

Original Research Article

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Correlation and Path Co-efficient Analysis in Ridge Gourd [*Luffa acutangula* (L.) Roxb.]

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ABSTRACT

Correlation and path co-efficient analysis for 18 traits were conducted for thirty genotypes of ridge gourd during 2010-11 at Kittur Rani Channamma College of Horticulture, Arabhavi, Karnataka, India. The Values of genotypic correlation co-efficient were greater than the phenotypic correlation co-efficient. Fruit yield per plant was highly significant and positively correlated with vine length at 45 and 90 DAS, number of branches at 90 DAS, number of leaves at 45 and 90 DAS, node to first female and male flowering, days to last harvest, sex ratio, number of fruits per plant, fruit yield per plot, average fruit weight and fruit length at both genotypic and phenotypic level. Whereas days to first female flowering, days to 50 per cent flowering, days to first male flowering and days to first harvest were negative and highly significant correlation with fruit yield per plant. Path co-efficient analysis revealed that number of fruits per plant had the direct effect on yield, followed by average fruit weight and fruit length both at phenotypic and genotypic level. Thus, selection for these characters will improve the yield. The results indicated that number of fruits per plant and average fruit weight can be considered during selection for improved yield in ridge gourd.

Keywords

Ridge gourd,
Correlation, Path
co-efficient
analysis, Fruit yield
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Introduction

Ridge gourd [*Luffa acutangula* (L.) Roxb.] is an important warm season vegetable grown all over India and having long history of cultivation in the tropical countries of Asia and Africa (Sheshadri, 1980). Ridge gourd belongs to genus *Luffa* of *Cucurbitaceae* family and has chromosome number $2n = 26$.

Ridge gourd originated in India, it is cultivated in the tropics for its tender edible fruits both on commercial scale and in kitchen gardens throughout India and it is popular vegetable both as spring summer and rainy season crop. Seeds are reported to be possess purgative, emetic and antihelmintic properties due to the secondary metabolite *cucurbitacin* (Robinson and Decker-Walters, 1997).

Ridge gourd is large climber with long tap root system and leaves green, simple and ovate with 5-7 lobes. Though cultivated species are monoecious in nature different sex forms viz., androecious, gynoecious, gynomonocious, andromonocious and hermaphrodite forms are also reported (Choudhary and Thakur, 1965). The staminate flowers with 5 stamens (synandry) are born in 10-20 flowered racemes while pistillate flowers are solitary, short or long pedunculate and fragrant. Pistillate and staminate flowers are borne on axil of leaf. Anthesis starts between 4 to 6 pm in the evening and remain throughout the night and are ready for selfing and pollination in the early morning or afternoon. Anthesis and dehiscence are governed by temperature and humidity. Anthers are free and pistil has three placenta with many ovules. Stigmas are three and bilobate. Fruit is club shaped and angled with ten prominent ridges and many seeded. It becomes hard, ridged and inedible on maturity. Seeds are black, flattened and wrinkled. One thousand seeds weigh about 150 to 170 g (Doijode, 2002).

The crop improvement work should be focused on selection of genotypes for better yield, superior quality and resistance to biotic stresses. Selection is an intrinsic part of all vegetable crop improvement programmes and it is as old as cultivation itself. For an effective selection, information on the nature and magnitude of variation available in the material with regard to component characters contributing to yield and the part played by the environment in the expression of these plant characters is essential. In selecting a plant or a type, one should be reasonably sure of the superiority of the selection being inherited by the progenies. This is because a sizable part of the phenotypic variation is caused by environmental factors. The biometrical methods applied in crop improvement programme provide means of

evaluating the phenotypic expression of characters in terms of their genotypic worth.

Before aiming an improvement in yield, it is necessary to have the knowledge of correlation and path co-efficient analysis. However, selection based on yield alone is often misleading, because it is one of the most complex character being dependent on its components for its full expression. For rational improvement of yield and its components, association of component characters with yield and among the components themselves should be found out by estimating the correlation co-efficient.

