



UC  
CE

University of California Cooperative Extension • Tulare County

# Citrus Notes



Volume 3, Issue 3

September 2006

## FALL CITRUS MEETING

Tuesday, October 17, 2006

4437 South Laspina Street, Tulare  
9:00 A.M. - 12:00 P.M.

**9:00 Progress Report on Variety Evaluations**

*Dr. Tracy Kahn, Principal Museum Scientist, UC Riverside*

**9:30 Winter Weather**

*Dan Gudgel, Warning Coordination Meteorologist, National Weather Service*

**BREAK**

**10:15 Weed Management: Seed Bank and Resistance Development**

*Dr. Anil Shrestha, IPM Weed Ecologist, Kearney Research & Extension Center*

**11:00 Detection of Frost Damage in Oranges**

*Dr. Jim Thompson, Specialist in Cooperative Extension, UC Davis*

**11:30 Management of Citricola Scale**

*Dr. Robert Luck, Professor of Entomology, UC Riverside*

### Leaf Analysis

Well-timed tissue analysis gives a reading of the current level of the various nutritional elements in the tree and how the tree has responded to a previous fertilizer application. Tissue levels should be interpreted in light of the amount of fruit produced as well as the quality and sizes of fruit produced. Reports from the packing house will provide information on field boxes produced as well as size distribution and quality (grade). From all this information goals can be established for the orchard's

fertilizer program. One other factor is essential in setting these goals. Being familiar with the possible effect on production and fruit quality from increasing the level of various elements in the tree is critical. Increasing the level of a nutrient can have impacts on production as well as quality-rind texture, peel thickness, time to reach 8:1 solids to acid ratio. In general, if all the nutrient levels are in the recommended optimum range, only nitrogen, phosphorous and potassium will have significant effects on quality and size. Records of previously applied fertilizer (what, how much and when) will

also be helpful particularly when related to crop load, fruit size and quality. Maintaining all nutrients in the recommended optimum range is the first goal. Adjustment in nutrient levels based upon type and quantity of fertilizer to be applied can then be made if desired. Establishing goals for the nutritional program is helpful in maintaining focus on critical issues such as yield, fruit size, quality and market requirements.

### **Spider Webs**

Unusual spider activity has been observed in a number of orchards this summer. Webbing extending from tree to tree in a row or in some instances from row to row has been seen. If not aware that the webbing is present, it is very easy to walk into the webs which are often waist to shoulder high. Specimens were collected from one orchard and were identified as members of a very large family of spiders known as Orb Weavers. Members of this family vary in size, color and shape. They spin spiraling orb webs on support lines that radiate outward from the center. The web is used as a device to trap prey. Whether these sightings indicate an increasing presence is to be expected from this species or that the presence and sightings indicate an unusual presence in citrus resulting from optimum weather, winter and spring conditions is not known at this point.

### **Premature Fruit Drop**

Mid to late summer is typically the time when some of the new crop of navels begin to exhibit premature color break and begin to drop from the tree. On close inspection, the navel end has a brown to black discoloration and if the fruit is cut this discoloration can be seen extending up through the center of the fruit. Often insects are associated with this condition, generally dried fruit beetles and vinegar flies. The cause of this condition (known as black heart) is the fungus Alternaria citri. Infection can occur shortly after petal fall, but doesn't express itself until later. In some seasons when there appears to be more checks/splits at the navel end, the incidence of this condition appears to be greater than normal. Extensive research has been conducted on this condition but failed to find an effective management option.

Fall brings weather changes which result in splits in navel oranges. With rapid growth and higher humidity the turgidity within the fruit may exceed the peel's ability to grow and a split occurs at the navel end. This area is also subject to brown rot and blue-green molds; fortunately, the decay organisms stimulate the abscission of the fruit so that it does not become a problem at harvest.

### **Late Pruning**

Trees respond to pruning by producing new growth at the pruning sites. Trees pruned in late summer and fall enter the frost season in a heightened state of activity compared to non-pruned trees. Trees entering the frost season should ideally be in a much reduced state of activity making them less susceptible to critical temperatures. Late pruned trees are more severely damaged during a freeze which has been demonstrated during freeze episodes in the past, including the freeze of December 1990. More severe frost damage to fruit has been observed as well in late-pruned orchards, presumably as a result of reduced protective foliage and lower fruit temperature, resulting from increased loss of heat from radiation. The preferred orchard condition entering the frost season is for vegetation to be mature and hardened off and the trees in a low state of activity, all of which makes them less sensitive to cold.

