COOPERATIVE EXTENSION • UNIVERSITY OF CALIFORNIA
SACRAMENTO COUNTY

Tree and Vine Newsletter

Chuck Ingels, Pomology/Viticulture Farm Advisor

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October 2006

Pear Field Meeting

Codling Moth Pheromones

High-Density Plantings

Platform Harvester

DATE/TIME: October 26, 2006, 1:30-4:00 PM
LOCATION: Koket Ranch, 14205 Isleton Rd., Walnut Grove (directions on reverse)
SPONSORS: 1) University of California Cooperative Extension, Sacramento County
2) California Pear Advisory Board
CONTINUING ED.: 1.0 hr. PCA credit applied for, 2.5 hrs. CCA credit applied for

TOPICS

(See reverse for details)

Alternative Codling Moth Mating Disruption Techniques
High-Density Pear Planting and its Economics
Mechanical Platform/Harvester Demo

SPEAKERS

Rachel Elkins – UC Cooperative Extension, Lake & Mendocino Counties
Chuck Ingels – UC Cooperative Extension, Sacramento County
Karen Klonsky – Agricultural & Resource Economics Dept., UC Davis
Steve Welter – Insect Biology, ESPM Dept., UC Berkeley

Pear Field Meeting (Cont.)

October 26, 2006

TOPICS IN DETAIL

Alternative Codling Moth Mating Disruption Techniques

New pheromone dispensers are being tested that require fewer dispensers per acre and have the potential to save labor and cost. You will see:

- Hercon flakes and a flake applicator in use
- Suterra meso-emitters (paraffin) and enhanced membrane dispensers
- Suterra puffers

Steve Welter will discuss the potential of these technologies, and Rachel Elkins will discuss the success of puffers in Lake and Mendocino County pear orchards.

High-Density Planting and its Economics

Chuck Ingels and Rachel Elkins will discuss potentially size-controlling pear rootstocks and high-density plantings. Rachel and Karen Klonsky will also discuss new cost studies comparing standard plantings with trellis planting systems using trees propagated with sleeping eyes vs. standard dormant.

Mechanical Platform/Harvester

Come see Lake County pear grower Lars Crail's platform harvester. The machine harvester may also be used for other orchard operations. Lars will discuss why he bought it, how it worked in 2005 and 2006, and its advantages and disadvantages. Learn about the research on it that was conducted by Rachel Elkins and UC Ag. Engineer Victor Duraj.

DIRECTIONS

Koket Ranch, 14205 Isleton Rd., Walnut Grove

From the north (Sacramento)

Take I-5 south from Sacramento, take the Twin Cities Rd. exit, turn right (west). Continue west about 5 miles until it dead-ends at River Rd., turn left. Drive through Walnut Grove and turn right at the second bridge (Georgiana Slough bridge). Cross the bridge and turn right onto Isleton Rd., round the bend to the left and continue west just over 2 miles, turn left into Koket Ranch, 14205 Isleton Rd.

From the south (San Joaquin County)

Take I-5 north, and take the Thornton Walnut Grove Rd. exit, which is before the San Joaquin/Sacramento County line. Turn left (west) on Thornton Walnut Grove Rd. and go almost 6 miles, veer right onto the levee in Walnut Grove, and turn left onto the first bridge (Georgiana Slough bridge). Cross the bridge and turn right onto Isleton Rd., round the bend to the left and continue west just over 2 miles, turn left into Koket Ranch, 14205 Isleton Rd.

From the Bay Area (Hwy 12/Rio Vista)

Take Hwy 12 east through Rio Vista, cross the river and turn left on Hwy 160. Continue on Hwy 160 through Isleton, and at the bridge the road turns into Isleton Rd. (**do not** cross the Isleton bridge). Continue on Isleton Rd. almost 6 miles past the Isleton bridge, turn right into Koket Ranch, 14205 Isleton Rd.

PATHO-JEN CORNER

by Jenny Broome

Introduction

As of July 1, 2006 I work in the Sacramento Cooperative Extension office as an Area Plant Pathologist. I will also be serving Yolo and Solano Counties. I come to this tri-county position from the UC statewide special program, the Sustainable Agriculture Research and Education Program (SAREP), based at UC Davis after working there for 8 years, the last 5 years as associate director.