Association of characters determined by correlation co-efficient, although useful will not provide an exact picture of the relative importance of direct and indirect influence of each of the characters towards yield. Path co-efficient analysis was developed by Wright (1921) has been employed in many vegetables in order to overcome the unreliability of correlation co-efficient, this technique involves effective partitioning of the correlation co-efficient in to measures of direct and indirect effects on yield. Much work has not been done for its genetic improvement of ridge gourd. Hence an investigation was undertaken to study the correlation and path co-efficient analysis in ridge gourd.

Materials and Methods

The study was conducted with thirty genotypes of ridge gourd in Randomized Complete Block Design (RCBD) with two replication at Department of Vegetable Science, Kittur Rani Channamma College of Horticulture, Arabhavi during 2010-11 (August-2010 to January-2011). The spacing maintained between rows was 1.2 m and between plants was 0.9 m. Irrigation, weed control and other cultural practices were

followed as per the package of practices of horticultural crops of University of Agricultural Sciences, Dharwad (Anon., 2008). The vines were staked individually using wooden sticks and were trained uniformly. This helped the plants for better spreading and easy harvesting. Observations were recorded on growth, earliness, yield and yield contributing characters to know correlation of characters with yield.

The correlation co-efficient among all possible character combinations at phenotypic (rp) and genotypic (rg) level were estimated employing formula (Al-Jibouri *et al.*, 1958). The correlation co-efficient among all possible character combinations at phenotypic (rp) and genotypic (rg) level were estimated employing formula (Al-Jibouri *et al.*, 1958).

Phenotypic correlation = $r_{xy}(p) =$

$$\frac{\text{Cov}_{xy}(p)}{\sqrt{V_x(p) \times V_y(p)}}$$

Genotypic correlation = $r_{xy}(g) =$

$$\frac{\text{Cov}_{xy}(g)}{\sqrt{V_x(g) \times V_y(g)}}$$

Where,

$\text{Cov}_{xy}(G)$ = Genotypic covariance between x and y

$\text{Cov}_{xy}(P)$ = Phenotypic covariance between x and y

$V_x(G)$ = Genotypic variance of character 'x'

$V_x(P)$ = Phenotypic variance of character 'x'

$V_y(G)$ = Genotypic variance of character 'y'

$V_y(P)$ = Phenotypic variance of character 'y'

The test of significance for association between characters was done by comparing table 'r' values at n-2 error degrees of freedom for phenotypic and genotypic

correlations with estimated values, respectively.

Path co-efficient analysis suggested by Wright (1921) and Dewey and Lu (1957) was carried out to know the direct and indirect effect of the morphological traits on plant yield.

Results and Discussion

The genotypic and phenotypic correlation co-efficient were determined to obtain information on the relationship among all 18 quantitative characters in ridge gourd and are presented in Tables 2 and 3, respectively.

Analysis of variance showed significant differences for all the characters under study (Table-1). Correlation co-efficient analysis revealed that fruit yield per plant showed positive and significant correlation with number of fruits per plant (0.889), average fruit weight (0.826), fruit yield per plot (0.821), fruit length (0.795), number of leaves at 90 days after sowing (0.795), vine length at 90 days after sowing (0.774), days to last harvest (0.717), number of branches at 90 days after sowing (0.708), number of leaves at 45 days after sowing (0.692) and vine length 45 days after sowing (0.616) at genotypic level. Whereas number of fruits per plant (0.862), average fruit weight (0.858), fruit yield per plot (0.807), fruit length (0.784), number of leaves at 90 days after sowing (0.768), vine length at 90 days after sowing (0.760), days to last harvest (0.682), number of branches 90 days after sowing (0.650), number of leaves at 45 days after sowing (0.599) and vine length 45 days after sowing (0.517) at phenotypic level. Since, these association characters are in the desirable direction, selection for these traits may improve the yield per plant. These results are in confirmed with Varalakshmi *et al.*, (1995), Rao *et al.*, (2000), Chowdhury and Sarma

(2002) and Prasanna *et al.*, (2002) in ridge gourd. Fruit yield per plant was highly significant and negative association with days to first female and male flowering (-0.690 and -0.611), days to 50 per cent flowering (-0.684) and days to first harvest (-0.612) indicating that earliness parameters were negatively correlated with fruit yield, which adversely affect the fruit yield.

