



University of California Cooperative Extension

Kern Citrus and Subtropical Fruit

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August 2009

- Upcoming Meeting -
**California Red Scale
Monitoring and Management**

**Wednesday, August 26, 2009
Shafter Research and Extension Center
17053 Shafter Avenue, Shafter CA 93263
8:30 – 10:30 a.m.**

Craig Kallsen and David Haviland (UCCE Kern Co.)
and Beth Grafton-Cardwell (UC Riverside/Kearney Ag Center)

For more information call:
Craig Kallsen (661) 868-6221

We will bring the mobile teaching lab to Shafter REC to teach the details of the life cycle of the pest and its parasites using a PowerPoint lecture, microscopes and handouts. Field monitoring using pheromone traps will be demonstrated and treatment thresholds and current treatment options discussed. With this knowledge PCAs and growers can make better decisions about California red scale control tactics.

Bring a hand lens and if you have an orchard with red scale, bring scale-infested pheromone traps and/or scale-infested fruit for us to examine and discuss.

2 units of continuing education have been granted.

Be Prepared for Sticker Shock

With the constant threat of introductions of exotic pests of citrus, especially the Asian Citrus Psyllid and the HLB bacterium that it may eventually carry to California citrus trees, citrus nursery people are being strongly encouraged to produce citrus trees in screened houses. Screened houses will greatly decrease the probability of spreading insect and mite pests and the diseases they may carry from the nursery to growers' orchards. Growing trees in this way may further reduce the small chance of spread of some of our existing pests and diseases from nurseries to growers' orchards as well, such as citrus stubborn and Tristeza. However, building and maintaining screened enclosures of the size necessary to produce thousands of citrus trees is a very expensive proposition. Be forewarned that some of these costs will undoubtedly be passed on to the consumer if the nursery business is to remain profitable and high-quality trees are to remain available.

Short Summary of an Irrigation Stress and Early-Navel Fruit Maturity Experiment Conducted in the Southern San Joaquin Valley of California

Craig Kallsen and Blake Sanden
University of California Cooperative Extension, Kern County

Mary Lu Arpaia
University of California Cooperative Extension, U.C. Kearney Agricultural Center

The objective of this research was to measure effects of late-season irrigation stress on fruit yield, quality, and maturity of an early-maturing navel orange variety. In the summer of 2006, three irrigation regimes were initiated in the experimental orchard. In 2006, and each year of the three-year experiment, irrigation in the stressed treatments was first reduced in early August. Initially measured levels of tree stress increased slowly as the deep soils in this orchard provided abundant stored water. In 2007, late-season irrigation stress was intensified in two of the treatment regimes in the trial. In the final season, 2008, the trees in the treatment with the highest irrigation stress in 2006 and 2007 were fully irrigated to measure the recovery response of the tree in terms of fruit yield, quality and harvest maturity. Fruit was commercially harvested in mid to late October each year of the experiment. Generally, over the course of the three years, late-season irrigation stress increased total soluble solids (i.e. Brix), titratable acidity, the BrimA index, and color. Fruit juiciness and the soluble solids/acid ratio (i.e. sugar/acid ratio) were little affected. The intensity of the irrigation stresses in 2007 decreased fruit yield by number and weight, decreased the percentage of large fruit and reduced fruit grade. When trees exposed to two years of late-season irrigation stress were fully irrigated the following year, fruit yield and quality was similar to trees that had been fully irrigated all three years.

