



SUTTER/YUBA COUNTIES COOPERATIVE EXTENSION ~ UNIVERSITY OF CALIFORNIA  
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# Pomology Notes



April/May 2006 Issue

## UPCOMING MEETINGS:

<u>DATE</u>	<u>TITLE/SUBJECT</u>	<u>LOCATION</u>	<u>CONTACT</u>
MAY 4	UCCE PRUNE SPRING FIELD MTNG	LIVE OAK	822-7515
MAY 11	NICKELS FIELD DAY	ARBUCKLE	458-0570

## GENERAL ORCHARD CHECKLIST FOR APRIL/MAY:

- Plan nitrogen fertilizer program for the rest of the season **after** fruit set. Split applications (several small applications) usually allow trees to absorb more fertilizer nitrogen than one large “shot” of fertilizer. Plan potassium fertilizer program for the rest of the season **after** fruit set. A heavy crop may mean the orchard needs extra help (foliar sprays in addition to soil applied fertilizer) to make it through the season without becoming potassium deficient. Growers with drip or micro-sprinkler irrigation system can begin adding potassium through the irrigation system (depending on crop size) in the spring when fruit growth and nutrient demand takes off.
- Look for zinc deficiency symptoms in the orchard now – particularly delayed bud break and small, yellow leaves. These symptoms may disappear later in the season as shoot growth increases.
- Prepare for warmer weather (it will probably show up sooner than we think!)
  - Protect the future of your orchard by painting the trunks of replants and young trees **WHITE**. When painting trunks, use indoor water-based latex (not oil-based) paint. If trunk shields are used on young trees, the trunk should also be painted to avoid “box burn” around the top of the box that could girdle the tree trunk at that height. “Box burn” can be a significant problem in hot springs or late plantings.
  - Start monitoring soil moisture as the warm weather approaches to make sure orchard gets adequate water when needed.

## PRUNE ORCHARD SPECIFIC CHECKLIST FOR APRIL/MAY:

- Wet spring weather can mean increased risk of fruit brown rot and prune rust infections. Summer disease control will be a topic at the spring prune field day (May 4). See the UC prune fungicide efficacy and spray timing information in this newsletter.

- Evaluate fruit set and cropload at pit hardening (early to mid May).
- Peach twig borer traps should be up by now (late March). UC recommends 2 traps per block.
- Scouting for prune rust should start in early May. UC recommends checking 40 leaves/block for rust symptoms (angular yellow spots on the top of the leaf, rust colored “spore pad” underneath the leaf). At the first sign of rust (the very first rust spot), UC recommends spraying with sulfur. If rust is visible in an orchard, and rain is forecast, time a protectant spray of sulfur **before** the rain, not after. Sulfur will not stop an infection from spreading, but it will stop an infection from happening and it can only do that if it is applied before the rain.

#### ALMOND ORCHARD SPECIFIC CHECKLIST FOR APRIL:

- Watch the weather forecasts, and when needed, protect almonds against spring and summer diseases head of predicted rain (see information in this newsletter).
- Navel orange worm traps should be up by April 1. Use four traps per block or 1 trap per 10 acres in large blocks. Peach twig borer traps should be up before April 1. UC recommends 2 traps/block.
- Plan to attend Nickels Field Day in Arbuckle on May 11.

#### **PRUNE FIELD MEETING PLANNED**

A spring field meeting focused on prunes is planned for May 4 at Heier’s orchard just west of East Butte Road. An agenda is included in this newsletter. The meeting will include a review of fall aphid spray trials at Heier’s, reviews of spider mite and prune rust management, cropload assessment, and fruit brown rot control. CE hours have been requested.

#### **DISEASE CONTROL IN PRUNES IN 2006**

While the cool, wet weather this spring has meant that there may be good fruit set in the region, it has raised a lot of questions about disease control. As I write this (April 5), the weather folks are predicting two(!!!) more weeks of wet weather. If this happens, there is a good chance of an extended period of disease risk to flower parts and small fruit still in their jackets. Dr. Jim Adaskaveg, UC professor of plant pathology, tells me that long periods of wetness do put dying flower parts (petal-fall timing) and young fruitlets at risk of disease infection. He suggested that if growers choose to spray to protect their crop, they should focus on materials with good efficacy on jacket rot (*Botrytis*) as well as brown rot. These materials include Pristine®, Rovral® + oil, Scala®, Vangard®, and Elevate®. [Orbit® (Bumper) is ineffective on jacket rot, although it is an excellent brown rot material.] Dr. Adaskaveg also mentioned that it is important rotate fungicide chemistry classes from spray to spray as part of a good pesticide resistance management program.

