



TREE AND VINE NOTES



May 2007

Early to mid season irrigation considerations related to dried plum fruit quality

By Bill Krueger UC Cooperative Extension, Glenn County

With a dry winter and early warm weather irrigation season got an early start this year. It will be important to pay close attention to tree water needs, especially early to mid season to see that fruit quality is maximized and fruit quality problems related to water stress are avoided or minimized.

To maximize fruit size it is critical that trees be well supplied with water during the early growing season and into July. To ensure that trees are adequately supplied it is important to know how much water they will use. Evapotranspiration (ET), a measure of tree water use, is a combination of evaporation and transpiration. It will typically be 0.25 inches per day and can be as high as 0.33 inches per day during peak water usage. ET values can be found in local newspapers, on the California Irrigation Management System web site at <http://www.cimis.water.ca.gov>, or the Tehama County web site at <http://ceteama.ucdavis.edu>. Moisture monitoring for irrigation management can be soil based, weather based or plant based. For more information on moisture monitoring and irrigation scheduling contact your UC cooperative Extension Office.

End cracking of prunes is caused by moisture stress followed by irrigation and normally occurs from spring to mid summer (especially May and June). To avoid end cracks make sure that trees do not become water stressed during this time period. From mid July on little end cracking will occur even if stressed trees are irrigated. Additionally, prune trees infested with mealy plum aphid will be more prone to end cracking than fruit from uninfested trees.

Side cracking results from internal water pressure building in the fruit during the night in combination with high humidity and dew such that internal water pressure exceeds the elasticity the skin. Side cracking is generally greater on larger fruit since they often have greater diurnal changes in internal fruit pressure or their skins are less elastic since fruit are more exposed. Side cracking begins about a week after the cheek diameter exceeds the suture diameter and continues for about three weeks. This is usually in early through mid July. Cool weather during this time will greatly increase the number of side cracks. Some growers try to minimize side cracking by avoiding irrigation around the 4th of July.

Blue Prune Drop and Leaf Scorch (heat damage) is occasionally seen in Central Valley prune orchards and was a significant problem in some orchards last year. It often occurs when cool spring weather is followed by a rapid onset of high temperatures. The sunny side of exposed prunes develops premature color, may be sunken or flattened, and fruit can drop prematurely. Leaf scorch may develop in leaves near damaged fruit. As the damaged leaves dry they often have darkened veins. Anything that reduces heat in the orchard will potentially reduce damage. Make sure that trees are adequately irrigated prior to onset of heat to insure maximum evaporative cooling.

Microirrigation System Maintenance

Dan Rivers, UC Cooperative Extension, Merced County

As with any permanent irrigation system, routine maintenance is important for keeping a microirrigation system operating at peak efficiency. This includes regular cleaning of filters and flushing of mainlines and laterals. By frequently checking your filter initially, you can settle in on a cleaning schedule that is based on water quality and irrigation frequency. A difference in pressure of 5 psi across a filter can also be a good indicator. Many systems are self-cleaning based on a pressure differential. And even with good filtration, materials get through that could potentially plug emitters. Again, frequent checking of mainline flush valves and hose ends for accumulated material initially can help you decide how frequently to flush these lines.

Occasionally it is necessary to add cleaning agents such as chlorine or acid to your microirrigation system. Irrigation water high in organic material can support biological activity in the distribution lines that could lead to emitter clogging. This is common with surface water sources and can be treated by chlorination with household bleach, calcium hypochlorite, chlorine gas or other available biocide materials. Different chlorine concentrations and treatment frequencies can be used depending on the amount of microorganisms present in the water. Help with determining these rates and with selecting injection equipment can be found at your local farm advisor's office or irrigation supply stores.

To inject chlorine, first flush accumulated debris from the lines and then inject the chlorine at the desired concentration for a long enough period to treat the entire system. This can be easily checked with a swimming pool test kit at the emitter furthest from the injection point. It is possible (and less time consuming) to make this test at the first emitter on the last lateral then calculating travel time through the lateral. This is a good time to check that your 2liter/hr emitters are emitting 2liters/hr. A 35mm film canister (harder to find these days) is convenient for taking this measurement as they hold 35ml and should fill in 63 seconds. Larger emitters can be upended into a larger container. Make a note of the total travel time for when you are applying fertilizers and other chemicals through your microirrigation system as this is important for making uniform applications. Also, any injection should be followed by a fresh water application of an equal or greater volume to flush the lines.

