



# your Lake County HORTICULTURAL NOTES

SEPTEMBER - OCTOBER 1995  
PART II

## !!! MARK CALENDARS !!!

contact us for details

**Oct. 31-Nov. 2      1995 UC WALNUT SHORT COURSE**  
UC Davis

**Nov. 29-Dec. 2      1995 UC PEAR SHORT COURSE**  
UC Davis

**December 13      IRRIGATION SYSTEM EVALUATION  
WORKSHOP**  
8:00-12:00 Impact and microsprinklers  
1:00-5:00 Drip systems  
Clear Lake Grange, Finley  
(more info upcoming)

**January 22-24, 1996 UC VARIETAL WINE GRAPE SHORT COURSE**  
UC Davis (more info upcoming)

## *EFFECTS OF THE 'GREAT FLOOD OF 1995'*

As the season proceeded after the water receded, it became apparent that nearly 60 inches of rain had taken its toll. Because the rains continued into bloom and many orchards/vineyards remained waterlogged through the spring, affected tree and vine root systems were debilitated, and in some cases, perhaps permanently damaged. Interestingly, crops responded differently and there was great variation among sites.



**PEARS** - In the Big Valley, pear trees seemed the most notably damaged. This is likely because they tend to be planted on the heaviest, most poorly drained ground. Despite their natural resistance to soil-borne disease, high water during bloom and early growth resulted in lack of oxygen, killing both existing and larger feeder roots and preventing new root development during a key time for root growth. This was illustrated in one case where a grower was concerned about poor shoot growth, nutritional deficiency symptoms (mainly **potassium**) and small fruit size. Backhoe trenches revealed stark contrast between trees in heavy, poorly drained soil and adjacent trees on lighter, alluvial soil. The large roots (1/4" and up) of the poor trees were orange under the outer bark, typical of anaerobic conditions. There were few fine feeder roots and those that had survived were often discolored at the tips. The soil profile was still a wet "slick" in late August, with only the top 18 inches or so fairly well drained and supporting decent roots. These trees were thus surviving on a very limited *working* root zone.

Adjacent trees on better soil had good shoot growth, no nutritional deficiency symptoms and normal yield and fruit size. The soil profile revealed uniform, well-drained soil and a deep, well-branched root system with numerous feeder roots. Inner root color was white rather than orange.

The backhoe revealed clearly different patterns. Translating this to future **management** means asking:

- Does *sprinkler frost protection* possibly exacerbate the problem? In some sites, would wind be a better choice? Does the risk of short term frost loss outweigh the possible long-term damage of applying excess water on poorly drained ground during a vulnerable time of year for root growth?
- Would *drain tile* in some sites alleviate chronic waterlogging?
- Would *nutrient applications*, especially potassium, be beneficial in the "healing" process, or would it be a useless investment if root recovery lags?
- **Most importantly**, should *irrigation practices* be modified to accommodate a limited healthy root system, i.e. is it analogous to "farming in a flower pot"? Related to this, should *water use be monitored* differentially in good and poor areas using gypsum blocks or some other means? (The answer to this is DEFINITELY YES!!!)

Of course, the economics of all of the above must also be considered. This is hard to do because it is unknown 1) how long it takes root systems to recover, 2) at what level of damage they will or will not recover and 3) what level of recovery will pay to invest in. Besides soil and water management, other compounding factors include tree age and initial health, rootstock type, insect damage impacts and diseases (i.e. oak root fungus).

**GRAPES** - In most cases, mature *healthy* vineyards emerged in excellent shape. Of course, there was some damage to some young vines and those already weakened due to winter injury or phylloxera. Generally, major vine growth began after the rains stopped and as the season went

on, most appeared to benefit from replenished deep moisture. Of course, there are symptoms of potassium deficiency here and there, but this may be attributed to variety, rootstock and crop load rather than the rains.

Variation among rootstocks did likely occur. In the rootstock trial at Kendall-Jackson, 5BB and 5C have consistently outperformed other stocks, largely because they have tolerated the heavy, poorly drained site. Growers who have noted growth differences related to rootstock should let me know; this would make an interesting discussion at winter meetings.

**WALNUTS** - Somewhat surprisingly, walnuts generally look good (the **trees** that is; nuts are a different story!). Most walnuts are planted on fairly good soil or well-drained hillsides. Dryland trees look especially good.

