



Cooperative Extension ~ University of California
 Sutter/Yuba Counties
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Orchard Notes

October 2003

Avoiding Water Contamination and Pesticide Drift

A UCCE Workshop for Orchard Pesticide Applicators and their Supervisors
 November 19, 2003

Keeping pesticides out of groundwater and surface water and preventing pesticide drift are two of the most important issues facing agriculture today. This 4-hour workshop will give participants practical and effective tools to deal with these issues. Through demonstrations, problem identification exercises, and creation of personalized checklists, participants will learn ways that water contamination and pesticide drift can occur, what factors contribute to this, and how to reduce these risks. Participants may choose between identical English and Punjabi language sessions.

FEE: Pesticide applicators and their supervisors are encouraged to attend together. This includes family members from farms with no non-family employees. Owner-applicators are encouraged to attend as well! There is a discounted registration fee of \$35.00 for supervisor-applicator pairs (2) attending from the same company. The registration fee for individuals (1) is \$25.00. Registration fee includes resource materials and refreshments. Participants will receive a certificate of attendance.

REGISTRATION: Space is limited, so register early. Register by mail as indicated below. Confirmation will be sent by mail or fax and will include the starting time and directions to the workshop location in Yuba City. Meeting date is November 19, 2003, last day to register will be Friday, November 14, 2003.

REFUNDS: There will be **no refunds**, however another person can attend in your place.

CONTINUING EDUCATION CREDIT: PCA, QAC, QAL, and Private Applicator continuing education credit pending approval.

Avoiding Water Contamination and Pesticide Drift
A Workshop for Orchard Pesticide Applicators and their Supervisors
Please print. (Maximum 2 registrants per form. Photocopy this form for additional registrants.)

Company _____

Supervisor's name _____ I would like to attend in: English Punjabi

Applicator's name _____ I would like to attend in: English Punjabi

Mailing Address _____

City _____ State _____ Zip _____

() _____ () _____

Daytime Phone Number _____ Fax Number _____

Enclosed is my check for \$35 (for supervisor-applicator pair) or \$25 for an individual.

Made check payable to UC REGENTS

Confirmation will be sent by mail or fax and will include the starting time and directions to the workshop location.

Register by:

MAIL: Sutter/Yuba UCCE
 142A Garden Highway
 Yuba City CA 95991-5512
 PHONE: (530) 822-7515

FIELD MEETINGS FOCUS ON SAVING MONEY IN DORMANT SPRAYS

Starting November 10th -14th a series of UCCE field meetings will be put on that focus on money saving practices in orchard pest management. (See below for locations) Franz Niederholzer, UC Farm Advisor for prunes and almonds in Yuba and Sutter Counties, will discuss and demonstrate how to calibrate an orchard air-blast sprayer. In addition, he will teach growers and their employees how to identify dormant season orchard pests, and how to count these pests in a block. This information will

be of value to all tree fruit growers. Finally, he will discuss some options for dormant spray programs in prune orchards. This information may also be of interest to other orchard crop growers. Growers are encouraged to attend and to bring their employee(s) to this meeting. Please bring a hand lens for pest ID, and spur samples from your orchard. Extra hand lenses will be available for use during the class. Please call Franz (822-7515) for further information on equipment and how to cut spurs to view during the class. CE units have been requested.

POSTHARVEST PRUNE FIELD MEETINGS - PROGRAM

Orchard Air-Blast Sprayer Calibration

- Why calibrate?
- Addressing key question prior to calibration
 - How much volume per acre?
- Demonstrate calibrating air-blast sprayer (Nelson/Hardy engine-drive model pulled by Franz’s county truck). Mike Estes, Nelson Manufacturing, will be there to help with the discussion and demonstration.

