

# your *North Coast Orchard Notes*

University of California Cooperative Extension  
883 Lakeport Blvd., Lakeport, CA 95453

**JANUARY – FEBRUARY 2002**

**HAPPY NEW YEAR!**

Vol. 5, No. 1

↓↓ **MARK YOUR CALENDARS** ↓↓

- |                    |  |
|--------------------|--|
| <b>February 11</b> | <b>Lake County Fruit Frost Program Meeting</b> , Lakeport<br>(agenda on page 8)  |
| <b>February 14</b> | <b>Managing Water In North Coast Orchards</b> , Upper Lake<br>Special Guest: Bill Pauli, President, California Farm Bureau Federation<br>(agenda page 9 , registration form page 12) |
| <b>February 20</b> | <b>2002 North Coast Pear Research Meeting</b> , Ukiah<br>(agenda page 10-11 , registration form page 12)   |
| March 1            | Agricultural Direct Marketing Strategies for Successful Business and<br>Communities, UC Davis<br>contact: UC SAREP, (530) 752-7556   |
| March 1 or 8       | Pear Day, Woodland - contact: California Pear Growers (916) 774-9550   |
| <b>March (TBA)</b> | <b>Lake County Walnut Update</b> (contact us); agenda in March <i>Orchard Notes</i>  |
| <b>March (TBA)</b> | <b>North Coast Olive Growers Meeting</b> (contact us); agenda in March<br><i>Orchard Notes</i>   |

## ***PLAN TO ATTEND WINTER MEETINGS***

Please register SOON for the meetings listed above. North Coast orchardists continue to face challenges, which is why keeping abreast of the latest developments in modern farming practices is even more important!

To better meet local program needs, a research/extension priorities survey was mailed to all pear (and apple) growers last fall. Approximately 50% of North Coast pear growers and PCA's responded. The respondents felt the five most important subject areas needing attention were: 1) insects; 2) marketing; 3) diseases; 4) sustainable and organic practices, and 5) water use measurement and harvest and mechanization (tied). Two follow-up roundtable discussion sessions were held to obtain further input and suggestions for addressing priorities.

In response to these results, two upcoming meetings will address several of the "top five" topics. While it is our job to provide you with opportunities to learn and try new tactics, it is up to you to avail yourself of these opportunities. We hope to see ALL of you at both the water management (February 14) and research (February 20) meetings!

The water management workshop is relevant to growers of **all** orchard crops, including pear, apple, walnut, olive, and others. Growers of other perennial crops are, of course, also welcome to attend. Meetings for North Coast walnut and olive growers are being planned and will be detailed in the next *Orchard Notes*.

### ***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: **Bring** thermometers into the Agricultural Commissioner's office on or before **Friday, February 15**. **Pick up** thermometers on or before **Friday, February 22**.

In **Mendocino County**, thermometers should be brought in to the Agricultural Commissioner's office by **February 22nd** and picked up on or before **Friday, March 1**.

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:

- ⇒ 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, and this year will be available on a subscriber basis **only**. Growers and support organizations will be given the appropriate telephone number(s) and password(s) to access the fruit frost forecasts once their support payment has been received. If you did not receive the informational notice about the program and would like to subscribe to the fruit frost services offered by the program, please contact the Lake County Department of Agriculture at (707) 263-0217.

For **Mendocino** growers, fruit frost reports are furnished by Ag Unlimited, Mendocino County Farm Bureau, and the Mendocino Wine Growers Alliance. Growers should contact one of these entities to obtain the frost phone number. Forecasts are also available on the Fox Weather Service website; obtain the address and password from one of the above entities.

In both counties, the fruit frost phone numbers and website passwords are for **commercial growers ONLY**. For your ease in accessing the recordings, the numbers (and website passwords) 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

Dean Wolbach or Diana Barker  
Mendocino County Air Quality Management District  
463-4354

## **CHANGES IN BURNING REGULATIONS**

### *Lake County Air Quality Management District*

The Lake County Air Quality Management District agricultural burning regulations for Lake County were amended in June of 2001. A total of 28 separate burning rules were modified or added. Three major changes are:

- 1) The requirement to file and abide by a Smoke Management Plan (SMP) for planned burns greater in size than 20 acres, or which are likely to have a smoke impact, pose a potential danger for escape, or have a history of public complaints. The SMP must include a map of the burn area, steps to control fire escape, excessive smoldering or public nuisance, and acceptable meteorology. Burning under a SMP requires Air District concurrence on each day for which material will be ignited. The Air District will assist the ag community in preparing a SMP.
- 2) Modification to the allowable burning hours. Burning shall now be confined to 11:00 a.m. to 3:00 p.m. for grass, leaf, or field crops.
- 3) Modification changing the start date of the annual burn ban to May 15<sup>th</sup>.

To receive a copy of all 28 changes and additions, stop by the Air District office and ask for the “Title 17” rule package, or call 263-7000.

