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RESEARCH ARTICLE

PHENOTYPIC AND GENOTYPIC CORRELATION COEFFICIENT STUDIES IN COMMERCIAL VARIETIES OF GLADIOLUS

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ABSTRACT

Present investigations on phenotypic and genotypic correlation coefficients in gladiolus were carried out on important qualitative and quantitative traits. Phenotypic and genotypic traits revealed positive association in desired characters. Informations on phenotypic and genotypic aspects showed considerable correlations in different trades of commercial varieties which can be taken in the programmes of further making improvement in this important floriculture industrial crop.

INTRODUCTION

Gladiolus (*Gladiolus grandiflorus* L.), queen of flowers, belongs to irridaceae family has special position in floriculture industry (Prasad *et al.,* 1996). In cut flower marketing it has a top status for earning in domestic and big cities markets at national level (Prasad and Kumar, 2001). Its commercial varieties of choice and floret colour of spikes have the maximum export potential value in demands of marketing in foreign countries. Healthy spikes of desired quality and colours have a lot of escope for exporting to earn foreign exchange in floriculture industry (Swarup, 1993; Dadlani, 1996; Teaotia, 1996). Correlation studies for desired characters inclusion in development of new varieties are essential for having information on quality and quantitative aspects (Gowda, 1984; Misra and Saini, 1988). Therefore correlation studies on desired traits were taken up in commercial varieties of gladiolus.

MATERIALS AND METHODS

50 commercial varieties were selected and trials were laid out in randomized block design with three replications at Chandra Shekhar Azad University of Agriculture and Technology, Kanpur during 1999-2000 and 2000-2001.

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Data were recorded in observations on vegetative and reproductive growth of flowering and thee same were subjected for phenotypic and genotypic correlation of different traits for obtaining the results for desired information. The statistical calculations were done by the methods suggested by Burton and DeVane (1953).

RESULTS AND DISCUSSION

Data of table 1-2 revealed that in phenotypic, plant height had positive association in leaves (0.0036, 0.1281), number of cormels (0.034, 0.0825), in the growth of plants, respectively. Number of leaves/plant showed positive correlation with length of leaf (0.1416), width of leaf (0.0953), number of florets/spike (0.0334), number of corms/plant (0.0665) and number of cormels/plant (0.1657) during 1999-2000. In spike development its length revealed positive association with days to flower (0.4031, 0.3984), number florets/spike (0.2152, 0.2585), number of corms/plant (0.2219, 0.2637) and cormels (0.3185, 0.2894) in 1999-2000, 2000-01, respectively. Lal and Singh (1978), Prasad and Mishra (1991) and Chandel *et al.* (1999) reported positive correlations in some varieties. Results summarized in table 3-4, for genotypic correlation exhibited that plant height revealed positive association with number of leaves (0.0157), length of spike (0.0777), number of florets/spike (0.2242) and cormels/plant, length of leaf in first year experiment. Similar findings were found in second year. Gowda (1989), Saxena *et al.* (2001), Katiyar *et al.* (2014) and Prasad and Kumar, (2001) also reported genotypic correlation in some varieties of gladiolus.

Table 1. Phenotypic correlation coefficient (1999-2000)

S.No.	Characters		Plant height	No. of leaves	Length of leaf	Width of leaf	Length of spike	No. of days to flowering	No. of florets/spike	No. of corms/plant	No. of cormels/plant	Weight of cormels/plant
			1	2	3	4	5	6	7	8	9	10
1.	Plant height	a	1.0000	0.0036	-0.075	-0.0618	0.0712	-0.0639	0.1872	-0.1393	0.0347	-0.0407
		b	1.0000	0.1281	-0.198	0.1487	-0.0209	-0.0762	0.3281	-0.1468	0.0325	-0.0687
2.	No. of leaves	a		1.0000	0.1416	0.0953	0.0082	-0.1930	0.0334	0.0665	0.1657	0.0422
		b		1.0000	0.0834	-0.1041	0.0213	-0.1910	0.1229	0.0743	0.1186	0.1416
3.	Length of leaf	a			1.0000	-0.0108	0.0253	-0.0576	-0.0991	0.0029	-0.0056	-0.0934
		b			1.0000	0.0810	0.1245	-0.0034	-0.0068	0.1916	0.0668	0.0242
4.	Width of leaf	a				1.0000	0.0232	0.1283	0.0412	0.1184	-0.0252	-0.1108
		b				1.0000	0.0352	0.2820*	0.0148	0.0675	-0.1837	-0.1898
5.	Length of spike	a					1.0000	0.4031***	0.3185**	0.2219	0.0489	0.0515
		b					1.0000	0.3984*	0.2585*	0.2637*	0.2298*	0.0854
6.	No. of days to flowering	a						1.0000	0.1611	0.1713	-0.0927	-0.1458
		b						1.0000	0.1645	0.1566	0.0452	-0.0611
7.	No. of florets/spike	a							1.0000	0.0112	0.0719	-0.0030
		b							1.0000	0.0132	-0.2058*	-0.2620*
8.	No. of corms/plant	a								1.0000	0.0729	0.8630***
		b								1.0000	0.0905	0.0631
9.	No. of cormels/plant	a									1.0000	0.7595*
		b									1.0000	0.4536
10.	Weight of cormels/plant	a										1.0000
		b										1.0000

Table 2. Phenotypic correlation coefficient (2000-2001)

S.No.	Characters		Plant height	No. of leaves	Length of leaf	Width of leaf	Length of spike	No. of days to flowering	No. of florets/spike	No. of corms/plant	No. of cormels/plant	Weight of cormels/plant
			1	2	3	4	5	6	7	8	9	10
1.	Plant height	a	1.0000	0.0157	-0.1353	-0.1338	0.0777	-0.0785	0.2242*	-0.1820	0.0368	0.0337
		b	1.0000	0.1898	0.0131	-0.1372	-0.0119	-0.0865	-0.4137	-0.1668	0.0305	-0.0601
2.	No. of leaves	a		1.0000	0.1733	0.1862	-0.0059	-0.1095	0.0955	0.0483	0.1870	0.0519
		b		1.0000	0.1775	0.0714	0.0245	-0.2402	-0.1618	-0.1188	0.1394	0.1641
3.	Length of leaf	a			1.0000	-0.0480	-0.0394	-0.1184	-0.0827	-0.0699	-0.0034	-0.1179
		b			1.0000	0.1775	0.0114	-0.0391	0.3632	0.1825	0.1113	-0.0260
4.	Width of leaf	a				1.0000	0.0394	0.1184	0.2460*	0.0699	-0.0545	-0.1623
		b				1.0000	0.0389	0.4390**	0.0815	0.2197	-0.2632	-0.3821
5.	Length of spike	a					1.0000	0.4360**	0.2989*	0.2925	0.3228*	0.1730
		b					1.0000	0.4299**	0.2920	0.3116*	0.2979*	0.0971
6.	No. of days to flowering	a						1.0000	0.2271	0.2256	0.0462	0.0692
		b						1.0000	0.1898	0.1805	0.0436	-0.0708
7.	No. of florets/spike	a							1.0000	-0.0712	0.1101	-0.1896
		b							1.0000	0.1840	-0.2317	-0.3058
8.	No. of corms/plant	a								1.0000	0.0891	-0.0249
		b								1.0000	0.1215	0.0070
9.	No. of cormels/plant	a									1.0000	0.0889
		b									1.0000	0.8028***
10.	Weight of cormels/plant	a										1.0000
		b										1.0000

Results of commercial varieties gave important positive association of traits in present investigations.

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