

Effect of Marginal Quality Groundwater on Yield of Cotton Crop and Soil Salinity Status

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Abstract : In this paper, effect of marginal quality groundwater on yield of cotton crop and soil salinity was studied. In this connection, three irrigation treatments each with four replications were applied. These treatments were use of canal water, use of marginal quality groundwater from tube well, and conjunctive use by mixing with the ratio of 1:1 of canal water and marginal quality tubewell water. Water was applied to the crop cultivated in Kharif season 2011; its quantity has been measured using cut-throat flume. Total 11 watering each of 50 mm depth have been applied from 20th April to 20th July, 2011. Further, irrigations were stopped from last week of July, 2011 due to monsoon rainfall. Maximum crop yield (seed cotton) was observed under T1 which was 1,516.8 kg/ha followed by T3 (mixed canal and tube well water) having 1009 kg/ha and 709 kg/ha for T2 i.e. marginal quality groundwater. This concludes that crop yield in T2 and T3 with in comparison to T1 was reduced by about 53 and 30% respectively. It has been observed that yield of cotton crop is below potential limit for three treatments due to unexpected rainfall at the time of full flowering season; thus the yield was adversely affected. However, salt deposition in soil profiles was not observed that is due to leaching effect of heavy rainfall occurred during monsoon season.

Keywords : conjunctive use, cotton crop, groundwater, soil salinity status, water use efficiency

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