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Studies on correlation and path coefficient analysis among the yield and yield attributes traits in Bottle gourd [*Lagenaria siceraria* (Mol.) Standl]

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Abstract
The experiment was conducted in Randomized Block Design with three replications to evaluate thirty morphologically distinct bottle gourd genotypes at the Main Experiment Station, Department of Vegetable Science at the Narendra Deva University of Agriculture & Technology, Narendra Nagar (Kumarganj), Ayodhya (U.P.) during *summer season* of 2018. Fruit yield/ plant (kg) exhibited highly significant and positive correlation with number of fruits/ plant, node number to first staminate flowers, average fruit wt /fruit (Kg), node number to first pistillate flower and fruit circumference (cm). Whereas, significant but negative correlation was found with days to first staminate flower anthesis and days to first pistillate flower anthesis. Positive and non-significant correlation was recorded with fruit length (cm), days of first fruit harvest, number of primary branches per plant and vine length (m) at both genotypic and phenotypic correlation. The genotypic correlations were larger in magnitude than the corresponding phenotypic values, suggesting therefore a strong inherent relationship in different pairs of characters. Path coefficient analysis highest positive direct effect on fruit yield per plant was exerted by average fruit weight per fruit followed by fruits per plant, days to first fruit harvest, number of primary branches per plant, days to first staminate flower anthesis, node number to first staminate flowers and node number to first pistillate flower. While highest negative direct effect on fruit yield per plant was exerted by days to first pistillate flower anthesis followed by vine length (m), fruit length and fruit circumference.

Keywords: Bottle gourd, correlation, path coefficient, yield

Introduction
Bottle gourd [*Lagenaria siceraria* (Mol.) Standl] is a member of the Cucurbitaceae family. It originated in southern Africa and has the chromosomal number 2n = 2x = 22.

The fruit is used for variety of purposes, tender fruits are used as vegetable and for preparing sweet dishes, rayta and pickles. Bottle gourd is rich source of various essential minerals, iron, protein and full of fibre which is helpful in digestion. The edible portion of bottle gourd contain 96.1% moisture, 3.5% total soluble solids, 0.12% acidity, 2.5% carbohydrates, 0.2% protein, 0.1% fat, 0.5% mineral, 0.6% fibre, 44 mg thiamin, 23 mg riboflavin, 0.33 mg niacin and 13 mg ascorbic acid/100 g of edible portion (Deore *et al.* 2008) [1]. It is a rich source of potassium, vitamin C, protein, sulphur, fat and phosphorus.

Cultivated forms of *Lagenaria* intercross freely, resulting great variation in vigour and horticultural characteristics. Some varieties differ in earliness of flowering and fruit set by a month or more. Spectacular variations are encountered in fruit shape, size and colour. The background colour of fruit is either light green or dark green. The dark green can be distributed as a solid colour, as regular or irregular strips and as an irregular blotch. The size of fruit varies from 5-30 cm in diameter and over eight feet in length. The fruit shape varies from flat to round, cylindrical, club shaped, or long or narrow. Some forms are tomari shaped or have longed beaks. (Singh 2013) [10].

It is grown in both rainy and summer seasons and its fruits are available in the market throughout the year. Bottle gourd is one of the largest producing cucurbitaceous vegetables in the world preferred in both urban and rural population.

Yield is a complex character controlled by a large number of contributing characters and their interactions. A study of correlation between different quantitative characters provides an idea of association that could be effectively exploited to formulate selection strategies for improving yield components.

For any effective selection programme, it would be desirable to consider the relative magnitude of association of various characters with yield. The path coefficient technique developed by Wright (1921) [12] helps in estimating direct and indirect contribution of various components in building up the total correlation towards yield. On the basis of these studies the quantum importance of individual character is marked to facilitate the selection programme for better gains.

