Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
www.phytojournal.com
JPP 2020; 9(6): 1027-1029
Received: 23-09-2020
Accepted: 29-10-2020

AR Thorat
Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India

KG Shinde
Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India

MN Bhalekar
Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India

SA Ranpise
Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India

Corresponding Author:
AR Thorat
Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra, India

Correlation studies in different genotypes of dolichos bean (*Lablab purpureus* L.)

AR Thorat, KG Shinde, MN Bhalekar and SA Ranpise

Abstract
The present investigation entitled "Correlation Studies in different genotypes of Dolichos bean (*Lablab purpureus* L.)" was carried out during 2017-18 for 9 different sowing dates at All India Coordinated Research Project on Vegetable Crops, Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra. The experiment was laid out in Randomized Block Design (R.B.D.) with ten pole type genotypes and three replication. The results of the present investigation clearly showed that pod setting percent, number of pods per vine, number of pods per inflorescence, vine length, pod length, length of inflorescence, number of grains per pod and pod width significantly positive association with green pod yield. Also days to first flowering, days to 50% flowering and days to first picking showed significantly negative association with green pod yield. The association between characters revealed in the present study shall be of great help to choose genotypes with desirable characters for hybridization, selection and further breeding program.

Keywords: Pole type genotypes, correlation, dolichos bean

Introduction
Dolichos bean (*Lablab purpureus* L.) is also known as Lablab bean, is one of the important indigenous legume vegetable grown in India for its tender green pods, mature fresh green seeds, and dry seeds. Dolichos bean is a rich source of protein, minerals, vitamins and fibre. India is one of the primary centers of origin and diversity of pole-type vegetable dolichos bean (*Lablab purpureus* var. *typicus*). In India, it is popularly grown in south, east and north east parts of the country. It is the major sources of protein in the South Indian diet. With cultivated area of 0.085 million hectares and production of 0.030 million tones, Karnataka only contributes about 90% of both area and production of Dolichos in India (Laxmi *et al.*, 2015) [6]. Lablab is referred to as an 'orphan legume crop'. Orphan crops are also referred to as'underutilized crops' because of their lack of global cultivation and utilization yet have high nutritional qualities, are heat and drought tolerant, and are accessible to less affluent farmers. In fact, it is considered as a multipurpose crop since it is used for food, forage, soil improvement, soil protection and weed control (Shi-vashankar & Kulkarni, 1989) [13].

The beans are naturally rich in carbohydrates, proteins, fat and fibers as well as minerals including calcium, phosphorus and iron (Naeem *et al*. 2009b) [8]. The composition of green pods of dolichus bean per 100 g of edible portion, 86.1g moisture, 3.8g protein, 0.7 g fat, 6.7g, carbohydrates, 68.0 mg phosphorous, 1.7 mg iron and 210.0 mg calcium. It also contain traces of Thiamine 0.1 mg, Niacin 0.7 mg, Ribo-flavin 0.06 mg. It is rich source of vitamin A (617.0 I.U.) (Bose *et al*, 2003) [1]. nutritional factors and other physical characteristics. Other studies have shown that lablab bean varieties and accessions may differ significantly in their physical and nutritional characteristics.

Apart from the nutrients, the lablab beans, as is the case with other legume grains, may also contain varying amounts of antinutritional factors such as tannins, phytic acid and trypsin inhibitors. These anti-nutrients reduce the absorption and bioavailability of nutrients in legume grains (Makokha *et al*., 2002; Shaahu *et al*, 2015) [7, 12].

A wide range of variability exists in pod shape, size and colour and other Agronomic characters in Dolichos Bean, which are the most important among attributes of a plant and its yielding ability. For rational approach to the improvement of yield, it is essential to have detailed information on the association among different yield components. Correlation of quantitative attributes would help in choosing component characters that are positively correlated, hence the investigation was conducted. (Falconer, 1960) [3].

