



University of California ≈ Cooperative Extension
Sutter/Yuba Counties, 142A Garden Highway, Yuba City CA 95991
Tel: (530) 822-7515 ≈ Fax: (530) 673-5368
<http://cesutter.ucdavis.edu>



Orchard Notes

OCTOBER/NOVEMBER 2005

This Issue Contains:

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JANINE HASEY
U.C. FARM ADVISOR

PLANNING AN ORCHARD?

Long before you order the trees, there are many considerations to planning a successful, economically viable orchard. The first and most basic consideration is the soil type and its attributes or limitations for supporting adequate root growth for the tree crop you would like to plant. I'm always amazed at how many people neglect this first step and end up with trees that don't grow well and more management challenges than necessary. Because many tree crops are deeply rooted like walnuts that grow best with five feet or more of nonstratified soil, it is equally important to determine the potential for seepage, flooding or fluctuating water table problems. For this most important phase to orchard planning, very detailed soil maps for both Sutter and Yuba Counties are available in our office that serve as a guide to what you can plant. Just because your neighbor grows a certain crop doesn't ensure it is suited to your site.

Once you know what tree crops are suited to your site (if any are), then consider the overall economics of this crop in the world and statewide. This includes competing counties or countries where it is grown and how and where the crop is marketed. Should you have a contract before growing this crop? Does this tree crop have the potential for making money? For production costs of our major crops, we have cost and return studies in our office or they can be downloaded on the web at <http://www.agecon.ucdavis.edu>.

Once you have settled on a crop to grow and knowing the soil type, you can determine what rootstock is best for the situation. Known nematode or disease problems such as crown gall or oak root fungus also need to be considered when choosing the best rootstock for the site. The choice of what variety to grow is the next consideration and in part will also determine which rootstock to plant. For example, the walnut variety 'Howard' which is a smaller, less vigorous tree than is 'Chandler' is planted on the more vigorous Paradox walnut rootstock unless it will be grown on our best walnut soils. Understanding the attributes of

the chosen variety and rootstock and knowing the soil type and limitations, a grower can now make a reasonable guess at the best tree and row spacing for the orchard management style selected – conventional, high density or hedgerow.

What is the water quality at the site? If you are using surface water from our rivers there will not be a problem with quality (just be aware that there are *Phytophthora* spores in surface water so managing irrigation set times not to exceed 24 hours – 18 hours is better, is imperative). You can save a lot of money by doing a complete water analysis of well water before using it for irrigation. This was quite evident in a local 2-year-old ‘Howard’ hedgerow where trees had no vigor. By the end of this summer, leaves were showing the characteristic brown margin from chloride toxicity. Tests showed chloride accumulating in the leaves and soil using well water applied by microsprinkler. The well water analysis showed high sodium levels and four times the chloride concentration of a nearby well used to irrigate a different walnut block that had no problems.

If you follow the steps above and still choose to plant a tree crop that is less suited to the site than another crop would be, at least you’ll know the management challenges you have ahead of you and can plan for them. For example, if you choose to plant walnuts where the soil is heavier, shallower or has a relatively high water table, plan to more carefully manage the irrigation scheduling to avoid stressing trees than if trees were planted on a deep Columbia river loam soil. More careful monitoring and optimum irrigation timing can be achieved by using both soil moisture monitoring devices like watermarks and plant based measurements using a pressure chamber.

Plan to grow a quality crop. Along with high yields and controlling your costs, producing a quality product is how to survive in an increasingly competitive market.

