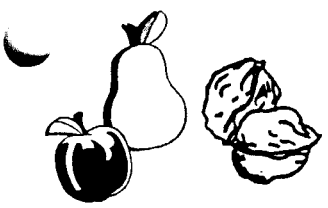
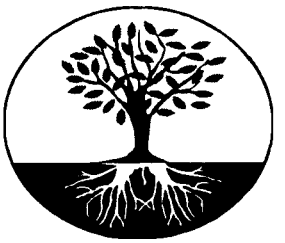
University of California Cooperative Extension



your *North Coast* Orchard Notes



FEBRUARY 1999

MARK YOUR CALENDARS WITH THESE IMPORTANT DATES !!

February 25	Pear Post-harvest Research Meeting, Napa contact our office for agenda and registration form
March 1	***Orchard Notes* subscription forms DUE into UCCE office** contact us if you need a form
March 6	Sonoma County Apple Day 1999: Organic Apple Production, Sebastopol contact: Paul Vossen, (707) 527-2621
MARCH 9	**1999 LAKE COUNTY WALNUT UPDATE** Clear Lake Grange, Finley (agenda and registration on pages 10-11)
MARCH 18	**1999 LAKE COUNTY FRUIT FROST MEETING** Board of Supervisors Chambers, Lakeport contact: Dept. of Agriculture, 263-0217
May 20-22	Establishing and Managing an Olive Orchard for Gourmet Olive Oil Production contact: UNEX, (530) 757-8899

PREPARE FOR ORCHARD FROST PROTECTION

It is hard to believe, but a new (and hopefully **normal**) season looms just around the corner. Once again it is time to "tune up" and repair pumps, wind machine engines, and other vital components. For **Lake County** growers, the Department of Agriculture has set the following schedule to test thermometers:

Monday, March 8	***Bring** thermometers into the UCCE office*
Wednesday, March 10	*Thermometers will be **tested***
Friday, March 12	***Pick up** thermometers*

In **Mendocino County**, the Department of Agriculture will test thermometers on **February 25th**. Bring thermometers in **February 23rd and 24th.**

As always, a new thermometer tag will be provided when you bring them in. **Please be sure all old tags are removed prior to bringing thermometers in.** Thermometers will not be tested without a new tag on each one. Feel free to stop in ahead of time and pick up a supply if you like. The following instructions were provided by the National Weather Service Meteorologist:

883 Lakeport Blvd. • Lakeport, CA 95453 • (707) 263-6838 • FAX (707) 263-3963 • TDD 1-800-698-4544
U.S. Department of Agriculture, University of California and County of Lake Cooperating

⇒ **1)** Store and transport thermometers in a **sturdy box or container with the BULB END DOWN.** This will help prevent separation. Do not store or transport in a paper or plastic bag.

⇒ **2)** Thermometers must be clean of chemicals and dust or they will not be tested.

⇒ **3) Do not use rubber bands or wire to tie the thermometer testing tags to the thermometers.** Twine is the only acceptable material. Tags should be tied to the top of the thermometer, **not the bulb end**. The bulb end is immersed in water during testing.

⇒ **4)** Have your name clearly marked on the thermometer testing tag (for identification purposes).

In **Lake** County, Fruit Frost Report recordings are furnished by the Agricultural Commissioner's office. The telephone numbers are available by calling the Ag Commissioner's office at 263-0217, the Cooperative Extension office at 263-6838, or your local pear packing shed. For **Mendocino** growers, fruit frost reports are furnished by Ag Unlimited, Mendocino County Farm Bureau, and the Mendocino Wine Growers Alliance. Mendocino growers will be notified by mail what the phone numbers for this year will be. If you do not receive notification by mail, call the Mendocino County Farm Bureau at 462-6664.

In both counties, the Fruit Frost numbers are for **commercial growers** only. For your ease in accessing the recordings, the numbers are unlisted and not available to the general public. ***PLEASE KEEP THEM CONFIDENTIAL!***

PROPER ORCHARD HEATER MAINTENANCE AND OPERATION

Lake County Air Quality Management District

The agricultural crop frost protection season is here and now is the time to determine if your orchard heaters are being properly maintained and operated. Heaters should be periodically maintained for fuel-efficient operation, as well as to prevent excessive smoke. Several points which you should consider before using your heaters:

1) Use approved heaters only. A list of approved heaters is available at the Lake County Air Quality Management District, 883 Lakeport Blvd., Lakeport. Call (707) 263-7000 if you have questions.

