

Orchard Floor Management

Herbicide Chart

The 2010 registration status of Herbicides in Trees and Vines was recently updated by Extension Weed Specialist, Brad Hanson, UC Davis, and is included for your reference. Weed susceptibility information can be found at the **Weed Research and Information Center** (<http://wric.ucdavis.edu>). The "Susceptibility of Weeds to Herbicides" 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, Non-Cultivation, and Harvest Efficiency

The October 24th storm was reminiscent of the October 13, 2009 storm, both dropping around 2 inches of rain in some areas of our counties. The recent storm delayed harvest in many Chandler walnut orchards. The majority of growers have non-tilled orchard floors and manage either resident vegetation or a reseeding annual or perennial cover crop by mowing. These orchards have better fall and winter orchard access due to firmer ground and are able to return to harvesting more

UPCOMING MEETINGS

Sutter County Ag Department Grower Continuing Education Classes

November 10 & 18, 2010

December 7 & 9, 2010

530-822-7503

16th Annual Cling Peach Day

January 20, 2011, Morning

530-822-7515

(Program in Jan. issue of Orchard Notes)

Sutter/Yuba/Colusa Walnut Day

February 24, 2011, Afternoon

530-822-7515

(Program in Feb. issue of Orchard Notes)

quickly after heavy rainfall than those walnut orchards cultivated for weed control or incorporation of a winter green manure cover crop. For high rainfall areas such as the Sacramento Valley, reseeding annual cover crops are well suited for no-till orchards. If managed properly, this type of cover crop is seeded once in the fall, matures (produces seed) usually in early June, is dormant in the summer not requiring irrigation, and will reseed and grow after the rains begin each subsequent fall.

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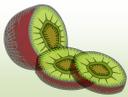
Planting a cover crop improves soil quality by adding organic matter and for legumes, also nitrogen. Results from local cover crop demonstration trials in walnuts and peaches seeded in 2007 or 2008 and sampled in May 2009, showed the various nitrogen fixing clover mixes averaged 92 lbs of nitrogen per acre. Other advantages may include weed suppression, less runoff compared to bare soil, preventing soil crusting caused by sprinklers and rain, increased soil pores, and reduced labor and diesel costs since the seeded cover crop is usually mowed only a couple of times in the spring and early summer. Allowing resident vegetation to grow during the winter with mowing in the spring and summer has many of these same advantages but may produce less biomass than a seeded cover crop.

There is still a window of opportunity to plant a cover crop this fall. In producing walnut orchards, plan to seed just after harvest but before significant leaf fall for best stand establishment. By December, soil temperatures are too low to provide quick and consistent germination while competition from resident vegetation becomes more of a problem.

The following websites provide information on cover crops in orchards and seeding instructions for local conditions. Hardcopy is also available from our office:

<http://cesutter.ucdavis.edu/files/73220.pdf>
<http://anrcatalog.ucdavis.edu/pdf/21627e.pdf>

<http://cesutter.ucdavis.edu/files/73219.pdf>



KIWIFRUIT UPDATES

Is Dry Matter a Reliable Quality Index for 'Hayward' Kiwifruit?

The following summarizes several years of research on an alternative maturity measurement to the ripe soluble solids content (RSSC). The authors are Carlos H. Crisosto, Jorge Zegbe, Janine Hasey, and Gayle M. Crisosto. The study was funded by the California Kiwifruit Commission and fruit used in the survey was donated by California growers. The entire paper will be posted at my website.

Dry matter (DM) measurement at harvest is being proposed as a quality index for 'Hayward' kiwifruit because it includes both soluble solids (mainly sugars) and insoluble solids (largely structural carbohydrates and starch). From two seasons' data, in-store consumer acceptance was well related to DM. However, in a harvest season when kiwifruit exhibited high ripe titratable acidity (RTA), RTA also played an important role in consumer acceptance. In both seasons, regardless of RTA, consumers 'liked' kiwifruit that had DM \geq 16.1%. In the 2008 growing season, when RTA was high (RTA \geq 1.2%), a high DM (\geq 16.1) was needed to satisfy consumers. However, with RTA $<$ 1.2%, a lower DM (\geq 15.1%) was required allowing a large proportion of the kiwifruit to satisfy a high percentage of consumers. Many of the DM survey kiwifruit samples had a DM content exceeding 15.1%, but DM varied among vineyards and seasons. DM did not change during cold storage. Thus, DM is a reliable candidate for a quality index, but RTA should also be considered.

Botrytis Fruit Rot Control

The following information is provided by UC Riverside Plant Pathologist Jim Adaskaveg. Also included are 2010 kiwifruit fungicide efficacy and treatment timing tables.

