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FRUIT AND NUT NOTES

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1754 Walnut Street, Red Bluff, CA 96080 Phone (530) 527-3101 Email: rpbuchner@ucdavis.edu

Richard P. Buchner
UC Farm Advisor -Orchard Crops, Tehama County Director

Prepared by Cindy McClain
Office Manager/Ag Secretary

IN THIS ISSUE:

SACRAMENTO VALLEY REGIONAL PRUNE NEWSLETTER

- **What can you do now to produce the largest prunes possible?**
  Bill Krueger, UCCE Farm Advisor - Glenn County
- **Gopher control….better late than never!**
  Joe Connell, UCCE Farm Advisor - Butte County
- **Fruit Brown Rot Management for Prunes**
  Franz Niederholzer, UCCE Farm Advisor - Sutter/Yuba Counties
  Jim Adaskaveg, Professor of Plant Pathology - UC Riverside
- **Wrapper Burn**
  Joe Connell, UCCE Farm Advisor - Butte County
- **Harvest Timing for Sutter**
  Carolyn DeBuse, UCCE Farm Advisor - Yolo/Solano Counties
- **Prune-Timed Searches for Webspinning Mites**

What can you do now to produce the largest prunes possible?

Bill Krueger, UCCE Farm Advisor, Glenn County

With a current Prune Board estimate of 160,000 tons, an estimated carryover of 40,000 tons and a large supply prunes in South America (120,000 tons) many of them small, it is easy to see that there will be no money in producing small prunes. Sunsweet has informed it's growers that it will not pay for D size or smaller (96 count per pound or smaller) prunes. Delivering prunes of this size or smaller will have no value but will incur hauling and drying costs and industry assessments. What can be done at this point to get the best out of what you have? Management considerations:

Nutrition. Make sure that your crop is adequately supplied with potassium (K). Heavy crops can draw down potassium levels rapidly. Leaf levels have been observed to go from 1.6 per cent K in July to 1.0 by early August under heavy cropped conditions. If the crop runs short of K before the prunes are ready to harvest dry size could be reduced. Foliar potassium sprays can be applied through July and are advisable on heavily cropped trees with marginal K levels.

Irrigation. Make sure your orchard is well irrigated during July. Water stress before fruit maturity can adversely affect fruit sizing. While it may not increase sizing potential, mild to moderate levels of water stress near harvest in August can help achieve desirable sugar content in fruit and reduce "dry-away" (drying costs). Developing moderate stress shortly before harvest may improve drying ratio by beginning the drying process on the tree.

Harvest timing. Ideally prunes are harvested when soluble solids reach 24% and fruit pressure drops to 3-4 lbs. Green tonnage peaks at this point and begins to decline as fruit drop increases. Dry tonnage decreases to a lesser degree because it is partially offset by an improved drying ratio. Harvest costs are reduced with later harvest due to reduced green tonnage (assuming costs are per green ton and not per acre or per tree). Blocks with light crops may achieve good soluble solids while fruit is still greater than four pounds pressure and are good candidates for earlier harvest. Blocks with heavy crops will generally have better returns when harvest is later than normal. Risks of later harvest include weather events, such as high winds, which can increase drop, potential increased losses if brown rot is developing in the orchard, and limited harvester and dryer capacities which can further delay harvest.

Sizing at harvest. Harvest sizing is a last resort for improving fruit size in your crop. Given the current crop and market conditions growers with large crops of small fruit should consider this option to help reduce harvest cost and improve the value of the remaining fruit. This can also help the industry improve the ability to market the 2010 crop by reducing the carryover and especially the supply of smaller less marketable fruit.

Points to consider with chain sizing.

- Sugar and pressure. Fruit with higher soluble solids will have a better drying ratio and result in larger fruit. As the season progresses fruit softens and continues to accumulate sugar so the opening on the sizer may need to be adjusted to avoid removing fruit with value.
- Keep sizers clean for proper functioning
- Don't overload sizers. It may be necessary to reduce harvest speed for sizers to function properly.
- Monitor discarded fruit by checking soluble solids and fruit sizes of dropped fruit or by drying and analyzing a sample to be sure that you are removing what you want to.

