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POMOLOGY NOTES

POMOLOGY NOTES E-MAIL EXTRA: MARCH, 2007

Franz Niederholzer, UCCE Farm Advisor, Sutter/Yuba Counties

UPCOMING MEETINGS:

April 24……..UCCE Sutter/Yuba Prune Field Day #1……Yuba City area
April 25……..UCCE Sutter/Yuba Prune Field Day #2…… District 10 area
April 26……..UCCE Sutter/Yuba Prune Field Day #3…… Rio Oso area
May 2 ……...Nickels Field Day, Nickels Soil Lab…….. Arbuckle
June 12-13……Sprayer Calibration Field Day……TBA

More information on these meetings will be available in the near future.

SUMMARY:

- 2007 PRUNE CROP: In 2004 and 2005, temperatures at bloom were very high (above 80°F) and the crop in the south Sacramento Valley was very light. This season, temperatures were in the high 70's and low 80's at bloom. We won't know if this has hurt the 2007 crop, but I suggest not fertilizing with nitrogen or potassium until after the crop has set – probably around the middle of April.

- FREE PESTICIDE CONTAINER RECYCLING: Triple rinsed pesticide containers will be recycled for free on March 30, 2006, from 8 AM to 2PM at Growers Ag Service in the Tudor area. Call Jan Kendal at the Sutter County Ag Commissioner's office (822-7503) for more information.

- EARLY PEST PRESSURE? Will the early heat this season mean earlier peach twig borer (PTB) biofix and more mites? PTB traps should be up now. Look for spider mites in places in the orchard where mites appear every year.

- IRRIGATION: Early hot weather may mean early irrigation. Check orchard moisture levels and irrigate when needed. Dry, stressed trees are more vulnerable to mites and tree growth will be reduced. If prune trees get too dry in the spring, summer irrigation will crack the fruit.

- FERTILIZER: Cropload is the single most important factor that drives tree nitrogen (N) and potassium (K) needs. Fertilizer prices are up this year. You might save some money by waiting until you know how much of a crop is in an orchard before applying N or K fertilizer.

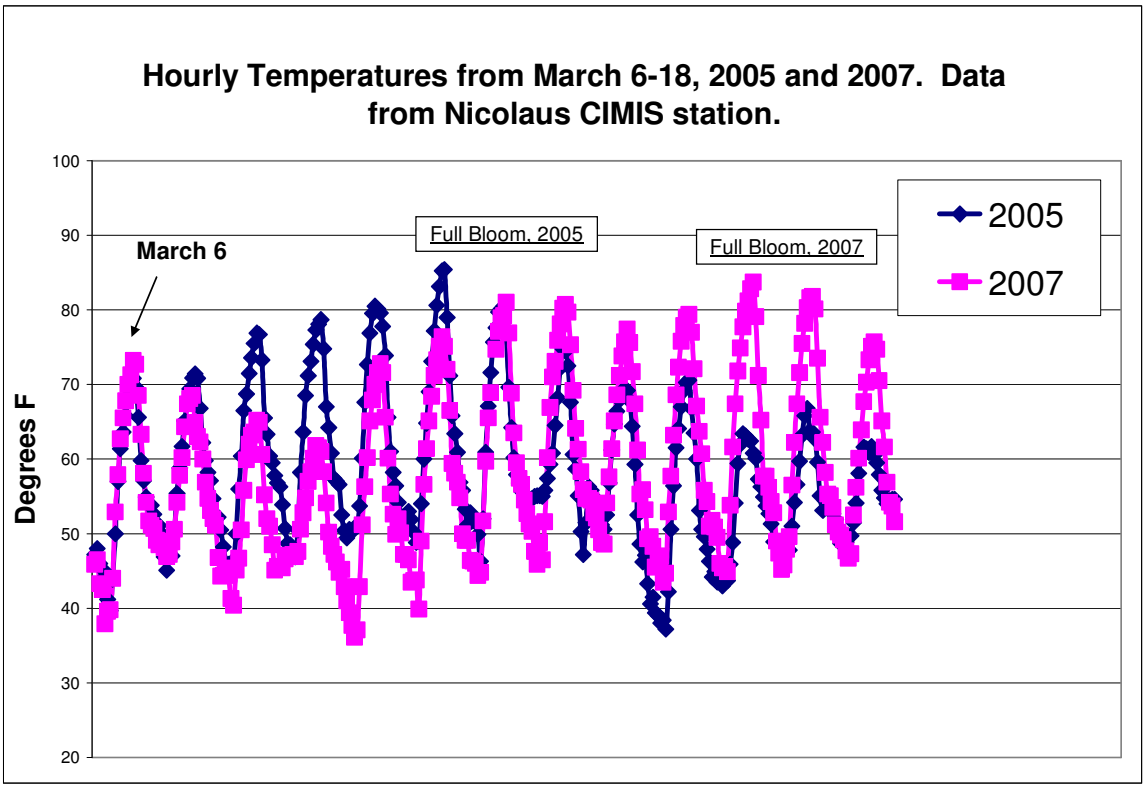
- NO DORMANT SPRAY? If a prune orchard was not sprayed with an insecticide in the fall or winter, there is a good chance that aphids will be a problem in the block. Check the trees for aphids as soon as the petals fall. Call Franz at 822-7515 (office) or 218-2359 (cell) for information on looking for aphids in prune orchards.

