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Study on character association and path analysis in brinjal (*Solanum melongena* L.)

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Abstract
Correlation coefficient analysis in 35 varieties of brinjal was carried out at Vegetable Research Block, College of Horticulture, SKLTSHU, Rajendranagar, Hyderabad during *Rabi*, 2015-16. The results revealed that the association of days to first flowering, days to 50% flowering, number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, number of fruits per plant, days to last harvest, fruit length, fruit width, average fruit weight and total phenol content with fruit yield and among themselves was positive and highly significant and these traits were identified as yield components. The genetic improvement of fruit yield thus can be obtained by direct selection of these yield components. Path coefficient analysis revealed that the characters viz., number of fruits per cluster, number of fruits per plant, days to last harvest, average fruit weight had moderate to high positive direct effect and significant correlation values on fruit yield. Thus, the fruit yield per plant can be improved by making selection of these characters during yield improvement programme.

Keywords: brinjal, genotypic correlation, phenotypic correlation, path analysis

Introduction
Brinjal (*Solanum melongena* L.), a member of the Solanaceae family, is the most common and popular vegetable crop of India. It can be grown in almost all parts of India year round and is a major source of income for the small and marginal farmers. It is being grown extensively in India, Bangladesh, Pakistan, China, Philippines. India is the second major producer of brinjal in the world after China. In India, brinjal occupies an area of 0.71 million hectares with annual production of 13.55 million tonnes accounting to an average productivity of 19.1 tonnes per hectare. The area covered by brinjal crop in Telangana is 0.015 million hectare with a production of 0.30 million tons and productivity of 20.0 MT/ha. (NHB, 2014). Due to its highest production potential and availability of the produce to consumers, it is also termed as poor man's vegetable (Kumar *et al*., 2014) [8]. It is grown for its immature, unripe fruits which are used in the variety of ways as cooked vegetable in curries. It is popular among people of all social strata and hence, it is rightly called as vegetable of masses (Patel and Sarnaik, 2003) [12]. Correlation and path co-efficient analysis are the important biometrical technique to determine the yield components. The characters that are positively correlated with yield are of considerably important to plant breeder for selection purpose. Correlation provides a measure of genetic association between the characters and reveals the traits that might be useful as an index of selection. According to Feyzian *et al.* (2009) investigation of the interrelationships between yield and its components will improve the efficiency of a breeding programme with appropriate selection criteria. All the changes in the components need not, however be expressed by changes in the yield. This is due to varying degrees of positive and negative correlations between yield and its components and among the components themselves. A study of association of these characters helps in selection of genotypes and also suggests the advantage of a selection scheme for more than one character at a time, which could be explained that improvement of one character results in improvement of all positively related characters. In the present study, the simple correlation coefficients between yield and its components and their inter correlations among the components were estimated. Although the correlation co-efficient indicates the nature of association among the different traits, path analysis splits the correlation co-efficient into measure of direct and indirect effects thus providing understanding of the direct and indirect contribution of each character towards yield. Hence, the present investigation was planned to unravel the correlation and path co-efficient of yield and yield attributing traits in brinjal.

Materials and Methods

The present investigation was carried out at Vegetable Research Block, College of Horticulture, SKLTSHU, Rajendranagar, Hyderabad during *Rabi*, 2015-16. The experiment was laid out in a Randomized Block Design with three replications. Each accession was grown in a double row plot consisting of 20 plants spaced at 50 cm x 50 cm and the crop was raised as per the recommended package of practices. The crop was maintained properly till the last harvest and observations on growth, yield as well as its contributing characters was noted on five randomly selected plants in each plot at different stages of crop growth. Analysis of covariance for all combinations were done and used for estimation of correlations. Phenotypic and genotypic correlations were worked out by the formulae suggested by Al-Jibouri *et al.* (1958) [4]. Path analysis was done as per the procedure outlined by Wright (1921) [16] and Dewey and Lu (1959) [3].

Results and Discussion

In general, it was observed that genotypic correlation coefficients were higher than that of phenotypic correlation coefficients. This could be interpreted on the basis that there was a strong inherent genotypic relationship between the characters studied, but their phenotypic expression was impeded by the influence of environmental factors.

