Investigation on Genetic Estimates and Diversity in Aromatic Rice (*Oryza sativa* L.)

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Abstract

Rice is one of the major staple food crops in the world. India is one of the mega centers of biodiversity and center of origin of rice. West Bengal is a rich source of small, medium-grained aromatic rice varieties. Short-grained aromatic rice is sometimes superior to Basmati types. Due to the aroma and superior grain quality, the demand for aromatic rice varieties has increased in domestic and international markets. Therefore, top priority should be given to collection, characterization, evaluation, and conservation. Here, we report on agro-morphological genetic diversity based on 12 agro-morphological characters-days to 50% flowering, days to maturity, plant height(cm), tillers per plant, panicle per plant, panicle length (cm), no. of filled grains/panicle, no. of unfilled grains/panicle, total no. of grains/panicle, 1000 seed weight (gm), total no. of filled grain/plant, and total yield/plant (gm) in rice germplasm collected from diverse eco-geographical regions. Phenotypic coefficients of variation exhibited a bit higher values but maintained a close relationship with genotypic variation and genotypic coefficient of variation for all the traits, indicating low G×E interaction. Total yield/plant is positively and significantly related to days to maturity, total no. of grains/panicle, 1000 seed weight, and total no. of filled grain/plant. The genotypes were further grouped into four major clusters through multivariate analysis based on the 12 traits. The origin of genotypes did not play a significant role in the constitution of clusters. Selection of parents based on parents belonging to different cluster would like to produce more desirable segregants.

Keywords: *Aromatic Rice* (*Oryza sativa* L.), *morphological characters, genetic diversity, small and medium grained rice germplasm, desirable segregants*