

CROP CURRENTS

From: Janet Caprile, Farm Advisor
 jlcaprile@ucdavis.edu

MAIN OFFICE:

75 Santa Barbara Rd., 2nd floor
 Pleasant Hill, CA 94523
 (925) 646-6540 Phone
 (925) 646-6708 FAX

BRENTWOOD OFFICE:

724 Third St
 Brentwood, CA 94513
 (925) 634-3012
Office Hours: Mondays 1:30-4:30

SPRING 2002

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PESTICIDE SAFETY TRAINING in Spanish

For the last several years UC Cooperative Extension has offered pesticide safety training for farmworkers at the beginning of the season. This year and last year, we were able to expand the number of classes offered due to the assistance of Jorge Vargas, Ralph Fonseca and James Chan with CCC Department of Agriculture. They have been doing an excellent job of providing the training in Spanish for both Pesticide Handlers and Fieldworkers. There are still two classes left in the Brentwood area - one for Pesticide Handlers and one for Fieldworkers. Note that the March 7th class is on Thursday, NOT Wednesday as was printed in the original announcement. If your employee(s) cannot attend one of these scheduled classes, any certified commercial applicator (PCA, PCO, QAC, QAL) or private applicator may legally provide the training.

To Register: Call UC Cooperative Extension at 646-6540 before the class to provide the number of people from your operation that will be attending so we can prepare materials for participants. The class is FREE and open to all who wish to attend.

Classes for Pesticide Handlers

Pesticide Handlers are anyone who applies, mixes, loads, flags, or otherwise handles pesticides. Employers must provide a pesticide safety training every year for their handlers before they begin work with pesticides. Each participant will receive an official Pesticide Safety Training Record.

- Thursday, March 7, 2002
 8:00 –10:00 am
 Delta Community Center
 730 Third Street, Brentwood

Classes for Field Workers

Field Workers are employees who work in fields or nurseries where pesticides have been applied but do not handle pesticides themselves. Employers must provide a pesticide safety training every 5 years for their field workers. Each participant will receive a blue EPA Worker Training Verification Card.

- Tuesday, April 2, 2002
 8:00-9:30 am
 Delta Community Services Center
 730 Third Street, Brentwood

WEATHER UPDATE

Since the last newsletter the weather concerns have switched from chill to rainfall! Despite the relatively warm December, January and early February were quite cold and we have accumulated 760 hours of chill which is about 82% of average. Every other year or so we end the season with chill hours in the 700-800 range (see below) so bud break should be within the normal range. If you haven't done so yet, a late dormant oil spray may help to offset the effects of low chill.

There has been more concern about the lack of recent rainfall. However, because of the high rainfall in November-December, we are actually 0.8 inches ahead of "normal" for this time of year. We usually get another 3 inches or so in spring. If the spring rains are short, you may want to turn your irrigation system on a little early this year.

| BRENTWOOD RAINFALL⁺ | | |
|---------------------------------------|------------------|----------------|
| (inches) | | |
| Month | 2001-2002 | Average |
| October | 0.2 | 0.7 |
| November | 2.2 | 1.1 |
| December | 5.7 | 1.7 |
| January | 1.18 | 3.0 |
| February | 0.8* | 2.8 |
| Mar | | 1.5 |
| April | | 0.7 |
| May | | 0.7 |
| June | | 0.3 |
| July | | 0.1 |
| August | | 0.1 |
| September | | 0.3 |
| TOTAL | 10.1 | 13.0 |

* through February 23, 2002

+ data from the Brentwood CIMIS station

| ACCUMUALTED CHILL HOURS – BRENTWOOD, CA | | | | | | | | | | |
|------------------------------------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------|
| MONTH | 2001-2002 | 2000-2001 | 1999-2000 | 1998-1999 | 1997-1998 | 1996-1997 | 1995-1996 | 1994-1995 | 1993-1994 | AVG |
| November | 74 | 281 | 101 | 123 | 41 | 128 | 96 | 277 | 212 | 148 |
| December | 240 | 631 | 451 | 589 | 422 | 376 | 309 | 753 | 655 | 492 |
| January | 596 | 1013 | 640 | 1007 | 652 | 691 | 579 | 879 | 995 | 807 |
| February | 760 * | 1226 | 715 | 1209 | 756 | 821 | 688 | 966* | 1215* | 903 |

