

Correlation studies in okra *Abelmoschus esculentus* (L.) Moench

SHASHANK SHEKHAR SOLANKEY AND ANIL K. SINGH

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See end of the article for authors' affiliations

Correspondence to:

SHASHANK SHEKHAR SOLANKEY

Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, VARANASI (U.P.) INDIA

ABSTRACT

In a correlation study conducted with 20 parents (17 lines x 3 testers) and their 51 F₁'s, in two different seasons *i.e.* *Kharif* and summer, it was revealed that the single fruit weight, number of fruit per plant and number of seeds per fruit were identified as important fruit yield component in *Kharif* season. However, number of fruits per plant, plant height and stem diameter were most crucial yield component for summer season.

Key words : Correlation, Line x tester, Okra

In okra so many varieties have been developed but substantial increase in productivity potential could not be realized probably due to genetic potential ceilings of the genotypes. Thus, there is an urgent need of genetic improvement of the crop for yield. The main objectives of crop improvement include the development of early maturing, high yielding, insect and disease resistance varieties along with other desirable quality attributes like good fruit shape and size besides fresh texture. In most of the developed countries like U.S.A. and Japan mainly F₁ varieties are under cultivation on commercial scale instead of open pollinated varieties. Estimation of correlation coefficient among the yield contributing variables is necessary to understand the direction of selection and to maximize yield in the shortest period of time. Genetic correlation indicates the relative importance of character(s) on which greater emphasis should be made in selection for yield. However, as the number of variables in the correlation study increases the direct and indirect association between yield and particular component character becomes complex. It only reveals the direction and magnitude of association between any two characters.

MATERIALS AND METHODS

The present investigation was carried out at Institute of Agriculture Sciences, Banaras Hindu University, Varanasi, in a Randomized Block Design with three replications during *Kharif* season, 2007 and summer season, 2008. All the recommended practices were followed during experimentation. The experimental material consisted of 51 F₁'s, involving 17 lines (IC - 128883, VRO-5, VRO-6, AC-108, IC-45806, IC-218877,

IC-218844, Arka Abhay, IC-43720, IIVR-342, IC-140906, IIVR-198, EC-305612, IIVR-435, IIVR-401, SA-2 and IC-140934) and 3 testers (Arka Anamika, Pusa Sawani and Parbhani Kranti). Observations were recorded on fifteen characters *viz.*, plant height (cm), stem diameter (cm), number of branches/plant, number of nodes/plant, internodal length (cm), days to first flowering, days to 50 per cent flowering, number of fruits/plant, single fruit weight (g), fruit length (cm), fruit diameter (cm), fruit yield/plant (g), number of seeds/fruit, number of ridges/fruit and ascorbic acid content (mg/100g). Phenotypic and genotypic correlation coefficients were worked out to study the inter-relationship between various pairs of characters as suggested by Al-Jibouri *et al.* (1958).

RESULTS AND DISCUSSION

The phenotypic and genotypic correlation coefficients computed between fifteen characters under study for parents and their F₁'s in two different seasons (*Kharif* and Summer) are presented in Table 1 (*Kharif* parents), Table 2 (summer parents), Table 3 (*Kharif* F₁'s) and Table 4 (summer F₁'s). The genotypic correlation coefficients were higher in magnitude than phenotypic correlations for most of the traits barring few exceptions indicating inherent genetic association.

In *Kharif* parents, only 13 and 4 combinations showed significant positive and negative correlation coefficients, respectively. The single fruit weight (P = 0.720, G = 0.826) had highest positive significant correlation followed by number of fruits per plant (P = 0.642, G = 0.722) with number of seeds per fruit and

Table 1: Phenotypic (rp) and genotypic (rg) correlation coefficients of parents for 15 characters in okra during *Kharif* season

