

Developing Improved Strategies for Management of Replant Problems

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PROJECT SUMMARY

Objectives:

- Determine the biological causes of replant disease (RD).
- Develop improved management strategies for RD and other replant problems.

Background:

Replant disease commonly occurs when an almond orchard is replanted into ground that previously had an almond or other *Prunus* species, where it significantly slows growth and can outright kills young trees. The exact microorganism(s) that cause replant have not been identified.

Replant disease along with other soil pests problems such as nematodes and oak root fungus have been managed through the use of soil fumigants. However, all of the soil fumigants face tremendous regulatory pressures. This project has used different chemical and non-chemical pre-plant soil treatments in newly planted orchards to assess whether any are effective in controlling replant disease.

Discussion:

New culture-independent (i.e., DNA-based) analyses of bacterial, stramenopile, fungal populations were completed on soil samples from three replanted orchards.

So far, *Pythium* and *Fusarium* have not been found with the DNA-based analyses, while *Phaeoectriella lignicola* showed up, in contrast to the culture-based analyses.

Using both culture-based and DNA-based methods species of *Cylindrocarpon* fungi were regularly identified as occurring in soils with replant disease. *Cylindrocarpon* isolates from a wide range of samples are being sequenced, to group related strains together and test their pathogenicity.

In late 2009, field trials were initiated using spot treatments of Brassica meal, steam (see 10-AIR6-Hanson/9-AIR6-Fennimore), or fertigated UN32 at 200 lb/A. Trees were planted in February, 2010. Initial results will be reported at the 2010 ABC Annual Industry Conference and future reports.

Additional trials with various soil fumigants, rates and spot treatments are also being monitored as part of this larger, multi-year project (see annual reports from previous years).

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For More Details, Visit

- Poster location 28, Exhibit Hall, Session 1; or on the web (after January 2011) at AlmondBoard.com/AICposters
- 2009-10 Annual Report CD (09-PATH1-Browne); or on the web (after January 2011) at AlmondBoard.com/ResearchReports
- Related Projects: 09-PATH2-Browne/Kluepfel; 10-PREC3-Holtz; 10-HORT13-Lampinen