Biologically Integrated Farming Systems

While at SAREP I helped create and expand a State and Federally-funded competitive grants program to increase adoption of environmentally protective farming systems, known as the Biologically Integrated Farming systems (BIFS) program. We supported 9 different demonstration projects involving wine grapes, walnuts, dairy/forage production systems, strawberries, tomato/cotton rotations, apples, citrus, and rice. Each project often ran for 3 to 5 years and was aimed at increasing the adoption of integrated farming systems that were less reliant on high-risk agricultural pesticides and synthetic fertilizers. I hope to continue working in this area by cooperating with my UCCE colleagues to obtain funding to help the region's commodities develop and expand the use of integrated farming systems. Possible commodities that I think might be ripe for such projects include pears, tomatoes, and maybe a second round of support for winegrapes, building on the successes of the first Lodi-Wood-bridge Winegrape Commission's first BIFS project.

For more information on the program see the UC SAREP web site at www.sarep.bifs.ucdavis.

Alternatives to Methyl Bromide – Soilborne Disease Management

While at SAREP, I also set up a granting program to support the development and extension of alternatives to methyl bromide (MeBr), with a particular emphasis on biological and cultural controls of soilborne pathogens. This was an initiative funded by the State of California legislature a few years ago. See the UC SAREP web site http://www.sarep.ucdavis.edu/mebralt/ for results from these projects in wine grapes, stone fruit, cut flowers, and pre- and post-harvest strawberries.

Looking toward the future, I am interested to hear from you about particular uses of MeBr that you feel are threatened and where alternatives are needed. Possible opportunities locally that I see include further development of soil solarization for soilborne disease management in nursery crops and environmental horticulture. Solarization can be combined with the use of organic amendments made from composted urban green waste together with animal manures to increase its efficacy. Mulches and composts made from urban green waste have also been used alone to aid in the control some soilborne pathogens in orchards and in environmental horticulture. I am interested to hear if you think there are opportunities in this area for work in Sacramento County.

Organic Agriculture

I assisted other SAREP colleagues with an Organic Initiative, which started in 2000 and at its peak was supporting county-based research and extension in organic farming in 13 counties. We obtained funding from the CDFA/USDA Buy California Initiative to produce organic production manuals in 4 crops, building on the success and interest in the first ANR organic production manual in apples, which came out in 2000. I am currently working with other UC colleagues to complete two of those manuals for organic strawberry and organic wine grape production, which we hope will be available early in 2007. Stay tuned.

In the interest of understanding who within UC and the USDA was doing work relevant to the organic industry, I worked with a visiting Korean scholar, Chulgoo Kang, to conduct a survey of over 1,000 UC researchers and educators. We published the results in a report available online at http://www.sarep.ucdavis.edu/organic/organicsurvey04.htm.

Weather-Driven Disease Models

Over the past few years I have worked to increase the use of weather-driven disease forecasting models in California agriculture. My first experience was in developing and testing a spray forecasting model for gray mold (*Botrytis cinerea)* on table and wine grapes. The Botrytis model is being used extensively in Chilean table grapes and in some California vineyards. More recently we tested and found the Botrytis model could be used to aid in gray mold control of California strawberries on the Central Coast where similar disease control was obtained with fewer applications of fungicides. I also cooperated with Joyce Strand at UC IPM on the PestCast disease model database which provides summaries and model details on weather-driven risk models for pears, wine grapes, tomatoes, and other crops. For

further information, visit this web site: http://www.ipm.ucdavis.edu/DISEASE/california_pestcast.html

I would like to hear from you if you think there are opportunities to use weather data to schedule the timing of fungicides and bactericides for improved disease control. There has been lots of research to develop models for several diseases such as pear scab and fire blight in pears, powdery mildew and black mold in tomatoes, powdery mildew and Botrytis bunch rot in wine grapes, and walnut blight in walnuts, as well as other crops and diseases. However, the question is whether these models are useful for crops here, or if not, why not, and whether some fine-tuning is needed to make them more useful here.

New Directions and Projects – You Tell Me!

I would like to hear from you about what kinds of plant disease research and education work you would like to see happening in the tri-county area.

In my new position here in Sacramento County, I plan to work with Sacramento County farm advisor Chuck Ingels and Master Gardener staff and volunteers to provide plant disease diagnosis and management advice as well as develop cooperative research and education programs for key commodities in the Southern Sacramento Valley. I am also interested in assisting organic farmers in the region through developing plant disease management options.

I come to this position after receiving a doctorate and a Masters of Science in plant pathology from UC Davis and a Bachelor of Arts from Swarthmore College. After completing my doctorate, I worked for several years at the Department of Pesticide Regulation as an Environmental Research Scientist before returning to the University.