### **Another Frost Management Consideration**

Although it is difficult to think of frost management at this point, one important related concept is worth mentioning. A bare, firm orchard floor is warmer on a cold night than one with substantial growth or one that has been recently tilled. More sunlight strikes the soil when it is bare and therefore more energy is absorbed during the day and is radiated back during the night as heat. Weed management programs minimizing weed growth going into and during the frost season offer the potential of a warmer orchard on a night with critical temperatures. A related thought-orchard floors free of vegetation at the time of fall application of preemergent herbicides offer the opportunity for more even deposition of the spray to the soil as contrasted with weedy situations which often breaks up spray patterns and result in herbicide being tied up on weed growth and not on the orchard floor.

## **Growth Regulator Sprays**

Gibberellin growth regulator applied approximately two weeks before color break to navel oranges has the most effect in reducing the rate of rind aging and incidence of puff and crease, disorders which reduce packout particularly in mid to late season fruit. Factors that have a bearing on the effectiveness of the treatment are spray coverage, amount of gib applied, and timing of the application. Because the material does not move to a great extent from the site where it is deposited on the peel, good distribution of spray material over the fruit surface is critical. The severity of the peel problem will vary from orchard to orchard, the length of time the fruit will remain on the tree and from year to year. Because of delayed color development with early applications, these treatments should be applied where the fruit is to be held for late harvest.

## **Fall Copper Spray**

Preferred timing for fungicide applications for preharvest fruit pathogens has historically been just before or after the first rain. Fall weather with lower temperatures and nighttime dew on the tree, provides conditions favorable for the increase in populations of fruit pathogens such as brown rot and Septoria. An early application of copper at this time helps to suppress the increase in the level of these organisms. In the case of Septoria and other related pathogens, inoculum carries over from spring to fall on deadwood within the canopy. With above average late winter and spring rainfall this past year the opportunity for significant levels of inoculum carry-over is a consideration in timing fall sprays. With favorable fall weather, an increase in this inoculum will occur. Those orchards receiving only a single copper spray last fall, should receive consideration as to a well-timed spray as should those orchards with considerable deadwood in the canopy and/or a history of Septoria and stain problems.

## **Caution! Navel Orange Growers\***

**Charles Coggins, Emeritus Professor  
University of California, Riverside**

Growers who want their navel oranges to qualify for export to Korea will need to apply at least one copper

spray containing lime to minimize the presence of Septoria citri. Details of the requirements for the 2006-2007 seasons will be sent to all California citrus packers soon by the California Citrus Quality Council (CCQC).

Many navel orange growers will apply gibberellic acid (Gib) to delay rind senescence (aging) and 2,4-D to delay and reduce abscission (drop) of mature fruit. Based on research reported in 1974 (J. Amer. Soc. Hort. Sci. 99(3):197-199), Gib is rendered ineffective when it is applied in a mixture containing as little as 0.125 pound of calcium hydroxide (lime) per 100 gallons of water. Therefore, it is imperative that Gib be applied as a separate spray. To assure that Gib has ample opportunity to enter citrus leaf and fruit tissue and exert its expected response, it is recommended that the Gib application be made at least 3 days before or 3 days after the copper/lime. The preferred sequence is to apply Gib at least 3 days prior to the copper/lime. To minimize leaf and fruit drop caused by the Gib, consider adding a little 2,4-D to the Gib tank mix. The University of California recommendation is 6-18 grams acid equivalent (ae) isopropyl ester formulation per acre. However, this amount of 2,4-D applied at Gib application time will not control late season abscission of mature navel oranges.

Abscission of mature navel oranges typically does not become a major problem until after January. If 2,4-D is applied prior to the end of November, a dosage of 30 grams ae/acre in a simple aqueous spray is permitted (or 45 grams ae/acre in a hydrated lime spray). Beginning in December, the maximum per acre dosage is 15 grams ae. Experience indicates that the best application is a simple aqueous spray at the end of November at 30 grams ae/acre. In other words, as close to the onset of abscission as possible at the maximum permitted rate.

A considerable reduction in cost can be realized by combination sprays. However, the application of Gib with lime will result in the waste of Gib dollars and the application of 2,4-D with lime may lead to less abscission control than obtained with the lime free spray.

\* Reprinted with permission of CCQC.

University of California  
Cooperative Extension  
Tulare County  
4437B S Laspina St  
Tulare, CA 93274

Nonprofit Org  
US Postage Paid  
Visalia, CA 93277  
Permit No. 240

# *Citrus Notes*

---



## **Agenda Correction**

*Fall Citrus Meeting*  
*Tuesday, October 17, 2006*

Neil O'Connell  
Farm Advisor