

Evaluation of the growth and yield of upland rice varieties to drought stress

ABSTRACT

Background and Objective: Drought stress affects crop yield by more than 50%. The agronomic characteristics and yielding ability of different upland rice varieties collected in Sabah, Malaysia and to evaluate the response of upland rice varieties to drought stress at the flowering stage. Materials and Methods: There were seven upland rice varieties (Tadong, Kondoduvon, Tiga Bulan, Worik, Purak, Lombug, and Kalopak) and one lowland variety as control (Mahsuri) selected for this project. Water stress treatments (by adjusting soil moisture content, SMC) were conducted at the onset of the flowering stage. Results: The water stress treatments were T1 (control) (50% SMC), T2 (30% SMC) and T3 (15% SMC). From the application of drought treatments, Kondoduvon-T1 recorded the highest shoot dry mass of 153.57 g. Tadong-T1 recorded the highest 1000-grain weight (34.80 g). Purak-T1 achieved the highest percentage of filled grain 92.08%. The extrapolated yield is significantly and positively correlated with the total number of tillers and most of the yield component parameters. Conclusion: Overall, the variety of Purak performed better under drought stress and achieved the highest extrapolated yield and thus suggested to be the best candidate for producing drought tolerant and high-yielding rice variety in the future