Path co-efficient analysis determined to obtain information on the direct and indirect effect of characters on fruit yield per plant among all 18 quantitative characters in ridge

gourd and are presented in Tables 4 and 5, respectively.

Path co-efficient analysis shows that the number of branches at 90 days after sowing, number of leaves at 90 days after sowing, number of fruits per plant, average fruit weight, fruit yield per plot and days to last harvest had direct positive effect on fruit yield. Among these number of fruits per plant, average fruit weight and fruit yield per plot had high direct positive effect on fruit yield indicating their true positive and significant association with yield.

Table.1 Analysis of variance (mean sum of squares) for growth, earliness, yield, fruit quality and seed parameters in Ridge gourd (*Luffa acutangula* (L.) Roxb)

Sl. No	Character	Replication	Genotypes	Error	SEm±	CD@ 5%
Df		1	29	29		
A	Growth parameters					
1.	Vine length 45 DAS	3638.12	2208.48**	490.87	22.15	45.31
2.	Vine length 90DAS	13081.00	14421.23**	1085.74	32.95	67.39
3.	Number of branches 90 DAS	0.56	2.86**	0.11	0.33	0.68
4.	Number of leaves 45 DAS	0.005	44.94**	9.00	3.00	6.14
5.	Number of leaves 90 DAS	313.78	2652.61**	77.68	8.81	18.03
B.	Earliness parameter:					
1.	Days to first female flower	0.05	27.92**	0.89	0.94	1.94
2.	Days to first male flower	0.22	10.91**	0.67	0.82	1.68
3.	Node to first female flower	2.02	32.40**	0.35	0.59	1.22
4.	Node to first male flower	0.17	0.25*	0.02	0.13	0.28
5.	Days to 50 % flowering	0.06	9.10**	0.68	0.82	1.70
6.	Days to first harvest	0.61	10.79**	1.36	1.16	2.39
7.	Days to last harvest	6.62	53.83**	3.68	1.91	3.93
8.	Sex ratio	0.10	45.46**	0.08	0.28	0.58
C.	Yield and yield components:					
1	Number of fruits per plant	2.48	1.52**	0.07	0.26	0.55
2.	Fruit yield per plant	49070.00	342163.72**	3069.86	55.40	133.30
3.	Fruit yield per plot	2.17	30.02**	0.13	0.36	0.74
4.	Average fruit weight	15.50	5972.36**	22.45	4.73	9.69
5.	Fruit length	4.64	63.05**	0.38	0.62	1.28
6.	Fruit diameter	98.98	53.91**	2.58	1.60	3.25

* Significant at 5 % (p=0.05)

