



TREE AND VINE NOTES



APRIL 2001

ALMOND BUD FAILURE (BF) – “CRAZY TOP” (Hendricks)

This is a bad year for “crazy top” in Carmel, and many Nonpareils are showing it this year. Some of the varieties in which bud failure has been prevalent and severe are Jordanolo, Merced, Harvey and Carmel. Nonpareil bud failure has been less common in recent years than it was in the ‘60s and ‘70s, but now we are again seeing more in Nonpareil. The Peerless, Price, Thompson and Mission seldom show BF. It has not been reported and verified in Butte, Padre, Sonora, Ne Plus Ultra, Fritz, and Monterey, but this is no assurance that BF will never be seen in these varieties.

What causes bud failure? Bud failure is a genetic disorder. Bud failure occurs when a susceptible strain of a susceptible variety is subjected to heat and stress. Tests show that the higher the average summer temperatures, the more rapidly BF symptoms develop and the more severe BF will become. Research indicates that the rate of BF development is directly proportional to the accumulation of heat units from temperatures above 80°F. The most severely affected buds are those that developed during periods of extreme heat. Last June we had a few days of over 100°F in mid-June, which probably caused much of the BF we see now. Some research and field experience indicates that water stress may also increase BF the following year. This may be due to higher bud temperatures on stressed and partially defoliated trees.

What can be done with bud failure? When trees express bud failure in the first 5 or 6 years of the orchard, the affected trees should be replaced. After the age of 6 or 7 years, trees should be allowed to produce until they no longer pay their way. In old orchards that will be recycled in 4 to 5 years, it doesn’t pay to replace trees. Budding or grafting BF trees with good wood is possible, but it may not be economically successful or practical.

Ask your nursery about the budwood source and how it has performed in the hotter growing areas. But remember that past good performance of a budwood source is only an indication, but not proof of good future performance.

The University of California publication, **Almond Production in California**, publication 3364 has two chapters on bud failure and variety selection. Every almond producer should have a copy of this publication. Dr. Dale E. Kester's 25-page final report to the Almond Board on the

Noninfectious Bud-Failure Project is accessible in pdf format on the Web at:

<http://fruitsandnuts.ucdavis.edu/alm2.html>

ALMOND LEAF SCORCH – A RENEWED THREAT TO ALMONDS? (Hendricks)

Almond Leaf Scorch (ALS), sometimes called “Golden Death” has been seen in past years in the Sacramento Valley, and as far south as Merced in 1997, but little has been seen since. This disease has been more a curiosity than a real threat to the almond industry. ALS is most commonly seen on the Peerless variety, but is occasionally seen in Nonpareil as well. Now, with the Glassy-Winged Sharpshooter (GWSS) invading the Central Valley, and with its ability to transmit this disease, will ALS become a renewed threat to almonds?

Almond leaf scorch is caused by the bacterium, *Xylella fastidiosa* which also causes Pierce’s disease in grapes and alfalfa stunt. A different strain of *Xylella* causes Oleander scorch. Transmission of the bacterium is thought to be primarily by the small red-headed and green sharpshooter leafhoppers which feed on the leaves. The Glassy-Winged Sharpshooter is much larger and will feed on shoots and small limbs. The threat is that this pest will be a very efficient vector of “Golden Death”. Spread is usually from weedy alfalfa and irrigated pastures into almonds, and fortunately there seems to be very little tree to tree spread. Many common weeds and riparian plants are hosts in addition to alfalfa, including Bermudagrass, rye, fescues, watergrass, blackberry, and nettle.

The typical symptom of this disease is a very bright scorching of the leaf with a yellow or “golden” band showing between the green leaf tissue and the brown tip of the leaf. In late spring and early summer, the leaves can be quite bright, thus the term “Golden Death”. The banding and burn is somewhat irregular and more marginal than is salt burn. But in the late summer infected trees show a more brown colored leaf burn, which is very easily confused with salt burn. A leaf nutrient analysis will detect high salt levels if salt is the cause for the burn. The Almond IPM Manual has some photos of ALS.

Peerless seems to be an indicator variety, and can be infected within an orchard where other varieties are not. Infected trees can survive for many years, but they may bloom and leaf out slightly later than healthy trees, they become stunted, have reduced terminal growth, and are less productive than a healthy tree.

At this time nobody knows whether “Golden Death” will become a new threat to almond production. But almond growers should watch for any symptoms of ALS this spring. Report any suspicious symptoms to the Agricultural Commissioner or to our office.