Characters	Plant height (cm)	Stem diameter (cm)	Number of branches/plant	Number of nodes/plant	Inter nodal length (cm)	Days to first flowering	Days to 50 % flowering	Number of fruits/plant	Single fruit weight (g)	Fruit length (cm)	Fruit diameter (cm)	Number of seeds/fruit	Number of ridges/fruit	Ascorbic acid (mg/100g)	Fruit yield per plant (g)
Plant height (cm)	rp 0.529*	-0.131	0.233	0.195	0.302	0.202	0.091	-0.411	-0.162	-0.140	-0.145	0.190	-0.010	-0.416	
Stem diameter (cm)	rg 0.684**	-0.223	0.118	0.412	0.429	0.346	0.172	-0.633**	-0.256	-0.370	-0.239	0.215	-0.022	-0.533*	
Number of branches/plant	rp	-0.127	0.050	0.161	0.361	-0.012	0.041	-0.390	-0.076	-0.249	-0.258	-0.021	0.059	-0.311	
Number of nodes/plant	rg	-0.146	0.047	0.323	0.525*	-0.087	0.050	-0.501	-0.082	-0.266	-0.403	0.021	0.074	-0.471	
Inter nodal length (cm)	rp	0.232	0.248	-0.386	-0.068	-0.027	-0.068	-0.075	-0.367	0.315	-0.116	0.142	-0.290	-0.202	
Days to first flowering	rg	-0.777**	rp	-0.486*	-0.101	0.006	-0.064	-0.096	-0.398	0.535*	-0.119	0.148	-0.307	-0.220	
Days to 50 % flowering	rg	-0.818**	rg	-0.177	-0.067	-0.067	0.081	0.272	0.120	0.080	0.247	-0.114	-0.375	-0.253	
Number of fruits/plant	rp	0.271	0.067	0.271	0.136	0.136	0.067	-0.260	-0.059	-0.139	-0.115	0.241	0.411	0.182	
Single fruit weight (g)	rg	0.430	0.211	0.408	-0.079	-0.259	-0.110	-0.408	-0.079	-0.259	-0.110	0.433	0.561**	0.192	
Fruit length (cm)	rp	0.353	0.332	-0.209	0.173	-0.468*	-0.026	-0.209	0.173	-0.468*	-0.026	0.151	-0.001	0.147	
Fruit diameter (cm)	rg	0.359	0.441*	-0.308	0.195	-0.750**	-0.060	-0.308	0.195	-0.750**	-0.060	0.210	-0.010	0.181	
Number of seeds/fruit	rp	0.023	0.023	-0.182	0.128	-0.013	-0.062	-0.182	0.128	-0.013	-0.062	0.163	-0.247	-0.013	
Number of ridges/fruit	rg	0.089	0.089	-0.250	0.168	-0.004	-0.040	-0.250	0.168	-0.004	-0.040	0.239	-0.303	-0.072	
Ascorbic acid (mg/100g)	rp	0.099	0.099	0.285	0.446*	-0.578	0.722**	0.099	0.285	-0.369	0.642**	0.294	-0.091	0.497*	
	rg	0.298	0.298	0.446*	0.446*	-0.578	0.722**	0.298	0.446*	-0.578	0.722**	0.557*	-0.117	0.654**	
	rp	0.198	0.198	0.201	0.720**	0.188	0.044	0.198	0.201	0.720**	0.188	0.044	0.518**	0.518**	
	rg	0.152	0.152	-0.098	0.826**	0.024	0.047	0.152	-0.098	0.826**	0.024	0.047	0.636**	0.636**	
	rp	0.248	0.248	0.248	0.248	0.248	0.246	0.248	0.248	0.248	0.248	0.246	0.475*	0.475*	
	rg	0.388	0.388	0.271	0.511*	0.252	0.081	0.388	0.271	0.511*	0.252	0.081	-0.158	-0.158	
	rp	0.018	0.018	-0.018	0.278	0.081	0.116	0.018	-0.018	0.278	0.081	0.116	-0.248	-0.248	
	rg	0.284	0.284	0.351	0.634**	0.772**	0.772**	0.284	0.351	0.634**	0.772**	0.772**	0.772**	0.772**	
	rp	0.349	0.349	0.349	0.349	0.349	0.349	0.349	0.349	0.349	0.349	0.349	0.349	0.349	
	rg	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	0.300	
	rp	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	0.376	
	rg	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	-0.190	
	rp	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	
	rg	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	-0.194	