Notes: * through February 23rd

CONTROL GROUND SQUIRRELS NOW

If you had a problem with ground squirrels last season, spring is one of the most effective times to control them. As soon as ground squirrels emerge from their winter hibernation, they begin to breed. If you control them before they have a chance to reproduce, you greatly reduce the summer population as every female will produce about 8 young! Fumigants work best at this time of year when the soil moisture is relatively high. Gas cartridges (available at cost from the county Ag Department) or Aluminum phosphide tablets (restricted material) are the most common options. Wait until you see the squirrels running around and treat all active holes. Return in a few days to retreat any misses or holes that have been reopened.

FUNGICIDE EFFICACY

Several new fungicides for tree and vine crops have recently been registered or are about to be registered. Some have entirely new chemistries which means they will be helpful in preventing resistant strains of disease from developing if alternated with materials from other chemical classes. The table which follows represents a fairly comprehensive list of the current new and pending materials that have been tested by our excellent team of UC plant pathologists. Not all materials are registered on all tree crops so check the label before using. A more complete handout which includes efficacy and timing for almond, apple/pear, apricot, cherry, grapes, peach/nectarine, pistachio, plum, and prune are available from my office or on the web at <http://www.uckac.edu/plantpath>.

EFFICACY: TREE CROPS

| Fungicide | Brown rot | Jacket rot (Botrytis) | Shot hole | Powdery mildew | Rust | Scab | | Anthracnose | Alternaria |
|-----------------------|-------------------|-----------------------|-----------|----------------|------|--------|------------|-------------|------------|
| | | | | | | Almond | Apple/pear | | |
| Abound ^a | ++ | ---- | +++ | ++ | +++ | +++ | +++ | ++++ | +++ |
| Benlate ^b | +++ ^e | +++ | ---- | +++ | ++ | +++ | +++ | ---- | ---- |
| Botran | ++ | +++ | ? | ? | ? | ? | ? | ? | ? |
| Bravo | ++ | ++ | +++ | ---- | ++ | NR | NR | +++ | ++ |
| Captan | ++ | ++ | +++ | ---- | + | +++ | ++ | ++ | ---- |
| Copper | + | + | ++ | ---- | ---- | +/- | ---- | ---- | + |
| Elevate | +++ | ++++ | + | ND | ND | ND | ND | ND | ND |
| Elite | ++++ | ++ | +/- | +++ | +++ | +/- | +++ | +++ | ++ |
| Flint | ++ | ---- | +++ | ND | ID | +++ | +++ | ND | +++ |
| Funginex ^c | +++ | ---- | ---- | ++ | + | ---- | +++ | ND | ND |
| Indar | +++ | ---- | + | ND | ND | +++ | ---- | + | ---- |
| Laredo | +++ | ---- | + | ++++ | ++ | ---- | ++++ | ++ | ---- |
| Maneb | + | + | ++ | ---- | +++ | ++ | ++ | ++ | + |
| Orbit (Break) | +++ | ---- | +/- | +++ | +++ | NR | NR | +++ | ---- |
| Procure | ++ | ---- | +/- | +++ | ND | ND | ++++ | ND | ND |
| Rally | ++ | ---- | +/- | ++++ | ++ | ---- | ++++ | ++ | ---- |
| Rovral | +++ | +++ | +++ | ---- | ---- | ---- | NR | ---- | +++ |
| Rovral + oil | ++++ | ++++ | +++ | + | ++ | ---- | NR | ---- | +++ |
| Rubigan | +++ | ---- | ---- | ++++ | ++ | NR | ++++ | ND | ND |
| Scala (NR) | ++ | +++ | ND | ND | ND | ND | ND | ND | ND |
| Scholar ^d | ++++ | ++++ | ---- | ---- | ---- | ---- | ---- | ---- | ---- |
| Sulfur | + | + | ---- | +++ | +++ | ++ | ++ | + | ---- |
| Thiram | + | + | ND | ---- | ---- | NR | ++ | ND | ND |
| Topsin M | +++ ^e | +++ | ---- | +++ | ++ | +++ | +++ | ---- | ---- |
| Vanguard | ++++ ^f | ++++ | ++ | ND | ND | ---- | ++++ | ND | +++ |
| Ziram | + | + | +++ | ---- | ---- | +++ | ++ | ++ | + |