However, the high water did take its toll on individual orchards and already weakened trees. Similar to the pear example above, a section of one orchard exhibited delayed growth and pale, small leaves in the spring. The other section appeared vigorous and healthy. Backhoe trenches revealed a layered soil profile with a shallow, weak root system in the poor section versus deep, well-branched roots in the more uniform, well-drained part of the orchard. In this case, however, once temperatures warmed up in May, shoot growth responded well, indicating better drying conditions than in the heavy Big Valley adobe clay site. Also, nutritional symptoms differed in the walnut case; they were mainly manganese and zinc, which respond better to foliar applications than potassium. It was suggested to the walnut grower that 1) moisture status be monitored in both the good and poor areas of the orchard and 2) if at all possible, irrigation schedule be modified to accommodate differential water use.

The winter-spring of 1995 was hopefully exceptional. Growers can only wait and see how trees and vines will ultimately respond. If you would like help evaluating a particular situation, contact me.

## ***NONPRODUCTIVE CHANDLER TREES***

By now, most walnut growers have either read or heard about apparently healthy Chandler trees that chronically lack nuts. After reading the following articles, Chandler growers may want to mark any of their own suspicious trees before shaking. I would appreciate being informed of any such trees in Lake County.

### **I. OFF-TYPE CHANDLER**

Bill Olson, UCCE, Butte County

In 1986, a grower showed me a few Chandler trees that dropped most of their nutlets. Yield data confirmed that these trees only produced 10-20 percent as much as neighboring "good" Chandler trees. In 1988, we started taking a closer look at what was happening. In that year, we observed that 60 percent of the nutlets fell off the "bad" trees while only 27 percent fell off the "good" trees. Observations over subsequent years showed that the nutlet drop on the "bad" trees didn't

happen every year. In 1993, we grafted “bad” and “good” Chandlers onto the same trunks of 10 trees. 1995 was our first year to evaluate the nutlet drop on these grafts. Grafts from the “bad” trees dropped 62 percent of their nutlets while the nutlet drop from the “good” grafts was only 12 percent.

Over the years, many growers have called me about a small percentage (1-4%) of their Chandlers dropping excessive nutlets and not producing good crops. These growers, of course, wanted to know what the problem was and how to correct it.

#### **Lets look at what we know:**

1. Nutlet drop/poor production occurring on a small percent of Chandler trees.
2. Trees appear healthy and normal, if anything more vigorous than average.
3. Problem doesn’t happen every year.
4. When problem does happen, it happens on the same trees.
5. Not contagious, i.e. more trees don’t seem to get the problem in the orchard.
6. Affected graft wood moved to new site, on new trunk still has the problem, i.e. it can be spread by graft wood.

#### **What is the problem?**

Although a virus could be involved, we believe the problem is the result of a “bud-sport” or genetic disorder that has crept into the Chandler variety. There is no way to identify affected graft wood ahead of time. Mother Nature is responsible for this problem. Sometimes a bud-sport or genetic disorder can be desirable. For example, Ashley walnut is a lateral bearing bud-sport from the terminal bearing Hartley, Scharch Franquette is a more productive sport from Franquette. Sometimes they can be undesirable. For example, Bull Mission is a vigorous, low producing genetic disorder from Mission Almond.

#### **What to do:**

I recommend that you mark the affected trees in the spring and again when your shaker operator observes low productive trees when he shakes the trees. He should also mark highly productive trees. In this way, the affected trees can be top worked (grafted) over with wood from trees in your own orchard that you know are highly productive.

This year (1995) appears to be a bad year for this problem - remember it doesn’t occur every year - so it is important that you look for and **mark low productive trees this year.**

You may decide to observe these trees for a few years but remember, as trees get larger, they become more difficult to graft and the quicker you correct the problem the sooner these trees will start paying their way.

If you would like to talk to me about this please give me a call.