Gopher Control...Better Late than Never!

Joe Connell, UCCE Farm Advisor, Butte County

If you have an orchard where individual trees are yellowing, have thin canopies with small leaves, or lack of new growth, gopher damage is a possible cause. On some rootstocks, root rot or oak root fungus could also be possibilities and this should be checked out. If it's gophers, they can be the cause of significant ongoing tree losses. Gophers chew off roots and can chew off bark all the way around the trunk at the crown right down to the wood. If you dig around a sick tree and find the bark missing two or three inches below ground level, you can bet that a gopher is the culprit most of the time. If the orchard is weedy around the tree trunks, providing cover and protection, meadow voles can chew off bark at ground level girdling trees and causing a similar decline.

Gophers are active all year and this is still a good time to reduce their population. It's easy to see new signs of their activity when weeds are being controlled for harvest and new fresh mounds are evident. If you carry a poison dispensing probe with you and use it each time you see fresh mounds, you can sharply reduce the gopher problem in your orchard. Be persistent.

Gophers eat year around. If you do a good job of weed control in your orchard and you have active gopher mounds you can be certain the gopher will be feeding on your trees as harvest approaches. Gophers can damage any age tree. The easiest trees for a gopher to kill are first through fourth leaf trees because they can girdle them quickly. I've also seen 10 year old trees killed by gophers.

The longer gophers work on trees, the weaker the trees become. Oftentimes the damage doesn't become apparent until the year after the injury has occurred since it may take awhile for the root system to starve and decline, especially on older trees. Remember, leaves manufacture sugars that are translocated down through the phloem to feed the root system. When gophers chew off the bark the phloem pipeline to the roots is missing and the root system gradually starves.

If the gopher doesn't kill the tree and it's only partially girdled, it can be permanently weakened with the damaged roots or crown becoming avenues of entry for crown gall and wood rots. Wood rots weaken the structural strength of roots and the crown and contribute to tree losses in windstorms.

Gophers are a serious problem but they can be stopped. Don't pass up this opportunity to control gophers in your orchard by using a probe now.

Fruit Brown Rot Management for Prunes

Franz Niederholzer, UC Farm Advisor, Sutter/Yuba Counties
Jim Adaskaveg, Professor Plant Pathology—UC Riverside

Fruit brown rot can cost growers money in lost crop, off-grades of harvested fruit, and hand sorting fees. New fungicides can provide excellent protection and reduce disease, but integrated approaches are needed to optimize fruit brown rot management. . Fungicide choice is important because some fungicides are more efficacious than others and they can vary in efficacy at different times of the growing season based on their physical and chemical properties. For fruit brown rot management, application timings should be during early fruit development and within four weeks (1-2 weeks is optimal) of harvest, or just before a predicted rain as harvest approaches. Check with your PCA for the material and timing that best fits your orchard(s).

Not all orchards need a preharvest fungicide treatment for brown rot control. Fungicide sprays cost growers money in materials, equipment, time, and labor. Growers must decide if a preharvest brown rot fungicide is needed based on the history of the disease in the orchard (previous seasons), the amount of disease during bloom in the current growing season, any predicted wetness events from rain, irrigation, or dews within 3 to 4 weeks of harvest, and horticultural factors (crop density, nutritional status of the orchard, etc.).

If the orchard has very conducive conditions for disease, applications with even the best fungicide available will not eliminate brown rot from your fruit, but should avoid a possible disaster. For example, in UC research trials in 2008, Orbit + oil applied two weeks before harvest reduced brown rot damage from 80% on unsprayed fruit to just under 20% when the fruit were stored at 100% humidity for 5 to 7 days after harvest.

Minimize the period of time between harvest and fruit dehydration to prevent disease development on harvested fruit within the bins. Brown rot can develop quickly on ripe, harvested fruit that may be injured during mechanical harvesting. Check with your packer about market concerns with fungicide residue on fruit.

