differences were recorded among the genotypes for this trait (Table 3). The mean value ranged from 36.60 days to 49.13 days. The genotype CO(Gb) 14 found to flower earlier (36.60 days) followed by Tindivanam local (38.80 days) and Cuddalore local (39.07 days), while the genotype Thiruvanamalai local (49.13 days) showed delayed flowering (Table 6). The grand mean for this character was (43.62 days). The pooled mean value ranged from 37.40 to 53.96 days. The genotype CO(Gb) 14 found to flower earlier (37.40 days) followed by Cuddalore local (39.43 days) and Tindivanam local (39.50 days), while the genotype Trichy local (53.96 days) showed delayed flowering (Table 6). Similar result was reported by Nath *et al.* (2019) [16] and Ravinaik *et al.* (2015) [22] was reported in dolichos bean.

#### Days to 50% flowering

Significant differences were recorded (Table 2) among the genotypes for this trait. The mean value ranged from 47.40 to 65.73 days. The genotype Cuddalore local found to flower earlier 47.40 days followed by Co(Gb) 14 (49.53 days) and Tindivanam local (50.80 days), while the genotype Trichy local (65.73 days) showed delayed flowering. Ten genotypes were exceeded the mean value of 55.90 days in kharif season. Similarly, during rabi season mean value ranged from 42.87 to 55.07 days (Table 3). The genotype CO(Gb) 14 found to flower earlier 42.87 days followed by Cuddalore local 45.47 days and lies on par with each other, whereas the genotype Thiruvanamalai local (55.07 days) showed delayed flowering. In pooled analysis, the data showed statistically significant differences for the above trait. The genotype CO(Gb) 14 found to flower earlier (46.20 days) followed by Cuddalore local (46.43 days) and Tindivanam local (48.50 days), while the genotype Trichy local (58.13 days) showed delayed flowering (Table 6). The grand mean for this character was 52.72 days and ten genotypes exceeded the mean value. The results of present findings are in close conformity with the results reported by Pandey *et al.* (2011) [18] who also reported the variation in 50% flowering from 37 days (Makwapur) to 47 days (Mandir) and Whankate *et al.* (2021) [31] reported that similar results in French bean.

#### Leaf Area Index at 50% flowering

Significant differences for this trait were observed among the genotypes in the kharif season (Table 2 and 3). The genotype CO(Gb) 14 recorded the highest leaf area index at 50% flowering 48.50 and 46.49 cm<sup>2</sup> followed by Cuddalore local (45.66 cm<sup>2</sup>) and Villupuram local (28.94 cm<sup>2</sup>) for kharif and rabi season, respectively. The lowest leaf area index at 50% flowering was accounted by the genotype Theni local and Vadalore local (34.86 cm<sup>2</sup>). On the whole, twelve genotypes exceeded the grand mean (40.63 cm<sup>2</sup>) for this character. The leaf area index at 50% flowering of various genotypes showed statistical significant difference. These finding were reported by Rathi and Dhaka (2007) [21] in pea, Nwofia *et al.* (2013) [17] in vegetable cowpea, Archana and Gadewar (2013) [3] in cowpea and Idahosa *et al.* (2010) [9] in cowpea.

#### Total biomass at 50% flowering

The data on total biomass at 50% flowering in Table 2 showed significant differences among the genotypes. The genotypes Ankur Goldy registered maximum total biomass at

50% flowering 4.07 g per plant followed by CO (Gb) 14 (3.38 g per plant) and minimum total biomass at 50% flowering was recorded in Krishnagiri local 1.48 g per plant. Nine genotypes exceeded the grand mean value in kharif season. In rabi season, the data showed significant differences for total biomass at 50% flowering was ranged from 1.13 to 3.67 g per plant. The genotype Goldy recorded the maximum (3.67 g per plant) total biomass at 50% flowering while the genotype Krishnagiri local was found to record the least 1.13 g per plant (Table 3). In the pooled analysis, the genotypes showed significant differences for this trait and AnkurGoldy recorded the maximum amount of total biomass at 50% flowering 3.52 g per plant and the minimum amount of total biomass at 50% flowering was accounted by the genotype Krishnagiri local 1.30 g per plant (Table 6). Similar results were reported by Archana and Gadewar (2013) [3] in cowpea.

#### Number of racemes per plant

The data showed statistically significant differences for this trait (Table 2). The genotype AnkurGoldy recorded maximum number of racemes per plant (8.67) followed by Kumbakonam local (7.07) and the minimum number of racemes per plant was accounted by the genotype Trichy local (2.87) during kharif season. In rabi season, the genotype Kumbakonam local was found to record the maximum (5.87), while Trichy local was found to record the minimum (2.87) (Table 3). In pooled analysis, the genotypes Kumbakonam local recorded the maximum number of raceme per plant (6.46) followed by AnkurGoldy (6.43) and the minimum number of racemes per plant was accounted by the genotype Trichy local showed (2.86) (Table 6). This observation is in accordance with the findings of Ali *et al.* (2005) [1].

