your *North Coast* Orchard Notes

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

MAY 1999

LOCAL UC-SPONSORED WEATHER INFORMATION FOR ORCHARDISTS

North Coast orchardists may access local weather data in various ways. They may purchase individual monitoring units, or access data from a networked system. In either case, units consist of one or more sensors (e.g. air temperature and relative humidity) which feed raw data to a processor, which then manipulates and downloads it in readable form to the user, either at the device itself or via computer communications software. Information ranges from raw data to output from various models, such as apple scab, powdery mildew, and degree-days for various insect pests. Chilling hours (below 45°F) and frost data are also common outputs.

There are two UC-sponsored network systems available by varying means to Lake and Mendocino orchardists. Both systems were funded (at least in part) by a Statewide UCIPM PestCast research weather database grant originating from US EPA and the California Department of Pesticide Regulation.

The Lake County Pear and Grape PestCast Network

This system was initiated in 1996. Grantees were University of California Cooperative Extension in Lake County, Lake County Air Quality Management District (LCAQMD), and the Lake County Fruit Frost District. The purpose of PestCast is to develop and disseminate disease models. The Lake County network is unique among PestCast systems in its multifunction purpose: pest management research, air dispersion, fire hazard, and agricultural/fruit frost data collection. After initial planning, station installation, and "growing pains", all stations (except one at Red Hills, which will be operational in summer 1999) became fully operational in March 1999. Depending on location, there are sensors in both grape and pear canopies, as well as above canopy.

The PestCast grant paid for the base computer (located in the UCCE office) and three Campbell Scientific CR-10X weather stations (Middletown, Scotts Valley and Upper Lake). UCIPM also pays for three phone lines (Kelseyville, Middletown, and base computer). The LCAQMD purchased additional stations (Buckingham Point, Kelseyville, Mt. Konocti, Red Hills). WeatherNews, Inc. of Chico is the statewide PestCast contractor; they handle system installation, calibration and maintenance. Annual maintenance expenses ($200 per station) for 1999 were shared by the UCCE Pomology program (3 stations), LCAQMD (2 stations), and the Lake County Fruit Frost District (1 station).

Data for all PestCast systems is downloaded overnight to the UCIPM website, ***www.ipm.ucdavis.edu*** (click on crop disease models and go to PestCast research database). Data varies by station. Data is summarized in 15-minute, hourly and daily increments. From the PestCast web site, data can be downloaded for a variety of purposes depending on individual need. Data is archived permanently by UCIPM so users may access both current and historical information. The UCIPM PestCast website describes parameters for many crop pest models. Degree-day calculations using the local stations can be made on the site. For information on which data is useful for which model, please contact UCCE or email UCIPM at **ipmig@ucdavis.edu**.

As an optional addition to its fruit frost contract, WeatherNews currently publishes a web page, ***www.wxnet.com/lakeco***. Using the Campbell stations (including two privately-owned stations on Guenoc Ranch), this site displays daily weather forecasts, real-time hourly data for Kelseyville, Middletown, Scotts Valley, and Upper Lake, and data from the previous one to seven days. It also includes links to many other weather-related sites. Status of the WeatherNews website after frost season will depend on user interest and willingness to contribute financially to its continuation. Starting with the year 2000 frost season, access to the WeatherNews site may be limited only to those who contribute to the Fruit Frost Trust Fund. For further information on the Lake County Weather Page, contact WeatherNews, Inc. at 530-893-0308, or email them at **wnichico@wni.com**.

In conjunction with its statewide PestCast contract, WeatherNews has produced accompanying software, Weather Information Network Display System (WINDS), designed mainly for Campbell Scientific dataloggers. Campbell Scientific PC208 communications software is required to download station data into WINDS. WINDS is currently installed and operating on the UCCE base station computer in Lakeport. Details on content, availability and cost of the WINDS software can be obtained from WeatherNews.

The Lake County Grape and Pear Network is a radio telemetry system. The Mt. Konocti station relays data from the other stations to the Kelseyville station, which is then interrogated via telephone. The system thus allows for expansion based on potential user interest and financial capacity; for example, if solar radiation sensors are installed, ETO for irrigation scheduling can be calculated.

To learn more about the UCIPM PestCast system, Lake County Pear and Grape Network, or the Fruit Frost District and Trust Fund, contact the following individuals:

- ✓ Rachel Elkins, Pomology Farm Advisor, 263-6838
- ✓ Mark Lockhart, Agricultural Commissioner, 263-0217
- ✓ Bob Reynolds, Director, AQMD, 263-7000
- ✓ Joyce Fox Strand, UCIPM, (530) 752-7693

Mendocino County Adcon Monitoring System

The PestCast pear-related portion of this system consists of three Adcon Telemetry weather stations, a relay station in Potter Valley, and a base computer in the Mendocino UCCE office.