There are three reduced risk fungicides registered for Botrytis fruit rot control on kiwifruit. Elevate (fenhexamid) is registered as Judge (fenhexamid) for postharvest use along with Scholar. Vanguard is registered for preharvest use as of last February. The label is at this link: <http://www.cdms.net/LDat/ld26N003.pdf>. Judge should mostly be used for domestic markets because international maximum residue limits (MRL's) are not available for many countries.

The Vanguard Label is very flexible because it has a 0 day preharvest interval (PHI) for 10 oz per acre and can be applied twice if needed (20 oz per growing season). Ground applications are preferred but an air application is allowed (only one per season).

Because most infections go through the stem end injury, postharvest treatments are more effective. The principle for preharvest use is that total inoculum levels are reduced and less viable spores are available when the actual harvest is taking place. Because Botrytis is a ubiquitous pathogen, the less inoculum the less likely contamination of fruit will occur. In our research, preharvest treatments were effective but not as effective as postharvest treatments. If packers want to try the postharvest treatments, guidelines include a dry brush bed followed by a re-cycling fungicide drench over a roller bed, followed by brushing to remove excess liquid. Fruit can be packed and air dried for a day prior to cold room storage (this should prevent any staining in long term storage). Scholar would be the preferred treatment. A second choice for a single application would be a mixture of Scholar and Judge. Judge by itself is effective for short term storage because it is less effective on surface staining fungi like *Cladosporium spp.*

KIWIFRUIT: FUNGICIDE EFFICACY

Fungicide	Resistance risk (FRAC number) ¹	Botrytis Fruit Rot
Vanguard ²	high (9) ³	+++
Judge ⁴ /(Elevate*)	high (17) ³	+++
Scholar ⁴	high (12)	+++

Rating: ++++ = excellent and consistent; +++ = good and reliable; ++ = moderate and variable; + = limited and/or erratic; +/- = minimal and often ineffective; ---- = ineffective; NR = not recommended

* Registration pending in California

1 Group numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions (for more information, see <http://www.frac.info/>). Fungicides with a different group number are suitable to alternate in a resistance management program. In California, make no more than one application of fungicides with mode of action Group numbers 1, 4, 9, 11, or 17 before rotating to a fungicide with a different mode of action Group number; for fungicides with other Group numbers, make no more than two consecutive applications before rotating to fungicide with a different mode of action Group number.

2 Vanguard preharvest registration for California is approved for the 2010 fall season as of Feb. 2010.

3 To reduce the risk of resistance development, start treatments with a fungicide with a multi-site mode of action; rotate or mix fungicides with different mode of action FRAC numbers for subsequent applications, use labeled rates (preferably the upper range), and limit the total number of applications/season.

4 Judge and Scholar are for postharvest use only.

KIWIFRUIT: TREATMENT TIMING

Note: Not all indicated timings may be necessary for disease control.

Disease	Bud break	Full bloom	Preharvest Interval ¹			
			14 day	7 day	1 day	Postharvest
Botrytis	----	++ ²	++	+++	++++	++++
Fruit rot						

Rating: ++++ = most effective; +++ = highly effective; ++ = moderately effective; + = least effective; ---- = ineffective

1 Apply as needed. A predictive model BOTMON is available using ONFIT methods for disease detection.

2 Apply only if rain is forecasted.



Yellowing 'Howard' Walnut Trees

This past summer, several orchards in Sutter and Yuba Counties planted to 'Howard' on seedling Paradox rootstock had problems with scattered trees that turned yellow and had no further growth or sometimes collapsed. After sampling in several orchards, there is no obvious cause to this problem. Several UC researchers and I plan to study this yellowing and stunted 'Howard' on Paradox issue. If you saw these symptoms in your orchard, please contact me at 822-7515.

Thousand Cankers Disease

Thousand cankers disease on walnut is caused by the fungus *Geosmithia morbida* and is spread from attacks by a tiny beetle called the walnut twig beetle (*Pityophthorus juglandis*). The fungus colonizes and kills the phloem tissue forming cankers around the beetle entry holes and galleries, eventually coalescing, with trees often dying within three years of initial symptoms. Symptoms begin with a thinning and yellowing of the upper crown, followed by dieback of larger branches and eventual collapse. In California, the disease was first found in Yolo County in 2008 in northern California black walnut. As reported in http://cesutter.ucdavis.edu/newsletterfiles/Orchard_Notes17578.pdf, the beetle was found in Sutter County as was thousand cankers disease in an old eastern black walnut tree that had extensive dieback in April 2009. It was subsequently found in other black walnut trees, two English walnut trees and Paradox rootstock in various Sutter County locations in 2009. In 2010, locally several more English walnut trees and Paradox rootstock were confirmed with the disease including the first thousand cankers reports in Yuba County. The diseased English walnut trees all had other problems or low vigor. We are assessing the susceptibility of various walnut species to the disease. I have been conducting walnut twig beetle trapping and insecticide/ fungicide studies. For more information on disease identification, see <http://www.ipm.ucdavis.edu/EXOTIC/thousandcankers.html>.

