Effect of Deficit Irrigation on Potatoes Production

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Abstract. A field experiment was conducted in 1986/87 crop growing season to investigate the effects of deficit irrigation on potatoes production. The experiment consisted of three irrigation levels, 80%, 50% and 30% of available water (levels 1, 2 and 3) and two varieties of potatoes (Ajax and Miraka). The soil of the experimental site is sandy loam and the irrigation water used had an EC of 5.5 dS/m at 25°C. The accumulative water applied was 540, 440, and 390 mm for levels 1,2, and 3, respectively. The gross irrigation water required for the region using surface irrigation and irrigation water with EC of 5.5 dS/m was calculated as 960 mm. At the highest level of irrigation, maximum average yield of 2.717 and 2.433 g/m^2 were obtained for Ajax and Miraka, respectively. The yield was a function of the quantity and quality of irrigation water. It could be suggested that the inhibiting effect of the saline water on potatoes yield can be decreased by frequent irrigation, and increasing the leaching fraction.

Introduction

In the late seventies several varieties of potatoes (*Solanum tuberousm*) were introduced by the Ministry of Agriculture and Water. Potatoes are now grown in different regions of the Kingdom [1] with most, being grown in the Eastern Province of Saudi Arabia where production of wheat is insignificant.

The use of medium to saline water for irrigation is a subject of vital importance in the Kingdom where most of underground water is classified as medium to saline water [2]. The tuber yield of potatoes response to irrigation has been reported in many irrigation experiments and show that tuber yields have been affected by water stress at different stages of growth [3-6]. The objective of this study was, therefore, to determine the effect of deficit irrigation on tuber yield of two varieties using ground water with an ECw of 5.5 dS/m at 25°C.