

Produced by:


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 Farm Advisor
 Fresno & Madera
 Counties

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Dormant Weed Control in Tree Nut Crops 2014

*Mick Canevari, Brent Holtz, and Brad Hanson,
 University of California Cooperative Extension*

Current dry weather has preempted most normal winter weed germination and growth while prolonged periods of dry soil has caused some early weeds to desiccate and die. In most tree and vine herbicide trials conducted so far this winter--the untreated controls look similar to herbicide treatments, very clean and without weeds. What to do at this point poses some interesting questions. Will it rain? Most of us are worrying more about irrigating our almond trees this summer than controlling weeds right now.

If you have some weed growth that germinated with rain our rain in December, or with fall and winter irrigations, you may want to apply a post-emergent herbicide now in order to prevent hard to kill weeds from becoming established. The warm weather could allow these weeds to establish and become more difficult to control, impacting the success of later herbicide applications by increasing trash on the berm and reducing coverage.

If you have solid set or micro irrigation systems and available water, you could apply pre-emergent herbicides and incorporate them with a light winter irrigation. A lower concentration or rate could be used in February, compared to a November rate, and the chance of crop injury for some materials applied close to bud break will be reduced. The Dinitroaniline herbicides, such as Prowl or Surflan, would be a good choice to be set with winter irrigations since this chemistry controls many of our summer weeds and grasses and is very soil stable under multiple rain events and continuous irrigations. The Dinitroaniline herbicides however, do not adequately control our more troublesome and persistent weeds such as Fleabane & Horseweed, and to some extent Willow Weed and Malva that can germinate well into spring and early summer. If you are battling these weeds you can consider other pre and post emergent herbicides in order to control them while they are small.

Growers with drip-irrigation (surface or buried) or furrow-run flooded orchards are going to have an awfully hard time getting decent activation of pre-emergent herbicides on dry berms. Applying herbicides under different spray patterns (solid and spot sprays) will have to be considered by each farm operator. Hopefully, we will get some rain in February that will still allow pre-emergent herbicides to be used effectively and provide good control into early summer. But without rain we will have to reduce herbicide rates for smaller or no weeds and a reduced time of residual control. This may be the year to stock up on post emergent herbicides!

Dormant Weed Control

Weeds have a tremendous capacity to spread within an orchard. The first line of defense is identifying the weeds you need to control, and selecting the best herbicides or cultural practices to control those weeds. If you use the same herbicide(s) each year, a shift to tolerant weed species will ultimately take over and a loss of herbicide effectiveness will occur. Alternating products with different modes of action at least every couple years will improve results and insure herbicides long term viability. The UCIPM web site has charts that show which weeds are controlled by what herbicides, and an excellent weed photo gallery that includes many weed species commonly found in California for easy identification and reference <http://www.ipm.ucdavis.edu/>.

Pre Emergent Herbicides

Prowl H₂O (pendimethalin) herbicide has excellent grass control and broadleaves especially those germinating in the spring and summer time. Surflan (Oryzalin) and Prowl are similar in their weed spectrum and residual properties. Prowl H₂O and Surflan remain stable on the soil without rainfall for 21 days. Apply them at the higher label rates (4-6 quarts per sprayed acre) for extended weed control. Another strategy is to treat early season November/December for winter weeds with a low rate of glyphosate (Roundup, Touchdown) with a soil residual herbicide such as Chateau, Matrix, Alion, or Pindar GT and then wait to apply the Surflan or Prowl later in February or March to achieve summer long weed control.

Chateau (flumioxazin) is a long-lasting pre-emergent herbicide available for tree, nut, and vine crops. Applied between 8-12 oz. per treated acre, Chateau enhances burndown of small broadleaf weeds and provides residual control of difficult weeds such as fleabane and horseweed (mare's tail) and a host of other winter weeds as they germinate. This has made Chateau an excellent herbicide for use in the fall/early winter timing during the dormant period. This time frame also avoids phytotoxicity to emerging bud tissue in the early spring, especially on young trees. The addition of Rely (glufosinate), Roundup (glyphosate), Treevix (saflufenacil), or Gramoxone (paraquat) is

needed to control emerged weeds especially fleabane and mare's tail.