Several important factors make an orchard more vulnerable to fruit brown rot infection:

- Fruit wetness at harvest or as harvest approaches. A single rain shower can result in devastating infection levels. Long irrigation sets can also increase orchard humidity and the duration of dews during periods of temperature extremes (e.g., warm days and cool nights). Continuous wetness of 7-10 hours under warm conditions constitutes an infection period for fruit brown rot.
- Fruit damage (split fruit, insect damage, etc.). Prevention of insect damage (peach twig borer, leafroller, etc.) is key for a high level of control of fruit brown rot. Split fruit is also more vulnerable to brown rot infection than undamaged fruit. Check for split fruit and insect damage when considering a preharvest fungicide application. Damaged fruit is more difficult to protect with fungicides than “clean” fruit.
- Late harvest. Growers must balance the risk of increased brown rot infection with the economic benefit (lower dry away) of harvesting at lower fruit pressures.
- Clustered fruit. Incidence of fruit brown rot infection is higher for clustered fruit than for solitary fruit. Fruit injuries (rubbing damage may cause a thinner "skin" or cuticle or surface abrasions from dust particles), insect damage, and longer drying periods after rain or dew are possible reasons for increased risk of brown rot infection for clustered fruit.

- High disease pressure. Old fruit mummies or blossom infections in an orchard increase disease spore numbers and infection risk. Unfortunately, by July, there is no way of economically reducing orchard brown rot spore counts. Early in the season, take steps to reduce preharvest disease pressure by 1) using an effective bloom spray program and 2) remove and destroy fruit mummies. Even with a good bloom spray program, fruit rot infections can develop when rain or high humidity occur as fruit mature.
- High nitrogen (N) levels. Avoid excess N fertilization. Fruit from trees with excessive nitrogen levels are more prone to fruit brown rot infection.

If a preharvest fungicide for brown rot control is needed, proper fungicide selection and application practices are important to obtain the best control possible.

- UC research shows that Group 3 fungicides (Orbit, Indar, etc.) and Pristine (Group 7 + Group 11 fungicides premixed) are more effective in reducing fruit brown rot damage than Group 11 (Gem, Abound, etc.) or Group 9 (Vangard, Scala, etc.) fungicides.
- Adding 2% summer oil (415 grade) to the spray tank with fungicide greatly improves brown rot control by providing improved coverage of the fungicide on the fruit. Two gallons of oil per 100 gallons of water = 2% oil mixture. Don't use oil on fresh market prunes. The oil will take the waxy bloom off the fruit. A preharvest oil spray will not affect the appearance of dried fruit.
- Good spray coverage is essential for good disease control. Remember that higher gallonage per acre and slower application speeds improve fungicide coverage. Low volume applications or spray equipment (e.g., electrostatic) are not recommended for preharvest treatments. Every-other-row sprays give poor coverage and increase the risk of fungicide resistance.
- Alternating fungicide classes between sprays also decreases the chance of fungicide resistance developing. An example of one possible fungicide rotation program for a prune-growing season is:

  Green bud spray -- Group 9 fungicide (e.g., Scala or Vangard)

  Full bloom spray – Group 2 (e.g., Rovral, Iprodione, Nevado, etc.) [plus captan or chlorothalonil (Captan and Bravo, Equus, or Echo, respectively) for scab control]

  Preharvest spray – Group 3 (e.g., Orbit, Bumper, Indar, etc.), Group 7+11 (e.g., Pristine), Group 17 (e.g., Elevate) [Note: Group 3 and Group 7+11 also may be used for managing leaf rust].

In this example, no fungicide group is used more than once in a season, and strong materials like Group 3 and Group 7+11 could be included in rotation as pre-harvest treatments in years that are conducive for brown rot on fruit.

Wrapper Burn

Joe Connell, UCCE Farm Advisor, Butte County

When new trees are planted late or weakened in some other way, wrapper burn can become a problem when we have an early hot spell. I've visited several orchards this spring with both prunes and almonds experiencing this problem. What is wrapper burn? It's essentially a sunburn injury that occurs near the top of tree wraps on newly planted trees when there is little shoot growth and an insufficient transpiration stream operating to cool the trunk. We had two hot spells this spring, either of which may have contributed to the problem. April 19th through 22nd had high temperatures from 88 to 94^{o}F and May 15th through 18th reached daily highs between 89 and 98^{o}F at the Durham CIMIS weather station.

