Response of transplants of some olive cvs. to some fertigation treatments

Sahar Ali Farid

5. SUMMARY AND CONCLUSIONSThis study was carried out during two consecutive seasons of 2000 and 2001 at Maruot Experimental Station, Alexandria and during two cycles of 2003/2004 at El-Sheikh Zwaied Regional Experimental Research Station of the DRC to study the role of endo mycorrhizal fungi (Glomu australe and Glomus macrocarpus) and paclobutrazol foliar sprays with irrigation water salinity and different nitrogen forms at two doses of fast or slow release N fertilizers as relation to plant growth, leaf mineral content of Manzanillo and Toffahi olive transplants (Olea europea, L.). The olive transplants were transplanted in March and removed in September in Maruot Station, while they were transplanted in May and removed in December in the first cycle, while transplanted in September 2003 and removed in March 2004 in the second cycle at El-Sheik Zwaied Station. The same treatments were worked in two regions, six-month-old Manzanillo and Toffahi olive transplants, that are nearly similar in growth, vigor and health, were transplanted into black polyethelene bags 30cm in diameter. The bags were filled with peatmoss and sand (4kg soil/bag) at a ratio of 1.3, respectively in the experiment of N forms, while filled with sterilized sand in the second experiment. Each transplant was planted in one bag. The obtained results of this study can be reported as follows:Effect of N forms and application rate:Slow release N fertilizers were found much better than fast release ones, in general, especially bentonite coated urea (BCU) which was most effective on olive transplants growth parameters.The lower rate of N application was the most appropriate under the conditions of this work.Using BCU at a low rate maximized photosynthesis, chlorophyll-a, b and carotene content, dry matter production, and leaf mineral contents.Effect of water salinity, mycorrhizae and paclobutrazol:The best combination treatment for olive transplants growth traits including stem diameter, branching, height, and leaf area and leaf differentiation, is the foliar spray of paclobutrazol at the concentration of 500 ppm or less and the inoculation with G. australe. These will decrease the hazardous effect of salts in the irrigation water.Photosynthesis was not significantly affected by any of the applied treatments but paclobutrazol, especially when applied at the higher concentration of 1000 ppm in both growth cycles.The most recommended practice for the production of chlorophyll-a, b and carotene is the inoculation of transplants with G. australe and foliar spray with paclobutrazol at low concentration (500 ppm). This combination is expected to alleviate the damaging effect of salts brought about with the irrigation water.The treatment of inoculation with mycorrhiza G. australe, was the best for dry matter production and accumulation in plant parts. Dry matter production and accumulation formulates and constitutes the end potential of plants towards the future performance, especially during the primary stages of growth.The best treatment for the highest macro elements (N, P, K, Mg, and Ca as %) content in olive leaves is the inoculation with G. australe to combat the hazards of salts brought to plants with irrigation water.Concerning the leaf content of Mn, Zn, Na, and Cl, the same above recommended treatment (inoculation with mycorrhiza G. australe) was the best.The best treatment for maximizing intensity status was composed of the cultivar Toffahi inoculated with G. australe mycorrhiza.Also, the best combination treatment was that composed of the inoculation with G. australe to the olive cultivar Toffahi with no foliar spray with paclobutrazol.This treatment is expected to have the olive transplants more ready for the future performance and fruit production and oil yield as well.CSO