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**Franz Niederholzer**  
UCCE Farm Advisor  
Sutter, Yuba, Colusa Counties

**Join us on Tuesday, September 26!**

## Advances in Prune Production

*The latest research and how it impacts your management practices*

Topics/speakers will include:

**Cytospora canker:** Dr. Themis Michailides, UC Davis Plant Pathology specialist

**Wood Rot Fungi:** Bob Johnson, UC Davis Plant Pathology Department

**Prune rootstock trial research:** Rich Buchner, UCCE Farm Advisor Emeritus

The meeting will include researcher presentations (30-45 minutes each) followed by Question and Answer sessions (30-45 minutes) to help growers and PCAs plan to apply research results ahead of the pruning season.

Date: **Tuesday, September 26** from **9 AM to 3 PM** with lunch included

Location: **Ord Bend Community Hall:** 3241 CA-45, Glenn, CA

Registration is \$25 online and \$35 at the door:

[sacvalleyorchards.com/events/](http://sacvalleyorchards.com/events/)

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## Fall prune orchard management considerations following a heavy crop

*Franz Niederholzer, UC Farm Advisor, Colusa, Sutter and Yuba Counties*

2017 has been quite a year, with at or near record rains and river levels followed by extended summer heat. The rains helped with snow pack and reservoir levels, but extended soil saturation in many orchards didn't prepare prune root systems for the demands of feeding a big crop and cooling the orchard (through transpiration). Many orchards in this region saw heavy crops of small fruit and return of "prune dieback" due to a combination of fruit sunburn, high potassium demand in June/July, and disease infection. The heat also helped suppress sugar levels and slow fruit maturity as harvest approached. With all this cheery background in mind, here are some considerations for orchard practices for the fall, with a focus on cost efficiency and return on investment:

### Cost saving questions for fall, 2017:

- ✓ Skip pruning? There is a significant savings to growers when skipping pruning in a mature orchards, **but only if you are ready to shaker thin the crop if needed.** There is NO savings – and probably significant income loss – if you don't prune, but then set a huge crop and don't thin. That will produce lots of small fruit that will break limbs, cause sunburn, and worsen *Cytospora* infections.
- ✓ Skip fall potassium? This idea is less attractive this fall than last, as a big crop uses a lot of potassium (K). If you had a big crop this year (and most growers did) consider banding the maintenance rate of 400-500 lbs of K fertilizer (dry potassium sulfate or muriate of potash) late this fall after leaves begin to drop. Another option is to wait until early April 2018 to check crop set before starting foliar and/or water run K fertilizer applications. Fall K applications mean one less thing to worry about in the spring and the investment literally isn't going anywhere (it will stay in the soil to be used by the next good crop). If it has been three or more years since you applied a fall, maintenance rate of potassium, this year might be a good year to put it on. More detailed information on K nutrition in prunes can be found at: <http://www.sacvalleyorchards.com/prunes/horticulture-prunes/potassium-nutrition-maintaining-optimal-levels/>
- ✓ Do you need a full dormant spray? Ask your PCA to do a spur sample to check for scale. Find videos on how to conduct a dormant spur sampling at: [ipm.ucdavis.edu/PMG/r606900511.html](http://ipm.ucdavis.edu/PMG/r606900511.html) (sampling form: [ipm.ucdavis.edu/PMG/C606/prune-dormantspursample.pdf](http://ipm.ucdavis.edu/PMG/C606/prune-dormantspursample.pdf)). If there is no need to spray for scale, but you have a history of aphid pressure, consider a low rate of pyrethroid in late October or November as a dormant spray replacement for this year. A fall aphid spray with a pyrethroid (Asana®, Warrior®, etc.) can be tank mixed with zinc sulfate foliar fertilizer. A fall pyrethroid spray only controls aphids the following year, but that is the only annual problem in many prune orchards. Peach twig borer can be controlled with B.t. (DiPel®, Javelin®; doesn't harm bees) tank mixed with bloom fungicides. If there is not enough scale to warrant treatment, skip the full dormant spray for this year.
- ✓ Skip pre-emergence weed spray? Can you get away for a year with no pre-emergence spray? Times have changed and fleabane is glyphosate resistant. Talk with your PCA about your options. How much money and time will a weedy orchard cost you at harvest in spilled fruit and barked trees? What are your options? Unless you can mow down the fleabane ahead of harvest, a good pre-emergence program might be worth the cost, even this year.

