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Root and Shoot Responses to Salt Stress in Jojoba (Simmondsia chinensis)

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Salinity affects plant growth due to both osmotic and ionic stress. The root system is essential in defense mechanisms against salinity, particularly involving salt ion avoidance or exclusion. Jojoba (*Simmondsia chinensis*) displays significant resistance to salinity. In the present study, Jojoba was planted in 60-L plastic buckets containing perlite growth medium and were provided with eight distinct salinity levels using two operating tanks of final irrigation solutions. Response of Jojoba to salinity was measured in above ground parameters and in roots using minirhizotron access tubes and imaging analysis. Leaf phosphorous and potassium concentrations decreased with increasing salinity level while leaf manganese, calcium, sodium and chloride concentrations increased with irrigation salinity level. Jojoba plants were found to have high level of storage of salt minerals in leaves but without effects on photosynthesis or transpiration. Roots exhibited different distribution patterns under different salinity treatments. Root length density increased with increased salinity at each depth. Root number and root length increased over time. During spring, the plant growth was faster than winter. Root diameter decreased over time due to new root development. Time had a more significant effect on root length density than irrigation water salinity or soil depth. Root number and root length were not significantly affected by the salt treatments.