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The effect of nitrogen fertilizer and deficit irrigation on yield, irrigation water use efficiency and anthocyanin of Roselle

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Abstract
In this study, the effect of different levels of irrigation water and nitrogen fertilizer on Roselle was investigated. Experiment was with split plot design with four irrigation water levels (I1, I2, I3 and I4, equivalent to 25, 50, 75 and 100% of water requirement, respectively) and three levels of nitrogen (N1, N2 and N3, equivalent to 50, 75 and 100%, respectively). Nitrogen fertilizer requirement was performed as a subplot. At the end of the experiment, yield parameters, anthocyanin content and irrigation water efficiency were measured. The results showed that the simple effects of irrigation water and nitrogen fertilizer at the level of one and five percent probability on all measured parameters and nitrogen fertilizer on all parameters except irrigation water efficiency were significant. The highest yield was obtained from 100% fertilizer application and 100% water requirement treatments, but in this regard, no significant effect was observed between 100% and 75% water requirement treatments. The highest irrigation water efficiency was obtained in the treatment of 75% of water requirement and 100% of nitrogen fertilizer application, but in this regard, there was no significant difference between different treatments of nitrogen fertilizer. Therefore, due to the water situation in the region and the reduction of water resources, using 75% of water will save water consumption without having a significant effect on reducing yield.

Keywords: Irrigation water efficiency, dry yield, anthocyanin