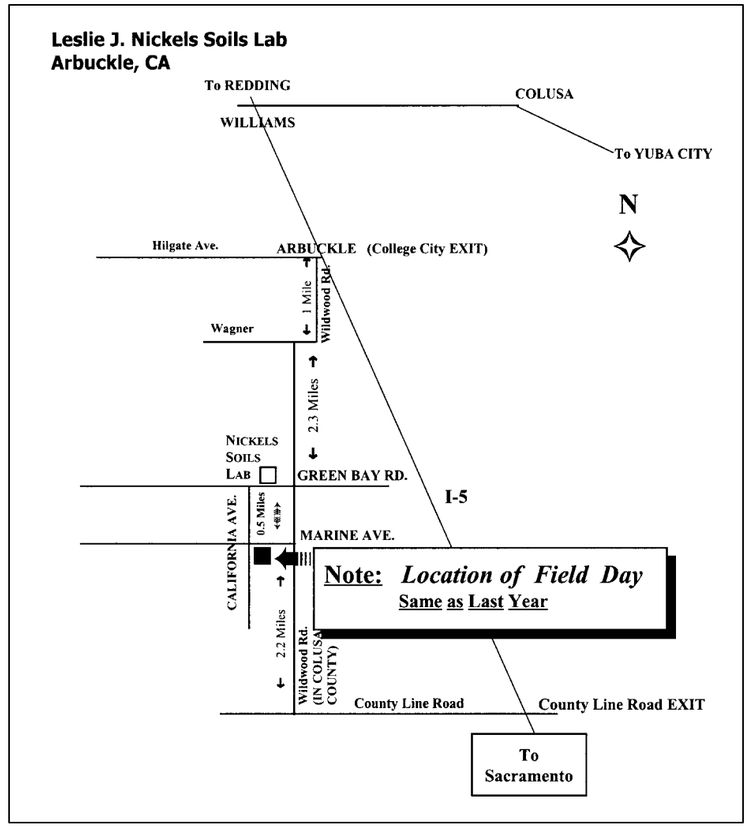

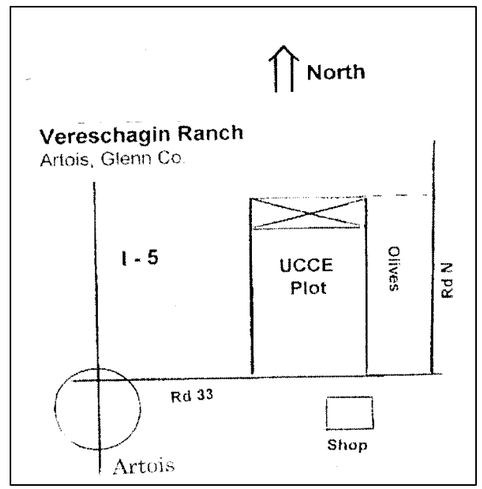

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11

ORCHARD FACTS

UNIVERSITY OF CALIFORNIA · COOPERATIVE EXTENSION · GLENN COUNTY

P.O. Box 697 (821 E. South St.), Orland, CA 95963 · (530)865-1107 · FAX (530)865-1109 · (800)698-4544 (TDD)

Cooperative Extension Work in Agriculture and Home Economics, U.S. Department of Agriculture, University of California and County of Glenn Cooperating

April 10, 2000

Vol. II, No. 8

In This Issue

Bill Krueger
Farm Advisor

PRUNE PEST MANAGEMENT ALLIANCE MEETING

April 20, 2000
9:00 a.m.
Talbot-Vereschagin Farms
1 mile east of Artois on Co. Road 33

Sponsored by:

Glenn County Water Stewardship Committee
Glenn County NRCS
Environmentally Sound Prune Systems
Glenn County Cooperative Extension

Agenda:

NRCS EQIP Programs for Glenn County
Hue Dang, NRCS, Glenn County

Covercrops in Orchard Systems
Fred Thomas, CERUS Consulting

Herbicide Runoff Trials in Citrus
Tim Prather, UC IPM Weed Ecologist

Dormant Spray Runoff Trials
Frank Zalom or Mike Oliver, UC Integrated Pest Management Specialist

Aphid Control in Prunes
Bill Krueger, UCCE Glenn County

Disease Monitoring - Prune Rust and Fruit Brown Rot
Bill Krueger, UCCE Glenn County

2.5 hours of PCA credit pending

Funding was provided by the University of California Cooperative Extension, USDA, Natural Resources Conservation Service (NRCS) in California Through the Environmental Quality Incentives Program (EQIP).