Number of flowers per cluster showed positive and significant correlation with number of fruits per cluster (0.462 P, 0.512 G), number of fruits per plant (0.313 P, 0.370 G), fruit weight (0.216 G) at genotypic level, total phenol content (0.231 P, 0.304 G), fruit yield per plant (0.296 P, 0.368 G). Number of fruits per cluster showed positive and significant correlation with number of fruits per plant (0.520 P, 0.605 G), days to last harvest (0.314 P, 0.376 G), total phenol content (0.260 P,0.312 G), fruit yield per plant (0.246 P, 0.287 G) and negative significant correlation with fruit length (-0.235 P, -0.296 G). Number of fruits per plant showed positive and significant correlation with days to last harvest (0.537 P, 0.542 G), total phenol content (0.346 P, 0.361 G), fruit yield per plant (0.408 P, 0.405 G). The character average fruit weight showed positive and significant correlations with total phenol content (0.234 P, 0.244 G), fruit yield per plant (0.759 P, 0.762 G). Naliyadhara *et al.* (2007) and Thangamani and Jhansirani (2012) reported analogous positive association of average fruit weight with fruit width. Prabhu and Natarajan (2008) [13], Prabhu *et al.* (2008) [13], Jadhao *et al*. (2009) [5] and Nalini *et al*. (2009) reported similar results with fruit yield per plant in brinjal.

Ascorbic acid content was not registered positive and negative significant correlations with remaining yield and yield related characters. Total phenol content registered positive and significant correlations with shoot and fruit borer infestation (0.421 P, 0.438 G) and fruit yield per plant (0.423 P, 0.441 G).Shoot and fruit borer infestation recorded negative and significant correlations with plant height (-0.249 P, -0.264 G). The findings are in conformity with the reports of Kranthi and Celine (2013).

The fruit yield per plant recorded positive and significant correlation with days to first flowering, days to 50% flowering, number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, number of fruits per plant, days to last harvest, fruit length, fruit width, average fruit weight and total phenol content. Shoot and fruit borer infestation exhibited negative significant correlation with plant height, number of branches per plant and ascorbic acid content. These results are in consonance with those reported by Arunkumar *et al*. (2013) [1], Lokesh *et al.* (2013) [9], Nayak and Nagre (2013) [10] and Krishna Patel (2015) [7]. High and positive phenotypic and genotypic correlation of fruit yield with number of flowers per cluster, number of fruits per plant, days to last harvest, fruit length, fruit width, average fruit weight, total phenol content was also recorded. Thus, the fruit weight of plant seems to have predominated effect on fruit yield per plant. There is ample scope in the improvement of yield by selecting a genotype having higher number and long fruiting duration since they are highly correlated.

The results on character association indicated significant positive association of yield with days to first flowering, days to 50% flowering, number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, number of fruits per plant, days to last harvest, fruit length, fruit width, average fruit weight which indicated that the adequate knowledge of interrelationship between fruit yield per plant and its components themselves is useful for selection and simultaneous improvement in these characters.

The estimation of correlation coefficients indicates only the extent and nature of association between yield and its components, but does not show the direct and indirect effects of different yield attributes on yield *per se*. Fruit yield is dependent on several characters which are mutually associated; these will in turn impair the true association existing between a component and fruit yield. A change in any one component is likely to disturb the whole network of cause and effect. Thus, each component has two paths of action *viz.*, the direct influence on fruit yield, indirect effect through components which are not revealed from the correlation studies. Each component has two path actions *viz.*, direct effect on yield and indirect effect through components which are not revealed by correlation studies. Average fruit weight showed high positive direct effect (0.6925 P, 0.6002 G) at both levels on fruit yield per plant. This trait showed positive significant correlation and had high positive direct effect on fruit yield per plant and hence direct selection through this character would be effective (Singh and Singh, 2001). Ascorbic acid content recorded negligible negative direct effect (-0.0621 P, -0.0628 G) on total yield per plant. This trait also showed negligible positive and negative indirect effects through different traits on fruit yield per plant. Similar kind of results was obtained by Thangamani and Jansirani (2012) in brinjal. Total phenol content recorded negligible positive direct effect (0.0492 P, 0.0965 G) on fruit yield per plant. This trait exhibited low to moderate positive and negative indirect effect through different traits on fruit yield per plant. Shoot and fruit borer infestation displayed low, moderate negative direct effects (-0.1560 P, -0.2039 G, respectively) on fruit yield per plant. This trait also showed negative significant correlation with fruit yield per plant. Hence, this character was not used for direct selection in brinjal. Similar results were obtained by Prabhu and Natarajan (2008) in brinjal [13].

