



## UCCE Kern County Subtropical Crops Newsletter

Submitted by **Craig Kallsen, Farm Advisor, Kern County**  
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### UC COOPERATIVE EXTENSION FALL CITRUS MEETING

Tuesday, November 18, 1997 1-5 p.m.  
1031 S. Mt. Vernon Ave.  
Conference Room Bakersfield, CA 93307

**Moderator:** *Craig Kallsen, Subtropical Fruit and Pistachio Farm Advisor*

**1:00 p.m.** Registration

**1:10 p.m.** Testing New Chemistries to Control California Red Scale  
*Craig Kallsen, Farm Advisor UCCE Kern County*

**1:40 p.m.** Regulatory Update  
*David Moore, Deputy Ag Commissioner - Pesticide Use Enforcement - Kern County*

**2:10 p.m.** Deficit Irrigation in Citrus  
*Dr. Dave Goldhamer, UCCE Water Management Specialist*

**2:45 p.m.** BREAK  
*Refreshments Courtesy of California Citrus Mutual*

**3:00 p.m.** The Monterey Agreement. What It Means to Kern County Growers  
*Gary Bucher - Water Resource Manager, Kern County Water Agency*

**3:45 p.m.** Using Concentrated Oil Sprays to Thin Navels  
*Craig Kallsen, UCCE Farm Advisor, Kern County*

**4:15 p.m.** Foaming Canker in Citrus  
*Dr. Beth Teviotdale, UCCE Plant Pathologist*

**4:45 - 5:00 p.m.** ADJOURN

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## **OTHER UPCOMING MEETINGS:**

UC Lindcove Research and Extension Center and Tulare County Cooperative Extension will present a schedule of field days. All field days will start at 9 A.M. and End at 12 Noon. Presentations will be held in the field - Rain or Shine. These will be walking tours of various research programs as follows:

**November 4, 1997:** Dr. Beth Grafton Cardwell and Dr. Joseph Morse will discuss scale, and thrips field research programs. Growers can view various management methods and the effect these methods have on fruit grade at packing time. In addition, research on ant management will be discussed.

**November 12, 1997:** Dr. Louise Ferguson will present field research data on Okitsu Wase and Dobashi Beni Satsumas on different rootstocks. Dr. Joe Semancik will discuss viroids and their effects on Valencia orange. Melogold and Oroblanco maturity information will be presented.

**December 11, 1997:** Dr. David Gumpf will present maturity data and answer questions. There will be taste testing and presentations on citrus varieties of the citrus clonal protection program. This will be an inside event.

**January 6, 1998:** Dr. Mikeal Roose and Tracy Kahn will present information on new citrus hybrids, including navels and mandarins. Bring your questions.

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## **CITRUS**

**FUKUMOTO NAVELS SUSPECTED OF HAVING  
FOAMING CANCKER**

The first symptoms of this previously unknown disease of citrus appeared in Kern County in July, and by mid-September, several young Fukumoto navels plantings demonstrated a significant number of infected trees. Some of the groves examined have a 20 to 30 percent infection rate, so the growers are understandably concerned about the problem. As of early October, the disease has been limited to Fukumoto navels that have been in the ground more than one year but less than three years. Symptoms include profuse gumming, usually beginning on the trunk where the newly forming scaffold branches are being trained. The gumming can better be described as Afoaming. The foaming may be so vigorous that it can be heard coming from the splits which occur from the outer bark down to the cambium. The disease appears to enter the tree, most commonly, around the base of smaller branches. These infected branches may be pulled easily from the trunk. The foam has a sweet smell, similar to the smell which occurs when sugar is being fermented. The foam is produced in large quantities and, as the disease advances, the entire trunk may become involved and a pool of the foam may form at the base of the tree. The cambium layer turns a yellow-brown color and the symptom can spread up and down from what appears to be the initial site of infection. The tops of trees can become involved and the entire tree may appear covered in the foam. However, even trees with profuse trunk foaming usually appear normal from a distance as the leaves remain dark green. As the disease progresses, limbs and twigs will break at the cankers and these dead limbs will be visible from a distance. The canker itself, in addition to the cambium discoloration, is soft and spongy. The exudate is very attractive to insects, especially dried fruit beetles and ants, which will form galleries in the soft wood of the canker.

