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Date	Event	Location	Contact
November 15	Sutter County Ag Commissioner (SCAC) Grower Meeting	Sutter Co. Ag Bldg.	822-7503
December 1	UCCE/SCAC spray meeting	Sutter Co. Ag Bldg.	822-7503
December 6	Sutter County Ag Commissioner (SCAC) Grower Meeting	Sutter Co. Ag Bldg.	822-7503
December 8	Sutter County Ag Commissioner (SCAC) Grower Meeting	Sutter Co. Ag Bldg.	822-7503
January 19	Sacramento Valley Cling Peach Day	Sutter Co. Ag Bldg.	822-7515
February 29	Sutter/Yuba/Colusa Walnut Day	Veterans Memorial Hall	822-7515



Peaches

Management of Peach Leaf Curl – New Approaches for an Ever Present Disease

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Peach leaf curl (PLC) is caused by the yeast-like fungus *Taphrina deformans*. The disease may cause significant crop damage and thus, needs to be managed every year. Additionally, the disease can be especially troublesome if treatments are not timed properly or when environmental conditions are extremely favorable for disease such as the previous winter season (2010-2011) where 6 inches of rainfall occurred in December alone.

The pathogen most likely survives the warm, dry summer period as ascospores. With fall and winter rains, the ascospores germinate by budding and form numerous budding blastospores. These prolific spores of the epiphytic fungus may completely cover twigs and buds of peach trees, as well as the space between bud scales as populations increase. Tree to tree spread of the fungus is by dissemination of blastospores via splashing water and by ascospores that are forcibly discharged and thus, are air-borne and can move longer distances. Leaves and the occasional fruit infections occur only on young or undifferentiated tissue by the parasitic filamentous stage of the parasite. Cool, wet

weather during leaf emergence favors disease development.

Historically, copper has been the stand-by treatment for managing this disease. For diseases like PLC that need to be controlled over extended periods of wetness, most copper products with their long residual activity have worked well over the years. Recently, formulations of fixed coppers have been developed with reduced metallic copper equivalent (MCE). For diseases that require multiple applications, these new formulations have proven their effectiveness when using overall less MCE on a per acre basis. For diseases like PLC that need residual activity, however, the efficacy of these products when used at lower rates (e.g., 1.2 to 2.1 lbs/A MCE for reduced MCE fixed coppers) than traditional formulations (e.g., 3 to 5 lbs/A MCE for fixed coppers or even 8 to 10 lbs/A MCE for basic copper sulfate) have not been as efficacious over long rainy winter seasons. If using the newer reduced MCE copper products, always use the upper label rate, consider using a sticker or winter oil as an adjuvant to increase persistence, and plan to make two applications.

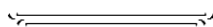
With increased costs of copper products and the need to prevent over-usage of copper in agricultural ecosystems, in the last few years we identified several products that are equivalent or even more effective than copper for managing PLC. Products such as ziram, chlorothalonil (e.g., Bravo, Chlorothalonil, Echo, Equus) and dodine (Syllit) when applied at optimal timings are effective treatments. Overall, ziram over a range of labeled (8 to 10 lbs/A) and experimental (4 to 6 lbs/A) rates has been most effective. The long residual activity of ziram and chlorothalonil is a needed characteristic for managing the disease with minimal (e.g., 1 to 2) late fall or winter applications. In high-rainfall late fall and winter seasons, higher rates and at least two applications of these materials should be used, one in late Nov./early Dec. and one in Jan./early Feb. Under low rainfall conditions during the winter period, a single late-Nov./early-Dec. application of ziram has been very effective in our trials.

Different strategies have been implemented for managing leaf curl. Some product labels indicate only bud swell or pre-bloom applications, whereas others indicate dormant (late Nov./early Dec.) and delayed dormant (Jan./early Feb.) treatments. For all the products that we evaluated in California, the pre-bloom application is the least effective timing after a wet winter. The most effective timings are the late Nov./early Dec. followed by the Jan./early Feb. application. Both are important during wet winters. The goal of these timings is to prevent high inoculum populations from developing on tree surfaces that allow bud infestation and subsequently early infection of developing leaves. The use of only pre-bloom treatments allows for high populations to develop during tree dormancy and thus, populations cannot be reduced to low levels that allow highly effective disease control.

