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Research Article

## HERITABILITY, CORRELATION AND PATH COEFFICIENT ANALYSIS IN FIFTY SEVEN OKRA GENOTYPES

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### Abstract

A study was undertaken to analyse the heritability, correlation and path co-efficient for growth and fruit characteristics in fifty seven okra (*Abelmoschus esculentus* Lam) genotypes grown at Plant Genetic Resources Centre, Regional Agricultural Research Station, Bangladesh Agricultural Research Institute during kharif season of 2013. The highest range of variation was recorded in average fruit weight (18.25-25.41g), followed by yield per plant (98.90 – 1650.00g). The highest GCV (46.70 %) and PCV (47.72 %) were recorded for fruit yield per plant while both were lowest for days to maturity (8.07 % and 8.25 %). High heritability coupled with high or moderate degree of genetic advance was estimated in plant height (99.82 % and 205.06), number of fruits per plant (99.53% and 203.63%), number of leaves per plant (99.57% and 204.49%), number of seeds per fruit (99.73% and 205.44%), leaf length (98.22% and 198.52%), leaf diameter (98.91% and 203.76%), 100-seed weight (98.12% and 202.13%) and yield per plant (95.76 % and 197.26%). The highest positive correlation were observed between number of fruits per plant and yield per plant ( $r = 0.99^{**}$ ) and between number of fruits per plant and 100-seed weight ( $r = 0.44^{**}$ ). Also results showed that significantly positive correlation were between 100-seed weight and yield per plant ( $r = 0.44^{**}$ ), 100-seed weight and leaf length ( $r = 0.42^{**}$ ), 100-seed weight and leaf diameter ( $0.38^{**}$ ), number of leaves per plant and 100-seed weight ( $r = 0.28^*$ ), 100-seed weight and plant height ( $r = 0.40^{**}$ ), 100-seed weight and fruit length ( $r = 0.28^*$ ). Significantly positive correlations were also observed for plant height and number of fruits per plant, number of leaves per plant and yield per plant. The path coefficient analysis was done to determine direct and indirect effects of traits on fruit yield. Direct significant positive and negative effect of number of fruits per plant (-0.091), 100-seed weight (0.174), number of seeds per plant (-0.213), average fruit yield (-0.310) towards yield.

**Key words:** *Abelmoschus esculentus* Lam; correlation; heritability; path coefficient analysis

### Introduction

Okra (*Abelmoschus esculentus* L. Moench) belongs to the family *Malvaceae* of the plant kingdom. It has high nutritive value and export potential. It is an annual herbaceous vegetable crop that is grown for its tender fruits often consumed as vegetable (Chattopadhyay *et al.*, 2011) and other meal. It is considered an important vegetable throughout the tropical and sub-tropical regions of Africa and Asia, (Bisht and Rana, 1995a) with an estimated annual production figure of six million tons (Siemonsma and Koume, 2004). A 100g edible portion of okra fruit contains 90g water, 2g protein, 1g fiber, 7g carbohydrates and has an energy value of 145 kJ/100g. Okra contributes to source of vitamins, minerals and calcium (70-90 mg/100g) in the diet. It is considered as one of the important vegetable that is grown and consumed in all parts of Bangladesh. Okra is reported to have good alkaline pH which contributes to its

relieving effect in gastrointestinal ulcer by neutralizing digestive acid (Wamanda, 2007). Mucilage from Okra have

been reported to be effective as blood volume expander and has the potential to alleviate renal disease, reduce proteinuria and improve renal function (Siemonsma and Koume, 2004). Crop improvement through successful selection programme is only achieved using valid information about the correlation and genetic variability of traits of interest knowing full well that improvement in any crop is dependent on the amount of genetic variability in the population. (Duzyaman and Vural, 2002) reported that, phenotypically varied genotypes most probably of diverse source are often regarded as more effective in obtaining capable crosses. Therefore the aim of this study is to evaluate the nature of genetic variability, heritability and characteristics association of some quantitative traits in a cultivated variety of okra for possible improvement in

quality of yield and yield components so as to enhance productivity and subsequently improve income generation to the local producers.

## Materials and methods

### Materials

Fifty seven genotypes of okra (*Abelmoschus esculentus*) grown at Regional Plant Genetic Resources Centre under Regional Agricultural Research Station, BARI was selected for conducting this study. The experiment was premeditated in Randomized Complete Block Design (RCBD) with three replications.