Path coefficient analysis showed that days to first flowering, days to 50 % flowering, number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, number of fruits per plant, days to last harvest, fruit length, fruit width, average fruit weight, total phenol content exhibited moderate to high positive direct effect on fruit yield per plant and these traits recorded significant, positive correlation with fruit yield per plant. It clearly indicates that direct selection based on these characters would be effective for an increase in yield.

Table 1: Phenotypic (P) and genotypic (G) correlation coefficients among yield and yield attributes in 35 genotypes of brinjal.

Characters		Plant height (cm)	No. of branches per plant	Days to first flowering	Days to 50 % flowering	No. of flower clusters per plant	No. of flowers per cluster	No. of fruits per cluster	No. of fruits per plant	Days to first harvest	Days to last harvest	Fruit length (cm)	Fruit width (cm)	Average fruit weight (kg)	Ascorbic acid content (mg/ 100g)	Total phenol content (mg/ 100g)	Shoot and fruit borer infestation(%)	Cumulative wilt incidence (%)	Little leaf incidence (%)	Fruit yield per plant (kg)
Plant height (cm)	P	1.000	0.041	0.012	0.021	-0.171	0.179	-0.125	-0.009	0.003	0.006	0.265**	0.037	0.214*	0.053	-0.148	-0.249*	0.00	0.00	0.128
	G	1.000	0.045	0.013	0.023	-0.181	0.237*	-0.136	-0.007	0.005	0.007	0.271**	0.038	0.216*	0.054	-0.154	-0.264**	0.00	0.00	0.129
No. of branches per plant	P		1.000	-0.525**	-0.504**	-0.057	0.023	-0.131	-0.172	-0.284**	-0.276**	0.049	-0.086	0.069	0.078	-0.377**	-0.276**	0.00	0.00	0.053
	G		1.000	-0.605**	-0.580**	-0.064	0.033	-0.167	-0.202*	-0.323**	-0.312**	0.049	-0.105	0.072	0.088	-0.494**	-0.319**	0.00	0.00	0.055
Days to first flowering	P			1.000	0.982**	-0.036	0.124	0.261**	0.291**	0.403**	0.433**	0.083	0.12	0.041	-0.187	0.537**	0.470**	0.00	0.00	0.207*
	G			1.000	0.993**	-0.043	0.139	0.294**	0.293**	0.411**	0.439**	0.084	0.121	0.04	-0.189	0.565**	0.479**	0.00	0.00	0.208*
Days to 50 % flowering	P				1.000	-0.051	0.108	0.207*	0.289**	0.393**	0.448**	0.09	0.112	0.034	-0.164	0.526**	0.438**	0.00	0.00	0.207*
	G				1.000	-0.054	0.147	0.258**	0.291**	0.397**	0.451**	0.092	0.111	0.033	-0.167	0.559**	0.451**	0.00	0.00	0.208*
No. of flower clusters per plant	P					1.000	-0.167	-0.097	0.406**	-0.02	0.044	-0.046	-0.062	-0.017	0.078	0.058	0.052	0.00	0.00	0.222*
	G					1.000	-0.244*	-0.113	0.418**	-0.016	0.042	-0.048	-0.071	-0.015	0.081	0.063	0.057	0.00	0.00	0.226*
No. of flowers per cluster	P						1.000	0.462**	0.313**	-0.179	0.082	-0.005	0.078	0.175	-0.089	0.231*	-0.12	0.00	0.00	0.296**
	G						1.000	0.512**	0.370**	-0.214*	0.096	0.005	0.102	0.216*	-0.12	0.304**	-0.125	0.00	0.00	0.368**
No. of fruits per cluster	P							1.000	0.520**	-0.073	0.314**	-0.235*	-0.005	-0.047	-0.07	0.260**	-0.011	0.00	0.00	0.246*
	G							1.000	0.605**	-0.09	0.376**	-0.296**	0.001	-0.059	-0.096	0.312**	-0.007	0.00	0.00	0.287**
No. of fruits per plant	P								1.000	-0.047	0.537**	-0.351**	-0.098	-0.112	0.116	0.346**	0.012	0.00	0.00	0.408**
	G								1.000	-0.048	0.542**	-0.355**	-0.099	-0.112	0.119	0.361**	0.009	0.00	0.00	0.405**
Days to first harvest	P									1.000	0.478**	0.119	0.297**	0.209*	-0.111	0.099	0.241*	0.00	0.00	0.087
	G									1.000	0.485**	0.122	0.303**	0.213*	-0.112	0.102	0.250*	0.00	0.00	0.090
Days to last harvest	P										1.000	-0.062	0.278**	0.217*	-0.052	0.499**	0.289**	0.00	0.00	0.467**
	G										1.000	-0.062	0.279**	0.218*	-0.054	0.520**	0.296**	0.00	0.00	0.470**
Fruit length (cm)	P											1.000	0.580**	0.691**	-0.240*	0.07	0.024	0.00	0.00	0.399**
	G											1.000	0.593**	0.700**	-0.244*	0.072	0.023	0.00	0.00	0.407**
Fruit width (cm)	P												1.000	0.861**	0.014	0.279**	0.109	0.00	0.00	0.654**
	G												1.000	0.865**	0.014	0.296**	0.113	0.00	0.00	0.659**
Average fruit weight(kg)	P													1.000	-0.157	0.234*	0.053	0.00	0.00	0.759**
	G													1.000	-0.159	0.244*	0.056	0.00	0.00	0.762**
Ascorbic acid content (mg/100g)	P														1.000	-0.251**	-0.253**	0.00	0.00	-0.114
	G														1.000	-0.262**	-0.254**	0.00	0.00	-0.115
Total phenol content (mg/100g)	P															1.000	0.421**	0.00	0.00	0.423**
	G															1.000	0.438**	0.00	0.00	0.441**
Shoot & fruit borer infestation (%)	P																1.000	0.00	0.00	-0.009
	G																1.000	0.00	0.00	-0.007
Cumulative wilt incidence																		0.000	0.00	0.000
																		0.000	0.00	0.000
Little leaf incidence (%)																			0.000	0.000
																			0.000	0.000