Materials and Methods

The present experimental material comprised thirty morphologically diverse bottle gourd genotypes (Table-1) were collected from different places in India. The experiment was conducted Randomized Block Design with three replications at Main Experiment Station of Department of Vegetable Science at the Narendra Deva University of Agriculture & Technology, Narendra Nagar (Kumarganj), Ayodhya (U.P.) during *summer season* 2018. Individual plot dimensions for the bottle gourd genotypes were 3 m x 3 m, with a row to row spacing of 3 m and a plant to plant spacing of 50 cm. As a result, six plants were kept in separate plots. To raise a healthy crop stand, the entire suggested agronomic package of procedures and plant protection measures were followed. The following twelve quantitative characters were observed for six selected plants *viz*., node number to first staminate flower anthesis, node number to first pistillate flower anthesis, days to first staminate flower anthesis, days to first pistillate flower anthesis, days to first fruit harvest, fruit length (cm), fruit circumference (cm), average fruit weight (kg), number of fruits per plant, vine length at the time of last harvest (m), number of primary branches per plant and average fruit yield (kg/plant). Characters that go together Fruit yield was used as the dependent variable with genotypic and phenotypic correlation coefficient levels and path coefficient analyses, while the rest of the attributes were treated as independent variables with simultaneous equations. which expressed the fundamental relationship between path coefficients that were solved to estimate direct and indirect impacts using Dewey and Lu's method (1959) [2].

Table 1: List of bottle gourd genotypes used for the study and their source of origin

S. No.	Name of genotypes	Source of origin
1.	NDBG-21	N.D.U.A.&T, Ayodhya
2.	NDBG-22	N.D.U.A.&T, Ayodhya
3.	NDBG-23	N.D.U.A.&T, Ayodhya
4.	NDBG-24	N.D.U.A.&T, Ayodhya
5.	NDBG-25	N.D.U.A.&T, Ayodhya
6.	NDBG-26	N.D.U.A.&T, Ayodhya
7.	NDBG-27	N.D.U.A.&T, Ayodhya
8.	NDBG-28	N.D.U.A.&T, Ayodhya
9.	NDBG-29	N.D.U.A.&T, Ayodhya
10.	NDBG-30	N.D.U.A.&T, Ayodhya
11.	NDBG-31	N.D.U.A.&T, Ayodhya
12.	NDBG-32	N.D.U.A.&T, Ayodhya
13.	NDBG-33	N.D.U.A.&T, Ayodhya
14.	NDBG-34	N.D.U.A.&T, Ayodhya
15.	NDBG-60	N.D.U.A.&T, Ayodhya
16.	NDBG-61	N.D.U.A.&T, Ayodhya
17.	NDBG-62	N.D.U.A.&T, Ayodhya
18.	NDBG-63	N.D.U.A.&T, Ayodhya
19.	NDBG-64	N.D.U.A.&T, Ayodhya
20.	NDBG-65	N.D.U.A.&T, Ayodhya
21.	NDBG-66	N.D.U.A.&T, Ayodhya
22.	NDBG-67	N.D.U.A.&T, Ayodhya
23.	NDBG-68	N.D.U.A.&T, Ayodhya
24.	NDBG-69	N.D.U.A.&T, Ayodhya
25.	NDBG-70	N.D.U.A.&T, Ayodhya
26.	NDBG-71	N.D.U.A.&T, Ayodhya
27.	NDBG-72	N.D.U.A.&T, Ayodhya
28.	NDBG-73	N.D.U.A.&T, Ayodhya
29.	Pusa Naveen (C)	IARI New Delhi
30.	NDBG-104 (C)	N.D.U.A.&T, Ayodhya

Result and Discussion

The genotypic and phenotypic correlation coefficients computed among the twelve characters under study (Table-2) in general, genotypic correlation coefficients were found to be higher than the corresponding phenotypic correlation coefficients, suggesting therefore, a strong inherent relationship in different pair of characters in bottle gourd germplasm.

The genotypic correlation level, Fruit yield/plant (kg) exhibited highly significant and positive correlation with number of fruits/ plant (0.566**), node number to first staminate flowers (0.406**), average fruit wt /fruit (Kg) (0.387**), node number to first pistillate flower (0.370**) and fruit circumference (cm) (0.217*). Whereas, significant but negative correlation was found with days to first staminate flower anthesis (-0.701**) and days to first pistillate flower anthesis (-0.372**). Positive and non-significant correlation was recorded with fruit length (cm) (0.203), days of first fruit harvest (0.196), number of primary branches per plant (0.056) and vine length (m) (0.040). The highly significant and

positive correlation on fruit yield/ plant (kg) was exhibited with number of fruits/ plant (0.571**), node number to first staminate flowers (0.386**), node number to first pistillate flower (0.337**) and average fruit wt /fruit (Kg) (0.350**). Significant but negative correlation with days to first staminate flower anthesis (-0.344**). Whereas, positive but non-significant correlation was recorded with fruit length (cm) (0.166), fruit circumference (cm) (0.156), days of first fruit harvest (0.141), number of primary branches per plant (0.043) and vine length (m) (0.038). Whereas, days to first pistillate flower anthesis (-0.205) was showed negative and non- significant at phenotypic correlation level.