* and ** indicate of significance of values at P = 0.05 and 0.01, respectively,

Table 2: Phenotypic (rp) and genotypic (rg) correlation coefficients of parents for 15 characters in okra during summer season

Characters	Plant height (cm)	Stem diameter (cm)	Number of branches/plant	Number of nodes/plant	Inter nodal length (cm)	Days to first flowering	Days to 50 % flowering	Number of fruits/plant	Single fruit weight (g)	Fruit length (cm)	Fruit diameter (cm)	Number of seeds/fruit	Number of ridges/fruit	Ascorbic acid (mg/100g)	Fruit yield per plant (g)
Plant height (cm)	rp 0.524*	rg 0.386	0.082	0.361	0.204	-0.091	-0.053	0.273	-0.083	-0.221	-0.205	0.150	0.145	-0.182	-0.263
Stem diameter (cm)	rp 0.160	rg 0.175	0.072	0.305	0.393	0.044	-0.102	0.361	-0.028	-0.489	-0.473	0.232	0.212	-0.246	-0.389
Number of branches/plant	rp 0.422	rg 0.436	0.303	0.303	0.069	-0.202	-0.106	0.358	-0.339	-0.246	-0.367	0.107	0.198	0.068	-0.259
Number of nodes/plant	rp 0.709**	rg -0.777**	0.251	0.251	0.123	-0.197	-0.271	0.387	-0.359	-0.393	-0.654	0.126	0.284	0.088	-0.361
Number of internodal length (cm)	rp 0.422	rg 0.436	0.303	0.303	0.069	-0.202	-0.106	0.358	-0.339	-0.246	-0.367	0.107	0.198	0.068	-0.259
Days to first flowering	rp 0.294	rg 0.487*	0.131	0.131	0.142	0.235	0.294	0.050	-0.060	0.142	0.177	0.070	0.353	0.106	-0.134
Days to 50 % flowering	rp 0.131	rg 0.142	0.142	0.142	0.189	0.189	0.189	0.084	-0.069	0.189	0.345	0.045	0.429	0.111	-0.150
% flowering	rp 0.114	rg 0.114	0.114	0.114	0.162	0.162	0.162	0.391	0.159	0.079	-0.156	0.411	0.129	-0.189	-0.037
Number of fruits/plant	rp 0.229	rg 0.274	0.229	0.229	0.378	0.378	0.378	0.427	0.201	0.040	-0.403	0.459*	0.174	-0.206	-0.045
Single fruit weight (g)	rp 0.194	rg 0.194	0.194	0.194	0.208	0.208	0.208	0.226	-0.217	-0.307	0.003	-0.326	-0.018	0.137	-0.243