Matrix FNV (rimsulfuron) is a pre-emergent herbicide active on many winter broadleaf and grass weeds including fleabane, malva, willow weed, and mare's tail. Its broad spectrum activity on grasses and broadleaf weeds, makes it a good fit for an early fall application timing November/December. It should be tank mixed with a contact herbicide; Roundup, Rely, Gramoxone, or Treevix. Matrix is applied at 4 ounces product per broadcast acre. A second application or use of another pre-emergent herbicide is generally needed in the spring for extended summer weed control. Matrix is very safe on young trees.

Alion (indaziflam) is a new herbicide registered in tree nuts. It is a preemergent, long-lasting soil residual herbicide exceptional in controlling grasses and many broadleaf weeds. It is effective on both winter and summer weeds including fleabane, mare's tail, sowthistle, and willow weed. At least 1/4 inch of water is needed to set and activate soil residual. Since it is strictly a pre-emergent herbicide, it requires a tank mix with a post contact herbicide for emerged weeds; Rely, Roundup, and Gramoxone are all compatible. Alion is a brand new chemistry and has shown excellent results and has an inhibiting cell wall formation MOA (mode of action). This MOA will have an important role in future weed control strategies of weed resistant management. Dr. Brad Hanson, Extension Weed Specialist at UC Davis, performed a number of trials where Matrix and Alion were tank mixed together and better long term weed control was observed (UC Weed Science Blog at <http://ucanr.org/blogs/UCDWeedScience/>).

Pindar GT (oxyfluorfen and penoxsulam) is two herbicides, having pre- and post-emergence activity for use in tree nuts and fruits. Applied in November/December, it provides residual control lasting into spring/early summer. It is especially effective on filaree, malva, willow weed, sowthistle, and many other winter broadleaf weeds. If weeds have emerged, it is recommended to combine it with a post-herbicide Roundup, Rely, or Gramoxone. If heavy grass pressure is anticipated in the orchard, the addition of Prowl or Surflan will benefit long term grass weed

control. Within 14 days of application, a ½ inch of water is needed to set and activate the herbicide.

Trellis (isoxaben) has been recently registered for use in bearing almonds and other nut and fruit crops. It is a pre-emergent herbicide controlling many winter and summer broadleaf weeds. Applied in the fall/winter time frame will provide 4-5 months of control. It has no post-emergent activity, therefore, it must be tank mixed with Roundup, Rely, or Gramoxone for emerged weeds. Trellis mode of action is unique; it inhibits cellulose development making it a good rotational herbicide to manage weed resistance. If grass weeds are an issue, the addition of a pre-emergent grass herbicide; Prowl or Surflan will be needed.

Post Emergent

Rely (glufosinate) herbicide has become a mainstay for growers needing a broad spectrum burn down herbicide to control tough weeds like fillare, willowweed, or glyphose resistant fleabane and marestail. During the 2012 season, California was in short supply of Rely due to the high demand in the midwest for planting glufosinate corn varieties. In recent years, the development and spread of Roundup resistant weeds is forcing a change from Roundup Ready corn and soybeans varieties to planting Liberty Link varieties which require the use of glufosinate herbicide (Rely, Liberty). With the heavy use expected in corn states, Rely is again anticipated to be in short supply for California growers in 2013. Growers should plan on alternative weed control strategies that will replace the use of Rely. We are confident with the post- and pre-emergent herbicide combinations we have available and used in a timely manner, we can still expect excellent weed control results.

Treelix (saflufenacil) is a new post-emergent contact herbicide offered for almond, nuts, and fruit crops. The use is for tough emerged broadleaf weeds but no activity on grasses. Like all post contact herbicides, treating small weeds 1"- 6" tall with complete spray coverage is important. Treelix is excellent in burning down fleabane, marestail, and willowweed, especially in cooler temperatures beginning in fall through spring time. It has no soil residual activity, therefore, will need to be tank mix with soil active herbicides for

long term control. If grasses have already emerged, using glyphosate or Gramoxone is needed.