*Significant at 5 per cent level; ** Significant at 1 per cent level

Table 2. Direct and indirect effects of various yield attributes on fruit yield in 35 genotypes of brinjal

Characters		Plant height (cm)	No. of branches per plant	Days to first flowering	Days to 50 % flowering	No. of lower clusters per plant	No. of flowers per cluster	No. of fruits per cluster	No. of fruits per plant	Days to first harvest	Days to last harvest	Fruit length (cm)	Fruit width (cm)	Fruit weight (kg)	Ascorbic acid (mg/ 100g)	Total phenol content (mg/ 100g)	Shoot and fruit borer infestation (%)	Cumulative wilt incidence (%)	Little leaf incidence (%)	Fruit yield per plant (kg)
Plant height (cm)	P	-0.01251	0.0053	0.0001	0.0025	-0.0166	-0.0023	-0.0067	-0.0024	-0.0004	0.0011	-0.0035	0.0024	0.1479	-0.0033	-0.0072	0.0388	0.000	0.000	0.128
	G	-0.0057	0.0109	0.0061	-0.0053	-0.0336	0.0066	-0.0045	-0.0012	-0.0009	0.0015	-0.0107	0.0060	0.1297	-0.0033	-0.0148	0.0537	0.000	0.000	0.129
No. of branches per plant	P	-0.00051	0.1307	-0.0061	-0.0611	-0.0055	-0.0003	-0.0071	-0.0477	0.0442	-0.0472	-0.0006	-0.0057	0.0476	-0.0048	-0.0185	0.0430	0.000	0.000	0.053
	G	-0.00026	0.2416	-0.2883	0.1369	-0.0118	0.0009	-0.0056	-0.0367	0.0536	-0.0691	-0.0019	-0.0166	0.0431	-0.0055	-0.0476	0.0650	0.000	0.000	0.055
Days to first flowering	P	-0.00015	-0.0686	0.0116	0.1191	-0.0034	-0.0016	0.0142	0.0809	-0.0626	0.0741	-0.0011	0.0079	0.0283	0.0116	0.0264	-0.0733	0.000	0.000	0.207*
	G	-0.00007	-0.1462	0.4764	-0.2347	-0.0079	0.0039	0.0098	0.0532	-0.0682	0.0973	-0.0033	0.0190	0.0241	0.0118	0.0545	-0.0975	0.000	0.000	0.208*
Days to 50 % flowering	P	-0.00026	-0.0658	0.0114	0.1213	-0.0049	-0.0014	0.0113	0.0803	-0.0612	0.0766	-0.0011	0.0074	0.0233	0.0102	0.0258	-0.0683	0.000	0.000	0.207*
	G	-0.00013	-0.1400	0.4733	-0.2363	-0.0100	0.0041	0.0086	0.0528	-0.0660	0.1001	-0.0036	0.0175	0.0199	0.0105	0.0539	-0.0919	0.000	0.000	0.208*
No. of flower clusters / plant	P	0.00214	-0.0074	-0.0004	-0.0061	0.0974	0.0022	-0.0052	0.1128	0.0031	0.0075	0.0006	-0.0041	-0.0119	-0.0048	0.0028	-0.0080	0.000	0.000	0.222*
	G	0.00104	-0.0154	-0.0204	0.0128	0.1853	-0.0068	-0.0038	0.0758	0.0025	0.0093	0.0018	-0.0111	-0.0089	-0.0051	0.0060	-0.0116	0.000	0.000	0.226*
No. of flowers per cluster	P	-0.00224	0.0030	0.0014	0.0131	-0.0163	-0.0132	0.0251	0.0870	0.0278	0.0139	0.0000	0.0051	0.1214	0.0055	0.0113	0.0186	0.000	0.000	0.296**
