

## New Format – Get the Newsletter Online!

Smith-Lever is no longer funding our newsletter so the name of the newsletter has changed, but the up-to-date insect phenology information will remain the same. We will continue to send out the newsletter via mail from the Tulare County Cooperative Extension office, via fax for those who request it, and for those who have internet access our website contains the current issue, an archive of all past issues, and much more. Visit us at <http://www.uckac.edu/citrusent> for all the details or contact Beth Grafton-Cardwell or Greg Montez at (559) 646-6500.

## Citrus Cutworm

**Source of Information:** Lindcove Research and Extension Center

**Biofix:** January 15, 1999 for the Exeter and Ivanhoe area

**Lower developmental threshold:** 46°F

**Current Accumulated Degree Day Units:** 140 DD

**Begin Sampling for Cutworm Larvae:** 250 DD

The citrus cutworm moths have been flying since mid January. Apparently the heavy freeze has not had much of an effect on citrus cutworm, as pheromone trap captures have been strong and steady. We have estimated that using a lower developmental threshold of 46°F and a biofix of the second week of consecutive moth flight, we will see larvae emerging approximately 350-400 degree-days later. The earliest we have seen larvae emerge is after 250 degree-days. You should start sampling at 250 degree-days using a net shake, beating sheet, or time search method. The treatment threshold for these methods is 15 worms per 25 net shakes, 1 hour search, or 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>).

As of February 26, we have accumulated 140 degree-days at the Lindcove Research and Extension Center and so we don't expect to see larvae yet. We will begin looking for worms the second week of March. The earliest we have seen larvae appear in citrus in the previous 6 years was Mar 4 and the latest was April 5. The timing of the first appearance of larvae depends on the average daily temperature in the valley in the next few weeks. We will keep you informed of the degree day units as they accumulate via fax and the web page (<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 1<sup>st</sup> and 2<sup>nd</sup> instar larvae. We will also try to help you determine when this event is happening using degree day units.

## California Red Scale

California red scale males should begin appearing on traps in mid March. Now is a good time to begin placing pheromone traps in citrus orchards (1 trap per 2.5 acres) starting with the southern end of the valley and working north. 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 and when peak crawler emergence will occur. 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 pesticides. Peak crawler emergence can be observed using double-sticky tape wrapped around branches to catch crawlers as the crawl along the branch or by estimating when the peak of the male flight occurred and spraying 550 degree days later. In addition, degree day units can be used to predict when 3<sup>rd</sup> instar females are present. The 3<sup>rd</sup> instar female stage occurs about 800 degree days after each male flight. The 3<sup>rd</sup> instar females are the favorite stage for attack by *Aphytis* parasites. We will be tracking red scale degree-days on our website.

PCAs and growers that plan to release *Aphytis* should begin releasing by March 1<sup>st</sup>. 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 rearing it's ugly head in many orchards throughout the San Joaquin Valley. One of the reasons is that the El Niño conditions we had last year were perfect for soft scale growth and development. Another reason is that *Vedalia* beetle disappeared during the summer and never came back. The *Vedalia* beetle is very sensitive to the new insect growth regulators, Knack (= Esteem) and Applaud, which are applied for California red scale control. The orchards that are experiencing the worst problems are next to orchards that were sprayed with Knack or Applaud. This is because the spray drift killed the *Vedalia* beetle but not the cottony cushion scale. The *Vedalia* beetle adults are not killed but their offspring do not complete development. A sign of the negative effects of the insect growth regulators is the presence of dead *Vedalia* pupae. The *Vedalia* beetles should have returned to citrus this past fall but have not. If you see any, please let me know (Beth Grafton-Cardwell 559-646-6500, or Neil O'Connell, 559-733-6484). The *Vedalia* beetle is the best method of controlling cottony cushion scale and so we expect to see some heavy populations of scale this spring.