Some growers may prefer multiple post-emergent treatments rather than pre-emergent treatments, if orchard access is limited during the dormant season. Roundup, Touchdown, Gramoxone, Shark, Venue, Rely, Goal, and 2,4-D are registered for use in almond orchards. Glyphosate is moderately effective on purple nutsedge with repeated applications prior to the six-leaf growth stage. Yellow nutsedge can be managed by using 4qts/A of glyphosate at each application. Sandia has shown excellent results to control nutsedge, but is not registered on almond (Sandia is registered for pistachio and walnut). The key to nutsedge control is repeated applications before it is able to regenerate new nutlets and tree size allows for orchard shading. Care should be taken to avoid resistance in weed species by repeated use of the same herbicide year after year. Cost comparisons between pre- and post-emergent programs often show that the expense of repeated contact application equals or exceeds the cost of the pre-emergent treatment, especially if you have noxious weeds like fleabane, which are best controlled with these newer pre-emergent materials. Herbicide application equipment should NEVER be used for treating tree foliage! Manufacturer labels providing essential information about the proper use and application rate for all pesticides can be accessed at <http://www.agrian.com> or <http://www.cdms.net>. NOTE: Before using any herbicide always check labels for any use restrictions applicable to your area or soil type.

Dr. Brad Hanson, Extension Weed Specialist at UC Davis, has created a UC Weed Science Blog at <http://ucanr.org/blogs/UCDWeedScience/>. UC Davis also has a UC Weed Research and Information Center: <http://wric.ucdavis.edu/>, a Weed Identification tool: <http://weedid.wisc.edu/ca/>, and current CA tree and vine registrations: <http://ucanr.org/t&v-registrations>.

About the authors: Mick Canevari is Farm Advisor Emeritus, San Joaquin County; Brent Holtz is Farm Advisor & County Director, UCCE San Joaquin County, and Brad Hanson is Extension Weed Specialist at UC Davis.

Orchard IPM activities for January & February

Gurreet Brar, UCCE Farm Advisor, Fresno & Madera Counties

Almonds:

Prior to bloom, evaluating mummy nuts for navel orangeworm (NOW) infestation is important-counting mummy nuts and if more than two mummy nuts remain per tree, knocking them down before February 1.

You should have done a weed survey after harvesting to assess and identify the weeds present. You can apply post-emergence herbicides, alone or in combination with pre-emergence herbicides. Remember that a good weed control program aids your IPM program. Many weeds harbor harmful pests as well, therefore controlling potential insect population buildup by limiting weed growth now can save you time and money later in the season.

Recent research suggests that application of IGRs like diflubenuron to control peach twig borer (PTB) at bloom may be harmful to honey bee brood. Nevertheless, this is the right time to examine limb crotches and tree trunks to determine when PTB larvae start emerging from overwintering hibernacula. If a spray is needed, an insecticide application at bloom should be avoided and other alternative control timings should be considered.

Dormant spur sampling: Dormant spur or twig sampling is used to determine the need for a dormant treatment to control San Jose scale, European red mite, brown mite, European fruit lecanium, and almond scab. Spurs or twigs are the short green shoots producing the flower buds, and represent twig growth that developed in the previous summer and fall. They have not yet developed bark. Dormant spur sampling is done once a year between mid-November and the end of January.

Randomly select 35 to 50 trees from each orchard or plot to be sampled.

Selecting major scaffolds randomly, clip 2 to 3 spurs or twigs from the inside of each tree's canopy for a total of 100.

Clip the spur off at the base, making sure to include some old spur wood along with the last year's growth to detect parasite activities on scales.

Using a hand lens or binocular microscope, examine 20 of the spurs for scales, mite eggs, and scab lesions and record observations in a sampling form. It is not necessary to count the number of individual insects or mite eggs present, just identify the pest or disease and record whether it is present or not.

For taking treatment decision, refer to the table below for threshold information. With the current dry weather and lack of moisture within the trees, concerns about the oil burn have been raised. If an application of oil is needed, make sure you select an oil with specifications with lower risk of oil burn such as narrow range or summer oils with high unsulfonated residue, low distillation temperature and lower viscosity. If your trees are excessively dry, oil application may cause injury to the tissues.

