

Almond Brown Line Disease: Development of a Molecular Assay for its Detection

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PROJECT SUMMARY

Objectives:

- Characterize Almond Brown Line Disease molecularly using polymerase chain reaction (PCR)-based assays.
- Obtain diseased wood from symptomatic trees in the spring, summer, and fall to assess when best to sample for detection.
- Develop specific primers for quantitative real time PCR and monitor the titer of PYLR phytoplasma in peach and almond trees maintained at UCD orchard.

Background:

Almond Brown Line Disease causes most affected trees to die within a year or two of obvious symptoms. Diseased trees showed bark split, union disorder and a brown line consisting of necrotic phloem tissue.

The causal agent is a phytoplasma against which traditional fungicides do not work. It is thought that Peach yellow leaf roll (PYLR) is the same phytoplasma that is causing brown line disease.

Once in the tree it can be transmitted from rootstock to scion or from grafted limb to the rest of the tree. Diseased almond trees have been observed primarily when rooted on Mariana rootstock, a plum root. Marianna is useful for marginal soils and has some resistance against a number of soil-borne pests.

Given that the disease can be transmitted within the tree via infected rootstocks, it would be useful to have a method for assessing which wood is infected. A credible detection method would permit the certification of plant material as PYLR-free, thus reducing transmission.

This project will try to isolate DNA from symptomatic wood to develop a DNA-based method for disease detection. The CDFA Nursery Improvement Advisory Board (IAB) is co-funding this effort, as a detection method could be a tool used in clean plant certification programs.

Project Cooperators and Personnel: Franz Niederholzer, University of California Cooperative Extension Yuba & Sutter Counties; Jerry Uyemoto, USDA/ARS (emeritus), Davis

For More Details, Visit

- Poster location 20, Exhibit Hall, Session 1; or on the web (after January 2011) at AlmondBoard.com/AICposters