Citrus Leafminer (CLM) Moths Restless

Judging by the number of calls that I have been receiving from homeowners in Bakersfield this spring, citrus leafminer (a relatively new pest to citrus in Kern County) may be a bigger problem late summer and fall in Kern County than in previous years, especially if we get a vigorous fall leaf flush. The problem seems particular severe on trees that produce numerous leaf flushes throughout the years, such as occurs with the Eureka lemon, and of course baby trees. According to ANR publication leaflet entitled, *Citrus Leafminer and Citrus Peelminer*, Publication number 8321, April 2008, “Research conducted in Florida has shown that CLM typically do not reduce the yield of mature trees (older than 4 years of age) provided the trees have adequate fertilizer and water at the appropriate times of the year. Chemical control of CLM in mature trees is extremely difficult, and the treatments are rarely effective ... Young trees will have their growth slowed and in some cases may be killed if defoliation caused by CLM feeding is continuous. For the proper timing and use of insecticides, please refer to the UC IPM Citrus Pest management guidelines (<http://www.ipm.ucdavis.edu/PMG/r107303211.html>).”

The high temperatures that we have seen in August this season will reduce or postpone leaf flushes, however, growers may create new growth through some production practices. Anything that results in new leaf flushes, such as hedging, topping or heavy interior pruning or late nitrogen applications can increase the number of new, tender leaves perfect for colonization by CLM.

Citrus peelminer populations are also characterized by year-to-year ebbs and flows and it is not hard to find the mines of this moth either in the developing larger-diameter citrus fruit this season. Excellent information on these pests is available at Dr. Beth Grafton-Cardwell’s web site at the following address: <http://www.uckac.edu/citrusent/>

Improve Control and Reduce Costs by Trapping California Red Scale

The citrus industry is justifiable concerned by the unintended introduction of exotic pests, such as the Asian Citrus Pysillid, to California. However, while keeping an eye on the new exotics, grower profitability necessitates that attention remain on many of the serious pests that have been with us for decades or more. California red scale (CRS), a pest that industry made a valiant attempt to eradicate decades ago, is one such pest. Every citrus grower should have a strategy to control CRS. California red scale infestations can seriously impact fruit quality and yield, especially in California’s San Joaquin Valley, where biocontrol is more problematic. Biological control tends to be easiest in the coastal areas and some inland districts of southern California because milder weather in these regions allows the overlap of generations, which provides susceptible host stages for parasitism year round. However, even in the San Joaquin Valley, many growers achieve control without annual pesticide applications. Some growers achieve satisfactory control by releasing supplementary parasitic wasps and by encouraging biological control of most citrus pests through the minimal use of pesticides.

Many other growers reduce the number of pesticide applications made to CRS through careful monitoring of this pest by visual evaluation of foliage and fruit in combination with the use of pheromone traps. The most commonly used trap design is a white card, covered with a sticky substance, to which a cap containing a female-sex pheromone is attached with a paper clip. Male scale fly, females do not. Males fly to find females to fertilize. The pheromone attracts flying male red scale to the trap where they are captured. In the San Joaquin Valley, CRS is able to complete four

generations, so; generally, four peak populations of male scale (called flights) are trapped annually. The first flight occurs in April-May, the second in June-July, and the third and fourth flights are more difficult to separate. The fourth flight normally occurs in September-October. Left uncontrolled, CRS populations increase greatly in numbers in later generations and these generations begin overlapping by the third flight. The traps provide information on both the overall population density, and when reproductive events are taking place. For best results, the traps are used in combination with calculation of degree days based on temperature models to determine the most effective time for pesticide applications. Pesticides are usually targeted at the first or second generation, but timing the application within the generation varies with the mode of action of a given pesticide. Some materials are aimed prior to or during the peak egg hatch or later as the nymphs molt between developmental stages. Visual examination of the twigs earlier in the season or the fruit after early July can assist in confirming scale density within areas of the orchard and scale developmental stages.

Often population densities in the first and second flights are so low that, even in orchards at risk, that information from the fourth or last flight of the previous year should be used to evaluate the need for pesticide treatment in the following year. However, first and second flight trapping is critical for determining generational appearance and development in the spring and summer. Nymphs from the first and second generation are the usual targets for control, since numbers are lower and population peaks are more distinct and thus more targetable. If overall population numbers remain beneath accepted economic thresholds, pesticide sprays are unnecessary. Sometimes only portions of large blocks of citrus will need to be treated based on variable population densities in the same orchard.

