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Exploitation of heterosis for various yield attributes in rice (*Oryza sativa L.*) under coastal saline soils

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During *kharif* 2009, staggered sowings of eight selected parents (RP Bio-226, Swarna, CSR-27, CSR-30, CST-7-1, CSRC(S) 7-1-4, SR26B and CSRC(S) 5-2-2-5) were taken up at Rice Section, ARI, Rajendranagar, Hyderabad. Parents were crossed in a diallel fashion without reciprocals to generate F_1 seed of 28 crosses. This diallel set along with eight parents were sown during *kharif*, 2010 under both normal and coastal saline soils of Agricultural Research Station, Machilipatnam. The saline soils were of sandy loam in texture with an average electrical conductivity of 6.3 dS m^{-1} and P^H of 7.9 while the normal soil had an E.C of 2.3 dS/m and P^H of 7.2. The source of irrigation was canal which was normal. The same set of diallel was also transplanted under normal soil condition during the same crop season to compare the effect of salinity on various yield attributing parameters. From each replication, observations were recorded on 15 randomly selected plants from each of parents and F_1s and the data were recorded on ten yield attributes.

The heterotic trends in rice among 28 F_1 hybrids under saline and normal soil conditions revealed that there was severe reduction in number of heterotic hybrids and the range of heterosis of all types under stressed environment than that observed under favourable soil environment. Further, the hybrid Swarna x CSRC(S) 7-1-4 manifested significant heterotic expression over mid and better-parents for number of filled grains $panicle^{-1}$ and grain yield $plant^{-1}$ besides showing high specific combining ability and mean performance for these traits. Similarly, the hybrid RPBio-226xCSR-30 was also found to be heterotic over mid and better-parents for number of total tillers $plant^{-1}$, number of productive tillers $plant^{-1}$, panicle length, panicle weight and test weight along with desirable per se and combining abilities. These promising rice hybrids identified from the present study for yield and its component characters could be utilized further for commercial exploitation under saline soil conditions.

Biography

M. Sudha Rani is presently working as Scientist (Pl. Br.), Seed Research and Technology Center, ANGR Agricultural University, Hyderabad. She joined as Scientist (Pl. Br.) at ARS, Machilipatnam during 1999 and involved in developing rice varieties with salt tolerance. Later, she involved in development of gall midge tolerant varieties (2 Nos) at RARS, Warangal. Presently her work is involved in Seed Research of different crops particularly in the area of safer storage of seed, development of seed testing strategies in various crops and DUS testing of maize, greengram and blackgram varieties for protecting them under PPV&FR Act. Also actively involved in guiding Post Graduate students and so far she has guided two students. And she has 15 research publication and 15 popular articles at her credit s as on date.

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