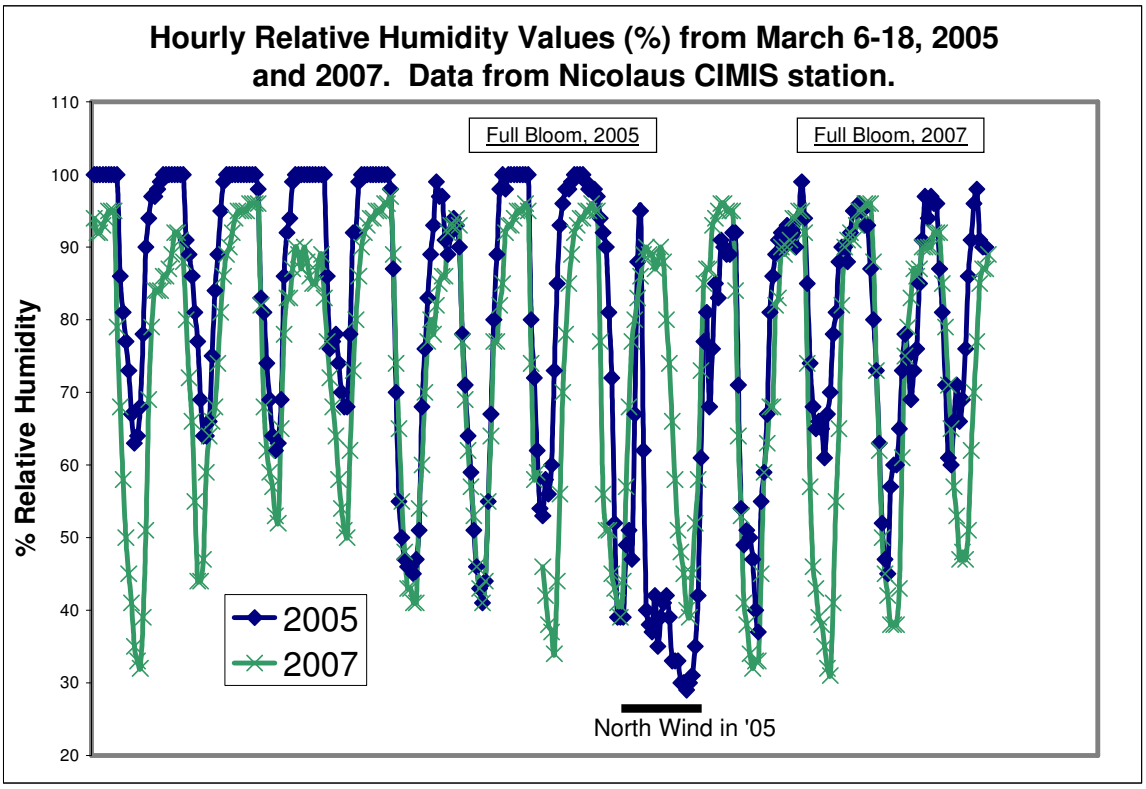
- Almond disease management: Watch the weather and spray protective fungicides where needed. Timing and efficacy tables for almond fungicides are included in this newsletter.