Fruit length (cm)	rp 0.260	rg 0.260	0.260	0.260	0.444*	0.444*	0.444*	0.272	-0.246	-0.392	0.131	-0.383	-0.064	0.151	-0.273
Fruit diameter (cm)	rp 0.427	rg 0.427	0.427	0.427	0.114	0.114	0.114	0.040	0.114	0.162	0.024	0.031	-0.035	-0.060	0.334
Number of seeds/fruit	rp 0.195	rg 0.195	0.195	0.195	0.073	0.073	0.073	0.106	0.073	0.384	0.055	-0.050	-0.073	-0.075	0.383
Number of ridges/fruit	rp 0.275	rg 0.275	0.275	0.275	-0.140	-0.140	-0.140	0.262	-0.140	0.208	0.258	-0.258	-0.129	0.084	0.204
Ascorbic acid (mg/100g)	rp 0.103	rg 0.103	0.103	0.103	-0.206	-0.206	-0.206	0.418	-0.206	0.444*	0.139	-0.393	-0.083	0.112	0.206
	rp 0.511*	rg 0.511*	0.511*	0.511*	0.229	0.229	0.229	0.274	0.229	-0.151	-0.578**	0.872**	0.378	-0.469*	0.255
	rp 0.471*	rg 0.471*	0.471*	0.471*	0.274	0.274	0.274	0.274	0.274	-0.194	-0.848**	0.878**	0.473*	-0.508*	0.290
	rp 0.235	rg 0.235	0.235	0.235	0.663**	0.663**	0.663**	0.077	0.663**	0.260	-0.143	0.663**	0.077	-0.235	0.511**
	rp 0.574**	rg 0.574**	0.574**	0.574**	0.427	0.427	0.427	0.694**	0.427	0.427	-0.298	0.694**	0.117	-0.256	0.574**
	rp 0.301	rg 0.301	0.301	0.301	0.195	0.195	0.195	0.045	0.195	rp	rp	0.045	-0.008	0.214	0.301
	rp 0.401	rg 0.401	0.401	0.401	0.275	0.275	0.275	0.103	0.275	rg	rg	0.103	-0.148	0.261	0.401
	rp 0.209	rg 0.209	0.209	0.209	0.469*	0.469*	0.469*	0.010	0.469*	0.469*	0.469*	-0.010	-0.025	0.301	-0.209
	rp 0.455*	rg 0.455*	0.455*	0.455*	0.330	0.330	0.330	0.330	0.330	0.330	0.330	0.330	0.330	-0.441	0.455*
	rp 0.511*	rg 0.511*	0.511*	0.511*	0.415	0.415	0.415	0.415	0.415	0.415	0.415	0.415	0.415	-0.471*	0.511*
	rp 0.099	rg 0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	0.099	-0.083	0.099
	rp 0.111	rg 0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	0.111	-0.091	0.111
	rp 0.162	rg 0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	0.162	-0.162
	rp 0.167	rg 0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.167	-0.167

