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Statistical Analysis for Maturity Traits in Pigeonpea (*Cajanus cajan* L.)

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A B S T R A C T

Pigeonpea is an essential staple pulse crop in the Indian sub-continent. Being drought tolerant and hardy, it is favourable crop for resource poor farmers. Its long maturity duration is a constraint as it gets affected by many abiotic and biotic stresses during its crop duration. An idea about the flowering and maturity patterns in pigeonpea will be helpful to get better insights for the improvement of these traits in the crop. The present study presents statistical analysis of days to 50% flowering (DFF) and days to 75% maturity (DM) in pigeonpea genotypes. The mean DFF and DM are 121.45 and 170.78 days respectively. These traits and their pattern are important aspect of study in any pigeonpea improvement programme.

Introduction

Pigeonpea [*Cajanus cajan* (L.) Millsp.] or redgram (*Arhar*) is an important grain legume majorly grown in Asia, Africa and Latin American countries. It originated in the Indian sub-continent.

The crop, in addition to being an important source of protein, has multiple benefits. The crop improves soil fertility fixing considerable amounts of atmospheric nitrogen, releasing soil bound phosphate and the split pulse consumed provides highly nutritious food for human consumption (Gwata and Shimelis, 2013). Considerable amount of this legume crop is traded in international markets majorly in the Indian sub-continent and ultimately generating income for poor small holder farmers. The crop is relatively tolerant to drought and thus suitable for cultivation in the semi-arid agro-ecological areas.

The average grain yield obtained by farmers in pigeonpea is generally low due to crop's sensitivity to photoperiod, biotiv stresses like fusarium wilt, reaction to insect pests and abrupt abiotic conditions as a result of climate change. A major proportion of the smallholder farmers still grows traditional varieties in the crop. These varieties or landraces are characterized by low grain yield and late maturity. Long crop duration in

pigeonpea is a major reason for low productivity as it gives stress longer access to this pulse crop in field. Based on maturity duration, the improved cultivars can be classified as small duration (SD; 90 days) or medium-duration (MD; 150 days) or long-duration (LD; 240 days) types. Thus, days to 50% flowering (DFF) and days to 75% maturity (DM) become important criteria in order to study and enhance pigeonpea varieties.

Materials and Methods

The experimental material consisted of 80 recombinant inbred lines with parents ICPL 99010 and ICP 5529. The data was recorded for days to 50% flowering (DFF) and days to 75% maturity (DM) in these pigeonpea lines in the F_6 and F_7 generation. The summary statistics was worked out using Microsoft Office Excel using the Data analysis function using the mean data of two season.

Results and Discussion

In earlier pigeonpea studies it has been found that the pigeonpea maturity has direct correlation with yield (Singh *et al.*, 1995). As yield is the most important parameter in any crop improvement programme, it has to be given the prime focus. Moreover, shorter the DFF and DM, lesser the crop management practices will be required to furnish and harvest the crop.

Days to 50% flowering (DFF)

The data for Days to 50% flowering ranged from 114 to 129.5 days. The mean over lines for Days to 50% flowering was 121.45 with SE of 0.34. The standard deviation was 3.06 (Table 1).

Table.1 Descriptive statistics of DFF and DM traits in pigeonpea lines

PARAMETERS	DFF	DM
Mean	121.45	170.78
Standard Error	0.34	0.47
Median	122.00	171.00
Mode	122.00	168.00
Standard Deviation	3.06	4.27
Sample Variance	9.35	18.19
Kurtosis	0.59	0.18
Range	15.50	20.00
Minimum	114.00	159.00
Maximum	129.50	179.00
Sum	9837.50	13833.50
Confidence Level (95.0%)	0.68	0.94

Days to 75% maturity (DM)

The data for Days to 75% maturity (DM) ranged from 159 to 179 days. The mean over lines for Days to 75% maturity was 170.378 with SE of 0.47. The standard deviation was 4.27.

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