HEAT AT BLOOM = BAD NEWS AT PRUNE HARVEST?

I have gotten calls from growers and PCA's wondering about the affect of the hot bloom weather on prune flowers and the chances for a decent fruit set. As I write this on March 20, I am pessimistic about the chances for good set on the flowers in most orchards in Sutter/Yuba Counties – but I sure hope I'm wrong and a good crop sets. The graphs below compare temperatures and relative humidity at bloom in 2005, when the crop was very light in this area, with 2007. The only apparent difference in the weather between is that there was no north wind this year, and there was a north wind in 2005. Windy days in 2005 season show up as times with very low relative humidity.

See information later in this newsletter about saving money if the crop is light.





PESTICIDE CONTAINER RECYCLING DAY SET FOR MARCH 30

Sutter County Ag Commissioner's office has organized a Pesticide container recycling day at Growers' Ag Service on Everglade Road (south of Hwy 113 in Sutter County) on Friday, March 30, from 8AM to 2 PM. Here are some details:

ALL CONTAINERS MUST BE TRIPLE RINSED. Containers will be inspected before they are accepted for recycling (while you wait) and containers that have not been triple rinsed will be rejected on the spot.

- All containers up through 30 gallon drums will be accepted, but the 30's must be cut into quarters or they will not be accepted. (They won't fit into the chipper that grinds all containers.)
- No cost and no limit to the amount of triple rinsed containers brought in.
- Contact Jan Kendal at Sutter County Ag Commissioner's office (822-7503) if you have questions.

PEACH TWIG BORER BIOFIX EARLY?

The early heat should accelerate peach twig borer (PTB) development, and biofix (first sustained moth catch of the season) may be earlier than usual. (Biofix is usually in the second week of April in Sutter County.) Don't miss the first moths. Hang traps by the end of March (earlier?) and check the trap every day (if possible) until the first moth is caught.

DRY, WARM WEATHER = EARLIER IRRIGATION SEASON?

Rainfall this past winter was less than the annual average, and we have had warm weather, so far, through much of March. Trees begin to pull water from the ground once leaves are out. It is important to maintain adequate moisture in the root zone of growing plants. Don't get behind on water early in the season. Check soil moisture levels at least once a week by hand or with soil moisture monitoring equipment (Watermark sensors, etc.). Spider mite populations may build earlier in the season if temperatures remain warm.

CAREFUL FERTILIZER USE

Fertilizer costs are up, but adding fertilizer can improve yield if needed. Cropload is the single largest factor that drives nutrient use. I suggest waiting until after fruit or nut set before applying nitrogen or potassium fertilizers – as long as the trees had sufficient levels of those nutrients last year. Fertilizing prunes with nitrogen when there is a light crop promotes rich, vigorous shoot growth – perfect aphid food.

APHID TROUBLES IN BLOCKS WITHOUT A DORMANT SPRAY?

If your orchard was too dry to apply a dormant spray in January, the block may be at risk of aphid infestation this spring. The lighter the crop, the more the chance of a longer period of vigorous shoot growth and longer the aphids will stay in the orchard. Monitor the block at least once a week, and more than that if you possibly can. Aphid populations can increase very rapidly once warm weather is here to stay. Call Franz at 822-7515 (office) or 218-2359 (cell) for information on scouting for aphids in prune orchards.

Why not just spray an orchard for aphid control (without monitoring) if a dormant spray wasn't applied? There is one good reason. **Money**. If the prune crop has been hurt by the heat at bloom, keeping the trees healthy for the least amount of money is very important. Spraying for aphids without knowing if you really have a problem may hurt beneficial insect populations that will help control spider mites. If the crop is light, spraying for aphids without really having to and then having to spray for spider mites means extra cost in what could be a low crop year. If I monitored and found a large aphid population in my orchard, I would spray.

