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Correlation and path analysis studies in Gerbera (*Gerbera jamesonii*)

S.D. MAGAR, S.D. WARADE, N.A. NALGE AND C.A. NIMBALKAR

SUMMARY

The correlation and path coefficient analysis were worked out for twenty eight diverse genotypes of gerbera for 11 characters. The correlations studies revealed that the genotypic correlations were higher than corresponding phenotypic correlations. The number of flowers per plant showed significant positive correlation with number of leaves per plant, plant spread, leaf area and number of suckers per plant at genotypic level. Path coefficient analysis showed that the leaf area (0.536) had highest direct effect on number of flowers per plant, followed by plant spread (0.227) and number of leaves per plant (0.207) and direct selection could be made for these characters for improving the yield. Considering correlation and path coefficients the characters *viz*., leaf area, plant spread, number of leaves per plant and number of suckers per plant emerged out as important component of cut flower yield in gerbera in the present study.

Improvement in any crop depends on the magnitude of genetic variability and the degree of transmission of characters from one generation to next generation. Besides this, the knowledge of association between yield and its contributing traits will be of great value in planning a breeding programme. But it does not give the exact position of the relative importance of direct and indirect effects of various yield attributes. Path analysis facilitates the partitioning of correlation coefficients into direct and indirect effects of various characters on yield or any other attributes. Gerbera is an important flower crop but very little information is available on its genetic potential for yield and yield contributing characters. Therefore, the present efforts was made investigate and to know inter–relationship and association of 11 characters and to understand the nature of direct and indirect effect of these characters on yield.

MATERIALS AND METHODS

The experiment was carried out at the Hi-tech Floriculture and Vegetable Improvement Project, College of Agriculture, Pune during 10th January, 2007 to 10th January, 2008 for one year. Twenty–eight genotypes of

Correspondence to:
S.D. MAGAR, Department of Horticulture, College of Agriculture, DHULE (M.S.) INDIA
Authors' affiliations:
S.D. WARADE, Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA
C.A. NIMBALKAR, Department of Agriculture Statistics, Mahatma Phule Krishi Vidyapeeth, Rahuri, AHMEDNAGAR (M.S.) INDIA
N.A. NALGE, Department of Horticulture, College of Agriculture, AKLUJ (M.S.) INDIA

gerbera were collected from different sources. The experiment was laid out in completely randomized design with three replications. Each genotype was represented by single row one m long and width 50 cm with plant to plant spacing of 25 cm. All recommended intercultural practices were followed to maintain good growth of the crop. The observations were recorded from randomly selected five plants from each genotype in each replication for number of leaves per plant, plant spread (cm), leaf area (cm^2), number of days required for first flowering, flower diameter (cm), flower stalk length (cm), number of ray florets per flower, flower stalk thickness (mm), number of suckers per plant, vase life (days) and number of flowers per plant. Correlation coefficients of genotypic and phenotypic level were worked out (Snedecor and Cocharan, 1967) and Path coefficients (Direct and indirect effects) by Dewey and Lu (1959).

RESULTS AND DISCUSSION

In plant breeding, correlation coefficient analysis measures the mutual relationship between various characters and determines the component characters on which selection can be based for genetic improvement in yield. The knowledge of association between different characters with yield helps the breeder to sort out the characters associated with yield. Genotypic correlation coefficients provide a measure of genotypic association between characters and give an indication of characters which may be useful for over all improvement in the crop Johnson *et al*. (1956).

In the present investigation the genotypic correlations were higher than the phenotypic ones, which revealed that the phenotypic expressions of the correlation are