Dr. Teviotdale, University of California plant pathologist, stationed at the UC Kearney Ag Center near Parlier, has been studying foamy canker disease in other crops for a number of years. It was first found infecting fruit and nut crops in the San Joaquin Valley in the early 1980s on two-year old almond trees, and has shown up on stone fruits and even on long beans. Since July of this year, she has been working on a planting of young Fukumotos in Fresno county, with symptoms similar to those in Kern County. Dr. Teviotdale has determined that the bacteria isolated from Kern County Fukumotos are the same bacteria that have been isolated previously on other crops infected with this disease. Dr. Teviotdale has shown that two bacteria, that appear to work in association with a yeast, can cause the disease. These bacteria, apparently, live on the foliage of most citrus and many other crops, but for some reason are able to cause disease in young

Fukumoto navels. At least, one of the bacteria that appears to be involved is one associated with fermentation. Dr. Teviotdale says that with almonds, the grower may lose a few trees, but, in general, the trees are able to outgrow the disease.

At the present time, there is no treatment for the disease. The disease appears to spread fastest with hot temperatures. The cankers of infected trees examined in Kern County in early October appear to be Adrying up either in response to a natural defense mechanism of the tree or as a result of cooler temperatures. Dr. Teviotdale will discuss what is known about the disease at the Fall, Kern County Citrus Meeting, to be held on the afternoon of November 18, 1997, at the UC Cooperative Extension Office in Bakersfield.

### **FUNGICIDES AND NEMATACIDES HIGHLY RECOMMENDED FOR REPLANT SITUATIONS**

Dr. John Menge, Professor and Plant Pathologist, UC Riverside, continues his research into controlling *Phytophthora* in a replant situation. His experiment at the UC Lindcove Research and Extension Center involves testing the effect of mulches, bacterial biocontrol agents, and a registered fungicide and nematocide, on the growth of replants in a soil inoculated with *Phytophthora*. To date, heavy organic mulches of plant material and manures have severely retarded the growth of the replants as compared to the non-treated control trees. Replants grown with the addition of the registered fungicide and nematocide, show better and more uniform growth than other treatments. The bacterial bio-control agents appear to be having a positive effect that is increasing with time. Dr. Menge recommends that all replanted groves be treated in July with fungicides registered to control *Phytophthora* species during the first two years the new trees are in the ground.

### **BUDDING OVER TREES TO ANOTHER VARIETY**

The longer that I am on this job, the firmer is becoming my conviction that if a grower wants to change the existing variety on a given piece of land, the best approach is to replant the block to new trees rather than attempt to bud the older block over with a new variety. This belief is especially firm if the existing block is older than 25 years. Some of the problems that I have witnessed to date include: severe bark sun burning especially at the foot of the tree; burning the new buds with foliar fertilizers/other unknown chemicals; over-watering inducing rots of various types; heavy insect feeding on new tender growth; poor bud take for a variety of

reasons; failure of growers to follow up the budding with removal of suckers, and general slow regrowth of the new shoots.

If all goes well, budded trees may beat replants into production. However, things in general do not usually appear to go well with older, rebudded trees. Young trees are vigorous, and once they come into production, produce high yields of big fruit. In Kern County, the cost of removing old, existing trees, in some cases, can be offset by selling of the wood to cogeneration plants. Removing the old orchard can also give the grower a chance to correct some existing problems. Layered soils can be slip plowed or ripped, and groves that are infested with nematodes or fungi can be treated more effectively in the absence of living trees.

### **LIMING USED TO BE SO EASY**

While as of the date of this writing there still appears to be no sign of the dreaded El Nino, many growers in Kern County are preparing for the worst by paying particular attention to their Fall copper sprays. Last season=s wet weather did result in considerably more Atear staining@ of fruit in the San Joaquin Valley, but Kern County escaped the worst of the effects as a result of our naturally more arid conditions. In Kern County, growers probably apply copper sprays as much as to prevent *Septoria* related stains on the fruit as to prevent brown rot. As a result of our reduced rainfall, as compared to points north in the Valley, the well-proven Bordeaux mixture of 4.5 pounds of copper sulfate and 6 pounds of hydrated lime per 100 gallons of water with a total application of 10 to 24 gallons of water per tree, is probably an over-kill for most growers. I do not know of any growers who are applying whitewash at the rate of 1000 to 2400 gallons/acre in Kern County. If tear staining was a terrible problem last year in a particular grove of very large trees, maybe this is the way to go.

