

**Espeleta, J.F. and D.M. Eissenstat. 1998. Responses of citrus fine roots to localized soil drying: a comparison of seedlings with adult fruiting trees. *Tree Physiology* 18: 113-119**

***Summary***

We studied the responses of citrus (*Citrus volkameriana* Tan. & Pasq.) roots to 15 weeks of soil drying. A comparison was made between the fine roots of 1-year-old seedling root systems (seedling) and the fine roots of woody laterals of 6-year-old grafted trees (adult). Each seedling and woody lateral root system was established in a pair of vertically separated and independently irrigated soil compartments located in field root chambers excavated adjacent to the trees to which the woody laterals were attached. Root + soil respiration and fine root survival of seedlings and adults were similar for the first 5 weeks. However, eight weeks after termination of irrigation to the upper soil compartments, mortality of fine roots were high in adults but not seedlings. Fine roots of adults exposed to dry soil for 5, 8 and 15 weeks exhibited 2, 26 and 33% mortality, respectively, whereas the corresponding values for fine roots of seedlings were 2, 6 and 8%. Although root + soil respiration rates of adults and seedlings were similar before the soil drying treatment, rates for adults were only 25% of those for seedlings after 15 weeks of soil drying. We conclude that, although fine roots of adults and seedlings are similar in form, they respond differently to soil drying.



Javier inserting citrus roots of Red grapefruit trees into double-pot system in a root box



Estimating root/soil respiration of citrus roots in the field