



ISSN (E): 2277-7695  
ISSN (P): 2349-8242  
NAAS Rating: 5.23  
TPI 2022; 11(8): 293-298  
© 2022 TPI  
[www.thepharmajournal.com](http://www.thepharmajournal.com)  
Received: 08-05-2022  
Accepted: 17-06-2022

#### Reetu Singh

M.Sc. Scholar, Department of Vegetable Science, College of Agriculture, Raipur, IGKV, Raipur, Chhattisgarh, India

#### Dhananjay Sharma

Senior Scientist, Department of Vegetable Science, College of Agriculture, Raipur, IGKV, Raipur, Chhattisgarh, India

#### Jitendra Trivedi

Senior Scientist, Department of Vegetable Science, College of Agriculture, Raipur, IGKV, Raipur, Chhattisgarh, India

#### Sunil Nair

Senior Scientist, Department of Genetics and Plant Breeding, College of Agriculture, Raipur, IGKV, Raipur, Chhattisgarh, India

#### Corresponding Author:

#### Reetu Singh

M.Sc. Scholar, Department of Vegetable Science, College of Agriculture, Raipur, IGKV, Raipur, Chhattisgarh, India

## Evaluation of Dolichos bean (*Lablab purpureus* L.) genotypes for pod yield and its trait

Reetu Singh, Dhananjay Sharma, Jitendra Trivedi and Sunil Nair

### Abstract

Twenty four genotypes of dolichos bean (*Dolichos lablab* L.) were evaluated for under All-India Coordinate Research Project on Vegetable Crops, Department of Vegetable Science, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.), during *rabi* season 2021-22. The range, mean, heritability in broad sense, genetic advance, genetic advance as percentage of mean, phenotypic and genotypic coefficient of variations, correlation and path coefficient were estimated. The studies on variability showed high genotypic as well as phenotypic coefficient of variations for traits *viz.*, pod width (32.10 and 32.71 percent), no. of primary branches per plant (25.10 and 29.09 percent), fresh pod yield per plot (20.95 and 26.28), fresh pod yield per plant (20.52 and 26.26), no. of pods per cluster (21.83 and 25.38 percent) and average weight of pod (21.94 and 23.76 percent). Higher heritability estimates coupled with high genetic advance as percentage of mean were observed for plant height, no. of primary branches per plant, days to first flowering, no. of flowers per inflorescence, days to 50% flowering, inflorescence length, pod length, pod width, no. of pods per cluster, average weight of pod, fresh pod yield per plant and fresh pod yield per plot. Fresh pod yield per plant (1.060) expressed a highest positive direct effect on fresh pod yield per plot followed by days to first flowering (0.249), days to first fruit harvest (0.244) and pod length (0.242).

**Keywords:** Dolichos bean, variability, heritability in broad sense, correlation, path analysis

### Introduction

Dolichos bean (*Lablab purpureus* L.) is a bushy semi-erect herbaceous vegetable crop and belongs to family Fabaceae with  $2n=22$  chromosomes (Goldblatt, 1981) <sup>[10]</sup>. In India, it is generally known as Sem, Wal, Avare, Avarai, etc. (Ayyangar and Nambiar, 1935; Shivashankar and Kulkarni, 1989) <sup>[2, 21]</sup>. It is mostly grown throughout the country and cultivated to a significant extent in Karnataka, Tamil Nadu, Andhra Pradesh, Maharashtra, Gujarat, Bihar, some part of Uttar Pradesh and West Bengal.

It is a multipurpose crop that is grown for vegetable, pulse and forage. Young green pods and tender beans are used as vegetables in India and dry seeds are used to make curry and dal. It is also recognized for producing fodder and it's used as green manure (Morris 2003) <sup>[16]</sup>.

Two natural types of dolichos bean are recognized based on the shape and surface of the pods, as well as the point of attachment of seeds to the suture of the pods (Ayyangar and Nambiar, 1935; Magoon *et al.*, 1974) <sup>[2, 15]</sup>. These are *Lablab purpureus* var. *typicus* and *Lablab purpureus* var. *lignosus*. *Lablab purpureus* var. *typicus* has flat, longer, and more tapered pods, with the long axis of the seeds parallel to the pod suture. It is mostly farmed for the soft, fleshy entire pods that can be eaten as a vegetable. It is trained on a pendal because of its twinning behavior. *Lablab purpureus* var. *lignosus* is a bushy annual. It has stiff, parchment-walled pods that are shorter and more sharply truncated, and the long axis of the seeds is perpendicular to the pod suture. Despite its great range of versatility and variation, it remains an underutilized crop. The consumer preferences also differ with pod size, shape, colour and aroma.

