HEALTHY FOOD SYSTEMS • HEALTHY ENVIRONMENTS • HEALTHY COMMUNITIES • HEALTHY CALIFORNIANS

University of California
Agriculture and Natural Resources
Making a Difference for California
Cooperative Extension Sutter-Yuba Counties

Orchard Notes

June 2011

This Issue

Submitted by:

Janine Hasey
UC Farm Advisor
Sutter-Yuba Counties

PEACHES

2011 – Another Long Growing Season for Cling Peaches

Predicting Peach Harvest

Peach harvest timing can be predicted based on the heat units accumulated driven by temperature the first 30 days after bloom. Temperatures those first 30 days are critical and what happens after that has a much smaller effect on harvest date. Weather near harvest coupled with soil, tree nutrition, water status, etc. can also have some effect on harvest date. On the average, we accumulate about 6000 growing degree hours (GDH) during the first 30 days after bloom. This spring we accumulated only 4,963 GDH, about 100 GDH less than last year which was also a cooler spring than normal. Therefore, we can expect a later than normal peach harvest like in 2010.

The table below lists full bloom dates, growing degree hours (GDH) 30 days after bloom using the Nicolaus CIMIS weather station, and the general harvest timing from 2003-2010. Also included is the prediction for 2011 which will probably be a couple days later than 2010 harvest timing.

Year	2011	2010	2009	2008	2007	2006	2005	2004	2003
Full Bloom	Mar 14	Mar 12	Mar 16	Mar 10	Mar 9	Mar 14	Mar 3	Mar 9	Mar 9
GDH_{30}	4,963	5,060	6,117	5,548	7,420	4,375	6,153	7,788	5,953
Harvest Timing	Predicting Later than normal	Later than normal	Slightly later than normal	Normal	Early	Very late	Normal	Very early	Normal

Sizing Fruit

The rate of early fruit development is very dependent on the weather; the warmer the weather, the faster the fruit develop with a demand for carbohydrates 5 to 10 times higher than during a cooler spring.

Anything limiting carbohydrate accumulation by the fruit can ultimately lead to smaller fruit. During cool springs like 2010 and 2011, fruit take much longer to develop and there is more time to accumulate necessary carbohydrates for fruit development and to obtain larger size. Sizing peach fruit is more difficult when (GDH) 30 days after bloom are above 6,000 whereas it is generally a better fruit sizing year when springtime temperatures are cooler and GDH_{30} is below 6,000.

Because of a predicted delayed harvest, there is greater potential for larger fruit size. Growers should be able to size more fruit this year. To maximize cling peach yield potential, thin trees just enough to have fruit slightly large enough to make No. 1 size at harvest. You've over thinned if you don't have around 2-3 percent No.2 fruit. In 2011, growers will be paid for 5 percent No.2 fruit on Extra Early varieties and 2 percent No.2 fruit on all other varieties. Reference date was set on May 23 for 2011.

Ripe Fruit Rot

Because of our wet spring and late season rains, you may be wondering what effect this could have on ripe fruit rot this summer. Ripe fruit rot caused by *Monilinia* or *Botrytis* can certainly cause damage if rain or dew occur before harvest when the fruit is ripening and is more susceptible. Preharvest infection and subsequent rot is increased where fruit are injured (e.g. insects or hail) or cracked. Additionally, quiescent or latent infections may occur on uninjured green fruit and develop into rot as the fruit ripens. Spores produced from blighted blossoms or twigs can infect young, green fruit but infections remain dormant until ripening.

Fungicides are preventive and must be applied to uninjured fruit before infections occur. To control *Monilinia,* sprays should be applied during the last 4 weeks before harvest as needed. Preharvest sprays cannot protect injured fruit. Fruit should be examined every other week after color break to detect any developing problems. Fruit rot is also managed by controlling blossom and twig blight during bloom and removing blighted twigs when possible, controlling peach twig borer and oriental fruit moth, and using appropriate (not high) levels of nitrogen fertilizer and water.

