

## **Genotypic and phenotypic relationship among yield components in rice under tropical conditions**

### **ABSTRACT**

The associations among yield-related traits and the pattern of influence on rice grain yield were investigated. This evaluation is important to determine the direct and indirect effects of various traits on yield to determine selection criteria for higher grain yield. Fifteen rice genotypes were evaluated under tropical condition at five locations in two planting seasons. The experiment was laid out in a randomized complete block design with three replications across the locations. Data were collected on vegetative and yield components traits. The pooled data based on the analysis of variance revealed that there were significant differences ( $p < 0.001$ ) among the fifteen genotypes for all the characters studied except for panicle length and 100-grain weight. Highly significant and positive correlations at phenotypic level were observed in grain weight per hill (0.796), filled grains per panicle (0.702), panicles per hill (0.632), and tillers per hill (0.712) with yield per hectare, while moderate positive correlations were observed in flag leaf length to width ratio (0.348), days to flowering (0.412), and days to maturity (0.544). By contrast, unfilled grains per panicle (-0.225) and plant height (-0.342) had a negative significant association with yield per hectare. Filled grains per panicle (0.491) exhibited the maximum positive direct effect on yield followed by grain weight per hill (0.449), while unfilled grain per panicle (-0.144) had a negative direct effect. The maximum indirect effect on yield per hectare was recorded by the tillers per hill through the panicles per hill. Therefore, tillers per hill, filled grains per panicle, and grain weight per hill could be used as selection criteria for improving grain yield in rice.

**Keyword:** Rice grain yield; Higher grain yield; Rice genotypes; Tropical condition; Rice

