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Abstract

Effects of Fresh and Saline Water Irrigation for Maize in Coastal Areas of Bangladesh †

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Abstract: Farmers are being encouraged to represent the conjunctive use of fresh water (FW) and saline water (SW) irrigation for the future agriculture in the coastal saline prone areas of Bangladesh where the scarcity of FW. Therefore, the effects of fresh and saline water irrigation for maize was performed on the crop performances, water use, water productivity (WP), soil salinity and scope for maize cultivation in coastal areas. The experiment was carried out at farmers' field at two locations with six irrigation treatments and replicated thrice during 2016–2017 and 2017–2018. Results showed that the effect of FW (0.5 ≤ salinity ≤ 1.5 dS/m) at early growth stages and SW (1.5 ≤ salinity ≤ 5 dS/m) at later growth stages had insignificant difference compared to the treatment of FW irrigation. Yield slightly increased with increased number of irrigations but there was no significant differences among the treatment. WP significantly affected by irrigation frequency in both locations, decreasing greatly with increasing amount. The more changes in soil water occurred at upper layer than lower depth of soil profiles. The highest changes soil salinity (EC_e) occurred at mid-February of the crop growing season compared to the beginning and later growth stages of maize in 60 cm soil profiles. The technique of fresh and saline water irrigation at different growth stages of maize in coastal regions could be an alternative irrigation scheduled and method for increasing yield and WP through establishment of maize compared to no crops at fallow lands during *rabi* (dry) season in the salt affected areas of Bangladesh.

Keywords: coastal zone; conjunctive use; saline and non-saline irrigation; soil salinity; water productivity

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