



your Lake County HORTICULTURAL NOTES

FEBRUARY-MARCH 1995

!!! MARK CALENDARS !!!

(contact us)

- | | |
|-----------------|--|
| MARCH 8 | HANDS-ON PESTICIDE APPLICATOR TRAINING
UC Hopland Field Station |
| MARCH 21 | TRAIN-THE-TRAINER (PESTICIDE HANDLERS)
(English and Spanish sessions)
Clear Lake Grange, Finley |
| MARCH 22 | TRAIN-THE-TRAINER (NON-PESTICIDE HANDLERS)
(Spanish only) |

(registration form for March 21 and 22 on tan page)

ORCHARD AND VINEYARD THERMOMETER TESTING

It's that time of year again! Art Horton from the U.S. National Weather Service will be here on March 8th to test thermometers. The schedule is as follows:

- | | |
|---------------------------|---|
| Monday, March 6 | <i>Bring thermometers into our office</i> |
| Wednesday, March 8 | <i>Thermometers will be tested</i> |
| Friday, March 10 | <i>Pick up thermometers</i> |

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:



- ❶ 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.
- ❷ Thermometers must be clean of chemicals and dust or they will not be tested.
- ❸ ***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 emersed in water during testing.
- ❹ Have your name clearly marked on the thermometer testing tag (for identification purposes).

Fruit Frost Report recordings are furnished by the Agricultural Commissioner's office. The telephone numbers are available to commercial growers by calling the Ag Commissioner's office at 263-2271, the Farm Advisor's office at 263-2281 or your local pear packing shed or winery. For your ease in accessing the recordings, these numbers are unlisted and not available to the general public. ***PLEASE KEEP THEM CONFIDENTIAL!*** The general public has access to these reports from the following radio stations and schedules:

KNTI 6:30, 7:30, 8:30 P.M. - 7 days per week

KUKI on the hour from 6:00 to 11:00 P.M. - 7 days per week

K-WINE on the hour after the news starting at 6:00 P.M. until Midnight or later as necessary based on frost threat situation

All of the above schedules will begin March 13, 1995. Again, to allow you access to the recordings more readily, please refer your non-grower friends to these radio schedules.

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

EFFECT OF ORCHARD FLOOR CONDITION ON TEMPERATURES

Recently, there has been discussion of whether it is harmful or beneficial to maintain a cover crop in orchards frost-protected by undertree sprinklers.

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.

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.

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 and the potentially very early bloom, I wish all Lake County growers a **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 first initial couple of 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 <u>maintain</u> :	
	<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

FROST PROTECTION FACTORS

TEMPERATURE CAUSING INJURY (30 minutes or more)

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

FROST PUBLICATIONS (available at UCCE office)

Frost Protection for North Coast Vineyards	Pub. #2743	\$1.50
Frost Protection: When to Turn Sprinklers On and Off	Pub #7165	Free
Passive Frost Protection of Trees and Vines (emphasis on soil and ground cover management)	Pub. #21429	\$1.50

1994 LAKE-MENDOCINO PEAR RESEARCH MEETING

Despite the excellent working weather on Friday, February 10, the turn out for the pear meeting was great. I think everyone agreed that the information and presentations were excellent and that there are many new ideas and techniques coming to California pear orchards. Of course, none of this would be possible without the partnership of the industry (collectively and by individual cooperators), UC campuses and Extension.

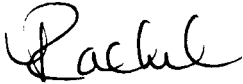
Perhaps of most immediate interest to Lake County growers is the impending registration of A506, now called Blightban A506®, by Plant Health Technologies. Dr. Steve Lindow of UC Berkeley presented results of recent trials, which indicate enhanced control of fireblight, frost and russet using A506 in conjunction with antibiotics.

Steve met recently with Lake County PCA's to discuss proper use of A506 and to plan 1995 demonstration trials. **I URGE ALL GROWERS TO DISCUSS APPROPRIATE USE OF A506 WITH THEIR PCA BEFORE APPLYING IT!**

If you attended the February 10 meeting, read the research report on A506 carefully. If you missed the meeting, contact us for a copy of "1994 Report Research Projects for California Bartlett Pears".

Let's give A506 the best chance to help control these three very critical problems!

Sincerely,



Rachel Elkins
Farm Advisor

UC Statewide IPM Project's 1995 Train-the-Trainer Programs

New Regulations Will Require Extensive Training in Safe Pesticide Handling

In response to recent federal regulatory action, the University of California's Integrated Pest Management Project, in cooperation with the Lake County Farm Bureau, the Lake County Cooperative Extension office, and the Lake County department of Agriculture, will offer three workshops for trainers of pesticide handlers and fieldworkers on March 21 and 22 in Lakeport. The March 21 workshop is designed to prepare trainers of pesticide handlers and fieldworkers to conduct effective and complete training sessions that will comply with state and federal requirements. The March 22 workshops are designed for trainers of fieldworkers who do not handle pesticides. One of these workshops will be conducted in Spanish and the other in English.

The federal Environmental Protection Agency issued new worker protection standards that now require each state to develop tougher regulations ensuring the safety of those who use pesticides in commercial settings and those who work in areas where pesticides have been applied. These regulations were fully implemented on January 1.

Trainers who attend these workshops will be issued certificates which they can use to obtain and issue Worker Protection Standard Training *Worker Verification Cards*. Pest Control Advisers, licensed pesticide applicators, and growers are able to issue these cards without attending one of these workshops, however the workshops will provide information on what type of training is required and how to conduct training sessions.

The March 21 workshop for trainers of pesticide handlers and fieldworkers is an 8-hour session beginning at 8 am and continuing to 4:30 pm. Lunch, refreshments, a training manual, and several other resources are provided for the \$100 registration fee.

The two workshops held on March 22 will be 4 hours in length, from 8 am to 12 noon. The \$40 registration fee includes materials for conducting fieldworker training and refreshments.

Enrollment in these programs is limited due to the nature of the training being provided. Anyone interested in participating is encouraged to register early. Mail, telephone, and FAX registrations are accepted and payment can be made by check or credit card. For further information or to register by telephone, call the University of California IPM Education and Publications office at (916)752-7691. For mail or FAX registrations, use the registration form below:

REGISTRATION FORM

PHOTOCOPY THIS FORM FOR ADDITIONAL REGISTRATIONS

Registration may be made by:

MAIL - Mail this registration form to:
IPM Education & Publications
University of California
Davis, CA 95616-8620

PHONE:
(916)752-7691
Also call this number
if you have questions.

FAX:
(916)752-9336
If paying by
credit card.

Please Print:

Name (First, Middle, Last) _____ () _____
Daytime Phone

Mailing Address _____ City _____ State _____ Zip _____

Please register me for the TRAINERS workshop scheduled for (check one):

☐ Lakeport, Tuesday, March 21, 1995 - \$100 - Workshop for trainers of pesticide handlers/fieldworkers (English)
Workshop hours 8 am to 4:30 pm

☐ Lakeport, Wednesday, March 22, 1995 - \$40 - Workshop for trainers of fieldworkers (English)
Workshop hours 8 am to 12:00 noon

☐ Lakeport, Wednesday, March 22, 1995 - \$40 - Workshop for trainers of fieldworkers (Spanish)
Workshop hours 8 am to 12:00 noon

☐ Enclosed is my check for \$ _____ payable to UC Regents. ☐ Please charge my ☐ VISA ☐ MasterCard

Account # _____ Expiration Date: _____

Signature _____ Print Name of Cardholder _____