## **II. HANDLING OFF-TYPE CHANDLERS**

Bill Olson, UCCE, Butte County

In the last issue of Walnut Notes, I described the “Off type” Chandler problem we have been investigating for the past 10 years. I suggested these trees be identified and “top worked” with graft wood from your own orchard from trees known to be good producers. Some growers have indicated that they are going to simply “live with the problem” since it is only a few trees/acres (5% or less in our studies) and the poor production doesn’t happen every year (about 1 year out of 3 i.e. 1986, 88, 91, 95 from my records). I suggest that in most cases, these trees be top worked to good productive trees as soon as possible. Here’s why: from the data I have collected, if you have 5% of the trees affected, you will lose about 3600 lbs. per acre over 30 years production by “living with the problem”. By top working (which will cost \$50-75 per tree) as soon as the problem becomes apparent, you can cut these losses to about 800 lbs. per acre. The difference in income over 30 years would be about \$2500 per acre. The decision seems obvious to me but each grower may have circumstances that influence the decision, such as the number of trees affected, number of trees per acre and age of affected trees.

### ***WALNUT HARVEST CONSIDERATIONS***

In contrast to rain-phobic grape growers, walnut growers are anxiously waiting for a couple of good rains to promote hull split. Despite blight, downy spot and erratic nut set, there is a crop out there and nuts appear to be of good size.

Hartley and Chandler growers should pay particular attention to shaking practices. It is known that shakers are a prime means of spreading deep bark canker (DBC) bacteria from tree to tree. Besides this, improperly run shakers can seriously and permanently damage trees. Key to preventing both physical damage and DBC spread are (thanks to San Joaquin Farm Advisor Joe Grant):

- \* first and foremost, a conscientious, well-trained and experienced shaker operator;
- \* sufficient drying off of trees prior to harvest;
- \* correct shaker head pressure adjustment;
- \* pattern suited to the crop and tree size;
- \* frequent, regular checks of machine condition during harvest;
- \* regular checking, rotating and servicing of shaker pads;
- \* slings greased once per hour, check regularly for wear.

In Hartley and Chandler blocks, shaker pads should be washed with a diluted bleach solution often. Growers should ask their operator to use new or cleaned pads if coming from a DBC-infected orchard. Once DBC enters a tree, it is there permanently - EXERCISE CAUTION!

## **NEW UC FARM AND GARDEN CATALOGUE**

The 1995 catalogue is now available. In addition to publications, it includes slide sets and videos, which may be useful for employee training. There is also a separate section of items costing \$3.50 or less, and quite a few **Spanish** items as well. IT'S FREE!

## **1995 WINTER MEETING HANDOUTS**

Contact us for the following:

Lake County Bosc Summer Field Tour, July 29

1995 Lake County Walnut Update, April 24

Sonoma County Grape Day, March 1

## **PEAR WOOD BUYER**

If you are planning to remove pear trees this fall, there is a person interested in purchasing salvage wood to make furniture. Contact me if you are interested.

## **LATE FALL CHECKLIST**

contact me for specific details on these topics

**Weed Control** - By now, most of you know of my bias toward a late fall - early winter program if you use pre-emergent herbicides (October 1993 **Hort Notes**). Don't play unnecessary "catch up" next spring! Contact me for herbicide tables.

**Zinc Sprays** - For pears, apply 36% zinc sulfate ( $ZnSO_4$ ) just prior to leaf fall (remember, no oil within 30 days!). In severe cases, follow-up zinc treatments of chelate or oxide may be warranted. Unless soil is very dry and the weather very cold, spur-pruned grapes may be treated by daubing 36%  $ZnSO_4$  onto fresh, non-bleeding pruning wounds. Foliar-treat cane-pruned (or spur-pruned) varieties in the spring. Walnuts should be treated with  $ZnSO_4$  or chelate in the spring just after full pistillate bloom when reddish leaves have lost most of their color.

**Potassium Soil Applications** - K deficiency symptoms are especially apparent this year. If leaf or petiole levels and symptoms show a need, late fall is the ideal time to apply  $K_2SO_4$ . Generally, massive doses are needed to overcome being tied up by soil colloids. Grape growers may effectively apply K through or under drip systems during the growing seasons, but rates will still need to compensate for tie-up in heavy soils.

## **AG WEATHER FORECASTING TERMINATED**

There has been word that as of October 1, 1995 the National Weather Service Agricultural Forecast Program will be terminated. All forecasts and other products/services will have ceased on September 30 and forecasters have already received reassignments to other programs and facilities. Lake-Mendocino forecaster Art Horton has already transferred to a general weather forecaster position in San Diego. As we learn more, the agricultural community will, of course, be notified.

## **HAVE A GREAT GRAPE AND WALNUT HARVEST!**

Sincerely,



Rachel Elkins  
Farm Advisor