New Peach Cost Study

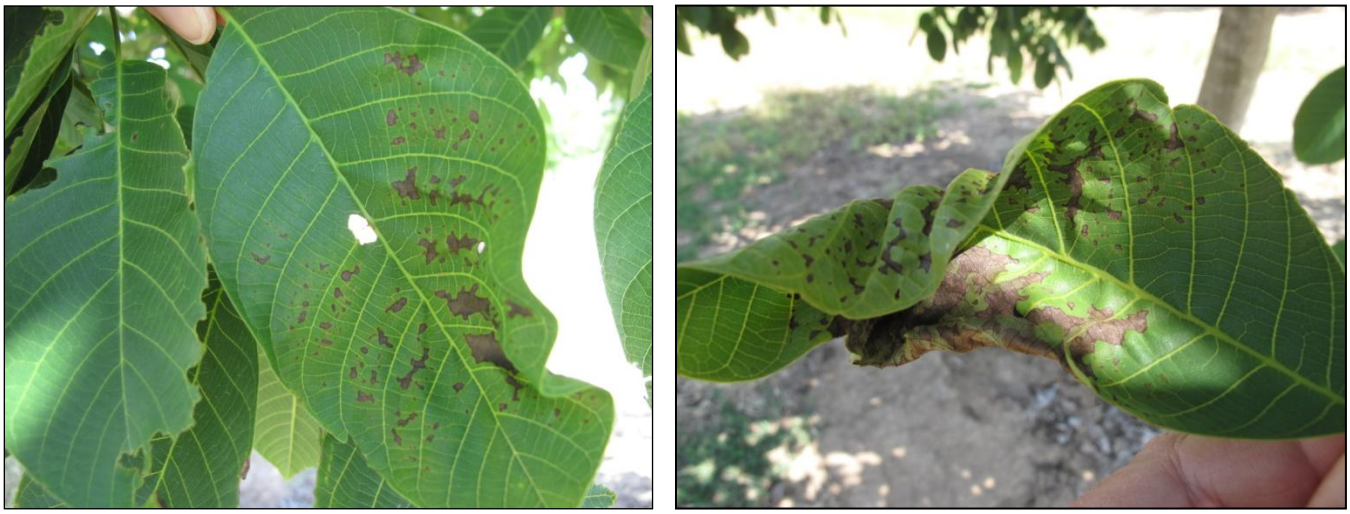
Sample Costs to Produce Processing Peaches, Cling and Freestone Extra-early Harvested Varieties, Sacramento Valley and San Joaquin Valley, has just been revised. It can be accessed at http://coststudies.ucdavis.edu. Hard copies will also be available from our office.

WALNUTS

Mesophyll Collapse

During the week of May 22nd, dark brown lesions between the leaf and veins and twisted and folded leaflets were seen in many area walnut orchards. The cause is mesophyll collapse, a physiological disorder from sudden temperature changes in spring when young leaves are expanding, or if developing foliage is exposed to hot, dry conditions or strong winds. Under these conditions, the leaf tissue between the upper and lower epidermis called the mesophyll, may lose turgidity and collapse. In my experience, I have seen this problem occur mainly in years with sudden temperature fluctuations such as we have had this spring. We reached high temperatures in the low 80's from May 10-13, dropping to the upper 50's and low 60's May 14-17, then back up to near 80° F May 19-21 before symptoms were seen. We have also had some strong winds but not hot, dry winds or conditions this spring.

Severely affected leaflets will drop but this disorder does not appear to affect the crop. It is thought that trees mildly zinc deficient may be more susceptible to mesophyll collapse. If you saw these leaf symptoms make sure to analyze for zinc in your July leaf sample.



Mesophyll collapse taken on May 24, 2011. *Photos by J. Hasey*.

Training Walnut Trees

There are many newly planted walnut orchards locally and what a grower does this first season is very important to the long term success of the orchard. First leaf walnut trees need constant vigilance once they start growing. The objective during the first summer is to properly train the trunk. The goal is to attain over ten feet of trunk growth in a standard spaced orchard and about seven to eight feet of growth in a hedgerow orchard. Once the shoot that will be the trunk is selected, tie it to the stake. Check trees frequently during the summer and continue to tie trunk up the stake as needed. The stake should be placed on the west side of the tree in our area so our north and south winds don't blow the tree into it. Keep other shoots pruned back since they contribute carbohydrate for increasing caliper growth and sunburn protection; don't let them compete with the trunk and slow its growth.

Check soil moisture frequently with a soil tube or auger and stem water potential with a pressure chamber if you have one. Avoid stressing walnut trees for water or they stop growing and it can take a few weeks for them to resume growth. However, with our late season rains, be careful not to start irrigating too soon. Typically, the key to great growth is frequent and light irrigations with short set times. Avoid saturating the soil to prevent crown and root rot diseases. Monitor carefully all summer and into early fall. Training guidelines are available at http://cesutter.ucdavis.edu/newsletterfiles/Sacramento_Valley_Walnut_News14487.pdf.

Walnut Husk Fly

It is time to hang walnut husk fly traps by mid-June. For information on walnut husk fly biology, monitoring, and spray timing, see this article on my website at
http://cesutter.ucdavis.edu/newsletterfiles/Sacramento_Valley_Walnut_News14498.pdf

Storm Related Damage

We have certainly been experiencing unusual weather for this time of year. Any grower whose orchard has suffered from storm related damage such as from hail should contact your Local Agricultural Commissioner's office to report it.

Hail damage on peach in Sutter County June 1, 2011. *Photo by Jan Kendel*.

What Do New Changes in Aluminum Phosphide Labels Mean for Burrowing Mammal Control?

By Roger A. Baldwin, UC IPM Wildlife Pest Management Advisor
UC Kearney Ag Center

Note: Roger discussed gopher and ground squirrel control at my April 14 field meeting. He is looking for grower participation in his survey.