FUNGICIDE PROGRAMS FOR SPRING/SUMMER DISEASE CONTROL IN ALMONDS.

The weather forecast calls for at least a chance of showers about a week off (its March 20 as I write this), so disease management is still an issue in almond. Here are some management suggestions for these spring/summer diseases as suggested by Dr. Jim Adaskaveg, UC from UC Riverside and the UC IPM Pest Management Guidelines for almond.

SHOTHOLE: Monitor the orchard in the late winter and early spring for fruiting bodies at the center of shot hole spots on leaves. Spray if fruiting bodies are found and wet weather is predicted. Repeat applications as long as fruiting bodies are present and wet weather continues.
ALTERNARIA LEAF BLIGHT: A fungi that attacks leaves and can defoliate orchards, Alternaria is effectively controlled by only two registered materials (see fungicide efficacy table in this newsletter). Orchards with poor air-movement, high humidity, and prolonged periods of leaf wetness are most susceptible to infection by Alternaria. Look for leaf spots (lesions) in the spring, and begin spraying if symptoms are found. Repeated applications of the same material have contributed to strobilurin resistance in this pest.

ALMOND SCAB: is a fungal disease of twigs, leaves, and fruit. Symptoms develop in spring and summer, and defoliation can result from severe infections. The disease organism overwinters in twig cankers on 1-year-old shoots, and spores are released from those sites in the spring – usually in mid-March. High humidity or rainfall will promote infection after spore release, and orchards with poor air movement/high humidity/extended leaf wetness are most prone to infection. The first leaf symptoms of scab appear some time after the infection. In orchards with high disease pressure several applications of different materials may be needed to give effective control.

ALMOND RUST: This fungus infects leaves following spring or summer rains, and can defoliate trees if the infection is severe. Protectant sprays (sulfur, maneb, or strobilurin containing material), ahead of spring or summer rains are needed for control.

ANTHRACNOSE: This disease infects nuts, leaves and spurs/limbs. Protect your orchard beginning at bloom through the spring and summer if the orchard has a history of anthracnose or infections are present and wet weather is predicted. The warmer the predicted storm, the higher the potential risk of anthracnose infection. Alternate materials for best control and resistance management (see fungicide efficacy table in this newsletter).

RESISTANCE MANAGEMENT: Resistance or reduced efficacy of strobilurin fungicides on scab and Alternaria leaf spot has been documented in some orchards (outside of Sutter/Yuba Counties) by UC researchers. Since only strobilurins are registered for summer use for Alternaria control, repeated use of this chemistry has been the only option for control of that disease and has probably contributed – along with every-other-row spraying – to accelerated resistance development. Alternating materials (when allowed by label) is an important part of a resistance management program. Early use of effective materials other than strobilurin-containing products for summer disease – following the label – is a key part of a resistance management program. The attached fungicide efficacy and timing sheets may be helpful to growers and PCAs planning or implementing a resistance management program in almonds. Products with the same fungicide chemistry have the same Resistance risk number and should not be used consecutively. For example, Abound and Flint are both 11's (strobilurin chemistry) and one should not be used following the other.

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UC FARM ADVISOR

ALMOND—FUNGICIDE EFFICACY

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

[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] 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.

[3] 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.

[4] Oil is a "light" summer oil, 1-2% volume/volume.

[5] Bravo Ultrex, Bravo Weather Stik, Echo, and Echo Ultimate are currently registered.

[6] Do not use in combination with or shortly before or after oil treatment.

[7] Efficacy is better in concentrate (80-100 gal/acre) than in dilute sprays.

[8] Excellent control obtained with combination of Benlate and Captan; activity of Topsin should be similar to that of Benlate.

[9] The low rates necessary to avoid phytotoxicity in spring reduce the efficacy of copper.

[10] Not registered for use later than 5 weeks after petal fall.

[11] Efficacy reduced at high temperatures and relative humidity; experimental for Alternaria.

[12] Field resistance of *Alternaria* sp. to strobilurin fungicides has been detected in almond orchards.

[13] "Burns out" scab twig lesions when applied at delayed dormant.

ALMOND—TREATMENT TIMING

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

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

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.