++++ = excellent; +++ = very good; ++ = good; + = fair; +/- = slight; - = ineffective; ID = incomplete data, NR = not registered, ND = no data

- a Causes severe phytotoxicity on some apple cultivars.
- b Label withdrawn.
- c No active label for tree or vine crops.
- d Postharvest use only.
- e Resistant populations of target organisms occur in California.
- f High summer temperatures and relative humidity reduce efficacy.

EFFICACY: GRAPEVINES

| Fungicide | Powdery mildew | Downy mildew | Bunch rot | | Phomopsis | Eutypa |
|----------------------|----------------|--------------|-----------|--------|-----------|--------|
| | | | Botrytis | Summer | | |
| Abound | ++++ | ++++ | --- | --- | +++ | --- |
| AQ10 | +++ | --- | --- | --- | --- | --- |
| Bayleton | ++ | --- | --- | --- | --- | --- |
| Benlate ^a | ++++ | --- | ++ | ++ | + | +++ |
| Captan | --- | + | ++ | ++ | +++ | --- |
| Copper | ++ | +++ | ++ | +++ | + | --- |
| Elevate | --- | --- | +++ | ++ | --- | --- |
| Elite | ++++ | --- | ++ | ++ | --- | --- |
| Flint ^b | ++++ | + | ++ | ++ | ++ | --- |
| JMS Stylet oil | ++++ | --- | ++++ | ++ | --- | --- |
| Maneb | --- | --- | ++ | --- | +++ | --- |
| Procure | ++++ | --- | --- | --- | --- | --- |
| Quintec (NR) | ++++ | --- | --- | --- | --- | --- |
| Rally | ++++ | --- | --- | --- | --- | --- |
| Ridomil Gold | --- | ++++ | --- | --- | --- | --- |
| Rovral | --- | --- | +++ | --- | --- | --- |
| Rovral + oil | --- | --- | +++ | --- | --- | --- |
| Rubigan | ++++ | --- | --- | --- | --- | --- |
| Serenade | +++ | --- | ++ | + | --- | --- |
| Sovran | ++++ | ++++ | ++ | ++ | ++++ | --- |
| Sulfur | +++ | --- | --- | --- | --- | --- |
| Thiram (NR) | --- | --- | ++ | --- | --- | --- |
| Valero | +++ | --- | --- | --- | --- | --- |
| Vanguard | --- | --- | ++++ | ++ | --- | --- |
| Ziram | --- | --- | ++ | --- | ++ | --- |

++++ = excellent; +++ = very good; ++ = good; + = fair; +/- = slight; - = ineffective; NR = not registered

a Label withdrawn.

b Causes severe phytotoxicity on Concord grapevines.

MANAGING INSECTIDE RESISTENCE

Last season we saw a lot of codling moth (CM) damage in apple orchards in the Brentwood area. Part of this had to do with grower decisions to reduce inputs in the face of the poor apple market. But there were a number of situations where appropriate sprays went on at the right time and did not provide the control they should have. I suspect that insecticide resistance may be developing and we will be testing these orchards for resistance this coming season. Meanwhile, it seems worthwhile to review what can be done to discourage resistance from developing and what you can do to manage resistance if you suspect you have it. These concepts should be relevant for all pests and crops even if the example here is CM and it's host crops (apples, pears, or walnuts).

Insects can develop resistance to an insecticide which is sprayed frequently. Some insects inevitably survive and go on to breed offspring which are more tolerant to that same material. This is something that usually happens slowly over time as repeated sprays gradually become less effective. The usual approach to avoid or delay the development of resistance is to alternate materials of different chemical classes. This way those insects that escape one type of material should be killed by the other and won't go on to breed a resistant population.