The evaluation of existing variety's potential is necessary because it is the genetic diversity of the initial parent material that aids in crop improvement. In terms of qualitative characters, as well as green pod yield and yield contributing characters, there is a lot of variation. Hence, to achieve the intended value in breeding programmes, genetic variability studies using appropriate biometrical methods become important for achieving the required value in terms of tangible results.

## Material and Methods

Twenty four genotypes of dolichos bean were grown in a randomized block design with three replications on the experimental field of the AICRP on Vegetable Crops under the Department of Vegetable Science at horticultural research cum instructional farm, Indira Gandhi Krishi Vishwavidyalaya, Raipur (C.G.), during *rabi* season 2021-22. Each genotype was planted with a spacing of 1.5 m between the rows and 0.75 m between the plants. For optimal crop growth, the recommended dose of fertilizers and other cultural measures were implemented. From each plot, five competitive plants were chosen at random and tagged to record observations on various characters.

Analysis of variance was carried out by using the method as per Panse and Sukhatme, (1978) [18]. The phenotypic and genotypic coefficient of variations was calculated using methodology given by Burton and Devane (1953) [6]. Estimates of the genotypic and phenotypic correlation were derived by using equations as per given by Lush (1940) [13]. According to Hanson *et al.* (1956) [11], heritability in the broad sense genetic advance as percentage of mean was calculated.

## Result and Discussion

The analysis of variance for pod yield and its traits showed that the mean sum of squares owing to 24 genotypes was found to be significant for all 13 traits at 1% and 5% level of significance and indicating that there was enough variability among genotypes for pod yield and its traits in dolichos bean were shown in Table 1. Similar result was also observed by Wahabuddin *et al.* (1986), Borah *et al.* (1992) and Bendale *et al.* (2008) [22, 5, 4].

The mean performance (Table 2) for number of primary branches per plant, days to first flowering, days to 50% flowering, inflorescence length and days to first fruit harvest was recorded maximum in 2019/DBPVAR-7. Maximum plant height was recorded in 2019/DBPVAR-4. Number of flowers per inflorescence and number of pods per plant was recorded highest in 2021/DOLPVAR-6. Maximum Pod length and pod width was recorded in 2020/DOLPVAR-2. Fresh pod yield (kg/plant or kg/plot) and average weight of pod were recorded highest for 2021/DOLPVAR- 8.

High genotypic as well as phenotypic coefficient of variations were recorded for traits *viz.*, pod width (32.10 and 32.71 percent), no. of primary branches per plant (25.10 and 29.09 percent), fresh pod yield per plot (20.95 and 26.28), fresh pod yield per plant (20.52 and 26.26), no. of pods per cluster (21.83 and 25.38 percent) and average weight of pod (21.94 and 23.76 percent) whereas moderate genotypic and phenotypic coefficient of variations were observed for no. of flowers per inflorescence (17.25 and 18.95), inflorescence length (16.25 and 19.17), pod length (13.68 and 14.67), days to 50% flowering (12.56 and 13.63), plant height (11.08 and 11.76) and days to first flowering (11.02 and 12.23). Low genotypic and phenotypic coefficient of variations was observed for days to first fruit harvest (8.30 and 10.00 percent). The genotypic and phenotypic coefficients of

variations are shown in Table 3.

For the most of the traits, the phenotypic coefficient of variance was higher than the corresponding genotypic coefficient of variation. This might be caused by environmental variables influencing the expression of these traits or by the genotypes and environment interacting to some degree. The results are general agreement with the findings of Sahu and Bahadur (2018) and Afsan and Roy (2020) [20, 1].