The Air District has stated its appreciation to the ag community for wise burning practices during the current burn season – especially burning toward mid-day after temperature inversions break down. Good job!

## **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

IMPORTANT! The bare, firm and moist condition in the **top foot of soil** should be in place BEFORE a frost event occurs. The orchard floor should thus be prepared BY MARCH 1. 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°." (Note from Rachel: Dewpoint is the **WHOLE BALL GAME!** Note the high starting temperatures when DP falls below 24-25°).

If dewpoint is:                      Start sprinklers at - to maintain:

	<u>33°F</u>	<u>31°F</u>
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.

	<u>First color</u>	<u>Full bloom</u>	<u>Post bloom</u>
Apples	25°F	28°F	29°F
Pears	25	28	30
Kiwifruit (green shoots)	30-31	31	31
Olives (blossoms and green fruit)	-	31	28
Walnuts	30	30	30

***FROST PUBLICATIONS*** (available at UCCE Lake County office; will be displayed February 11)

<b>An Explanation of Dew Point</b>	--	Free
<b>Frost Protection: When to Turn Sprinklers On and Off</b>	Pub #7165	Free
<b>Passive Frost Protection of Trees and Vines</b> (emphasis on soil and ground cover management)	Pub. #21429	\$1.50
<b>Understanding and Utilizing Water for Frost Protection</b>	--	Free

**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 (contact me or your PCA if you would like help identifying parasitized nymphs).

**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, is only listed for summer use on "official" UC treatment guidelines due to concerns about phytotoxicity. Growers who choose to use oil should heed all cautionary statements. This is because 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.

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 registered materials 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 as they tend to disrupt natural control.

Of course, growers can choose to give Mother Nature generous benefit of doubt and hold off treating this winter.

**UC IPM Pest Management Guidelines – WALNUT**

**TREATMENT**

Pesticide (commercial name)	Amount to Use**		P.H.I.+ (days)
	(conc.)	(dilute)	

**CAUTION:** Oils are not recommended for use during the dormant season on walnut trees.

- A. METHIDATHION\*  
(Supracide) 25WP                      8 lb                                      2 lb                                      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.
- B. CHLORPYRIFOS  
(Lorsban) 4EC                              4 pt                                      1 pt                                      14  
COMMENTS: Make no more than 2 applications/season. Levels in surface waters of this material that are high enough to be toxic to certain aquatic invertebrates have occurred following rains; avoid runoff into surface waters.
- C. NARROW RANGE OIL#                                      Label rates                                      0  
COMMENTS: An application in summer will suppress low to moderate populations. Do not apply if trees have suffered from a lack of adequate soil moisture or other stressing factors (insects, disease damage, etc.) at any time during the year or if temperatures are expected to exceed 90°F at time of application.

\*\* 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.  
# Acceptable for use on organically grown crops.

**LAKE COUNTY FRUIT FROST MEETING**  
**Monday, February 11, 2002**  
**10:00 a.m. – 12:00 noon**

**Board Of Supervisors' Chambers**  
**Lake County Courthouse**  
**255 N. Forbes Street, Lakeport**

**Sponsored by:**

Lake County Department of Agriculture  
Lake County Fruit Frost Trust Fund  
University of California Cooperative Extension  
Lake County Air Quality Management District

**PROGRAM**

- 10:00 a.m.**    **Registration and welcome**  
*Chuck Morse, Lake County Department of Agriculture*
- 10:15**        **2002 Fruit Frost Program and Thermometer Testing**  
*Chuck Morse*  
*Marc Walsh, Weathernews, Inc., Chico*  
*Drew Tritchler, Lake County Department of Agriculture*
- 10:45**        **UCIPM Pest Cast Network and Lake County Weather Page Website Update**  
*Rachel Elkins, U.C. Cooperative Extension*  
*Marc Walsh*
- 11:15**        **Using the Adcon network for frost protection**  
*Derek Sissom, Agrilink, Santa Rosa*
- 11:30**        **New smoke management requirements and opportunities**  
*John Thompson and Bob Reynolds,*  
*Lake County Air Quality Management District*
- 11:45**        **Fruit Frost Program discussion and sign-up**  
**Display of fruit frost publications available from UCCE**
- 12:00**        **Adjourn**



**BRING THERMOMETERS FOR TESTING TO MEETING**  
(see instructions on page 2)

# MANAGING WATER IN NORTH COAST ORCHARDS

Thursday, February 14, 2002

8:00 a.m. to 2:00 p.m.

