CFPN
trial

The effect of Polyhalite on Ca and Mg deficiencies in greenhouse tomatoes irrigated with desalinized water

When	Planting date: September 2016 Harvest: December 2016 to June 2017
Crop	Tomato *(Solanum lycopersicum)*
Soil type	Light to medium sandy loam soil
Where	Beit-Ezra, Israel
Measurements	Marketable fruit yield Stem diameter

Objective

To evaluate polyhalite applied as a pre-planting fertilizer to prevent typical Ca and Mg deficiencies and to ensure yield and quality in greenhouse tomatoes produced with desalinated irrigation water in Israel.

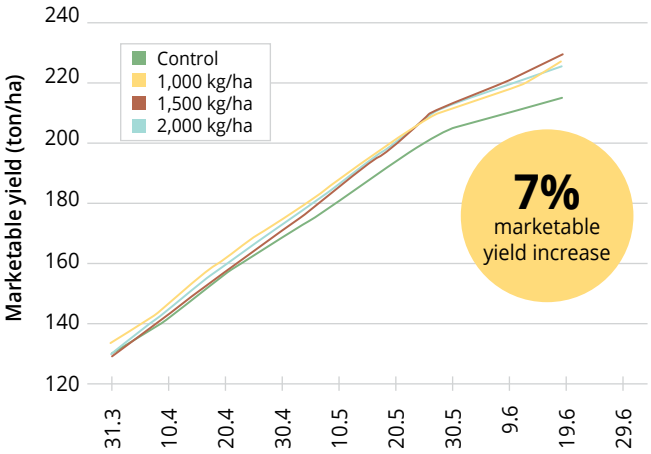
Treatments

The observation was carried out in a farmer's greenhouse and included four treatments: control (without polyhalite application), 1,000, 1,500 and 2,000 kg polyhalite/ha. Standard polyhalite was spread and embedded along the planting rows before planting.

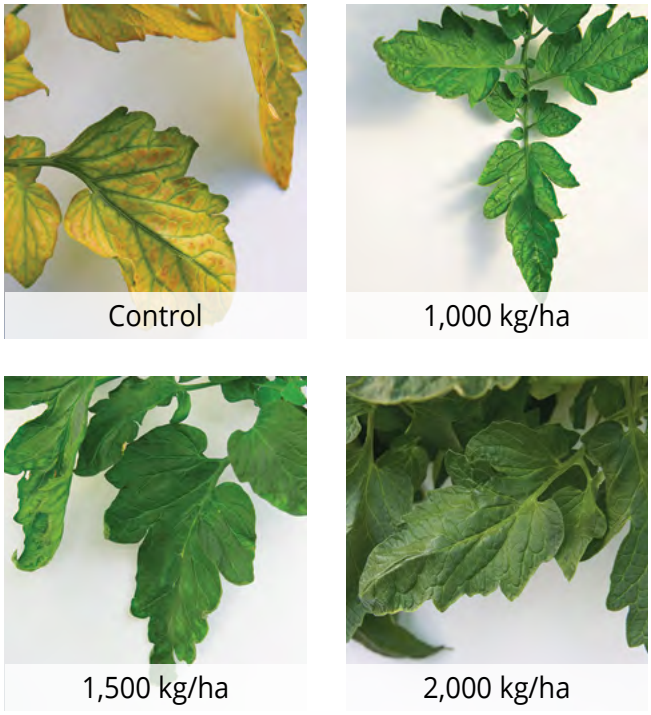
Chicken manure organic fertilizer was applied pre-planting. Desalinated water with a very low concentration of Mg was used for irrigation. Liquid fertilizer (N-P-K + micro-elements) was applied through fertigation throughout the crop cycle.

Results

- → Symptoms of Mg deficiency (typical yellowing of lower leaves) occurred in the control plants as early as mid-November. Plants with polyhalite application remained green, healthy, and productive.
- → Stem diameter below the uppermost inflorescence was significantly thinner in the control plants than those of plants applied with polyhalite.
- → During the winter months, no yield differences between treatments were observed.
- → From April to the end of the season, the marketable yields from the polyhalite plots were consistently better than from the control plot where there was more fruit malformation and blossom end rot.
- → Pre-planting application of polyhalite can replace large amounts of costly liquid fertilizer, enabling the application of Ca and Mg at the pre-planting stage, with no need for additional application during the growing season.



Effects of pre-planting polyhalite application on the accumulating marketable yield of Ikram greenhouse tomatoes during spring (from April to June 2017).



Magnesium deficiency symptoms in tomato leaves, as noticed on 11 Jan 2017.

Further reading

Sacks, M., S. Gantz, U. Mezuman, L. Peled, and P. Imas (2017) Polyhalite - A Multi-Nutrient Fertilizer Preventing Ca and Mg Deficiencies in Greenhouse Tomatoes under Desalinized Irrigation Water. https://www.ipipotash.org/publications/eifc-418

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ARO and ICL initiative