Many growers are concerned about possible damage from fruit brown rot, as 2005 was a very bad year for this disease. UC research showed that prune flowers are sensitive to brown rot infection during petal fall. Prune fruit are most sensitive to brown rot infections at pit hardening and again right before harvest.

When deciding whether or not to spray this spring – either at the end of petal fall/shuck split or at pit hardening, growers should consider disease history in each block, the weather forecast, and the crop (income) potential in the block.

The latest UC information regarding almond fungicide efficacy, spray timings, and fungicide chemistry classes are included in this newsletter. Use alternate fungicide chemistries, whenever possible, to avoid resistance development. Always read and follow the label. Pesticides provide the most value to growers when carefully applied using a calibrated sprayer.

### **SPRING/SUMMER DISEASE CONTROL IN ALMOND**

If the rest of the spring is as wet as March, then spring/summer disease control should be a priority for almond growers -- especially in sensitive varieties with a history of disease. When spring rains are forecast, especially long, warm storms, growers are strongly urged to consider protecting their orchards from disease before the storm starts. Premature defoliation due to foliar diseases (rust, scab, and/or alternaria leaf blight) can reduce future crop yield.

The latest UC information regarding almond fungicide efficacy, spray timings, and fungicide chemistry classes are included in this newsletter. Use alternate fungicide chemistries, whenever possible, to avoid resistance development. Always read and follow the label.

FRANZ NIEDERHOLZER , UC FARM ADVISOR

## ALMOND—FUNGICIDE EFFICACY

Fungicide	Resistance risk (FRAC#) <sup>1</sup>	Brown Rot	Jacket rot	Anthrac -nose	Shot hole	Scab	Rust <sup>2</sup>	Leaf blight	Alternaria	Silver leaf
Benlate <sup>3</sup>	high (1)	++++	++++	----	----	+++	+	++++ <sup>8</sup>	----	----
Pristine <sup>2</sup>	medium (7/11)	++++	++++	++++	++++	++++	+++	ND	+++ <sup>10</sup>	----
Rovral + oil <sup>4</sup>	low (2)	++++	++++	----	+++	+/-	++	ND	+++ <sup>10</sup>	----
Scala	high (9)	++++	++++	ND	++	----	ND	ND	+ <sup>10</sup>	----
Topsin-M <sup>3</sup>	high (1)	++++	++++	----	----	+++	+	+++ <sup>8</sup>	----	----
Vanguard	high (9)	++++	++++	ND	++	----	ND	ND	+ <sup>10</sup>	----
Abound	high (11)	+++	----	++++	+++	++++	+++	+++	+++ <sup>11</sup>	----
Elevate	high (17)	+++	++++	----	+	ND	ND	ND	ND	----
Flint/Gem	high (11)	+++	----	++++	+++	++++	+++	+++	+++ <sup>11</sup>	----
Laredo	high (3)	+++	----	++	++	----	+	+++	----	----
Rovral	low (2)	+++	+++	----	+++	----	----	ND	+++ <sup>10</sup>	----
Bravo/Echo <sup>5,6</sup>	low (M5)	++	NR	+++	+++	+++	NR	NR	NR	----
Captan <sup>6</sup>	low (M4)	++	++	+++	+++	+++	----	+++	----	----
Maneb	low (M3)	++	+	++	++	++	+++	++	----	----
Rally <sup>7</sup>	high (3)	++	----	++	+/-	----	+	+++	----	----
Ziram	low (M3)	++	+	+++	+++	+++	----	++	+	----
Copper	low (M1)	+/-	+/-	----	+ <sup>8</sup>	----	----	----	ND	ND
Lime sulfur <sup>13</sup>	low (M2)	+/-	NR	----	+/-	++	NR	NR	NR	NR
Sulfur <sup>6</sup>	low (M2)	+/-	+/-	----	----	++	++	----	----	----
PlantShield (NR)	low	----	----	----	----	----	----	----	----	+++

**Rating:** ++++ = excellent and consistent, +++ = good and reliable, ++ = moderate and variable, + = limited and/or erratic, +/- = minimal and often ineffective, ---- = ineffective, NR = not registered, and ND = no data

<sup>1</sup> Group numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions. Fungicides with a different group number are suitable to alternate in a resistance management program. For more information, see <http://www.frac.info/>.

