RESEARCH PAPER

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Genetic variability and heritability studies in local collections of sponge gourd [*Luffa cylindrica* (Linn.) M. Roem.]

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Genetic variability and heritability for different characters were studied in *luffa cylindrica* with 30 genotypes. High magnitude of genotypic and phenotypic variance were observed for all the characters *viz.,* days to appear first male flower, days to appear first female flower, node umber at which first female flower appear, number of fruit per plant, fruit weight, fruit length, fruit diameter, number of seeds per fruit, 100- seed weight, and marketable fruit yield per plant. High estimates of heritability along with high genetic advance were recorded for marketable fruit yield per plant, fruit length and number of fruit per plant which indicated the effectiveness of additive gene action. Thus these traits could be used effectively in developing high yielding varieties of sponge gourd.

Key words : Variability, Heritability, Sponge gourd, Genetic advance

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INTRODUCTION

The efficiency of selection mainly depends upon the extent of genetic variability present in a population. The estimates of genetic and phenotypic coefficient of variation, heritability and its components are useful in designing an effective breeding progammes. The present study was, therefore, conducted to find out the extent of variability, heritability and genetic advance for different yield contributing components of sponge gourd.

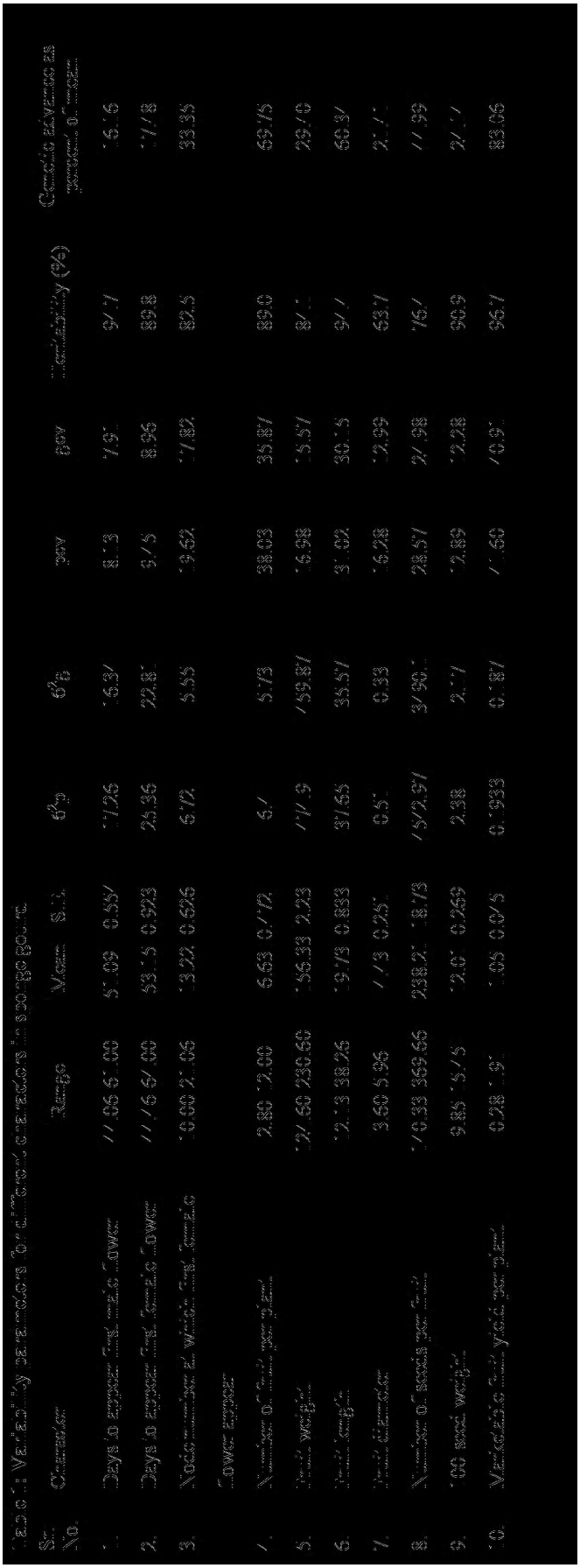
RESEARCH METHODOLOGY

The material consisted of 30 genotypes and was grown in Randomized Block Design in three replications each entry was grown in two rows of five plants spaced at 1.5 m x 1.5 m at Vegetable Research Station, Jagudan, during *Kharif* 2007-08. The observations for different characters were recorded on five randomly selected plants in each replication. The analysis of variance of the design was done by using mean values of the characters. Genetic estimates were calculated as per procedure suggested by Johnson *et al*. (1955) and Burton (1952).