Higher heritability estimates coupled with high genetic advance as percentage of mean (Table 3) were observed for plant height, no. of primary branches per plant, days to first flowering, no. of flowers per inflorescence, days to 50% flowering, inflorescence length, pod length, pod width, no. of pods per cluster, average weight of pod, fresh pod yield per plant and fresh pod yield per plot. These characters indicated the role of additive genetic variance towards expression of available characters. Higher heritability coupled with moderate genetic advance as percentage of mean, was observed for days to first fruit harvest, which is mainly due to the role of non-additive genetic component in their expression.

These findings are in general agreement with the findings of Noorjahan *et al.* (2019) [17] who found the similar result days to 1st flowering, days to 50% flowering, length of inflorescence, no. of flowers per inflorescence, no. of pods per inflorescence, days to first pod harvest, pod length, pod width, and pod yield per plant, Chauhan and Kundu (2021) [8] for days to 50% flowering, plant height, pod length, pod width, Geetha and Divya (2021) [9] for days to 50% flowering, plant height. Correlation coefficient analysis revealed that pod width, pod length and fresh pod yield per plant exhibited the positive correlation with fresh pod yield per plot at both genotypic and phenotypic levels. Hence, direct selection for these variables may lead to the development of high green pod yielding in dolichos genotypes. These findings are in general agreement with the findings of Bahadur *et al.* (2013) [3] and Chandran *et al.* (2015) [7]. The genotypic (G) and phenotypic (P) correlation coefficients are shown in Table 4. In path analysis, fresh pod yield per plant showed high positive and direct effect with fresh pod yield per plot. Therefore, fresh pod yield per plant should be considered in selection criteria for increasing fresh pod yield per plot. The present study suggested that more emphasis should be given to selecting genotypes with more fresh pods yield per plant and days to first flowering.

Direct and indirect effect of different characters on fresh pod yield per plot is shown in Table 5 and 6.

The experimental findings on path analysis are in general agreement with the result reported by Kamble *et al.* (2015) [12] who reported positive direct effect for number of primary branches per plant & days to first flowering. Reddy *et al.* (2018) [19] who reported moderate positive direct effect for number of primary branches per plant, Magalingam *et al.* (2013) [14] who found negatively direct effect for plant height, green pod width and number of pods per cluster.

**Table 1:** Analysis of variance for pod yield and its traits in Dolichos bean

S. No.	Observations	Mean sum of square			
		Replication		Genotype	Error
		DF	02	23	46
1.	Plant height (cm)	75.80	27,271.77**	2,201.04	
2.	No of primary branches per plant	1.14	1.33.59**	27.39	
3.	Days to first flowering	10.57	3,352.47**	483.85	
4.	No of flowers per inflorescence	18.56	1,049.73**	135.63	
5.	Days to 50% flowering	147.09	5,787.94**	649.64	
6.	Inflorescence length (cm)	10.07	607.19**	140.49	
7.	Pod length (cm)	13.89	248.97**	23.78	
8.	Pod width (cm)	2.21	83.12**	2.10	
9.	Days to first fruit harvest	140.58	3,885.92**	1,018.99	
10.	No. of pods per cluster	1.49	104.98**	22.02	
11.	Average weight of pod (g)	0.02	75.94**	8.26	
12.	Fresh pod yield per plant (kg)	0.12	6.14**	2.15	
13.	Fresh pod yield per plot	0.24	14.31**	4.59	

