

California Red Scale

The fourth generation of California red scale of 1998 will soon be ceasing development for the winter. Warmer growing regions, including Kern county and the foothill regions of Tulare and Fresno counties saw a complete fourth flight and a limited fourth crawler emergence, while orchards in the valley basin and Madera county only had a partial fourth male flight. Degree-day accumulations had really picked up in August and early September but recent cooling and shortened days will prevent the fourth generation of scale from reaching maturity in most areas. The citrus growing regions are still 400 to 800 degree-days behind last year's accumulation, and the difference can be seen in the growth of the trees as well as the development of the scale. Current degree-day accumulations for the six citrus growing regions can be found at our website, <http://www.uckac.edu/citrusent>.

California Red Scale 1998

Lindcove Citrus Field Station Block 93

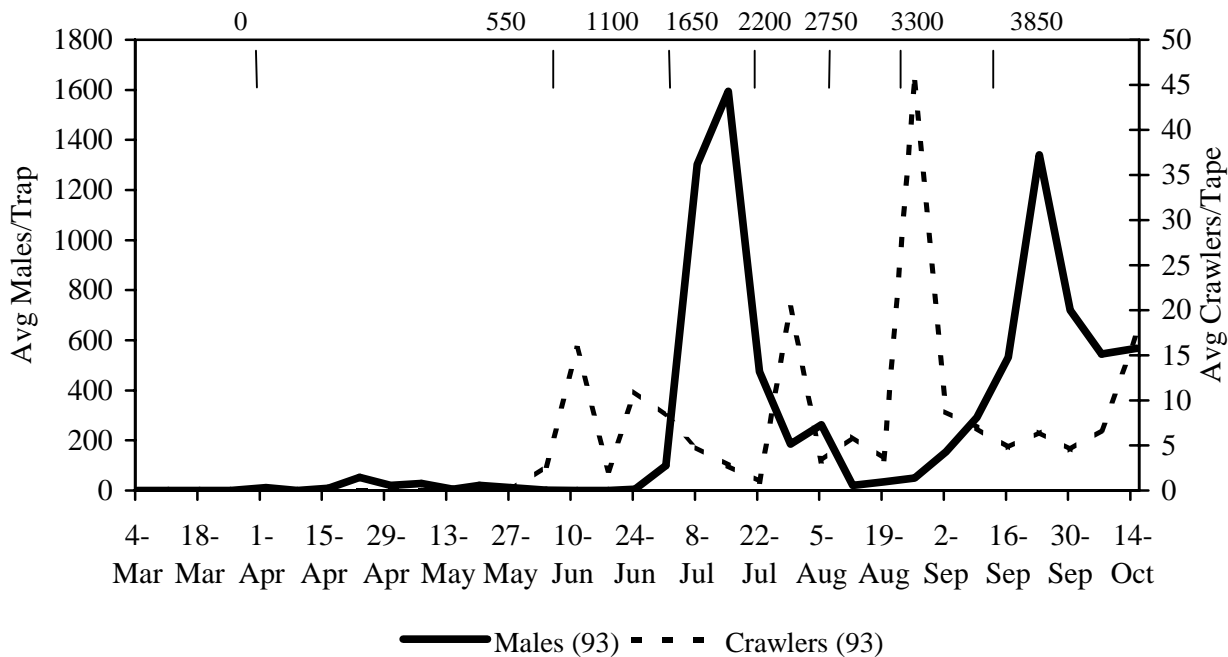


Figure 1 shows the CRS development in one of our experimental blocks at Lindcove Field Station. The numbers across the top of the graph show the degree-day accumulation for the date at the bottom of the graph. The biofix for this block occurred with the first male capture the week of March 30. First crawler emergence occurred June 4th at 570 DD, and the second flight started July 1, at 1083 DD. The second crawler emergence began when predicted, 1674 DD on July 22. There was no discernable third flight, as was seen in many orchards this year, but the third crawler emergence occurred when it was predicted to on August 26, 2666 DD. The fourth male flight was extended over nearly four weeks, starting in mid September, and the crawler count shows a fourth period of activity during the week of October 15th.

Since this area is now accumulating degree-days at about 50 DD per week, the crawlers would theoretically need until the end of November to reach the third instar, which certainly will not occur.

I have no idea what to expect with Aphytis activity, Becky says that they are very active right now but they should only be finding first and second instar scale right now, along with leftovers from the third generation.

