

Is There a Risk of Transmitting *Rhodococcus* Between Plants or Orchards on Infested Pruning Equipment?

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With the recent elucidation that plant pathogenic bacteria in the genus *Rhodococcus* are responsible for the new disease of ‘UCB-1’ pistachio rootstock called pistachio bushy top syndrome (PBTS), researchers now seek to understand the epidemiology of the disease for prevention of transmission to unaffected plants and orchards. In direct response to growers’ concern over the potential for pathogen transmission on pruning equipment, a greenhouse experiment was designed and implemented in November 2014.

To address the pathogen-transmission potential on infested tools, healthy ‘UCB-1’ clonal rootstocks were obtained from a commercial nursery. Plants were tested for presence of *Rhodococcus* bacteria by pressing leaves on selective medium prior to initiating the study; *Rhodococcus* was not recovered from any of the plants. Plants were cut with pruners that were prepared with each of three treatments: 1) uninfested/negative control, 2) naturally-infested pruners, and 3) artificially-infested pruners/positive control. Uninfested pruners were sprayed with 95% ethanol and flamed prior to making cuts on test plants. A positive control treatment was established by dipping pruners in a bacterial suspension of two isolates of *Rhodococcus* that had been recovered from pistachio bushy top plants. The naturally-infested pruners were run through naturally-infected plant material collected from a commercial pistachio orchard in Tulare County, CA. The naturally-infected material was collected the same day as treatments were implemented on plants. Twenty replicate plants were utilized for each treatment and treatments were geographically separated within the greenhouse to prevent transmission from infested plants to negative controls.

After approximately 5 months, each plant was sampled for epiphytic populations of *Rhodococcus*. Putative *Rhodococcus* isolates were subcultured and sent to the Randall laboratory at New Mexico State University for confirmation of identity. Based on visual observation, there are no differences in aboveground growth and development between treatments; however, epiphytic populations of *Rhodococcus* have been detected on 20% (5/20) and 15% (3/20) of plants cut with naturally-infested and artificially-infested pruners, respectively. The pathogen has not been recovered from the negative control plants. Further work will be conducted to determine whether treatments affected plant height, shoot, and root biomass; the results will be presented in a future newsletter edition.

The results of this study indicate that *Rhodococcus* is transmissible on pruning tools. Consequently, to mitigate spread of the pathogen from infected to uninfected plants, both within and between orchards, growers should instruct pruning crews to disinfest tools between trees. Additionally, growers unaffected by pistachio bushy top syndrome are advised to request pruners disinfest all tools prior to entering unaffected blocks.

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In-A-Nutshell

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