INFLUENCE OF MARINE WATER ON GROWTH AND YIELD OF RICE

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Executive Summary

Salinization of Soil is one of the serious environmental factors and limit productivity of the most of the agricultural crops including rice worldwide. The coastal areas of Bangladesh are potentially suited for rice production but were left idle due to salinity problem. Considering these points, a pot experiment was conducted with two rice varieties viz. BRRI dhan28 and BRRI dhan47 in the experimental shed of Department of Agronomy, Sher-e-Bangla Agricultural University, Dhaka during boro season (2017-2018) to determine the effect of different level of salinity on rice and finding out the comparative performance of two varieties under salinity. Mixture of fresh water and marine water was used as salinity treatments. Four salinity treatments were used in this experiment viz. control S_0 (only fresh water), Quarter strength marine water S_1 (Three parts fresh water and one-part marine water; 7.5 ds m^{-1}), Half strength marine water S_2 (half fresh water and half marine water; 15 ds m^{-1}), Full strength marine water S_3 (only marine water; 30 ds m^{-1}). These mixtures were used for irrigation purpose throughout the life cycle. Intrusion of marine water in rice significantly reduced plant height, number of tillers $hill^{-1}$, leaf relative water content (RWC), number of effective tillers $hill^{-1}$ panicle length, number of filled grains $panicle^{-1}$, 1000 grain weight, grain yield, straw yield and biological yield but increased the number of non-effective tiller $hill^{-1}$ and unfilled grain $panicle^{-1}$. Growth and yield reduction was higher in BRRI dhan28 compared with BRRI dhan47 under salt stress conditions. Irrigation with full strength marine water grain yield reduction was 100% in BRRI dhan28 where it was 72% in BRRI dhan47. However, growth and yield reduction increased with increasing the level of salinity and BRRI dhan47 performed better than BRRI dhan28 under salinity stress conditions.

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