2) Soot accumulations in the stack, air louvers and primary air openings should be removed periodically to improve combustion. Keep these openings clear for optimum air flow.

3) Remove sludge, carbon and debris from the fuel bowl to maintain storage capacity.

4) Use clean fuel to maintain adequate volatility and good combustion. It is illegal to use waste oil.

5) Damaged or worn out components should be replaced to prevent air and oil leaks.

A poorly maintained heater is inefficient and produces a thousand times more particulate air pollutants than a properly operating heater. Good heater operating practices will make for better air quality for all of us. Should you have questions, please call the District.

Contact: Ross Kauper or Robert Reynolds
Lake County Air Quality Management District
263-7000

Philip Towle or Diana Barker
Mendocino County Air Quality Management District
463-4354

EFFECT OF ORCHARD FLOOR CONDITION ON TEMPERATURES

In past years, several articles have appeared in trade publications stating that it is beneficial to maintain a cover crop in orchards frost-protected by under tree sprinklers. Advocates of cover crops propose that more ice can form on the increased surface area of the cover crop, thereby providing a greater amount of heat when sprinklers are turned on.

Conventional wisdom is that bare, firm, moist soil absorbs the most heat, which when radiated into the air, provides 2-6° F more warmth than a cover-cropped orchard floor. This means that ***before any frost protection is carried out***, the orchard with a bare, moist, firm floor will be 2-6° F warmer than a cover-cropped one, thereby potentially delaying turn-on time or even reducing overall protection need.

Growers must thus weigh the value of an **inherently warmer** orchard which provides a "buffer" against delayed or no sprinkler turn-on versus an inherently colder orchard ***theoretically*** compensated for by the release of a greater amount of heat **after** turn-on.

"Theoretically" is emphasized because in discussions with UC biometeorology staff, there is much data confirming the effect of orchard floor conditions on temperature, but **no** local data on whether cover crops will truly provide more heat with sprinklers. We will, hopefully, learn the answers over the next several years. Until then, consider all aspects of your orchard operation (i.e. frost, fruit quality, spraying, weed control) when deciding how to maintain your floor.

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

Given the moisture we have had recently, combined with more than adequate chilling hours, bloom could potentially occur very early. I wish all Lake County growers a short and **MILD** frost season!

IS IT SAFE TO COMBINE WIND AND UNDER-TREE SPRINKLERS?

There is virtually no information, much less guidelines, on combining wind and sprinklers. Frost protection experts are apparently leary due to the potential problem of evaporative cooling during the initial few minutes after sprinklers are turned on, before the released heat has raised air temperature.

The only clear-cut research on the subject (that I could find) was an experiment conducted in a mature apple orchard by Washington State University agricultural engineers Robert Evans and Arte Kroeger. They compared wind alone, under-tree sprinklers alone (Rainbird F-20's, 3/16" nozzles) and the two combined. They concluded that *under a strong inversion with calm air,* wind provided an extra 1-2°F protection to the 3-4°F of sprinklers alone. Thus, from these results, if the predicted minimum is 26°F, it would be beneficial to combine wind and sprinklers. Now, every 10 seconds, they were unable to measure the initial cooling that supposedly takes place when sprinklers are first turned on. The key phrase, however, is "**strong** inversion". Evaporative cooling **would** pose a problem *if* the inversion was weak or none, in which case it would be useless to turn wind machines on anyway.

EFFECT OF DEW POINT ON AIR TEMPERATURE

The concept of dew point is often difficult for both novice and veteran growers to **really** understand. Bill Coates, U.C. Farm Advisor in San Benito County, offers a clear, succinct explanation:

"You may wonder what significance the dew point plays in our daily frost forecasts. The dew point is the temperature at which dew or frost begins to condense out of the atmosphere as the temperature falls on a clear, calm night. When the dew point is 45°, dew will begin to form on vegetation or other objects exposed to a clear sky when the temperature drops to 45°F. At a dew point of 28°, no dew will form but white frost will appear when the temperature reaches 28°F.

The dew point is an indication of the amount of moisture in the atmosphere - the higher the dew point, the greater the amount of water vapor in the air. On nights when the dew point is high (above 35°), the temperature fall is usually slow and steady with few fluctuations. When the dew point is low (below 25°), the temperature fall is usually more rapid and orchard thermometers should be watched more closely. Frost is rarely a problem when the dew point is above 45°."

