

Citrus Cutworm

Source of Information: Lindcove Research and Extension Center

Biofix: January 25, 2000 for the Exeter and Ivanhoe area

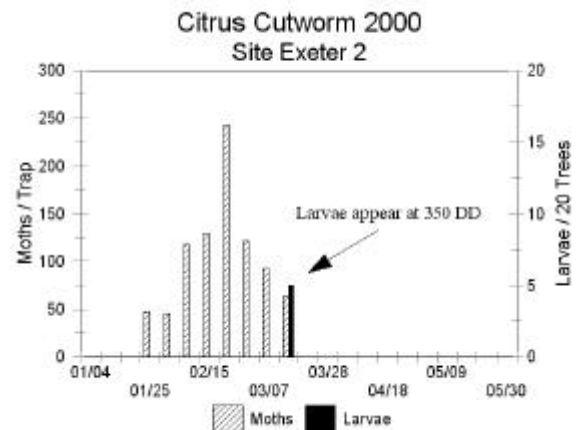
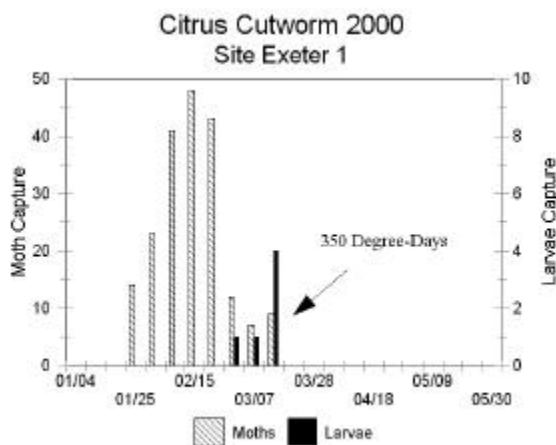
Lower developmental threshold: 45.6°F

Current Accumulated Degree Day Units: 350 DD

Begin Sampling for Cutworm Larvae: 250 DD, (occurred during the last week of February)

Detect 1st and 2nd instar larvae: 350-400 DD, (occurred during the middle of March)

Citrus cutworm moths have been flying since mid January. Pheromone trap captures have been in the 50-250 moths per week range for the past four weeks. We estimated that using a lower developmental threshold of 46°F and a biofix of the second week of consecutive moth flight (Jan 25), we would see larvae emerging approximately 350-400 degree-days later. The earliest we have seen larvae emerge is at 250 degree-days and so that is when we began sampling. As of March 10th, we have accumulated 350 degree-days at the Lindcove Research and Extension Center. Using a beating sheet, we began seeing 1st and 2nd instar cutworm larvae during the week of February 28th in Exeter site 1 (300 DD) and during the week of March 13th in Exeter site 2 (350 DD). We will keep you informed of cutworm development via fax and the web (<http://www.uckac.edu/citrusent/>).



Microbial pesticides are most effective when applied approximately 400-550 degrees after moths begin flying, when the population consists primarily of 1st and 2nd instar larvae. In the Exeter/Ivanhoe area, where cutworm seem to be most common, it is time to spray the microbials if the worms are above the treatment threshold. The treatment threshold is 15 worms per 25 net shakes, per 1 hour search, or per 20 trees sampled with a beating sheet. See your Citrus IPM manual or guidelines for details of how to sample. Insecticide treatment recommendations can be found in the citrus guidelines that you can purchase from your UC Cooperative Extension Office, or by subscription as Publication 3339 from UC DANR Communication Services (800-994-8849), or on the world wide web (<http://www.ipm.ucdavis.edu>).

California Red Scale

Source of Information: Lindcove Research and Extension Center

Biofix (beginning of male flight): March 13, 2000 in Tulare and Kern counties

Lower developmental threshold: 53°F

Current Accumulated Degree Day Units (as of March 17, 2000):

