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Effect of Saline Ground Water on Economics of Bitter-Gourd (Momordica charantia L.) Cultivation and Soil Characteristics in Semi Arid Region

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Abstract : Due to the declining freshwater availability to agriculture in many areas, the utilization of saline irrigation requires more consideration. For this purpose, the effects of saline irrigation on the economics of crop yield and soil salinity should be understood. A two-year field experiment was carried out during 2017-18 with three replications to investigate the effect of saline groundwater on the economics of bitter gourd production and soil salinity status after harvesting the crop. Two irrigation treatments, i.e., fresh quality irrigation water (IT_1 EC 0.56 $dS.m^{-1}$ (control) and other is saline groundwater (IT_2 EC 2.56 $dS.m^{-1}$) were used under drip system of irrigation. Cost-benefit analysis is often used to assess adaptation approaches. In this study, it has been observed that the salts under IT_1 (fresh quality water) and IT_2 (saline groundwater) did not accumulate in the wetted zone. However, the salts were observed deposited at wetted periphery under both the treatments after the crop end at all the three sampling depths under drip system of irrigation. Moreover, the costs and benefits associated with different irrigation treatments for two consecutive seasons for bitter-gourd cultivation were also investigated, and it was found that the average gross returns per hectare in season 1 were USD 5008.22 and 4454.78 under irrigation treatment IT_1 and IT_2 respectively. Whereas in season 2 the average gross returns per hectare were 3713.47 and 3140.51 under IT_1 and IT_2 respectively.

Keywords : ground-water, soil salinity, drip irrigation, wetted zone, wetted periphery, cost benefit analysis
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