ROOT SYSTEM PERFORMANCE UNDER DIFFERENT WATER REGIMES IN RICE *(Oryza sativa* L.) VARIETIES

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This study was carried out to evaluate the effect of different water regimes on root development of the selected new improved rice varieties at Rice Research and Development Institute, Batalagoda during January to July 2013. A completely randomized design (CRD) was used with three replicates. Three water regimes were used as treatments namely, standing water level (T1), alternate wetting and drying (T2) and field capacity (T3) with Bg 352, Bg 358 and Bg 366 rice varieties. The plants were grown individually in PVC pipes and treatments were applied to individual plants. Maximum root length, total root length, root volume, root number, average root diameter, root surface area, root dry weight and root to shoot ratio were recorded. Total root length, root volume, root number, average root diameter, root surface area and root dry weight showed higher value for both vegetative and maturity stages at standing water level except maximum root length. Out of those root volume, root number and average root diameter were significantly higher for both stages. Dry matter partitioning to roots decreased from vegetative to maturity, but the ratio of root to shoot was tended to be higher in alternate wetting and drying than other treatments at vegetative stage. Bg 352 showed higher total root length, root number, root volume, root surface area, root dry weight and root to shoot ratio in alternate wetting and drying treatment at vegetative stage. At maturity stage, it showed higher maximum root length, total root length, root volume, root number, root surface area and root to shoot ratio and out of them root number and root surface area were significantly higher. Therefore, this study indicated that Bg 352 has high ability to withstand alternate wetting and drying than other two selected varieties.

Key words: New improved rice varieties, Root characters, Water regimes