<sup>2</sup> Of the materials listed, only sulfur, Abound, and Flint are registered for use in late spring and early summer when treatment is recommended. Applications of Pristine only at 5 weeks after petal fall will not adequately control late-season diseases. Registration change for Pristine to allow 24-day preharvest interval is pending.

<sup>3</sup> Benlate label withdrawn. Strains of the brown rot fungi *Monilinia laxa* and *M. fructicola* resistant to Benlate and Topsin have been found in some California almond orchards. Resistant strains of the jacket rot fungus, *Botrytis cinerea*, have been reported in California on crops other than almond and stone fruits and may have the potential to develop in almonds with overuse of fungicides with similar chemistry. Resistant strains of the scab fungus, *Cladosporium carpophilum*, have been reported on other crops but not in California.

<sup>4</sup> Oil is a "light" summer oil, 1-2% volume/volume.

<sup>5</sup> Bravo Ultrex, Bravo Weather Stik, Echo, and Echo Ultimate are currently registered.

<sup>6</sup> Do not use in combination with or shortly before or after oil treatment.

<sup>7</sup> Efficacy is better in concentrate (80-100 gal/acre) than in dilute sprays.

<sup>8</sup> Excellent control obtained with combination of Benlate and Captan; activity of Topsin should be similar to that of Benlate.

<sup>9</sup> The low rates necessary to avoid phytotoxicity in spring reduce the efficacy of copper.

<sup>10</sup> Not registered for use later than 5 weeks after petal fall.

<sup>11</sup> Efficacy reduced at high temperatures and relative humidity; experimental for Alternaria.

## ALMOND—TREATMENT TIMING

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

Disease	Dormant	Bloom			Spring <sup>a</sup>		Summer	
		Pink bud	Full bloom	Petal fall	2 weeks	5 weeks	May	June
Alternaria	----	----	----	----	----	+++	+++	+++
Anthracnose <sup>b</sup>	----	++	+++	+++	+++	+++	+++	++
Brown rot	----	++	+++	+	----	----	----	----
Green fruit rot	----	----	+++	----	----	----	----	----
Leaf blight	----	----	+++	++	+	----	----	----
Scab <sup>c</sup>	+	+	+	+	+++	+++	++	+
Shot hole <sup>d</sup>	+ <sup>e</sup>	+	++	+++	+++	++	----	----
Rust	----	----	----	----	----	+++	+++	+ <sup>f</sup>

**Rating:** +++ = most effective, ++ = moderately effective, + = least effective, and ---- = ineffective.

- a. Two and five weeks after petal fall are general timings to represent early postbloom and the latest time that most fungicides can be applied. The exact timing is not critical but depends on the occurrence of rainfall.
- b. If anthracnose was damaging in previous years and temperatures are moderate (63°F or higher) during bloom, make the first application at pink bud. Otherwise treatment can begin at or shortly after petal fall. In all cases, application should be repeated at 7- to 10-day intervals when rains occur during periods of moderate temperatures. Treatment should, if possible, precede any late spring and early summer rains. Rotate fungicides, using different fungicide classes, as a resistance management strategy.
- c. Early treatments (during bloom) have minimal effect on scab; the 5-week treatment usually is most effective. Treatments after 5 weeks are useful in northern areas where late spring and early summer rains occur. Dormant treatment with liquid lime sulfur improves efficacy of spring control programs.
- d. If pathogen spores were found during fall leaf monitoring, apply a shot hole fungicide during bloom, preferably at petal fall or when young leaves first appear. Re-apply when spores are found on new leaves or if heavy, persistent spring rains occur. If pathogen spores were not present the previous fall, shot hole control may be delayed until spores are seen on new leaves in spring.
- e. Dormant copper treatment seldom reduces shot hole infection but may be useful in severely affected orchards and must be followed by a good spring program.
- f. Treatment in June is important only if late spring and early summer rains occur.