RESULTS AND ANALYSIS

Estimates of different genetic parameters are presented in Table 1. The analysis of variance for the characters revealed that the mean sum of squares were highly significant which indicated the presence of high genetic variability. Estimates of genotypic and phenotypic variance revealed that number of seeds per fruit exhibited the highest phenotypic (4542.97) and genotypic variance (3490.1) followed by fruit weight, fruit length and days to appear first female flower.

The genotypic and phenotypic coefficient of variations were of the same magnitude indicated the absence of environmental interaction on the characters. The difference between gcv and pcv were observed to be comparatively low for all characters which suggested all these characters had less influence by environment, thus confirming the results of Abusaleha and Dutta (1990). The high genetic coefficient of variability was exhibited in traits, marketable fruit yield per plant (40.91), number of fruit per plant (35.87) and fruit length (30.15) indicates the ample scope for the improvement of these characters by the selection programme. The estimation of gcv alone does not assess the amount of heritable variation which can be studied by estimating heritability. Heritability estimates were high for marketable fruit yield per plant, days to appear first male flower, fruit length, 100- seed weight and number of fruit per plant. According to Burton (1952) a character having high gcv value with high



Sr. No.	Character	Range	Mean	S.E.	σ^2_p	σ^2_e	pcv	gcv	Heritability (%)	Genetic advance as percent of mean
1.	Days to appear first male flower	41.00-61.00	51.09	0.557	7.125	16.31	8.13	4.91	30.41	6.16
2.	Days to appear first female flower	41.67-67.00	53.15	0.923	25.35	22.85	9.45	8.96	89.88	17.18
3.	Node number at which first female flower appear	10.00-21.06	13.22	0.626	6.12	5.55	19.62	17.82	82.5	33.35
4.	Number of fruit per plant	2.80-12.00	6.63	0.172	6.1	5.13	38.03	35.81	89.0	69.15
5.	Fruit weight	121.60-230.60	156.33	2.23	171.9	159.81	16.98	15.57	87.1	29.10
6.	Fruit length	12.13-38.26	19.73	0.833	31.65	35.51	31.02	30.15	91.1	60.31
7.	Fruit diameter	3.60-5.96	4.73	0.251	0.51	0.33	16.28	12.99	63.1	21.11
8.	Number of seeds per fruit	210.33-369.66	238.21	18.13	1502.91	3190.1	28.51	21.98	76.1	11.99
9.	100 seed weight	9.85-15.15	12.05	0.269	2.38	2.11	12.89	12.28	90.9	21.11
10.	Marketable fruit yield per plant	0.28-1.91	1.05	0.045	0.1933	0.181	41.60	40.91	96.1	83.06

heritability would be more valuable in the selection programme. High heritability value couple with high to magnitude value were observed for marketable fruit yield per plant, number of fruit per plant, fruit length and number of seeds per fruit there by indicating less environmental influence on these characters.

Johnson *et al*. (1955) suggested that heritability estimates in conjunction with genetic advance were reliable in predicting the resultant effect for selecting the best individual. The expected genetic advance expressed in percentage of mean was high for characters such as marketable fruit yield per plant, number of fruit per plant, fruit length and number of seeds per fruit while, days to appear first male flower, days to appear first female flower and fruit diameter had low expected genetic advance expressed in percentage of mean. Based on these findings it was suggested that more emphasis should be given to marketable fruit yield per plant, fruit length and number of fruit per plant in selection programme aiming to improve fruit yield in sponge gourd.

LITERATURE CITED

Abusaleha and Dutta, O.P. (1990). Genetic variability and heritability in sponge gourd. *J. Maharastra Agric. Uni.,* **15**(3) : 335-336.

Burton, G.W. (1952). Quantitative inheritance in grasses. *Proc. 6th Int. Grassid. Cong*., **1** : 277-283.

Johnson, H.K., Robinson, H.F. and Comstock, R.E. (1955). Estimates of genetic and environmental variability in soyabean. *Agron. J.*, **47** : 314-318.

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