To monitor San Jose Scale put up pheromone traps between February 25 and March 1. Use these traps and degree-days to predict the crawler stage. Place sticky tape in the trees in April to catch crawlers when they hatch. Also, keep an eye on mound-building activity of pocket gophers. Treat-

Dormant Treatment Decision Table		
(% Infested or Infected Spurs or Twigs)		
Pest	Threshold	Treatment
San Jose Scale	Below 20%	No Spray
	20%-60%	Oil at 6-8 gals/acre
	Over 60%	Oil with insect growth regulator ²
European Fruit Lecanium	Below 20%	No spray
	20% and above	Oil only
Overwintering Mite Eggs ¹	Below 20%	No spray
(European red or brown mite)	20% and above	Oil only
Scab	Below 10%	No spray
	10% and above	Copper/oil or chlorothalonil/oil

¹Oil works best closer to delayed dormant timing or on warmer days when eggs are respiring. Using dormant oil alone does not provide adequate control for European red mites in Kern County.

²See San Jose Scale section for specific insect growth regulators.

ments like traps or poison baits can be used in spring if necessary.

Pistachio:

Remember that in pistachio, NOW infestation significantly increases risk of aflatoxin contamination, therefore care must be taken to reduce NOW damage. Follow the orchard sanitation measures as discussed in almonds. Remove and destroy, or disc under, mummy nuts to reduce navel orange-worm overwintering sites and inoculum sources of *Botryosphaeria panicle* and shoot blight.

Destroy, or remove the pruned wood and brush piles, from the orchard floor to reduce overwintering sites for leaffooted plant bug and the incidence of *Botrytis blossom* and shoot blight and *Botryosphaeria panicle* and shoot blight.

Evaluate pistachio buds or small twigs for presence of *Botryosphaeria*, the fungus that causes panicle and shoot blight in pistachio. Infected buds can develop shoots with black circular spots of 1-2 mm in size. These symptoms can also develop on rachises and leaves. Consider dormant bud sampling (BUDMON) to determine resident populations, especially if damage from *Botryosphaeria* was high this past year.

Careful monitoring of the disease threats early on is the best way to deal with potential orchard health problems later in the season. To assist the growers in fungal disease management, University of California publishes a Fungicide Efficacy Guide that can help you select the right material and the proper timing of application for the most effective disease control. The guide is available at <http://www.ipm.ucdavis.edu/PDF/PMG/fungicideefficacytiming.pdf>

Walnuts:

If there are significant number of mummy nuts on the trees or on the ground by the end of February, they need to be removed before mid-March. Destroy mummy nuts and remove any huller waste material.

During dormant period we monitor the tree scaffolds, limbs and spurs for scale and mites and also note down if there is any evidence of parasit-

ism. If your dormant scale and mite monitoring indicated that there is need for a treatment, consult UC IPM guidelines for walnut pest management to treat European fruit lecanium, frosted scale or walnut scale.

Any ground covers should be mowed before bloom.



(From top) Mummy nuts of pistachio, walnut and almonds. Orchard sanitation is of utmost importance during this time of the year to keep the in-season insect-pest infestations under control. Remove mummy nuts from your trees and destroy them according to guidelines provided here. (Photos: Gurreet Brar)

MARK YOUR CALENDARS!

2014 North San Joaquin Valley Almond Day

Sponsored by the University of California Cooperative Extension

February 6, 2014. 8:30 a.m. - 12:00 noon

**Robert J. Cabral Ag Center
2101 E. Earhart Avenue, Stockton**

1.5 Hours of Continuing Education Credit Pending

3.0 Hours of CCA hours pending

7:30 Registration Opens

8:30 Program Begins

Welcome

Brent Holtz; Farm Advisor & County Director, UCCE San Joaquin County

Monitoring and Treatment Decisions for Leaf Footed Bug

Dr. Kent Daane, Cooperative Extension Specialist, UC Kearney Ag Center

Update on Orchard Sprayer Technology and Efficacy

Franz Niederholzer, Farm Advisor, Sutter, Yuba & Colusa Counties

Summary of UCCE Almond Field Trials in the North San Joaquin Valley

Brent Holtz, Farm Advisor, San Joaquin County

Roger Duncan; Farm Advisor, Stanislaus County

David Doll; Farm Advisor, Merced County

Dynamics and Management of our Local Groundwater Basins

Dr. Thomas Harter, Groundwater Hydrologist, UC Davis

Irrigating Almonds in a Drought Year

Ken Shackel, Professor in Plant/Water Relations, UC Davis

Managing Salinity in Almond Orchards.