MANAGEMENT TOOLS FOR GRAY MOLD IN KIWIFRUIT

Gray mold caused by *Botrytis cinerea* often infects at the wound where the stem is snapped off during kiwifruit harvest resulting in decayed fruit during cold storage. The environmental conditions this year have favored disease development. Luckily for the conventional grower, the reduced-risk fungicide Scholar 50 WP was fully registered last July as a new postharvest treatment for gray mold control. This adds another postharvest control to Elevate that was registered two years ago and is now being marketed under the trade name Judge. Elevate just recently was registered for preharvest gray mold control and is being sold as Elevate for that use. Use of Elevate (fenhexamid) is limited to either pre- or postharvest use but not both in one season. See my website at <http://cesutter.ucdavis.edu> for the complete article on these gray mold management tools written by plant pathologist Dr. Jim Adaskaveg who conducted the research. For organic kiwifruit growers, there are no effective organically acceptable materials at this time for gray mold control. Organic growers may want to try “curing” fruit, which is letting the stem end dry out before packing and putting in cold storage. This has been shown to help reduce gray mold in storage in New Zealand and to a limited extent in California.

PEACH DISEASE CONTROL

Shothole fungus – This disease can take a toll on twigs and buds if there is a fair amount of winter rainfall. Twig lesions can develop that produce spores and affected buds turn dark brown or black and are usually covered with a shiny layer of exuded gum. Spray at leaf fall in late November or early December before winter rains to protect against twig infections. In addition to copper or Ziram that growers usually use to prevent this disease, the newer fungicide Pristine should give excellent control of Shothole. This spray is applied before the dormant oil that is typically applied in January or early February to control scale and mite eggs and combined with copper for peach leaf curl control.

Brown rot – It was easy to find brown rotted fruit in the extra early varieties this past summer. Often the wood was killed back where fruit were infected. It would have been best to prune out any dead wood and remove infected fruit right after harvest. Infected fruit that dropped or was knocked to the ground last summer would have decomposed by now and would not serve as a source of inoculum at bloom. At this point, wood killed from brown rot and mummy fruit remaining in the tree should be pruned out and destroyed. Apothecia produced on overwintering mummy fruit produce the spores that infect blossoms next spring.

WALNUT OBSERVATIONS/FALL TASKS

Oilless Nuts - These nuts split early, drop, and have a dark pellicle (skin) and white kernel. Oilless nuts lack the "cream" kernel color and light pellicle of normal nuts. Oil accumulation takes place in July and August so that process is not working. Oilless nuts are common in heavy crop years like 2005. Along with the early varieties where it commonly occurs like Ashley and Vina, many Chandler growers reported large losses from oilless nuts this season. Not all the oilless nuts split early this year, instead the hulls turned black and shriveled before releasing the nut, especially on Chandlers and Howards. These nuts are found on shaded spurs that only have a few chlorotic "tiger striped" leaves.

There isn't enough carbohydrate to mature these nuts especially with heavy crops. Heat and water stress - too much or too little irrigation, also played a role. For pictures, visit our website, <http://cesutter.ucdavis.edu/>, click on Pomology and go to walnut problems.

Pruning - Pruning **mature trees** after harvest before leaf fall allows for easier deadwood removal. Diseased wood from branch wilt and Botryosphaeria blight can be pruned out and destroyed reducing inoculum levels. Pruning **young walnut trees**, especially 1-3 year-olds, should be delayed until March, after the possibility of winter injury has passed.

Minimizing Winter Injury – Young orchards are quite susceptible to damage by sudden autumn frosts. Trees should be allowed to harden off in October by cutting off irrigation by late September. Trees are also more prone to frost injury if the soil is dry as shoots are desiccated as water is drawn away from cells in the freezing process. Once trees are hardened off, a light irrigation should be considered in both young and mature orchards if we do not start getting rainfall by early November. If freeze damage should occur, we recommend painting young trees with white latex paint as soon as possible after the event. The paint is believed to reduce moisture loss of damaged cells from the sun during winter and allow cells to repair and continue to function.

Examine Nut Quality – Examine nuts during harvest and drying to identify any problems with nut quality. After the equipment is put away and the huller/dryer is cleaned, study processor grade reports to give you further clues for how to improve your crop quality next year.

ORCHARD FLOOR MANAGEMENT

Herbicide Charts

The 2005 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 in the back of the newsletter. The Susceptibility of Weeds to Herbicide chart can also be accessed through the Pest Management guidelines at the UCIPM website at <http://ucipm.ucdavis.edu>. Go to the weed section under each individual crop.