## General Fall Practices to Consider in Prune Orchards:

### Pruning:

- ✓ Avoid pruning shortly ahead of rainfall events, **especially** young trees in new plantings or interplants. Rain-splash can result in costly disease spread to freshly cut branches. If you have to prune ahead of rain, consider a fungicide spray (Topsin-M® and/or Rally®) after cutting to protect the open, fresh pruning wounds from disease infection.
- ✓ Prune out existing *Cytospora* cankers by cutting several inches to a foot below any symptoms (dead bark). The pruned out wood should be removed from the orchard and burned. If an orchard has a lot of dieback/dead wood, consider a special crew or employee to just cut out diseased and damaged wood. This lets them focus on the cuts to clean up the orchard and not go back and forth between regular pruning cuts and orchard clean up. Consider fungicide spray(s) in the orchard to protect pruning wounds if rain is forecast. Information on identifying *Cytospora* cankers plus pictures of “Good” and “Bad” cuts for *Cytospora* control that can be laminated into a shirt-pocket sized handout and given to pruners can be found at: <http://www.sacvalleyorchards.com/prunes/pruners-pocket-guide-for-cutting-out-cytospora/>

### Irrigation:

- ✓ Keep up with orchard irrigation needs. As the days grow shorter and cooler (soon!), orchard irrigation needs decrease but don't vanish. Use ET estimate (available for north and south Sacramento Valley at: <http://www.sacvalleyorchards.com/et-reports/>) or soil moisture evaluation (electronic sensor or by hand using auger or shovel) to determine when and how much irrigation water to apply. Don't forget to account for efficiency of the irrigation system (evaporation, etc.) when deciding how much water to use. Why worry about irrigation headed into the fall? For one, water stressed prune trees are more susceptible to *Cytospora* canker spread compared to well-watered trees.

### Nutrition:

- ✓ Foliar zinc (36% zinc sulfate) can be applied at the beginning of leaf drop in late October or early November at about 20 lbs material/acre in 100 gallons water/acre. This zinc sulfate rate and timing may drop leaves, disrupting aphid reproduction and reducing the risk of tree blow over in strong wind. [A low rate of pyrethroid insecticide can be tank mixed with this zinc sulfate application rate and timing for good aphid control next year.]

A lower rate of zinc sulfate (5 lbs material/acre in 100 gallons water per acre) is an effective zinc foliar fertilizer spray when applied ahead of natural leaf drop (late September or early October). This lighter rate will not accelerate leaf drop. This timing is too early for pyrethroid tank mix for aphid control next year.

- ✓ Once leaves drop, trees won't pick up nitrogen until bud break in spring. Any nitrogen applied in the fall is likely to be leached from the root zone before spring, especially if we have a wet winter. Don't apply nitrogen between start of leaf drop and after growth begins next spring.

### Weed management:

- ✓ Following a postharvest weed survey ([ipm.ucdavis.edu/PMG/C606/prune-fallweeds.pdf](http://ipm.ucdavis.edu/PMG/C606/prune-fallweeds.pdf)), apply mid to late fall pre-emergence herbicide applications with a post-emergence, “burn down” material if needed shortly before moderate rainfall (0.25”-0.5”) to move the material into the soil. If the weather forecast calls for inches of rain, wait. Inches of rain can move a product deeper in the soil than desired for the best weed control. Pre-emergence herbicide incorporation calls for a quarter to half an inch of rain.

Consult your PCA about effective pre-emergence herbicides for fleabane. The traditional “Surflan/Prowl® + Goal” program doesn’t give good fleabane control. Skipping a fall pre-emergence spray may cost more money than you save. “Roundup®-only” weed spray programs are no longer effective with the development of glyphosate resistant weeds like fleabane and marestail. Glufosinate (Rely®) is now registered in prunes, but good timing and repeated applications may be needed for effective fleabane control.

### Gopher management:

- ✓ Late fall through late winter is an excellent time to focus on gopher control. This is a time when gopher population are generally lower than the rest of the year, before they begin the spring breeding cycle. [Gophers have two breeding “pulses” -- in late winter into spring and then again in the fall.] See recent UC IPM gopher control information at: <http://ipm.ucanr.edu/PMG/r105600211.html>.



### Aphid Management Review

*Franz Niederholzer, UCCE Farm Advisor, Colusa and Sutter/Yuba Counties*

*Luke Milliron, UCCE Farm Advisor, Butte, Glenn and Tehama Counties*

Plum aphids (2 species) are the major pest of prunes. Feeding on leaves and stems of rapidly growing shoots, the mealy plum aphid (MPA) causes curling and stunting of leaves, and also secretes honey dew leading to sooty mold on the fruit surface and an increased risk of end cracking in the summer. Severe, uncontrolled MPA infestations can limit return bloom in prunes, reducing crop load the following year. The leaf curl plum aphid (LCPA) also feeds on growing shoots, severely stunting and contorting leaves and also secreting large amounts of honeydew. Fall or winter are good timings to control aphid. So, with harvest over, it’s a good idea to settle on an aphid control plan to protect next year’s crop.

Both MPA and LCPA move out of most prune orchards to summer hosts once prune shoot growth ceases -- usually by June at the latest. [In highly vigorous, young orchards where shoot growth lasts all season, aphids may remain all season long.] Plum aphids move back into orchards in the fall (late September into October) to feed, mate, and lay eggs that will hatch during bloom the following year.

It is very challenging to effectively monitor plum aphid in California prune orchards before eggs hatch. The fall spur sampling protocol ([ipm.ucanr.edu/PMG/r606900511.html](http://ipm.ucanr.edu/PMG/r606900511.html) or from your local UCCE office) includes aphid eggs, but those eggs are scattered in the orchard and only one egg out of 100 spurs triggers a spray treatment. There is a real risk of missing aphid pressure in a block if you only use the dormant spur test results to determine the need for control. [Still, the dormant spur sampling is vital to scale control, so while looking for scale, keep an eye out for aphid eggs – they are a lot easier to see (when present) compared to scale.]