Kern: 36 DD

SW Tulare: 32 DD

NE Tulare: 32 DD

Fresno: 0 DD

Madera: 0 DD

1st Crawler emergence occurs: 550 DD

Second male flight occurs: 1100 DD

2nd crawler emergence begins: 1650 DD

2nd generation whitecap stage: 1800 DD

The male scale are beginning to fly throughout the San Joaquin Valley, signaling the biofix for California red scale development. Now is the time to start your temperature recorders and begin accumulating degree days. You should already have pheromone cards in place in your orchards (1 trap per 2.5 acres). The southern end of the valley is warmest and so everything happens there first. If you change the cards every week, you will know when the male scale start flying and when their flights peak. The start and peak of each male flight is very useful information. If you combine the start or peak of the male flight with the accumulated degree-day units in your orchard you can predict when the crawlers will begin to emerge. The beginning of crawler emergence occurs approximately 550 degree days (using a base temperature of 53°F) after the beginning of the flight of males in each generation. If you wait for peak crawler emergence to occur, then the pesticides will be most effective. The crawler stage is most easily killed by organophosphate (Lorsban® and Supracide®) and carbamate (Sevin®) pesticides. Peak crawler emergence can be observed using double-sticky tape wrapped around branches to catch crawlers as they move along the branch or by estimating when the peak of the male flight occurred and spraying 550 degree days later. The second generation white cap stage is the best stage to treat with insect growth regulators (Esteem®, when it becomes registered). The white caps are the best target because these insecticides won't hurt the scale until they attempt to molt. It is important to wait to spray insect growth regulators until the 2nd generation of activity so that the vedalia beetle will have time to clean up the cottony cushion scale.

PCAs and growers that plan to release *Aphytis* parasitic wasps should begin releasing by March 1st. These parasites work the best when you start releasing them early in the year and release them frequently (every two weeks). You want to seed the early season population with parasites that will build on their own for the rest of the season. You should try to release 5,000 / acre every two weeks for 9 months to get a total of 100,000 *Aphytis* per acre into the orchard.

Cottony Cushion Scale

Cottony cushion scale has been a problem in many orchards in the San Joaquin Valley since we began using insect growth regulators (IGRs) for California red scale control. This is because the vedalia beetle, that is the best control agent of cottony cushion scale is extremely sensitive to IGRs. In 1998, growers sprayed 50,000 acres of San Joaquin Valley citrus with Esteem® (= Knack®) or Applaud® and in 1999 they sprayed 25,000 acres. The sprays were especially hard on vedalia in 1998. We did not see vedalia return for nine months. The orchards that experienced the worst problems were not the orchards that were sprayed with these chemicals, because the IGRs will also slowly kill cottony cushion scale, but rather the nearby orchards. This is because the spray drift into nearby orchards was enough to kill the vedalia beetles but not enough to kill the cottony cushion scale. Esteem prevents the vedalia eggs from hatching and both Esteem and Applaud prevent the beetle from

emerging from the pupal case. A sign of the negative effects of the insect growth regulators is the presence of dead vedalia pupae on the outside leaves of the trees. In 1999, fewer acres were sprayed with IGRs and the vedalia beetles came back after 4 months. Most orchards have vedalia beetles in them now (March 2000). Vedalia beetles should work very quickly on cottony cushion scale populations now that the weather is warming up and we should see few if any problems with cottony cushion scale this spring where the beetles become established. There are no insectaries mass-rearing vedalia beetle, so the best method of getting them started in an orchard is to find an orchard that has lots of pupae and adult beetles and move as many as you can into your orchard. We estimate that it takes only 25 beetles/10 acre orchard to get vedalia beetles started. They do their best work if started in February through April. In the spring, when the conditions are right, vedalia can clean up a nasty cottony cushion scale problem in 4-6 weeks.

Insecticide Registration News

(see <http://www.uckac.edu/citrusent/section18.htm> for details)

California red scale: We did not request a Section 18 registration for California red scale this year for several reasons. First, the insect growth regulators have done such a good job of reducing scale that we do not have an “emergency” situation at the moment. Second, we expect Esteem® (pyriproxifen) to receive full registration sometime this year. We had hoped to have Admire® / Provado® (imidacloprid) as well, but it hit a federal registration snag and we are not likely to see it or Applaud® (buprofezin) registered until next year. Valent is planning to incorporate wording on the supplemental label to restrict use of the Esteem to the second generation of red scale activity (July). The purpose of the restriction is to give the Vedalia beetles time to clean up cottony cushion scale problems during March-June. As you should know by now, Esteem® does not let the Vedalia beetle eggs hatch or the pupae emerge.

Glassy-winged sharpshooter: There is a Section 18 registration for Admire® (soil application of imidacloprid) for Riverside and Kern counties only. Please contact your County Ag Commissioner for a permit to use this product and for the details of the Section 18 registration. The Section 18 is in effect from February 25 through June 20, 2000. There is very little known as to the best timing of application or the level of efficacy that this insecticide will provide against glassy-winged sharpshooter. Several UC researchers are conducting experiments this year to determine the best use of Admire® in citrus.

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