23rd NICKELS FIELD DAY

Thursday, May 11, 2000

8:30 am

Nickels Soils Lab

Marine Ave - Arbuckle

(Same location as last year)	
1/2 MILE SOUTH OF ORIGINAL SITE ON GREEN BAY	**(See MAP on back)**

TOPICS:

8:30 am Coffee and Donuts courtesy of Colusa-Glenn Farm Credit Association

9:00 am **Introductions**

9:15 am **Field Presentations**

OPTIMIZING ALMOND POLLINATION:

A. The Role of Varieties and Flower Biology
Dr. Tom Gradziel Pomologist UC Davis

B. Managing Honeybees
Dr. Robert Page Entomologist UC Davis
Mike Rosso Pollination Consultant Yuba City

Reducing Almond Production Costs
Bill Krueger UC Farm Advisor Glenn County

Almond Disease Developments
Dr. Jim Adaskaveg Plant Pathologist UC Riverside
Joe Connell UC Farm Advisor, Butte County

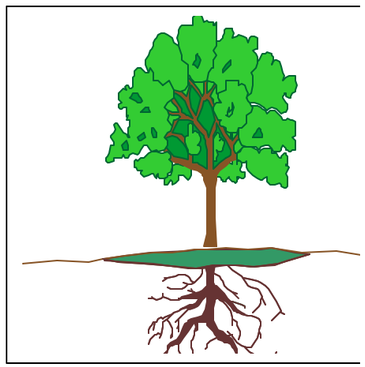
Training and Pruning for Early Yield
John Edstrom UC Farm Advisor Colusa,Yuba and Sutter Counties

Micro-irrigation Systems &Measuring Tree Water Stress
Dr. Larry Schwankl Irrigation Specialist
Dr. Ken Shackel Pomologist UC Davis

Equipment Demonstration: **Lazo Frost Control Machine**
Dan McGuire AgTec, Visalia

12:00 pm Adjourn

12:30 pm Lunch



Catered Tri-tip Lunch by **PREPAID RESERVATION**: $8 per person ($10 at the door)

Proceeds to benefit the Pierce Youth Foundation

Return attached registration by May 1st to: *Pierce Youth Foundation, P. O. Box 1349, Arbuckle, CA, 95912*

(Make checks payable to: *Pierce Youth Foundation)*

Luncheon Reservation Form

Nickels Field Day

Please return this form and your check by May 1st.

Cost: ***$ 8.00/person (Prepaid Reservation)*** **Make checks payable** ***Pierce Youth Foundation***
$10.00/person at the door **& mail to:** ***P. O. Box 1349***
Arbuckle, CA, 95912

Name:		
Address:		
City:	**State:**	**Zip:**
Phone:		
Name(s) of Attendee(s):		
Total Amount Enclosed:		

EXAMPLES OF IRRIGATION

1. Sprinkler irrigated almonds

Crop ET = .25 inches/day
Available water - 1.5 inches/ft.
Effective rooting depth - 4 feet
Application rate - .1 inches/hour
Application efficiency - 80%
Allowable Depletion - 50%

In this example we have a total of 6 inches available (1.5 inches/ft. X 4 ft. effective rooting depth). Of this, we only want to deplete 50% or 3 inches. If daily ET is .25 inches, it would take 12 days (3 inches/.25 ET/day) to use this amount. To refill the soil profile, we would need to apply 3.75 inches (3 inches/.8 efficiency). At an application rate of .1 inch per hour, we would need to run the sprinklers 37.5 hours. If we did not want to run our sprinklers this long, we would not allow this much depletion to occur. For example, if our maximum run time was 24 hours, we could only allow 1.9 inches depletion to occur (24 hours x .1 inch/hr x .8