Should this be updated? Is there more to say on CCS?

Knack and Applaud Treatments: Growers and PCAs have reported that where Knack or Applaud was used in the first crawler generation (June for most regions), control of California red scale has ranged from acceptable to excellent. Many PCAs reserved the use of Knack for their worst-case scenarios, and have been very pleased with the results compared to the previous season. Some growers were initially uncomfortable with Knack or Applaud treatments because these pesticides did not kill the crawlers and they found many whitecaps on the fruit. With organophosphate insecticides that would be a sure sign that the pesticide didn't work. Knack and Applaud are insect growth regulators and so they don't poison the scale, instead they disrupt egg hatching, growth, and proper molting. The insects don't die until they try to molt into the next stage (that can take days or weeks) and even then it is hard to tell if they are dead. Scale that don't molt properly will eventually die and flake off of the fruit or be washed off in the packing line. This season has been a big learning experience for everyone as to how Knack and Applaud affect red scale and how to tell if the scale are alive or dead. Because Knack and Applaud kill the male scale more easily than the female scale, you should not depend on male trap counts to decide if the pesticide was effective. The best way to assess the scale population is to wait 6-8 weeks after the spray to look at 100 fruit per 10 acre block to see if the next generation of scale have grown up and are producing any crawlers. In some cases, PCAs have observed that a few scale survived an application of Knack or Applaud, but these scale were sickly and undersized, and produced only a few crawlers. If the scale on the green fruit are producing many crawlers and an insect growth regulator was applied more than 6 weeks ago, then a second insecticide application may be warranted.

Cottony cushion scale

Cottony cushion scale has been building in many citrus orchards in the San Joaquin Valley for the last few years. Both Knack and Applaud are highly toxic to the Vedalia beetle which normally controls the cottony cushion scale. We have been watching Knack and Applaud treated blocks and as predicted these treatments eliminated the Vedalia beetle. During the heat of summer, Vedalia beetle numbers are naturally low in most areas of the Valley but are expected to increase again in the fall months. What we need to know is at what point in the next few months does the Vedalia beetle return to the Knack or Applaud treated blocks. Please contact me as soon as you find live Vedalia beetle eggs, larvae, or pupae in Knack or Applaud treated blocks.

Beth Grafton-Cardwell
Extension Entomologist
Kearney Agricultural Center
bethgc@uckac.edu

Greg Montez
Research Associate
gregm@uckac.edu

California Red Scale and Cottony Cushion Scale Workshop

Kearney Agricultural Center, 9240 S. Riverbend Ave., Parlier

209-646-6500

September 9, 1998

Beth Grafton-Cardwell

This is a very informal program. Arrive any time between 8:30 am and 3:00 pm to have your citrus fruit and twig samples evaluated. We will have 1) video tapes playing throughout the day showing the lifecycles of red scale and cottony cushion scale, 2) microscopes set up for you or one of our technicians to examine the scale, and 3) a microscope attached to a TV monitor for group viewing of scale and for discussions.

At 9:30 and 1:30 I will give a short presentation describing how the insect growth regulators affect scale growth and take questions from the audience.

California red scale:

Growers in Fresno, Tulare, and Kern Counties have had the opportunity to use two new insecticides, Knack and Applaud, during 1998 for red scale control. These insecticides do not work like the old pesticides because they are insect growth regulators. They don't poison the scale, instead they disrupt insect hatching, growth, and proper molting. The insects don't look dead and they die very slowly. If you have been wondering if your red scale is alive or dead, if it is reproducing, or how well the parasites are doing, bring some samples of fruit to the workshop. We will help you look at the scale under the microscope and determine what is happening in your orchard.

Type of red scale sample to bring in: Six to ten pieces of green fruit infested with red scale from each orchard you are curious about.

Cottony cushion scale:

Knack and Applaud are being used for California red scale control. It just so happens that these pesticides are very toxic to the Vedalia beetle, a predatory beetle that normally does a great job in controlling cottony cushion scale. If you have questions about the lifecycle of cottony cushion scale or Vedalia beetle, if you want to learn how to recognize whether the insects are alive or dead, bring some samples of cottony cushion scale-infested twigs from your block.

Type of cottony cushion scale sample to bring in: Four to five branches with heavy populations of cottony cushion scale from each orchard.