Dormant Spur Assessment

- What are we looking for and why?
- How to take the sample
- Magnifying options (hand lens, microscope, hands-free lens, etc.)
- How to ID
 - San Jose scale
 - Fruit lecanium scale
 - Mite eggs
 - Aphid eggs
 - Other?
- What’s in a specific block? (quantifying pest populations)
- Decision making for the dormant spray

What Could/Should Go in the Dormant Spray Tank?

- What combinations of products are effective on what pest(s) at what populations?
- When should these products be applied?
 - For best pest control
 - Avoiding oil damage (phytotoxicity)

DAY OF WEEK	DATE	TIME	HOST	AREA	LOCATION
Monday	Nov. 10	9-11 AM	David Crane	Live Oak	11565 N. Township
Wednesday	Nov. 12	9-11 AM	Khan Ahmed Khan	District 10	414 Silva Ave.
Wednesday	Nov. 12	1-3 PM	Danna & Danna, Inc.	Southern Yuba County	Murphy Road, west of Feather River Blvd.
Thursday	Nov. 13	1-3 PM	Bains Brothers Farming	North Yuba City	1970 N. Township
Friday	Nov. 14	9-11 AM	Neill Mitchell	Tudor	365 Wilson Rod

PROTECTING SURFACE WATER AND COVER CROPS

With increasing surface water regulations of agricultural runoff, having a cover crop in your orchard, whether planted or resident vegetation, is more important than ever. There is a proposed Dormant Spray Water Quality Initiative through The California Department of Pesticide Regulation (CA DPR) to establish concentration limits. It will require mandatory controls to limit drift and water run-off of the pesticides diazinon and chlorpyrifos (Lorsban), and provide ongoing monitoring of concentration levels. Every grower needs to do their part to keep what is applied in their orchard on-site.

How can vegetation on the orchard floor reduce runoff to surface waters? There are several ways:

- Increasing water infiltration
- Decreasing pesticide movement carried by sediment
- Adsorbing pesticides to plant surfaces
- Reducing sheet erosion and runoff caused by rainfall falling on bare ground
- Pesticides are generally less persistent (breakdown faster) on vegetation than on soil

Locally, we have two cover crop trials comparing a naturally reseeding annual cover crop to resident vegetation. In the walnut trial, which is part of the pest management alliance study, a mix of legumes (clovers, vetch and subclover) plus a brome grass was seeded in fall of 1999 and has annually reseeded itself. Over the years, the subclover and brome grass increased while the other species remained the same or decreased. In the organic peach trial, subclover, brome grass and a combination of both, were seeded in the fall of 2001 and reseeded itself in 2002. In both trials, the seeded cover crop middles had more biomass (i.e. higher plant density and better growth) than did the resident vegetation. In these trials we did not measure actual runoff; however, we could speculate that there may be less runoff where there was a seeded cover crop than just resident vegetation

because of higher plant density. In another University of California cover crop trial in Glenn County where runoff was measured, a seeded grass cover crop, a seeded legume cover crop, resident vegetation and bare ground were compared. All plots with vegetation, whether seeded or resident, had lower volumes of water leaving the plot than did bare soil.

Another benefit in the peach cover crop trial was that the subclover or subclover plus brome supplied the nitrogen needs of newly planted peaches for the first two growing seasons. A drawback in both studies was that gopher activity increased where cover crops were seeded. There is also increased potential for frost damage with tall, dense cover crops, which can reduce orchard temperatures 2 to 6 degrees. We mowed the cover crop plots early enough in the spring (usually by mid-March), to decrease frost hazard while not interfering with the cover crop's ability to produce seed later in the spring so reseeding would occur in the fall.

Before you invest in planting a cover crop, make sure your objectives are clearly defined. When selecting a particular species or mix, consider your goals, cost vs. benefits, nitrogen needs, tillage practices and irrigation methods. Winter annual or perennial cover crops generally should be planted by late October for the best stand. For more information on planting cover crops, you can visit our website (<http://cesutter.ucdavis.edu>) where I have an article and photos on cover cropping in walnuts and cover crop costs in the organic peach study to date (you can also get copies from our office). Another helpful website for specific cover crop information is <http://www.sarep.ucdavis.edu>, University of California Sustainable Agriculture Research and Education Program.