If dewpoint is:	Start sprinklers at - to maintain: 33°F	31°F
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

TEMPERATURES CAUSING INJURY TO BLOSSOMS AND YOUNG FRUIT

These temperatures are conservative for safety. Damage generally occurs if they are sustained for 30 minutes or more. Factors influencing incidence and severity of damage are variety, tree vigor, bloom strength, and moisture status.

	First color	Full bloom	Post bloom
Apples	25°F	28°F	29°F
Pears	25	28	30
Kiwifruit (green shoots)	30-31	31	31
Walnuts	30	30	30

FROST PUBLICATIONS (available at UCCE Lake County office)

An Explanation of Dew Point -- Free

Frost Protection: When to Turn Sprinklers On and Off Pub #7165 Free

Passive Frost Protection of Trees and Vines Pub. #21429 $1.50
(emphasis on soil and ground cover management)

Understanding and Utilizing Water for Frost Protection -- Free

EFFECTS OF THE DECEMBER FREEZE

On December 22, temperatures descended to between 10° and 15° F, depending on location. Growers and media were interested in how local crops fared.

Apple and **pear** trees were very unlikely to have suffered damage since they were completely dormant. The only hazard was potential damage to buds caused if oil was applied to dry trees,

since soil and bark moisture were both low at this time. Fortunately, rains resumed in mid-January, allowing oil to be applied for much needed pear psylla, European red mite, and scale control.

Walnut trees were more likely to be damaged than pome fruits. They are susceptible to winter kill when soil moisture is low and/or they have incurred seasonal stresses from pests (particularly spider mites), inadequate moisture, poor nutrition, etc. Growers planning to treat soft scale should apply oil very cautiously this year (see article this page). Symptoms of winter kill are shoot dieback, slow, weak or failed leaf out, and lack of bloom due to bud damage.

Olive trees are sub-tropical evergreens. They were very likely to have incurred at least some freeze damage, depending on variety, tree health, and location. Any fruit remaining would have been ruined. Symptoms of freeze injury are split bark, untimely leaffall, and limb dieback. Of the standard varieties grown in California, Ascolano, and particularly Mission, are the most resistant to cold temperatures. Mission trees have been known to survive 8°F. There is little, if any, local data on varieties recently imported from France, Italy, and Spain for oil production. The December freeze has provided an opportunity to evaluate tree survival and extent of injury in several UC experimental plantings around the state, including one in the Anderson Valley of Mendocino County.

Kiwifruit may also have sustained injury, especially plants in low areas. Vines growing in the "banana belt" areas on the lake are least likely to have been injured.

In deciduous trees, damage symptoms and growth response will be apparent as growth resumes in the spring. For evergreens, though symptoms may be seen immediately, it is best to wait until temperatures warm and shoot growth resumes before doing remedial pruning or fertilizing to injured trees. For any injured tree, pruning should then be limited to removing dead shoots or limbs and lightly thinning new shoots. Heavy pruning should be avoided until normal bearing is restored. Nitrogen fertilizer should be applied very lightly to prevent excessive vegetative growth which 1) competes for valuable carbohydrates and 2) is associated with poor structural integrity. Ammonium nitrate is taken up rapidly by the roots and may be the preferred nitrogen form this year.

TIME TO MONITOR FOR SOFT SCALE IN WALNUT

Frosted, and to a lesser extent calico, scale have become chronic problems in some locations. Though the wasp parasites are active, in some orchards scale populations have built up beyond the parasites' ability to keep them in check. Hopefully, the extreme cold this winter will kill many overwintering nymphs.

If new growth was heavily encrusted with soft scale last season, winter is the time to monitor and decide whether to treat. Check last year's wood on random trees **throughout** the block. Unparasitized nymphs are **flat**, amber to dark brown, with a few waxy filaments protruding from the base. Parasitized nymphs are **convex** (humped) and almost black.

IF THERE ARE MORE THAN 5 NYMPHS PER FOOT OF LAST YEAR'S WOOD THROUGHOUT THE ORCHARD, AND
LESS THAN 90% ARE PARASITIZED,
CONSIDER TREATING

Current UC recommendations are listed below. **If** treatment is necessary, apply it during ***delay dormant*** before rapid scale growth begins in spring. Note that oil, though labeled for use on walnuts, has been removed from the "official" UC treatment guidelines due to concerns about phytotoxicity. Growers who choose to use oil should heed all cautionary statements.

OIL IS **VERY** PHYTOTOXIC TO MOISTURE-STRESSED TREES. Trees that have suffered insect or mite damage, or other stresses, are also potentially vulnerable to damage. Registered insecticides used alone in dormant are less effective, requiring re-treatment (disrupting aphid and scale natural control) but are safer to trees.

