

الملخص الانجليزي لرسالة الماجستير

للدكتور/ عبدالستار جمال عبدالستار عبد الخالق
المدرس بقسم البساتين – كلية الزراعة – جامعة الفيوم

عنوان الرسالة: تأثير ملوحة مياه الري على نمو وإنتاجية وجودة ثمار صنفين من الطماطم
المزروعة في نظام الهيدروبونيك

Effects of salinity of irrigation water on growth, fruit yield and fruit quality of two tomato (*Lycopersicon esculentum* Mill.) cultivars grown in hydroponic system

ABSTRACT

Inadequate irrigation management and using nutrient solution in hydroponic culture, which necessitates high fertilizer application leads to moderate salinization of water and soils that is the most extensive and harmful form of salinization. We investigated the response of tomato growth, yield and fruit quality to salinity of irrigation water, and evaluation the response of two cultivars of tomato marmande to different salinity levels. The experiment carried out under greenhouse and hydroponic system of coconut fiber substrate with two cultivars (Dumas and Raf) and two salinity levels (3.3 dS m^{-1} is the control and 5.3 dS m^{-1}) arranged in a randomized block design with three replications. The salinity treatments were initiated immediately after transplant.

The results showed that the plant growth parameters were affected by salinity treatment especially at first stage of plant development probably, due to the fact that young plants were more sensitive to saline conditions. The reduction in growth could be a result of salinity, which cause water stress due to osmotic effects. In addition to in our experiment, plants grown under salinity treatment had a higher absorption of Na^+ , which could be produce toxic effects. The highest total fruit yield was under control (3.132 kg/plant) followed by the high salinity level (2.613 kg/plant), marketable fruit yield and fruit weight significantly decreased with increase of EC level from 3.3 dS m^{-1} to 5.3 dS m^{-1} . The control had a significantly higher fruit number, on the other side; cv. Raf had a higher fruit number more than Dumas. While the unmarketable fruit yield was not affected by salinity treatment. The total fruit yield reduction resulted from a decrease of fruit weight. The appearance of fruit with BER increased with high level of salinity (0.127 kg/plant) more than the control (0.045 kg/plant), while salinity treatment did not affect on appearance of cracking, catface, small and deformed fruit. Salinity did not improve fruit quality as TSS, acidity, colour and taste. In case of TSS probably, due to increase in TSS in fruit is a cumulative effect over time of the fruit development and ripening, and at the maturity stage of tested fruits the salinity treatment not reached to their clear effect. WUE in both terms of total and marketable fruit yield was not affected by increasing of EC level of irrigation water, but IWUE in both cases, as terms of total and marketable fruit yield was found to decrease with increase of EC level in the nutrient solution. Cultivars behaved differently in response to salinity; Raf was more sensitive for stem fresh and dry weight, while Dumas was more sensitive for fruit weight. Apart from that, the behavior of the two cultivars was similar under salinity.