\* Significant at 5% and \*\*Significant at 1%

**Table 2:** Mean Performance of pod yield and its traits in Dolichos bean

S. N.	Characters No.	1	2	3	4	5	6	7	8	9	10	11	12	13
	Genotypes	PH (cm)	NOP B/P	DTFst. Fl.	NOFL. /I	DT 50% Fl.	IL (cm)	PL (cm)	PW (cm)	DTFst. FH	NOP/ C	AWt. OP (g)	FPY/ P (kg)	FPY/ Plot (kg)
1	2019/DBPVAR-1	183.23	7.20	69.67	29.93	82.33	22.30	9.78	1.90	92.87	7.93	2.11	1.45	2.18
2	2019/DBPVAR-2	183.77	4.80	59.13	21.93	74.00	19.76	13.29	2.94	85.00	5.73	3.29	1.83	2.75
3	2019/DBPVAR-3	193.41	7.13	69.20	24.15	81.33	20.04	12.53	2.54	92.67	6.20	3.90	1.54	2.32
4	2019/DBPVAR-4	207.59	6.80	68.87	18.75	78.33	19.45	15.34	4.62	88.80	4.30	4.77	1.17	1.76
5	2019/DBPVAR-5	188.78	6.20	65.07	22.27	70.67	17.50	13.24	2.73	81.47	5.80	5.16	1.40	2.10
6	2019/DBPVAR-6	190.26	5.00	59.53	19.37	71.67	18.66	15.86	5.36	82.13	4.80	5.47	1.71	2.58
7	2019/DBPVAR-7	192.37	8.67	78.93	17.73	96.00	22.46	10.52	2.01	95.80	4.23	2.58	0.89	1.35
8	2019/DBPVAR-8	186.65	6.30	65.33	24.97	73.67	18.90	10.57	2.31	85.27	6.20	2.86	1.36	2.04
9	2020/DOLPVAR-1	189.89	5.25	61.47	19.65	72.33	18.24	11.63	2.43	85.20	3.87	4.56	0.85	1.28
10	2020/DOLPVAR-2	178.83	3.16	55.60	19.47	61.00	13.17	16.59	5.51	79.33	6.30	4.84	1.54	2.31
11	2020/DOLPVAR-3	202.59	4.20	56.07	21.35	62.33	13.84	13.27	2.74	79.40	5.03	4.65	1.20	1.80
12	2020/DOLPVAR-4	192.81	4.60	58.47	25.50	70.00	15.91	13.06	2.63	81.47	6.17	4.46	1.22	1.84
13	2020/DOLPVAR-5	183.87	4.95	59.20	23.67	62.67	14.20	14.43	3.78	87.33	5.37	4.52	1.24	1.88
14	2020/DOLPVAR-6	180.24	3.18	55.93	23.80	62.00	13.83	13.67	3.07	83.20	5.63	4.82	1.36	2.05
15	2020/DOLPVAR-7	181.65	4.75	59.00	21.68	70.33	16.08	11.80	2.52	82.27	4.37	4.35	1.05	1.59
16	2021/DOLPVAR-1	154.83	3.10	53.80	18.08	62.67	13.85	15.53	4.67	80.27	4.27	5.45	1.12	1.70
17	2021/DOLPVAR-2	143.74	4.35	56.33	21.20	68.00	14.73	15.01	4.24	81.40	5.03	5.06	1.24	1.86
18	2021/DOLPVAR-3	162.80	5.93	62.67	20.77	74.67	19.89	11.27	2.35	91.73	5.20	5.96	1.20	1.81
19	2021/DOLPVAR-4	154.37	5.20	60.53	22.87	70.33	16.60	13.70	3.10	82.33	5.80	5.06	1.07	1.62
20	2021/DOLPVAR-5	149.90	5.30	62.00	22.98	74.33	19.82	13.12	2.67	92.07	5.87	5.10	0.79	1.19
21	2021/DOLPVAR-6	177.26	4.40	56.87	32.80	69.67	15.75	14.90	3.95	82.33	8.57	4.95	1.44	2.17
22	2021/DOLPVAR-7	158.09	4.90	59.27	17.50	73.00	18.62	15.23	4.33	87.07	4.03	5.78	1.41	2.12
23	2021/DOLPVAR-8	140.64	6.67	67.00	18.95	72.00	17.31	15.83	4.88	86.53	4.10	6.29	2.01	3.10
24	2021/DOLPVAR-9	140.73	4.00	43.00	15.52	47.33	11.18	15.16	4.28	56.87	3.47	5.57	1.59	2.40
	Mean	175.76	5.25	60.96	21.87	70.86	17.17	13.55	3.40	84.28	5.34	4.65	1.32	1.99
	S.Em±	3.99	0.47	1.87	0.97	2.17	1.01	0.42	0.18	2.72	0.39	0.24	0.12	0.18
	CD (0.05)	11.41	1.27	5.35	2.78	6.19	2.88	1.19	0.51	7.76	1.14	0.69	0.35	0.52
	CV	3.94	14.69	5.32	7.72	5.30	10.80	5.30	9.07	5.58	12.95	9.12	16.29	15.87