Since accurate monitoring ahead of aphid infestation is hard to do, growers basically have two choices for plum aphid management:

1. Assume you have an annual problem and treat between fall and full leaf out. If you have a history of aphid infestation when dormant sprays are skipped or applied with poor coverage (every-other row by ground or aerial spraying), it’s a good bet you have a significant risk of annual aphid infestation.

2. Wait and watch, treat if aphids show up once shoot growth gets going in the spring. If you haven't had much or any aphid pressure in the last few years, the 'wait and see' approach is a good option. Before you spray, make sure the pesticide sprayed is cleared with your processor/packer.

Both strategies can be effective with the right pesticide materials, spraying and timing. There are advantages and disadvantages to each plan. It's a grower's call. Talk with your PCA about options.

The following table shows a range of timings and materials that control aphids, plus options to control other pests commonly controlled with a traditional dormant spray (pesticide plus oil) – scale and peach twig borer (PTB). If you move away from a traditional dormant spray when controlling aphid, make sure to keep those occasional pests under control.

General timing, efficacy, and water quality risk for spray practices and material combinations that target key prune insect pests – plum aphid, peach twig borer (PTB) and scale. Efficacy rating assumes excellent spray coverage. “++” = excellent control, “+” = partial control, “--” = no control or benefit.

**Always read the label & check with your PCA regarding orchard specific rates, materials & timing.**

General Timing	Timing details, materials	-----Spray target/goal-----				
		Aphid <sup>1</sup>	PTB <sup>2</sup>	Scale <sup>3</sup>	Advance Bloom	Risks harming water quality <sup>4</sup>
<b>Fall</b> Nov-Dec	<b>Fall spray</b> (pyrethroid only)	++	+	--	--	+
<b>Dormant</b> Dec-Jan <sup>5</sup>	<b>Lite dormant spray</b> (pyrethroid only)	++	++	--	--	++
<b>Dormant</b> Dec-Jan <sup>5</sup>	<b>Lite<sup>+</sup> dormant spray</b> (3-4 gpa oil + pyrethroid)	++	++	+	++	++
<b>Dormant</b> Dec-Jan <sup>5</sup>	<b>Dormant spray</b> (3-4 gpa oil + diazinon or Lorsban)	++	++	++	++	++
<b>Dormant</b> Dec-Jan <sup>5</sup>	<b>Dormant scale spray</b> (3-4 gpa oil+Centaur® or Seize™)	--	--	++	++	+
<b>Bloom</b>	<b>B.t. with bloom sprays</b> (Dipel®, Javelin®, etc.)	--	++	--	--	--
<b>Bloom</b>	<b>2x 4% 440 oil at bloom</b> (with fungicides) <sup>6</sup>	++	--	?	--	--
<b>Post-bloom</b>	<b>Aphid spray</b> (late March-April) <sup>7</sup>	++	--	--	--	--
<b>Post-bloom</b>	<b>PTB “May” spray</b> timed by Deg Days after biofix <sup>7</sup>	--	++	--	--	--
<b>Post-bloom</b>	<b>Scale crawler spray</b> based on monitoring <sup>7</sup>	--	--	++	--	--

1. Determine the need to spray for aphid based on:

- A regular history of some aphid pressure in an orchard may suggest a need for annual treatments.
- No history of aphid infestation suggests “wait and see” strategy could be effective.

2. PTB feeding on fruit can damage fruit in-season and is an entry point for brown rot.

3. Scale is not always a problem in prunes, but can be a major problem if not controlled when populations build. Use dormant spur sampling to determine the scale population in your orchard and what treatment is needed.

4. Indicates relative risk of runoff from orchards to surface water and harm to aquatic life (fish and their food chain). “++” = significant risk, “+” = relatively less risk, and “-” indicates relatively little to no risk.
5. This spray mix is very effective on indicated pests in late dormant or delayed dormant (Feb. 1 to pre-bloom), but does not move bloom date and/or must be reported to Ag Commissioner’s office to avoid bee kills after Jan31.
6. Cannot be tank-mixed with captan or chlorothalonil (Bravo®, etc.) fungicides.
7. Check with your packer to make sure anything sprayed is on their “OK to spray” list.

**Sources:**

Fall/spring aphid control:

- <http://ucanr.edu/repositoryfiles/2005-45.pdf-79161.pdf> ; <http://ucanr.edu/repositoryfiles/2008-64.pdf-79197.pdf>
- <http://ucanr.edu/repositoryfiles/2010-50-85739.pdf>

Dormant aphid control:

- <http://ipm.ucanr.edu/PMG/r606301711.html> (check to make sure registrations of listed pesticides are current)

San Jose Scale control:

- <http://ipm.ucanr.edu/PMG/r606302111.html> (check to make sure registrations of listed pesticides are current)

Peach twig borer control:

- <http://ipm.ucanr.edu/PMG/r606300211.html> (bloom treatments other than B.t. are not currently recommended)



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