

# Weed Management and Herbicide Safety in the Almond Production System

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## PROJECT SUMMARY

### Objectives:

- Evaluation of new herbicides, tank mixes, and application techniques, particularly for glyphosate-resistant weed control.
- Evaluate and diagnose almond injury symptoms from various herbicides and develop training tools for advisors and consultants.

### Background and Discussion:

Weed control, which includes both chemical and mechanical practices, is an annual management challenge and production expense for almond growers. In addition to direct impacts on crop productivity and establishment in young orchards, weeds are managed in established orchards to decrease frost risk in the spring, increase irrigation efficiency, minimize competition for fertilizer, and allow equipment access for other pesticide applications. Weed control is also an important part of an integrated pest management strategy as excessive weed populations can foster insect, diseases, and vertebrate pests of almonds. Importantly, because almonds are shaken from the trees and mechanically picked up from the orchard floor, effective season-long weed management is also needed to ensure efficient harvest operations.

Many growers use multiple weed management approaches that include mechanical control in the middles (tillage and/or mowing) combined with strip herbicide applications within the tree rows. Other growers utilize complete herbicide applications across the orchard floor for season-long weed control. Although a small organic production segment of the market utilizes only non-chemical weed control practices, the vast

majority of California's almond acreage is treated with herbicides several times each year, often with a combination of residual preemergence and broad spectrum "burn down" products.

This project focuses on weed control efficacy, primarily with herbicides, in the almond production system. Research and demonstration trials are conducted at multiple locations in the Central Valley to provide real-world information on how new herbicides, herbicide tank mixes, and application techniques affect herbicide performance in the range of soil, climate, and production practices used in California. A special focus of this work is on the increasing problems with glyphosate-resistant weeds including hairy fleabane, horseweed, junglerice, ryegrass, and several other confirmed or suspected resistant weed species.

In addition to herbicide efficacy, Farm Advisors, Pest Control Advisors, and growers frequently have questions and concerns about crop safety with herbicide used in and around almond orchards. A second focus of this project is to help solve crop injury issues known or suspected to be due to herbicides. One ongoing project was initiated to determine what, if any, interactive effects of glyphosate and micronutrients occur after repeated use in almond orchards.

The broad weed management research partially supported by this Almond Board of California project provides direct and practical benefits to almond producers, pest control advisors, county-based cooperative extension advisors, as well as related orchard and nursery industries.

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**Project Cooperators and Personnel:** Patrick Brown, Bahar Yildiz Kutman, Seth Watkins, Lynn Sosnoskie, and Marcelo Moretti, UC Davis; David Doll, UCCE – Merced, Franz Niederholzer, UCCE – Colusa/Sutter/Yuba, John Roncoroni, UCCE – Napa

### For More Details, Visit

- Poster location 13, Exhibit Hall A + B during the Almond Conference; or on the web (after January 2016) at [Almonds.com/ResearchDatabase](http://Almonds.com/ResearchDatabase)
- 2014 - 2015 Annual Reports CD (14-HORT12-Hanson); or on the web (after January 2016) at [Almonds.com/ResearchDatabase](http://Almonds.com/ResearchDatabase)
- Related projects: 15-AIR9-Doll; 15-PATH1-Browne; 15-AIR5-Gao