#### Raceme length

The raceme length of different genotypes showed statistically significant differences (Table 2). Among the genotypes, the highest raceme length was recorded in CO(Gb) 14 (35.29 cm) followed by Kumbakonam local (34.43 cm) and the minimum was recorded in Villupuram local (22.07 cm) during kharif season, whereas during rabi season the genotype Kumbakonam local was found to record the highest raceme length (31.87 cm) followed by CO(Gb) 14 (30.65 cm) and Trichy local 29.73 cm while the lowest raceme length was noticed in Villupuram local (19.78 cm) (Table 3). Among the twenty genotypes screened nine genotypes exceeded the general mean of 25.79 cm. This finding is similar to that of Vaijyanthi *et al.* (2017) [30], who recorded the raceme length in the range of 8.26 to 99.25 cm in dolichos bean.

#### Number of flowers per raceme

The various genotypes studied in the present investigation showed significant differences for this trait (Table 2). Among the genotypes Ankur Goldy recorded the maximum number of flowers per raceme (35.73) followed by Navaratna (31.13) and the minimum number of flowers per raceme was accounted by the genotype Salem local (17.40) during kharif season. Similarly, during rabi season the maximum number of flowers per raceme (31.67) was recorded in AnkurGoldy while Dharmapuri local registered minimum flowers per raceme (14.73) (Table 3). In pooled analysis, significant differences on the data were observed for number of flowers per raceme (Table 6). The genotype AnkurGoldy was found to record the maximum (33.70), while Salem local was found to register the minimum (16.30). These results are in



accordance with Baswana *et al.* (1980) <sup>[15]</sup>, Mallareddy *et al.* (1992) <sup>[12]</sup>, Ali *et al.* (2005) <sup>[1]</sup> and Upadhyay and Mehta (2010) <sup>[28]</sup>.

### Total biomass at last harvest

In kharif and rabi season, significant variations were observed among the genotypes for this trait (Table 2 and 3). The mean value ranged from 4.72 to 9.10 and 4.23 to 8.02 g per plant for kharif and rabi season, respectively. The genotype AnkurGoldy found to record the maximum total biomass at last harvest (9.10 g per plant) followed by Theni local (8.21 g per plant) and CO(Gb) 14 (7.90 g per plant) and lied on par with each other, while the genotype Salem local (4.72 g per plant) showed minimum biomass. In rabi season, the genotype AnkurGoldy found to record the maximum total biomass at last harvest (8.02 g per plant) followed by Theni local (7.86 g per plant), while the genotype Dindigul local (4.23 g per plant) showed minimum total biomass at last harvest. Similar findings were reported by Karnwal and Singh (2009) <sup>[10]</sup> in soya bean, Vaghela *et al.* (2009) <sup>[29]</sup> in kabuli chickpea.

### Yield attributing parameters

#### Days to first harvest

In kharif season, significant variation was observed with respect to number days required to first harvest among the genotypes of dolichos bean (Table 4). The mean value ranged from 51.00 to 72.20 days. The genotypes Cuddalore local recorded (51.00 days) minimum days for earlier harvest followed by Dharmapuri local (53.33 days) and lied on par with each other, while the genotype Kumbakonam local (72.20 days) take maximum days for first harvest. In rabi season, variations were observed among the genotypes for the trait. The mean value ranged from 43.47 to 60.13 days. The genotypes CO(Gb) 14 takes 43.47 days for earlier harvest followed by Cuddalore local (47.00 days), while the genotype Thiruvanamalai local (60.13 days) took maximum days for first harvest (Table 5). Days to first harvest had recorded low phenotypic and genotypic coefficients of variability with high heritability estimates coupled with moderate genetic advance. These findings were reported by Parmer *et al.* (2013) <sup>[19]</sup> and Rathi and Dhaka (2007) <sup>[21]</sup> in dolichos bean, and pea, respectively.

#### Number of pods per plant

The number of pods per plant directly influences the yield of green pods (Table 4). The highest number of pods per plant was recorded in genotype Ankur Goldy (146.20) followed by Dhoni (110.33) and Nandhini (104.00) whereas the lowest number of pods per plant was recorded in Villupuram local (60.80) in kharif season. The data on number of pods per plant showed significant differences for rabi season (Table 5). The genotype Ankur Goldy and Dhoni recorded the highest number of pods per plant (138.22) followed by Navaratna (101.00) and Nandhini (96.47). The genotype Villupuram local recorded the minimum number of pods per plant (17.57) (Table 5). In pooled analysis, the genotype Ankur Goldy had the maximum number of pods per plant (142.21) followed by Dhoni (124.27) and Navaratna (101.86) whereas the genotype Villupuram local had the minimum number of pods per plant (39.18) (Table 7). Difference in growth characters might be due to genetic variability within genotype itself or due to the environmental effects. The significant differences among the genotypes with respect to number of

pods per plant were also reported by Whankate *et al.* (2021) <sup>[31]</sup> in genotypes of french bean.