ORCHARD PLANTING PREPARATION

Fall is the time to prepare the ground if planning on planting an orchard in early 2004. The following are some practices that should be done now:

- If replanting after removing an orchard, remove as many of the old roots as possible. Rip soil where there is hardpan. (ripping in the fall also has an added benefit of

increasing water infiltration, thereby decreasing winter runoff)

- Sample the roots and soil for nematodes. This will help determine the need for fumigation. If lesion nematodes (*Pratylenchus vulnus*) or Ring nematodes are found and you are planning on planting walnuts or peaches, fumigate this fall while the soil is warm and dry. Letting the soil go fallow or planting to a grass for a year will also help reduce nematodes. With the economics of crops like cling peaches, it would be better to fallow the land unless you have a contract and have researched your other crop options.
- Ridge berms in the fall so they have time to settle over the winter. Planting trees on berms is an established practice in our area, especially on heavier soils. With berms, water moves away from the tree into the middles, which helps reduce crown and root rot and water logging during heavy rains, and helps avoid saturation in flood irrigated orchards. A practice to be avoided though, that is too common in our area, is ridging up berms after trees are planted, thereby burying the upper rootstock portion (above the roots) of the tree that should be totally exposed. Wet soil around this rootstock area creates a favorable condition for crown rot development and many trees have died needlessly because of this. I've even seen new trees planted too deeply on berms. Always plant walnut and peach trees to just cover the first root with soil. Dig the hole just deep enough for the root system or backfill and tamp in to ensure that trees do not settle more deeply after planting.

MINIMIZING FROST DAMAGE TO WALNUTS

Last April winter kill damage was observed in some walnut orchards mainly in the southern part of Sutter County when they failed to leaf out. Whether the damage occurred from cold temperatures in early November or in February is still open for

debate (see May issue of Orchard Notes). What is important now is preparing your walnut trees, especially young ones, to better withstand a sudden autumn frost. The warm days we had in September and early October did not help to slow growth. The shorter days and lower night temperatures now will help trees to harden off as well as cutting off irrigation water in early fall.

Trees are also more prone to frost injury if the soil is dry. Once trees are hardened off, they should be irrigated if we do not start getting rains by early November. Walnut trees that are dormant and have some soil moisture will also better withstand the really cold temperatures that can occur in December (remember the Yukon Express in 1990). When soils are dry, more cold damage can occur through desiccation of shoots as water is drawn away from cells in the freezing process.

If frost injury occurs, the first symptom seen is a darkening of the cambial tissue. Subsequently, more damage can occur to the initial injury from sunburn through the winter months. That is why much of the dark tissue damage seen from winter kill often occurs on the south or west sides of the limbs. If freeze damage should occur, we recommend painting trees with white latex paint as soon as possible after the event. The paint may reduce the drying and desiccation (moisture loss) of damaged cells from the sun during the winter and allow cells to repair and continue to function.

WALNUT OBSERVATIONS

You can see pictures of these problems on our website at <http://cesutter.ucdavis.edu>

Oilless Nuts - Due to the heavy crop load on both early varieties like Vina and later walnut varieties like Chandler, oilless nuts were quite common this year. These were the nuts that split early and dropped to the ground giving the appearance that they were ready to be harvested. When these nuts are cracked open, the skin on the kernel (pellicle) is dark brown and kernels are white rather than the normal "cream" color. Oilless kernels shrivel readily and are worthless nuts. Typically oilless nuts come from fruiting spurs in the shaded areas of trees. Often these spurs have a few nuts and only a

couple of leaves. There is not enough leaf surface or carbohydrate to properly mature the nuts. The leaves on these spurs are often referred to as “tiger stripped” because of interveinal chlorosis.