The most important traits yield per plant had exhibited highly significant and positive correlation with number of fruits per plant and fruit weight at phenotypic and genotypic correlation. In days to first staminate flower anthesis, the node number to first staminate flower (-0.373) and correlation with fruit yield/plant kg (-0.344) is highly negatively significant meanwhile the days to first pistillate flower anthesis (0.240) and vine length (m) (0.262) are highly positively significant, other traits are non- significant. In days to first pistillate flower anthesis, fruit circumference (cm) (-0.216) and number of fruit/plant (-0.260) are negative significant meanwhile days to first fruit harvest (0.214) is positive significant and other traits are non-significant. In node number to first staminate flower, fruit per plant and correlation on fruit yield/ plant kg (0.386) are highly significant meanwhile fruit length (0.215) is significant and other traits are non-significant. In node number to first pistillate flower, the fruit length (0.271) and correlation on with fruit yield/ plant kg (0.337) are highly positively significant and number of primary branches per plant (0.247) is positively significant and vine length (-0.443) is highly negative significant and the other traits are non-significant. In days to first fruit harvest, fruit circumference (-0.171), average fruit wt/fruit (kg) (-0.087) and number of primary branches per plant (-0.019) are negative non-significant and other traits are positive non-significant. In fruit length (cm), average fruit wt/fruit (kg) (0.414) is positive highly significant and number of primary branched per plant (0.261) is positive significant meanwhile fruit per plant (-0.208) is negative significant and other traits are non-significant. In fruit circumference (cm), the average fruit wt/fruit (kg) (0.272) is highly significant meanwhile number of primary branches per plant, vine length (m) and fruits per plant are negative non-significant and fruit yield /plant is positive non-significant. In number of primary branches per plant, vine length (m) (-0.250) negative significant and other traits are non-significant. In case of vine length (m), fruit per plant is negative non-significant and traits are non-significant. In case of average fruit wt per fruit (kg) fruits per plant (-0.554) is highly negative significant and fruit yield per plant (0.350) is positive highly significant. In case of number fruits per plant, correlation with fruit yield/plant kg (0.571) was recorded positive and highly significant. Similar studies were also reported earlier by Khan *et al.* (2009), Yadav *et al.* (2010), Singh *et al.* (2012), Yadav and Kumar (2012), Janaranjani *et al.* (2015), Mashilo *et al.* (2016) [8], Mahapatra *et al.* (2019) [7] Kumari *et al.* (2021) [5, 14, 9, 13, 4, 8, 7, 6].

The path coefficient analysis was carried out from genotypic and phenotypic correlation coefficient to resolve direct and indirect effect of different characters on fruit yield per plant (Table-3). Path coefficient analysis highest positive direct effect on fruit yield per plant was exerted by average fruit weight per fruit (0.974) followed by fruits per plant (0.958), days to first fruit harvest (0.163), number of primary branches per plant (0.061), days to first staminate flower anthesis (0.043), node number to first staminate flowers (0.040) and node number to first pistillate flower (0.016). While highest negative direct effect on fruit yield per plant was exerted by days to first pistillate flower anthesis (-0.133) followed by vine length (m) (-0.032), fruit length (-0.031) and fruit circumference (-0.024) at genotypic level. The highest positive direct effect on fruit yield per plant was exhibited by number of fruit/plant (1.084), average fruit wt /fruit (Kg) (0.955), days of first fruit harvest (0.039), vine length (m) (0.039), node number to first pistillate flower (0.033), number of primary branches per plant (0.012), node number to first staminate flowers (0.010) and days to first staminate flower anthesis (0.001). Whereas, negative direct effect on fruit yield per plant was exhibited by fruit length (cm) (-0.021), fruit circumference (cm) (-0.021) and days to first pistillate flower anthesis (-0.011) at phenotypic.