**PRUNE (OR DRIED PLUM)—FUNGICIDE EFFICACY**

Material	Resistance risk (FRAC#) <sup>1</sup>	Brown rot		Russet scab	Rust
		Blossom	Fruit		
Benlate <sup>2</sup> + oil <sup>3</sup>	high (1)	++++	++++	----	----
Orbit (Bumper)	high (3)	++++	NR	----	NR
Pristine	medium (7/11)	++++	++++	ND	ND
Rovral <sup>4</sup> + oil <sup>3</sup>	low (2)	++++	NR	----	NR
Scala	high (9)	++++	+++ <sup>7</sup>	----	ND
Topsin-M <sup>2</sup> + oil <sup>3</sup>	high (1)	++++	++++	----	----
Vanguard	high (9)	++++	+++ <sup>7</sup>	----	ND
Benlate <sup>2</sup>	high (1)	+++	+/-	----	----
Elevate	high (17)	+++	+++	ND	----
Rovral <sup>4</sup>	low (2)	+++	NR	----	NR
Topsin <sup>2</sup>	high (1)	+++	+/-	----	----
Abound	high (11)	++	+	----	+++
Botran	high (14)	++	++	ND	ND
Flint/Gem	high (11)	++	+	----	+++
Bravo/Echo <sup>5,6</sup>	low (M5)	++	++	++	---- <sup>6</sup>
Captan <sup>5</sup>	low (M4)	++	++	+++	----
Rally	high (3)	++	++	----	----
Sulfur	low (M2)	+/-	+/-	----	++

Rating: +++++= excellent and consistent, ++++= good and reliable, ++= moderate and variable, += limited and erratic, +/- = minimal and often ineffective, ---- = ineffective, ? = insufficient data or unknown, NR=not registered after bloom, and ND=no data.

1. Group numbers are assigned by the Fungicide Resistance Action Committee (FRAC) according to different modes of actions. Fungicides with a different group number are suitable to alternate in a resistance management program. For more information, see <http://www.frac.info/>.
2. Benlate label withdrawn. Strains of *Monilinia fructicola* and *M. laxa* resistant to Benlate and Topsin-M have been reported in some California prune orchards. No more than two applications of Benlate and Topsin should be made each year.
3. The oil is "light" summer oil, 1-2% volume/volume. If applied in summer causes fruit to lose bloom and look red. They dry to normal color.
4. Blossom blight only: not registered for use after petal fall.
5. Do not use in combination with or shortly before or after oil treatment.
6. Do not use after jacket (shuck) split.
7. High summer temperatures and relative humidity reduce efficacy.

**PRUNE (OR DRIED PLUM)—TREATMENT TIMING**

**Note:** Timings listed are effective but not all may be required for disease control.

<b>Disease</b>	<b>Green bud</b>	<b>White bud</b>	<b>Full bloom</b>	<b>May</b>	<b>June</b>	<b>July</b>
Brown rot <sup>a</sup>	+++	+++	+++	---	+	++
Russet scab <sup>b</sup>	---	---	+++	---	---	---
Rust <sup>c</sup>	---	---	---	+	++	+++

**Rating:** +++ = most effective, ++ = moderately effective, + = least effective, and --- = ineffective.

Timings used will depend upon orchard history of disease, length of bloom, and weather conditions each year.

- a. Flowers are susceptible beginning with the emergence of the sepals (green bud) until the petals fall but are most susceptible when open.
- b. A physiological disorder; no pathogens involved.
- c. More severe when late spring rains occur.

**UCCE SUTTER/YUBA PRUNE FIELD DAY**  
**MAY 4, 2006**  
**HEIER'S ORCHARD, EAST BUTTE ROAD,**  
**LIVE OAK, SUTTER COUNTY**



- 8:30 am Sign-in with coffee and donuts
- 9:00 Aphid control trials and insect scouting review
- 9:45 Review of prune rust and spider mite management.
- 10:30 Cropload assessment.
- 11:00 Review/discussion of fruit brown rot control.

**CE hours  
requested**

**MEETING LOCATION: JUST SOUTH OF THE SANDERS AND EAST BUTTE ROADS  
INTERSECTION ON THE WEST SIDE OF EAST BUTTE ROAD.**

DRIVING DIRECTIONS: Exit Hwy 99 at Eager Road (several miles north of Yuba City and south of Lomo crossing). Drive west on Eager Road to Larkin Road. Turn right on Larkin Road, go north several miles, and then turn left on Sanders Road. Take Sanders Road going west, past Broadway, until Sanders dead ends into East Butte Road. Turn left on East Butte Road and Heier's orchard will be on the right within a quarter mile.

**Yellow UC meeting signs will be out on East Butte Road to  
direct you to the meeting location.**