Groundwater sources are often high in mineral content which can precipitate out and clog lines and emitters. In this case it may be necessary to acidify the water to lower the pH to 7.0 or below. This can be with sulfuric, hydrochloric or phosphoric acid or a nitrogen fertilizer/sulfuric acid mix. It is easiest to add acid to a small sample of the irrigation water in the lab and with a pH meter or indicator dye determine the proper amount to add. Again, use the pool test kit or a pH meter to check this in the field when you are injecting. It may be necessary to lower the pH to 5.0 and let it sit in the lines for 24 hrs to clear precipitate clogged emitters. Be sure to follow this with fresh water to flush the lines. It is possible to damage emitters if you lower the pH too much or let it sit too long.

Also of note, lowering the pH of the water may help the chlorine to work better but be careful to inject them separately because mixing them together produces toxic chlorine gas.

**VARIETY DISPLAY AND RESEARCH UPDATE
SEMINAR**

8:00 – 9:00 a.m. Variety display by stone fruit nurseries, breeders and the USDA

9:00 – 10:00 a.m. Research Update Topic and discussion in the field

Mark your calendars for these dates:

Friday, June 15 Mites and miticides

Friday, July 13 TBA

Friday, August 10 Preventing fruit doubles, deep sutures and other disorders.

At the
Kearney Agricultural Center
9240 S. Riverbend Avenue
Parlier, CA 93648

For more information call:

Scott Johnson (559) 646-6547, Kevin Day (559) 685-3309, Ext. 211, Harry Andris (559) 456-7557, Brent Holtz (559) 675-7879, Ext. 209, or Bob Beede (559) 582-3211, Ext. 2737

JUST PUBLISHED

Organic Olive Production Manual

This manual provides detailed information for growers on production issues, plant nutrition, economics, pest and weed control, management of olive wastes, the conversion process, and organic certification and registration.

This manual has been developed as a supplement to the Olive Production Manual, 2nd Edition, (3353). Organic growers are advised to consult both publications as they develop and refine their production systems.

#3505 \$18.00

DIAGNOSING SPOTS ON APRICOTS

By Bill Coates, UC Cooperative Extension, San Benito County

There are a variety of spots that can show up on the surface of apricot fruits. The most common are fogspot, powdery mildew and shot hole disease. Fogspot begins as small purple or red spots. They tend to grow with time and the center of the spot may turn black. Fogspot does not form leaf symptoms. The larger fruit spots form scabs near harvest that lift up from the edges. There is currently no effective control.

Powdery mildew forms larger red or purple patches with white fungal mycelium present. These remain present at harvest. Shot hole disease is less common locally than the other diseases. Purple spots form on the leaves with a distinct yellow halo and tan colored spores in the middle. The spots drop out leaving a “shot hole”. Fruit will have purple spots that scab over. Effective fungicides are available for both powdery mildew and shot hole disease but they must be applied from bloom until pit hardening.

The Home Orchard Growing Your Own Deciduous Fruit and Nut Trees Chuck Ingels, Pamela Geisel & Maxwell Norton

This book was developed especially for use by backyard orchardists, rare fruit growers, and small-scale growers. It offers a fairly comprehensive look at standard growing methods, as well as some unique practices that enthusiasts have developed in recent years, some of which are not practical for the commercial grower.

#3485 \$25.00

New Free Publications Recently Posted to the Online Catalog

8218 **Citrus Bacterial Canker Disease and Huanglongbing (Citrus Greening)**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8218>

7266 **Pears: An Alternative Feed**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=7266>

8214 **Causes and Management of Runoff from Surface Irrigation in Orchards**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8214>

8215 **Managing Existing Sprinkler Irrigation Systems**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8215>

8213 **Measuring Irrigation Flows in a Pipeline**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8213>

8216 **Soil Intake Rates and Application Rates in Sprinkler-Irrigated Orchards**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8216>

8211 **Storing Runoff from Winter Rains**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8211>

8212 **Understanding Your Orchard's Water Requirements**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=8212>

Recently Updated Pest Note

7492 **Glassy Winged Sharp Shooter**

<http://anrcatalog.ucdavis.edu/InOrder/Shop/ItemDetails.asp?ItemNo=7492>

Cost Studies

UC Cooperative Extension has completed four new cost-of-production studies for growing organic walnuts, conventional walnuts, prunes (dried plums), and rice:

Sample Costs to Produce Organic Walnuts

Sample Costs to Establish a Prune Orchard and Produce Prunes

Sample Costs to Establish a Walnut Orchard and Produce Walnuts,

Sample Costs to Produce Rice

The cost studies are available online at <http://coststudies.ucdavis.edu> and at county UCCE offices.