Stephen Grattan; Plant/Water Relations Extension Specialist, UC Davis

12:00 Adjourn

UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION

45th TRI-COUNTY WALNUT DAY - Visalia Holiday Inn, 9000 W. Airport Drive, Visalia, CA

February 6, 2014

PRE-REGISTRATION DUE BY
Thursday, January 30, 2014

REGISTRATION

- 7:00 a.m. **Coffee and Danish Courtesy of California Walnut Commission/Walnut Board**
Moderator: Elizabeth Fichtner, UCCE Farm Advisor, Tulare County
- 7:50 a.m. **Welcome Walnut Growers**
Tulare County Board of Supervisors
- 8:00 **Does it pay to fumigate a replant walnut site?**
Bob Beede, UCCE Farm Advisor Emeritus, Kings County
- 8:30 **California walnuts...an industry working together!**
California Walnut Commission
- 9:00 **Monitoring and management of navel orangeworm on walnuts**
Dr. Charles Burks, Research Entomologist, USDA-ARS, Parlier
- 9:30 **Botryosphaeria and Phomopsis canker and blight: the sleeping giant in walnut orchards.** *Dr. Themis Michailides, Plant Pathologist, Dept. of Plant Pathology, UC Davis*
- 10:00 **Break**

Moderator: Gurreet Brar, UCCE Farm Advisor, Fresno and Madera Counties
- 10:30 **Efforts to update the UCCE cost study for walnut production in the SSJV**
Dr. Gurreet Brar, UCCE Farm Advisor, Fresno and Madera Counties
- 10:45 **Wood piles may harbor walnut twig beetle and promote thousand cankers disease**
Dr. Elizabeth Fichtner, UCCE Farm Advisor, Tulare County
- 11:00 **Development of new walnut varieties and rootstocks**
Chuck Leslie, Staff Research Associate, UC Davis Walnut Breeding Program
- 11:30 **Walnut pruning and training impacts on root growth, canopy growth and productivity.** *Dr. Bruce Lampinen, Walnut and Almond Extension Specialist, UC Davis*
- 12:00 **Lunch graciously provided by our sponsors**

REGISTRATION

LUNCHEON SPACE IS LIMITED TO FIRST 225 REGISTRANTS

Option 1 (\$10): Register Online by 1/30/2014
<http://ucanr.edu/14>

Option 2 (\$10): Register by mail by 1/30/2014

Please detach and mail this form with a check made payable to **UC REGENTS**

Mail to: UC Cooperative Extension
TCWD
4437B S LASPINA ST
TULARE CA 93274-9537

Name: _____
Number of attendees in party: _____
Amount Enclosed (\$10 per person) _____
Company: _____
Address: _____
City/State/Zip: _____
Phone: _____

Option 3 (\$15): Register at the door; checks and cash accepted.

Continuing Education Credit Requested

**2.0 hours of PCA (Other)
3.5 hours of CCA**

Drought Management for Almonds

A short, topical meeting sponsored
by the University of California Cooperative Extension

Tuesday, January 28th, 2014. 9:00 a.m. - 11:00 a.m.

UCCE Merced Cooperative Extension Office

2145 Wardrobe Avenue, Merced, CA 95340

8:30 Registration Opens

9:00 Program Begins

Irrigating Almonds in a Drought Year

Ken Shackel, Professor in Plant/Water Relations, UC Davis

Application of Irrigation Strategies for Almonds

David Doll, UCCE Merced Farm Advisor

Managing Salinity in Almond Orchards

Stephen Grattan, Plant/Water Relations Extension Specialist, UC Davis

Questions and Answers

11:00 Adjourn

'From the Shell' is produced by UCCE Nut Crops Farm Advisor Gurreet Brar. Contact him for further information, or to be added to the e-mail list, at (559) 241-7526; or e-mail: gurbrar@ucanr.edu



Our programs are open to all potential participants. Please contact the Fresno County UCCE office (two weeks prior to the scheduled activity) at 559-241-7515 if you have any barriers to participation requiring accommodation.

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