#### Pod length

Pod length showed significant variations among the genotypes (Table 4). The genotype Nandhini recorded the highest pod length 12.97 cm followed by Goldy 12.29 cm and Trichy local 11.56 cm. The shortest pod was observed in Tindivanam local 4.56 cm in kharif season. In rabi season, among the genotypes tested Nandhini recorded the maximum pod length 11.95 cm followed by Goldy 11.44 cm and CO(Gb) 14 (9.56 cm) (Table 5). The shortest pod was observed in Theni local 4.36 cm. In pooled analysis, the genotype Nandhini recorded the maximum pod length 12.45 cm followed by Goldy 11.86 cm and Navaratna 9.65 cm. The shortest pod was observed in Tindivanam local 4.56 cm (Table 7). Such observations were also noted by earlier workers and they reported that the significantly higher length (7.15-15.05 cm) of green pod in dolichos bean (Chattopadhyay and Dutta, 2010), 5.18-10.48 cm in dolichos bean (Parmer *et al.*, 2013) <sup>[19]</sup> and 9.21-14.29 cm in french bean (Whankate *et al.*, 2021) <sup>[31]</sup>

#### Pod width

The data on pod width of bean was presented in Table 4 and 5 showed significant difference among the genotypes for this character under study. The pod width ranged from 1.22 to 2.74 cm. The maximum pod width of was recorded in Navaratna (2.74 and 2.80 cm) followed by Nandhini (2.64 cm) and CO(Gb) 14 (2.41 cm), while Theni local registered minimum pod width of 1.22 and 1.21 cm for kharif and rabi season, respectively. In pooled analysis, the genotype Navaratna recorded the maximum pod width 2.77 cm followed by Nandhini 2.65 cm and Theni local 1.21 cm recorded the minimum (Table 7). This finding was supported by Chattopadhyay and Dutta (2010) who reported the breadth of pod of 1.44-3.11 cm in dolichos bean and 0.90 -1.51cm in French bean (Whankate *et al.*, 2021) <sup>[31]</sup>.

#### Pod weight

Higher weight of the individual pod was recorded in CO(Gb) 14 (4.43g) followed by Dhoni (3.57g) and AnkurGoldy (3.31g) while least weight was in Theni local (1.16 g). Among the twenty genotypes, significant differences were observed for this trait. The general mean for this trait was (2.63g) and eleven genotypes exceeded the general mean in kharif season (Table 4). Similarly, during rabi season CO (Gb) 14 recorded had the maximum value for this character (4.53 g) followed by (Dhoni 3.72 g) and Panruti local (3.49 g). The minimum pod weight was exhibited by Dindigul local (2.49g). The general mean for this trait was 3.22 and ten genotypes exceeded the general mean in rabi season (Table 5). The results of present findings were in accordance with the results reported by Whankate *et al.* (2021) <sup>[31]</sup> in french bean (2.44 to 3.85 g), Chattopadhyay and Dutta (2010) <sup>[6]</sup> in dolichos bean (2.92 to 8.92 g), 2.00 -3.46 g in dolichos bean (Ravinaik *et al.*, 2015) <sup>[22]</sup> and 3.95 g in dolichos bean (Ananth and Kumar, 2018) <sup>[32]</sup>.

#### Number of seeds per pod

The data showed in Table 4 and 5 highlighted that the maximum number of seeds per pod was recorded in kharif season was Nandhini (4.53) followed by Kumbakonam local and Tindivanam local (4.47) whereas in the rabi season,

Krishnagiri local (4.60) followed by Theni local, Goldy and Dharmapuri local (4.27) and CO(Gb) 14 (4.20). The minimum number of seeds was recorded in Chidambaram local (2.53) and Vadalore local (2.27) for kharif and rabi, respectively. In pooled analysis, the genotype showed the maximum number of seeds per pod in Theni local (4.33) followed by Goldy (4.30) and Tindivanam local (4.26) (Table 7). The minimum number of seeds per pod was exhibited by Chidamparam local (2.53). The variation in number of seeds per pod might be due to genetic variability in different germplasm. It is evident in the present study which agreed with observations of Whankate *et al.* (2021) [31] in French bean (7.60), 4.14- 4.25 in dolichos bean (Pramoda *et al.*, 2020), 3.00 -5.00 in dolichos bean (Ravinaik *et al.*, 2015) [22], 4.00-6.00 in dolichos bean (Das *et al.*, 2015) and 3.93-4.67 in lablab bean (Nath *et al.*, 2019) [16].

### Green pod yield per plant

The mean performance of the genotype for pod yield per plant is furnished in Table 4 and 5. Out of the twenty genotypes, the genotype AnkurGoldy registered the highest pod yield per plant 484.93 and 449.74 g followed by CO(Gb) 14 (432.38 and 421.61g) and Dhoni (394.27 and 387.67g), for kharif and rabi season respectively. The lowest pod yield per plant 91.00 and 52.24g was recorded in Theni and Villupuram local, respectively for kharif and rabi season. The estimated grand mean was 244.75 and 217.34 g for kharif and rabi season respectively. The data on pod yield per plant showed significant differences among the genotypes. Observation on the average pod yield per plant revealed that AnkurGoldy recorded the highest pod yield per plant with 467.33 g which was significantly superior to all other genotypes followed by CO(Gb) 14 (426.99 g) and Dhoni with 390.96 g and lied on par with each other. The lowest pod yield per plant 74.10g was recorded in Villupuram local. This is in agreement with the findings of Mohan *et al.* (2009) who reported that the dolichos pod yield per plant ranged from 69 to 576.9 g, 430 to 1160 g in lablab bean (Nath *et al.*, 2019) [16], 450 to 790 g in dolichos bean (Das *et al.*, 2015) [7] 239 to 327 g in dolichos bean (Ravinaik *et al.*, 2015) [22] and 214.04 g in dolichos bean (Ananth and Kumar, 2018) [32].

