

Identification of Almond Rootstocks with Resistance to *Armillaria* Root Disease

Project Leaders: Roger Duncan

University of California Cooperative Extension, Stanislaus County, 3800 Cornucopia Way (#A), Modesto, CA 95358
(209) 525-6800, raduncan@ucdavis.edu

PROJECT SUMMARY

Objectives for current year:

- Use a large potted-tree assay to confirm results from a previous laboratory assay, which identified *Armillaria*-resistant rootstocks.
- To screen additional rootstocks that were not included in the lab assays.

Background and Discussion:

Armillaria root disease (oak root fungus) affects all almond regions of California. The standard resistant rootstock commonly used in oak root fungus infested soils is Marianna 26-14. M 26-24 has many undesirable characteristics, including incompatibility with Nonpareil, propensity for root suckers, and low vigor, especially in sandy soils. An alternative rootstock for ORF infested soils is needed.

In 2012, laboratory assays indicated that Krymsk 86 may be at least as resistant to oak root fungus as the standard, Marianna 26-24. Peach rootstocks, including Nemaguard, and peach x almond hybrid rootstocks, including Brights and Hansen, proved to be highly susceptible.

With this project we hope to validate these findings in large potted plants, as a step toward future field experiments. Our approach is to inoculate plants rooted in large (15-gallon) pots and maintained outdoors. Field trials of rootstock resistance to *Armillaria* root disease can be informative when they include artificial inoculations to each tree, but they can take upwards of 10 years to get results in terms of tree

mortality. We hope that this potted tree method will gain trustworthy information within one year. Rootstocks to be screened in this project include:

- Nemaguard (peach)
- Empyrean 1 (peach hybrid)
- Hansen (peach x almond hybrid)
- Marianna 26-24 (plum)
- Marianna-40 (plum)
- Viking (peach, almond, plum & apricot)
- Atlas (peach, almond, plum & apricot)
- Krymsk 86 (peach x plum hybrid)
- Citation (peach x plum hybrid)
- Rootpac R (peach x almond hybrid)
- SAM-1 (probably an almond hybrid)

In October 2015, twenty-five potted sapling trees of each test rootstock were acquired from commercial nurseries and then replanted into large, growing containers. Trees were inoculated with live cultures of *Armillaria mellea*. They will be grown outside for one year. During the year of growth, trees will be monitored for signs of disease. Trees that die during the course of the year will be examined to confirm the cause of death. At the end of one year, surviving trees will be harvested and examined for incidence and severity of root / crown infection by the fungus.

Project Cooperators and Personnel: Kendra Baumgartner, USDA-ARS, Dept. of Plant Pathology, University of California, Davis

For More Details, Visit

- Poster location 54 Exhibit Hall A + B during the Almond Conference; or on the web (after January 2016) at Almonds.com/ResearchDatabase
- Related projects: 12-PATH7-Baumgartner; 15-HORT10-Gradziel; 15-HORT16-Aradhya/Ledbetter; 15-AIR9-Doll; 15-AIR5-Gao/Doll;