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Correlation Coefficeints Study Between Seed Yield and Yield Contributing Characters and Seed Quality Characters in Guar (*Cymopsis Tetragonaloba* (L) Taub) Under North Coastal Zone of Andhra Pradesh

Key words : Correlation coefficeints, Yield.

Guar (*Cymopsis tetragonaloba* (L) Taub) is a drought tolerant annual crop having high export value for its edible guar gum powder obtained from seeds. The crop is having wider adaptability but having low productivity in the non-traditional area. The seed yield of the crop is dependent on many yield attributing parameters and for gum powder recovery on seed quality parameters. In present study, the different varieties evaluated under local agro-climatic condition on the performance of the crop, a correlation study was taken up for yield and yield attributing characters and seed and seed quality characters of guar at Regional Agricultural Research Station of North Coastal Zone of Andhra Pradesh.

A field experiment was carried out during rabi season in the years 2007-2008 in the Regional Agricultural Research Station, Anakapalli, Visakhapatnam district of Andhra Pradesh. The crop was sown in the second fort night of September during both the years of study. The genotypes are RGM-111, RGC-936, G-32, GG-1, G-36, G-37, GAUG-9005, GAUG-9003, HG-56-3, RGC-1002, RGC-986, RGM-112, G-16, G-42, RGC-1025, G-39, G-28, G-3, G-4 and G-5 were evaluated in the experiment, with two replications in a Randomized Block Design. The simple correlation coefficients are calculated by using the means of the characters viz., plant height, number of branches/plant, days to 50% flowering, number of days taken to maturity, number of pods/plant and number of seeds/pod were calculated by using the formulae given by Panse and Sukhatme (1967).

Correlation studies were undertaken between seed yield (dependent variable) and 6 independent variables viz.,plant height, number of branches/plant, days to 50% flowering, number of days taken to maturity, number of pods/plant and number of seeds/plant and the results were presented and discussed hereunder (Table).

The correlation coefficients studies revealed that the seed yield have significant positive correlation with plant height (0.9301), number of seeds/pod (0.8383), number of pods/plant (0.7609), number of branches/plant (0.4677) and non-significant positive correlation with days to 50% flowering and negative correlation with number of days taken for maturity (0.3882). The character plant height showed the significant positive correlation with number of branches/plant (0.4869), number of pods/plant (0.7431), number of seeds/plant (0.7615) and negative association with number of days taken for maturity (0.5024). The number of branches/plant showed non-significant positive correlation with number of seeds/plant (0.3333), number of pods/plant (0.3979), days to 50% flowering (0.2086) and negative association with number of days taken for maturity (0.1928). The character days to 50% flowering showed non-significant positive correlation with number of seeds/plant (0.1257), number of pods/plant (0.4241) and negative correlation with number of days taken for maturity (0.2998).The character number of days taken for maturity showed a non-significant negative correlation with number of seeds/plant (0.3504) and number of days taken for maturity (0.2235).

The character number of pods/plant showed non-significant positive correlation with number of seeds/pod. The character number of seeds per pod recorded highest significant positive correlation (0.8383) with seed yield. The correlation coefficient studies revealed that the seed yield was having highly significant positive association with plant height, number of branches/plant, number of pods/plant and number of seeds/pod. It explains that the vegetative growth characters particularly plant height and number of branches/plant produce more number of pods/plant which ultimately resulted in the higher yields in the present study. The similar results were also reported by Sanghi *et al* (1964) and Stafford RE and Seiler GJ (1986).

Table. Correlation coefficients of seed yield and yield attributing characters of Guar *(Cymopsis tetragonaloba* L.).

Parameter	Plant height (cm)	No. of branches/ plant	Days to 50 % flowering	No.of daystaken formaturity	No.of pods/ plant	No.of seeds/ pod	Seed yield (kg/ha)
Plant height (cm)	1.0000						
No.of Branches/plant	0.4869*	1.0000					
Days to 50% Flowering	0.2881	0.2086	1.0000				
No. of days taken forMaturity	-0.5024*	-0.1928	-0.2998	1.0000			
No. of pods/plant	0.7431*	0.3979	0.4241	-0.2235	1.0000		
No. of seeds/pod	0.7615*	0.3333	0.1257	-0.3504	0.6587	1.0000	
Seed yield (kg/ha)	0.9301*	0.4677*	0.1918	-0.3882	0.7609*	0.8383*	1.0000

Parameter	Weight of Gum powder (g)	Seed yield (kg/ha)	Weight of endosperm (g)	Weight of non-endosperm (g)	Recovery percentage ofendosperm (%)	Weight ofgum atsemi solidstate(g)
Seed yield (kg/ha)	1.0000					
Weight of Endosperm (g)	0.3971	1.0000				
Weight of non-endosperm (g)	0.6981*	0.0794	1.0000			
Recovery Percentage of Endosperm (%)	-0.4513	0.1682	-0.5103*	1.0000		
Weight of Gum atSemi solid State (g)	0.7002*	0.1438	0.9491	-0.6345	1.0000	
Weight of Gum powder (g)	0.7394*	-0.2395	06526	-0.5201	0.5914*	1.0000

Seed Quality Parameters:

The correlation studies were undertaken between weight of the gum powder (dependent variable) and 5 independent variable viz., weight of endosperm, weight of non-endosperm, weight of gum at semi solid state, recovery percentage of endosperm and seed yield. The correlation coefficients presented in the table showed significant positive correlation of weight of the gum powder with weight of the endosperm (0.6981), recovery percentage of endosperm (0.7002), weight of the gum at semi solid state (0.7394) and non-significant positive correlation with seed yield (0.3971) and negative association with non-endosperm.

The weight of gum at semi solid state showed significant positive correlation with weight of endosperm (0.6526), recovery percentage of endosperm (0.5914) and negative association with weight of non-endosperm (0.5201).The character recovery percentage of endosperm showed significant positive correlation with weight of endosperm (0.9491) and non-significant association with weight of non-endosperm and seed yield. The weight of gum powder is strongly associated with weight of the endosperm and recovery percentage of endosperm and weight of gum at semisolid state and negative association with weight of non-endosperm reveals that the genotype having maximum weight of endosperm is to be selected for highest recovery of gum powder for its cultivation. The similar results also reported by Fabio Gresta *et al* (2013).

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