



Pomology Notes

ORCHARD CHECKLISTS

November-December 2005 Issue

PRUNE ORCHARD CHECKLIST FOR NOVEMBER/DECEMBER:

- Look at dormant spur sample and consider aphid history in your orchard to determine if there is a need to control aphid (mealy plum or leaf curl aphid) between now and petal fall.
- Check dormant spur sample results to determine the need for scale control. If needed, effective treatments can be applied in dormant or delayed dormant timing.
- Apply potassium fertilizer in flood irrigated blocks.
Adequate potassium nutrition is key to prune orchard health and productivity.
- Plan orchard pruning/crop management program for 2006.
- Consider applying preemergent herbicides to tree strips in blocks that are not disced in summer.
- Remove tree boxes from around newly planted trees after final herbicide treatment.

ALMOND ORCHARD CHECKLIST FOR NOVEMBER/DECEMBER:

- Take dormant spur sample to determine the need for scale control. If needed, effective treatments can be applied in dormant or delayed dormant timing.
- Consider removing leaves by the end of November (see article in this newsletter.).
- Prepare/maintain your orchard sprayer(s) and other key equipment.
- Consider applying preemergent herbicides to tree strips
- Apply potassium fertilizer in flood irrigated blocks if summer leaf analysis indicates need.
- Remove tree boxes from around newly planted trees after final herbicide treatment.
- Line up bees for pollination at bloom. A minimum of one hive/acre is recommended.

SUBMITTED BY:
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UPCOMING MEETINGS:

DECEMBER 7-8, 2006
ALMOND BOARD CONFERENCE IN
MODESTO
(209)549-8262

MARCH 1, 2006
PRUNE DAY IN YUBA CITY
822-7515

MARCH 9, 2006
TEHAMA COUNTY
PRUNE DAY IN RED BLUFF
527-3101

CROP YEAR IN REVIEW 2005

A review of the weather in the past year can help explain some of the crop problems or successes during the year. In the graph below, I've plotted the difference in daily maximum temperatures between each day last year and the 20 year average for the same site (CIMIS weather station in Nicolaus). Where the temperature high for the day was above the 20 year average, the graph shows a bar above the 0-line that equals the number of degrees over the average for that day. Here are some comments about the 2005 season weather and what could have been done (with 20/20 hindsight) to avoid trouble:

