

CONTROL OF AVOCADO ROOT ROT - INJECTION

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Project Objectives: To determine the effectiveness of fosetyl-AI trunk injections and the best timing for their use. Two added objectives are 1; to diagnose the damage caused by injection into the trunk of avocado trees and the prognosis for long term use of trunk injections, and 2; to measure the affect of application methods on uptake, distribution and longevity of phosphonates in avocado trees.

As in the chemigation trials we have terminated trials which were deemed untenable. These included the injection trial at Embarcadero and the one at Spauldings. The Embarcadero injection trial was Hass on Duke 7 and was terminated for the same reason that the chemigation trial was terminated. In essence, the heavy clay soil that the trees were planted in was kept saturated by the application of excess water and a salinity buildup. It is well known that Duke 7 does not perform well under these circumstances and the cooperator deemed it too expensive to modify the irrigation system and practices to correct the problem. The trees did not respond to injections and continued to decline so the trial was terminated.

The Spaulding trial was 30 year old Hass on seedling rootstocks and had shown some improvement when we reported last year. This year, however, there were no detectable differences. With the death of the cooperator the fate of the site has become uncertain. It was decided that the effort needed to maintain the site in the face of little improvement and its uncertain fate could be better utilized at more favorable sites where we have clonal rootstocks and good management.

Miller I

This trial is fully described under the chemigation report and is summarized here for convenience.

This trial was recently initiated in Santa Barbara County. The replant site trees are approximately 8 to 10 year old Hass on G755B planted in soil infested with *Phytophthora cinnamomi*. The objective of the trial is to compare methods of application of fosetyl-AI to determine the most effective method of application with emphasis on cost, tree damage and environmental impact. There are 18 replicates of each treatment that will be evaluated by visual criteria and yield. Treatments consist of fosetyl-AI applied at 20 grams per tree 2 times per year. Application methods are chemigation, foliar spray, trunk paint and trunk injections. Another treatment consisting of a silicone band impregnated with fosetyl-AI wrapped around the trunk was planned. However, the

bands on hand began to turn brittle and this treatment was eliminated.

Trunk Damage

We had originally submitted a separate request to assess the damage caused to avocado trunks by the injection of chemicals. There is some evidence that long term use of injections can damage the tree directly and also by entry of secondary organisms. If this premise proves to be valid, trunk injections will only be used as an interim method of application until full registration provides other methods.

We have initiated an experiment on avocados at South Coast Field Station to assess injection damage. Sixteen trees have been injected with water or fosetyl-AI using syringes or the propane driven pressure gun. Two sets of injections were done 6 months apart. This spring these trees will be injected with a vital dye below the injection points to determine if injection interferes with water transport in the trees. The trees will be dissected to determine the extent of physical damage present. We also hope to locate trees in groves that have been injected a number of times to assess the damage to them caused by the injections.

Phosphonate movement

The trees for this trial are on hand and will be planted this spring. Treatments will consist of fosetyl-AI applied by foliar spray, trunk paint, soil drench and trunk injection. Evaluations will be made by analysis of plant tissues for the presence of the chemical. We intend to develop data on speed of entry, distribution throughout the plant and longevity of the chemical in the plant. Development of this data will add to the field data and enable us to determine more accurately when and how often to treat avocado trees with root rot controlling chemicals.