### Methods

Data on twelve quantitative characteristics of 57 okra genotypes were used for variability estimation, correlation and path coefficient analysis. The selected characteristics were days to flowering (DF), days to maturity (DM), plant height (PH), number of fruits per plant (NFP), number of leaves per plant (NLP), leaf length(LL), leaf diameter (LD), branch per plant (BP), fruit length (FL), average fruit weight (AFW), number of seeds per fruit (NSF), 100-seed weight (HSW) and yield per plant (YP).

### Statistical Analysis

The analysis of variance for each characteristics was performed using Microsoft Excel, MSTAT software and correlation and path co-efficient analysis was performed using R-STAT (Agricole) software.

### Estimation of Variation and its Heritable Components in Genetic Parameters: Phenotypic and Genotypic Variance

The phenotypic and genotypic variances were estimated according to (Johnson *et al.*, 1955). The error mean square (EMS) was considered as error variance ( $2e$ ). Genotypic variances ( $2g$ ) were calculated by  $GMS-EMS/r$ , where,  $GMS$ = Genotypic mean square,  $EMS$ = Error mean square  $r$ =replication. The phenotypic variances ( $2p$ ) were derived by adding genotypic variances with the error variances ( $2e$ ) as given by the following formula:  $2p = 2g + 2e$ .

The genotypic and phenotypic components of variance were computed according to formulae given by (Lush, 1940) and (Choudhary and Prasad, 1968) for the observed characteristics.

$$\text{Genotypic variance (Vg)} = \frac{\text{Tr. M. S. S.} - \text{E. M. S. S}}{r}$$

$$\text{Error variance (Ve)} = \text{E.M.S.S.}$$

$$\text{Phenotypic variance (VP)} = \text{Vg} + \text{Ve}$$

$$\text{Number of replications} = r$$

### Genotypic and Phenotypic Co-efficient of Variation (GCV and PCV)

Genotypic and phenotypic co-efficient of variations were computed by the formula suggested by (Burton and Devane, 1953) as given below:

Where,  $g$  = Phenotypic standard deviation,  $\sigma$  = population mean.

### Heritability

Heritability in broad sense was estimated according to (Johnson *et al.*, 1955).

### Genetic Advance

The expected genetic advance for different characters was estimated as per the formula given by (Johnson *et al.*, 1955).

Where,

$K$  = Selection differential, the value of which is 2.06 at 5% selection intensity,

$p$  = Phenotypic standard deviation.

### Character Association by Correlation Study and Path Analysis

Correlation and path-coefficient analysis were estimated by the association of characteristics and cause effect relationship studied for yield and component characteristics.

### Estimation of Correlation

Association of different characteristics under the study was analyzed by the working out genotypic and phenotypic degree of correlation and simple correlation coefficient for all the possible parts of characteristics combination by the method of (Hayes *et al.*, 1955) and (Al-Jabouri *et al.*, 1958).

### Estimation of Direct and Indirect Effect of Different Characters on Yield

In order to find a clear picture of the inter-relationship between fruit yield and other components, path analysis splits the correlation coefficient into the measure of the direct and indirect effect of each contributing characteristics towards yield at genotypic level was done following by (Dewey, D.R. and K.H. Lu 1959).

### Calculation of Residual Effect

After calculating the direct and indirect effect of different characteristics, the residual effect was calculated using the formula suggested by (Singh and Choudhury, 1985)

## Results and Discussion

### Estimation of Variation and its Heritable Components in Genetic Parameters

#### Analysis of Variance

The mean squares from combine analysis of variance for the twelve quantitative traits studied are presented in table 1. The result indicated that the existence of considerable variation among all traits studied. The extent of variability in respect to twelve characteristics in different genotypes, measured in terms of range, genotypic coefficient of variation (GCV), phenotypic coefficient of variation (PCV) along with the heritability, expected genetic advance are given in Table 1. This result is encouraging because the presence of high variability among traits is an indication of better chance for improvement when selection for desirable characteristics is done particularly when the yield traits are involved.