Optimizing strategies for peach leaf curl management in orchards with a history of disease:

- Apply a late Nov./early Dec. treatment after most leaves have fallen from trees to ensure excellent coverage of branches, stems, and buds. (This spray will also control shot hole (*Wilsonomyces carpophilus*).
- Apply the late Nov./early Dec. treatment before significant late fall and winter rainfall occurs.
- Apply an additional Jan./early Feb. treatment if high rainfall occurs in Dec. and early Jan.
- In addition to Jan./early Feb. treatments, apply a pre-bloom (bud swell or two weeks before bloom) treatment if high rainfall occurs in Feb.
- Order of importance of applications: dormant (late Nov./early Dec.) > delayed dormant (Jan./early Feb) > pre-bloom (two weeks before bloom) for environments favorable for disease.

- Apply treatments at a minimum of 100 gals/A. Higher gallonage (120-150 gals/A) generally improves coverage.
- Use an adjuvant such as oil or a sticker to increase persistence.
- Use higher labeled rates of new formulations of copper products (e.g., minimum of 3-4 lbs MCE/A/application) to increase effective residues that are toxic to the pathogen.
- For ziram, use 6-8 lbs/A for long-range forecasts of high precipitation and a minimum of 4-6 lbs/A for drier forecasts under California conditions.
- For chlorothalonil and dodine, plan to make at least two applications in northern peach production areas of California where higher rainfall occurs. A single application may be sufficient in southern peach growing districts of California.



Orchard Floor Management

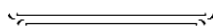
Herbicide Chart

The 2011 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

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 website provides information on cover crops in orchards and seeding instructions for local conditions. Hardcopy is available from our office. http://cesutter.ucdavis.edu/Orchard_Crops_254/Cover_Crops/



Pruning Walnuts

Mature walnut orchards with broken branches, deadwood or dead limbs from branch wilt disease or *Botryosphaeria* and/or *Phomopsis* cankers this past summer should be pruned as soon as harvest is over when there are still leaves on the tree to easily distinguish where the dead limbs are located. Limbs infected with the canker diseases should not be pruned or hedged when rains are predicted within 1 to 2 weeks after pruning. For more information on the canker diseases and management guidelines, see http://cesutter.ucdavis.edu/newsletters/Summer_2010_Sacramento_Valley_Walnut_News36485.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_254/Branch_Wilt_104/ and http://cesutter.ucdavis.edu/Orchard_Crops_254/Botryosphaeria_Blight_-_Phomopsis_Cankers_57/

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

Autumn Frosts

This month, be aware of weather forecasts predicting temperatures below freezing if you have young walnut trees that have not hardened off. They can sustain injury to the cambium at temperatures of 28° F and below. Visit the NOAA National Weather Service Forecast Office in Sacramento <http://www.wrh.noaa.gov/sto> for weather forecasts.

If we experience an autumn frost, see the article on “Preparing Young Walnut Trees for Winter” at http://cesutter.ucdavis.edu/newsletters/Sacramento_Valley_Walnut_News39443.pdf that contains information on freezing temperature effects on walnut and what to do to reduce damage.

Tree Staking

Our recommendation for staking walnuts is to use supports 8 feet high above ground (6 feet high for hedgerows when needed) placed 10 inches **away from the trunk**. The stake should be oriented so the wind blows the tree **away from the stake**. For most areas in Sutter and Yuba counties, our winds blow from the north and the south. By placing the stake on the west side of the trunk, the tree can move freely in a wind without hitting or rubbing on the stake. However, I see many orchards with stakes that are too short, stakes placed right next to the trunk, and stakes oriented on the trunk’s north or south sides. Invariably, trees in these orchards will often have breakage right at the top of the stake (sometimes near the ground also) and rubbing injury on the trunk or developing primary branches from the trunk tied too closely to the stake and also being blown into the stake.

There has been extensive research on the consequences of staking landscape trees and the concepts can be applied to staking walnut trees. Staked landscape trees: grow taller but the trunk caliper grows less near the ground and more near the top support tie; have more wind resistance if the top is not free to bend; are prone to rubbing and girdling from stakes and ties; and develop uneven xylem around the trunk if the tree is closely tied to one stake with the trunk growing or bending away from the stake. When the tree is tied snugly to one stake, during a wind when the top is being blown around, greater stress will occur at the top tie if the trunk below is not able to flex in the opposite direction. Consequently, the trunk is more likely to break at the top tie or be deformed.