For more details and/or to share your thoughts with me as I develop my new program to serve the tri-county area, please contact me in Sacramento CE at 916-875-6421, or my cell phone 530 681-0216, or Email: jcbroome@ucdavis.edu.

Survey of Sacramento County Grape Varieties, Clones, and Rootstocks

by Chuck Ingels

As one of my sabbatical projects, I surveyed Sacramento County grape growers to determine the acreage of wine grape varieties, clones, and rootstocks in the county, as well as to obtain qualitative feedback about these plant materials from growers. For the full report, including graphs, visit our web site (http://cesacramento.ucdavis.edu) or call our office for a copy.

According to Sacramento County Agricultural Commissioner records, 28,045 acres of wine grapes were harvested in 2005. Grapes are the leading commodity in the county, with a value of over $108 million. All Sacramento County vineyards belong in one of two Crush Districts, each of which also includes one or more other counties: the Lodi District (Crush District 11), which lies east of Interstate 5, and the Clarksburg District (Crush District 17), which is west of I-5. Roughly two-thirds of the Sacramento County acreage is in the Lodi District and about one-third is in the Clarksburg District. In 2005, the entire Lodi District had 66,243 acres of harvested wine grapes, the majority of which is in San Joaquin County, and the Clarksburg District had 15,468 acres, the majority of which is in Yolo County.

In this study, a total of 47 growers of 15 acres or more provided information. Over 20,000 acres were included in the survey, representing over 500 blocks of separate varietal clone/rootstock combinations. Growers were asked to provide the varieties, clones, and rootstocks they grow, as well as the acreage, year planted or grafted, and location. Growers were also asked to offer their knowledge and experience of the clones and rootstocks.

Rootstocks

5C is by far the leading rootstock used in Sacramento County, distantly followed by Freedom, SO4, and more than 10 other rootstocks. However, a smaller percentage of 5C was planted after 1998 and a greater proportion of 101-14 Mgt, 5BB, and 1103P were planted. Nearly all vineyards on their own roots and on AXR#1 were planted before 1999. Rootstock selection differed considerably by district, with growers in the Lodi District using a higher proportion of 5C, 110R, and 1103P, and Clarksburg District growers using proportionally

more Freedom, SO4, 5BB, 3309C, and a far greater amount of 101-14 Mgt.

Varieties and Clones

The leading varieties grown in Sacramento County are Chardonnay, Cabernet Sauvignon, and Merlot. These varieties comprise over 60 percent of the acreage. Other leading varieties include Sauvignon Blanc, Zinfandel, Syrah, Pinot Gris, and Pinot Noir.

The far majority of the Chardonnay, Cabernet Sauvignon, and Merlot was planted before 1999. However, about half the Pinot Gris and Petite Sirah acreage was planted after 1999. Pinot Noir was unique, with about 85 percent of the acreage planted from 1999 to 2006. No Chenin Blanc in the acreage surveyed was planted after 1998.

Of the red varieties, Cabernet Sauvignon clones 7 and 8 are widely used in the Lodi District, but much less so in the cooler Clarksburg District. Far more Merlot clone 3 is used than clone 181, especially in the Lodi District; proportionally more clone 181 is used in the Clarksburg District. A far greater proportion of Zinfandel clones Costamagna and Primativo are used in the Clarksburg District than in the Lodi District, and no Zinfandel clone 1A is used in the Clarksburg district.

The Clarksburg District has a higher proportion of all white varieties and clones than the Lodi District, which is reasonable since the Clarksburg district is cooler. Chardonnay is by far the leading white variety, and clone 4 is by far the most widely used clone. All of the Chenin Blanc acreage is planted in the Clarksburg district only.

My thanks to the many growers who participated in this study.

REST-BREAKING ALTERNATIVES FOR SWEET CHERRY AND AN UPDATE ON CHILL ACCUMULATION

by Kitren Glozer, Plant Sciences Dept., UC Davis

Many cherry growers have had mixed results in their use of rest-breaking chemicals. Results that have varied from year-to-year include: amount of bloom advance and maturity advance, percent fruit set and phytotoxicity (bud death). Some of the variation can be due to cherry variety and root-stock, location, type of rest-breaking chemical, surfactant, and the concentration and method of application (i.e. carrier volume used per acre). Production practices like nutrition, pruning and irrigation may also add to variation.

