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Comparative Response of Two Olive (*Olea europaea* L.) Cultivars to Salinity

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Abstract: Two olive (*Olea europaea* L.) cultivars, Leccino and Barnea, were exposed to increasing concentrations of NaCl (control, 2560, 5120 and 7680 mg l⁻¹ of NaCl, which is equal to 4.0 dS m⁻¹, 8.0 dS m⁻¹ and 12.0 dS m⁻¹ salinity) in a sand culture. Plants were harvested and separated into different organs. Thin root, thick root, shoot and leaves were analysed for Na⁺, Cl⁻, K⁺, Ca⁺² and Mg⁺² contents. Dry weights of the plants were determined. Shoot elongation was also measured. Increasing NaCl inhibited growth of the plants. However, this effect was only statistically significant in Barnea. The growth of Leccino was not statistically affected by the salinity. Cultivars took up similar amounts of NaCl by thin roots but translocated to leaves in different quantities. Salinity negatively affected the K⁺, Ca⁺² and Mg⁺² contents of plant tissues. On the whole, the major effect of the NaCl treatment was observed in the K⁺ content, followed by Ca⁺² and Mg⁺². The Na⁺/K⁺ ratio of the plants increased with increasing salt treatments. The results clearly show that *Olea europaea* L. cultivars may possess an effective salt exclusion mechanism operating in the root system.

Key Words: Dry matter, Ion uptake and translocation, Salinity, Na⁺/K⁺ ratio, *Olea europaea* L.

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