** Significant at 1 % (p=0.01)

NS: Non significant

Df: Degrees of freedom

DAS: Days after sowing

Table.2 Genotypic correlation co-efficient among growth, earliness, yield and yield components in ridge gourd (*Luffa acutangula* (L.) Roxb.)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0.838**	0.695**	0.505**	0.686**	-0.062	-0.065	0.650**	0.609**	-0.116	-0.202	0.526**	0.546**	0.627**	0.616**	0.654**	0.654**	0.606**
2	1.000	0.860**	0.669**	0.880**	-0.224	-0.272	0.690**	0.647**	-0.265	-0.301	0.746**	0.770**	0.805**	0.774**	0.790**	0.764**	0.713**
3		1.000	0.645**	0.775**	-0.310	-0.309	0.756**	0.636**	-0.320	-0.402*	0.783**	0.649**	0.703**	0.708**	0.717**	0.722**	0.730**
4			1.000	0.709**	-0.484**	-0.346	0.660**	0.458*	-0.407*	-0.377*	0.608**	0.494**	0.596**	0.692**	0.670**	0.660**	0.650**
5				1.000	-0.579**	-0.565**	0.869**	0.831**	-0.503**	-0.655**	0.772**	0.634**	0.789**	0.795**	0.808**	0.805**	0.753**
6					1.000	0.884**	0.898**	0.784**	0.882**	0.913**	-0.365*	-0.253	-0.575**	-0.690**	-0.651**	-0.662**	-0.691**
7						1.000	0.852**	0.774**	0.889**	0.829**	-0.358*	-0.321	-0.472**	-0.611**	-0.571**	-0.633**	-0.589**
8							1.000	0.867**	0.817**	0.813**	0.597**	0.478**	0.604**	0.619**	0.675**	0.622**	0.580**
9								1.000	0.774**	0.660**	0.463**	0.334	0.601**	0.588**	0.630**	0.609**	0.509**
10									1.000	0.848**	-0.365*	-0.273	-0.612**	-0.684**	-0.659**	-0.637**	-0.643**
11										1.000	-0.362*	-0.227	-0.589**	-0.612**	-0.580**	-0.579**	-0.520**
12											1.000	0.714**	0.675**	0.717**	0.727**	0.651**	0.780**
13												1.000	0.647**	0.560**	0.555**	0.439*	0.531**
14													1.00	0.889**	0.857**	0.826**	0.637**
15														1.000	0.821**	0.871**	0.795**
16															1.000	0.959**	0.781**
17																1.000	0.810**
18																	1.000

Critical r value = 0.463 at 1 per cent and 0.361 at 5 per cent

* and ** indicate significant at 5 and 1 per cent probability level, respectively.

- 1. Vine length 45 DAS
- 2. Vine length 90 DAS
- 3. Number of branches 90 DAS
- 4. Number of leaves 45 DAS
- 5. Number of leaves 90 DAS
- 6. Days to first female flowering

- 7. Days to first male flowering
- 8. Node to first female flowering
- 9. Node to first male flowering
- 10. Days to 50 % flowering
- 11. Days to first harvest
- 12. Days to last harvest

- 13. Sex ratio
- 14. Number of fruits per plant
- 15. Fruit yield per plant
- 16. |Fruit yield per plot
- 17. Average fruit weight
- 18. Fruit length

Table.3 Phenotypic correlation co-efficient among growth, earliness, yield and yield components in ridge gourd (*Luffa acutangula* (L.) Roxb)

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0.639 **	0.636 **	0.498**	0.652**	-0.020	-0.010	0.624**	0.520**	-0.102	-0.193	0.497**	0.510**	0.510**	0.517**	0.509**	0.584**	0.492**
2	1.000	0.702**	0.535**	0.734**	-0.210	-0.205	0.650**	0.560**	-0.211	-0.226	0.659**	0.709**	0.704**	0.760**	0.746**	0.707**	0.663**
3		1.000	0.663**	0.756**	-0.265	-0.300	0.734**	0.577**	-0.317	-0.395*	0.692**	0.619**	0.607**	0.650**	0.657**	0.686**	0.608**
4			1.000	0.687**	-0.460**	-0.368*	0.538**	0.314	-0.357	-0.375*	0.513**	0.407*	0.525**	0.599**	0.525**	0.515**	0.536**
5				1.000	-0.550**	-0.527**	0.844**	0.737**	-0.45**	-0.449**	0.681**	0.615**	0.762**	0.768**	0.766**	0.715**	0.731**
6					1.000	0.859**	0.865**	0.704**	0.844**	0.778**	-0.360	-0.231	-0.553**	-0.657**	-0.631**	-0.638**	-0.671**
7						1.000	0.797**	0.675**	0.845**	0.769**	-0.357	-0.304	-0.451*	-0.564**	-0.535**	-0.594**	-0.557**
8							1.000	0.791**	0.755**	0.718**	0.555**	0.470**	0.557**	0.601**	0.668**	0.598**	0.570**
9								1.000	0.679**	0.656**	0.383*	0.316	0.527**	0.557**	0.612**	0.579**	0.506**
10									1.000	0.674**	-0.362*	-0.213	-0.548**	-0.627**	-0.616**	-0.585**	-0.600**
11										1.000	-0.358	-0.190	-0.499**	-0.537**	-0.506**	-0.505**	-0.463**
12											1.000	0.708**	0.516**	0.682**	0.693**	0.608**	0.732**
13												1.000	0.618**	0.554**	0.553**	0.437*	0.528**
14													1.000	0.862**	0.811**	0.781**	0.608**
15														1.000	0.807**	0.858**	0.784**
16															1.000	0.850**	0.775**
17																1.000	0.802**
18																	1.000

