Investigating the Effects of Glufosinate (Rely) on Young Almond Trees

Project Leader: Bradley D. Hanson
Dept. of Plant Sciences, University of California, Davis, Robbins Hall, Davis, CA 95616
(530) 752-8115, bhanson@ucdavis.edu

PROJECT SUMMARY

Objectives for current year:

- Determine if bark injury observed in young almond trees is due to glufosinate application.
- Determine factors contributing to this sporadically observed injury in order to develop mitigation techniques.
- Evaluate the regrowth response of young almond trees exposed to simulated drift of various herbicides.

Background and Discussion:

Most almond growers use an integrated weed management approach that includes mechanical weed control in the middles combined with strip herbicide applications within the tree rows. Between tree strip applications and preharvest orchard floor treatments, the vast majority of California's approximately 800,000 acres of almonds are treated at least once each year with a broad spectrum "burn down" herbicide.

Among the three broad spectrum postemergence herbicides, paraquat (Gramoxone Inteon), glyphosate (Roundup, Durango, etc), and glufosinate (Rely, Rely 280), glyphosate is the most widely used due to its efficacy, low mammalian toxicity, and relatively low price. These herbicides do not have any inherent selectivity in almond – their safety to the crop is based upon applications directed below the foliage, minimal exposure to green bark (often through the use of milk cartons during early establishment years), and the use of other application techniques to minimize tree exposure. However, each year almond growers, pesticide consultants, and researchers observe cases of injury in almonds due to drift, misapplication, or occasionally unknown causes.

Because of the increasing problems with glyphosate resistant weeds and the desire to minimize selection pressure for more resistant biotypes, Rely herbicide use in almonds has increased substantially in recent years. In the period since Rely was registered an almond, PCA's, researchers, and University extension personnel have received a number of calls about injury to young (2-4 yr-old) almond suspected to be related to glufosinate applications. The injury symptoms most often noted is gummosis or gum balls on the lower trunks but other symptoms including tip die-back have also been alleged. Thus far, evidence has been largely anecdotal because these symptoms have been somewhat difficult to recreate in the field.

This project was initiated in 2011 to confirm the cause of the alleged glufosinate injury on young almond trees and to determine factors contributing to the sporadically observed symptoms. A secondary objective is to compare glufosinate injury to other herbicide symptoms on young trees.

A trial was initiated in a second leaf almond orchard near Parlier, CA and two new experimental orchards were planted near Davis and Arbuckle CA in spring 2011 for 2012 treatments. Preliminary results from 2011 suggest that trunk exposure to glufosinate can result in localized lesions. There does not appear to be a strong correlation to glufosinate formulation; however, a strong rate response was observed. These experiments are expected to continue through 2013.

Project Cooperators and Personnel:
Joi Abit, University of California, Davis; David Doll, University of California Cooperative Extension, Merced

For More Details, Visit

- Poster location 41, Exhibit Hall, Session 3; or on the web (after January 2012) at AlmondBoard.com/AICposters