	G	-0.00135	0.0079	0.0662	-0.0346	-0.0451	0.0282	0.0171	0.0672	0.0356	0.0212	-0.0001	0.0161	0.1296	0.0075	0.0293	0.0254	0.000	0.000	0.368**
No. of fruits per cluster	P	0.00156	-0.017	0.0030	0.0251	-0.0094	-0.0061	0.0545	0.1443	0.0112	0.0537	0.0031	-0.0003	-0.0327	0.0043	0.0128	0.0016	0.000	0.000	0.246*
	G	0.00078	-0.0404	0.1401	-0.0610	-0.0210	0.0144	0.0335	0.1099	0.0149	0.0835	0.0117	0.0001	-0.0354	0.0060	0.0301	0.0013	0.000	0.000	0.287**
No. of fruits per plant	P	0.00011	-0.0224	0.0033	0.0350	0.0395	-0.0041	0.0283	0.2778	0.0073	0.0919	0.0046	-0.0065	-0.0776	-0.0072	0.0170	-0.0018	0.000	0.000	0.408**
	G	0.00004	-0.0488	0.1396	-0.0687	0.0774	0.0104	0.0203	0.1816	0.0080	0.1202	0.0140	-0.0156	-0.0671	-0.0074	0.0348	-0.0017	0.000	0.000	0.405**
Days to first harvest	P	-0.00003	-0.0371	0.0046	0.0477	-0.0019	0.0023	-0.0039	-0.0130	-0.1556	0.0817	-0.0015	0.0196	0.1449	0.0068	0.0048	-0.0375	0.000	0.000	0.087
	G	-0.00003	-0.0781	0.1957	-0.0939	-0.0028	-0.0060	-0.0030	-0.0087	-0.1661	0.1076	-0.0048	0.0478	0.1278	0.0070	0.0098	-0.0509	0.000	0.000	0.090
Days to last harvest	P	-0.0000	-0.0361	0.0050	0.0544	0.0042	-0.0010	0.0171	0.1492	-0.0743	0.1710	0.0008	0.0184	0.1505	0.0032	0.0245	-0.0450	0.0000	0.0000	0.467**
	G	-0.0000	-0.0753	0.2089	-0.1065	0.0078	0.0027	0.0126	0.0983	-0.0805	0.2220	0.0024	0.0440	0.1308	0.0033	0.0501	-0.0603	0.0000	0.0000	0.470**
Fruit length (cm)	P	-0.0033	0.0064	0.0009	0.01088	-0.0044	0.0000	-0.0127	-0.0975	-0.0185	-0.0105	-0.0132	0.0384	0.4786	0.0149	0.0034	-0.0038	0.0000	0.0000	0.399**
	G	-0.0015	0.0117	0.0399	-0.02167	-0.0088	0.0001	-0.0099	-0.0644	-0.0202	-0.0137	-0.0396	0.0934	0.4201	0.0153	0.0069	-0.0047	0.0000	0.0000	0.407**
Fruit width (cm)	P	-0.0004	-0.0112	0.0014	0.01365	-0.0060	-0.0010	-0.0002	-0.0272	-0.0462	0.0475	-0.0077	0.0663	0.5962	-0.0008	0.0137	-0.0170	0.0000	0.0000	0.654**
	G	-0.0002	-0.0254	0.0575	-0.02633	-0.0131	0.0028	0.0000	-0.0180	-0.0504	0.0620	-0.0234	0.1576	0.5194	-0.0008	0.0285	-0.0231	0.0000	0.0000	0.659**
Average fruit weight(kg)	P	-0.0026	0.0090	0.0004	0.00409	-0.0016	-0.0023	-0.0025	-0.0311	-0.0325	0.0371	-0.0091	0.0570	0.6925	0.0097	0.0115	-0.008	0.0000	0.0000	0.759**
	G	-0.0012	0.0173	0.0191	-0.00787	-0.0027	0.0061	-0.0019	-0.0203	-0.0353	0.0484	-0.0277	0.1364	0.6002	0.0100	0.0235	-0.0113	0.0000	0.0000	0.762**