PH (cm) - Plant height (cm), DT50%Fl - Days to 50% flowering, DTFst.Fr.H - Days to first fruit harvest, NOPr.B/Pl - No. of primary branches per plant, IL (cm) - Inflorescence length (cm), NOP/C - No. of pods per cluster, DTFst.Fl - Days to first flowering, PL (cm) - Pod length (cm), AWOP (g) - Average weight of pod (g), NOFL/I - No. of flowers per inflorescence, PW (cm) - Pod width (cm), FPY/Pl(kg) - Fresh pod yield per plant (kg), FPY/Plot (kg) - Fresh pod yield per plot (kg)

**Table 3:** Genetic parameters of variation for pod yield and its traits in Dolichos bean

S. N.	Parameters Characters	Mean	Range		Coefficient of variation (%)		h <sup>2</sup> (b) (%)	Genetic advance	Genetic advance as per cent of mean
			Minimum	Maximum	Genotypic	Phenotypic			
1.	Plant height (cm)	175.76	140.64	207.59	11.08	11.76	88.79	37.81	21.51
2.	No of primary branches per plant	5.25	3.10	8.67	25.10	29.09	74.48	2.34	44.62
3.	Days to first flowering	60.96	43.00	78.93	11.02	12.23	81.08	12.45	20.43
4.	No of flowers per inflorescence	21.87	15.52	32.80	17.25	18.95	82.84	7.07	32.34
5.	Days to 50% flowering	70.86	47.33	96.00	12.56	13.63	84.86	16.87	23.83
6.	Inflorescence length (cm)	17.17	11.18	22.46	16.25	19.17	71.81	4.87	28.36
7.	Pod length (cm)	13.55	9.78	16.59	13.68	14.67	86.92	3.56	26.26
8.	Pod width (cm)	3.40	1.90	5.51	32.10	32.71	96.29	2.21	64.89
9.	Days to first fruit harvest	84.28	56.87	95.80	8.30	10.00	68.84	11.96	14.18
10.	No. of pods per cluster	5.34	3.47	8.57	21.83	25.38	73.99	2.07	38.69
11.	Average weight of pod (g)	4.65	2.11	6.29	21.94	23.76	85.28	1.94	41.75
12.	Fresh pod yield per plant (kg)	1.32	0.79	2.01	20.52	26.26	61.07	0.44	33.04
13.	Fresh pod yield per plot	1.99	1.19	3.10	20.95	26.28	63.56	0.68	34.41

**Table 4:** Association analysis (genotypic and phenotypic) among pod yield and its traits in Dolichos bean genotypes

S. N.	Characters		PH (cm)	NOPB/P	DTFstFl	NOFI/I	DT 50% FL	IL (cm)	PL (cm)	PW (cm)	DTFstFH	OP/C	Wt. OP (g)	FPY/P (kg)
1	PH (cm)	G P	1.000 1.000											
2	NOPB/Pl.	G P	0.303** 0.226											
3	DTFstFl.	G P	0.466** 0.338**	0.988** 0.772**										
4	NOFI/I	G P	0.261* 0.238*	0.053 0.084	0.166 0.105									
5	DT 50% FL	G P	0.379** 0.237**	0.910** 0.729**	0.989** 0.844**	0.181 0.158								
6	IL (cm)	G P	0.307** 0.266*	0.952** 0.641**	0.943** 0.704**	0.163 0.160	1.011** 0.792**							
7	PL (cm)	G P	-0.354** -0.318**	-0.621** -0.451**	-0.562** -0.472**	-0.378** -0.296*	-0.590** -0.517**	-0.631** -0.533**						
8	PW (cm)	G P	-0.326** -0.312**	-0.488** -0.379**	-0.449** -0.386**	-0.409 -0.378**	-0.480** -0.436**	-0.506** -0.437**	0.968** 0.896**					
9	DTFstFH	G P	0.363** 0.235*	0.702** 0.535**	0.892** 0.775**	0.325** 0.217	0.921** 0.749**	0.950** 0.589**	-0.519** -0.385**	-0.444** -0.343**				
10	NOP/C	G P	0.227 0.214	0.028 0.022	0.166 0.073	0.940** 0.890**	0.175 0.130	0.151 0.177	-0.246* -0.192	-0.268* -0.238*	0.307** 0.175			
11	AWt.OP (g)	G P	-0.567** -0.485**	-0.499** -0.393**	-0.546** -0.432**	-0.436** -0.363**	-0.570** -0.478**	-0.525** -0.426**	0.735** 0.644**	0.631** 0.570**	-0.441** -0.289*	-0.431** -0.350**		
12	FPY/Pl. (kg)	G P	-0.118 -0.125	-0.080 -0.028	-0.154 -0.153	0.024 0.007	-0.219 -0.205	-0.092 -0.120	0.467** 0.326**	0.516** 0.370**	-0.310** -0.184	0.150 0.103	0.204 0.054	
13	FPY/Plot(kg)	G P	-0.131 -0.139	-0.069 -0.016	-0.146 -0.140	0.015 0.001	-0.212 -0.201	-0.087 -0.121	0.461** 0.334**	0.512** 0.377**	-0.304** -0.174	0.138 0.090	0.206 0.071	1.000** 0.998**