Communications and display software is also installed in the Lake County UCCE office with access to data from all Adcon stations located in Mendocino pear orchards. Data is accessed via modem from Ag Unlimited, the Adcon franchisee for Lake and Mendocino County. It is available *directly* only to those growers who own Adcon stations and/or purchase the necessary communications software, and who pay a monthly service fee to the franchisee.

Adcon has donated communications and display software to UCCE for model validation research. It is currently being utilized for codling moth degree-day and pear scab (Mills Table) models. Information on the Adcon system may be obtained from Ag Unlimited, (707) 468-8154. Contact UCCE for information on use of the system for research purposes.

1999 LAKE COUNTY WALNUT UPDATE HANDOUTS

Concern about the economic status and future of the local (and statewide) walnut industry prompted a turnout of over 50 growers in March. Speakers and panelists presented much valuable information. Of particular interest were several key points made by UC Davis Extension Ag Economist Karen Klonsky (some of which are highlighted in Figures 1 to 4 on pages 8 and 9):

1. Chandler now dominates the shelling market, reflected by lower prices for traditional varieties such as Franquette, which is a mainstay of the Lake industry.

2. Labor availability and cost has become a key limiting factor for local walnut growers; hand-harvested orchards that cannot be mechanically harvested will be at a greater disadvantage than those on flat ground.

3. Per acre tonnage has stayed flat, or even declined relative to the state average. Dr. Klonsky stated that even a 5% increase from 30% to 35% of state average, would translate into a substantial increase in returns, especially combined with conversion to newer varieties such as Chandler or Howard.

4. For all perennial crops, purchased input costs have increased dramatically. Adoption of newer technology, such as rootstocks, varieties, and planting densities, is critical to recoup these increases.

Marketing was also discussed. Besides an overview of the statewide marketing program, two alternative options were presented by local growers. Linda Holdenried described Lake County Farmer's Finest, a group of 17 growers who share a logo focusing on local quality. Chuck Frances encouraged growers to consider organic production, which recently has been receiving very respectable returns due to high demand and limited supply. Low pest control need in Lake County orchards may make organic growing feasible for many growers.

Growers unable to attend the meeting may contact me for copies of the following items:

- ✓ 1998 Walnut Research Reports (Walnut Marketing Board, 410 pp.)

- ✓ handouts from Dr. Karen Klonsky's talk on the economics of local production
- ✓ California Walnut Commission Winter Report
- ✓ Walnut Production and value – 1948 to 1987, 1996-1997 (Lake County Dept. of Agriculture)
- ✓ Tulare hedgerow production records and grade sheets (Joe Conant, Wheatland)
- ✓ California Walnut News and California Walnuts 7 Day Meal Plan (WMB promotional materials)
- ✓ Walnut blight; UCIPM Pest Management Guidelines/stages of development of the pistillate or female flowers of walnuts (to time copper applications)

Chuck Frances has also provided copies of a newsletter from the California Certified Organic Farmers if you are interested in researching requirements for certification. We also have *Production Practices and Sample Costs for Organic Walnuts – Sacramento Valley – 1994 – Standard Spacing/Sprinkler Irrigated*, produced by Karen Klonsky.

FOCUS ON SUMMER CARE OF YOUNG TREES

Irrigation - it is May 10th and growers only recently experienced wet weather on May 2-3. However, recent warming has hastened the need to irrigate young trees in the near future. This is because:

1) limited root systems draw moisture from a limited area; any damage caused by sustained waterlogging further reduces the effective root zone and uptake;

2) heavy weed growth easily out-competes tree roots for moisture (and nutrients);

3) less stored reserves in bark and roots necessitates more dependence on the soil for early nutrient uptake, which requires adequate moisture on a constant basis, which takes us back to 1); and

4) unlike mature tree root systems, root systems are constantly expanding in area and density, which must be encouraged.

Growers should begin to comparatively monitor soil moisture around mature versus young plants and make sure the needs of young trees are met. It is crucial that young tree root systems be kept moist but not waterlogged.

Unfortunately, there is little good information on actual water use of young trees. Irrigation amount/timing is usually "seat of the pants", based on experience and convenience. UC Extension Specialist Dr. Scott Johnson has developed actual water use data using a weighing lysimeter (a scale that measures subtle weight changes in plants). The following table has been adapted for Lake County from evapotranspiration (ET) data from the Kearney Ag Center at Reedley, where the experiment was done. Although the data was developed for stone fruit, there is likely to be little difference for *young* deciduous trees of most species. Mendocino County growers can adjust the following table for their use. Ukiah's year-round ET is typically 95% of

Lake County's. In coastal locations such as Point Arena, water use is 95% of Lake County's ET October through March, and 60% of Lake County's water use in the warmer months.

