

**WATER UTILIZATION OF VEGETABLES GROWN
UNDER PLASTIC GREENHOUSE CONDITIONS IN ANKARA
USING NEUTRON PROBE TECHNIQUE**

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In order to find suitable varieties of tomato, pepper and cucumber for plastic greenhouse conditions in Ankara and ensure both higher yields and lower NO₃ leaching greenhouse experiments were conducted for three years. In the first year (2001) of the experiment four different varieties from each vegetable, namely, Tomato (Ecem F₁, 9920 F₁, 2116 F₁ and Yazgı F₁), Cucumber (Hızır F₁, Rapido, Hana, and Luna) and Pepper (1245 F₁, 730 F₁, Serademre 8 and 710 F₁) had been grown in the plastic greenhouse using drip irrigation-fertiligation system. Yazgı F₁ variety for tomato, Hızır F₁ variety for cucumber and Serademre 8 variety for pepper were chosen to be suitable varieties to grow in the plastic greenhouse conditions in Ankara.

One access tube in each N₃ and N₀ treatment plots of tomato, cucumber and pepper in 2002 and 2003 experiments were installed for the soil moisture determinations at 30, 60 and 90 cm depths. Readings with the neutron probe were taken before planting and after harvest for the water consumption calculations using the water balance approach and the WUE was calculated on the basis of the ratio of dry matter weight to the amount of water consumed.

Tensiometer and suction cups were installed at 15, 30, 45 and 60 cm depths only to N₁, N₂ and N₃ treatments plots of each vegetable in 2002 and 2003. Tensiometer readings were taken just before irrigation. Also, soil solution samples from suction cups were taken at final harvest and NO₃ determinations were done with RQFLEX nitrate test strips.

Significantly higher yields and WUE values were obtained when the same amount of N fertilizer is applied through fertigation compared to the treatment where N fertilizer applied to the soil then drip irrigated. The nitrate concentrations of the soil solution increased as the N rates increased and no NO₃ had been found in the soil solution taken from 75 cm soil depth, indicating that no leaching of N fertilizer occurred beyond 75 cm soil depth.

Economical analysis showed that the highest profit would be made when tomato is grown instead of cucumber or pepper.



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**NUCLEAR TECHNIQUES USED IN SOIL FERTILITY
AND PLANT NUTRITION**

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Nuclear techniques, which include the usage of radioactive and stable isotopes, had been used in soil fertility, plant nutrition, plant breeding, plant protection and food preservation