\* Significant at 5% and \*\*Significant at 1%, G=Genotypic; P=Phenotypic

PH (cm) - Plant height (cm), DT50%Fl - Days to 50% flowering, DTFst.Fr.H - Days to first fruit harvest, NOPr.B/Pl - No. of primary branches per plant, IL (cm) - Inflorescence length (cm), NOP/C - No. of pods per cluster, DTFst.Fl - Days to first flowering, PL (cm) - Pod length (cm), AWOP (g) - Average weight of pod (g), NOFI/I - No. of flowers per inflorescence, PW (cm) - Pod width (cm), FPY/Pl(kg) - Fresh pod yield per plant (kg), FPY/Plot (kg) - Fresh pod yield per plot (kg).

**Table 5:** Genotypic path coefficient for pod yield and its traits in Dolichos bean

Characters	PH (cm)	NOPr. B/Pl	DTFst. Fl	NOFI/I	DT50% Fl	IL (cm)	PL (cm)	PW (cm)	DTFst. Fr.H	NOP/C	AWOP (g)	FPY/Pl (kg)	r
PH (cm)	-0.092	0.009	0.111	0.016	-0.159	-0.017	-0.086	0.069	0.088	-0.036	0.090	-0.125	-0.131
NOPr.B/Pl	-0.028	0.029	0.246	0.003	-0.383	-0.051	-0.151	0.103	0.171	-0.005	0.079	-0.085	-0.069
DTFst.Fl	-0.041	0.029	0.249	0.010	-0.416	-0.051	-0.136	0.095	0.218	-0.026	0.086	-0.163	-0.146
NOFI/I	-0.024	0.002	0.041	0.061	-0.076	-0.009	-0.092	0.087	0.079	-0.149	0.069	0.025	0.015
DT50%Fl	-0.035	0.027	0.247	0.011	-0.420	-0.054	-0.143	0.102	0.225	-0.028	0.090	-0.232	-0.212
IL (cm)	-0.028	0.028	0.235	0.010	-0.425	-0.054	-0.153	0.107	0.232	-0.024	0.083	-0.098	-0.087
PL (cm)	0.032	-0.018	-0.140	-0.023	0.248	0.034	0.242	-0.205	-0.127	0.039	-0.116	0.495	0.461
PW (cm)	0.030	-0.014	-0.112	-0.025	0.202	0.027	0.235	-0.211	-0.108	0.042	-0.100	0.547	0.512
DTFst.Fr.H	-0.033	0.021	0.222	0.020	-0.387	-0.051	-0.126	0.094	0.244	-0.049	0.070	-0.329	-0.304



NOP/C	-0.021	0.001	0.041	0.058	-0.074	-0.008	-0.060	0.057	0.075	-0.159	0.068	0.159	0.138
AWOP (g)	0.052	-0.015	-0.136	-0.027	0.239	0.028	0.178	-0.133	-0.108	0.068	-0.158	0.216	0.206
FPY/Pl(kg)	0.011	-0.002	-0.038	0.001	0.092	0.005	0.113	-0.109	-0.076	-0.024	-0.032	1.060	1.000