Cover Crops

Winter annual cover crops should be seeded in the fall. For walnuts, there is a short window of time right after harvest before significant leaf drop and rainfall to have equipment and seed ready for planting. Advantages to a cover crop include reduced soil erosion, better fall and winter access, increased water infiltration, reduced run-off of pesticides, soil protection and stabilization, weed suppression, and extraction of atmospheric nitrogen by legume cover crops. Allowing resident vegetation to grow and mowing in the spring has

many of these same advantages but often will be sparser (less biomass) than a seeded cover crop. See the article on cover cropping in walnuts at <http://cesutter.ucdavis.edu> (click on Pomology, then Walnut Information) or cover crop article in the October 2003 "Orchard Notes" at same website for more information.

CROWN GALL TREATMENT

Sutter and Yuba walnut growers gave a high priority ranking and listed crown gall as the top research need in a statewide grower survey in 2002. Crown gall is indeed a prevalent problem among walnut orchards throughout our two counties. Crown gall is a bacterial disease that infects primarily rootstocks through wounds and natural openings. The disease first appears as small outgrowths on the rootstock becoming rough and larger with age. Left unchecked, the gall may progress around the crown, weakening and eventually girdling the tree. The main problem with Paradox rootstock is its high susceptibility to crown gall.

Many growers ask about the effectiveness of treating existing crown gall on Paradox rootstock. A study conducted for five years by Bill Olson, retired Butte County farm advisor, examined the effect of crown gall on tree growth and productivity. The main findings were as follows:

- Trees with galls left untreated will eventually yield less than trees with no galls.
- The amount of the crown that is girdled (from 25-75%) has a direct relationship with the time it takes for a significant yield drop.

- The cost of gall removal (1 -2 hours at a cost of up to \$30 per tree) could be recovered in one to two years with the additional yield gained.
- The trial suggested that treating young trees with galls can render them to be as productive as trees without galls. (Note - young trees that are already stunted from crown gall should be replaced).
- The trial also suggested that the long-term effect of not treating crown gall infection leads to stunted trees and crop loss.

For successful surgical gall removal, the entire gall should be exposed and isolated from healthy tissue leaving about one-inch margin of uninfected tissue around the gall. Treating around the margin of where the gall was removed, whether using heat or chemical treatment, is key to successful control. When using heat, be careful to confine the heat treatment to the healthy tissue within the one-inch margin surrounding the gall. Applying heat to other healthy tissue will cause damage to the cambium layer.

What about treatment timing? Treatment can be done any time during the year but treating when dry is the best. Avoid the rainy season or when irrigating. The causal organism *Agrobacterium tumefaciens*, is a soil bacterium and more likely will infect under wet conditions. Springtime treatment has the advantage of more rapid callus formation during the growing season.

For more information, you can check out the video on Crown Gall Biology and Control from our office or visit the Walnut Pest Management Guidelines at the UC IPM website at <http://ipm.ucdavis.edu>.

AGRICULTURAL LAND CONSERVATION

Meeting Announcement

Holding Our Agricultural Ground, Mitigation - Protection - Viability

A Valley Vision Forum conducted by The Great Valley Center, Yuba and Sutter Forum

November 10, 2005, 8:30 a.m. - 11:30 a.m.

Corporation Yard, 1185 Market Street, Yuba City

RSVP to Jayne Lobao at 209-522-5103 or jayne@greatvalley.org, Brochures are available at our office

Publications

Conserving Agricultural Land through Compensation: A Guide for California Landowners

Published by the Agricultural Issues Center (AIC) and Community Studies Extension, UC Davis, 2004.