Blue Lakes Lodge, 5135 Hwy. 20, Upper Lake

## PROGRAM

- 8:00 a.m. Registration and Coffee**
- 8:30 Welcome and opening remarks**  
*Rachel Elkins, University of California Cooperative Extension,  
Lake and Mendocino Counties*
- 8:40 Water issues of concern to North Coast orchardists**  
*Janet Pauli, Chair, Mendocino County Inland Water and Power Commission  
Bob Lossius, Assistant Public Works Director,  
Water Resources Division., County of Lake*
- 9:20 Overview of irrigation management research in pears**  
*Rachel Elkins*
- 9:40 Dealing with increased energy costs**  
*Blaine Hanson, Land, Air and Water Resources (LAWR), UC Davis*
- 10:15 BREAK**
- 10:30 Irrigation scheduling; applying the CORRECT amount of water (ET scheduling, soil moisture monitoring, plant-based monitoring); the concept of RDI and what is known on pears**  
*Larry Schwankl and Blaine Hanson, LAWR, UC Davis  
Rachel Elkins*
- 11:40 Determining application rates of sprinkler and drip systems**  
*Larry Schwankl*
- 12:15 Irrigation system maintenance**  
*Larry Schwankl*
- 12:45 BUFFET LUNCH: Guest Speaker: Bill Pauli, President  
California Farm Bureau Federation**
- 1:45 Discussion And ADJOURN**

**Growers of ALL orchard crops should attend this meeting!**  
Register by **FEBRUARY 1** – see form on page 12



**2002 NORTH COAST PEAR RESEARCH MEETING**  
**Wednesday, February 20, 2002**  
**8:00 a.m. to 1:30 p.m.**  
**Veterans Auditorium, 293 Seminary Avenue, Ukiah**

**Sponsored by:**

University of California Cooperative Extension  
California Pear Advisor Board  
California Pear Growers  
Pear Pest Management Research Fund

**PROGRAM**

(2.5 units Continuing Education Credits requested)

**8:00 a.m. Registration and Coffee**

**8:30 Welcome and Announcements**

*Rachel Elkins, University of California Cooperative Extension  
Lake, Mendocino, Sutter and Yuba Counties*

**8:40 North Coast pear Industry priorities for research and extension: results of survey and roundtable discussions**

*Rachel Elkins*

***SESSION I: FIRE BLIGHT AND OAK ROOT FUNGUS***

**9:00 Progress toward developing an integrated management program for oak root fungus**

*Dave Rizzo, Dept. of Plant Pathology, UC Davis  
Rachel Elkins*

**9:20 Effect of growth regulators and pruning cuts on rat-tail bloom and fire blight**

*Steve Southwick, Dept. of Pomology, UC Davis*

**9:40 Biology and control of fire blight**

*Steve Lindow, Dept. of Microbial Biology, UC Berkeley*

**10:00 Questions and Discussion**

**10:10 BREAK – refreshments courtesy of California Pear Advisory Board**

***SESSION II: CODLING MOTH***

**10:30 Dispenser options for mating disruption**

*Steve Welter, Insect Biology, UC Berkeley*

**10:50 Reduced risk insecticides to supplement mating disruption**

*Bob Van Steenwyk, Insect Biology, UC Berkeley*

- 11:10**      **Evolution and outlook for North Coast areawide codling moth programs**  
*Rachel Elkins*  
*Lucia Varela, University of California Cooperative Extension/UCIPM,*  
*North Coast*
- 11:30**      **Evaluation of Isomate<sup>®</sup> and Checkmate<sup>®</sup> dispensers**  
*Chuck Ingels, UCCE, Sacramento County*  
*Lucia Varela*
- 11:50**      **Questions and Discussion**
- 12:00**      **LUNCH** (sponsored by CPAB – prior registration required)  
**Update on the CPAB Tree Pull Program**  
*Bob McClain or Chris Zanobini*

***SESSION III: CANOPY MANAGEMENT***

- 12:45**      **Effect of various pruning methods on yield and fruit size**  
*Chuck Ingels*
- 1:00**      **Evaluation of 45 rootstock x training combinations for Bosc pears**  
*Rachel Elkins*
- 1:15**      **Questions and Discussion**
- 1:30**      **ADJOURN**

Register by **FEBRUARY 13**  
see form on page 12



**REGISTRATION FORM**  
**Managing Water in North Coast Orchards**  
**Thursday, February 14, 2002**  
**Blue Lakes Lodge, Upper Lake**

Name \_\_\_\_\_ Phone \_\_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_

Crop interest \_\_\_\_\_

Make check payable to **UC Regents** (includes refreshments, lunch, and one irrigation manual of your choice - \$25 value).

Return this form **with** payment of \$20 per person **BY FEBRUARY 4** to:

U. C. Cooperative Extension  
883 Lakeport Blvd.  
Lakeport, CA 95453  
FAX – (707) 263-3963

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**REGISTRATION FORM**  
**2002 North Coast Pear Research Meeting**  
**Wednesday, February 20, 2002**  
**Veterans Memorial Building, Ukiah**

Name \_\_\_\_\_ Phone \_\_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_

Name \_\_\_\_\_ Phone \_\_\_\_\_

Total # of lunches \_\_\_\_\_ (compliments of California Pear Advisory Board)

Return this form **BY FEBRUARY 13** to: U. C. Cooperative Extension  
883 Lakeport Blvd.  
Lakeport, CA 95453  
FAX – (707) 263-3963