

Investigation of Nutrient Contents of Tomato Plants Grown in Greenhouses in Elmali-Antalya Region

Hatice Tuba SELÇUK¹, Sahriye SÖNMEZ²

¹Program of Organic Agriculture of Akdeniz University Vocational School of Technical Sciences, Antalya-Turkey

²Department of Soil Science and Plant Nutrition, Akdeniz University, Faculty of Agriculture, Antalya-Turkey
htubaselcuk@akdeniz.edu.tr

Aim of the study: Tomato production in greenhouses reaches very significant volumes in Antalya and surrounding region, but this production stops due to the extreme heat in summer season, and this situation is a problem for tomato production. In recent years, the number of alternative production facilities established in highland areas is rapidly increasing in order to resolve the problem. Elmali region of Antalya province of Turkey constitute 57% of highland greenhouse areas, and it comes first in the tomato production with 520 ha. However, the studies on the highland greenhouse tomato production increasing in recent years are not sufficient. In this study, that aims to investigate the mineral nutrient contents of tomato greenhouses in Elmali region of Antalya province.

Material and Methods: Leaf samples were taken from according to Geraldson (1937) from 30 different tomato greenhouses in Elmali, Antalya region. Beginnings from above the plants' fifth or sixth leaves were taken archetypally from determined greenhouses. The taken leaf samples were washed by distilled water and dried in a forced air oven at 65°C to a constant weight. After drying; the leaf samples were ground separately in a stainless mill to pass through a 20 mesh screen and kept in clean polyethylene bags for analysis. Dried leaf samples of 0.5 g each were digested with 10 mL HNO₃/HClO₄ (4:1) acid mixture on a hot plate. The samples were then heated until a clear solution was obtained. The same procedure was repeated several times. The samples were filtered and diluted to 100 mL using distilled water. Concentrations of P, K, Ca, Mg, Fe, Zn, Mn and Cu in the digestates were determined by using ICP-OES (Perkin Elmer-Inductively Coupled Plasma (Kacar and Inal, 2008). N was determined by a modified Kjeldahl procedure (Kacar and Inal, 2008).

Results: According to the results; the N and Ca contents of plants were generally sufficient, but it was determined that the P, K and Mg contents were insufficient. It was found that most of samples were sufficient in terms of micro ((Fe, Mn, Zn and Cu) elements contents and generally determined that there was no any problem with regard to micro element nutrition. In conclusion, it was determined that it specifically should be pay attention to applications of P, K and Mg of which are commonly established deficiencies and have importance in terms of plant growth and fruit quality.

Acknowledgements: The Scientific Studies Management Unit of Akdeniz University provided financial support for this project (2013.02.0121.027).

Keywords: Tomato, greenhouse production, mineral nutrients, Elmali-Antalya, Turkey.