* and ** indicate significance of values at P=0.05 and 0.01, respectively

Table 3 : Phenotypic (rp) and genotypic (rg) correlation coefficients of hybrids (F₁'s) for 15 characters in okra during *Kharif* season

Characters	Plant height (cm)	Stem diameter (cm)	Number of branches/plant	Number of nodes/plant	Inter nodal length (cm)	Days to first flowering	Days to 50 % flowering	Number of fruits/plant	Single fruit weight (g)	Fruit length (cm)	Fruit diameter (cm)	Number of seeds /fruit	Number of ridges/fruit	Ascorbic acid (mg/100g)	Fruit yield per plant (g)
Plant height (cm)	rp 0.707** rg 0.880**		0.084 0.045	0.591** 0.609**	-0.128 -0.119	0.019 0.054	-0.017 0.013	-0.066 -0.133	-0.197 -0.244	-0.320* -0.359**	-0.121 -0.295*	-0.112 -0.159	-0.005 0.023	0.014 0.018	-0.222 -0.288*
Stem diameter (cm)	rp 0.010 rg -0.044		0.010 -0.044	0.444** 0.545**	-0.156 -0.134	0.003 0.049	0.017 0.112	-0.080 -0.174	0.013 0.042	-0.158 -0.190	-0.039 -0.066	-0.014 -0.061	0.130 0.252	-0.079 -0.120	0.037 -0.089
Number of branches/plant	rp 0.247 rg 0.259		rp 0.247 rg 0.259	0.247 0.259	-0.223 -0.296	-0.016 -0.007	0.043 0.055	0.045 0.015	0.022 0.140	-0.022 -0.004	-0.065 -0.096	0.029 0.096	-0.008 0.042	0.010 0.006	-0.149 -0.144
Number of nodes/plant	rp -0.745** rg -0.829**		rp -0.745** rg -0.829**	-0.745** -0.829**	-0.745** -0.829**	0.041 0.067	0.026 0.043	0.001 -0.006	-0.186 -0.158	0.020 0.045	-0.037 -0.097	-0.126 -0.105	0.041 0.072	-0.072 -0.078	0.021 0.019
Internodal length (cm)	rp 0.021 rg 0.022		rp 0.021 rg 0.022	0.021 0.022	rp 0.021 rg 0.022	0.022 0.022	0.008 -0.009	0.053 0.314*	-0.027 -0.093	-0.294* -0.418**	-0.072 -0.044	0.083 0.060	-0.016 -0.027	0.104 0.134	-0.124 -0.157
Days to first flowering	rp 0.474** rg 0.436**		rp 0.474** rg 0.436**	0.474** 0.436**	0.474** 0.436**	rp 0.474** rg 0.436**	0.465** 0.206	0.010 0.097	0.010 0.097	-0.097 0.070	0.126 -0.008	0.287* 0.214	0.052 0.139	-0.297* -0.313*	-0.024 -0.030
Days to 50 % flowering	rp 0.319* rg 0.319*		rp 0.319* rg 0.319*	0.319* 0.319*	0.319* 0.319*	rp 0.319* rg 0.319*	0.465** 0.206	0.070 0.151	0.070 0.151	0.063 0.096	-0.020 -0.143	0.652** 0.658**	0.045 0.125	-0.051 -0.084	0.217 0.392**
Number of fruits/plant	rp 0.407** rg 0.422**		rp 0.407** rg 0.422**	0.407** 0.422**	0.407** 0.422**	rp 0.407** rg 0.422**	rp 0.407** rg 0.422**	rp 0.407** rg 0.422**	rp 0.407** rg 0.422**	0.407** 0.422**	0.298* 0.390**	0.700** 0.762**	-0.098 -0.300*	-0.119 -0.156	0.196 0.282*
Single fruit weight (g)	rp 0.179 rg 0.189		rp 0.179 rg 0.189	0.179 0.189	0.179 0.189	rp 0.179 rg 0.189	rp 0.179 rg 0.189	rp 0.179 rg 0.189	rp 0.179 rg 0.189	rp 0.179 rg 0.189	0.179 0.189	0.236 0.249	-0.039 -0.121	-0.067 -0.073	0.220 0.276*
Fruit length (cm)	rp 0.177 rg 0.197		rp 0.177 rg 0.197	0.177 0.197	0.177 0.197	rp 0.177 rg 0.197	rp 0.177 rg 0.197	rp 0.177 rg 0.197	rp 0.177 rg 0.197	rp 0.177 rg 0.197	rp 0.177 rg 0.197	0.177 0.197	0.046 -0.323*	-0.036 -0.063	-0.064 -0.031
Fruit diameter (cm)	rp -0.043 rg -0.131		rp -0.043 rg -0.131	-0.043 -0.131	-0.043 -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	rp -0.043 rg -0.131	-0.108 -0.147	0.279* 0.360**
Number of seeds/fruit	rp -0.083 rg -0.104		rp -0.083 rg -0.104	-0.083 -0.104	-0.083 -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	rp -0.083 rg -0.104	-0.083 -0.104	0.097 0.170
Number of ridges/fruit	rp -0.211 rg -0.254		rp -0.211 rg -0.254	-0.211 -0.254	-0.211 -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	rp -0.211 rg -0.254	-0.211 -0.254
Ascorbic acid (mg/100g)															

* and ** indicate of significance of values at P = 0.05 and 0.01, respectively,

Table 4 : Phenotypic (rp) and genotypic (rg) correlation coefficients of hybrids (F₁s) for 15 characters in okra during summer season