This 83 page soft cover book covers the major programs for compensating California farmers and ranchers for using conservation practices. [Several programs are covered including the Williamson Act, USDA Cost-Sharing and Reserve Program, and agricultural easements.](#) Order from AIC by e-mail <agissues@ucdavis.edu>, fax or telephone or download chapters at: <http://aic.ucdavis.edu> (click on Land Use and Farmland Conversion)

Compensating Landowners for Conserving Agricultural Land

Compensating landowners is an increasingly important approach for maintaining working landscapes, especially in the face of urban expansion. The papers (April, 2003, conference in

Sacramento) describe, evaluate, and suggest variations in a range of compensatory techniques, including: (1) property tax preferences for farmland allowed by state governments; (2) federal cost-share conservation payments administered by USDA; (3) federal payments for the temporary retirement of cropland; and (4) agricultural easements created through the acquisition of development rights from landowners.

261 pages, soft cover edition, \$15. Order from AIC by e-mail <agissues@ucdavis.edu>, fax or telephone. Pay by check, Visa or MasterCard; price includes tax and postage. [Download book in .pdf format \(large file size\)](#) at: <http://aic.ucdavis.edu> (click on Land Use and Farmland Conversion)

Farmland Conservancy Newsletter

The quarterly newsletter, Focus on Farmland, produced by the California Farmland Conservancy Program, Dept. of Conservation, can be viewed on their web site at:

<http://www.consrv.ca.gov/DLRP/cfcp/FocusonFarmland.htm>

USDA NATURAL RESOURCES CONSERVATION SERVICE (NRCS) EQIP PROGRAM SIGN-UP PERIOD

The application period for USDA's Environmental Quality Incentives Program (EQIP) will remain open until **December 2, 2005**. EQIP was established by the 2002 Farm Bill to provide a voluntary conservation program for farmers and ranchers to address natural resource concerns. It promotes agricultural production, environmental quality, ground and surface water quality, and conservation on private lands. Generally, 50 percent cost-share is available for a number of conservation practices. Limited resource farmers, with gross farm sales of not more than \$100,000, and beginning farmers or ranchers, having operated a farm or ranch for less than ten consecutive years, may be eligible for higher cost-share rates. Practices that increase irrigation efficiency, such as microjet and sprinkler systems, tailwater recovery,

nutrient management, integrated pest management, field borders, filter strips, and cover crops are eligible for cost-share through EQIP.

To sign up for the 2006 Environmental Quality Incentives Program in Yuba or Sutter Counties, visit the Natural Resources Conservation Service at 1511-B Butte House Road in Yuba City or call (530) 674-1461, ext. 3, well before December 2 to provide appropriate documentation of agricultural production, ownership, and project location before the application deadline.

2005 Susceptibility of Weeds to Herbicides

Preemergence

Postemergence

	Casoron	Karmex	Devrinol	Solicam	Surflan	Goal	Simazine	Treflan	Prowl	Kerb	Gallery
Annual Broadleaves											
Cheeseweed (Malva)	C	P	P	P	P	C	P	N	N	P	C
Chickweed	C	C	C	P	C	N	C	C	C	C	C
Clover	P	P	P	N	N	P	C	N	N	N	P
Fiddleneck	C	C	C	P	C	C	C	C	C	N	C
Filaree	P	C	C	P	N	C	P	N	N	N	C
Flax-leaved Fleabane	C	N	N	N	N	N	C	N	N	N	
Goosefoot	C	C	C	C	C	C	C	C	C	C	P
Grousel	C	N	P	P	N	C	C	N	N	N	C
Henbit	C	C	N	P	C	C	C	C	C	C	C
Horseweed (Marestail)	P	N	N	N	N	N	C	N	N	N	P
Knotweed	C	C	C	P	C	P	C	C	C	C	P
Lambsquarter	C	C	C	P	C	C	C	C	C	C	C
Mustard	C	C	P	P	N	C	C	N	N	C	C
Nightshade	C	C	N	C	P	C	C	N	P	C	C
Pigweed	P	C	P	P	C	C	C	C	C	N	C
Prickly Lettuce	C	C	C	C	N	C	C	N	N	N	C
Puncturevine	C	P	N	C	C	C	P	P	P	N	
Purslane	C	C	C	C	C	C	C	C	C	C	C
Shepherdspurse	C	C	N	P	N	C	C	N	N	C	C
Sowthistle	C	C	C	C	N	C	C	N	N	P	C
Spurge	C	P	N	C	C	C	P	C	C	N	P
Wild Radish	C	C	N	N	N	C	P	N	N	C	C

