Almond Fumigant Studies: Continued Research on Methyl Bromide Alternatives and Fumigant Alternatives for Buffer Zones

Project Leader: David Doll
University of California Cooperative Extension – Merced County, 2145 Wardrobe Ave., Merced, CA 95341
(209) 385-7403, dadoll@ucdavis.edu

PROJECT SUMMARY

Objectives:

- To continue to assess established fumigant plots for control of Prunus Replant Disease and plant pathogenic nematodes.
- Develop non-fumigant based control measures for almond replant disease and plant pathogenic nematodes within fumigant buffer zones.

Background and Discussion:

Increasing regulations have restricted the use of fumigants within varying distances from sensitive areas depending upon the type and amount of fumigant used. This prevents growers from treating areas along the agricultural-urban interface. The inability to fumigate usually leads to a reduction of tree vigor and yield. Research has focused on delivering smaller doses of fumigants per treated orchard acre and the use of tarps to reduce emissions and increase effectiveness. This data will most likely be used to help develop regulations that decrease the size of, but not eliminate buffer zones. True fumigant alternatives must be developed for these untreatable areas.

This project continues the work of plot monitoring and nematode sampling for four fumigant trials, which include:

- South Livingston Trial. Planted in the spring of 2010 and located on a loamy sand soil near Livingston, CA. This trial is comparing conventional fumigants to methyl bromide.
- Ballico Trial. Planted in the spring of 2011 and located on a sand soil near Ballico, CA. This trial is comparing conventional fumigants with non-fumigant alternatives.
- Winton Trial. Planted in the spring of 2012 and located on a loamy sand soil near Winton, CA. This trial is comparing conventional fumigants with non-fumigant alternatives.
- Ballico Trial #2. Planted in the spring of 2015 and located on a sand soil near Ballico, CA. This trial is comparing an alternative fumigant and non-fumigant alternatives to conventional fumigation.

Treatments within the trials are being monitored for tree growth, yield, and nematode control. Harvest data is collected upon first harvest - usually the third year, and continued through the tenth year, possibly longer. Diameter and circumference measurements are made in the dormant period following the year of growth. Nematodes are sampled from established plots following the growth in mid-October.

Initial results from harvests indicate that fumigants containing Telone-II, mixtures of Telone-II and chloropicrin are out-yielding the non-fumigated control. Nematode re-infestation has occurred more rapidly than previously thought, with almond parasitic nematodes being detected within two years post-fumigation.

Project Cooperators and Personnel: Andrew Ray, Vivian Lopez, and Matt Johnson, UCCE - Merced; Amanda Hodson, UC Davis, Davis, CA; Brad Hanson, UCCE - Weed Specialist, Davis, CA; Greg Browne, USDA-ARS, Davis, CA; Steve Fennimore, UCCE - Weed Specialist , Salinas, CA.

For More Details, Visit

- Poster location 51, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2016) at Almonds.com/ResearchDatabase
- 2014 - 2015 Annual Reports CD (14-AIR9-Doll); or on the web (after January 2016) at Almonds.com/ResearchDatabase
- Related projects: 15-AIR5-Gao; 15-PATH1-Browne; 15-PATH7-Duncan/Baumgartner