### Green pod yield per hectare

The genotypes showed significant differences for this trait (Table 4 and 5). The Pod yield ranged from 2.50 to 13.32 and 1.43 to (12.35 t/ha for kharif and rabi season respectively. Among the genotypes AnkurGoldy showed the highest yield (13.32 and 12.35 t/ha.) followed by CO(Gb) 14 (11.88 and 11.54 t/ha.) and Dhoni (10.83 and 10.65 t/ha) while the lowest yield of 2.50 and 1.43 t/ha was recorded in Theni and Villupuram local, respectively. The results of present findings are differed from the finding of Muthuramu *et al.* (2015) who reported that, the maximum yield of green pods per hectare was recorded in Arka Anoop (18.5 t/ha) followed by Arka Suvidha (18.00 t/ha). Similar results were also reported by Zeliang *et al.* (2018) [32] in french bean genotypes at different locations. Nath *et al.* (2019) [16] reported that the pod yield of lablab bean was in the range of 2.87 to 7.73 t/ha. Ananth and Kumar (2018) [32] reported that the yield of dolichos bean was 11.71 t/ha.

**Table 1:** Details of lablab genotypes used in the study

S. No.	Genotypes	Source
1.	CO (Gb) 14	TNAU
2.	Ankur Goldy	Theni
3.	Dhoni	Dindigul
4.	Nandhini	Dindigul
5.	Navaratna	Theni
6.	Goldy	Vellore
7.	Cuddalore local	Pathirikuppam
8.	Dharmapuri local	Morapur
9.	Dindigul local	Dharmathupatti
10.	Krishnagiri local	Kaveripatnam
11.	Trichy local	Thayanur
12.	Kumbakonam local	Nannilam
13.	Villupuram local	Thiyagathurugam
14.	Salem local	Mettur
15.	Thiruvanamalai local	Sethpattu
16.	Tindivanam local	Villupuram
17.	Theni local	Theni
18.	Panruti local	Thiruvathigai
19.	Chidamparam local	Lalpuram
20.	Vadalore local	Cuddalore

**Table 2:** Growth parameters of dolichos bean genotypes during kharif season

Genotype	Plant height (cm)	No. of Primary branches per plant	Days to first flowering	Days to 50% flowering	Leaf area index @ 50% flowering	Total biomass @ 50% flowering (g)	No. of racemes per plant	Raceme length (cm)	No. of flowers per raceme	Total Biomass at last harvest (g)
CO (Gb) 14	91.44	7.33	38.20	49.53	48.50	3.38	6.33	35.29	26.40	7.90
Ankur Goldy	127.33	8.60	44.40	53.47	41.23	4.07	8.67	26.08	35.73	9.10
Dhoni	108.72	7.33	46.23	54.53	42.24	2.89	6.13	30.66	23.80	6.63
Nandhini	104.54	6.40	46.80	55.47	37.20	2.67	3.60	26.21	19.53	7.07
Navaratna	109.35	5.73	48.07	56.00	41.35	2.39	4.27	30.57	31.13	6.24
Goldy	103.05	4.67	43.87	52.73	44.61	1.70	5.07	28.84	25.40	5.73
Cuddalore local	85.11	3.53	39.80	47.40	45.66	2.61	6.20	28.31	22.13	6.51
Dharmapuri local	99.52	4.53	52.40	60.07	41.75	1.67	4.80	30.73	19.40	5.68
Dindigul local	132.92	5.80	49.87	57.73	41.37	1.76	5.67	29.42	21.73	5.41
Krishnagiri local	123.04	5.07	48.93	56.80	41.04	1.48	4.33	31.19	23.80	5.49
Trichy local	96.84	3.60	60.27	65.73	39.19	2.09	2.87	31.86	23.13	4.89
Kumbakonam local	97.10	6.93	50.87	60.13	38.85	2.54	7.07	34.43	22.27	5.67
Villupuram local	125.20	5.80	42.53	53.73	38.75	2.43	5.80	22.07	19.73	6.57
Salem local	141.67	5.67	44.87	53.27	38.14	2.24	6.20	26.41	17.40	4.72
Thiruvanamalai local	126.49	5.13	51.20	59.60	35.02	1.78	5.00	28.77	23.47	5.08
Tindivanam local	123.77	4.40	40.20	50.80	41.55	2.32	4.53	24.16	24.13	6.21
Theni local	120.84	5.80	46.27	56.00	34.86	3.03	5.40	26.08	28.53	8.21
Panruti local	142.15	4.93	50.00	59.00	42.24	1.95	6.13	28.09	21.87	6.96

Chidambaram local	138.45	5.47	44.33	54.20	44.31	1.94	5.93	25.66	20.47	5.89
Vadalore local	136.31	5.07	52.60	61.80	34.86	2.19	4.80	28.59	18.13	7.56
Grand mean	116.69	5.59	47.08	55.90	40.63	2.35	5.44	28.65	23.41	6.37
SE (d)	5.11	0.87	2.67	1.75	1.61	0.37	0.64	1.88	2.50	0.70
CD (0.05)	10.28	1.74	5.38	3.53	3.24	0.75	1.29	2.58	5.02	1.42

