UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION COUNTY OF LAKE

your Lake County HORTICULTURAL NOTES

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MARCH 1991

*** * * * IMPORTANT DATES * * * ***

March 4-5	BRING THERMOMETERS IN FOR TESTING
March 15	ASCS Ag Conservation Sign-up, Lakeport (pg. 6)
March 19	1991 Wine Grape Update, Finley (Agenda/registration form on page 8)
March 25	Recent Advances in Viticulture and Enology (RAVE *91), U.C. Davis
April 1	1991 Walnut Update, Lakeport (agenda on page 9)

-- contact us for information --

DROUGHT IRRIGATION STRATEGIES

PART I. Growers should take extra care to follow very conservative irrigation practices this season. Key elements of an efficient water use plan are: (reprinted from May 1988 Hort Notes)

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, johnsongrass 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. While chemical mowing is perhaps the most desirable choice in this very water-short year, 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 photosynthesis 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 times, as you probably well know, are at bloom and during 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. 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 soils hold 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. 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 canopy 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.

U.C. IRRIGATION PUBLICATIONS (contact us)

Drought Irrigation Strategies for Deciduous Orchards
#21453 15 pages $1.00

Irrigation Scheduling; A Guide for Efficient On-Farm Water Management
#21454 67 pages $6.00

FROST PROTECTION IN A DRY YEAR

If relative humidity remains low and bloom occurs early, be aware that significant injury can occur prior to full bloom. Below are tables reprinted from the August 1988 Hort Notes article, "Which Pears Survived the 1988 Frost Season", which documented damage to various bud stages. IN 1988, A VERY HIGH PERCENTAGE OF POTENTIAL CROP WAS LOST BY MARCH 19!

TABLE 1 EFFECTS OF ORCHARD FLOOR CONDITION ON TEMPERATURES

Bare, firm, wet soil		warmest*
Close mowed cover crop, moist soil	1/2°	colder
Moist soil, low growing cover crop	1/2-1/3°	colder
Dry, firm soil	1 1/2-2°	colder
Fresh disced or loose soil	2°	colder
High cover crop	2-4°	colder
Cover crop with restricted air drainage	6-8°	colder

*I recommend an irrigation to wet the top 8-12" of soil be completed before protection begins this year if the soil profile is dry this spring and trees/vines are susceptible to injury. The ground must be in the desired condition when the frost event occurs so that heat is immediately available to the trees.

TABLE 2 CRITICAL TEMPERATURES FOR BLOSSOM BUDS

BUD DEVELOPMENT STAGE	CRITICAL TEMPERATURE (° F) 10% KILL	90% KILL
separated scales	15	0
blossom buds exposed	20	6
tight cluster	24	15
pre-petal	25	19
popcorn	26	22
partially open	27	23
full bloom	28	24
post bloom	28	24

TABLE 3 DAMAGING TEMPERATURES, SPRING 1988

DATE	KELSEYVILLE	SCOTTS VALLEY
3/09	23.5°	24.0°
3/10	24/0	26.0
3/11	25.0	26.0
3/12	25.0	25.0
3/13	27.0	27.0
3/14	27.0	27.0
3/15	26.5	27.5
3/23	27.5	(29.0)
3/26	27.0	(31.5)
3/27	26.0	28.0
4/07	27.0	27.5
4/30	27.5	(29.0)

Although there is no direct data to confirm this, I feel strongly that some portion of early damage in 1988 could have been avoided if the moist orchard floors were in a bare (or with killed sod), firm, moist condition. Like 1991, 1988 was also quite dry and many orchards entered the frost season lacking soil moisture.

Using Table 1, one can see that an extra .5-4° F can be gained, or lost, depending on orchard floor condition. This may then be correlated with increased or decreased susceptibility of various blossom bud stages during a frost event (Table 2). Temperature data for 1988 is given in Table 3. For example, if blossoms were in tight cluster on March 9 (which quite a few were), an extra 2 - 4° F would have saved 10% or more of blossoms at that stage in Kelseyville and Scotts Valley.

Of course, the nature of the 1991 bloom period may differ from 1988, which was strung out over several weeks. If 1991 is a "snowball bloom", potential for "all or nothing" damage is great. In either case I recommend A SMOOTH, (AT LEAST SEMI-)BARE, MOIST ORCHARD FLOOR BY THE FIRST WEEK OF MARCH!

FROST PROTECTION FACTORS

Temperatures Causing Injury
(30 minutes or more)

	First color	Full bloom	Post bloom
Grapes (green shoots)	30-31° F	31° F	31° F
Pears	25	28	30
Kiwifruit (freen shoots)	30-31	31	31
Walnuts	30	30	30

Effect Of Dew Point On Air Temperature

If dewpoint is:	Start Sprinklers at	to maintain:
13-14 F	43°F	40°F
15-16	42	39
17-18	41	38
19-21	40	37
22-23	39	36
24-25	38	35
26-27	37	34
28-	36	33

HORT NOTES ARTICLES ON FROST PROTECTION (contact us for copies)

Article	Issue
The Big Freeze - What Happened?	June 1988
Frost: Advice From a Fellow Advisor	June 1988
Frost Damaged Grapes-Does Shoot Break-Out Pay?	June 1988
Which Pears Survived the 1988 Frost Season?	August 1988
Frost Publications-Available at UCCE Office	March 1989
Prepare for the 1990 Frost Season	March 1990
Is it Safe to Combine Wind and Under-Tree Sprinklers?	March 1990
Frost Publications - Available at UCCE Office	March 1990
A Note on Dew Point	March 1990

1991 AGRICULTURAL CONSERVATION PROGRAM SIGN-UP

(by Katie Delbar, Program Assistant, ASCS, Ukiah 468-9225)

ASCS will soon be accepting applications for the 1991 Agricultural Conservation Program. The Agricultural Conservation Program (ACP) sign up period will run from March 4th to March 22, 1991.