### **Genetic parameters**

#### **Range and Mean**

The highest range of variation was recorded in average fruit weight (18.25-25.41g) followed by yield per plant (98.90-1650.00g), number of fruits per plant (3.00-66.00g) and 100seed weight (1.25-6.90g), respectively among the characteristics (Table 1.) Moderate range of variation was found in number of leaves per plant (28.00-142.50) with the mean of 57.41. The remaining contributing characteristics had narrow range of variation indication narrow range of variability among the okra genotypes for these traits. (Nanohar *et al.*, 1986) observed a wide range of variability in fruit weight among 13 ber genotypes in their study. (Saran *et al.*, 2007) also observed the highest range of variation for fruit yield per plant and fruit weight. (Vijay and Manohar, 1990) stated that characteristics which showed high range of variation in okra genotypes should be given priority in the selection. Since in breeding program, variability among the population is pre-requisite, high variability observed in respect of the traits under study implies that there is scope for making effective improvement of these traits.

#### **Genotypic and phenotypic Variances**

The genotypic and phenotypic variance range from 94664.664 and 4011.884 to 0.48 and 0.96 (Table 1). Estimates of genotypic and phenotypic variances were high for number of fruits per plant, average fruit weight and yield per plant. Genotypic and phenotypic component of variance were the highest for number of fruits per plant followed by yield per plant (94664.664 and 4011.884). It was 7.77 and 9.71 for average fruit weight. The moderate component of variance were found for number of leaves per plant (670.03 and 675.48), number of fruits per plant (165.62 and 167.41) and number of seeds per fruit (423.92 and 425.07). The phenotypic component of variance was higher than the genotypic component of variance for fruit yield per plant (4011.884 and 94664.664). Compare to genotypic component of variance, a little higher phenotypic component of variances were also found in fruit weight and fruit length (Table 1). The differences of phenotypic and genotypic variances were found low for the characteristics average fruit weight and fruit length indication that these characteristics were less influenced by environment. The phenotypic and genotypic variances for the characteristics number of fruits per plant and fruit yield per plant were 94664.664 and 4011.884, respectively and the difference was slight high suggesting that the characteristics was influenced by environment. In respect to error variance, genotypic variances were high in all the characteristics except number of fruits further indicating that the later was influenced by environment (Table1).

Comparatively higher phenotypic component of variance that the genotypic component and the extent of latter component showed that quantitative characteristics of okra

fruits are mostly hereditary in nature, which is evident by higher values recorded. (Nanohar *et al.*, 1986) reported that genotypic component of variances were greater than the environmental components of variances were greater than the environmental components for fruit breadth, in case of fruit length and fruit weight in ber which indicated fruit length and fruit weight were influenced by environmental variations as compared to other fruit characteristics.

#### **Genotypic and phenotypic Co-efficient of Variation**

From Table 1. The genotypic and phenotypic co-efficient of variations (GCV and PCV) are the measures of variability among the genotypes under study. The genotypic co-efficient of variation (GCV) measuring the range of genetic variability for different plant characteristics helps to compare this variability and phenotypic co-efficient of variation (PCV) indicated the interaction effect of environment on these traits. For fruit characteristics, the highest GCV and PCV were found for fruit yield per plant (46.70 and 47.72), number of fruits per plant (46.37 and 46.59) while fruit length (13.95 and 14.50) was minimum. Less difference between GCV and PCV recorded for all the fruit characteristics except fruit length revealed that these characteristics were least influenced by environment, as well it indicated low variability of these characteristics within the genotypes. The GCV and PCV for fruit length were 13.95 and 14.50 which indicated variability remained within the genotypes, however, not much influenced by the environment. The high GCV can be exploited by appropriate selection. Singh and jalikop (1986) reported that higher the value of genotypic co-efficient of variation more amenable the characteristics for improvement. (Nanohar *et al.*, 1986) found moderate value of GCV for yield per plant (31.01) in ber.

#### **Heritability and Genetic Advance**

From Table 1. high heritability (per cent of mean) estimates coupled with high genetic advance in number of fruits per plant (99.53% and 203.63), average fruit weight (79.97% and 164.74) and yield per plant (95.76 % and 197.26) which indicate that these characteristics were less influenced by environment demonstrating either these were simply inherited characteristics governed by a few major genes or additive gene effect even if they were under polygenic control and therefore, selection of these characteristics would be more effective for yield improvement. (Nanohar *et al.*, 1986) found high value of heritability and genetic advance for yield per plant (91.62% and 61.16) and pulp/stone ratio (91.67% and 56.91) in ber. With high value of heritability coupled with moderate degree of genetic advance were recorded for leaf length (98.22% and 198.52). High heritability value along with high or moderate value of genetic advance would be most effective condition for selection. Such condition arises due to action of additive genes.

