

Effect of Endo Mycorrhiza (*Glomus intraradices*) on Water Uptake and Tolerance to Salinity of Pepper Plants in the Arava

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Abstract

This report sums experiment of growing sweet pepper (*Capsicum annuum* L. cv Celica) while studying the effects of the plants being Mycorrhizal with *Glomus intraradices* or not at two levels of fertilization and three levels of irrigation. The motivation is to improve growing and irrigation management based on findings that show improved water and nutrients uptake by Mycorrhizal plants in general and *G. intraradices* in particular. The experiment took place during 2007/8 agricultural season in a greenhouse at Yair Experimental Station in the Arava Valley.

The studied three levels of irrigation were 50, 75 and 100% relative to the recommended amount by the extension service that is based on evaporation "A" pan data and a crop factor that changes according to the growing stages. The fertilization treatments were the recommended doze that is actually in practice and low in phosphorous. There were two separate treatments with the two different fertilization levels, each contained four replicas of the six possible combinations of irrigation levels (50, 75 and 100%) and the plants being Mycorrhizal or not (Mycorrhizae treatment hereafter). The dependent and measured variables were total yield and the percentage of export out of the total yield. These data were collected throughout the harvesting season, in this report we relate only to the accumulated data at the end of the growing season. Analysis of variance (ANOVA) was done while fitting a general linear model (GLM) to the data: The effect of the fertilization treatment was statistically significant – the recommended fertilization treatment is better than the low phosphorous one. In the low phosphorous treatment, there was not a significant effect to the irrigation level, however, the yield from Mycorrhizal plants was significantly higher than the non Mycorrhizal ones. In the recommended fertilization treatment, both irrigation level and the Mycorrhiza had a significant effect – higher yields were obtained at the 100% irrigation treatment and the Mycorrhizal plants. No interaction was found between the irrigation levels and the Mycorrhizae – one factor cannot compensate for the other one. Another interesting observation was the larger variability in the low phosphorous treatments.

On the economic side, it seems that the farmer who grows 4.5 hectares of pepper can increase the income by 315,000 NIS in return to a 6,750 NIS investment of adding Mycorrhizae to the plants.