Ascorbic acid content (mg/100g)	P	-0.0006	0.0101	-0.0021	-0.01995	0.0075	0.0011	-0.0038	0.0323	0.0172	-0.0089	0.0031	0.0009	-0.1088	-0.0621	-0.0123	0.0394	0.0000	0.0000	-0.114
	G	-0.0003	0.0212	-0.0902	0.03955	0.0150	-0.0033	-0.0032	0.0216	0.0186	-0.0119	0.0096	0.0021	-0.0955	-0.0628	-0.0252	0.0517	0.0000	0.0000	-0.115
Total Phenol content (mg/100g)	P	0.0018	-0.0493	0.0062	0.06379	0.0056	-0.0030	0.0141	0.0961	-0.0153	0.0852	-0.0009	0.0185	0.1620	0.0155	0.0492	-0.0657	0.0000	0.0000	0.423**
	G	0.0008	-0.1193	0.2691	-0.13213	0.0116	0.0085	0.0104	0.0655	-0.0170	0.1154	-0.0028	0.0465	0.1465	0.0164	0.0965	-0.0893	0.0000	0.0000	0.441**
Shoot &fruit borer infestation(%)	P	0.0031	-0.0360	0.0054	0.05317	0.0050	0.0015	-0.0005	0.0032	-0.0374	0.0494	-0.0003	0.0072	0.0363	0.0157	0.0207	-0.1560	0.0000	0.0000	-0.007
	G	0.0015	-0.0771	0.2280	-0.10658	0.0105	-0.0035	-0.0002	0.0015	-0.0415	0.0657	-0.0009	0.0178	0.0333	0.0159	0.0423	-0.2039	0.0000	0.0000	-0.009
Cumulative wilt Incidence (%)	P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.000
	G	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.000
Little leaf Incidence (%)	P	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.000
	G	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.000	0.0000	0.0000	0.000

Path using genotypic correlation (Residual Effect: 0.03) Path using phenotypic correlations: (Residual effect: 0.192

The residual factor determines how best the causal factors account for the variability of the dependent factor, the fruit yield per plant in this case. The residual effects were 0.0319 and 0.1925, which were of low magnitude at genotypic and phenotypic levels.

From the foregoing discussion, it can be concluded that days to first flowering, days to 50% flowering, number of flower clusters per plant, number of flowers per cluster, number of fruits per cluster, number of fruits per plant, average fruit weight, days to last harvest, fruit length, fruit width, average fruit weight and total phenol content showed positive correlation and positive direct effect on fruit yield per plant. These are identified as superior yield components. Hence, the genotypes which exhibited better performance for these characters can be used in further improvement of brinjal.

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