



Tree and Vine Newsletter



Chuck Ingels, Pomology/Viticulture Farm Advisor
Jenny Broome, Ph.D., Area Plant Pathologist

4145 BRANCH CENTER ROAD, SACRAMENTO, CA 95827-3898
E-MAIL caingels@ucdavis.edu, jcbroome@ucdavis.edu

OFFICE (916) 875-6913 FAX (916) 875-6233
Web Site: <http://cesacramento.ucdavis.edu>

January 2009

2009 SACRAMENTO RIVER DISTRICT PEAR RESEARCH MEETING

Tuesday, February 10, 2009

Walnut Grove Library Meeting Room, 14177 N. Market St., Walnut Grove, CA 95690
3 hours PCA / Private Applicator C.E. credit and 3.5 hours Certified Crop Advisor C.E. credit applied for

Sponsored by:

UC Cooperative Extension, Calif. Pear Advisory Board, and the Pear Pest Management Research Fund

Agenda

8:00 Refreshments

Entomology

8:30 Continued development of meso-emitters for pheromone mating disruption of codling moth
Frances Cave – UC Berkeley

8:50 Pest management strategies incorporating new, reduced-risk insecticides
Effects of pH on the efficacy of Ethephon and insecticides
Bob Van Steenwyk – UC Berkeley

9:20 Control of codling moth by postharvest application of Ethephon 2SL and insecticide
Chuck Ingels – UCCE Sacramento County

9:35 Mite surveys: Beneficial mites that prey on phytophagous mites
Rachel Elkins – UCCE Lake & Mendocino Counties

9:50 -- **Break** --

10:10 Survey: Needs Assessment for UCCE Programs

Plant Pathology

10:15 Evaluation of new bactericides for control of fire blight
Jim Adaskaveg – UC Riverside

Horticulture

10:35 Evaluation of potential new size controlling rootstocks
Rachel Elkins – UCCE Lake & Mendocino Counties

10:50 1) Inducing precocity in European pears
2) Use of plant growth regulators for freeze protection & increased fruit set
3) Managing bloom and cropping in European pear
Kitren Glozer – UC Davis

11:40 Use of autumn foliar fertilization for stimulating early dormancy: Potential effects on nitrogen, vegetative growth, and fire blight
Chuck Ingels – UCCE Sacramento County

11:55 Sustainable practices program development
Holly King – Great Valley Center, Modesto, CA
Andrew Arnold – SureHarvest, Soquel, CA

12:15 **Lunch** – Provided by Calif. Pear Advisory Board

CHILL PORTIONS AND DORMANT SPRAY TIMING

by Chuck Ingels

Stone and pome fruit trees rely on enough chilling for flowers and leaf buds to develop normally. If the buds do not receive sufficient chilling during winter to completely release dormancy, trees may develop physiological symptoms such as delayed and extended bloom, delayed foliation, reduced fruit set, and poorer fruit quality.

For decades, the chilling requirement of fruit trees has been defined as the number of hours below 45° F during the dormant season – generally between Nov. 1 and Feb. 15. However, simple chill hours (**CH**) do not account for warm days, which can cancel out the previous night's chilling experienced by trees. Also, chill hours accumulate in October, which help satisfy the chill requirement of dormant buds.

The Dynamic Model was developed in Israel in the 1980s and 1990s and has been tested on cherries and pears by UC researchers in the last six years. The model calculates chilling accumulation as 'chill portions' (**CP**), using a range of temperatures from 35-55°F (some temperatures are more effective than others), and it also accounts for chill cancellation by fluctuating warm temperatures. **CH** vary much more widely from place to place in any single year and also from year to year than do **CP**, as can be seen in Table 1. Also, using a **CP** range has provided the best response in the application of rest-breaking chemicals.

Pears

Our work in pears has shown that the broad definition of 800-1000 **CH** as a requirement for Bartlett pear should be considered as 56 to 66 **CP**, based on observations of bloom timing and best response to dormancy-enhancing treatments. Also, we have found that applying dormant oil at about 40 **CP** has led to the best effects on yield and fruit size.

Cherries

Many sweet cherry growers use rest-breaking chemicals to compact and advance bloom and harvest, especially when winter chill is limited. Applications of Dormex (hydrogen cyanamide) made between 49-54 **CP** consistently advance bloom by 10-14 days and harvest by 7-10 days. However, problems with phytotoxicity, spray restrictions, high

cost, and advancing harvest into the period when southern San Joaquin Valley cherries are still being harvested have limited the use of Dormex.

CAN 17 (calcium ammonium nitrate) + surfactant is also effective at advancing bloom and harvest. Applications made between 49-60 **CP** have consistently advanced bloom by 5-7 days and harvest by 3-5 days. So although CAN 17 is not quite as powerful a rest-breaking agent as Dormex, it seems to be safer and more predictable. Some growers and researchers have recently found that the use of a 25% solution of CAN-17, especially if used for 2 consecutive years, can have a carryover effect for up to 2 years.

Dormant spray oil, used with insecticides for cherry leafhopper control, can also serve to compact the bloom period although they are less effective than Dormex and CAN 17. Oil is most effective later in the winter after 700-800 chill hours have accumulated.