ALMOND RUST (Hendricks)

Almond rust, which is caused by the fungus *Tranzschelia discolor* usually causes concerns only in young almonds, but it has become a serious problem in some older almond orchards in recent years. Rust is seen in almond, prune, and peach, but the same rust disease is caused by different strains of the same fungus in the various tree crops. Rust begins infecting leaves in late spring. High humidity, rains, and prolonged irrigation can all contribute to infection. Spores which form on the under side of the leaves look like little patches of iron rust. There is no threat to the nuts, but rust causes defoliation that can vary from minor in many instances to severe in some orchards. Severe defoliation can result in reduced vigor and poorer yield next year.

If you have experienced rust problems in past years, be prepared to treat. Wettable sulfur is relatively cheap and usually effective if applied before infection begins. Sulfur also can effectively control peach silver mite where it has been a problem in some orchards. Other fungicides such as Abound® (Syngenta) and maneb can be more effective for rust than sulfur, even after the infections have begun. Plan your rust control program based upon the severity of the disease in your orchard in past years, and closely monitor this season.

NITROGEN CALCULATIONS IN ALMOND (Hendricks)

Annual leaf analysis for all orchard blocks is a very important tool for correction of deficiencies, but also to avoid excessive application of nitrogen fertilizers. Nitrogen contamination of groundwater is a real problem, both from the excessive use of nitrogen fertilizers and from other sources. Leaf analysis will help growers to keep the N in the optimum yield range, without excessive fertilizer application.

A new tool has been developed by Drs. P.H. Brown, Q. Zhang, and Max Stevenson at the University of California, Davis to help growers determine the optimum amount of nitrogen (N) to apply to almond orchards. This worksheet runs on Microsoft Excel and it calculates the N requirement for almonds based upon the yield history, current conditions, and previous N applications. It can be used to calculate both the timing and rate of fertilizer application required to achieve the optimum yield without using excess N. Site specific information is required for accurate projection of the N requirement for each orchard block. The data used in this model was derived from exhaustive tree-N budget determinations. You need Excel 97 or later to run this simple, friendly model which can be downloaded free from the web at www.sarep.ucdavis.edu/grants/reports/brown/nmodel.html. Give it a try!

FROST IN GRAPES (Norton)

In Merced County we had localized damage in cold, low areas and in vineyards that were not prepared properly. In the Delhi area there was scattered damage - especially to Thompson seedless variety. In most cases blocks that had dry freshly cultivated soil in the middles and tall weeds in the vine row had the worst damage. Vineyards nearby that had closely mowed cover crop or bare, firm, moist soil, had little damage even if they were in low areas. Growers who had the ability to do so and applied water during the frosty mornings very little or no damage at all.

Even if growers do not have the ability to wet the vineyard floor prior to frosty nights they should try to eliminate all weeds under the vines and have bare firm soil. If they have a cover crop, it should be closely mowed with as little residue remaining on the surface of the soil as possible. This means mowing far enough before frost season for the residue to break down. The idea is to create a condition where the moist soil can absorb heat during the day and radiate it at night.

Below are some possible frost scenarios going from warmest to coldest:

(Warmest condition)

bare, firm, wet soil

wet, closely mowed cover crop

bare firm dry soil

dry, closely mowed cover crop

dry, freshly disced soil

tall cover crop or weeds

(Coldest conditions)

INFORMATION ON REDUCING BACK INJURIES AVAILABLE

The National Institute for Occupational Safety and Health has a new publication out entitled [Simple Solutions: Ergonomics for Farm Workers](#). Call 800/356-4674 or go to www.cdc.gov/niosh or e-mail pubstaf@cdc.gov and request publication number 2001-111.

HELP STOP EXOTIC PESTS FROM INFESTING OUR CROPS

California agriculture is under siege by exotic pest and disease from other nations. In almost all cases they are brought in by travelers or by unscrupulous people smuggling produce over state or national lines. You can help stop smuggling by calling the CDFA hotline: 800/78-CRIME (800/782-7463) If the smugglers are caught there may be a monetary award for the tip.

NEW PUBLICATIONS (available at your local Cooperative Extension office)

Chemigation in Tree and Vine Microirrigation Systems #21599

Costs of Pressurized Irrigation Systems for Tree Crops #21585

Pierce's Disease #21600 contains several color slides of both PD and glassy winged sharpshooter.

The Measure of California Agriculture 2000 gives a detailed explanation of how agriculture contributes to California's economy. Contains lots of charts and graphs.

FINAL CHILL HOUR COUNT for 00-01

The total number of chilling hours at or below 45F near Livingston was 1400 – very high compared to recent years. This compares to 973 for 00, 1344 for 99, 850 for 98 and 922 for 97. Other temperature stats for the winter:

1922 hours below 50F

247 hours below 32F

41 hours below 28F

0 hours below 20F

DYING LIMBS OR TREE DEATH (Norton)

In early spring if a limb dies or the whole tree declines or dies, a likely culprit would be bacterial canker. If the tree starts to yellow and die after the weather gets warm or hot it is more likely crown or root rot. In either case you need to rule out other causes such as gophers, voles, mice, and oak root fungus. Single limbs that die may be due to fungal canker diseases such as cytospora, ceratocystis or eutypa. Consult the IPM Manual for your particular crop for more information about all these diseases.

