Effect of Different Irrigation Managements on Vegetative Characteristics, Yield, and Sugar Content of Sugar Beet in Lorestan Province

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Abstract

Effects of six irrigation treatments on vegetative characteristics, yield, and sugar content of sugar beet and water use efficiency were investigated. The experiment was conducted at Aleshtar in Lorestan province during growing seasons of 2014 and 2015, using a randomized complete block design. Irrigation treatments consisted of full irrigation (T1) as the control, T1 +cutting off the last irrigation (T2), 10% higher than the control (T3), 10% less than the control (T4), 20% (T5) and 30% less than the control (T6). The results of combined analysis of variance showed that the effects of different irrigation treatments on leaf area index, tuber dry weight, root yield, biomass, sugar content, sugar yield and water use efficiency on the basis of sugar yield was significant at 1% level. However, their effects on leaf dry weight and water use efficiency on the root yield basis was significant at 5% level. Although there were no significant differences between T2, T3, and T4 treatments in terms of crop vegetative characteristics, root yield, biomass and sugar yield, they increased these characteristics significantly compared to T5 and T6 treatments. Also, the highest water use efficiency on the basis of both root and sugar yield was obtained in T2 and T4 treatments. Therefore, to conserve water in sugar beet production in Lorestan province, decreasing the amount of water up to 10 % at each irrigation during the growing season or cutting off the last irrigation is recommended.

Keywords: Biomass, Deficit irrigation, Water use efficiency.

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