Accessing Chill Portions

Kitren Glozer (UC Davis Plant Science Dept.) has been leading the work in developing both rest-breaking treatment timings and calculating CP. You can download the Dynamic Model (an Excel spreadsheet) and the manual (a PowerPoint file) from our web site – see top of page 1 in this newsletter; click on Agriculture and Horticulture, see links on left. The manual describes **CP** and how to calculate them based on hourly temperatures from a nearby weather station or data logger. Three weather stations in Sacramento County are accessible online (see References).

Table 1 shows the CH and CP for Twitchell Island in 2007-08 and 2008-09. Note that CH are calculated starting Nov. 1, the standard start to CH accumulation, but they actually start accumulating in October. CP accounts for the October chilling. The Fair Oaks station tends to register slightly lower CH and CP than the Twitchell Island station, but in 2008-09, the two stations and the Russell Road station are virtually identical. The Russell Rd. chill portions will be periodically updated on our web site.

Table 1. Chill hours (CH) and chill portions (CP) from the Twitchell Island CIMIS station (Ref. #3).

Date	2008-09		2007-08	
	CH	CP	CH	CP
Nov. 1	0	1	0	3
Dec. 1	81	15	139	14
Jan. 1	569	39	477	38
Feb. 1			803	64
Feb. 15			926	73

References

1. www.ipm.ucdavis.edu (Russell Road weather station)
2. www.cimis.water.ca.gov (Twitchell Island and Fair Oaks weather station data)
3. <http://fruitsandnuts.ucdavis.edu> (chilling information and values for Twitchell Island and Fair Oaks)

SUMMARY OF RESEARCH AND EXTENSION NEEDS OF ORGANIC GROWERS IN SACRAMENTO, SOLANO, AND YOLO COUNTIES

by Jenny Broome, UCCE Sacramento, Yolo and Solano Counties

and Margaret Worthington, UC Davis graduate student intern with UCCE Sacramento County

An 8-page questionnaire was developed to assess the research and extension needs of registered organic growers in Yolo, Solano and Sacramento Counties. It was sent out in August 2008. Over the next two months, we received back 36 completed surveys out of 128 that were mailed out for a 28 percent response rate. The full report will be available soon on-line at the Sacramento County web site. We will use the results of this survey to better serve the organic community.

The Growers and Their Operations

The majority of survey respondents have been farming for over 15 years, the next largest group are new entry farmers with 1 to 5 years of experience. Respondents farm 86 acres on average, with 24 acres in transition. The top organic crops being grown include tomatoes (fresh and processed), walnuts, alfalfa, almonds, oranges, asparagus, basil, lettuce, peaches, wheat, and 25 other crops. On average, two family members work on the farm and hire 10 permanent and 12 seasonal workers.

Research and Extension Priorities

In order of importance, respondents were asked to list the top three organic production and/or marketing issues that need more UC research. Weed management was most often ranked as a top priority area needing more research. Nutrient management was also listed as a top and second highest priority

area. Arthropod pests and disease control were also listed as important, but less often than weeds or fertility. Livestock production and the use of livestock in crops was a top priority for some. Specific pest control needs included nematode resistance in heirloom tomatoes, stink bug control, and ground squirrel control. Sunburn in walnuts and use of microorganisms for plant disease management were mentioned. Marketing was mentioned as a first and second priority area.

Soils. Top needs identified include cover crops and how to incorporate residue into soils, no till orchards, and, in general, biomass additions: How to use compost and address quality concerns from purchased compost. Whether incorporation of compost/green manure/cover crop was better than mowing. Soil fertility practices for optimum seed production. How best to manage heavy clay soils. How to manipulate microbial populations for improved productivity. How to test soils to improve fertility management.

Weeds. Over 60 percent of the respondents said they have serious weed problems. The main weeds included grasses, specifically bermuda and johnson and water grass, star thistle, nutsedge, bindweed, broadleaves in general, morning glory, pigweed, and purslane. Future research should include control of weeds mentioned, affordable organic herbicides, flame weeding, weed control in organic landscapes, inter-row planting of grasses/clovers/cover crops to

outcompete unwanted grasses and weeds, and fall/winter weed control.

Arthropods. Almost 40 percent of the respondents said they had serious arthropod problems, however, almost 60 percent did not. Specific challenges include how proper soil management can reduce losses to pests, stink bugs on tomatoes, symphylans and nematodes, squash bugs, economic thresholds for organic, spray on pheromones for codling moth, and testing new products. Additional pests noted included aphids, stinkbugs, alfalfa weevil in alfalfa, lygus, walnut husk fly, alfalfa caterpillar, army worms, corn ear worm, cucumber beetles, leaf miner, mites, navel orange worm, red scale in citrus, thrips, and weevils. Fumigation alternatives are needed for walnuts such as nitrogen gas and packaging.