LIGHT BROWN APPLE MOTH

By Bill Coates, UC Cooperative Extension, San Benito County

The light brown apple moth (LBAM) was first detected in the Bay Area on February 27 and has since been found in a number of Central Coast and Bay Area counties. This is a serious quarantine pest and quarantine areas have been established in Alameda, Contra Costa, San Francisco, Marin, and Santa Clara Counties covering 182 square miles. Quarantine areas are expected soon for San Mateo, Santa Cruz, (Soquel area) and Monterey (Prunedale, Royal Oaks area) Counties. This quarantine will “prohibit the movement of all nursery stock and host fruits and vegetables from the quarantine region unless it is certified as free from the pest by an agricultural official.”

What is the “light brown apple moth”? The LBAM (*Epiphyas postvittana*) is a tortricid leafroller moth similar to *Pandemis* moth, orange tortrix and fruit tree leafroller which already occur in the Central Coast. It is a native of Australia but also occurs in New Zealand, New Caledonia, Hawaii, the United Kingdom and Ireland. The larvae and moth are most similar to *Pandemis* moth in appearance. There is pheromone lure available for trapping the adult male moth for monitoring purposes.

What crops does it infest? Over 250 hosts for the LBAM have been documented. Almost all major fruit and vegetable crops can be infested and many ornamentals. Among locally grown tree crops; apples, pears, apricots, walnuts, avocados and citrus are specifically listed as hosts.

What damage does it cause? On fruit trees, the most significant damage is surface fruit feeding resulting in scarring, similar to the other leafrollers. Internal damage to fruit can also occur but it is much less common. The larvae can enter apple and pear fruits through the calyx. Internal damage has also been noted as a problem with apricots, peaches and walnuts. Leaf feeding damage is of lesser significance in tree tops. The overwintering larvae may bore out buds in late winter similar to eyespotted budmoth.

Why is it important? Other leafrollers have been effectively controlled through a combination of biological controls, cultural controls (thinning of fruit clusters) and the proper selection and timing of pesticide applications (both conventional and organically-acceptable) that control the pest without injuring beneficial parasites and predators. However, additional control measures for this pest may be needed on crops that currently receive few insecticide sprays such as apricots and cherries because the LBAM has multiple (3-4) generations per year. The LBAM also requires excellent spray coverage because it rolls leaves or hides in clusters of fruit. The other major problem will be that certain markets will not accept commodities from the quarantine areas or possibly the whole state. Florida has already imposed a quarantine on all California nursery stock.

How do you control it? The timing and efficacy of insecticide sprays in California have not been researched due to the recent arrival of the pest. Australian sources indicate most spray materials effective for codling moth control will control LBAM.

How do I find out more about this pest? The official California Department of Food and Agriculture web site is http://www.cdfa.ca.gov/phpps/pdep/lbam_main.htm. This site has descriptions of LBAM and quarantine maps. Internet web searches for “light brown apple moth” will give you a lot of other information from Australia and the United Kingdom.

NEW UC FIG VARIETIES

By Janet Caprile, UC Cooperative Extension, Contra Costa County

Two new fig varieties have recently been released by the University of California, Department of Plant Sciences.

Sierra was released in March of 2005. It is a medium to large size fig of the common type and needs no caprification (the need for pollinating wasps in order to set fruit). The fruit has yellow-green skin with amber pulp. The first or Breba crop is usually very light and so far has been of little commercial significance. The second crop is abundant, flavorful, attractive, and high quality and holds fruit size well into the fall. It has a tight eye that restricts unwanted insect entry into the interior. The dried product has amber pulp, is meaty, rich, flavorful and of very good quality. Fruit ripens approximately 7-10 days after Calimyrna fig. This fig was originally developed as a high quality fruit for drying but is also suitable for fresh market.

Sequoia is the newest cultivar which has been developed for the fresh market. The skin is yellow-green with reddish-amber pulp. It is a common type which needs no caprification. The Breba crop ranges from light to medium in volume and this first fruit is large in size with very good quality. The production of a saleable Breba crop gives this variety an advantage over Calimyrna, Brown Turkey, and Sierra that have few or no Brebas. The second crop of Sequoia is abundant with a large to medium size and it maintains unwanted insects from entering the fruit. The fruit flavor and quality is as good as or better than all other fresh market figs except perhaps Calimyrna (one of Sequoia's parents).