Critical r value = 0.463 at 1 per cent and 0.361 at 5 per cent

* and ** indicate significant at 5 and 1 per cent probability level, respectively.

- 1. Vine length 45 DAS
- 2. Vine length 90 DAS
- 3. Number of branches 90 DAS
- 4. Number of leaves 45 DAS
- 5. Number of leaves 90 DAS
- 6. Days to first female flowering

- 7. Days to first male flowering
- 8. Node to first female flowering
- 9. Node to first male flowering
- 10. Days to 50 % flowering
- 11. Days to first harvest
- 12. Days to last harvest

- 13. Sex ratio
- 14. Number of fruits per plant
- 15. Fruit yield per plant
- 16. |Fruit yield per plot
- 17. Average fruit weight
- 18. Fruit length

Table.4 Genotypic path co-efficient analysis among growth, earliness, yield and yield component in ridge gourd (*Luffa acutangula* (L.) Roxb)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	rG
1	0.066	-0.152	0.102	-0.037	0.208	-0.174	-0.075	-0.033	0.108	-0.110	-0.172	0.173	-0.047	0.273	0.201	0.217	0.018	0.050	0.616**
2	0.039	-0.12	0.106	-0.031	0.225	-0.224	-0.077	-0.043	0.113	-0.101	-0.205	0.194	-0.056	0.35	0.238	0.255	0.019	0.092	0.774**
3	0.032	-0.161	0.112	-0.041	0.223	-0.292	-0.079	-0.035	0.167	-0.118	-0.379	0.230	-0.055	0.387	0.253	0.278	0.110	0.076	0.708**
4	0.012	-0.139	0.108	-0.055	0.203	-0.307	-0.068	-0.025	0.102	-0.103	-0.274	0.184	-0.036	0.469	0.248	0.28	0.018	0.075	0.692**
5	0.047	-0.170	0.125	-0.039	0.283	-0.382	-0.097	-0.037	0.149	-0.143	-0.353	0.201	-0.046	0.513	0.348	0.292	0.019	0.085	0.795**
6	0.010	-0.161	0.106	-0.03	0.107	-0.481	-0.024	-0.078	0.129	-0.169	-0.383	0.106	-0.033	0.066	0.045	0.044	0.009	0.047	-0.690**
7	0.011	-0.168	0.114	-0.018	0.102	-0.474	-0.01	-0.064	0.125	-0.159	-0.363	0.105	-0.024	0.064	0.043	0.043	0.009	0.053	-0.611**
8	0.024	-0.115	0.172	-0.037	0.220	-0.489	-0.012	-0.010	0.164	-0.146	-0.405	0.155	-0.035	0.497	0.275	0.282	0.010	0.069	0.619**
9	0.018	-0.114	0.117	-0.025	0.202	-0.424	-0.078	-0.069	0.119	-0.138	-0.386	0.145	-0.024	0.472	0.348	0.352	0.018	0.055	0.588**
10	0.020	-0.138	0.108	-0.026	0.108	-0.492	-0.01	-0.071	0.112	-0.178	-0.402	0.102	-0.035	0.068	0.046	0.047	0.008	0.049	-0.684**
11	0.010	-0.160	0.103	-0.026	0.102	-0.418	-0.014	-0.052	0.109	-0.151	-0.375	0.101	-0.039	0.061	0.038	0.042	0.009	0.048	-0.612**
12	0.040	-0.114	0.135	-0.039	0.273	-0.354	-0.065	-0.065	0.194	-0.134	-0.326	0.160	-0.057	0.450	0.271	0.28	0.011	0.057	0.717**
13	0.070	-0.123	0.163	-0.027	0.206	-0.324	-0.056	-0.058	0.140	-0.124	-0.312	0.101	-0.073	0.417	0.239	0.257	0.018	0.046	0.560**
14	0.054	-0.18	0.161	-0.038	0.222	-0.285	-0.065	-0.018	0.114	-0.109	-0.251	0.176	-0.047	0.486	0.26	0.306	0.017	0.086	0.889**
15	0.042	-0.132	0.141	-0.048	0.229	-0.364	-0.081	-0.04	0.176	-0.118	-0.34	0.195	-0.041	0.490	0.293	0.304	0.012	0.103	0.821**
16	0.041	-0.121	0.157	-0.042	0.218	-0.378	-0.082	-0.052	0.106	-0.114	-0.303	0.189	-0.032	0.555	0.297	0.318	0.011	0.103	0.871**
17	0.010	-0.100	0.167	-0.036	0.264	-0.391	-0.086	-0.042	0.155	-0.115	-0.322	0.203	-0.039	0.355	0.430	0.284	0.012	0.046	0.795**
18	0.038	-0.139	0.177	-0.029	0.203	-0.388	-0.042	-0.052	0.155	-0.143	-0.339	0.167	-0.024	0.337	0.359	0.292	0.014	0.140	0.726**