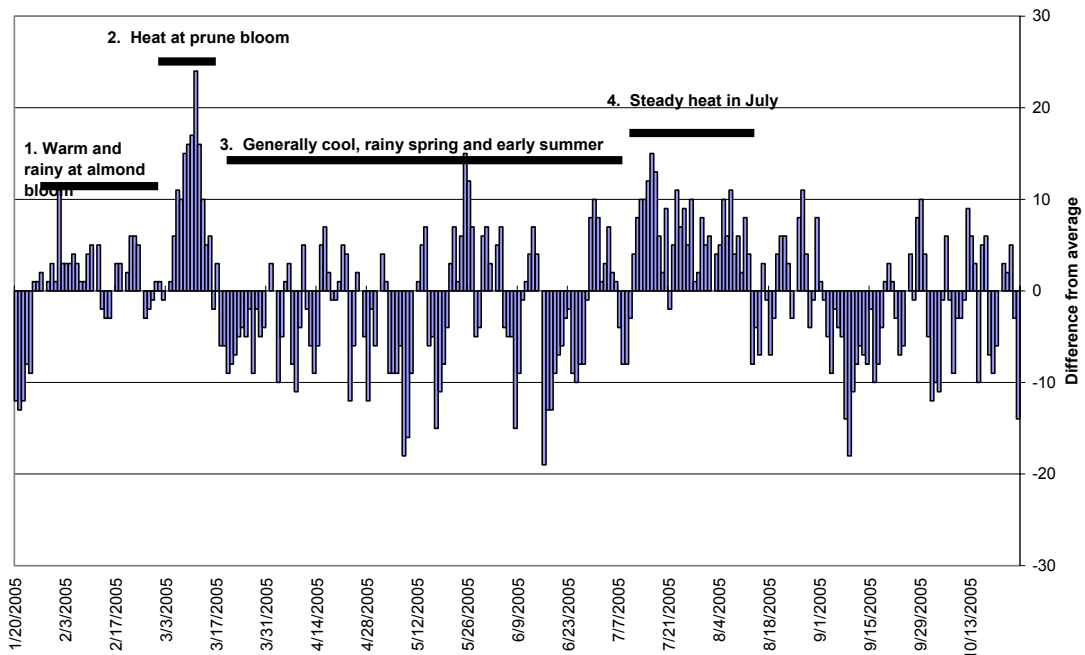
1. Warm weather and rain at Non-pareil bloom timing meant that flowers continued to develop/age while bees stayed in their hives. Reduced bee flight meant limited pollination and a very light crop. If it had been a cold storm, flower development would have slowed, and the chances for good pollination would have been better when the weather cleared to allow good bee activity. There wasn't much that could have been done about this.
2. Near record heat at prune bloom meant that the crop in the South Sacramento Valley didn't set. Good crops were set in blocks that bloomed before the heat peaked and after it broke. Spreading bloom by using oil in some blocks early in the dormant season (late December/early January) to advance bloom a couple of days should help spread the risk of extreme heat or cold at bloom – and hopefully increase grower return if the weather gets nasty at bloom.
3. Wet, cool weather in the spring (most of April through early July) meant that summer diseases had the “right” weather for infection. Maintaining a good disease control program past petal fall is very important in wet springs. Applying protectant fungicides before rain is the best way to protect against rust in prunes and almonds, as well as scab, alternaria, and anthracnose in almonds. It is sometimes hard to make the effort to spray ahead of forecast rain, especially since rain may not fall. Unfortunately, there is no “fix” once it has rained on unprotected orchards, so the best policy is to watch the weather forecast and spray when an experienced forecaster or several forecasters predict rain.

Also last spring, crop water use was steady, orchard soils dried up despite some rain, and prunes in water stressed orchards showed end cracking after irrigation or rain. The best way to avoid end cracking is to keep good moisture in prune orchards through June. Soil moisture sensors (Watermarks, etc.), pressure bombs to measure tree moisture level, or a shovel and the “hand feel” method are all effective ways of predicting if block needs irrigation.

4. Weeks of hot, dry weather in July were perfect for spider mite development, and this pest caused defoliation in many prune and almond blocks in the area. Careful mite scouting after June 1, and early spray treatment if needed are keys to keeping the leaves (the engine that drives crop growth) on the tree. See info on scouting for spider mites on the web at: <http://www.ipm.ucdavis.edu/PMG/C606/prune-mitesample.pdf>. This info was developed for prunes, but will also be helpful in almonds.

July heat also led to water stress and more defoliation in early almond varieties after preharvest water cut off. Where possible, some growers are irrigating (usually using drip or micro-sprinklers) harvested varieties before knocking later varieties.

Comparison of daily high temperatures in 2005 with 20 year average high temperatures for that date. Data from Nicholus CIMIS station.



What do the bars in the graph stand for? The difference between the daily high temperature last year and the 20 year average high temp for that day. For example, on July 19, 2005 the high temperature was 102°F and the 20 year average high temperature for that date was 92°F. The graph shows +10°F on that date – the difference between the high that day and the 20 year average high.

NEW OPTIONS FOR PEACH TWIG BORER CONTROL FROM DORMANT THRU BLOOM

Alternating products to manage resistance to a pesticide or group of pesticides that control key pests is an important consideration for all growers. This practice lowers the chances of a catastrophic failure of a pesticide when good control is really needed.