The problems associated with improper staking can be avoided by following the guidelines at the beginning of this article when you are planting a new orchard.



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California Herbicide Registration on Horticultural Tree and Vine Crops (updated October 2011)

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 --		-----stone fruit -----													
Preemergence	dichlobenil (<i>Casoron</i>)	N	N	N	N	R	R	N	R	N	N	N	N	N	N	N	R	N	N	N
	diuron (<i>Karmex, Diurex</i>)	N	R	N	R	R	R	N	N	N	R	N	N	R	N	N	R	N	R	N
	EPTC (<i>Eptam</i>)	R	N	N	R	N	N	N	N	N	N	N	N	R	N	N	N	N	N	N
	flumioxazin (<i>Chateau</i>)	R	NB	R	R	R	R	R	R	R	R	R	NB	NB	N	NB	R	N	NB	NB
	indaziflam (<i>Alion</i>)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	N	N	N	N
	isoxaben (<i>Trellis</i>)	R	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	N	NB	R	NB	NB	NB
	napropamide (<i>Devrinol</i>)	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	R	R	N	N
	norflurazon (<i>Solicam</i>)	R	R	N	R	R	R	R	R	R	R	R	R	R	N	N	R	N	N	N
	oryzalin (<i>Surflan, Farm Saver</i>)	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	R
	oxyfluorfen (<i>Goal, GoalTender</i>)	R	R	R	R	R	R	R	R	R	R	R	R	NB	R	R	R	R	R	R
	pendimethalin (<i>Prowl H₂O</i>)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	R	N	R	R
	penoxsulam (<i>Pindar GT</i>)	R	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	pronamide (<i>Kerb</i>)	N	N	N	N	R	R	R	R	R	R	R	N	N	N	N	R	N	N	N
	rimsulfuron (<i>Matrix, Mana</i>)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	N	R	N	N	N
	simazine (<i>Princep, Caliber 90</i>)	R	R	N	R	R	R	N	R*	R	R	N	R	R	N	N	R	N	R	N
thiazopyr (<i>Visor</i>)	NB	N	NB	NB	N	N	NB	NB	NB	NB	NB	N	R**	N	N	NB	N	N	N	
trifluralin (<i>Treflan</i>)	R	R	N	R	N	N	R	N	R	R	R	N	R	N	N	R	N	N	N	
Postemergence	carfentrazone (<i>Shark, Rage</i>)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	clethodim (<i>Prism</i>)	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	N	R	N	N	NB	N	NB	N
	clove oil (<i>Matratec</i>)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	2,4-D (<i>Clean-crop, Orchard Master</i>)	R	R	R	R	R	R	R	R	R	R	R	N	N	N	N	R	N	N	N
	diquat (<i>Diquat</i>)	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB	NB
	d-limonene (<i>GreenMatch</i>)	R	R	R	R	R	R	R	R	R	R	R	N	R	N	R	R	R	N	N
	fluazifop-p-butyl (<i>Fusilade</i>)	NB	R	NB	NB	NB	NB	R	R	R	R	R	NB	NB	NB	NB	NB	N	NB	NB
	glyphosate (<i>Roundup, Touchdown</i>)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
	glufosinate (<i>Rely 280</i>)	R	R	R	R	R	N	N	N	N	N	N	N	N	N	N	R	N	N	N
	halosulfuron (<i>Sandea</i>)	N	R	R	R	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
	paraquat (<i>Gramoxone Inteon</i>)	R	R	R	R	R	R	R	R	R	R	R	R	R	N	R	R	R	R	N
	pelargonic acid (<i>Scythe</i>)	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	N
	pyraflufen (<i>Venue</i>)	R	R	R	R	R	R	R	R	R	R	R	N	N	R	R	R	R	R	R
	safllufenacil (<i>Treovix</i>)	R	N	R	R	R	R	N	N	N	N	N	N	R	N	N	N	N	N	N
	sethoxydim (<i>Poast</i>)	R	R	R	R	R	R	R	R	R	R	NB	NB	R	NB	NB	R	N	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

* simazine is registered on only sour cherry in CA.

** thiazopyr is registered on orange and grapefruit only.

Weed susceptibility information and the most up to date version of this table can be found at the **Weed Research and Information Center** (<http://wric.ucdavis.edu>)