Characters	Plant height (cm)	Stem diameter (cm)	Number of branches/plant	Number of nodes/plant	Internodal length (cm)	Days to first flowering	Days to 50% flowering	Number of fruits/plant	Single fruit weight (g)	Fruit length (cm)	Fruit diameter (cm)	Number of seeds/fruit	Number of ridges/fruit	Ascorbic acid (mg/100g)	Fruit yield per plant (g)
Plant height (cm)	rp 0.719** rg 0.641**	0.164 0.030	0.717** 0.761**	-0.240 -0.158	-0.076 -0.098	-0.122 -0.187	0.285* 0.440**	0.015 0.015	-0.030 0.015	-0.190 -0.230	0.016 0.159	0.214 0.367**	-0.060 -0.109	-0.052 -0.078	-0.048 -0.031
Stem diameter (cm)	rp 0.201 rg 0.072	0.603** 0.611**	0.603** 0.611**	-0.357 -0.336	0.048 0.068	-0.002 0.012	0.323* 0.599**	-0.006 0.059	-0.007 0.037	-0.007 0.037	-0.005 0.141	0.250 0.505**	0.087 0.091	-0.150 -0.228	0.129 0.254
Number of branches/plant	rp 0.479** rg 0.472**	0.515** 0.515**	0.479** 0.472**	-0.515** -0.515**	-0.174 -0.188	-0.151 -0.173	0.164 0.233	-0.067 -0.040	0.009 0.036	0.009 0.036	-0.173 -0.152	0.093 0.165	0.035 0.029	-0.060 -0.062	-0.025 -0.004
Number of nodes/plant	rp 0.720** rg 0.734**	-0.227 -0.289*	0.294* 0.422**	-0.720** -0.734**	-0.227 -0.289*	-0.260 -0.380**	0.294* 0.422**	0.022 0.093	-0.071 -0.075	-0.071 -0.075	0.048 0.201	0.244 0.388**	0.004 -0.022	-0.088 -0.110	0.045 0.094
Internodal length (cm)	rp 0.231 rg 0.264	0.148 0.196	-0.198 -0.258	0.148 0.196	0.231 0.264	0.148 0.196	-0.198 -0.258	-0.178 -0.244	-0.206 -0.247	-0.206 -0.247	-0.053 -0.155	-0.263 -0.346*	-0.182 -0.209	0.161 0.182	-0.193 -0.291*
Days to first flowering	rp 0.648** rg 0.674**	0.112 0.125	0.112 0.125	0.648** 0.674**	0.112 0.125	0.648** 0.674**	0.112 0.125	-0.068 -0.119	-0.206 -0.238	-0.206 -0.238	-0.115 -0.191	0.037 0.020	0.016 0.028	-0.005 0.000	-0.112 -0.196
Days to 50% flowering	rp 0.016 rg 0.059	-0.029 0.052	-0.029 0.052	0.016 0.052	-0.029 0.052	-0.029 0.052	-0.036 0.052	0.016 0.063	-0.074 -0.060	-0.074 -0.060	-0.043 -0.134	-0.024 0.831**	0.036 0.103	-0.027 -0.075	0.065 0.069
Number of fruits/plant	rp 0.243 rg 0.274*	0.106 0.169	0.618** 0.604**	0.243 0.274*	0.106 0.169	0.618** 0.604**	0.813** 0.831**	0.063 0.063	-0.060 -0.060	-0.060 -0.060	-0.134 -0.134	0.831** 0.831**	0.103 0.103	-0.084 -0.084	0.097 0.097
Single fruit weight (g)	rp 0.239 rg 0.240	0.239 0.240	0.110 0.111	0.239 0.240	0.110 0.111	0.239 0.240	0.110 0.111	0.110 0.111	0.135 0.135	0.135 0.135	0.129 0.129	0.135 0.135	0.135 0.135	-0.129 -0.129	0.079 0.079
Fruit length (cm)	rp 0.070 rg 0.070	0.070 0.070	0.111 0.111	0.070 0.070	0.111 0.111	0.070 0.070	0.111 0.111	0.111 0.111	0.070 0.070	0.070 0.070	0.127 0.127	0.070 0.070	0.070 0.070	-0.150 -0.150	0.127 0.127
Fruit diameter (cm)	rp 0.005 rg 0.005	-0.161 -0.161	0.005 0.005	-0.161 -0.161	0.005 0.005	-0.161 -0.161	0.005 0.005	0.005 0.005	-0.161 -0.161	-0.161 -0.161	0.023 0.023	0.005 0.005	-0.161 -0.161	-0.038 -0.038	0.023 0.023
Number of seeds/fruit	rp 0.026 rg 0.026	0.026 0.026	0.018 0.018	0.026 0.026	0.026 0.026	0.026 0.026	0.018 0.018	0.018 0.018	0.026 0.026	0.026 0.026	0.141 0.141	0.018 0.018	0.026 0.026	-0.065 -0.065	0.006 0.006
Number of ridges/fruit	rp 0.132 rg 0.132	0.132 0.132	0.119 0.119	0.132 0.132	0.132 0.132	0.132 0.132	0.119 0.119	0.119 0.119	0.132 0.132	0.132 0.132	0.195 0.195	0.119 0.119	0.132 0.132	-0.132 -0.132	0.195 0.195
Ascorbic acid (mg/100g)	rp 0.173 rg 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.173 0.173	0.177 0.177	0.173 0.173	0.173 0.173	-0.173 -0.173	0.177 0.177
	rp 0.145 rg 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145	0.145 0.145
	rp 0.176 rg 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176	0.176 0.176