The California ground squirrel (*Spermophilus beecheyi*) and pocket gopher (*Thomomys* spp.) are widely considered to be the two most damaging wildlife pests in California agriculture. Numerous techniques are available for controlling ground squirrels and gophers including trapping, anticoagulant baits, acute toxicant baits, and burrow fumigants. Trapping can be an effective method to remove small to medium size populations of gophers and ground squirrels but often becomes too time consuming for large acreage. Both anticoagulant (e.g., diphacinone and chlorophacinone) and acute toxicant baits (e.g., zinc phosphide) can be quite effective at controlling ground squirrels when used appropriately. These rodenticides are less consistent but can still be effective when baiting for pocket gophers. Baiting is typically considered the cheapest and least time-consuming method for controlling both gophers and ground squirrels. However,

there are potential concerns for non-target poisonings when using rodenticides which can limit their applicability in some situations.

Burrow fumigants, such as gas cartridges and aluminum phosphide, do not typically pose as great of a concern for non-target exposure as baits, and usually involve shorter application times than trapping. Aluminum phosphide is particularly effective at controlling gophers and ground squirrels. Recent studies on ground squirrels and gophers indicated excellent control for both species (reduction in ground squirrel population = 97–100%; reduction in gopher population = 100%). Aluminum phosphide is a restricted use material; specific guidelines must be adhered to when using this material. Additionally, fumigation is generally only effective when soil is moist. Therefore, fumigation is restricted to late winter and spring or following irrigation. Nonetheless, aluminum phosphide fumigation is a very valuable part of an IPM program for controlling gophers and ground squirrels; its continued availability to growers is needed to maximize control efforts in many situations.

Unfortunately, recent changes in aluminum phosphide labels have been implemented due to the gross misuse of this product that led to the death of two young girls in Utah. These changes include the following:

1. Use is strictly prohibited around all residential areas, including single and multi-family residential properties, nursing homes, schools (except athletic fields, where use may continue), day care facilities, and hospitals.

2. The products must only be used outdoors for the control of burrowing pests, and are for the use on agricultural areas, orchards, non-crop areas (such as pasture and rangeland), golf courses, athletic fields, parks, and other non-residential institutional or industrial sites.

3. Products must not be applied in a burrow system that is within 100 feet of a building that is or may be occupied by people or domestic animals. This buffer zone for treatment around non-residential buildings that could be occupied by people or animals has been increased from 15 to 100 feet.

4. When this product is used in athletic fields or parks, the applicator must post a sign at entrances to the treatment site containing the signal word DANGER/PELIGRO, skull and crossbones, the words: DO NOT ENTER/NO ENTRE, FIELD NOT FOR USE, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.

5. When this product is used out of doors in a site frequented by people, other than an athletic field or park (such as agricultural fields), the applicator shall post a sign at the application site containing the signal word DANGER/PELIGRO, skull and crossbones, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed 2 days after the final treatment.

Because of these changes, I have developed a questionnaire designed to develop accurate facts on various methods, including fumigation with aluminum phosphide, for controlling burrowing mammals in California. The information will be provided to registrants, the U.S. EPA, and others to help develop use policies, labels, etc. My primary objectives are to:

1. Identify the level of use of aluminum phosphide for various burrowing mammals in agricultural areas prior to the new aluminum phosphide label restrictions.

2. Identify how new aluminum phosphide label restrictions will alter use of a variety of control methods.

3. Identify the potential impact of the new aluminum phosphide label restrictions on burrowing mammal populations.

4. See if there is support to further increase safety for residents and other public bystanders by requiring a new Certified Applicator Category for use of aluminum phosphide fumigants for burrowing pest control IF such a category would ease restrictions set forth in the most recent aluminum phosphide labels.

The data collected should provide a much clearer picture of use patterns and importance of several methods, including aluminum phosphide, for controlling agricultural populations of burrowing pests in California. The survey can be accessed at the following web address: http://ucanr.org/sites/AluminumPhosphideSurvey/.

Two surveys are found at this website; one is for agricultural users, the other is for rodent control professionals who control burrowing mammals in urban/residential areas. Be sure you complete the appropriate survey. Once completed, the survey can either be: 1) saved and e-mailed to me, or 2) mailed to me via USPS: Roger A. Baldwin, Ph.D., UC Kearney Agricultural Research & Extension Center, 9240 South Riverbend Ave. Parlier, CA 93648, Phone: 559-646-6583, E-mail: rbaldwin@uckac.edu. If you do not have internet access, give me a call or send a letter and I will mail a copy of the survey to you.

I must emphasize the importance of your participation in this survey if you use aluminum phosphide for burrowing mammal control. Data needs to be collected and subsequent results provided to the pertinent regulatory agencies to show the importance of aluminum phosphide for burrowing mammal control. Otherwise, there is a real possibility that we may completely lose aluminum phosphide for burrowing mammal control.