Branch Wilt – Dead leaves suddenly appearing on the outermost branches following a heat spell (especially on the southwest side) in the summer are a symptom for the fungus disease called branch wilt (*Hendersonula toruloidea*). With our record breaking July heat, there is damage in some of our orchards. The fungus spores usually invade bark through sunburn wounds and the disease develops under hot temperatures. The fungus spreads within the branch to other limbs and can extend into the trunk. Black sooty fungal spores can be seen where the thin outer layer of bark peels away. To stop the spread of the disease within the tree and the orchard, limbs that have been killed should be completely removed into uninfected wood. Although the dead leaves often remain on infected branches after leaf fall, it is still best to remove them right after harvest when they are easily visible.

Botryosphaeria blight – One walnut orchard with dying branches on replant trees this past spring, had symptoms that did not resemble branch wilt, but looked like a fungal pathogen. It was found to have the fungus *Botryosphaeria* that causes a deadly disease in pistachios. Themis Michailides, a plant pathologist at UC Kearney Agricultural Center, identified the disease and has observed it on walnuts in the southern San Joaquin Valley. Water stress (too little) may contribute to the problem in that area. Pruning about two inches below the canker margins into uninfected wood is the best method so far to control the problem. Check out the pictures on the website and give me a call if you ever think you have this problem so it can be properly identified.

TIMING PEACH PRUNING

A few peach growers who want to prune now before leaf fall called me wondering if it would have detrimental effects on the tree next spring. From work on nutrient remobilization by Scott

Johnson, Extension Peach Specialist at UC Kearney Agricultural Center, some nutrients will be prevented from moving back into the tree with early pruning. However, it doesn't seem to make a difference in how well the tree performs the next year. From several studies looking at peach pruning timing (September to April) on yield and tree performance, only pruning in April after the trees had bloomed was harmful to the tree. According to Pomologist Ted DeJong from UC Davis who studies peach tree physiology, he thinks pruning now is a good idea for very vigorous trees because it will limit some nutrient flow back into the tree and not elicit as much regrowth in the spring. However, he cautions to wait until leaf fall to start pruning in weak orchards.

KIWIFRUIT SECTION 18

The fungicide Elevate recently got a Section 18 for use as either a pre or postharvest treatment on kiwifruit for *Botrytis* (gray mold) control. Call the California Kiwifruit Commission for information on monitoring its use.

NEW PUBLICATIONS

IPM for Walnuts, Third Edition

The latest in the University of California's acclaimed IPM manual series; this edition is completely revised. It includes comprehensive information on each crop pest, including identification tips, monitoring methods, treatment thresholds, biological controls, and other management techniques.

What's new in the Third Edition?

- 65 more photos, for a total of 215 photos, and printed in larger format with improved color
- An additional 24 pest problems are discussed and illustrated for a total of more than 90
- The section on codling moth has been completely rewritten to include information on pheromone confusion, release of the *Trichogramma* egg parasite, and the new

kairomone lure that attracts both male and female moths

- Expanded chapters on vertebrate pests and weed management
- At 136 pages, the revision is 40% longer than the previous edition.

Growers and PCAs who want to keep abreast of innovative technologies for walnut pest management should make room on their bookshelf for this revised manual.

Publication #3270, \$30.00 is available from our office.

Sample Costs To Establish A Cling Peach Orchard And Produce Cling Peaches, Sacramento and San Joaquin Valleys, Late Harvested Varieties, 2003

Available from our office or on the web at <http://www.coststudies.ucdavis.edu>. Also available from our office is the updated "Individual Value of a Peach Tree". (We will also have a cost study for extra early varieties probably by December)

New Book Out On Ag Labor Management

Increased productivity, lower turnover, happier workers and increased profitability are the results of up-to-date labor management. The newly updated and expanded book on ag labor management is now available in both English and Spanish. Written by Gregory Billikopf, Personnel Management Farm Advisor for northern San Joaquin Valley, this book will be helpful for any farmer or rancher.