**Table 1:** Estimates of genetic parameters for different characteristics in okra genotypes

Characteristics	Range		Mean	Variance components			GCV (%)	PCV (%)	Heritability (%)	GA
	Min	Max		Genotypic variance	Phenotypic variance	Error variance				
Days to flowering	39.0	72.0	46.17	20.17	22.75	2.57	9.72	10.33	94.13	182.52
Days to maturity	71.0	104.0	81.61	43.48	45.38	1.90	8.07	8.25	97.91	198.24
Plant height	40.12	132.0	75.96	515.67	517.12	1.75	29.88	29.93	99.82	205.06
Number of fruits/plant	3.00	66.00	27.76	165.62	167.41	1.79	46.37	46.59	99.53	203.63
Number of leaves/plant	28.00	142.50	57.41	670.03	675.48	5.66	45.07	45.27	99.57	204.49
Leaf length	29.50	64.53	40.99	44.98	45.72	1.62	16.20	16.49	98.22	198.52
Leaf diameter	4.56	42.38	17.33	53.69	54.28	0.59	42.28	42.51	98.91	203.76
Branch/plant	1.00	7.00	3.02	0.48	0.96	0.48	15.89	32.10	49.89	102.78
Fruit length	12.45	24.80	17.92	6.28	6.79	0.19	13.95	14.50	92.49	190.52
Number of seeds/fruit	11.00	103.80	59.46	423.92	425.07	1.15	34.62	34.62	99.73	205.44
100-seed weight	1.25	6.90	4.80	1.25	1.27	0.024	23.38	23.59	98.12	202.13
Average fruit wt(g)	18.25	25.41	22.77	7.77	9.71	1.946	12.21	13.66	79.97	164.74
Yield/plant(g)	98.90	1650.00	644.63	90652.78	94664.664	4011.884	46.70	47.72	95.76	197.26

However, low heritability along with low genetic advance as exhibited due to polygenic inheritance was not found under study. The perusal of the result revealed that as higher estimates of number of fruits per plant, average fruit weight and yield per plant as well as fruit length, number of fruits per plant with respect to GCV, heritability and genetic advance indicated additive gene effects controlling these traits, individual plant selection for these traits would be effective in okra.

#### **Character Association by Correlation and path Co-efficient Analysis**

For a sound-breeding programme information on the genetic association between yield and its components is a pre-requisite. From this point of view the relationship between yield of okra and 12 another important characteristics were endeavored to find out through correlation and path co-efficient analysis.

#### **Correlation**

Knowledge of the relationship among plant characteristics is useful while selecting traits for yield improvement. Results correlation analysis showed that fruit yield per plant had significant and positive correlation with majority

studied traits (Table 2). The highest positive correlation were observed between number of fruits per plant and yield per plant ( $r = 0.99^{**}$ ) and between number of fruits per plant and 100-seed weight ( $r = 0.44^{**}$ ). Also results showed that significantly positive correlations were between 100-seed weight and yield per plant ( $r = 0.44^{**}$ ), 100-seed weight and leaf length ( $r = 0.42^{**}$ ), 100-seed weight and leaf diameter ( $0.38^{**}$ ), Number of leaves per plant and 100-seed weight ( $r = 0.28^*$ ), 100-seed weight and plant height ( $r = 0.40^{**}$ ), 100-seed weight and fruit length ( $r = 0.28^*$ ). Significantly positive correlations were also observed for plant height and number of fruits per plant, number of leaves per plant and yield per plant. In the present study, plant height had significant positive correlation with leaf length, fruit length, number of fruits per plant, and marketable yield per plant and had significant negative correlation with branches per plant and days to 50% flowering. Similar positive association of fruit yield was reported by Jaiprakashnarayan and Mulge (2004). (Kiran and Ravisankar, 2004) found that positive and significant correlated between number of branches/plant and total green fruit yield (ton per feddan). (Ali, 1995) found that positive and significant correlation between plant height and number of branches

per plant for different okra population. (Abbas, 2006) found that number of branches per plant significant and positive correlation with each of total green fruit yield (ton per feddan) and number of fruits/plant for okra population. (Dhall *et al.*, 2000) observed that total yield/plant positively and significant correlated with number of fruits/plant. Also, (Ramya and Senthilkumar, 2009) found that pod yield/plant was significant and positive correlated with number of pods per plant. In general a significant positive correlation was observed between most of the traits. However, negative correlation was also found among certain characteristics in the present study.