This works in most cases EXCEPT for CM and Guthion resistance! If the CM population has developed a resistance to Guthion, an organophosphate (OP), they are usually also resistant to most of our other CM materials even if they are in a different chemical class. This includes Imidan (OP), Sevin (carbamate), Asana (pyrethroid), and Confirm (insect growth regulator). Curiously, the only materials that are effective on a resistant CM population are two other OPs - Lorsban and PennCap. And these two materials become MORE effective on a Guthion resistant population. Unfortunately, PennCap and the in-season use of Lorsban have been cancelled on apples and pears. They are still available for walnuts.

So what do you do if you suspect you have some resistance developing but no alternate material to use? You do everything you can to improve your spray application. This should include:

Time the spray as accurately as possible. Use monitoring traps in your own orchard rather than relying on regional information.

Choose the **material** that is most effective and has the longest residual (ie. Guthion rather than Imidan). You may need to shorten the spray interval as it may not last the traditional 21 days. Some growers are considering applying Dannitol, a pyrethroid that has proved effective in pears where they have long been fighting CM resistance.

Buffer the material to the pH recommended on the label! This is extremely important as it can maximize the length of time the material will stay effective in the field. Imidan has a half-life of 13 days if the pH of the spray is at 5.0 but only about ½ a day if the pH is at 7.0. Similarly, Guthion has a half-life of 18 days at a pH of 5.0 but only 10 days at 7.0.

Make sure the **spray rig** is properly calibrated and adjusted. Replace worn nozzles and adjust them so that 2/3 of the spray goes on the top half of the tree and 1/3 goes on the bottom half. Check the coverage with water sensitive paper. Make sure the agitator is working. Keep the drive speed to 2 miles per hour. Driving too fast is the number 1 cause of poor spray coverage. Increasing the spray volume can also improve coverage (but it doesn't make up for fast driving!). And make sure you spray EVERY ROW. Alternate row spraying is not appropriate if you suspect even mild resistance.

Review proper spraying procedures with your **crew** – even if they are experienced. Have them help you test the effects of nozzle adjustments and drive speed with water sensitive paper so they can see the effects for themselves. Check on them when they are doing an actual application to make sure it is going on correctly. This is especially important for night shift applications when employees may be tired and not as conscientious.

BRENTWOOD AG VIDEO LIBRARY

The following is a list of videos available for viewing at my Brentwood office. You are welcome to stop by anytime to watch videos (call first to make sure someone is in the office).

General Agriculture

- 1992 Agricultural Census Data

Water & Fertility

- Ca. Farmers Create Wetlands for Wildlife
- The Fruits of their Labor: Nitrogen Management in Stone Fruit & Almonds
- Best Management Practices for Nitrogen & Fertilizer Use in Irrigated Agriculture
- Drip Irrigation and Fertigation Management of Vegetable Crops
- Monitoring Soil Moisture in Vineyards
- Protecting Groundwater: A Guide for the Pesticide User
- Two Green Thumbs Up: Compost Demonstrations

Pesticides

- Endangered Species & Pesticides: Balancing Protection and Production
- Jorge's New Job: The Importance of Cholinesterase Testing (Spanish)
- Jorge's New Job: The Importance of Cholinesterase Testing (English)
- Pesticide Handlers and the Worker protection Standard
- Siguiendo el Sol ... Chasing the Sun (Revised Worker Protection Standards)

Pest Management

- Biological Control
- Crown Gall in Tree Crops: Biology and Control
- Cultural Weed Control In Vegetable Crops
- Glassy-Winged Sharpshooter Identification and Monitoring (Spanish & English)
- Monitoring the Glassy-Winged Sharpshooter (Spanish)
- Grape Mealybug & Ants
- Spoiled Rotten: The Medfly, a Threat to California
- Walnut Husk Fly: Biology, Monitoring & Control Strategies