Residual value: 0.0030

Diagonal and bold underline figures shows direct effect on pod yield

PH (cm) - Plant height (cm), DT50%Fl - Days to 50% flowering, DTFst.Fr.H - Days to first fruit harvest, NOPr.B/Pl - No. of primary branches per plant, IL (cm) - Inflorescence length (cm), NOP/C - No. of pods per cluster, DTFst.Fl - Days to first flowering, PL (cm) - Pod length (cm), AWOP (g) - Average weight of pod (g), NOFI/I - No. of flowers per inflorescence, PW (cm) - Pod width (cm), FPY/Pl(kg) - Fresh pod yield per plant (kg)

**Table 6:** Phenotypic path coefficient for pod yield and its traits in Dolichos bean

Characters	PH (cm)	NOPr. B/Pl	DTFst. Fl	NOFI/I	DT50% Fl	IL (cm)	PL (cm)	PW (cm)	DTFst. Fr.H	NOP/C	AWOP (g)	FPY/Pl (kg)	r
PH (cm)	-0.012	0.002	0.012	0.007	-0.003	-0.003	0.000	-0.002	-0.001	-0.006	-0.009	-0.125	-0.139
NOPr.B/Pl	-0.003	0.008	0.028	0.002	-0.006	-0.006	-0.001	-0.002	-0.001	-0.001	-0.007	-0.028	-0.016
DTFst.Fl	-0.004	0.006	0.036	0.003	-0.007	-0.007	-0.001	-0.002	-0.002	-0.002	-0.008	-0.153	-0.140
NOFI/I	-0.003	0.001	0.004	0.028	-0.001	-0.002	0.000	-0.002	-0.001	-0.023	-0.007	0.007	0.001
DT50%Fl	-0.004	0.005	0.030	0.004	-0.008	-0.008	-0.001	-0.002	-0.002	-0.003	-0.009	-0.205	-0.201
IL (cm)	-0.003	0.005	0.025	0.005	-0.006	-0.010	-0.001	-0.002	-0.001	-0.005	-0.008	-0.120	-0.121
PL (cm)	0.004	-0.003	-0.017	-0.008	0.004	0.005	0.001	0.004	0.001	0.005	0.012	0.326	0.334
PW (cm)	0.004	-0.003	-0.014	-0.011	0.003	0.004	0.001	0.005	0.001	0.006	0.011	0.369	0.377
DTFst.Fr.H	-0.003	0.004	0.028	0.006	-0.006	-0.006	0.000	-0.002	-0.002	-0.005	-0.005	-0.183	-0.174
NOP/C	-0.003	0.001	0.003	0.025	-0.002	-0.002	0.000	-0.001	0.001	-0.026	-0.008	0.103	0.090
AWOP (g)	0.006	-0.003	-0.016	-0.010	0.004	0.004	0.001	0.003	0.001	0.009	0.019	0.054	0.071
FPY/Pl(kg)	0.002	0.002	-0.006	-0.002	0.002	0.001	0.001	0.002	0.001	-0.003	0.001	0.999	0.998

Residual value: 0.0018

Diagonal and bold underline figures shows direct effect on pod yield

PH (cm) - Plant height (cm), DT50%Fl - Days to 50% flowering, DTFst.Fr.H - Days to first fruit harvest, NOPr.B/Pl - No. of primary branches per plant, IL (cm) - Inflorescence length (cm), NOP/C - No. of pods per cluster, DTFst.Fl - Days to first flowering, PL (cm) - Pod length (cm), AWOP (g) - Average weight of pod (g), NOFI/I - No. of flowers per inflorescence, PW (cm) - Pod width (cm), FPY/Pl(kg) - Fresh pod yield per plant (kg)

## Conclusion

It could be concluded that the mean performance for green pod yield per plant (kg), of 2021/DOLPVAR-8 was superior among all the genotypes. Analysis of genetic variability revealed that direct selection of plant height, no. of primary branches per plant, days to first flowering, no. of flowers per inflorescence, days to 50% flowering, inflorescence length, pod length, pod width, no. of pods per cluster, average weight of pod, fresh pod yield per plant and fresh pod yield per plot may be advantageous in developing desirable dolichos bean genotypes.