Positive correlation was observed for branches per plant with number of fruits per plant (0.14 and 0.14). Branch per plant had positive correlation with yield per plant, even this relation was found to be significant in genotypic level (0.11) (Table 2). The assorted results might be indicating the plausible involvement of microclimatic factors.

Average fruit weight had positive correlation with fruit length (0.29 and 0.29), branches per plant (0.13 and 0.13), number of fruits per plant (0.33 and 0.33) and yield per plant (both 0.44). This result suggested that increase in the fruit weight increases the fruit yield. It also indicates that there was a strong and positive association with fruit weight and seed weight. These were in line with the findings of (Saran *et al.*, 2007). They observed that yield of ber genotypes had highly significant and positive correlation with fruit weight.

Positive and significant correlation was observed for leaf length with leaf diameter (0.37 and 0.37), fruit length and number of seeds per fruit (0.36 and 0.36), average fruit weight and yield per plant (0.44 and 0.44) while it was positive and highly significant with number of fruits per plant (0.99\*\*) in genotypic phenotypic expression. With leaf length and fruit length showed positive and significant correlation in genotypic level (0.18) and also positive but

significant correlation at phenotypic aspect. These results indicate that, there was a positive association among the leaf, fruit and seed characteristics coupled with yield per plant.

Positive correlation and highly significant results were recorded for number of fruits per plant with yield per plant (0.99\*\*). With fruit and seed characteristics, number of fruits per plant had positive correlation, even most of the cases these correlation were found to be significant (Table 2)

The genotypic and phenotypic correlations were worked out from the variance and covariance components according to the method of (Al-jibouri *et al.*, 1958). Path coefficient analysis was done based on genotypic correlations using the method of (Dewey and Lu, 1959). Genotypic and phenotypic correlations were significant among several characteristics that contributed towards yield (Table 1). Yield has highly significant and positive genotypic and phenotypic correlations with plant height, nodes per plant, inter-nodal length, fruits per plant and ten fruit weight. These results are partly in accordance with the results obtained by earlier workers (Patel and Dalal, 1994; Choudhary and Sharma, 1999; Hazra and Basu, 2000). Plant height recorded highly significant positive associations with branches per plant, nodes per plant, intermodal length and fruits per plant.

#### Path Coefficient Analysis

After getting information from the results of correlation analysis, the path coefficient analysis was done to determine direct and indirect effects of traits on fruit yield (Table 3). Results showed that direct significant positive and negative effect of number of fruits per plant (-0.091), 100-seed weight (0.174), number of seeds per fruit (-0.213), average fruit weight (-0.310) on yield. The number of fruits per plant had maximum direct effect (0.987) on yield.

**Table 2:** Correlation co-efficient of different characteristics (Okra)

	DF	DM	PH	NFP	NLP	LL	LD	BP	FL	NSF	HSW	AFW	YP
DF		0.62	0.13	-0.09	-0.06	0.51	0.34	-0.02	-0.04	-0.21	0.17	-0.31	-0.12
DM	0.62		-0.2	-0.38	-0.14	0.43	0	0	-0.38	-0.65	0.16	-0.49	-0.42
PH	0.13	-0.2		0.53	0.47	0.31	0.65	-0.05	0.42	0.15	0.40**	0.07	0.51
NFP	-0.09	-0.38	0.53		0.49	0.05	0.67	0.14	0.54	0.32	0.44**	0.33	0.99**
NLP	-0.06	-0.14	0.47	0.49		0.17	0.81	0.33*	0.1	0.19	0.28*	0.24	0.48
LL	0.51	0.43	0.31	0.05	0.17		0.37	-0.12	0.18	-0.22	0.42**	-0.13	0.05
LD	0.34	0	0.65	0.67	0.81	0.37		0.23	0.32	0.2	0.38**	0.15	0.64
BP	-0.02	0	-0.05	0.14	0.33	-0.12	0.23		-0.14	0.18	-0.15	0.13	0.11
FL	-0.04	-0.38	0.42	0.54	0.1	0.18	0.32	-0.14		0.36	0.28*	0.29	0.57
NSF	-0.21	-0.65	0.15	0.32	0.19	-0.22	0.2	0.18	0.36		-0.21	0.52	0.36
HSW	0.17	0.16	0.4	0.44	0.28	0.42	0.38	-0.15	0.28	-0.21		-0.01	0.44
AFW	-0.31	-0.49	0.07	0.33	0.24	-0.13	0.15	0.13	0.29	0.52	-0.01		0.44
YP	0	0	0.51	0.99**	0.48	0.05	0.64	0.11	0.57	0.36	0.44**	0.44	