**Table 3:** Growth parameters of dolichos bean genotypes during rabi season

Genotype	Plant height (cm)	No. of Primary branches per plant	Days to first flowering	Days to 50% flowering	Leaf area index @ 50% flowering	Total biomass @ 50% flowering (g)	No. of racemes per plant	Raceme length (cm)	No. of flowers per raceme	Total Biomass at last harvest (g)
CO (Gb) 14	76.34	5.20	36.60	49.53	46.49	2.67	6.33	30.65	23.13	7.08
Ankur Goldy	103.70	4.00	41.87	53.47	36.98	2.97	8.67	22.84	31.67	8.02
Dhoni	105.73	5.33	43.53	54.53	42.62	3.43	6.13	27.10	21.13	6.38
Nandhini	100.72	3.27	44.33	55.47	34.43	1.65	3.60	23.10	17.20	7.12
Navaratna	102.63	4.13	45.20	56.00	42.23	1.99	4.27	26.75	27.20	6.93
Goldy	94.11	4.20	42.33	52.73	42.78	3.67	5.07	25.29	22.33	5.10
Cuddalore local	63.54	4.93	39.07	47.40	43.60	2.59	6.20	26.27	20.07	5.98
Dharmapuri local	83.11	3.87	47.00	60.07	38.75	1.25	4.80	27.97	14.73	5.52
Dindigul local	117.11	4.93	44.60	57.73	31.48	1.81	5.67	26.10	18.27	4.23
Krishnagiri local	102.44	4.27	46.80	56.80	39.87	1.13	4.33	28.45	20.40	4.79
Trichy local	76.14	3.00	47.67	65.73	35.46	1.28	2.87	29.73	20.40	5.46
Kumbakonam local	85.81	5.80	44.73	60.13	37.23	2.25	7.07	31.87	19.53	5.86
Villupuram local	116.94	4.73	42.07	53.73	28.94	1.91	5.80	19.78	18.00	4.85
Salem local	117.51	5.27	42.80	53.27	36.32	1.99	6.20	24.44	15.20	5.08
Thiruvanamalai local	104.21	4.27	49.13	59.60	29.04	1.78	5.00	25.13	20.73	4.85
Tindivanam local	120.01	4.07	38.80	50.80	39.05	2.49	4.53	22.63	21.07	5.96
Theni local	114.44	4.60	42.93	56.00	35.40	2.75	5.40	25.21	26.60	7.86
Panruti local	128.41	5.00	46.87	59.00	41.87	1.83	6.13	25.31	23.40	6.97
Chidambaram local	117.47	4.87	42.13	54.20	43.19	1.97	5.93	22.93	17.80	5.86
Vadalore local	111.00	6.47	44.07	61.80	31.34	1.71	4.80	24.35	16.53	7.47
Grand mean	102.06	4.61	43.62	55.90	37.85	2.15	5.44	25.79	20.70	6.06
SE (d)	8.23	0.67	2.23	1.75	1.99	0.46	0.64	2.58	2.78	0.78
CD (0.05)	16.55	1.35	4.48	3.53	4.00	0.93	1.29	5.20	5.59	1.57

**Table 4:** Yield attributes in dolichos bean genotypes during kharif season

Genotype	Days to 1 <sup>st</sup> harvest	Number of pods per plant	Pod length (cm)	Pod width (cm)	Pod weight (g)	No. of seeds per pod	Green pod yield per plant (g)	Green pod yield (t/ha.)
CO (Gb) 14	54.00	97.80	8.51	2.37	4.43	3.47	432.38	11.88
Ankur Goldy	59.07	146.20	9.11	1.87	3.31	3.80	484.93	13.32
Dhoni	59.13	110.33	7.21	1.76	3.57	3.93	394.27	10.83
Nandhini	62.80	104.00	12.97	2.67	3.19	4.53	331.99	9.11
Navaratna	63.73	102.73	10.66	2.74	3.29	3.80	338.58	9.30
Goldy	58.20	97.60	12.29	2.26	3.04	4.33	297.82	8.18
Cuddalore local	51.00	93.93	8.42	2.45	3.04	3.80	286.33	7.88
Dharmapuri local	53.33	89.80	8.79	2.59	3.07	3.67	277.08	7.58
Dindigul local	71.07	84.87	5.57	1.78	2.62	3.93	222.39	6.11
Krishnagiri local	61.07	88.13	6.03	1.64	2.89	3.33	254.60	6.99
Trichy local	60.13	86.87	11.56	1.79	2.76	4.07	238.32	6.54
Kumbakonam local	72.20	96.53	8.63	2.22	3.19	4.47	308.95	8.48
Villupuram local	64.67	60.80	5.29	1.44	1.57	3.80	95.97	2.63
Salem local	58.73	79.00	5.68	1.52	2.29	3.60	155.31	4.26
Thiruvanamalai local	61.33	80.67	6.00	1.77	2.26	3.87	182.58	5.01
Tindivanam local	55.47	67.13	4.56	1.36	1.53	4.47	103.15	2.83
Theni local	60.13	78.40	5.26	1.22	1.16	4.40	91.00	2.50
Panruti local	66.40	76.07	4.80	1.58	1.92	3.60	146.20	4.02
Chidambaram local	58.60	66.80	5.66	1.39	1.95	2.53	130.69	3.59
Vadalore local	71.00	76.00	5.18	1.41	1.61	3.00	122.61	3.36
Grand mean	61.10	89.18	7.60	1.89	2.63	3.82	244.75	6.72
SE (d)	3.60	6.16	0.93	0.31	0.54	0.33	9.01	1.42
CD (0.05)	7.23	12.38	1.88	0.63	1.08	0.68	18.12	2.04