Conservation practices approved under the program will help correct soil, water and pollution on farm and forestland. Delbar will be in Lake County to discuss and sign up producers for the Agricultural Conservation Program on March 15, from 9:00 A.M. to 3:00 P.M. at the Lake County Agricultural Center.

For more information, please write or call the ASCS office at 405 Orchard Avenue, Ukiah, CA 95482, (707) 468-9225.

1990 PEAR RESEARCH REPORTS AVAILABLE

Contact us for a copy of the 1990 Report on Research Projects for California Bartlett Pears, summarizing research sponsored by California Tree Fruit Agreement. Projects include non-destructive firmness sorting, fireblight/russet/frost control using antagonistic bacteria, codling moth mating disruption, selective arthropod management, survey of codling moth resistance to Guthion and comparison of UC and Maryblyte models to predict fireblight.

UPCOMING UNEX COURSES (Call 1-800-752-0881)

1) Topics in Sensory Evaluation of Wine: Chardonnay and Cabernet Sauvignon
   April 6 9:00 a.m. - 4:30 p.m. UC Davis $155 w/lunch and tastings

2) Pesticide Regulations and Safety
   April 12 9:00 a.m. - 4:30 p.m. UC Davis $115.00 w/lunch

3) Legal Aspects of Establishing a Winery
   April 19 9:00 a.m. - 5:00 p.m. UC Davis $120 w/lunch

4) Rhone Varietal Production in California (ENROLL EARLY!)
   May 4 9:00 a.m. - 4:00 p.m. UC Davis $135 w/lunch and tastings

Other courses on various aspects of winemaking are also offered.

MORE THANK YOUS!!

The following cooperators were inadvertantly left off the list printed in February Hort Notes. My apologies and most sincerest thanks.

Dave and Vivian Bucknell
Carl Laslovich
Clear Lake Grange #680

Sincerely,

Rachel

Rachel Elkins
Farm Advisor

sar/RE

1991 WINE GRAPE UPDATE

co-sponsored by
University of California Cooperative Extension and
Lake County Grape Growers Association

WHEN: Tuesday, March 19, 1991
WHERE: Clear Lake Grange
1510 Big Valley Road, Finley

PROGRAM (4 units PCA Credit Applied for)

8:30-9:00 a.m.	Registration and Coffee
9:00-9:30	Winter Injury Factors and Management Jim Wolpert, Extension Viticulturalist University of California, Davis
9:30-10:20	Crown Gall - An Increasing Problem Andrew Bishop, Assoc. Plant Pathologist CA Dept. of Food and Agriculture
10:20-10:40	BREAK
10:40-11:30	Rootstock and Clonal Update Jim Wolpert and Rachel Elkins U.C. Cooperative Extension
11:30-12:00	North Coast Pest Management Update Sue Blodgett, Area IPM Advisor U.C. Cooperative Extension, Santa Rosa
12:00-1:00 p.m.	LUNCH (pre-registration required)
1:00-2:00	Drought Irrigation Strategies for Winegrapes Terry Prichard, U.C. Extension Irrigation Specialist, San Joaquin County
2:00-2:30	P.G.& E. Energy Conservation Programs Dan Williamson, Account Representative P.G.& E., Ukiah
2:30-3:00	1991 Agricultural Conservation Programs Katie Delbar, ASCS, Ukiah
3:00	ADJOURN

Questions? Call U.C.C.E. at 263-2281 or LCGGA at 263-0911

(cut and send) **REGISTRATION DEADLINE:** MARCH 11

REGISTRATION FORM - 1991 Wine Grape Update

Name_____

Mailing Address_____

Phone #_____ **# of persons attending**_____

Total enclosed $_____ ($6.50 per person)

Make checks payable to: LCGGA and mail to: LCGGA
Attn: Joline Silva
65 Soda Bay Road
Lakeport, CA 95453

1991 WALNUT UPDATE

DATE: Monday, April 1, 1991

TIME: 8:45 - 12:10 P.M.

PLACE: Lake County Board of Supervisors Chambers
255 No. Forbes Street, Lakeport

PROGRAM

(1.5 hours PCA Credit applied for)

8:45-9:15	**Registration and coffee**
9:15	**Pruning versus Tree Removal in Mature Hartleys** Wilbur Reil, UCCE, Yolo-Solano Counties
9:40	**French Walnut Production and Research** Wilbur Reil and Bill Olson, UCCE
10:10	BREAK (Refreshments sponsored by United Ag Products, Finley)
10:30	**Walnut Blight and Crown Gall Control** Bill Olson, UCCE, Butte County
11:00	**Walnut Research Progress and Plans** Dave Ramos, Extension Pomologist, UC Davis
11:30	**Domestic and Export Market Development Activities** Mark Villata, Associate Director Walnut Marketing Board, Sacramento
12:00	ADJOURN

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