Estimated Water Use of Young Trees in Gallons/Week
Lake County, California

Tree Volume	March*	April*	May	June	July	August	Sept.**	Oct.**
10	7	10	19	23	38	28	20	8
25	7	10.5	19	28	39	29	20	9
50	8	12	22	31	42	31.5	22	9.5
100	10	14	25	35	46	36	25	11
200	14	19.5	32	44	58	45	33	15
300	18	25	37	49	62	49	37	20
400	21	30	44.5	58	72	57	44.5	24
500	25	36	49	64	77	63	49	28
600	28	40.5	56	72	87	71	56	33

***** In years of normal rainfall, irrigating in March and April may actually inhibit roots.

** These values for late September or October would only be applied in years when temperatures stay high. Once the weather cools down, irrigation should be stopped to reduce the potential for root and crown rot.

In the table, tree volume refers to height x length x width of an average tree. Also, the data was developed from trees irrigated by drip using multiple emitters, thus application efficiency was high. In descending order, drip efficiency > microsprinkler > undertree sprinklers > flood/basin, so actual amount applied must be adjusted accordingly.

Other factors to consider are:

soil type **–** heavy soils hold more moisture and are more prone to waterlogging. Lighter soils drain faster. In either case, lighter, more frequent irrigations may be in order.

weather **–** obviously, cooler conditions reduce ET and warmer weather increases it; make adjustments accordingly.

weeds/covercrop **–** the table assumes *no competition*. Competing vegetation can add up to 30% additional water use.

Although the table is **only a guide**, it provides a clear picture of changing irrigation needs through the season.

Nitrogen fertilization - Yolo-Solano Farm Advisor Wilbur Reil suggests applying 1 oz. actual N per year of tree growth (below). He says some growers in his area apply this amount at each irrigation to keep trees growing vigorously all summer. It is important, however, to cease in time to promote hardening off, since fall frost can cause considerable damage to young trees.

Tree Age (years)	***Actual N per Season (*split *into spring plus summer applications)***
1	3 oz. (1.5 oz. each spring and summer)
2	4 oz. (2 oz. per application)
3	6.5 oz. (3.25 oz. per application)
4	9 oz. (4.5 oz. per application)
5	same as mature trees

SUMMER CHECKLIST FOR YOUNG FRUIT AND NUT TREES

(contact me for further details about any of the following):

- WEED CONTROL!!! (but watch herbicide phytotoxicity).
- Remember, young plants need more frequent, lighter irrigations than established ones, but watch excess moisture which will reduce vital oxygen in the root zone.
- A little fertilizer to push growth should be applied **after** growth begins.
- Begin to train the leader in 1-year-old walnuts; stake **up wind** of tree to avoid rubbing trunk and limbs. Pinch back competing laterals.
- Remove suckers when about 6-12" long. In walnuts, tear out or spray shears with Galltrol between cuts to prevent crown gall infection.
- Vertebrates can kill young plants in a hurry! Keep the area around trees trash and weed free.

CALIFORNIA OLIVE OIL COUNCIL

North Coast olive growers (or prospective growers) should be interested in joining the California Olive Oil Council (COOC). COOC is dedicated to disseminating information on all aspects of olive oil production, from growing olive trees to oil production, quality evaluation and marketing. They publish three issues a year of the newsletter, *Olea* (contact me for a sample copy), as well as sponsor workshops, tastings, and other events. They also offer certification and a logo for extra virgin olive oil.

For more information on COOC, contact:

Patricia Darragh
California Olive Oil Council
19229 Sonoma Hwy., No. 264
Sonoma, CA 95476-9830
(888) 718-9830
(510) 528-2271 (FAX)
oliveoil@cooc.com
www.cooc.com

VIII INTERNATIONAL SYMPOSIUM ON PEAR

The first announcement for this excellent conference was recently released. It is held in a different country every four years, and will be held September 5-10, 2000 in Bologna, Italy. Topics will include: genetics, varieties, propagation, biotechnology, rootstocks, orchard systems, pruning, soil management, nutrition, crop physiology, plant protection, post-harvest and fruit quality, processing, economics, and marketing. There will be two field trips and additional sightseeing. This is a wonderful opportunity to gain a worldwide perspective and meet growers and other industry personnel from around the world.

Pear trees "woke up" with a bang this spring (about a five day versus the four week bloom period in 1998), and so far the crop is FULL. Some frost, hail, and scab damage is apparent from late March and April storms. Many walnut trees were in bloom when the rains hit May 2-3; detrimental effects on pear scab, walnut pollination, and walnut blight should show up in this month.

