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Effect of Different Levels of Irrigation on Qualitative and Quantitative Properties of Corn (Cultivar NS) and Determination of the Optimum Depth of Irrigation in Water Shortage Conditions

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Abstract

In order to investigate the effect of different levels of irrigation on qualitative and quantitative yield and determine the corn's optimum depth of Irrigation in sShahrekord, a randomized complete block design experiment was done with 7 treatments including 40, 55, 70, 85, 100, 115 and 130 percent of soil moisture deficit and three replications in furrow irrigation. Effects of irrigation levels on yield, water use efficiency, weight of dry matter, plant height, stem diameter, median diameter, length and weight of corn were significant. Different levels of irrigation had no significant effect on seed oil and protein content, but their impact on plant fiber content was significant. With increasing depth of irrigation, stem length, grain weight and plant fiber content increased. The minimum and maximum corn yield were related to 40 and 130% of full irrigation with the yield of 43.1 and 88.1 tons per hectare, respectively. The maximum and minimum water use efficiencies were 55 and 130% of full irrigation treatments with values of 16.17 and 10.1 Kg per cubic meter, respectively. The result of economic analysis showed that the water consumption is 5/582 mm, equivalent to 86% full irrigation depth.

Keywords: Water use efficiency, production function, quantitative and qualitative properties, different levels of irrigation water, optimal irrigation depth.

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