2. SURFACE SYSTEMS - Flood Irrigation

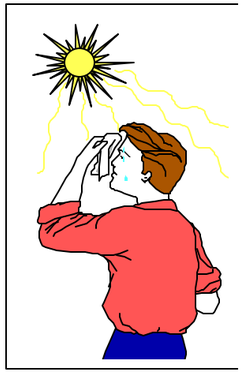
An orchard has a rooting depth of 4 feet and is on a relatively uniform sandy loam soil which holds an average of 1.1 inches of available water per foot. When this 4 feet of soil is wet to capacity, it holds approximately 4.4 inches of available water. To apply an irrigation when 50 percent of the water is still available, the orchard should be irrigated when 2.2 inches of water have been used. According to published ET data, crop water use the previous week was 1.4 inches and 0.8 inches the week before. This totals 2.2 inches indicating the orchard should be irrigated. Since the orchard's furrow irrigation system is 60 percent efficient, the grower should apply a 3.7 inch irrigation to replenish the available water in the soil reservoir.

1. Silt loam soil

Available water = 1.5 inches/foot
Rooting depth = 4 feet
Allowable Depletion = 50%
Crop ET = .25 inches/day

This is a soil with a low infiltration rate and we are only able to wet to a depth of 18 inches. Although we have an allowable depletion of 3 inches (1.5 inches/ft x 4 ft. = 6 inches x .5 allowable depletion), we are only able to apply 2.25 inches (1.5 inches/ft x 1.5 ft.). This then becomes the limiting factor and we would have to irrigate in 9 days (2.25/.25 ET).

Depth of penetration on most soils can be determined by using a 3/8 to ½ inch steel rod sharpened on one end with a "T" handle welded on the other end. In most soils, this probe can be pushed in the soil as far as the water penetrated following an irrigation. This allows for rapid, repeated checks on penetration.



1. Drip Irrigation

Crop - Prunes
Crop ET = .25 inches/day
Tree spacing is 18 ft. on a diamond or 155 trees/acre.
$\frac{\text{ET (inches/day) x 27,154 gallons/acre inch}}{\text{trees/acre}}$ = gallons/tree/day
(.25 x 27, 154)/155 = 44 gallons/tree/day

Assuming 90% efficiency, you would have to apply +49 gallons to get 44. If you have 4 one gallon/hour emitters per tree, it would be necessary to run the system 12 hours per day.

This method of irrigation scheduling will give you a place to start. It must then be verified with field checks using devices such as tensiometers, gypsum blocks, soil probes or a shovel.

CIMIS WEATHER DATA AVAILABLE

We will be making local weather data printouts available to interested growers again this year. Weather data will be sent out for the previous week each Monday beginning May 1 through October. This year the data will also be available via e-mail. The printout lists data such as evapotranspiration, precipitation, maximum and minimum air temperatures as well as wind speed and soil temperatures. The information is gathered through our local CIMIS weather station located in the Orland area.

Evapotranspiration numbers can be valuable tools in planning irrigations. Maximum and minimum temperatures can be used to follow insect development and aid in treatment timing.

If you would like to receive the weather information printout or a weekly e-mail, call the Farm Advisors' Office for more details at 865-1107.

IPM UPDATE

This information should not be used to time treatments in specific orchards, but can be used to compare results from your own traps and to give some ideas when to expect insect activity. To establish your own biofix, hang at least one trap in an orchard before activity is expected and note the date of sustained catches (catches on two consecutive readings). If you are connected to the internet, weather information can be found and day degrees can be calculated by logging on to the IPM home page at www.ipm.ucdavis.edu. We will be sending IPM updates weekly via e-mail. If you have e-mail and would like to receive this, contact our office or e-mail me at whkrueger@ucdavis.edu. Following is an example of an IPM update.

University of California Cooperative Extension, Glenn County Bill Krueger and Zachary Heath
April 7, 2000

Codling Moth: We began catching CM in a walnut orchard southeast of Orland around the 2nd of April. Treatment timing for CM in walnuts is recommended at 300 degree days (DD) after biofix, or when the walnuts are 3/8 to ½" in diameter. Using April 2nd as the biofix, 300 DD should occur on April 30th, given average temperatures. The warm weather we have been experiencing should push up this date by several days. CM is currently at 70 DD.

Peach Twig Borer: We also began catching PTB in almond orchards south of Orland around April 2nd. Treatment timing for PTB in almonds is at 400-500 DD after the biofix. Using April 2nd as the biofix, this should occur around May 7 to May 13 with average temperatures.