Days to first staminate flower anthesis had indirect positive effect through fruit circumference (cm) (0.004) and number of primary branches per plant (0.000). Whereas, negative indirect effect through average fruit wt /fruit (Kg) (-0.412), number fruits /plant (-0.221), days to first pistillate flower anthesis (-0.056), vine length (m) (-0.027), node number to first pistillate flower (-0.012), node number to first staminate flowers (-0.010), days of first fruit harvest (-0.006) and fruit length (cm) (-0.002) at genotypic level. At phenotypic level vine length (m) (0.010), days of first fruit harvest and fruit circumference (cm) (0.002) respectively, indirect positive effect. While number of fruits /plant (-0.199), average fruit wt /fruit (Kg) (-0144), node number to first pistillate flower (-0.012), days to first pistillate flower anthesis (-0.003), node number to first staminate flowers, fruit length (cm) and number of primary branches per plant (-0.001) respectively, showed negative indirect effect. The characters days to first pistillate flower anthesis showed indirect positive effect through average fruit wt /fruit (Kg) (0.096), days of first fruit harvest (0.069), number of primary branches per plant (0.023), days to first staminate flower anthesis (0.018), fruit circumference (cm) (0.005), node number to first pistillate flower (0.001). Whereas, negative indirect effect for number of fruits /plant (-0.431), fruit length (cm) (-0.011), node number to first staminate flowers (-0.006) and vine length (m) (-0.003) at genotypic level. At phenotypic level positive indirect effect was recorded for average fruit wt /fruit (Kg) (0.073), days of first fruit harvest (0.008), fruit circumference (cm) (0.005), node number to first pistillate flower (0.002), number of primary branches per plant (0.002), vine length (m) (0.001) and node number to first staminate flowers (0.000). While number of fruits /plant (-0.282) and fruit length (cm) (-0.004) recorded indirect negative effect. Node number to first staminate flowers exhibited positive indirect effects via number of fruits /plant (0.375), node number to first pistillate flower (0.017) and number of primary branches per plant (0.002). Whereas, negative indirect effects for days of first fruit harvest (-0.013), average fruit wt /fruit (Kg) (-0.011), fruit length (cm) (-0.003) and vine length (m) (-0.001) at genotypic level. Positive indirect effects were recorded at phenotypic level for number of fruits /plant (0.377), average fruit wt /fruit (Kg) (0.004), node number to first pistillate flower and number of primary branches per plant (0.002). Whereas, negative indirect effect for fruit length (cm) (-

0.005), days of first fruit harvest and fruit circumference (cm) (-0.002). Node number to first pistillate flower was recorded positive indirect effects via average fruit wt /fruit (Kg) (0.214), number of fruits /plant (0.145), number of primary branches per plant (0.020) and days of first fruit harvest (0.010). Whereas, negative indirect effect for fruit length (cm) (-0.011) and fruit circumference (cm) (-0.001) at genotypic level. Phenotypic level, Positive indirect effects showed average fruit wt /fruit (Kg) (0.176), number of fruits /plant (0.151), number of primary branches per plant (0.003) and days of first fruit harvest (0.000). While negative indirect effect for vine length (m) (-0.017), fruit length (cm) (-0.006) and fruit circumference (cm) (-0.001) at phenotypic level. Days of first fruit harvest exhibited positive indirect effects for number of fruits /plant (0.227) and fruit circumference (cm) (0.006). Whereas, negative indirect effect for vine length (m) (-0.011), number of primary branches per plant (-.008) and Fruit length (cm) (-0.002) at genotypic level. Phenotypic level, positive indirect effects showed number of fruits /plant (0.176), vine length (m) (0.008), fruit circumference (cm) (0.004). However, negative indirect effect for average fruit wt /fruit (Kg) (-0.083). Fruit length (cm) exhibited positive indirect effects for average fruit wt /fruit (Kg) (0.489) and number of primary branches per plant (0.020). However, negative indirect effects for number of fruits /plant (-0.243), vine length (m) (-0.008) and fruit circumference (cm) (-0.004) at genotypic level. Positive indirect effects for average fruit wt /fruit (Kg) (0.396), vine length (m) (0.007) and number of primary branches per plant (0.003). Whereas, negative indirect effects for number of fruits /plant (-0.226) and fruit circumference (cm) (-0.003) at phenotypic level. Fruit circumference (cm) showed positive indirect effects for average fruit wt /fruit (Kg) (0.330), vine length (m) (0.003) and number of primary branches per plant (0.002). Number of fruits /plant (-0.078) exhibited negative indirect effects at genotypic level. Positive indirect effects for average fruit wt /fruit (Kg) (0.260) and negative indirect effects for number of fruits /plant (-0.078) at phenotypic level. Number of primary branches per plant exhibited positive indirect effects for number of fruits /plant (0.054) and vine length (m) (0.010). However, negative indirect effects for average fruit wt /fruit (Kg) (-0.001) at genotypic level. At phenotypic positive indirect effects for average fruit wt /fruit (Kg) (0.029) and number of fruits /plant (0.011). while negative indirect effects for vine length (m) (-0.010). Vine length (m) exhibited positive indirect effects for average fruit wt /fruit (Kg) (0.200) and negative indirect effects for number of fruits /plant (-0.172) at genotypic level. At phenotypic positive indirect effects for average fruit wt /fruit (Kg) (0.186) and negative indirect effects for number of fruits /plant (-0.174). Average fruit wt /fruit (Kg) exhibited negative indirect effects for number of fruits /plant (-0.509) at genotypic level. At phenotypic level, negative indirect effects for number of fruits /plant (-0.601). Number of fruits /plants exhibited indirect positive effects through all characters at both genotypic and phenotypic level. The parameters indicated above were chosen after careful thought in the development of high-yielding bottle gourd genotypes. Similar result was also reported by Dwivedi (2000), Umamaheswarappa *et al.* (2004), Khan *et al.* (2009), Singh *et al.* (2012), Mashilo *et al.* (2016), Mahapatra *et al.* (2019) and Kumari *et al.* (2021) [3, 11, 5, 9, 8, 7, 6].