## References

- Afsan N, Roy AK. Genetic variability, heritability and genetic advance of some yield contributing characters in lablab bean (*Lablab purpureus* L. Sweet). J. Bio-Sci. 2019;28:13-20.
- Ayyangar GNR, Nambiar KKK. Studies in *Dolichos lablab* (Roxb) and (L.) the Indian field and garden bean. The First Proceedings of Indian Academy of Science. 1935;1(12):57-867.
- Bahadur V, Kumar P, Singh D. Studies on genetic variability, heritability and character association in Dolichos bean (*Lablab purpureus* L.). Hortflora Research Spectrum. 2013;2(3):208-214.
- Bendale VW, Ghangurde M J, Bhawe S G, Sawant S S. Correlation and path analysis in lablab bean (*Lablab purpureus* L. Sweet). Orissa J. Hort., 2008; 36(1): 49-52.
- Borah P, Shadeque A. Studies on genetic variability of common dolichos bean. Indian J. Hort. 1992;49(3):270-273.
- Burton GW, Devane EH. Estimating heritability in tall fescue (*Festuca arundinacea*) from replicated clonal material. Agron. J. 1953;45:478-481.
- Chandran KA, Patel AI, Patel H. Genetic variability, correlation and path analysis for yield and yield attributing traits. Trends in Biosciences. 2015;8(11):2883-2887.
- Chauhan S, Kundu S. Estimation of genetic variability, heritability and genetic advance for yield and yield attributing traits in dolichos bean (*Dolichos lablab* L.). International Journal of Environment, Agriculture and Biotechnology, 2021, 6(4).
- Geetha K, Divya S. Genetic studies on correlation and path analysis in dolichos bean (*Lablab purpureus* L.) genotypes. Madras Agricultural Journal. 2021;100(7-9):1-5.
- Goldblatt P. Cytology and the phylogeny of Leguminosae. In: Polhill, R.M., Raven, P.H. (Eds.), Advances in legume systematics, part 2. Richmond, U.K.: Royal Botanic Gardens, Kew. 1981, 427-463.
- Hanson WD, Robinson HF, Comstock RE. Biometrical studies of yield in segregating populations of Korean lespedeza, Agron. J. 1956;48:268-272.
- Kamble SS, Deomore JP, Sawardekar SV, Bhawe SG, Palshetkar MG. Correlation and path coefficient analysis for yield and yield components in segregating (F4) generation of lablab bean (*Lablab purpureus* L. sweet). International Journal of Applied Biology and Pharmaceutical Technology. 2015;6(3):237-240.
- Lush JL. Intra-sire correlation and regression of offspring on dam as a method of estimation heritability of characteristics, Proc. Amercian Science An. Prod. 1940, 301-392.
- Magalingam V, Yassin M, Kumar SR. Genetic variability and character association in dolichos bean. SAARC J. Agril. 2013;11(2):161-171.
- Magoon ML, Singh A, Mehra KL. Improved field bean

- for dry land forage. Ind Farm. 1974;24(2):5-7.
16. Morris JB. Bio-functional legumes with nutraceutical, pharmaceutical and industrial uses. Econ. Bot. 2003;57:254-261.
  17. Noorjahan AM, Deshmukh ID, Wankhade MP, Kalpande HV. Genetic variability, heritability and genetic advance studies in dolichos bean dolichos (*Lablab purpureus* L.). International Journal of Chemical Studies. 2019;7(3):479-482.
  18. Panse VG, Sukhatme PV. Statistical Methods for Agricultural Workers, IV-Ed Indian Council of Agricultural Research, New Delhi. 1978.
  19. Reddy KJ, Prabhakar BN, Saidaiah P, PandravadaSR. Correlation and path coefficient analysis in dolichos bean (*Dolichos lablab* L. var. *typicus prain*) genotypes. Journal of Pharmacognosy and Phytochemistry, 2018;7(2):1207-1212.
  20. Sahu S, Bahadur V. Genetic analysis of dolichos bean (*Lablab purpureus* L.) genotypes for horticultural traits. Journal of Pharmacognosy and Phytochemistry. 2018;7(4):3112- 3116.
  21. Shivashankar G, Kulkarni RS. Field bean (*Dolichos lablab* L. var. *Lignosus Prain*). Indian Horticulture. 1989;34:24-27.
  22. Wahabuddin MK, Bhalla JK. Heritability and genetic advance in certain mutants of field bean (*Dolichos lablab* var. *lignosus*). Biologia. 1986;32(2):283-287.