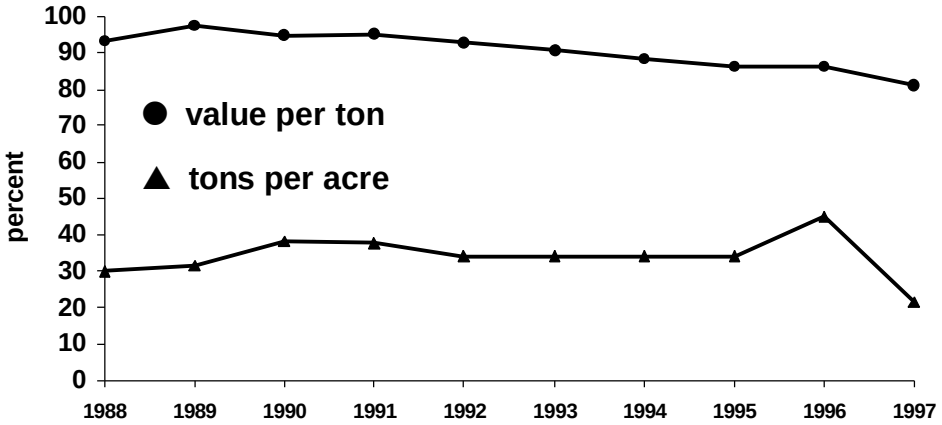
Have a GREAT Summer !!

Sincerely,

Rachel Elkins
Pomology Farm Advisor

LAKE COUNTY WALNUTS *as a* PERCENT *of* CALIFORNIA ENGLISH WALNUTS

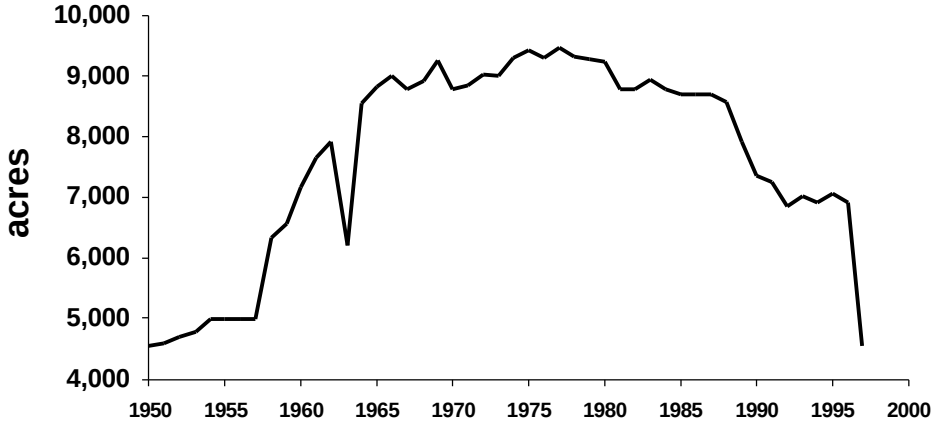
Yield and price



Source: Lake County Agricultural Commissioners' annual reports
Karen Klonsky, Dept. of ARE, UC Davis

LAKE COUNTY WALNUTS, 1950-1997

Acreage



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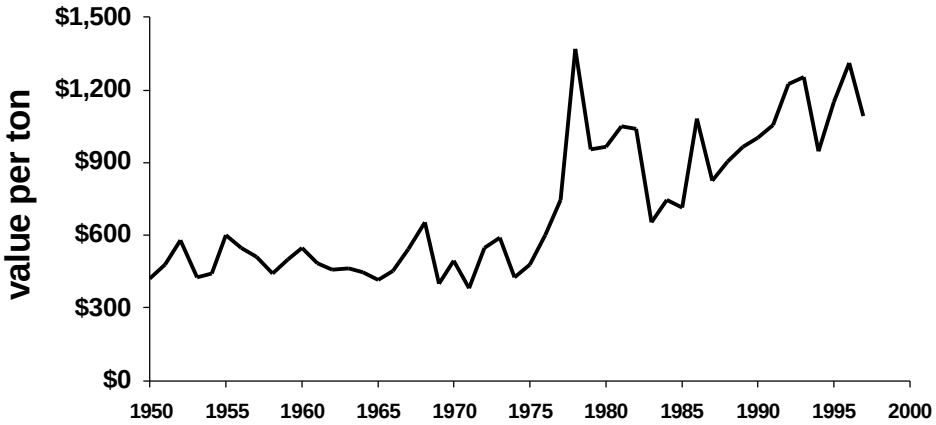
LAKE COUNTY WALNUTS, 1950-1997

Value per ton



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