	Roundup	MSMA	Gramoxone	2,4-D	Poast	Fusilade	Prism
	P	N	P	P	N	N	N
	C	C	C	P	N	N	N
	P	N	P	P	N	N	N
	C	N	P	P	N	N	N
	P	N	P	P	N	N	N
	C	N	P	C	N	N	N
	N	N	P	C	N	N	N
	C	N	C	C	N	N	N
	C	C	C	P	N	N	N
	C	N	P	C	N	N	N
	C	N	P	P	N	N	N
	N	N	N	C	N	N	N
	P	N	C	C	N	N	N
	C	N	C	C	N	N	N
	C	N	C	C	N	N	N
	C	N	P	C	N	N	N
	C	P	P	P	N	N	N
	C	N	C	C	N	N	N

Annual Grasses

Annual Bluegrass	C	C	C	C	C	P	C	C	C	C	P
Barnyardgrass	P	C	C	C	C	P	C	C	C	C	P
Crabgrass	P	C	C	C	C	N	P	C	C	C	P
Ryegrass	N	C	C	C	C	N	N	C	C	C	P
Wild Barley	C	C	C	C	C	P	C	C	C	C	N
Wild Oats	P	P	C	C	P	P	C	P	C	P	N
Fescues	P	C	C	C	C	C	C	C	C	C	N

	C	N	P	N	N	N	N	C
	C	P	C	N	C	C	C	C
	C	C	C	N	C	C	C	C
	C	N	P	N	C	C	C	C
	C	N	P	N	C	C	C	C
	C	N	P	N	C	C	C	C
	P	N	C	N	N	N	N	N

Perennials

Field Bindweed	P	N	N	N	P	N	N	P	P	N	N
Bermudagrass	P	N	N	P	N	N	N	P	P	N	N
Dallasgrass	N	N	N	N	N	N	N	N	N	N	N
Johnsongrass	N	N	N	P	N	N	N	P	P	N	N

	P	N	N	P	N	N	N	N
	C	N	N	N	P	P	P	P
	C	C	N	N	C	C	C	C
	C	C	N	N	C	C	C	C

C = Controlled
 P = Partial Control
 N = Not Controlled

Herbicide Registration on Horticultural Tree and Vine Crops--2005

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

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

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

**UCCE/Sutter County Agricultural Commissioner Office
Continuing Education Seminar**

New Control Strategies for the same old insect pests

December 1 and December 6, 2005

December 6 has an additional speaker, Jerry Schmierer, Colusa County UCCE
will speak on the new fungal disease in Garbanzo beans from 8:30 to 9:00

8:55 am	Introductions
9:00 - 9:30	Traditional dormant spray vs new insect control strategies in peaches <i>Janine Hasey ~ UC Farm Advisor, Yuba/Sutter Counties</i>
9:30 - 10:00	Traditional dormant spray vs new insect control strategies in prunes and almonds <i>Fran Niederholzer ~ UC Farm Advisor, Yuba/Sutter Counties</i>
10:00 - 10:30	Strategies to avoid resistance, <i>Carolyn Pickel ~ UC IPM Advisor</i>
10:30 - 11:00	Thoughtful use of adjuvants, <i>Franz Niederholzer ~ UC Farm Advisor, Yuba/Sutter Counties</i>
11:00 - 11:15	Break
11:15 - noon	Fate and basics of toxicology: Why should you care about the fate of pesticides in rivers? <i>Art Craigmill ~ Extension Toxicologist, UC Davis</i>

3.0 hours of DPR Continuing Education hours for Private Applicator's (PAs)-QALs-QACs
