University of California Cooperative Extension • Tulare County

Citrus Notes

Volume 8, Issue 4 **September 2010**

FALL CITRUS MEETING

Friday, October 8, 2010

4437 South Laspina Street, Tulare
9:00 - 11:30 A.M.

9:00 Navel Orange Strain Trial
Dr. Mary Lu Arpaia, Kearney Research & Extension Center

9:30 Volatile Organic Compound Emissions and Ozone Destruction in Citrus
Dr. John Karlik, UC Cooperative Extension, Kern County

BREAK

10:15 Epidemiology of Stubborn Disease
Dr. Raymond Yokomi, Research Plant Pathologist, USDA Ag. Research Service

11:00 Status of Citrus Tristeza Virus In and Around Lindcove Research and Extension Center
Dr. Beth-Grafton-Cardwell, Director, Lindcove Research and Extension Center

Continuing Education Credit Has Been Requested

Fruit Growth

The rate of fruit growth during development is largely controlled by temperature and soil moisture. The higher mean daily temperature the faster the growth of the fruit. Growth occurs primarily above 12.5 degrees centigrade (55 degrees Fahrenheit). Total heat units accumulated during fruit development vary significantly to citrus growing regions. In the Riverside area total annual units may equal 1700, whereas in Israel, total heat units may equal 3600. Deviations in heat units accumulated from year to year during fruit development can have an impact on rate of growth, color break and rate of change in concentration of acids and soluble solids in the fruit.

Leaf Analysis

Well-timed tissue analysis provides the current level of the various nutritional elements in the tree and how the tree has responded to 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.

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 break up spray patterns and result in herbicide being tied up on weed growth and not on the orchard floor.

Weed Management Considerations

Effective weed management with herbicides is dependent upon a number of critical factors including choice of material, timing of spray, effective coverage, growth stage of weed, and orchard and weather conditions. Selection of an effective preemergence herbicide for fall applications should be related to what weed species may emerge. In a presentation on weed management, Dr. Anil Shrethra described the seed bank which exists in the orchard. This bank consists of newly introduced species (1-5% of total seed), seed of species not well adapted to orchard conditions (10-20% of total) and a few, well adapted, dominant species (70-90% of total seed). The number of seeds produced by a mature plant is impressive and varies from one species to another, but two examples of common weeds would be barnyard grass (300,000 per plant) and prickly lettuce (28,000). In a weed management program where a significant number of plants escape and are able to form seeds, the potential for maintaining or increasing the seed bank is real. This suggests that keeping a record of any species escaping the current herbicide program, and some record of the density and distribution in the orchard of these species is helpful in evaluating the effectiveness of the program. If escapes are a problem, then a review of the basics listed above is in order. Control around the borders of the block is necessary to minimize seed production as well, and keep in mind that some species have airborne seeds (such as fleabane) which may arrive from adjacent locations. The same weed management approach is helpful in the spring herbicide program as well. Preventing seed production can reduce seed number in the seed bank at a rate of 12% a year in a no-till situation. Particularly difficult to control species such as Horseweed (Mare's Tail) and Fleabane present special problems. A few of the recommendations of Kurt Hembree, farm advisor in Fresno County, regarding these two species are included here. Typically, these two weeds are considered summer annuals with emergence in February; however, some emergence has been occurring in October, and therefore late winter herbicide applications will miss weeds. A split herbicide application is necessary in this situation, fall and spring. Application of postemergence herbicides have not been as effective in some cases in controlling these species. A combination of preemergence and postemergence applications is necessary. Effective materials may be regulated under ground water protection regulations; check with the agricultural commissioner's office. Sensitivity of these species to postemergence materials decreases with age of the plants. Good coverage is critical when spraying. Timing of the treatment is important. Treat when fewer than 21 leaves are present and prior to bolting, and use higher label rates. Consider tank mixes of effective, registered postemergence materials. When using glyphosate, at least 2# active ingredient per acre is recommended. Check the glyphosate label, as the amount of active ingredient can vary among products. Monitor routinely for weed species present and weed escapes following treatment.

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Fall Citrus Meeting

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