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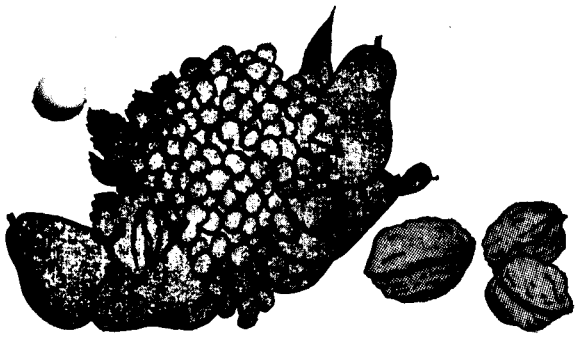

your Lake County HORTICULTURAL NOTES

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MAY, 1988

TOPIC OF THE YEAR: DROUGHT

PART I: TIPS TO SAVE WATER

As I write this it is raining, but I'll plunge ahead anyway because for growers with limited water supplies, these mild (though refreshing) spring rains will not replenish a depleted water table. Indeed this may be a critical year in many of our dry and semi-dryland walnuts and in those pear orchards where wells run low or even dry. Effects will be especially acute if trees are entering the '88 season weakened due to lack of water in 1987. Vineyards will likely be okay as long as early season water is available. Dryland vineyards may be more stressed, but these vines are also "acclimated" to dry conditions. I would be more concerned with vines that expect to be watered and are cut off from normal supplies. This holds for walnuts as well.

In addition to the low water supplies, the 1988 growing season began early with the earliest pear bloom date in history (that I know). This combined with unusually warm spring temperatures, means transpiration by crops, especially pears, began early and has exceeded the norm for this time of year. More water is being used earlier, and this means the supply may run out faster.

During the "Great Drought of 1976-77", many useful tips were published in various sources. The information is no less useful this year. I have compiled suggestions that I hope will help guide growers through this thus-dry year.

Weed and Cover Crop Control!!!

Of all options, this is probably the most practical, economical and crucial. When you irrigate, you are also supplying orchard/vineyard vegetation with up to 8-10" of water. I have seen figures that summer weeds use 25-50% more water versus bare ground. Where perennials such as field bindweed, nutsedge and dandelion predominate, as they do in many of our orchards, their deep roots will rob much water. Young trees especially suffer because their root systems are undeveloped and do not compete well with weeds.

Weed control can be accomplished by cultivation, mowing, or chemical mowing (using reduced herbicide rates to stunt growth). In previously non-tilled orchards, the last two practices are preferred because surface roots that supply the majority of water and nutrients to the tree are undisturbed. Frequent mowing or chopping conserves more water than shallow discing because temperatures are cooler and the mulch created by clippings keeps water from evaporating from the soil surface. Hoeing around young trees can reduce water use by half.

Remove Suckers And Water Sprouts

(unless being trained as new fruiting wood)

This is especially important on young trees/vines which withstand less competition.

Mite Control To Reduce Foliage Loss

In addition to stressing the tree this year, damage can affect next season's crop by reducing foliage and hence photosyntheses and bud development.

Alternative Irrigation Methods

1. Alternate middle irrigation has been shown to reduce ET (evapotranspiration) because less surface area is covered with water. Always water the same side and apply water more frequently. Normal production is possible with 25% less water in many tree crops.

2. Avoid sprinkler irrigating on windy days. Wind disturbs the distribution pattern and also increases evapotranspiration.

3. In young orchards, restrict water to the root zone. This means the root system and surrounding soil area. Root growth is inhibited by lack of moisture. Roots do not grow into dry soil, only into moist soil.

Irrigate Efficiently

1. Perform maintenance on all components of your system.

2. Check sprinkler pattern and adjust accordingly.

3. Use soil monitoring equipment (this includes shovels, augers and probes as well as "high tech" equipment). Know how much moisture is available in the root zone at any given time during the irrigation cycle.

PART II: STRATEGIES FOR OUR CROPS

Every crop responds differently to water stress due to the way the plant and crop develop through the season (growth curve). Thus, what is good for walnuts is not necessarily good for grapes. Recently, a group of Farm Advisors and UC research staff got together to discuss drought strategies for various crops. I have compiled their suggestions with some of my own and Chet Hemstreet's.*

Pears - Apple and pear have a "straight" growth curve. Crop development does not slow or stop significantly during the season. Hence, they are vulnerable to water stress all season. The most critical time, as you probably well know, is the final fruit swell period before harvest. Possible effects of water stress are exaggerated spring fruit drop, smaller fruit, poor bud set for next year's crop, worse mite problems and possibly dieback. Weed control is probably the best possible water-saving practice.

Grapes - Grapes can take more stress than most orchard crops, but early season stress (before veraison) is detrimental (see previous newsletters). Increasing stress gradually as harvest approaches is the best strategy. Pre-harvest cut-off or cut-down can occur sooner in deep, fine textured soils that hold water well. Shallow or coarse soil holds less water, necessitating irrigations later into the season.

Walnuts - Like pears, there is no "good" time to water stress walnuts. Early in the season, as nuts are filling out, blanks and shrivel will result. Later on in the summer stress causes sunburn, mold, dehydrated hulls, and mushy hulls (we saw plenty of this in '87!).