~ you can read the book for free at:

www.cnr.berkeley.edu/ucce50/ag-labor/

~ or for a hard copy, call Gregory at (209) 525-6800.

OTHER MEETINGS

**Dormant Sprays and Alternatives.
December 2 and 9, 2003 in Yuba City.**

Look for announcement in the November issue of Orchard Notes.

GET NEWSLETTERS ONLINE

Remember, you can subscribe to this newsletter online at our website at <http://cesutter.ucdavis.edu>. You will receive the newsletter as soon as it is finished and more easily view the pictures and articles I refer to.

HERBICIDE CHARTS

The 2003 Registration Status of Herbicides in Trees and Vines and Susceptibility of Weeds to Herbicides was recently updated by Extension Weed Specialist, Tom Lanini, from UC Davis. It is included for your reference.

Herbicide Registration on Horticultural Crops--2003

Herbicide-Common Name (trade name)	Almond	Apple	Apricot	Cherry	Grape	Kiwi	Nectarine	Olive	Peach	Pear	Pecan	Prune	Walnut
Preemergence													
dichlobenil (Casoron)	N	R	N	R	R	N	N	N	N	R	N	N	N
diuron (Karmex, Diurex)	N	R	N	N	R	N	N	R	R	R	R	N	R
EPTC (Eptam)	R	N	N	N	N	N	N	N	N	N	N	N	R
isoxaben (Gallery)	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
napropamide (Devrinol)	R	R	R	R	R	R	R	R	R	R	R	R	R
norflurazon (Solicam)	R	R	R	R	R	N	R	N	R	R	R	R	R
oryzalin (Surflan, Farm Saver)	R	R	R	R	R	R	R	R	R	R	R	R	R
oxyfluorfen (Goal)	R	R	R	R	R	R	R	R	R	R	R	R	R
pendimethalin (Prowl)	NB	NB	NB	NB	NB	N	NB	N	NB	NB	NB	NB	NB
pronamide (Kerb)	N	R	R	R	R	N	R	N	R	R	N	R	N
simazine (Princep, Caliber 90)	R	R	N	R sour only	R	N	R	R	R	R	N	N	R
thiazopyr (Visor)	NB	N	NB	NB	NB	N	NB	N	NB	N	N	NB	NB
Trifluralin (Treflan)	R	R	R	R	R	NB	R	NB	R	NB	R	R	R
Post emergence													
Clethodim (Prism)	NB	NB	NB	NB	NB	N	NB	NB	NB	NB	NB	NB	NB
2,4-D (Clean-crop, Orchard Master)	R	R	R	R	N	N	R	N	R	R	R	R	R
fluazifop-p-butyl (FusiladeDX)	NB	NB	R	R	NB	NB	R	NB	R	NB	R	R	NB
glyphosate (Roundup, Touchdown)	R	R	R	R	R	R	R	R	R	R	R	R	R
glufosinate (Rely)	R	R	N	N	R	N	N	N	N	N	R	N	R
halosulfuron (Sempra CA)	R	N	N	N	N	N	N	N	N	N	R	N	R
MSMA	NB	NB	NB	NB	N	N	N	N	NB	NB	N	NB	NB
Paraquat (Gramoxone)	R	R	R	R	R	R	R	R	R	R	R	R	R
sethoxydim (Poast)	NB	R	NB	NB	R	N	NB	NB	NB	R	NB	NB	NB

NOTE: This is intended as a general guide only. Before use of any herbicide, consult the label. Label change frequently and often contain special restrictions regarding specific use of a company's product.