The trunk from the top of the wrapper down about 4 inches is the area usually killed by the sunburn. This area receives both direct and reflected sun that bounces around inside the wrapper. The trunk more than 5 inches below the top of the wrapper is usually fine. The top of the tree, when girdled by wrapper burn will die back, but if the tree is healthy, it will sprout from below the injury and can grow a new top. Train the strongest shoot up alongside the trunk using the dead tree top above the wrapper as a stake. Pinch the tips on any competing shoots to favor the development of a strong trunk. Once you have sufficient height, pinch the tip of the strong shoot to stimulate growth of primary branches. When you prune this winter remove the old dead trunk above the point where the new trunk arises.

If a damaged tree makes reasonably good growth you're usually ahead by keeping it rather than replanting. By next spring it will have had a year to establish a root system and should start out strong compared to a new replant.

The wrapper burn problem can be avoided by white washing the trunks of newly planted trees before placement of the cartons. White interior water-based paint diluted with water 2 or 3 to 1 (water to paint) will provide the needed protection. If you use paint alone, be sure to white wash all the way down to ground level. Most of the time, cartons alone provide the needed sunburn, herbicide, and rodent protection but if you're planting late you might want to consider white washing as additional insurance against wrapper burn.

Harvest Timing for Sutter

Carolyn DeBuse, UCCE Farm Advisor, Yolo/Solano Counties

The new Sutter prune variety is in its early years of planting and harvesting. We are now working on learning how to harvest, dry and handle this variety to capitalize on its best potential and avoid problems. The positive qualities of Sutter are that it averages fruit sugars 2 ° Brix higher than French grown at the same location and it harvests 7-10 days earlier than French allowing growers to extend their harvest. It makes a very high quality prune when handled correctly. If you follow the traditional harvest parameters for harvest timing of French, Sutter will have problems in the drying process. French harvest begins when the average fruit internal flesh pressure is 3-4 pounds per square inch (PSI). Sutter harvested at this pressure was found to slab and bleed on the drying trays making it hard to clean the trays and rendering the final product unsuitable. When Sutter is harvested at a higher pressure the prunes have dried well with a high quality end product.

Last year Sunsweet, the UC Dried Plum/Prune Development Program, and UC Cooperative Extension experimented to fine tune Sutter's harvesting parameters and drying protocol. The testing included two harvests at different flesh pressure, 5-6 PSI as a high pressure group and 3-4 PSI as a low pressure group. Another experiment tested two drying temperatures to see if the skin breakage could be minimized by lowering the temperature. The two drying runs were at 185°F for an average of 18.75 hours compared to 175°F at 20.5 hours. A dried quality evaluation was used to assess the best harvest time and drying practices.

It was clear that fruit harvested at a lower pressure showed more skin breakage and slabbing than the fruit in the higher pressure group. Actual off grade numbers did not show a difference between the two groups but by visually inspecting the fruit you could see the increased slabbing and stickiness of the lower pressure group.

The two different drying temperatures showed no differences in dried fruit quality. This is good news because it means that Sutter can be dried in the same tunnels with the same drying timing as French.

Bottom Line: The recommendation of the industry and the UC Dried Plum/Prune Development Program is to test the internal flesh pressure of Sutter before it feels soft to the touch. Testing should be done regularly as the fruit nears maturity. For the best quality fruit begin harvesting Sutter when flesh pressure is between 6-7 PSI and complete harvest before the pressure drops below 4-5 PSI.

This may feel too early but you will not regret it. Sutter will be dried and in the bin before your French is ready to harvest. Your harvest efficiency will increase as will the final quality of your Sutter dried fruit.

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Cooperative Extension
University of California
1754Walnut Street
Red Bluff, CA 96080
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