RESEARCH ARTICLE

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# Studies on combining ability for earliness, yield and quality traits in baby Corn (*Zea mays* L.)

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### SUMMARY

The experimental material of baby corn comprised of 15 inbred lines, 3 testers and their 45 crosses generated by line x tester mating design. The experimental material was raised in Randomized Block Design with three replications during *Kharif*, 2008 at Varanasi. Sixteen characters were studied namely, plant height, cob height, days to first picking, days to second picking, cob length, cob diameter, cob yield with husk and without husk per plot, cob yield with husk and without husk per plant, number of cobs per plant, green fodder yield per plot and quality characters (total soluble sugars, ash content, protein content and phosphorus content). On the basis of desirable gca effects, parental lines namely, HUZM-221, HUZM-217, HUZM-69 and tester CM-119 were suitable for height, maturity, yield and yield attributing traits with quality characters. Hybrids, HUZM-221x CM-119, HUZM-217 x HKI-1105, HUZM-227-1-1x CM-119, HUZM-69 x HKI-323 were found to be suitable on the basis of their desirable sca effects for most of yield and quality traits.

Key words : Baby corn, Cob yield, Combining ability, Earliness, Line x tester

Norn is queen of cereals, baby corn is a specialized corn. It can be grown throughout the year. It is young finger like unfertilized cob of maize harvested two to three days of silk emergence, depending upon the developmental condition of plant and size of the cob. It is high valued vegetable crop help in diversification in maize cultivation. The prime objective of any breeding programme is to enhance the yield. Yield is a complex character, as it comprises of a number of componential traits (Johnson, 1973), which are polygenic in nature and influenced by environment. Baby corn in nature is cross pollinated crop but its product is unfertilized. For successful exploitation of genetic manipulation of baby corn crop involving tall, medium and dwarf genotypes, the knowledge of type of gene effects involved in expression of the trait is essential. Line x tester analysis helps in testing a large number of genotypes to assess the gene action and combining ability. The present experiment was therefore, planned to study combining ability in baby corn.

## MATERIALS AND METHODS

The 15 lines, 3 testers, their 45  $F_1S$  with standard check variety 'Prakash' were planted in Randomized Block

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J.P. SHAHI, P.K. SINGH AND K. SRIVASTAVA, Department of Genetics and Plant Breeding, Institute of Agricultural Sciences, Banaras Hindu University, VARANASI (U.P.) INDIA Design with three replications. Each entry had one row of 4m length in each replication. The plants were spaced 60 cm apart between rows and 15 cm with in the rows. All the recommended cultural practices were followed to raise a healthy crop. Data were recorded on 10 randomly selected plants in each row with respect plant height (PH), cob height (CH), days to first picking (DFP), days to second picking (DSP), cob length (CL), cob diameter (CDM), cob yield with husk per plot(CYH/PT) cob yield without husk per plot (CY/PT), cob yield with husk per plant (CYH/PL) Cob yield without husk per plant(CY/ PL), number of cobs per plant (NC/PL) and green fodder yield per plant(GFY/PT). The quality parameters, total soluble sugars (T.S.S), ash content (AC), protein content (PC), phosphorus content (PHC) were analyzed under laboratory condition. Mean values were subjected to statistical analysis as per model suggested by Kempthorne (1957) and procedure of Singh and Chaudhary (1985).

#### **RESULTS AND DISCUSSION**

The general combining ability effects of parents (lines and testers) for different characters during *Kharif* season are given in Table 1. The positive and significant estimates of gca effects were desirable for all the traits except cob height, days to first and second picking, where negatively significant estimates were more desirable for reduced cob height and early maturity. Lines HUZM-221, HUZM-217, HUZM-329 and testers CM-119, HKI-323 exhibited good gca effects for earliness, yield and quality traits, whereas, lines HUZM-91-1, HUZM-210-2 were good general combiner for early maturity and yield. For most of the