**Table 5:** Yield attributes in dolichos bean genotypes during rabi season

Genotype	Days to 1 <sup>st</sup> harvest	No. of pods per plant	Pod length (cm)	Pod width (cm)	Pod weight (g)	No. of seeds per pod	Green pod yield per plant (g)	Green pod yield (t/ha.)
CO (Gb) 14	43.47	93.70	9.56	2.41	4.53	4.20	421.61	11.54
Ankur Goldy	52.27	138.22	8.42	1.84	3.24	3.53	449.74	12.35

Dhoni	55.40	138.22	6.74	1.78	3.72	3.47	387.67	10.65
Nandhini	52.07	96.47	11.95	2.64	3.24	3.40	312.97	9.46
Navaratna	55.80	101.00	8.65	2.80	3.25	3.20	329.05	8.80
Goldy	50.47	95.33	11.44	2.20	3.18	4.27	294.48	8.10
Cuddalore local	47.00	93.50	8.42	2.33	3.32	3.07	310.35	8.53
Dharmapuri local	56.20	87.13	8.82	2.28	3.08	4.27	269.75	7.41
Dindigul local	56.53	82.67	5.73	1.74	2.49	3.20	206.49	5.67
Krishnagiri local	59.27	86.67	6.24	1.53	3.00	4.60	248.99	6.82
Trichy local	54.10	85.69	6.15	1.63	2.60	3.53	223.66	6.14
Kumbakonam local	53.07	95.16	8.53	2.06	3.09	3.87	294.20	8.08
Villupuram local	55.40	17.57	4.48	1.31	3.01	3.60	52.24	1.43
Salem local	50.53	25.56	5.32	1.40	3.48	3.67	88.22	2.42
Thiruvanamalai local	60.13	27.02	5.43	1.72	3.41	3.53	91.60	2.51
Tindivanam local	51.73	22.37	4.57	1.22	3.26	4.07	72.40	1.98
Theni local	54.80	24.83	4.36	1.21	3.02	4.27	75.37	2.07
Panruti local	59.40	23.13	5.15	1.42	3.49	3.33	79.68	2.19
Chidambaram local	54.07	22.10	5.08	1.33	2.90	2.53	63.09	1.74
Vadalore local	59.47	24.03	5.15	1.44	3.16	2.27	75.29	2.04
Grand mean	54.05	69.01	7.01	1.81	3.22	3.59	217.34	5.99
SE (d)	2.88	12.74	0.62	0.37	0.32	0.26	18.94	2.04
CD (0.05)	5.79	25.62	1.26	0.74	0.64	0.52	38.08	4.11

Table 6: Mean performance of growth parameters attributes in lablab genotypes

Genotype	Plant height (cm)	No. of Primary branches per plant	Days to first flowering	Days to 50% flowering	Leaf area index @ 50% flowering	Total biomass @ 50% flowering (g)	No. of racemes per plant	Raceme length (cm)	No. of flowers per raceme	Total Biomass at last harvest (g)
CO (Gb) 14	83.89	6.26	37.40	46.20	47.49	3.02	5.73	32.96	24.76	7.49
Ankur Goldy	115.51	6.30	43.13	50.80	39.10	3.52	6.43	24.46	33.70	8.56
Dhoni	107.22	6.33	44.88	51.96	42.43	3.16	5.73	28.87	22.46	6.50
Nandhini	102.63	4.83	45.56	52.70	35.81	2.16	3.53	24.65	18.36	7.09
Navaratna	105.99	4.93	46.63	53.23	41.78	2.18	4.03	28.65	29.16	6.58
Goldy	98.57	4.43	43.10	50.46	43.69	2.68	4.80	27.06	23.86	5.41
Cuddalore local	74.32	4.23	39.43	46.43	44.62	2.59	5.80	27.29	21.10	6.24
Dharmapuri local	91.31	4.20	49.70	56.83	40.25	1.46	4.53	29.35	17.06	5.59
Dindigul local	125.01	5.36	47.23	54.26	36.42	1.78	5.16	27.76	20.00	4.82
Krishnagiri local	112.74	4.66	47.86	54.56	40.45	1.30	4.13	29.81	22.10	5.14
Trichy local	86.49	3.30	53.96	58.13	37.32	1.68	2.86	30.79	21.76	5.17
Kumbakonam local	91.45	6.36	47.80	54.40	38.04	2.39	6.46	33.15	20.90	5.76
Villupuram local	121.07	5.26	42.30	51.16	33.84	2.17	5.30	20.92	18.86	5.70
Salem local	129.59	5.46	43.83	50.96	37.22	2.11	5.66	25.42	16.30	4.90
Thiruvanamalai local	115.34	4.70	50.16	57.33	32.03	1.78	4.63	26.95	22.10	4.96
Tindivanam local	121.89	4.23	39.50	48.50	40.29	2.40	4.30	23.39	22.60	6.08
Theni local	117.64	5.20	44.60	53.03	35.13	2.88	4.73	25.64	27.56	8.03
Panruti local	135.28	4.96	48.43	56.17	42.05	1.88	4.96	26.70	22.63	6.96
Chidambaram local	127.96	5.16	43.23	51.23	43.75	1.95	5.66	24.29	19.13	5.87
Vadalore local	123.65	5.76	48.33	56.03	33.10	1.95	4.66	26.47	17.33	7.51
Grand mean	109.38	5.10	45.35	52.72	39.24	2.25	4.95	27.23	22.09	6.22
SE (d)	6.85	0.77	2.46	2.20	1.81	0.42	0.56	2.26	2.64	0.74
CD (0.05)	13.57	1.54	4.88	4.36	3.58	0.83	1.12	4.48	5.24	1.48