Trees will suffer continued dieback and possible death. I recommend TOTAL weed control, especially in dryland orchards. If you do water, stretch your irrigations out through the season. Consider reducing furrow size or use alternate middles, but avoid cut-off during the hottest time of the year when maximum evapotranspiration occurs - July and August. Next dormant season, trees should be pruned well to balance roots to the tops and encourage adequate camopy to cover and protect nuts and wood from sunburn next year.

Kiwifruit - Kiwi cannot take stress. If you see wilted leaves it is too late. Stressed fruit stops growing and does not recover. There is no good time to stress vines. Make good use of tensiometers.

*Thanks to Lonnie Hendricks and Maxwell Norton of Merced County for summarizing meeting results.

BOTRYTIS BUNCH ROT-WHAT'S NEW?

Several growers have called to ask "What's the latest" in Botrytis control. Chemical-wise, the standards are still recommended at the usual times. Contact me if you need information on chemical control. I recommend the UC Grape Pest Management manual for a discussion of Botrytis biology and disease cycle as well as general management strategies. The latest and most exciting research involves the cultural practice of leaf removal to alter the micro-climate around clusters and hence create a less favorable environment for the Botrytis fungus to flourish.

In 1987, experiments were conducted in several North Coast counties, including Lake, by UC researchers Dr. Jim Marois and Dr. Doug Gubler. They showed that leaf removal eliminated the need to treat with a fungicide in many cases. In Lake County, Botrytis rot severity ranged from 27.2% where leaves were not removed to 6.7% where they were removed (Zinfandel). Percentage of infected clusters ranged from 10.8% without removal to 1.7% with removal (Zinfandel). Additionally, spray penetration and hence control of various vineyard pests was increased, for example control of variegated leafhopper which prefers dense, shaded canopies.

In the experiments, leaves were removed from nodes immediately above and below grape clusters just after full bloom. Drs. Marois and Gubler recommend early removal. This acclimates clusters to exposed conditions and provides optimum alteration of the microclimate through the season. If you do it, do it early.

From these results, the researchers concluded that canopy management is a key factor in controlling Botrytis. Leaf removal offers a solution for vigorous, dense vines. The best long-term solution however, is trellis design which exposes clusters and builds a "thinner" canopy. That is a whole topic in itself and will be discussed at a later date.

Two articles of possible interest to growers are:

"Botrytis bunch rot of grapes," by Dr. Jim Marois, UCD Plant Pathologist, in the Oregon Wine Advisory Board Research Report, and "The effects of timing and severity of leaf removal on yield and fruit composition of Sauvignon blanc grapevines", by UC Davis researchers Andy Bledsoe, Dr. Mark Kliewer, and Dr. Jim Marois. Contact me if you'd like copies.

PROPER USE OF ORCHARD HEATERS SAVES YOU MONEY!

(by Lake County Air Quality Management District)

Recently the District has received complaints and inquiries regarding excess smoke from orchard heaters. The District has the following suggestions regarding the proper use of orchard heaters that should increase the heat produced, reduce excess smoke and your operating costs as well.

Many types of orchard heaters are approved for use in the State of California; if you have any doubts about your particular equipment, you should contact the District office at 263-7000 to be sure that you are using approved equipment. "Smudge pots" have been illegal for many years, although a few people may still use the term when referring to orchard heaters.

The air intake vents should be cleaned on a regular basis, not only to reduce smoke, but to get the most heat from your fuel. A heater that is not getting sufficient air for complete combustion will emit thick, black smoke, a violation of State laws, and burn cooler than a heater that is being properly maintained. Be sure to instruct your employees as to proper maintenance and operation of the equipment.

The type of fuel being burned is also very important to maintaining your equipment and operating within State certification. ONLY clean fuel is legal to burn in orchard heaters. It is illegal to burn used waste oil which is by law considered to be toxic waste and may cause the heater to emit corrosive, toxic or carcinogenic fumes that may damage your equipment or the health of anyone exposed to the fumes.

To sum up the issue, you should use an approved heater that is maintained in good working order, operated according to instructions and burn uncontaminated fuel. This will insure legal, economical operation and the most healthful air possible for you, your family and all residents of Lake County.

1988 TASTING OF SUMMER PRODUCE

Growers of specialty produce are invited to participate in the 1988 Tasting on June 19th at the Oakland Museum. Over the years, the Tasting has become a dynamic regional forum where Northern California's finest growers and agricultural trades people convene to establish important trends in the quality produce market. The Tasting provides farmers with an opportunity to diversify their marketing strategies, increase their sales volume, and receive feedback on specialty crops. A survey of last year's participants indicates that eighty percent made sales contacts.

The Tasting begins with a professional preview, attended by 800 restauranteurs, retailers, wholesalers, and brokers. At the preview, growers display their produce and farm information. A comparative tasting of selected fruits and vegetables will also take place during the preview, followed by a public farmers' market. The farmers' market provides growers with an opportunity to recoup the time and money they invested to attend the Tasting. The days festivities will culminate with a reception attended by growers, sponsors, and Tasting staff.

If you are interested in attending please contact:

Department of Food & Agriculture
Direct Marketing Program
P.O. Box 942871
1220 N. Street
Sacramento, Ca. 94271-0001

The exhibitor's fee is $50.00. Farmers supply the fresh fruits and vegetables, we supply the rest! Call Michelle Woods or Greg Lawley at (916) 445-5294 for further information. Producer application forms are available at our office in Lakeport as well. Contact us if you need one.

Sincerely,

Rachel

Rachel Elkins
Farm Advisor