Table 2: Genotypic (rp) and Phenotypic (rp) correlation coefficient for pair of character in bottle gourd germplasm

Traits		Days to first staminate flower anthesis	Days to first pistillate flower anthesis	Node number to first staminate flowers	Node number to first pistillate flower	Days of first fruit harvest	Fruit length (cm)	Fruit Circumference (cm)	Number of primary branches/ plants	Vine length (m)	Average fruit wt /fruit (Kg)	Number of fruits /plants	Fruit yield/plant kg
Days to first staminate flower anthesis	G	1.000	0.422**	-0.261*	-0.767**	-0.037	0.062	-0.147	-0.007	0.825**	-0.423**	-0.231*	-0.701**
	P	1.000	0.240*	-0.053	-0.373**	0.052	0.041	-0.111	-0.095	0.262*	-0.151	-0.183	-0.344**
Days to first pistillate flower anthesis	G		1.000	-0.153	0.080	0.423**	0.368**	-0.220*	0.379**	0.087	0.098	-0.450**	-0.372**
	P		1.000	0.004	0.054	0.214*	0.206	-0.216*	0.205	0.037	0.077	-0.260*	-0.205
Node number to first staminate flowers	G			1.000	0.099	-0.082	0.241*	0.134	0.275**	0.017	-0.011	0.391**	0.406**
	P			1.000	0.071	-0.052	0.215*	0.096	0.187	-0.011	0.004	0.348**	0.386**
Node number to first pistillate flower	G				1.000	0.063	0.349**	0.055	0.331**	-0.496**	0.219*	0.152	0.370**
	P				1.000	0.000	0.271**	0.037	0.247*	-0.443**	0.184	0.139	0.337**
Days of first fruit harvest	G					1.000	0.057	-0.244*	-0.136	0.329**	-0.123	0.237*	0.196
	P					1.000	0.017	-0.171	-0.019	0.196	-0.087	0.163	0.141
Fruit length (cm)	G						1.000	0.178	0.357**	0.236*	0.502**	-0.253*	0.203
	P						1.000	0.143	0.261*	0.186	0.414**	-0.208*	0.166
Fruit Circumference (cm)	G							1.000	0.032	-0.088	0.339**	-0.081	0.217*
	P							1.000	-0.035	-0.001	0.272**	-0.072	0.156
Number of primary branches per plant	G								1.000	-0.319**	-0.001	0.056	0.056
	P								1.000	-0.250*	0.030	0.010	0.043
Vine length (m)	G									1.000	0.205	-0.180	0.040
	P									1.000	0.195	-0.160	0.038
Average fruit wt /Fruit (Kg)	G										1.000	-0.532**	0.387**
	P										1.000	-0.554**	0.350**
Number of fruits /plants	G											1.000	0.566**
	P											1.000	0.571**

* &** Significant at 5% & 1% respectively

Table 3: Direct and Indirect effects of different characters on fruit yield per plant at genotypic and phenotypic level in bottle gourd germplasm