Table 7: Mean performance of yield attributes in lablab genotypes

Genotype	Days to 1 <sup>st</sup> harvest	No. of pods per plant	Pod length (cm)	Pod width (cm)	Pod weight (g)	No. of seeds per pod	Green pod yield per plant (g)	Green pod yield (t/ha.)
CO (Gb) 14	48.73	95.75	9.03	2.38	4.47	3.83	426.99	11.70
Ankur Goldy	55.66	142.21	8.76	1.85	3.27	3.66	467.33	12.83
Dhoni	57.26	124.27	6.97	1.76	3.64	3.70	390.96	10.74
Nandhini	57.43	100.23	12.45	2.65	3.21	3.96	322.48	9.28
Navaratna	59.76	101.86	9.65	2.77	3.27	3.50	333.81	9.04
Goldy	54.33	96.46	11.86	2.22	3.11	4.30	296.15	8.13
Cuddalore local	49.00	93.71	8.42	2.39	3.17	3.43	298.34	8.20
Dharmapuri local	54.76	88.46	8.80	2.43	3.07	3.96	273.41	7.49
Dindigul local	63.80	83.76	5.64	1.76	2.55	3.56	214.43	5.88
Krishnagiri local	60.16	87.40	6.13	1.58	2.94	3.96	251.79	6.90
Trichy local	57.11	86.27	8.85	1.70	2.68	3.80	230.99	6.34
Kumbakonam local	62.63	95.84	8.58	2.14	3.14	4.16	301.57	8.28
Villupuram local	60.03	39.18	4.88	1.37	2.29	3.70	74.10	2.03



Salem local	54.63	52.27	5.50	1.46	2.88	3.63	121.76	3.34
Thiruvanamalai local	60.73	53.84	5.71	1.74	2.83	3.70	137.08	3.76
Tindivanam local	53.60	44.75	4.56	1.29	2.39	4.26	87.77	2.40
Theni local	57.46	51.61	4.81	1.21	2.08	4.33	83.18	2.28
Panruti local	62.90	49.60	4.97	1.49	2.70	3.46	112.94	3.10
Chidambaram local	56.33	44.45	5.36	1.35	2.42	2.53	96.89	2.66
Vadalore local	65.23	50.01	5.16	1.42	2.38	2.63	98.95	2.70
Grand mean	57.58	79.10	7.30	1.85	2.92	3.70	231.05	6.35
SE (d)	3.26	10.01	0.79	0.34	0.44	0.30	14.83	1.76
CD (0.05)	6.45	19.82	1.58	0.68	0.88	0.59	29.37	3.49

## Conclusion

Among the genotypes used in this study is diverse nature and could be used for breeding programme for the development of new varieties. The genotypes Ankur Goldy, CO (Gb) 14 and Dhoni showed better performance especially in respect of pod yield. Therefore, these genotypes can be taken under consideration for commercial cultivation both in kharif and rabi seasons in Tamil Nadu. The study also revealed that yield of dolichos bean could be improved through direct selection for number of pods per plant, number of seeds per plant, pod weight, green of seed pod yield per plant and total green pod yield.