Navel Orangeworm: We began catching NOW in a pistachio orchard near Orland around the 6th of April.

Oriental Fruit Moth: Using the Tehama County biofix of February 20th for OFM, 502 DD have been accumulated. The recommended treatment timing for OFM is at 500-600 DD after the 2nd biofix. This should occur some time at the end of May. We are currently catching about 9 moths/night in a prune orchard near Hamilton City.

California Red Scale: We began catching CRS in an orange orchard south of Orland around the 2nd of April. Treatment timing for CRS using a spray is recommended at 555 DD after the peak male flight. We are currently catching about 20 males/day.

San Jose Scale: We have not yet detected any SJS in our traps.

WATER BUDGET IRRIGATION SCHEDULING

The water budget approach is a useful tool for deciding when and how much to irrigate. Simply stated, this method involves keeping track of how much water is stored in the soil profile, subtracting water as it is used by the crop and irrigating when a predetermined amount of water has been depleted.

To use this system, several things must be known.

2. Evapotranspiration (ET) is a combination of evaporation from the soil surface and transpiration from leaf surfaces. ET values from the Orland CIMIS station are available from our office. Values published in local papers have been adjusted to a specific crop and field condition. Values from the CIMIS station are reference ET's and must be adjusted by multiplying by a crop coefficient. Crop coefficients can be obtained from our office.

3. Soil Water Holding Capacity is how much water is stored in the soil for plant use. The following table lists approximate available water holding capacity by soil texture.

SOIL TEXTURE	INCHES OF AVAILABLE WATER PER FOOT OF SOIL DEPTH
Sand	.5 - .7"
Fine Sand	.7 - .9
Loamy Sand	.7 - 1.1
Fine Sandy Loam	.9 - 1.6
Sandy Loam	.8 - 1,4
Loam	1.0 - 1.8
Silt Loam	1.2 - 1.8
Clay Loam	1.3 - 2.1
Silty Clay Loam	1.4 - 2.5
Clay	1.4 - 2.4

4. Water application = application rate x hours operated

Following are some conversion factors and formulas which should be used for calculating water applications.

CONVERSION FACTORS

Volumes: One Acre Inch = 3,630 cubic feet
= 27,154 gallons
One Acre Foot = 43,560 cubic feet
= 325,851 gallons
= 12 acre inches
One Cubic Foot = 1,728 cubic inches
= 7,481 (approx. 7.5) gallons
One Gallon = 231 cubic inches
= 0.13368 cubic foot

Flow Rates:

One Cubic Foot Per Second = 448.83 (Approx.) 450 gallons per minute
= 0.992 (Approx. 1) acre inch per hour
= 1.984 (Approx. 2) acre feet per day

One Acre Inch Per Hour = 452.6 (Approx.) 450 gallons per minute

Area: One Acre = 43,560 square feet

CALCULATING THE APPLICATION RATE IN INCHES PER HOUR

$$\text{INCHES PER HOUR} = \frac{\text{Gallons Per Minute}}{452.6 \times \text{acres}}$$

$$= \frac{\text{C. F. S.}}{1.01 \times \text{ACRES}}$$

$$= \frac{\text{EMITTERS/PLANT X FLOW/EMITTER in gallons per hour}}{.623 \times \text{PLANT SPACING in square feet}}$$

$$= \frac{\text{GALLONS/PER MINUTE/SPRINKLER X SPRINKLERS /ACRE}}{452.6}$$

$$= \frac{\text{GALLONS PER MINUTE/SPRINKLER X 96.3}}{\text{SPRINKLER SPACING in square feet}}$$

5. System Efficiency - How much of the water applied is available to the plant. Following are some approximate efficiencies.

SYSTEM	EFFICIENCY
Drip/Microsprinkler	90-95%
New, well maintained sprinklers	75-85%
Older sprinklers	65-80%
Flood, small basins	75-80%
Contour flood	60-65%
Furrow	40-60%
Furrow with return system	60-75%

6. Root depth. What is the effective rooting depth from which water would be depleted? In most crops, 75% of maximum rooting depth is the effective rooting depth.

7. Allowable depletion. It is not advisable to deplete all of the available moisture between irrigations. In most crops we only want to deplete 50-75% of available moisture before irrigating.