N = Not registered, NB = nonbearing, R = Registered

2003 Susceptibility of Weeds to Herbicides

	Preemergence											Postemergence						
	Casoron	Karmex	Devrinol	Solicam	Surflan	Goal	Simazine	Treflan	Prowl	Kerb	Gallery	Roundup	MSMA	Gramoxone	2,4-D	Poast	Fusilade	Prism
Annual Broadleaves																		
Cheeseweed (Malva)	C	P	P	P	P	C	P	N	N	P	C	P	N	P	P	N	N	N
Chickweed	C	C	C	P	C	N	C	C	C	C	C	C	C	C	P	N	N	N
Clover	P	P	P	N	N	P	C	N	N	N	P	P	N	P	P	N	N	N
Fiddleneck	C	C	C	P	C	C	C	C	C	N	C	C	N	P	P	N	N	N
Filaree	P	C	C	P	N	C	P	N	N	N	C	P	N	P	P	N	N	N
Flax-leaved Fleabane	C	N	N	N	N	N	C	N	N	N		C	N	P	C	N	N	N
Goosefoot	C	C	C	C	C	C	C	C	C	C	P	N	N	P	C	N	N	N
Grounsel	C	N	P	P	N	C	C	N	N	N	C	C	N	C	C	N	N	N
Henbit	C	C	N	P	C	C	C	C	C	C	C	C	C	C	P	N	N	N
Horseweed (Marestail)	P	N	N	N	N	N	C	N	N	N	P	C	N	P	C	N	N	N
Knotweed	C	C	C	P	C	P	C	C	C	C	P	C	N	P	P	N	N	N
Lambsquarter	C	C	C	P	C	C	C	C	C	C	C	N	N	N	C	N	N	N
Mustard	C	C	P	P	N	C	C	N	N	C	C	P	N	C	C	N	N	N
Nightshade	C	C	N	C	P	C	C	N	P	C	C	C	P	C	C	N	N	N
Pigweed	P	C	P	P	C	C	C	C	C	N	C	C	N	C	C	N	N	N
Prickly Lettuce	C	C	C	C	N	C	C	N	N	N	C	C	N	P	C	N	N	N
Puncturevine	C	P	N	C	C	C	P	P	P	N		C	N	C	C	N	N	N
Purslane	C	C	C	C	C	C	C	C	C	C	C	C	N	C	C	N	N	N
Shepherdspurse	C	C	N	P	N	C	C	N	N	C	C	C	N	C	C	N	N	N
Sowthistle	C	C	C	C	N	C	C	N	N	P	C	C	N	P	C	N	N	N
Spurge	C	P	N	C	C	C	P	C	C	N	P	C	P	P	P	N	N	N
Wild Radish	C	C	N	N	N	C	P	N	N	C	C	C	N	C	C	N	N	N
Annual Grasses																		
Annual Bluegrass	C	C	C	C	C	P	C	C	C	C	P	C	N	P	N	N	N	C
Barnyardgrass	P	C	C	C	C	P	C	C	C	C	P	C	P	C	N	C	C	C
Crabgrass	P	C	C	C	C	N	P	C	C	C	P	C	C	C	N	C	C	C
Ryegrass	N	C	C	C	C	N	N	C	C	C	P	C	N	P	N	C	C	C
Wild Barley	C	C	C	C	C	P	C	C	C	C	N	C	N	P	N	C	C	C
Wild Oats	P	P	C	C	P	P	C	P	C	P	N	C	N	P	N	C	C	C
Fescues	P	C	C	C	C	C	C	C	C	C	N	P	N	C	N	N	N	N
Perennials																		
Field Bindweed	P	N	N	N	P	N	N	P	P	N	N	P	N	N	P	N	N	N
Bermudagrass	P	N	N	P	N	N	N	P	P	N	N	C	N	N	N	P	P	P
Dallasgrass	N	N	N	N	N	N	N	N	N	N	N	C	C	N	N	C	C	C
Johnsongrass	N	N	N	P	N	N	N	P	P	N	N	C	C	N	N	C	C	C
C = Controlled P = Partial Control N = Not Controlled																		

OCTOBER 2003 ORCHARD NOTES

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