University of California Cooperative Extension • Tulare County

Citrus Notes

Volume 7, Issue 1 *April 2010*

Spring Citrus Meeting
Friday, April 30, 2010
Tulare County Agricultural Building
4437 So. Laspina St., Tulare, CA

8:30 A.M. **Progress Report Air Quality Research in Citrus**
Dr. John Karlik, Farm Advisor, UCCE, Kern County

9:00 **Screening for Virulent Strains of Tristeza**
Dr. Raymond Yokomi, USDA Agricultural Research Service, Parlier

9:30 **Break**

10:00 **Laboratory Screening for Huanglongbing Disease**
MaryLou Polek, Vice President/Operations, Citrus Research Board

10:30 **Management of Leafminer, Citricola Scale, Update on Asian Citrus Psyllid**
Dr. Beth Grafton-Cardwell, UCCE Extension Specialist/Entomology and Director, UC Lindcove Research and Extension Center

11:15 **Clogging in Microirrigation Systems**
Dr. Larry Schwankl, CE Irrigation Specialist, Kearney Agricultural Research & Extension Center

1.75 Hours of Continuing Education Credit Has Been Requested

Fruit Drop

Significant fruit drop was observed in early February in some orchards in the Lindsay-Exeter area. The drop occurred over a very short period of time-in a matter of days. Drop was seen in both navel and Valencia blocks. Of the orchards involved, the rootstock was trifoliate. The drop was observed the last week of January following the period of five consecutive days of rain. Of the rootstocks used commercially for some time, during the cold winter months trifoliate is in the most reduced state of physiological activity, approaching dormancy. In this state, water transport to the canopy is minimal. Following five consecutive days of rain, soil moisture may have been approaching saturation. Under these conditions, root function is affected. Following the rains, daytime temperature rose as evidenced by a sharp rise in ET. Under these conditions, it appears trifoliate was not able to respond to these conditions, resulting in tree stress. Where this drop was observed, fruit load was substantial.

Rains in January

During the extended rains, a typical situation developed in some orchard locations. In low spots water accumulated and ponding developed. In addition, soil adjacent to tree trunks became saturated for extended periods. In these situations, the conditions are optimum for activity of the soil fungus Phytopthora, and invasion of the tissue occurs, resulting in the disease known as brown rot gummosis. Rootstock tissue has some to substantial tolerance to infection, but if the bud union is covered, the scion tissue above the union has little to no tolerance to invasion by the pathogen. Monitoring for bark splitting and gum production from the soil line to the bud union can detect early symptoms, allowing early treatment.

Wilt in February

A navel orchard of Old Line Washington on sour orange rootstock was observed in the Lindsay area showing wilt early in the morning on a cool winter day in late February. With the extended rainfall in January and the cool weather, obviously this was surprising. Investigation of the orchard history indicated that tristeza virus had been detected in the past. The root system showed extensive damage. Samples were taken for analysis. Results of the sampling showed the presence of Phtophthora and Dry Root Rot. Under cool weather conditions and ample soil moisture, the damaged root system was not able to replace water loss even under very low evapotranspiration conditions. In the days following the first tree wilt, additional trees demonstrated wilt.

Nitrogen Demand

During the bloom and fruit setting period, there is a strong demand for nitrogen by the tree. Therefore, an adequate level of nitrogen must be readily available in the tree at this time. The time that it takes for soil applications of nitrogen fertilizer to be available to the tree depends upon what the form of nitrogen is in the fertilizer. First, of course, the fertilizer must be moved into the soil by rainfall or irrigation. The nitrate form in a fertilizer will move with the water and be available for immediate uptake by the roots. This is desirable where the nitrogen level in the tree may be deficient. The urea form moves with the water and then is rapidly changed to the ammonium form; this form absorbs to the soil particles and is then converted to the nitrate form. The ammonium form in a fertilizer is fixed to the soil particles at the soil surface and then is converted to the nitrate form before it can be taken up by the roots. The conversion to the nitrate form of urea and the ammonium form requires time, which is largely dependent upon soil temperature. Foliar application of lo-biuret urea is taken up by spring flush growth very rapidly (some studies suggest within hours). Although large quantities of nitrogen cannot be applied in this manner in a single spray, it is a method of quickly providing a source of nitrogen to the tree, as in cases where fall leaf analysis has suggested a below optimum level of nitrogen in the tree. Fertigation (injecting the fertilizer into the irrigation system) provides the opportunity to place the fertilizer in the root zone and in the nitrate form would be available for immediate assimilation by the root system. The fertigation should be managed to avoid leaching the fertilizer below the root zone. The amount of nitrogen applied should be based upon the nitrogen requirement of the trees. This amount should be based upon leaf analysis, the history of fertilizer applications to the orchard, and the yield and fruit quality response by the trees to these applications. Excessive fertilizer application is costly, may result

in a loss in fruit quality and may negatively affect groundwater quality.

Irrigation Start-Up

Increasing temperatures in the spring raises the question as to when to begin the irrigation season. Fortunately, winter rains have often replenished moisture in the soil profile, so there may not be an immediate need to start up the irrigation system. Applying the first irrigation while the soil is at or near saturation runs the risk of damaging roots. Decisions on timing the first irrigation should be made after evaluating soil moisture. Sample soil moisture at several locations and at several depths (6, 12, 18, 24 inches). Most of the roots are present in the 0-24 inch depth. An auger or soil tube is helpful in estimating soil moisture. Different soil types (sand, sandy loam, clay) with varying levels of moisture will behave differently when a sample is kneaded in the hand. A description of this method of estimating soil moisture is available in a one-sheet answer at the Cooperative Extension Office.

Being familiar with these behaviors allows one to draw a sample and get an idea as to whether the soil is at saturation (water is draining from the soil) at field capacity (maximum moisture the soil will hold after an irrigation) or after fifty percent of the moisture present at field capacity has been used. The goal would be to start the irrigation season with the root zone at field capacity and not overly dry with the tree in stress or saturated and at risk of root damage from the first irrigation.

Cost Studies

Two cost studies were recently completed. The orange study was released in November and the lemon study was released in February. These publications include detailed discussions and costs for both orchard establishment and fruit production. Copies can be obtained by contacting the Cooperative Extension office in Tulare at 684-3300.

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