Pruning Walnuts

Mature walnut orchards with broken branches, deadwood or dead limbs from branch wilt disease this past summer should be pruned as soon as harvest is over when there are still leaves on the tree. This way you can distinguish where the dead limbs are and easily remove them. Branch wilt diseased limbs are often on the southwest exposure. With branch wilt, make sure to remove all infected discolored wood and burn pruned limbs to avoid spreading the fungal spores. Additionally, this past season, several walnut orchards with limb dieback, sometimes severe, often on the lower limbs, were confirmed with *Botryosphaeria* and/or *Phomopsis* cankers. Often heavy scale infestations were associated with this disease. Limbs infected with these cankers should not be pruned or hedged when rains are predicted within 1 to 2 weeks after pruning. For more information on these canker diseases and management guidelines, see

http://cesutter.ucdavis.edu/newsletterfiles/Sacramento_Valley_Walnut_News20862.pdf.

To distinguish between branch wilt and *Botryosphaeria* and/or *Phomopsis* cankers, see the photos on our website at http://cesutter.ucdavis.edu/Orchard_Crops/Walnut_Problems.htm.

For 1-3 year old walnut orchards, it is best to wait as late in the season as possible to prune, preferably late February or March, after the threat of autumn frosts and winter freezes that can kill wood has passed.



PEACH UPDATES

Peach Shot Hole Disease Control

The disease shot hole, caused by the fungus *Wilsonomyces carpophilus*, can take a toll on peach twigs and buds during high rainfall winters. Symptoms first appear on twigs as small, purplish black spots that turn brown as they enlarge, eventually producing spores. Buds affected by shot hole turn dark brown or black and are usually covered with a shiny layer of exuded gum.

The spray timing is at leaf fall in late November or early December before winter rains to protect against twig infections. The fungicides Pristine, Ziram, and copper are effective in disease prevention. Visit <http://ipm.ucdavis.edu/PDF/PMG/fungicideefficacytiming.pdf> for more information on control. The shot hole spray is applied before the delayed dormant oil that is typically in late January or early February to control scale and mite eggs and combined with copper for peach leaf curl control and often an insecticide for peach twig borer unless a bloom spray is applied.

Peach Spotting on Fruit

Last summer some mature Stanislaus and Andross orchards had fruit with brown circular spots usually occurring on or near the blossom end (see photo). These symptoms are similar to a condition called "blossom-end breakdown" or "Sim's Spot". From a 1941 paper by UC Davis Pomology Professor L.D. Davis, he describes a disorder that was originally reported on the Sims variety having "small round light colored blister-like areas that always occur on the blossom end. These darken and finally may become a dark brown. A number of these circular areas may coalesce forming an irregular shaped dark brown spot. Sections through the fruit show dry pithy spots or cavities of varying

depths". Similar symptoms were seen in Tulare County peaches in 1998 but were not limited to just the blossom end of fruit which is similar to the symptoms we saw here this season. In 1998, the early season was also cooler than normal as it was in 2010. We really don't know the exact cause of this disorder. No organism seems to be associated with the problem. Possible causes cited are calcium or boron deficiency or environmental stress causing nutritional imbalance or affecting other physiological processes. The local orchards with this problem were borderline deficient in calcium, boron and potassium.



NRCS EQIP Deadline

The USDA Natural Resources Conservation Service (NRCS) in California application deadline for Fiscal Year 2011 Farm Bill conservation programs funding is **November 12, 2010**. The deadline includes all California Environmental Quality Incentives Program (EQIP) and Wildlife Habitat Incentives Program (WHIP) priorities, except the EQIP Organic Initiative which will be provided at a later date. Farmers are encouraged to start their application process as soon as possible to ensure consideration for this funding cycle by visiting a local NRCS office or USDA Service Center. Driving directions and contact information for the Service Centers are available on the Web at www.ca.nrcs.usda.gov/contact/. The announcement is at http://www.ca.nrcs.usda.gov/news/releases/2010/eqip_whip-9-13-10.html.

Newsletter Renewal



For your convenience all newsletters are available online.