* and ** indicate of significance of values at P = 0.05 and 0.01, respectively

number of seeds per fruit ($P = 0.634$, $G = 0.772$) with fruit yield per plant. However, the highest negative significant correlation was found in number of nodes per plant ($P = -0.777$, $G = -0.818$) with internodal length. Among *Kharif* F_1 's, only 16 and 5 combinations were expressed positive and negative significant correlations, respectively. In all the combinations plant height ($P = 0.707$, $G = 0.880$) had maximum positive significant correlation with stem diameter followed by single fruit weight ($P = 0.700$, $G = 0.762$) and number of fruits per plant ($P = 0.652$, $G = 0.658$) with number of seeds per fruit. Whereas number of nodes per plant ($P = -0.745$, $G = -0.829$) expressed maximum negative and significant correlation with internodal length. Thus, these characters emerged as most important associates of fruit yield per plant in okra.

In summer parents, number of fruits per plant ($P = 0.872$, $G = 0.878$) had highest positive significant correlation followed by single fruit weight ($P = 0.663$, $G = 0.694$) with number of seeds per fruit. The highest negative significant correlation was found in number of nodes per plant ($P = -0.709$, $G = -0.777$) with internodal length. In all the parents of summer season, only 9 and 6 combinations were observed to express significant correlation in positive and negative directions, respectively. Akinyele and Osekita (2006) also found that number of fruits per plant had highest genotypic correlation coefficient and it should be seen as major determiner of final yield.

For summer hybrids, only 12 and 5 combinations were expressed positive and negative correlations, respectively. The highest positive significant correlation were observed in number of fruits per plant ($P = 0.813$, $G = 0.831$) with number of seeds per fruit followed by plant height with number of nodes per plant ($P = 0.717$, $G = 0.761$) and stem diameter ($P = 0.719$, $G = 0.641$). However, the highest negative significant correlation were found in number of nodes per plant ($P = -0.720$, $G = -0.734$) with internodal length. Similar results for this trait had been observed by Dhall *et al.* (2000); Chhatrola and Monpara (2005); Bello *et al.* (2006); Patro and Sankar (2006); Singh *et al.* (2006) and Shazia Ali *et al.* (2008).

In order to take care of occurrence of negative as well as positive correlations between important yield components, a reasonable compromise is required for attaining their proper balance for maximum combined contribution towards manifestation of yield. Most of the correlation coefficients obtained in present study are in conforming to previous reports in okra (Dhankar and

Dhankar, 2002; Jaiprakashnarayan and Mulge, 2004 and Singh *et al.*, 2007).

Authors' affiliations:

ANIL K. SINGH, Department of Horticulture, Institute of Agricultural Sciences, Banaras Hindu University, VARANASI (U.P.) INDIA

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