Material and Methods

The investigation entitled "Correlation studies in different genotypes of Dolichos bean (*Lablab purpureus* L.)" was carried out during the year 2017-18 for 9 different sowing dates *viz*., 15th June, 15th July,15th August, 15th September, 15th October, 15th November, 15th December, 15thJanuary,15th February. The 10 pole type genotypes were evaluated in a Randomized Block Design (RBD) with three replications for each environment. Each genotype in a row length of 5.0 m with an inter row spacing of 1.5 m and interplant spacing 1.0 m. The treatment included 10 pole type genotypes DOLPVAR -1, DOLPVAR -2, DOLPVAR -4, DOLPVAR -5, DOLPVAR -6, DOLPVAR -7, RHR DBP-05, RHR DBP- 04, Swarna Utkrist and Phule Gauri.

All the agronomic practices and plant protection measures were followed as and when required as per recommendations to raise a good crop. The land used for experimental layout was fairly uniform with gentle slope. The soil of experimental site was medium black in color with good drainage. The land was brought to a fine til th by ploughing, clod crushing and two cross harrowings. Irrigations were given as per the requirement. 12morphologiccal characters were considered for data collection namely, days to first flowering, days to 50% flowering, days to first picking pod setting percent, number of pods per vine, number of pods per inflorescence, vine length, pod length, length of inflorescence, number of grains per pod and pod width significantly positive association with green pod yield. To understand the association among the characters, phenotypic correlation coefficient were worked out by adopting method described by Singh and Chaudhary (1977) [10].

Results and Discussion

Studies on association of independent characters with yield constitute the basic information in any crop improvement programme. Such studies calculate the effects of different yield components on yield and thereby rank the characters for applying selection pressure. Correlation analysis provides information on the dependence of yield on correlated characters. The phenotypic correlation coefficient helps in determining selection index which may be useful for overall crop improvement. Correlation coefficient between yield and its 12 component characters. pod setting per cent, number of pods per vine, number of pods per inflorescence, vine length (cm), pod length (cm), length of inflorescence, number of grains per pod and pod width.

Association between pod yield and its components

The characters pod setting per cent (0.93), number of pods per vine (0.73), number of pods per inflorescence (0.69), vine length (cm) (0.55), pod length (cm) (0.43), length of inflorescence (0.41), number of grains per pod (0.30) and pod width (cm) (0.23) showed significant positive association with green pod yield. Where the association of days to first flowering (-0.64), days to 50% flowering (-0.64) and days to first picking (-0.70) recorded significantly negative association with green pod yield per vine (Table 1).

Inter- relationships between pod yield components

Days to first flowering was significantly and positively correlated with days to 50% flowering and days to first picking, whereas, it showed positive and non significant correlation with length of inflorescence. Days to first flowering showed negative significant association between vine length, number of pods per inflorescence, number of pods per vine, pod setting %, pod length, pod width and average weight of 10 pods whereas, it showed negative and non significant correlation with number of grains per pod.

Days to 50% flowering was significantly and positively correlated with days to first picking, whereas, it showed positive and non significant correlation with length of inflorescence. Days to 50% flowering showed negative significant association between vine length, number of pods per inflorescence, number of pods per vine, pod setting per cent, pod length, pod width and average weight of 10 pods, whereas, it showed negative and non significant correlation with number of grains per pod.

Length of inflorescence was significantly and positively correlated with vine length, number of pods per inflorescence, number of grains per pod, number of pods per vine, pod setting per cent, pod length and average weight of 10 pods. Length of inflorescence showed negative non-significant association between days to first picking and pod width. Similar findings were reported by Uddin and Newaz (1997) [14] for inflorescence.

Vine length was significantly and positively correlated with number of pods per inflorescence, number of grains per pod, number of pods per vine, pod setting per cent, pod length, pod width and average weight of 10 pods, whereas, it showed negative and significant correlation with days to first picking.

Days to first picking was significantly and negative correlated with number of pods per inflorescence, number of pods per vine, pod setting per cent, pod length, pod width and average wt of 10 pods, whereas, it showed negative and non-significant correlation with number of grains per pod.

Number of pods per inflorescence was significantly and positively correlated with number of pods per vine, pod setting per cent, pod length, average weight of 10 pods and number of grains per pod, whereas, it showed negative and non-significant correlation with pod width.

Number of pods per vine was significantly and positively correlated with pod setting per cent, pod length, number of grains per pod whereas, it showed positive and non significant correlation with pod width. Number of pods per vine showed negative non-significant association between average wt of 10 pods.

Pod setting per cent was significantly and positively correlated with pod length, pod width, number of grains per pod and average weight of 10 pods.