YEAR ROUND IPM PROGRAMS

The University of California has recently presented a series of **Year Round Integrated Pest Management Programs** for a number of commodities, such as alfalfa, tomato, grape, peach, nectarine, plum, pear, almond, and prune.

The new program are organized seasonally by plant growth stage and includes relevant information on a variety of production practices such as irrigation, fertilization, soil and leaf sampling. At each stage you will be reminded which pests to look for with link to the **UC IPM** Guideline for each pest. In the IPM guidelines you will find the detailed information needed to control the pest (material selection, rates, timing, etc).

To access the Year Round IPM Programs online visit <http://ucipm.ucdavis.edu>. Click on "**Agriculture and floriculture (Pest Management Guidelines)**", and then click on any of the crops in the "**New! Year-Round Programs**" box to the left. You will find a season by season list of activities. For some crops you will find a "**Year-Round IPM Program Annual Checklist**"

NRCS EQIP GRANTS

The Environmental Quality Incentives Program (EQIP) provides funds in a cost share basis to growers willing to adopt production practices that benefit the environment. In 2008, the Natural Resources Conservation Service (NRCS) may again offer a cost share program for growers that follow the Year Round IPM Programs in 2008. Interested growers should contact NRCS. 2008 plans should be presented before December 2007, but the earlier you contact them to develop your plan, the better.

Union Mild Etch in Almonds on Marianna Root

Union mild etch (UME) is a condition that affects certain almond varieties growing on one commercial rootstock—plum (Marianna 2624). It can significantly reduce tree growth and yield and, in some cases, kill trees. UME is usually seen in young trees—although the exact cause is not known. Researchers have not found a virus, root disease(s), or phytoplasma related to this problem. Symptoms begin in the late spring with yellowing leaves, leaf rolling and edge burning followed by leaf drop and, in some cases, tree death. The condition is called Union Mild Etch because affected trees show pitting and grooving of the stem (under the bark) at the bud union. UME is characterized by root starvation followed by weak scion growth or total collapse. Trees generally show symptoms for one or two years before recovering, although growth and yield may be reduced for years. Symptoms of UME have been reported in Butte, Carmel, Price, Mission, Peerless, Aldrich, and Sonora varieties.

Research results have produced two important pieces of information concerning UME:

1. Bud Source is not a factor in UME appearance in a block. Research by Joe Connell (UCCE, Butte County), Jerry Uyemoto (USDA), and Rich Rosecrance (Cal. State, Chico) tested 20 different ‘Butte’ variety bud sources to see if trees growing from one of the 20 sources showed more or less UME development from 1st through 4th leaf in a large field test at the Chico State. There was no difference in UME appearance between bud wood sources.
2. Excessive water in the growing season significantly increases the number of trees affected with UME in a block. In the field test at the Chico State farm, two irrigation treatments were established: adequate water with trees receiving enough water to match estimated crop water use (ETc) or excessive water with ranged from 20-250% more water than the adequately watered trees. By the second year of the study, 59% of over-watered trees compared with 27% of the adequately watered trees showed UME symptoms. Dramatically increasing the amount of irrigation water applied to mature (10 year old) Butte trees on Marianna 2624 can cause the development of UME and the death of many trees.

In Sutter County, especially around the Sutter Buttes, Butte almond trees have been hit especially hard by UME. The wet springs of 2003 and 2006 seemed to have been related to higher incidence of UME in north Sutter Buttes area—especially in orchards right up against the foothills. It may be possible that increased below-ground water movement (“subbing”) off the Sutter Buttes in wet springs may reduce drainage of spring rains and irrigation water in the root zone and so increase the chance of UME developing.

What can almond growers do about Union Mild Etch UME?

- Install soil moisture sensors (Watermark sensor, etc.) to watch soil moisture levels at different soil depths in and below the root zone.
- Irrigate plum rooted almond trees only when soil or tree moisture readings show it is time to water.
- Use only enough irrigation water “refill” the root zone.
- Keep below ground water (subterranean water) out of an orchard using ditches or drain tiles.
- Consider the orchard location and risk if UME when deciding what varieties to plant on Marianna 2624 rootstock.