\* = Indicate 5 % level of significance \*\* = Indicate 1 % level of significance

**Table 3:** Direct (Diagonal) and indirect effect path coefficients

	DF	DM	PH	NFP	NLP	LL	LD	BP	FL	NSF	HSW	AFY	YP
DF		0.620	0.133	-0.091	-0.060	0.507	0.337	-0.022	-0.042	-0.213	0.174	-0.310	-0.123
DM	0.620		-0.199	-0.380	-0.137	0.428	0.003	0.004	-0.381	-0.646	0.160	-0.486	-0.425
PH	0.133	-0.199		0.528	0.474	0.312	0.649	-0.049	0.419	0.153	0.401	0.068	0.509
NFP	-0.091	-0.380	0.528		0.492	0.045	0.668	0.138	0.538	0.319	0.439	0.331	0.987
NLP	-0.060	-0.137	0.474	0.492		0.172	0.806	0.328	0.101	0.192	0.278	0.241	0.479
LL	0.507	0.428	0.312	0.045	0.172		0.372	-0.120	0.179	-0.221	0.422	-0.130	0.046
LD	0.337	0.003	0.649	0.668	0.806	0.372		0.231	0.316	0.201	0.385	0.148	0.638
BP	-0.022	0.004	-0.049	0.138	0.328	-0.120	0.231		-0.138	0.177	-0.153	0.125	0.115
FL	-0.042	-0.381	0.419	0.538	0.101	0.179	0.316	-0.138		0.362	0.284	0.290	0.573
NSF	-0.213	-0.646	0.153	0.319	0.192	-0.221	0.201	0.177	0.362		-0.208	0.515	0.362
HSW	0.174	0.160	0.401	0.439	0.278	0.422	0.385	-0.153	0.284	-0.208		-0.012	0.439
AFY	-0.310	-0.486	0.068	0.331	0.241	-0.130	0.148	0.125	0.290	0.515	-0.012		0.437

Residual Effect<sup>2</sup> = 0.0093

In our study of path analysis (Table 3), In order to find a clear picture of the inter-relationship between fruit yield and other components path coefficient analysis has been performed where yield of okra was considered as resultant variable and the rest characteristics as causal as causal variable. Among the different characteristics plant height showed direct negative effect (-0.199) on yield per plant which was compensated by indirect and significant positive (0.509) effect through number of fruits per plant via indirect positive effect (0.528) (Table 3). Average fruit weight exhibited highly significant association with yield (0.437). Whereas, it had positive direct effect on fruit yield possibly via indirect positive effect of number of fruits per plant (0.987). The high correlation observed with yield in this character could mainly due to indirect contribution through nodes per plant, primary branches and plant height. On the other hand, even its larger negative direct effect correlated with fruit yield. Thus, in the present study, branches per plant, plant height and number of leaves per plant were the characteristics, which had a major share in the direct and indirect contribution towards yield through leaf length and leaf diameter and number of fruits per plant. This may be resulted from the positive indirect influence via number of leaves per plant, branches per plant, leaf length and leaf diameter. A situation likes this where few characteristics shared a major responsibility in enhancing the yield potential were reported by (Choudhary and Sharma, 1999) and (Hazra and Basu, 2000). Present study, thus, indicated that prime emphasis should be given to these three characteristics in okra breeding programme. Residual effect of unknown factors was low (0.0093). This suggested that major portion of variability for total fruit yield could be associated with the characteristics included in this study.

## Conclusion

Considerable genetic variability was present among the okra genotypes selected in the study. The highest range of variation was recorded in average fruit weight, followed by

yield per plant, number of fruits per plant and fruit length. High heritability coupled with high or moderate degree of genetic advance was estimated in plant height, number of fruits per plant, number of leaves per plant, number of seeds per fruit, leaf length, leaf diameter, 100-seed weight and yield per plant. Both correlation and path co-efficient analysis carried in this study suggested that average fruit weight, fruit length and number of fruits per plant are major components of fruit yield. The improvement in marketable fruit yield per plant will be efficient if the selection is based on fruit weight, total number of fruits per plant and number of marketable fruits per plant. The above all estimation of heritability, correlation and path-coefficient analysis of okra genotypes indicated that individual plant selection would be effective for varietal improvement of this crop.

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