Of course, growers can choose to give Mother Nature generous benefit of doubt and hold off treating this winter. Contact me or your PCA if you would like help identifying parasitized scale.

If frosted, European fruit lecanium, calico, walnut, or San Jose scale need to be controlled during the dormant period, and trees have been stressed, use diazinon, parathion, or methidathion without oil. The use of these materials without oil will suppress scale insects, but treatments may be needed again during late spring or early summer.

1997 UC IPM Pest Management Guidelines – Walnuts

TREATMENT Pesticide (commercial name)	Amount to Use** (conc.)	(dilute)	P.H.I.+ (days)
CAUTION: Oils are not recommended for use during the dormant season on walnut trees. If the trees have suffered from a lack of adequate soil moisture or other stressing factors (insect, disease damage, etc.) at any time during the year, an application of oil can cause phytotoxicity.			
A. METHIDATHION* (Supracide) 2WP	8 pt.	2 pt.	7
COMMENTS: Do not combine with oil or severe phytotoxicity may occur. Do not graze livestock in treated orchard. Do not apply more than twice a year or more than once a dormant period.			

** For concentrate application, use the amount given in 80-100 gal water/acre, or lower if the label allows; for dilute application, amount is per 100 gal. water to be applied in 300-500 gal. water/acre, according to label.
+ Preharvest interval. Do not apply within this many days of harvest.
* Permit required from county agricultural commissioner for purchase or use.

POMOLOGICAL REFERENCE AVAILABLE IN SPANISH

review by UC Extension Postharvest Specialist Carlos Crisosto

The new reference *Fruticultura; El Potencial Productivo*, was written by Professor Gonzalo F. Gil Salaya of the Catholic University, Chile. It is an excellent reference book for orchard managers and others who need to understand and communicate horticultural concepts in Spanish.

The production of fruit trees is an activity whose efficiency is based on botanical, physiological, and ecological knowledge of plants. This book deals with a general review of the vegetative and photosynthetic behavior of different deciduous and evergreen subtropical fruit crop species. The information is covered in four main sections in a way that constitutes the basis for the establishment and management of orchards to achieve their maximum production potential.

In the first section, the most important fruit are introduced, classified, and reviewed; also the plant's life is explained from juvenile to adult or productive state, and continues through its senescence and death.

The yearly cycle of vegetative development is the theme of the second section. Bud latency, the budding, growth, and branching out of shoots and roots are analyzed and integrated to optimize the plant's management and for vegetative propagation.

The third section covers the establishment of an orchard with maximum production capacity. Photosynthesis is studied in relation to manageable factors, emphasizing optimum radiation interception in an orchard, and its distribution within the canopy of each plant. Plant form systems and orchard designs are described, and analyzed as a function of latitude and the time of year.

In the last section, current orchard designs, the closest to the optimum for diverse fruit species, are presented.

Each chapter includes a presentation of the most current worldwide published information. Even information published in different countries and languages is presented, interpreted, analyzed, and critiqued. Several examples of the importance of biological processes in management decisions are pointed out in the chapters in a way that maintains the reader's interest. Each chapter ends with a section of suggested practical recommendations based on the published information.

Fruiticultura; El Potencial Productivo is available for $50.00 plus $3.50 shipping from *The Good Fruit Grower*, 105 S. 18th Street, Suite 217; Yakima, WA 98901-2149, or call toll free 1-800-487-9946. Request Item #204. Books may also be ordered on their web site, https://secure/incommand.com/fruit/books.html.

UPCOMING UNIVERSITY EXTENSION OFFERINGS (UNEX)

contact UNEX at 1-800-752-0881 for details and to register

Getting Started in the Specialty Food Business

UC Davis, May 15-16, #984E302, $365.00

includes course text, manual, evening social and two lunches

31st Annual Nematology Conference

Yuba City, March 29, #983E100, $60.00 (by March 8), $75.00 (after March 8)

includes course materials and lunch

0.6 CEU's, 6 PCA hours, 6 CCA hours

Understanding Agricultural Leases

UC Davis, March 13, #983E104, $125.00

includes course materials

NEXT GENERATION PEAR GROWERS

by *Lars Crail, Lake County Pear Grower*

The Lake County Next Generation Pear Growers is an informal group that began meeting in January 1996. They meet on a regular monthly basis to discuss and explore a wide range of topics of interest to the pear industry. While topics of current concern are covered, emphasis is on those that will affect the pear industry in the future, particularly horticulture, personnel training and marketing. LCNGPG plans and sponsors orchard tours, topic speakers, training, and trips for the benefit of all adults interested in enhancing their knowledge of the pear industry and cultural practices. Examples of activities have included tours of local orchards, a soils tour, pruning workshop and pesticide safety training, both in Spanish, and trips to the Sacramento Delta, Hood River and Yakima. Currently the membership is actively encouraging participation of all Lake and Mendocino County growers and other interested parties actively involved in the North Coast pear industry. Dues are only $20 per year to cover mailings and other costs. Please call Lars Crail, 279-4949, or Dan Thornton, 743-1942, for information on membership or events.