To view newsletters, visit our website:

<http://cesutter.ucdavis.edu/newsletters.htm>.

You should be receiving our annual newsletter renewal form soon! To continue receiving this newsletter, please return the form to our office before January 31, 2011.

The mail list derived from the renewal forms are used expressly by the Sutter/Yuba UCCE Office. Our lists are not given or sold to other UCCE Offices, the University of California or companies wishing to sell or advertise their products to you.

Herbicide Registration on Horticultural Tree and Vine Crops--Oct. 2010

Herbicide-Common Name (example trade name)	Almond	Pecan	Pistachio	Walnut	Apple	Pear	Apricot	Cherry	Nectarine	Peach	Plum / Prune	Avocado	Citrus	Date	Fig	Grape	Kiwi	Olive	Pomegranate	
	----- tree nut -----				-- pome --		----- stonefruit -----													
Preemergence*																				
bromacil (Hyvar)	N	N	N	N	N	N	N	N	N	N	N	N	R	N	N	N	N	N	N	N
dichlobenil (Casoron)	N	N	N	N	R	R	N	R	N	N	N	N	N	N	N	R	N	N	N	N
diuron (Karmex, Diurex)	N	R	N	R	R	R	N	N	N	R	N	N	R	N	N	R	N	R	N	N
EPTC (Eptam)	R	N	N	R	N	N	N	N	N	N	N	N	R	N	N	N	N	N	N	N
flumioxazin (Chateau)	R	NB	R	NB	R	R	R	R	R	R	R	NB	NB	N	NB	R	N	NB	NB	NB
isoxaben (Gallery)	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	N	NB	NB	NB	NB	NB	NB
napropamide (Devrinol)	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	R	R	N	N	N
norflurazon (Solicam)	R	R	N	R	R	R	R	R	R	R	R	R	R	N	N	R	N	N	N	N
oryzalin (Surflan, Farm Saver)	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	R
oxyfluorfen (Goal, GoalTender)	R	R	R	R	R	R	R	R	R	R	R	R	NB	R	R	R	R	R	R	R
pendimethalin (Prowl H ₂ O)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	R	N	R	R	R
penoxsulam (Pindar GT)	R	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
pronamide (Kerb)	N	N	N	N	R	R	R	R	R	R	R	N	N	N	N	R	N	N	N	N
rimsulfuron (Matrix, Mana)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	R	N	N	N	N
simazine (Princep, Caliber 90)	R	R	N	R	R	R	N	R**	R	R	N	R	R	N	N	R	N	R	N	N
thiazopyr (Visor)	NB	N	NB	NB	N	N	NB	NB	NB	NB	NB	N	R**	N	N	NB	N	N	N	N
trifluralin (Treflan)	R	R	N	R	N	N	R	N	R	R	R	N	R	N	N	R	N	N	N	N
Postemergence																				
carfentrazone (Shark, Rage)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
clethodim (Prism)	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	N	R	N	N	NB	N	NB	N	N
clove oil (Matratec)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
2,4-D (Clean-crop, Orchard Master)	R	R	R	R	R	R	R	R	R	R	R	N	N	N	N	R	N	N	N	N
diquat (Diquat)	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
d-limonene (GreenMatch)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	R	R	R	N	N	N
fluazifop-p-butyl (Fusilade)	NB	R	NB	NB	NB	NB	R	R	R	R	R	NB	NB	NB	NB	NB	N	NB	NB	NB
glyphosate (Roundup, Touchdown)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
glufosinate (Rely 280)	R	R	N	R	R	N	N	N	N	N	N	N	N	N	N	R	N	N	N	N
halosulfuron (Sanda)	N	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
paraquat (Gramoxone Inteon)	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R	N
pelargonic acid (Scythe)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	N
pyraflufen (Venue)	R	R	R	R	R	R	R	R	R	R	R	N	N	R	R	R	R	R	R	R
saflufenacil (Treevix, Kixor)	R	N	R	R	R	N	N	N	N	N	N	N	R	N	N	N	N	N	N	N
sethoxydim (Poast)	R	R	R	R	R	R	R	R	R	R	NB	NB	R	NB	NB	R	N	NB	NB	NB

Note: This is a general guide to perennial crop herbicide registrations in California. Labels change frequently and often contain special restrictions; therefore you should always consult a current label before applying any herbicide.

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

* Several herbicides listed under preemergence also have some postemergence activity.

** Simazine is registered on only sour cherry in CA. Thiazopyr is registered on orange and grapefruit only.

Weed susceptibility information can be found at the **Weed Research and Information Center** (<http://wric.ucdavis.edu>)