Original Research Article

Correlation Analysis for Agro-morphological Features in Upland Cotton under Rainfed Conditions

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A B S T R A C T

Correlation studies were conducted by using 10 parents, 45 hybrids and one commercial check of upland cotton (*Gossypium hirsutum* L.) suggested that significant positive association of seed cotton yield with lint yield, number of sympodia per plant, number of bolls per plant, number of monopodia per plant, reproductive point per plant, lint index, Ginning outturn, plant height, seed index and boll weight will play a major role in seed cotton yield improvement and these characters should be considered as significant selection criteria for yield improvement in cotton.

Introduction

Most of the characters are polygenic and complex in nature governed by interaction between numbers of elements. Knowledge of relationship between yield and its components traits is important in selection of high yielding genotypes. Appreciable, importance has been put on interrelationship between yield and its component in cotton (iqbal *et al.,* 2006). Previous studies of Tyagi *et al.,* (1998) outlined that number of bolls and boll weight directly contributed to boost seed cotton yield. Phenotypic correlation coefficient between boll number and seed cotton yield were positive and significant were found by Baloch *et al.,* (1992). There are several factors which influence the yield not only in cotton but also in other crops most prominently the environment where crop being grown and

Influence of morphological characters of plants. Therefore, establishment of relations among the different traits is important in formulating selection criteria.

Numerous yield contributing traits such as number of fruiting branches, number of bolls per plant, boll weight, seed index, etc. it desirable for breeder to have extent of relationship between yield and its various components in a particular environment which facilitate him in selecting plants of favorable characteristics combination (Alkuddsi *et al.,* 2013). Thus, the present study is undertaken to estimate the correlations between seed cotton yield and its component characters in early generation F1 hybrids.

Materials and Methods

45 F1 hirsutum cotton hybrids were generated by crossing 10 parental genotypes of diverse origin and consistency performance by mating in half diallel manner. Assessment of F1 hybrids were laid down in a randomized complete block design (RCBD) with two replications at ARS, siruguppa during 2012-13 by accompanying a spacing of 60 cm within and 90 cm between the rows with a length of 6 meters.

All recommended agronomic and plant protection measures were taken to raise the good crop. Observations were recorded on the middle five competitive plants from each treatment in every replication. Mean vales were used to calculated the correlation analysis in accordance with Deway and Lu (1959).

Results and Discussion

Simple correlation analysis is carried for all possible combination of character to obtain information about relationship and intensity exit among them. The estimated correlation coefficient for different Agro-morphological feature in F1hybrids, their parents and one commercial check Bunny were presented in Table 1.

Seed cotton yield was significant and positively correlated with ten traits namely lint yield (0.987), number of sympodia per plant (0.962), number of bolls (0.945), number of monopodia (0.641), number of reproductive point per plant (0.391), lint index (0.266), Ginning outturn (0.255), plant height (0.174), seed index (0.086) and boll weight (0.022). Thus, selection for these characters will assist breeder in selection of genotypes with high seed cotton yield per plant. Similar kinds of results were reported by Kaushik *et al.,* (2003).

Whereas lint yield was positively correlated with ginning outturn, lint index, and number of bolls per plant, plant height, number of sympodia per plant, number of monopodia per plant and number of reproductive parts per plant.

Ginning outturn had positive intercorrelations with the number of sympodia per plant, reproductive parts per plant and number of monopodia.

Boll weight was significantly correlated with seed index, lint index and number of monopodia per plant in the positive direction. Seed index was positively correlated with lint index, number of bolls per plant. While, lint index was positively correlated number of bolls per plant, number of sympodia per plant, number of monopodia per plant and reproductive parts per plant.

Number of bolls per plant had positive intercorrelations with number of sympodia, number of monopodia, reproductive parts per plant and plant height besides, plant height had intercorrelations with number of sympodia, number of monopodia, reproductive parts, number of sympodia had positive intercorrelations with number of monopodia and reproductive parts however monopodia with reproductive parts.

Table.1 Correlation coefficients between different agro-morphological feature in upland cotton

	SCY	LY	GOT %	B WT	SI	LI	NOB/PLT	PLT HT	SYMP/PLT	MONO/PLT	REP PTS
SCY	1										
LY	0.987**	1.000									
GOT %	0.255**	0.399**	1.000								
B WT	0.022*	-0.019	-0.220**	1.000							
SI	0.086*	0.023	-0.307**	0.586**	1.000						
LI	0.266**	0.326**	0.522**	0.340**	0.648**	1.000					
NOB/PLT	0.945**	0.934**	0.259**	0.071	0.060*	0.242**	1.000				
PLT HT	0.174*	0.149*	-0.065	-0.009	0.049	-0.010	0.140*	1.000			
SYMP/PLT	0.962**	0.946**	0.226**	0.020	0.045	0.205**	0.929**	0.186*	1.000		
MONO/PLT	0.641**	0.622**	0.104*	0.108*	0.058	0.120*	0.639**	0.148*	0.634**	1.000	
REP PTS	0.391**	0.433**	0.345**	-0.128*	-0.116*	0.146*	0.389**	0.111*	0.367**	0.283**	1

* Significant at 5% level, ** Significant at 1% level

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