Peach twig borer is an important pest in almond and occasionally an important pest in dried prunes. Until recently, only a limited number of groups of pesticides were registered to use for peach twig borer control – just organophosphates (Lorsban, diazinon, Supracide, Imidan, etc.), pyrethroids (Asana, etc.), and B.t. (Dipel, Javelin, etc.). B.t. works best in bloom sprays, while the organophosphates and pyrethroids –highly toxic to bees -- are used in dormant and delayed dormant.

New, different chemistries are now labeled and offer almond and prune growers more PTB control options in dormant through bloom timings. Recent research in Sutter County, led by Dr. Frank Zalom, UC Extension Specialist at UC Davis, has shown that several of these new materials are very effective. All those tested worked as well as conventional materials (see results in Table 1 below) Almond (and prune growers) now have some new options for use in PTB control and resistance management.

Table 1. Average number of peach twig borer (PTB) shoot strikes per 2nd leaf almond tree, 2005. Dormant applications made on January 24, 2005 with backpack sprayers at a spray volume equivalent to 100 gpa. Strikes counted April 13, 2005.

Treatment	Material rate/acre	Strikes/tree**
Untreated	--	16.33
Dimilin® dormant ¹	16 oz	0.44
Dimilin® delayed dormant ²	12 oz	1.13
Dimilin® pink bud ²	12 oz	0.00
Success® dormant ¹	6 oz	0.00
Intrepid® pink bud ¹	10 oz *	0.44
Intrepid® delayed dormant ¹	12 oz *	0.00
Intrepid® pink bud & full bloom ^{1,3}	5 oz *	0.00
Imidan® dormant ¹	5.33 lb	0.11
Warrior® dormant ¹	2.56 oz	0.13
Warrior® dormant ¹	3.84 oz	0.00
Dibrom® dormant ¹	2 pts	0.11
Dibrom® dormant ¹	3 pts	0.22

¹ Applied with 1.5 gallons of oil/100 gallons of water.

² Applied with 1 quart summer oil/100 gallons of water

³ Two sprays were applied to plot, both at the rate of 5 oz/acre.

* Latron B-1956 spreader applied with this treatment @ 1 pint/100 gallons of water

**PTB control was statistically better than untreated controls at 5% level (there was only 5% chance that there was no difference in PTB control between the unsprayed and sprayed trees).

SPIDER MITE MANAGEMENT IS YEAR-ROUND

Spider mite damage costs growers this year (lost leaves, reduced fruit/nut growth and miticide costs) and next year (lost production if mite damage causes excessive defoliation). Spider mites seem to be an increasing problem in prune and almond blocks in the region.

I talked with a grower the other day about how tough spider mites have been on his almond orchard the last couple of years. We talked about some monitoring options to help know when mites are building in a block. We also discussed the possibility of using early sprays of systemic materials (Agrimek® (and generics), Onager®, Apollo®, etc.) in trouble spots that get hit hard by spider mites and defoliate year after year. We also talked about pyrethroid insecticides (Asana®, Warrior®, Pounce®, Ambush, ® etc.) and how they can hurt mite predators – the “good guys” that eat spider mites.

Pyrethroids are very effective and relatively inexpensive pesticides that are often used for peach twig borer (PTB) control in dormant (almond and prunes) and hull split sprays (almonds). Unfortunately, these materials also harm beneficial mites. Pyrethroids bind to wood and remain active for many months. Research by U.C. has shown that, in August, more than 90% of beneficial mites died within 48 hours of being placed on almond twigs that were sprayed with a dormant spray in early February.

Growers concerned about spider mites may want to talk with their PCA about developing a year-round plan to manage spider mites. Alternating between dormant PTB control materials that are less harmful to beneficial

insects could be part of that program. Effective dormant PTB materials that don't harm beneficials include Intrepid, Dimilin, and Success (see research results in previous article).

A list of registered pesticides and their impact on beneficial insects is available on the web at: <http://www.ipm.ucdavis.edu/PMG/r3900311.html> or call me (Franz) for a copy if you don't have web access.

