

Studies On Character Association In Safflower (*Carthamus Tinctorius L.*)

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ABSTRACT

Correlation analysis revealed that number of effective capitula/plant, number of filled seeds in main capitulum, diameter of main capitulum and 100 seed weight were significantly and positively associated with seed yield while plant height, days to 50% flowering and oil content exhibited negative association with seed yield. Path analysis revealed that number of effective capitula/plant had maximum positive direct effect followed by number of filled seeds in main capitulum on seed yield. Days to 50% flowering and plant height exhibited negative direct effect on seed yield.

Key Words: Correlation, Safflower, Path analysis.

INTRODUCTION

Safflower, a source of high quality edible oil, is a relatively low yielding crop. Hence, concerted efforts have to be made to raise the yield level of the crop. Knowledge of interaction among the characters and with the environment in plant breeding is very essential to determine the extent and nature of relationship between yield and yield components.

MATERIALS AND METHODS

The experimental material consisted of 60 exotic germplasm accessions and 4 cultivated check varieties of safflower obtained from Safflower Germplasm Management Unit (GMU) of the Directorate of Oilseeds Research, Rajendranagar, Hyderabad. The experiment was carried out during *rabi* 2003-04 and was sown in Simple Lattice (8x8) design with 2 replications.

Data was recorded on eight characters viz. days to 50% flowering, plant height, number of effective capitula/plant, number of filled seeds in main capitulum, diameter of main capitulum, 100 seed weight, oil content and seed yield/plant. The phenotypic correlation coefficients were calculated by working out the variance components for each character and the covariance components for each pair of characters using the formula suggested by Al-Jibouri *et al.* (1979). The direct and indirect effects were estimated by taking seed yield as dependent variable, using path coefficient analysis suggested by Wright (1921) and elaborated by Dewey and Lu (1959).

RESULTS AND DISCUSSION

The phenotypic correlation coefficients of seven

component traits of seed yield per plant viz. days to 50% flowering, plant height, number of effective capitula per plant, number of filled seeds in main capitulum, diameter of main capitulum, 100 seed weight and oil content were calculated with seed yield per plant as well as among themselves and are furnished in Table 1

Number of effective capitula per plant (0.662), number of filled seeds in main capitulum (0.399), diameter of main capitulum (0.367) and 100 seed weight (0.268) exhibited significant positive association with seed yield. Plant height (-0.138), days to 50% flowering (-0.110) and oil content (-0.025) exhibited negative association with yield. These associations were in concurrence with earlier reports given by Mathur *et al.* (1976); Makne *et al.* (1979); Prasad *et al.* (1993); Patil (1998); Sharma *et al.* (1998) and Venkata Gopinath (2003).

Days to 50 % flowering, exhibited negligible positive association with oil content and negligible negative association with seed yield. Similar findings were reported earlier by Patil *et al.* (1990); Ghongade *et al.* (1993) and Patil (1998). Plant height showed negative association with seed yield in the study while it showed positive association with oil content. Number of effective capitula/plant showed highly significant positive association with seed yield indicating its importance in selection but it exhibited negative association with oil content. Similar findings were reported earlier by Ashri *et al.* (1974); Makne *et al.* (1979) and Malleshappa *et al.* (1989,1990, 2003). Diameter of main capitulum exhibited highly significant positive association with number of filled seeds in main capitulum and seed yield. It showed positive association with oil content. Number of filled seeds in main capitulum exhibited

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