More complete information on the use of trapping to control California red scale is available at <http://www.ipm.ucdavis.edu/PMG/r107301111.html> or in the following manual: *Integrated Pest Management for Citrus, 2nd Edition, University of California, Statewide Integrated Pest Management Project, ANR Publication 3303. 1991.*

A workshop, sponsored by the University of California, called “California Red Scale Monitoring and Management” will be held Wednesday, August 26, 2009 from 8:30-10:30 a.m. at the Shafter Research and Extension Center at 17053 Shafter Avenue, Shafter CA 93263.

Citricola Scale Appears to be an Increasing Problem

With the increasing use of growth regulators and other new chemistries to control many citrus pests, citricola scale is becoming an increasing problem in many Kern county citrus groves. A side-affect of the older organophosphate and carbamate insecticides that were used to control citrus thrips and California red scale did such a good job of controlling citricola scale that many growers and PCAs weren't even aware that it could be a serious pest of citrus. Well the short answer is that it can be. Biological control of this pest is often disappointing in the San Joaquin Valley of California, since a single generation does not allow survival of beneficial insects, such as some parasitic wasps, which can effectively control this pest in other areas of the state. In many orchards this season, rapidly increasing populations of citricola scale have been slammed back by our recent run of hot temperatures. Hot temperatures can be an organic grower's best friend when it come to control of this scale. High temperatures are especially effective in trees that are topped to 10 feet or less in height and heavily interiorly pruned and trees on south-facing slopes. Monitor populations. There is probably no need to treat heat-killed dried-up scale. However, citricola populations can recover if temperatures cool. Fruit covered in black sooty mold growing on sticky honeydew are not generally welcomed at the fruit packing plant. Information on how to control this pest is available at <http://www.ipm.ucdavis.edu>.

Septoria still an Issue in Korean Markets – Kern County in the Spotlight

The California Citrus Quality Council (CCQC) mission is to represent the California citrus industry in response to problems and issues which arise in state, national, or international arenas and which affect the industry generally in areas of quarantine matters, technical assistance, international compliance, or other related issues. I received the following letter from the California Citrus Quality Council a few months ago and the information it contains bears repeating so that those businesses that might be affected are prepared for changes in the way the NAVEK program may be administered next season.

Dear Citrus Exporters:

The California Citrus Quality Council (CCQC) is contacting you to strongly recommend that Kern County navel oranges destined for export to Korea be sampled for Septoria citri through the Navel and Valencia Exports to Korea (NAVEK) program effective immediately.

CCQC was notified this morning (Wednesday, April 01, 2009) that Septoria was detected in two Kern County shipments in Korea. This marks the ninth detection of Septoria in Korea, six of which have been from Kern County. We therefore recommend that exporters consider voluntarily testing their navels before shipping them to Korea. We believe testing will lessen the risk of additional interceptions that threaten the long term viability of the Korea export market. Additionally, we strongly recommend Kern County growers reinforce their monitoring for rind-damaged fruit in orchards.

All exporters should be aware that Korean inspectors look for peel damaged fruit on arrival as an indicator for Septoria. Any peel damaged fruit that is found is sent to laboratories for PCR testing. Exporters can further reduce the risk of Septoria detections by culling defects to the greatest degree possible.

Please keep in mind that we will be renegotiating the Korea work plan this summer. All exporters should be especially vigilant for the balance of the season to avoid additional Septoria interceptions and paper work violations or we risk more costly requirements on exports to Korea.

Please contact me (James R. Cranney, President CCQC) by telephone at (530) 885-1894 or via e-mail at jcranney@calcitrusquality.org if you have any questions or need additional information.


Craig Kallsen, Citrus, Subtropical Horticulture, Pistachios Advisor

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to the event.



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