Plant Disease. Just over 30 percent of the respondents said they had serious plant disease problems, however almost 60 percent said they did not. Key diseases included phytophthora crown and root rot, oak root fungus, grape powdery mildew and bunch rot, sunburn, fire blight on pears and apples, apple scab, brown rot on stone fruit, canker on apricots, crop losses due to pollution and weather, crown gall, deep bark canker on walnuts, Verticillium wilt and other wilts in tomatoes, and virus in summer squash. Key approaches needing more research include how proper soil management can reduce plant disease, use of compost teas for disease control, and testing new approved products.

Animal Production. Most organic operators did not report mixing animal production with crop production. However, a few do raise sheep, dairy goats, and/or horses. Animals are used for their fertility inputs, weed control, crop residue removal, and insect control. Areas identified where more research is needed included natural/approved organic worming systems, the use of animals and timing of grazing on alfalfa to control weeds and alfalfa weevil, and whether using animals for weed control in walnut or almond orchards poses any food safety/contamination problems.

Environmental and Human Health. Most respondents felt that organic production provides en-

vironmental and/or human health benefits, such as less use of pesticides, more nutritious food, tighter nutrient cycles and improved soil structure and so less off-site movement of soil and water. Future UC research should focus on carbon sequestration, buffer zones for aerial spraying from mosquito districts, benefits of open spaces, nutrient movement through the soil and off-site, whether honeybee colony collapse disorder and NOx emissions are better or worse in organic, if perchlorate levels are higher in organic crops and why, and ways to reduce the amount of labor.

Marketing. Respondents mostly sell through the wholesale markets using a distributor, exporter, and/or cooperative, whereas, a smaller number employed direct wholesale marketing channels such as direct delivery to restaurants or stores. Just under 20 percent sold through Farmers Markets, and a lower number used Community Supported Agriculture/subscription sales, Farm Stands/U pick, and Mail Order. Most used several marketing channels. More UC research could investigate health and environmental benefits of organic, increase the efficiency of marketing, and assist with linking producers and markets. An economic analysis as to the feasibility of a new local meat processor is needed.

Current and Future Role of UC

Just over 60 percent of the respondents reported that they had benefited from UC programs, and just over 30 percent felt they had not. Respondents made concrete suggestions for how UC personnel could better serve their community. Suggestions included in general paying more attention to organic growers, having a single person or source of information on organic, increase support for local food systems, help with understanding employment laws, tax preparation/training, and workers compensation for small farmers. Overall, UC needs to better understand organic to be successful in researching and extending it. Respondents felt that a local organic farmer and researcher information exchange network was very important, as was an Internet site with specific organic information.

ONLINE UC PUBLICATION ON MEDIATION

The second edition of the online UC publication, *Party-Directed Mediation: Helping Others Resolve Differences* is now on-line. This publication, written by UCCE Stanislaus County Labor Management Farm Advisor Gregorio Billikopf, explains two mediation models in depth. The first model is used to deal with conflicts among peers; the second, disputes between superiors and subordinates.

Party Directed Mediation is an effort to present practical, sound, research-based ideas that hopefully lead to the improved management of deep-seated interpersonal conflict. While many of the concepts were originally developed through research in agriculture and agri-business firms, the methods (Party-Directed Mediation and Negotiated Performance

Appraisal) have since drawn the interest of a wide range of people throughout the world. The methods used require more time than traditional mediation, but are particularly well suited to volunteer mediators, intercultural conflicts when issues of saving face are important, and other conflicts in which emotional factors are high.

This approach is especially geared to help parties who will continue to live or work together after the mediator goes home, and need to learn interpersonal negotiation skills for handling future differences. The publication can be downloaded at <http://tinyurl.com/3kzu5>. A hard copy of the book can also be ordered.

UPCOMING MEETINGS

Pear Research Meeting. Tues. AM, Feb. 10, 2009. Walnut Grove Library. See page 1 of this newsletter.

Cherry Research Review. Tues., Jan. 27, 2009. UCCE office, Stockton, CA. For more information, call (209) 953-6100.

EcoLandscape Conference. Sat., Feb. 7, 2009, Sacramento. Topics: Rainwater harvesting, innovations in biopesticides, native grasses, compost use for landscape and environmental enhancement. Also a pre-conference workshop: Managing the Health and Vitality of Your Landscape through Soil Ecology with Elaine Ingham, Thurs. & Fri., Feb. 5-6, 2009. Visit www.ecolandscape.org.

Varietal Winegrape Production Short Course. Tues.-Thurs., Feb. 24-26, 2009. UC Davis. Physiology review, vineyard establishment, vineyard man-

agement, pest management. Enroll online at www.extension.ucdavis.edu/wine or call (530) 757-8899.

California Small Farm Conference. Sun.-Tues., Mar. 1-3, 2009. Radisson Hotel, Sacramento. There will be six short courses with tours from which to choose on Sunday, including one on cherry production and marketing. There will also be a tasting of local products on Sunday. On Monday and Tuesday are five workshop tracks from which to choose, including production agriculture, with five workshops each. For more information: www.californiafarmconference.com or call 888-712-4188.

Clarksburg District Wine Grower Meeting. Thurs. AM, Mar. 5, 2009. Jean Harvie Community Center, Walnut Grove. Agenda will be published in Feb. 2009 newsletter.