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Research Paper

Combining ability studies in Bitter gourd (*Momordica charantia* L.) for quantitative characters

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ABSTRACT

An experiment was conducted during 2008-09 at Vegetable section, Division of Horticulture, University of Agricultural Sciences, Bangalore on combining ability studies in bitter gourd for quantitative characters by using six lines and four testers in a line x tester mating design. Except two characters (number of primary branches and fruit yield per vine) significant differences were observed for the characters under study. Variances due to *SCA* were higher than the corresponding *GCA* for all the characters except for vine length at 60 and 90 DAS, it indicates predominance of non additive gene action and there is a scope for heterosis breeding. Out of ten parents Panurthy, Coimbatore Long, Chidambaram Small and VRBT-100 were observed to be best general combiner as they have made significant contribution in yield contributing characters. Coimbatore Long x Panurthy exhibited high *SCA* effect for fruit yield per vine, node at first female flower appears and days to first harvest, VRBT-100 x Panurthy was best for days to first male and female flower appears, Coimbatore Long x Panurthy was best for sex ratio and number of seeds per fruit in desired direction. These crosses can be exploited as desirable hybrids.

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Key words : Bitter gourd, GCA, SCA

Bitter gourd (*Momordica charantia* L.) is one of the important commercial cucurbit belonged to family cucurbitaceae. It is popular throughout India for its tender fruits which are consumed as fried, cooked, stuffed, curried and also in pickles. It is highly cross pollinated due to monoecious nature and has high degree of heterozygosity. Heterosis is still remained unexploited in this crop. The important step for exploitation of heterosis is to study the general combining ability of the parents and specific combining ability of hybrids. Although some information is available about combining ability, they are relevant to the specific region, genetic material involved and environmental condition. Therefore, this study was conducted to generate information about general and specific combining ability effects for different economic characters in a line x tester crossing system using six lines (as females) and four testers (as males).

MATERIALS AND METHODS

The present investigation was undertaken at Vegetable section, Horticultural Research Station, Division of Horticulture, University of Agricultural Sciences, Gandhi Krishi Vignana Kendra, Bangalore, during the year 2008-09. The experimental material comprised of six lines *viz.*, VRBT-100 (L_1), Arka Harit (L_2). White Long (L_3), Coimbatore Long (L_4). Green Long (L_5) and VRBT-103 (L_6)} and four testers *viz.*, IC-42261 (T_1), Chidambaram Small (T_2). Nanjangood Local (T_3) and Panurthy (T_4). Twenty four hybrids were generated by using line x tester mating design; MBTH-101 was used as a standard check. These materials were replicated thrice in a Randomized Block Design. The plants were spaced at 1.5m apart between row and 0.75m apart between plants. The standard agronomical practices were followed according to package of practiced University of Agricultural Sciences, Bangalore. Data were recorded from five randomly selected plants in each treatment over the replications for the characters *viz.*, Vine length at 45, 60 and 90 days after sowing (DAS), productive vine length, days taken for first male and female flower appearance, days taken for fifty per cent flowering, node at first female flower appearance, number of primary branches, days to first harvest, fruit length, sex ratio, per cent fruit set, number of seeds per fruit, number of fruits per vine, fruit