

Genetic Divergence Study of Rice on the Basis of Various Morphological Traits

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Abstract : Phenotypic diversity was confirmed by measuring different morphological traits i.e. seed traits (seed length, seed width, seed thickness, seed length-width ratio, 1000 grain weight) and root-shoot traits (shoot length, root length, shoot fresh weight, root fresh weight, root-shoot ratio, root numbers and root thickness). Variance and association study of desirable traits determine the genotypic differences among the rice germplasm. All the traits showed significant differences among the genotypes. The traits were studied in Randomized complete block design (RCBD) at different water levels. Some traits showed positive correlation with each other and beneficial for increasing the yield and production of the crop. Seed thickness has positive correlation with seed length and seed width ($r=0.104^{**}$, $r=0.246^{**}$). On the other hand, various root shoot traits showed positive highly significant association at different water levels i.e. root length, fresh root weight, root thickness, shoot thickness and root numbers. Our main focus to study the performance/correlation of root shoots traits under stress condition. Fresh root weight, shoot thickness and root numbers showed positive significant association with shoot length, root length, fresh root and shoot weight ($r=0.2530^{**}$, $r=0.2891^{**}$, $r=0.4626^{**}$, $r=0.4515^{**}$, $r=0.5781^{**}$, $r=0.7164^{**}$, $r=0.0603^{**}$, $r=0.5570^{**}$, $r=0.5824^{**}$). Long root length genotypes favors and suitable for drought stress conditions and screening of diverse genotypes for the further development of new plant material that performing well under different environmental conditions. After screening genetic diversity of potential rice, lines were studied to check the polymorphism by using some SSR markers. DNA was extracted, and PCR analyses were done to study PIC values and allelic diversity of the genotypes. The main objective of this study is to screen out the genotypes on the basis of various genotypic and phenotypic traits.

Keywords : rice, morphological traits, association, germplasm, genetic diversity, water levels, variation

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