Potentiality of irrigation technologies to control soil salinity and greenhouses pepper yield production improvement in sandy soil of Southern Tunisia

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Abstract: Localised surface drip irrigation (DI) is used to irrigate pepper crop in a greenhouse with two irrigation treatments 100% (T1) and 50% (T2) of the plant needs. The DI system is compared with a new irrigation technique called buried diffuser (BD). Irrigation treatment, soil depth, soil electrical conductivity (EC) and pepper yield production were used to compare between the irrigation systems using generalised additive mixed model (GAMM). The results indicated that yield production increased from 23,047 kg/ha under DI to 23,945 kg/ha under BD using T1 treatment. By using T2 treatment, the yield production was 13,164 kg/ha under DI and 15,703 kg/ha under BD. Moreover, BD helped to eliminate the salinity in the root zone for the T1 treatment. While it has the same effect on soil salinity as the T2 treatment of the DI. Under T1 and T2, the yield obtained from BD was significantly higher that DI.

Keywords: drip irrigation; DI; buried diffuser; BD; soil electrical conductivity; yield production; generalised additive mixed models; GAMMs.