## References

- Ali F, Sikadar B, Roy AK, Joarder OI. Correlation and genetic variation of twenty different genotypes of Lablab bean (*Lablab purpureus* (L.) Sweet). Bangladesh J. Bot. 2005;34(2):125-128.
- Ananth RA, Kumar SR. Screening of dolichos bean (*Lablab purpureus* L. (sweet)) genotypes for growth and yield in coastal region of Tamilnadu. Plant Archives. 2018;18(2):1258-1262.
- Archana T, Gadewar DR. Variability and Correlation studies in cowpea (*Vigna unguiculata*). Int. J. Env. Rehab. Conser 2013;4(1):44-49.
- Basu AK, Samnath SK, Sasmala AC. Genetic analysis for some seed parameter in lablab bean. Veg. Sci 2002;29(1):17-19.
- Baswana KS, Pandita ML, Dhankhar BS, Partap PS. Genetic variability and heritability studies on Indian bean (*Dolichos lablab* var. *ligonsus* L.) Haryana J Hort. Sci. 1980;9(1, 2):52-55.
- Chattopadhyay A, Dutta S. Characterization and identification of selection indices of pole type dolichos bean. Vegetable Crops Research Bulletin 2010;73:33-45.
- Das I, Shende VD, Seth T, Yada Y, Chattopadhyay A. Genetic analysis and interrelationships among yield attributing traits in pole and bush type dolichos bean (*Lablab purpureus* L.). J. Crop Weed 2015;11(2):72-77.
- Goulden CH. Methods of statistical analysis. John Wiley and Sons, Inc., New York 1959.
- Idahosa DO, Alike JE, Omoregie AU. Genetic Variability, Heritability and expected genetic advance as indices for yield and yield components selection in Cowpea (*Vigna unguiculata* L. Walp). Academia Arena. 2010;2(5):22-26.
- Karnwal MK, Singh K. Studies on genetic variability, character association and path coefficient for seed yield and its contributing traits in soybean (*Glycine max* L. Merrill.). Legume Res 2009;32(1):70-73.
- Kumar U, Pramila, Prasad K, Tiwari RK, Ghosh S, Sinha BM *et al.* Estimation of Genetic Variability and Genetic Divergence in Dolichos Bean (*Lablab purpureus* L. Sweet) Genotypes. Legume Res 2021;44(8):916-920.
- Mallareddy S, Viswanath SR, Satuan BA, Wali MC. Genetic variability, heritability and genetic advance for yield and yield attributing characters in field bean (*Lablab purpureus* L. Sweet). Mysore J. Agric. Sci 1992;26(1):15-20.
- Miah MRU, Barman N, Alam MZ, Yesmin K, Ahmad M. Effectiveness of some IPM packages consisting of chemical and non chemical components for suppressing pod borer and aphid in summer country bean. J. Environ. Sci. & Natural Resource 2017;10(1):109-115.
- Minde JJ, Venkataramana PB, Matemu AO. Dolichos Lablab-an underutilized crop with future potentials for food and nutrition security: A review. Crit. Rev. Food Sci. Nutr 2021;61(13):2249-2261.
- Mohan N, Aghora TS, Devaraju. Evaluation of Dolichos (*Lablab purpureus* L.) germplasm for pod yield and pod related traits. J. Hort. Sci 2009;4(1):50-53.
- Nath DD, Islam MS, Akter T, Ferdousi J. Morphology and yield potentials of lablab bean genotypes grown in early kharif season. Asian J Agri. Hort. Res 2019;4(4):1-5.
- Nwofia GE, Ogbonna ND, Agbo CU. Path analysis and heritability estimates of yield and yield components in vegetable cowpea as influenced by planting season. American-Eurasian J Agric. & Environ. Sci. 2013;13(9):1283-1289.
- Pandey YR, Gautam DM, Thapa RB, Sharma MD, Paudyal KP. Variability of french bean in the western mid hills of Nepal. J. Nat. Sci 2011;45:780-792.
- Parmar AM, Singh AP, Dhillon NPS, Jamwal M. Genetic variability studies for morphological and yield traits in dolichos bean (*Lablab purpureus* L.). World J Agric. Sci 2013;9(1):24-28.
- Pramoda, Sajjan AS, Malabasari TA, Shashidhar TR. Seed and yield parameters as influenced by season and plant growth regulators in dolichos bean (*Lablab purpureus* L. (Sweet)). Legume Res 2020;43(6):856-860.
- Rathi RS, Dhaka RPS. Genetic variability, correlation and path analysis in pea (*Pisum sativum* L.). J. Pl. Genet. Resour 2007;20(2):126-129.
- Ravinaik K, Hanchinamani CN, Patil MG, Mmamsaheb SJ. Evaluation of dolichos genotypes (*Dolichos lablab* L.) under north eastern dry zone of Karnataka. The Asian J. Hort 2015;10(1):49-52.
- Sarma B, Sarma A, Handique GK, Handique AK. Evaluation of country bean (*Dolichos Lablab*) land races of North East India for nutritive values and characterization through seed protein profiling. Legume Res 2010;33(3):184-189.
- Savitha BN. Characterization of avare (*Lablab purpureus* L. Sweet) local collections for genetic variability. M. Sc. (Agri.) Thesis, UAS. Bangalore 2008.
- Shivashankar G, Kulkarni RS. Field bean (*Dolichos lablab* L. var *lignosus* Prain). Indian Hort 1989;34:24-27.



26. Shivashankar G, Kulkarni RS, Shashidhar HE, Mahishi DM. Improvement of field bean. *Advances in Hort* 1993;5:277-286.
27. Singh A, Abhilash PC. Varietal dataset of nutritionally important *Lablab purpureus* (L.) Sweet from Eastern Uttar Pradesh, India. *Data in Brief* 2019;24:103935.
28. Upadhyay D, Mehta N. Biometrical studies in dolichos bean (*Dolichos lablab* L.) for Chhattisgarh plains. *Res. J Agric. Sci* 2010;1(4):441-447.
29. Vaghela MD, Poshia VK, Savaliya JJ, Kavani RH, Davada BK. Genetic studies in kabuli chickpea (*Cicer arietinum* L.). *Legume Res* 2009;32(3):191-194.
30. Vijayanthi PV, Ramesh S, Chandrashekar A, Keerthi CM, Marappa N, Mahadevu P *et al.* Yield stability analysis of dolichos bean genotypes using AMMI model and GGL biplot. *Inter. J Agri. Sci* 2017;9(47):4800-4805.
31. Whankate RA, Garande VK, Shinde US, Dhumal SS, Sonawane PN, Sarvade SA *et al.* Growth and yield performance of French bean (*Phaseolus vulgaris* L.) germplasm under Sub-Montane Zone of Maharashtra. *Legume Res* 2021;44(2):138-144.
32. Zelaing PK, Kumar M, Kumar R, Meena KL, Rajkova DJ. Varietal evaluation of french bean for higher productivity & nutritional security under the foot hill ecosystem of Nagaland. *Indian J Hill Farm* 2018;31(2):206-213.