Residual=0.0007. Diagonal values indicates direct effect rG= Genotypic correlation coefficient of fruit yield per vine
 * and ** indicate significant at 5 and 1 per cent probability level, respectively.

1. Vine length 45 DAS
2. Vine length 90 DAS
3. Number of branches 90 DAS
4. Number of leaves 45 DAS
5. Number of leaves 90 DAS
6. Days to first female flowering

7. Days to first male flowering
8. Node to first female flowering
9. Node to first male flowering
10. Days to 50 % flowering
11. Days to first harvest
12. Days to last harvest

13. Sex ratio
14. Number of fruits per plant
15. Fruit yield per plot
16. Average fruit weight
17. Fruit length
18. Fruit diameter

Table.5 Phenotypic path co-efficient analysis among growth, earliness, yield and yield component in ridge gourd (*Luffa acutangula* (L.) Roxb)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	rP
1	-0.005	-0.024	0.050	-0.026	0.021	-0.062	-0.014	0.047	0.005	-0.008	-0.035	0.001	0.011	0.172	0.161	0.169	0.033	0.021	0.517**
2	-0.004	-0.029	0.061	-0.023	0.024	-0.066	-0.015	0.054	0.006	-0.008	-0.047	0.001	0.015	0.265	0.207	0.258	0.044	0.017	0.760**
3	-0.003	-0.023	0.076	-0.028	0.024	-0.053	-0.017	0.056	0.006	-0.009	-0.036	0.001	0.015	0.201	0.176	0.192	0.054	0.018	0.650**
4	-0.003	-0.026	0.05	-0.033	0.019	-0.042	-0.011	0.041	0.003	-0.007	-0.034	0.001	0.009	0.206	0.174	0.202	0.036	0.014	0.599**
5	-0.004	-0.029	0.065	-0.031	0.028	-0.064	-0.022	0.064	0.007	-0.012	-0.039	0.001	0.013	0.267	0.205	0.251	0.048	0.02	0.768**
6	-0.002	-0.094	0.02	-0.092	0.021	-0.216	-0.091	0.026	0.007	-0.173	-0.192	0.001	0.009	0.038	0.028	0.032	0.01	0.011	-0.657**
7	-0.002	-0.078	0.011	-0.071	0.018	-0.195	-0.076	0.021	0.006	-0.159	-0.172	0.002	0.007	0.037	0.026	0.037	0.012	0.012	-0.564**
8	-0.003	-0.021	0.056	-0.023	0.024	-0.072	-0.048	0.076	0.008	-0.022	-0.012	0.001	0.01	0.207	0.164	0.188	0.051	0.017	0.601**
9	-0.003	-0.019	0.044	-0.013	0.021	-0.063	-0.044	0.06	0.010	-0.011	-0.015	0.001	0.007	0.192	0.149	0.171	0.048	0.022	0.557**
10	-0.002	-0.094	0.026	-0.094	0.021	-0.213	-0.092	0.027	0.007	-0.176	-0.189	0.003	0.01	0.032	0.029	0.027	0.04	0.011	-0.627**
11	-0.002	-0.075	0.022	-0.073	0.018	-0.198	-0.057	0.024	0.006	-0.151	-0.182	0.005	0.01	0.029	0.022	0.024	0.031	0.01	-0.537**
12	-0.002	-0.019	0.060	-0.022	0.019	-0.062	-0.015	0.042	0.004	-0.009	-0.021	0.001	0.015	0.233	0.189	0.205	0.049	0.015	0.682**
13	-0.002	-0.021	0.055	-0.017	0.017	-0.064	-0.011	0.036	0.003	-0.007	-0.021	0.001	0.021	0.186	0.159	0.172	0.035	0.012	0.554**
14	-0.003	-0.013	0.061	-0.012	0.022	-0.053	-0.016	0.068	0.006	-0.009	-0.02	0.001	0.023	0.273	0.235	0.223	0.049	0.027	0.862**