Traits		Days to first staminate flower anthesis	Days to first pistillate flower anthesis	Node number to first staminate flowers	Node number to first pistillate flower	Days of first fruit harvest	Fruit length (cm)	Fruit Circumference (cm)	Number of primary branches per plant	Vine length (m)	Average fruit wt /Fruit (Kg)	Number of fruits /plants	Correlation with Fruit yield/plant kg
Days to first staminate flower anthesis	G	0.043	-0.056	-0.010	-0.012	-0.006	-0.002	0.004	0.000	-0.027	-0.412	-0.221	-0.701**
	P	0.001	-0.003	-0.001	-0.012	0.002	-0.001	0.002	-0.001	0.010	-0.144	-0.199	-0.344**
Days to first pistillate flower anthesis	G	0.018	-0.133	-0.006	0.001	0.069	-0.011	0.005	0.023	-0.003	0.096	-0.431	-0.372**
	P	0.000	-0.011	0.000	0.002	0.008	-0.004	0.005	0.002	0.001	0.073	-0.282	-0.205
Node number to first staminate flowers	G	-0.011	0.020	0.040	0.002	-0.013	-0.007	-0.003	0.017	-0.001	-0.011	0.375	0.406**
	P	0.000	0.000	0.010	0.002	-0.002	-0.005	-0.002	0.002	0.000	0.004	0.377	0.386**
Node number to first pistillate flower	G	-0.033	-0.011	0.004	0.016	0.010	-0.011	-0.001	0.020	0.016	0.214	0.145	0.370**
	P	-0.001	-0.001	0.001	0.033	0.000	-0.006	-0.001	0.003	-0.017	0.176	0.151	0.337**
Days of first fruit harvest	G	-0.002	-0.056	-0.003	0.001	0.163	-0.002	0.006	-0.008	-0.011	-0.120	0.227	0.196
	P	0.000	-0.002	-0.001	0.000	0.039	0.000	0.004	0.000	0.008	-0.083	0.176	0.141
Fruit length (cm)	G	0.003	-0.049	0.010	0.006	0.009	-0.031	-0.004	0.022	-0.008	0.489	-0.243	0.203
	P	0.000	-0.002	0.002	0.009	0.001	-0.021	-0.003	0.003	0.007	0.396	-0.226	0.166
Fruit Circumference (cm)	G	-0.006	0.029	0.005	0.001	-0.040	-0.006	-0.024	0.002	0.003	0.330	-0.078	0.217*
	P	0.000	0.002	0.001	0.001	-0.007	-0.003	-0.021	0.000	0.000	0.260	-0.078	0.156
Number of primary branches per plant	G	0.000	-0.051	0.011	0.005	-0.022	-0.011	-0.001	0.061	0.010	-0.001	0.054	0.056
	P	0.000	-0.002	0.002	0.008	-0.001	-0.005	0.001	0.012	-0.010	0.029	0.011	0.043
Vine length (m)	G	0.035	-0.012	0.001	-0.008	0.054	-0.007	0.002	-0.019	-0.032	0.200	-0.172	0.040
	P	0.000	0.000	0.000	-0.015	0.008	-0.004	0.000	-0.003	0.039	0.186	-0.174	0.038
Average fruit wt /Fruit (Kg)	G	-0.018	-0.013	-0.001	0.003	-0.020	-0.016	-0.008	0.000	-0.007	0.974	-0.509	0.387**
	P	0.000	-0.001	0.000	0.006	-0.003	-0.009	-0.006	0.000	0.008	0.955	-0.601	0.350**
Number of fruits /plants	G	-0.010	0.060	0.016	0.002	0.039	0.008	0.002	0.003	0.006	-0.518	0.958	0.566**
	P	0.000	0.003	0.003	0.005	0.006	0.004	0.002	0.000	-0.006	-0.529	1.084	0.571**

Genotype- R SQUARE = 0.9824 RESIDUAL EFFECT = 0.1325
Phenotype- R SQUARE = 0.9711 RESIDUAL EFFECT = 0.1701

Conclusion

The result was concluded that fruit yield/ plant (kg) exhibited highly significant and positive correlation with number of fruits/ plant, node number to first staminate flowers, average fruit wt /fruit (Kg), node number to first pistillate flower and fruit circumference (cm).

Path coefficient analysis highest positive direct effect on fruit yield per plant was exerted by average fruit weight per fruit followed by fruits per plant, days to first fruit harvest, number of primary branches per plant, days to first staminate flower anthesis, node number to first staminate flowers and node number to first pistillate flower.

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