Pod length was significantly and positively correlated with average wt of 10 pods and non- significant and positively correlated with pod width, whereas, it showed negative and non-significant correlation with number of grains per pod. Similar findings were reported by Singh *et al.* (1979) [11] and Kabir and Sen (1989) [5] for pod length.

Pod width was significantly and positively correlated with number of grains per pod and average weight of 10 pods.

Number of grains per pod was non-significantly and positively correlated with average weight of 10 pods. Similar results were reported by number of seeds per pod; Desai *et al.* (1996) [2]; Kabir and Sen (1989) [5] and Pandey *et al.* (1980) [9].

Present investigation the characters like pod setting per cent, number of pods per vine, number of pods per inflorescence, vine length(cm), pod length(cm), length of inflorescence, number of grains per pod and pod width showed significant positive association with pod yield per hectare indicating dependence of these characters on each other. Similar findings was reported by Joshi (1971) [4].

Correlation studies indicated that pod setting percent, number of pods per vine, number of pods per inflorescence, vine

length, pod length, length of inflorescence, number of grains per pod and pod width showed significant positive association with green pod yield. Whereas days to first flowering, days to 50% flowering and days to first picking showed significantly negative association with green pod yield per vine (kg).These characters can be used for further breeding program.

References

1. Bose TK, Kabir J, Maity TK, Parthasarathy VA, Som MG. Vegetable crops 2003;2:263-272.
2. Desai NC, Tikka SS, Chauvan RM. Genetic variability and Correlation studies in Indian bean (*Dolichos lablab var*. ligneous). New Botanist 1996;23(4):197-204.
3. Falconer DS. Introduction to Quantitative Genetics. Oilver and Boyd, Edinburgh and London 1960, pp365.
4. Joshi SN. Studies on genetic variability for yield and its components in Indian beans (*Dolichos lablab var. lignous*). Madras agric. J 1971, pp368-371.
5. Kabir J, Sen SK. Correlation and path-coefficient analysis in *lablab niger. medik. Dolichos uniforus* Lam. *Tropical agric* 1989;66(3):281-283.
6. Laxmi K, Vaijayanthi PV, Keerthi CM, Shivakumar MS, Ramesh S, Mohan Rao A. Genotype dependent photoperiod induced sensitivity to flowering time in Dolichos bean (*Lablab purpureus* L.) sweet var. Lignosus. Bangladesh J Botany 2015;45(3):471-476.
7. Makokha A, Oniang'o R, Njoroge S, Kamar OK. Effect of traditional fermentation and malting on phytic acid and mineral availability from sorghum (*Sorghum bicolor*) and finger millet (*Eleusine coracana*) grain varieties grown in Kenya. Food and Nutrition Bulletin. United Nations University, 2002, 23(3).
8. Naeem M, Khan MMA, Moinuddin Siddiqui MH. Triacontanol stimulates nitrogen fixation, enzyme activities, photosynthesis, crop productivity and quality of hyacinth bean (*Lablab purpureus* L.). Scientia Horticulturae 2009;121(4):389-396.
9. Pandey. Correlation and path-coefficient analysis in Dolichos lablab. Abstract Retrieved from 1980. www.lablablab.org.
10. Singh PK, Choudhary RD. Biometrical methods. In: Quantitative Genetic Analysis, Kalyani Publishers, New Delhi 1977, pp178-185.
11. Singh SP, Singh NP, Shrivastava JP. Genetic studies on yield components in lablab bean. Indian J agric. Sci 1979;49(8):570-582.
12. Shaahu DT, Kaankuka FG, Okpanachi. Proximate, Amino Acid, Anti-Nutritional Factor and Mineral Composition of Different Varieties of Raw Lablab Purpureus Seeds. International Journal of Scientific & Technology Research 2015,4(4). Retrieved from www.ijstr.org.
13. Shivashankar G, Kulkarni RS. Field bean (*Dolichos lablab* Linn. var. *lignosus* Prain). Indian Horti-culture 1989;34:24-27.
14. Uddin MS, Newaz MA. Genetic parameters and the association among flower and pod characteristics of Hyacinth bean (*Lablab purpureus* L.). Legume Res 1997;20(2):82-86.