15	-0.003	-0.012	0.065	-0.011	0.025	-0.052	-0.019	0.058	0.006	-0.01	-0.027	0.002	0.013	0.242	0.222	0.231	0.051	0.026	0.807**
16	-0.003	-0.019	0.06	-0.026	0.023	-0.043	-0.021	0.061	0.007	-0.009	-0.021	0.001	0.012	0.262	0.243	0.251	0.053	0.027	0.858**
17	-0.002	-0.021	0.061	-0.023	0.021	-0.063	-0.02	0.058	0.006	-0.009	-0.02	0.001	0.011	0.161	0.319	0.227	0.066	0.011	0.784**
18	-0.003	-0.013	0.067	-0.016	0.025	-0.074	-0.011	0.064	0.003	-0.009	-0.024	0.001	0.007	0.159	0.245	0.204	0.02	0.038	0.683**

Residual=0.0117.

Diagonal values indicates direct effect

rP= Genotypic correlation co-efficient of fruit yield per vine

* and ** indicate significant at 5 and 1 per cent probability level, respectively.

1. Vine length 45 DAS
2. Vine length 90 DAS
3. Number of branches 90 DAS
4. Number of leaves 45 DAS
5. Number of leaves 90 DAS
6. Days to first female flowering

7. Days to first male flowering
8. Node to first female flowering
9. Node to first male flowering
10. Days to 50 % flowering
11. Days to first harvest
12. Days to last harvest

13. Sex ratio
14. Number of fruits per plant
15. Fruit yield per plot
16. Average fruit weight
17. Fruit length
18. Fruit diameter

Similar results were obtained by Rao *et al.*, (1999) in ridge gourd that high direct positive effect of number of fruits per vine on fruit yield, these results are in conformity with Prasanna *et al.*, (2002) and Kantharaja (2003) in ridge gourd, Rathod (2007) in bitter gourd and Kumar *et al.*, (2007) in bottle gourd. Therefore, direct selection for these traits would be rewarding for improvement of yield.

In conclusion, present study revealed that character like fruit yield per plant showed positive and significant correlation with vine length at 45 and 90 days after sowing, number of branches at 90 days after sowing, number of leaves at 45 and 90 days after sowing, node to first female and male flower, days to last harvest, sex ratio, number of fruits per plant, fruit yield per plant, fruit yield per plot and fruit yield per hectare. Since, the association is in desirable direction, selection for these traits may ultimately improve the yield. The number of fruits per plant, average fruit weight and fruit yield per plot were the most influencing factors. These characters have direct positive effect on fruit yield. Thus, these characters deserve greater weightage during selection for yield. The direct selection in these traits would be rewarding for improvement in the fruit yield per plant.

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