Tree Crops

- Grafting Walnut Trees
- Pruning Walnut Trees - Early Developmental Years
- Walnut Planting Guide
- The Spanish Bush System of Growing Sweet Cherries - Adapted to California

RESOURCES: Websites

Post Harvest Technology Research and Information Center, UC Davis

<http://postharvest.ucdavis.edu>

UCD Dept. of Viticulture and Enology

<http://wineserver.ucdavis.edu>

Plant Protection Quarterly Newsletter

<http://www.uckac.edu/ppq>

Nematode Management

<http://www.uckac.edu/nematode>

Vegetable Crop Research and Information Center

<http://vric.ucdavis.edu>

Agricultural Issues Center, UC Davis

<http://aic.ucdavis.edu>

RESOURCES: Publications

The following publications are available free from my office. Call for a copy or access them directly from the websites listed below.

UC IPM Pest Management Guidelines

The following guidelines were updated in January. They can be viewed and printed from the UC IPM website <http://www.ipm.ucdavis.edu>.

| | | |
|-----------|--------------|--------------|
| Alfalfa | Cucurbits | Small Grains |
| Apricot | Floriculture | Strawberry |
| Artichoke | Kiwifruit | Tomato |
| Cherry | Lettuce | |
| Corn | Onion/Garlic | |

Cost Studies

The newest cost of production studies are listed below. They can be viewed and printed from the Dept of Agriculture and Resource Economics, UC Davis website at: <http://coststudies.ucdavis.edu>

- **Apples** -No. San Joaquin Valley
- **Sweet Cherries** - No. San Joaquin Valley
- **Walnuts** - Sacramento Valley

RESOURCES: Classes

RESOURCES: More Publications

The following are new priced UC publications which are available from:

University of California
ANR Communications Services
6701 San Pablo Ave, 2nd floor
Oakland, CA 94608-1239
TEL: 800-994-8849
FAX: 510-643-5470
WEBSITE: <http://anrcatalog.ucdavis.edu>

Postharvest Technology of Horticultural Crops, Third Edition

Publication 3311, 535 pages, \$65

Integrated Pest Management for Almonds, Second Edition

Publication 3308, 199 pages, \$32

The UC Interactive Tutorial for Biological Control of Insects and Mites

Publication 3412, CD-ROM, \$30

IPM in Practice: Principles and Methods of Integrated Pest Management

Publication 3418, 296 pages, \$30

IPM for Floriculture and Nurseries

Publication 3402, 422 pages, \$45

Pierce's Disease

Publication 21600, 20 pages, \$6

Chemigation in Tree and Vine Microirrigation Systems

Publication 21599, 12 pages, \$5

Overseeding and Companion Cropping in Alfalfa

Publication 21594, 31 pages, \$10

Costs of Pressurized Irrigation Systems for Tree Crops

Publication 21585, 22 pages, \$5

A variety of agricultural classes and updates are offered through University Extension at UC Davis. Classes are often just 1 or 2 days long and many are offered on the weekend. The listing below includes a selection of classes they will offering this spring. For more information contact:

University Extension
University of California
1333 Research Park Drive
Davis, CA 95616-4852
1-800-752-0881
www.universityextension.ucdavis.edu

Edible Mushroom Cultivation

Mar. 2-3, 9am – 5pm

Understanding Agricultural Leases

Mar 23, 9am –5pm

Ca. Nematology Workshop

Mar 27

Managing the Small Vineyard II

Apr 6, 9am –4pm

Clonal Aspects of Winegrowing

Apr 12, 9am –4pm

Management of Fruit Ripening

Apr 22, 9am –5pm

Successful Small Scale Winemaking

Apr 27, 9am –4:30pm

Assessment of Agricultural Soils

May 1-3, 8am –5pm

Getting Started in the Specialty Food Business

May 18-19

Hydroponic Vegetable production

May 24, 9am –4:30pm

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Hope you find something of interest in this issue.

Janet Caprile, Farm Advisor
jlcaprile@ucdavis.edu

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UNIVERSITY OF CALIFORNIA
Oakland, California 94612

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