We wish **ALL** *North Coast orchardists a* **NORMAL** *1999 Season!*

Rachel Elkins

Rachel Elkins
Pomology Farm Advisor

1999 LAKE COUNTY WALNUT UPDATE
Tuesday, March 9, 1999
Clear Lake Grange #680
(a wheelchair accessible facility)
1510 Big Valley Road, Finley

AGENDA
(2 hours PCA Credit Requested)

8:15 a.m. **Registration** (coffee, juice, muffins)

8:45 **Welcome and announcements**
Rachel Elkins, UCCE Pomology Farm Advisor,
Lake County and Mendocino Counties

SESSION I: WALNUT GROWING IN LAKE COUNTY; WHERE IS IT GOING?

9:00 **The Bottom Line; how has it changed?**
Rachel Elkins
Dr. Karen Klonsky, Extension Agricultural Economist, UC Davis

Challenges for Local Growers –

Buyers Perspective
10:00 *Tom Burlando, North Coast Field Representative, Diamond Walnuts, Inc., Stockton*
10:20 *Chuck Crain, President, Crain of California, Los Molinos*
10:40 *Mark Snyder, Lake County Walnut, Inc., Kelseyville*

Growers Perspective
11:00 *Joe Conant, Whitney Warren Ranch, Wheatland*
Steve Ellis, Lower Lake
Chuck Frances, Kelseyville

11:30 **QUESTIONS AND OPEN DISCUSSION**

12:00 p.m. **LUNCH** (optional; pre-registration required)

12:30 **Walnut Marketing Update**
Dennis Balint, Executive Director, Walnut Marketing Board
Nathan Holleman, Marketing Director, California Walnut Commission

SESSION 2: WALNUT RESEARCH UPDATE

1:00 **Overview of Current Walnut Research**
Warren Micke, Extension Pomology Specialist Emeritus, UC Davis

1:30 **Progress on Understanding and Controlling Walnut Blight**
Dr. Steve Lindow, Dept. of Microbial Biology, UC Berkeley

2:00 **Rootstock and Varietal Development**
Dr. Gale McGranahan, Dept. of Pomology, UC Davis

2:30 **Observations on close-planted orchards**
Alex Suchan, Suchan Nursery, Upper Lake

3:00 **WRAP-UP and ADJOURN**

1999 LAKE COUNTY WALNUT UPDATE

WHEN: Tuesday, March 9, 1999

WHERE: Clear Lake Grange #680
1510 Big Valley Road, Lakeport
(north of Hwy. 29, west of downtown Finley)

COST: $10.00 per person – includes refreshments and lunch
(cost is optional – you may lunch on your own if you prefer)

SPONSORED BY: University of California Cooperative Extension

PROGRAM
(see page 10 for detailed agenda)

8:15 a.m. **REGISTRATION AND COFFEE**

9:00 ***SESSION 1:*** **WALNUT GROWING IN LAKE COUNTY; WHERE IS IT GOING?**

12:00 **LUNCH** (for in-house lunch, please submit registration form below by **February 15**)

1:00 p.m. ***SESSION 2:*** **WALNUT RESEARCH UPDATE**

3:00 **ADJOURN**

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LUNCHEON RESERVATION FORM
(fees will be collected at event)

Please reserve _____ lunches for the 1999 Lake County Walnut Update

Name _____ Phone # _____

Name _____ Phone # _____

Name _____ Phone # _____

Return this form **by MARCH 1** to:
Attn: Shirley Morse
U.C. Cooperative Extension
883 Lakeport Blvd.
Lakeport, CA 95453
(707) 263-6838
(707) 263-3963 - FAX

The Clear Lake Grange #680 is a wheelchair accessible facility

Cooperative Extension
U.S. Dept. of Agriculture
University of California
Oakland, CA 94612-3560

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Permit No. G-00268

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Penalty for Private Use, $300