Some growers are using basic copper sprays, of which there are many to choose from, and going as light as, for example, three to four pounds of copper from a basic copper product , two pounds of zinc sulfate, ten pounds of hydrated lime with 0.5 pound or so of a casein-type spreader-sticker in a total application of 100 gallons an acre. Light sprays like these are directed toward the bottom third of the tree, and are largely applied to prevent brown rot spores, splashed by rain, from germinating on the tree. Copper injury is always a consideration, and applying copper with no lime carries with it a much higher risk of phytotoxicity. This winter, in response to warnings about the upcoming El Nino, many growers are opting for heavier sprays in the 300-500 gallon/acre range, with

approximately 4.5 pounds of copper sulfate (or its labeled copper equivalent in basic or neutral copper products) and six to ten pounds of lime per 100 gallons of spray solution. These applications are directed at the whole tree to reduce tear staining on fruit caused by organisms like species of *Colletotrichum* which are, also, associated with twig die back and leaf drop. Again, coverage is as important as the total gallon age.

*Colletotrichum* is undoubtedly an organism that has been involved with some of the unexplained leaf drop episodes we were seeing in some groves last spring after all of the winter rain. Septoria staining on grapefruit has been a particular problem on grapefruit in the past, especially those fruit on the borders of some groves. Unfortunately, grapefruit appears to more susceptible to copper injury than some of the other citrus so sometimes the cure is worse than the disease.

Applying zinc in the Fall copper/whitewash appears to be beneficial both from the standpoint of disease control and nutritionally. The amount of copper containing material should be reduced in the spray mixture if zinc sulfate or other zinc materials are added. Some of the basic or neutral coppers now contain zinc.

To further complicate the use of hydrated lime, those using an *Aphytis* wasp release program for control of California red scale are being warned to avoid the use of lime due to its detrimental effect on beneficial insects. Those using the beneficial insects will have to make a judgment call on whether to maximize the fungus control or the insect control they receive from the beneficials. In Kern County, where the fungi are less of a problem, most growers can probably achieve sufficient control of brown rot, *Septoria* and *Anthraco* staining with the neutral coppers and greatly reduced levels of lime. Second applications of copper are always a possibility if rainfall is greater than expected, although sometimes being able to get into a wet grove in some areas of Kern County to respray is not a normal winter option.

### **HARD TO LOSE IF YOU SPRAY COPPER ON THIS KIND OF TWIG DIE BACK**

Some growers with early fruit, do not have to worry about tear-stained or brown-rotted fruit because their fruit was picked as early as October 1 this year. Copper deficiency continues to be suspect for a type of twig dieback we are seeing in some groves of early navels that do not customarily receive Fall copper sprays. The worst cases of twig dieback brought to the attention of this office

have been in a very young block of Midnight Valencias and in several blocks of Fisher navels. The young twigs split and ooze heavy gum. Dr. Menge was able to isolate *Colletotrichum* from a fresh sample, but whether it was the cause of the split or a secondary infection of the split, is not clear. The split twigs can be quite numerous and give the grove a poor appearance, but the damage does not appear to be of economic significance at the levels that we are seeing it in mature groves. An effort is being made to correlate this splitting with Fall nutritional levels of copper. Obviously, a Fall copper spray on groves that have this kind of twig dieback should correct the copper deficiency if this is the problem, and reduce the level of inoculum of *Colletotrichum* if that is the major cause.

Copper deficiency symptoms can mimic stubborn disease symptoms with respect to the growth habit of the vegetation, so check the copper levels before pulling too many stubborn trees.

It should be remembered that many agents, both biological and environmental, may cause twig gumming and die back in citrus. A common example, Tulare County Die back (which, also appears in Kern County), is usually seen with the first warm temperatures of late spring. Apparently, it is not associated with a disease organism or a nutrition problem, but is weather related. The twig die back that appears in the Fall in Melogolds appears to have a cause related to hot, dry summer winds.