ZINC SULFATE FERTILIZER AND ALMOND ORCHARD CLEAN-UP

Don't let this year's disease problems be the start of disease troubles in 2006. This was a bad year for summer leaf diseases in almond. Many of summer diseases -- such as scab, rust, and shot hole -- can overwinter on leaves that remain attached to the tree. Disease spores on old leaves can potentially infect new leaves as they develop and grow the next spring. Removal of old infected leaves is an important part of an integrated disease management program for the following season.

Zinc sulfate is an effective foliar fertilizer when applied in the fall at natural leaf drop (November or early December), and it can also accelerate leaf drop at that timing. UC recommends 10-15 pounds of zinc sulfate/100 gallons of water applied as a dilute spray to correct zinc deficiency. If you had a rust or scab problem in your almonds this year, consider zinc as a foliar fertilizer with the added benefit of leaf removal. [I have heard of growers using as much as 30-40 pounds of zinc sulfate per acre in concentrate applications. This approach is a risky one to me, as I've burned buds of nursery almond trees with zinc sulfate applied at the rate of 30 pounds/100 gallons of water sprayed to runoff. Poorly calibrated/set up sprayers can over-apply materials -- sometimes to runoff -- onto the lower branches closest to the nozzles.]

GETTING READY FOR 2006 PRUNE SEASON

A wise old farmer once told me that his equation for profitability was "make money in a good year and break even in a bad year". California prune growers SHOULD have a good year in 2006. (It ought to be!) Inventory is down and prices -- before dormant season! -- look good even if a big crop is set. Now is the time to make some solid plans to benefit from the current supply and demand situation. Here are ten important points to consider when planning for 2006. [They are in no particular order, as the growing conditions next year will determine which ones will actually be important next year...]

1. Take a hard look at controlling aphids before petal fall. If you have a history of aphids in a block or an aphid egg was found in the dormant spur sample, there is a very good chance that you will have to spray for aphids in-season if you don't control them before petal-fall. It will be much easier and cheaper to control aphids before petal fall. In-season aphid control (using diazinon, Asana, etc.) is tough on spider mite predators, possibly leading to a mite "flare-up" and the need for an expensive mite spray. Aphids can be controlled with conventional dormant spray materials from November through the start of bloom. Two oil sprays, 10 days apart, give good aphid control during bloom if slow sprayer speeds (1.5 mph) are used.
2. Get adequate nutrients to your trees -- especially potassium. Fall soil applied potassium fertilizer and/or spring/summer foliar sprays of potassium nitrate are options for growers with flood irrigation. Growers with micro-jets or drip irrigation can inject potassium with their irrigation water and/or use foliar sprays in the spring and/or summer.

3. Hedge your bets regarding extreme weather at bloom. Vary pruning intensity, manipulate bloom timing with oil sprays, and wait until just before bloom before deciding on orchard floor management (mowed close or left high, depending on the weather forecast.)
4. Use a good blossom brown rot control program. Two sprays (green bud and full bloom timings) may be needed if the weather is wet. One spray or less could be all that is needed if the weather is dry during bloom.
5. Consider a scab spray at full bloom. The difference between standard and substandard prunes in 2006 could be \$800/ton.
6. Be prepared to manage cropload (thin) if a big crop sets in 2006.
7. Give trees adequate water in spring through early summer to avoid end cracking. Monitor tree or soil moisture levels to know if the orchard needs water.
8. Make sure someone on your ranch can monitor for prune rust beginning May 1, and spray after the first rust spot is found.
9. Make sure someone on your ranch can monitor spider mites, and spray early if mites reach UCCE threshold. In a normal year (no early heat), scouting for spider mites should begin by June 1.
10. If you don't already have one, buy a pressure gauge to monitor fruit maturity. Fruit pressure is the best measure of the time to pick. Don't throw money away by picking too early or too late!

Consult with a PCA regarding label restrictions. Always read and follow the label.