AVOIDING NEIGHBOR PROBLEMS WITH SULFUR DUST (Norton)

Applying sulfur dust is an effective way to control powdery mildew in grapes but it can create neighbor problems if not done in a conscientious manner. The CA Sulfur Task Force has developed some practical guidelines to help us reduce complaints from neighbors and calls to local air pollution officials:

Check wind speed and direction.

Never apply in winds above 10 mph.

Create a buffer zone between applications and sensitive areas.

Look for people moving around buildings near application site.

Shut off equipment when making row turns.

For a free brochure call 916/646-9951.

Potassium Nitrate Foliar Sprays

Prepared by: Bill Olson, UC Cooperative Extension, Butte County

Pale green leaves in the tops of prune trees occurring in early June which are now yellow, burnt leaves is a common occurrence this year due to the generally heavy prune crop. This symptom is called potassium leaf scorch and is caused by potassium deficiency. **The bad news is that July is when the most potassium is pulled from the leaf to the fruit—so, in terms of yellow, burnt leaves, you haven't seen noting yet!**

There is virtually no way prune tree roots can pull enough potassium out of our generally deficient soils to satisfy a heavy crop of prunes.

In heavy crop years like this, foliar sprays of potassium nitrate are often needed to supplement any potassium applied to the soil. You should be able to tell now which areas need help and which do not just by looking at the leaves in the tops of the trees.

Over the years I have presented a lot of data to prune growers that shows how good potassium status trees can increase fruit size, reduce dry-away ratio and increase tonnage. This data was based on soil-applied potassium. Foliar applications will go a long way in keeping the trees green, thus reducing sunburn damage and dieback. This alone could be worth applying foliar treatments.

Unfortunately, foliar potassium sprays are not long-lived, 2 or 3 weeks at best, and need to be repeated for best results.

If you have not applied any foliar potassium nitrate sprays this season or applied some in April-May and now have potassium-deficient trees, I would encourage you to apply some treatments between now and early August. We are nearing the final growth stage for prunes and these treatments will help keep leaves green and may help prune size. These treatments will not turn yellow leaves green but will keep the remaining green leaves-green.

I have seen some 20-lb. Per acre applications of potassium nitrate give little improvement so I suggest you use our recommended rate of 30-32 lbs. Per acre, or a dilute application of 8 lbs. Per 100 gallons of water.

Other Causes of Yellow Leaves

If you are on a good potassium program but still have yellow leaves there may be other causes for the yellow leaves. This year I have seen yellow leaves also associated with: Rodent problems (Gophers and voles), ground mealy bug, and root and crown rot.

UC Farm Safety Program

Protect Your Hearing

Farm workers are often exposed to the loud noises of farm machinery for prolonged periods of time. This can eventually lead to hearing damage. In fact, hearing loss is considered a major occupational health issue for farmers. Prolonged exposure to any noise, from the intensity of a shotgun blast to a properly muffled tractor pulling a baler, can lead to permanent hearing loss.

To give some perspective on sounds and their noise levels, refer to the chart at the top of Page 2. Noise that is 85 decibels or greater can affect your hearing if you work around it more than 8 hours a day.

Ironically, noise-induced hearing loss starts silently. By the time those around you notice you can't hear as well, the damage may be irreversible. There are two actions you can take to avoid damaging your hearing: (1) try to control the sound around you, and (2) reduce your exposure to sounds.

Controlling the sound environment – Make sure that machine parts are well lubricated. Repair or replace worn, loose, or unbalanced chains, belts, and other parts. Replace faulty mufflers, using replacements that meet or exceed the manufacturer’s recommendations. Whenever possible, use machines that have cabs and keep the cab windows closed.

Reducing exposure to sounds-- Earmuffs and earplugs block dangerous sounds but still allow you to hear. Whichever form of hearing protection you choose, look for a noise reduction rating of 25 or higher. Also, read the label and be sure to follow the directions for proper use.

Decibel

<u>(Noise) Level</u>	<u>Sound Source</u>
15	Threshold of hearing
50-60	Normal conversation, background music
75-80	Road traffic, vacuum cleaner
80-85	Average interior of modern tractor cab
90+	Danger level
90-100	ATVs, tractors, combines with no soundproof cabs
115-120	Chain saw, squealing pigs, loud rock music

How can you tell if the noise you are exposed to is hurting you? You many have a problem if you hear ringing or other noises in your ears, if you cannot hear high-pitched or soft sounds, or if you have difficulty hearing people when they talk to you. If you experience any of these problems, have your hearing tested.

Protect your hearing on the job. Follow the recommendations provided in the insert to this newsletter.