### **SPEAKING OF STUBBORN**

Drs. Rebecca Creamer and George Oldfield, continue to work on both an easier , more rapid way to test trees for the stubborn virus, and on ways to reduce the transfer of the mycoplasma from host weeds to citrus. One of the methods Dr. Oldfield is trying, is to use heavy sprays of whitewash to make the trees less attractive to the beet leafhopper, which is the major vector of the disease. Extremely heavy applications of whitewash did reduce the number of beet leafhoppers trapped in a young grove, but, also appeared to reduce the growth rate of the trees. Lighter applications of whitewash also reduced leaf-hopper activity, but whether the reduction is sufficient to significantly reduce the level of stubborn transmission is not yet known. Obviously, if a grower is using an *Aphytis* release program in their young citrus, the decision is going to have to be made on whether stubborn disease or insect pests like California red scale are the greatest threat to the bottom line.

The PCR test for stubborn disease is improving, and, hopefully, growers will, eventually in the not too distant future, have this tool available to them. In the meantime, keep after the mustard weeds. These weeds appear to be our major storehouse of the disease organism in Kern County.

### **WHITEWASH PROTECTION AGAINST SUNBURN**

More Kern County growers are using whitewash to reduce sunburn on young citrus plantings just coming into bearing. Young, bearing trees do not produce sufficient canopy to cover most of their fruit, and sun burning is a major problem. The whitewash appears to help, but I am not aware of any replicated studies confirming this. Again, too much whitewash may reduce tree growth and adversely affect *Aphytis* and other beneficial insect and mite activity.

### **RIND STAINING ON BONANZA NAVELS**

For the third season in the row, growers have brought in samples of Bonanza navels, at harvest, that have a rind stain similar to that seen as *Anthraco* or *Septoria* tear staining or as deep as a spray-oil burn. The staining appears on the outer fruit on the tree, often on fruit that has a characteristic sunburn. The stains appear on the fruit well in advance of the first Fall rains. Samples sent to UC Riverside have not contained disease organisms. Currently, the cause of this staining is being attributed to hot, dry summer winds. Bonanza navels tend to be thin skinned, which may make them more susceptible to this kind of damage. Their thin skins certainly make them more susceptible to splitting.

Growers continue to complain about the short-lived nature of the trees, the excessive splits, and the small fruit of the Bonanza and Newhall varieties all the way to the bank.

### **UNKNOWN INSECT SCARRING FRUIT ON THE SKIRTS**

For a second year in a row, growers in the Mettler area have had oranges on the skirts of trees attacked by a mystery pest. The affected fruit is on the ground or within a foot of the ground. The entire surface of the fruit is attacked, with the damage looking very much like leafhopper feeding. Observations suggest, however, that leaf hoppers are not the culprit. Some suspect the false chinch bug, although there appears to be no feeding on leaves. The badly affected fruit appears to turn yellow before harvest and drop from the branches. If anyone has any ideas, I would appreciate hearing

them. The damage is usually old before it is recognized. We suspect that the actual attack may occur in July.

Pruning trees so that branches do not touch the ground appears to be a very effective preventative of this kind of damage, since it has not been seen in skirted trees.

### **ITS FROST TIME AGAIN**

Just because the media is predicting a warm, wet winter does not mean it will be so. The usual weather pattern is likely to be disrupted, and its difficult to predict what will be the net effect on our protective winter fogs and customary movement of winter fronts. The prudent grower will insure that thermometers are calibrated, wind machines serviced, frost water schedules established, insurance coverage purchased just like any other year.

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## **FIGS**

The fig acreage in Kern County is relatively small compared to many counties in the San Joaquin Valley, but we do have a few plantings and receive a few calls regarding them.

### **PREPLANT FUMIGATION ESSENTIAL FOR FIG PLANTING**

If a grower is contemplating planting figs, it is essential that the soil be fumigated prior to planting. Lesion, root knot and dagger nematodes can all be devastating to figs, and very little can be done to relieve a nematode problem on bearing trees, since very little is registered for figs. If preplant fumigation is not done on infested ground, the chances for success are poor.

Nemacur7 (check the label, of course) could be used on non-bearing trees the last time I looked.

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