Morpho-physiological and yield variability among 19 different rice collections

ABSTRACT

Rice is the most crucial staple food globally. Information about their variability is necessary to select rice varieties with desirable characteristics for breeding and molecular characterization purposes. This study aims to evaluate 19 lowland rice varieties based on their morpho-physiological and yield variability grown in an insect-proof rain shelter. Rice varieties had significant differences ($p<0.05$) on all parameters. Mahsuri achieved the highest plant height (151.2 cm), grains number per panicle (321.18), and filled grains per panicle (279.3). IR54 exhibited the highest number of tillers (27.5) and panicles (27). TR10 outdone other varieties in terms of productive tillers (100%) and 1000- grains weight (33.1 g). On the other hand, Jaya displayed the highest total grain weight (88.7 g) and grain yield (1.25 kg/m2). Malinja surpassed other varieties in terms of straw dry weight (84 g) and biological yield (1.18 kg/m2). Ohundus exhibited the highest harvest index at 58.36%, while IR72 had the lowest at 47.27%. Grain yield per pot has a significantly positive correlation with total grain weight, panicle number, straw dry weight, days to flowering, and harvest index. This study shows that each rice variety has its own unique traits. It is suggested to perform an open field study as the result may vary due to environmental variables.