A significant contributor to response variation is the amount and distribution of chilling accumulated in any given year. Chill accumulation can be calculated using various mathematical models, the simplest of which is the 'chill hours' model. Chill hours (**CH**) is the number of hours equal to or less than 45°F accumulated over the dormant season, which has traditionally started on November 1. Not all 'chill', however, is effective, and this is one problem with the 'chill hour' model. When **CH** alternate with temperatures above 45°F, such as is common in California's fall and winter, a canceling effect can occur for some of that 'chill' and there is no way to measure this cancellation with the 'chill hour' model.

Since 2002, researchers with UC Davis and UC Cooperative Extension (Southwick, Glozer and Grant) have tested the Dynamic Model as a way of calculating chill accumulation, with the support of the California Cherry Advisory Board and the cooperation of many growers. This model was developed in Israel in the 1980-1990's, where temperatures are also mild and variable in the dormant season. 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 also accounts for chill cancellation by fluctuating warm temperatures. Since we have used this model in field trials and in reevaluating historic data from our trials that began in 1994, we have been able to explain some of the variation in response. We found that **CH** vary much more widely from place-to-place in any single year and also from year-to-year than do **CP**. We also found that we have had the best response within a certain range of **CP** accumulated at application of rest-breaking chemicals. Initially we recommended application of Dormex when ~70% of chill hours had been satisfied (550-600 **CH**), and application of CAN17 at 650-750 **CH**. This can be a problem in years and locations where chill hour accumulation does not reach this minimum requirement (very poor chill years), and also does not account for wide variation in **CH** from place-to-place. In 2004 we modified this recommendation to 44-52 **CP** for Dormex, and 48-56 **CP** for CAN17. These recommendations were based on trials for 'Bing' and do not represent any other cultivar's requirements for chill accumulation or application of rest-breaking chemicals.

Defining the use of **CP** for timing rest-breaking chemical applications is a work in progress. In the 2004-2005 research trial conducted by Glozer and Grant, we found that chill accumulation began well before November 1 so that ~60-80 **CH** or 4-8 **CP**

had already accumulated by that date, depending on location. We made our applications of rest-breaking chemicals using the guideline recommendations previously established and the November 1 'start date' (Dormex applied @ 42-50 **CP**; CAN17 @ 42-53 **CP**). We found that a high percentage of bud death resulted from the last Dormex treatment and concluded that this treatment was too late. Good bloom advance, fruit set and fruit maturity advance were found with the earliest treatments. If we use the Dynamic Model to time the 'start' of the dormant season chill accumulation instead of November 1 calendar date, we have to adjust the chill portion accumulation accordingly so that Dormex was applied at 49-57 **CP** and CAN17 at 49-60 **CP**, using a data logger at the trial orchard.

When we review some of the recent years and locations where we have conducted our trials, we have found that chill accumulation before November 1 is not uncommon. In some years, few **CP** have accumulated before November 1 and a difference of 2-3 **CP** may not have much effect on rest-breaking chemical application timing. However, a difference of 6-8 **CP** may mean the difference between success and failure (reduction of fruit set, bud death). In our trials, the best results over the last three years for Dormex fell within a 49-54 **CP** range, when calculated from onset of the Dynamic Model, and the best CAN17 results from the last three years fell in a wider range of 49-60 **CP**. Within these effective ranges a greater or lesser success may be found and we continue to work to define these differences. We believe that using the Dynamic Model with **CP** continues to be the best way to calculate chill accumulation in California, with a change from the historic use of November 1 as the 'start date' for chilling to a date set by the Dynamic Model. This adjustment may help us to reduce the variation in response, safely time application of rest-breaking agents, and achieve good results.

PUBLICATIONS

Cherry Training Systems: Selection and Development

This 26-page publication, written for Pacific Northwest growers, covers the basics of pruning cherries and provides easy-to-understand techniques for training with the steep leader, Spanish bush, and Vogel central leader systems. Each method is discussed with excellent diagrams from young to mature trees. You can buy or download the publication from the OSU publications catalog: http://extension.oregonstate.edu/catalog/

Fertigation with Microirrigation

Fertigation is the process of applying fertilizer through an irrigation system. This manual helps guide users through strategies and decision making for fertigation with nitrogen, phosphorus and potassium, and gypsum. Publication 21620. $25. To order, call UC ANR Communication Services, (800) 994-8849 or log on at http://anrcatalog.ucdavis.edu.

Cover Crops for Walnut Orchards

This handy publication discusses the benefits of cover cropping as well as the challenges of. This new handbook outlines a step-by-step process for successful cover cropping in walnut. Publication 21627. $7. To order, call UC ANR Communication Services, (800) 994-8849 or log on at http://anrcatalog.ucdavis.edu.