

## Heterosis in cucumber (*Cucumis sativus* L.)

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### ABSTRACT

Thirty five  $F_1$  hybrids of cucumber involving 12 parents were studied to workout the extent of heterosis for yield and its contributing traits during April, 2005. The cultivars BGDL, DWD-2, GBGL and Pointsette were observed to be four best performing parents for total number of fruits per vine. Appreciable heterosis was found over better parent and mid parent for all the characters studied in desirable direction. Among all the hybrids maximum positive heterosis over mid (94.03) and better (31.73) parents were noticed in the hybrids  $L_4 \times T_1$  and  $L_4 \times T_2$ , respectively. The maximum yield recorded by these hybrids has been attributed to increase in average weight of fruit and total number of fruits per vine.

**Key words :** Cucumber, Heterosis, Lines, Productivity, Testers, Vigour

The cucumber (*Cucumis sativus* L.) is one of the important cucurbitaceous vegetable crop from nutritional as well as economic point of view. Wide range of genetic variability is available for this crop but little work has done to exploit it. Thus, there is a good scope for improvement in yield and other characters of cucumber through genetic manipulation.

Hormuzde and More (1989) noted heterosis for early yield in summer and lack of heterosis for total yield was attributed to inability of the  $F_1$  hybrids to sustain production over late period of harvesting. Li-Jianwer *et al.* (1995) observed positive heterosis in cucumber for the characters viz., total yield, early yield, fruit number and average fruit weight, whereas negative heterosis for vine length. Saikia *et al.* (1995) reported that the variety Pusa Sanyog took only 37.3 days to anthesis of first female flower at lowest nodes and found most early.

### MATERIALS AND METHODS

Twelve genetically pure diverse genotypes/lines namely GBGL, Vejundla Dosa, KNPL, BBDL, ARABL as lines. Hot season, white cucumber, Hyderabad cucumber, PCO-1, PCL-1, PCB-1 and PAU-1 as tester were used to develop 35  $F_1$ 's. All the crosses and their parents were sown in a randomized block design with two replications during April, 2005 at College of Agriculture, Bheemaranagudi taluk, Shahapur, district, Gulbarga. The crop was planted in single rows of 4.5 meter length with a spacing of 1.5 x 0.5 m. Ten plants were maintained in each row/plot. The observations were recorded on five randomly selected plants for nine economically important characters namely days to first female flowers, node number at which first female flower

appears, vine length (cm), fruit length (cm) fruit diameter (cm), average fruit weight (g), number of branches per vine, number of marketable fruits per vine, total number of fruits per vine, total fruit yield per vine (kg). The heterosis was expressed as percentage increase or decrease in the mean value of hybrids over better and mid parents in line x tester experiment. The analysis of variance for Randomized Block Design to test the significance of difference among genotypes including crosses and parents was done for all the characters as per the method given by Kempthorne (1957).

### RESULTS AND DISCUSSION

From Table 1 and 2 it was indicated that the range of heterosis percentage varied from -0.52 to -16.49 and -1.0 to -19.0 for days to first female flower, 0.00 to 46.15 and -9.52 to -47.61 for node number at which first female flower appeared, -54.04 to 30.74 and -46.02 to 14.52 for vine length, -15.24 to 44.45 and -29.27 to 6.63 for fruit length, -15.52 to 24.35 and -25.69 to 13.28 for fruit diameter, -29.12 to 15.33 and -25.39 to 9.38 for average fruit weight, -24.99 to 42.49 and -37.93 to 27.59 for total number of fruits per vine and -43.43 to 60.47 and -50.51 to 31.73 for total fruit yield per vine over their respective mid parent and better parent, respectively. The present findings are in general agreement with those reported by Singh *et al.* (1998) and Verma *et al.* (2000).

The crosses showing highest negative heterosis over mid parent and better parents were BGDL x White long (-16.49) and BGDL x Hot season (-19.0%) for days to first female flower, respectively. The same results were reported by Munshi and Sirohi (1993) in bittergourd.

The best performing hybrids along with their heterosis