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Use of Mycorrhizal Colonization to Reduce Nitrogen and Phosphorus Leaching from Nursery Containers

Lea Corkidi, Univ of California, Riverside, CA; lea.corkidi @ucr.edu

Donald J. Merhaut, Univ of California, Riverside, CA; donald.merhaut@ucr.edu

Edith B. Allen, Univ of California, Riverside, CA; edith.allen@ucr.edu

A. James Downer, Univ of Calif Coop Extn, Ventura, CA; ajdowner@ucdavis.edu

Jeff Bohn, Tree of Life Nursery, San Juan Capistrano, CA; jeffb@treeoftifenursery.com

Mike Evans, Tree of Life Nursery, San Juan Capistrano, CA; MikeEvans@treeoftifenursery .com

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The objective of our study was to investigate the effects of mycorrhizal colonization on N and P leaching from nursery containers. Mitigation of nitrogen (N) and phosphorus (P) leaching has become a major goal of the California nursery industry. Plant production in containers is a significant source of surface water and groundwater contamination. Commercial nurseries use large amounts of fertilizers and water that exceed the crops' nutrient requirements and the water holding capacity of the growing media. Arbuscular mycorrhizal (AM) fungi are a group of microorganisms specialized to colonize the roots of most plants. These fungi produce hyphae, which grow in and around the roots and develop an extraradical mycelium that enhances the plant ability to acquire mineral nutrients and water. We compared the growth response and the content of nitrate, ammonium and orthophosphate in leachates obtained from mycorrhizal and nonmycorrhizal plants of *Rhus integrifolia* and *Encelia californica* grown in a nursery mix with no fertilizer or with half or full rate of 18N-6P-12K Osmocote controlled release fertilizer. Mycorrhizal plants grown in half and full rate of Osmocote were taller and larger than nonmycorrhizal plants. Mycorrhizal colonization increased the nutrient use efficiency of *R. integrifolia*. Compared to the plants grown with half rate of Osmocote, full rate of Osmocote increased the growth of mycorrhizal plants but not of the nonmycorrhizal ones. Mycorrhizal colonization increased the content of N and P in *R. integrifolia* shoot tissue, and the P content of *Encelia californica*. The effects of mycorrhizal colonization on the content of N and P in leachates will be discussed.