

**California Red Scale – Male Scale are Flying**

	1st male flight	1st gen. crawler s	2nd male flight	2nd gen. crawlers	3rd male flight	3rd gen. crawlers	4th male flight	4th gen. crawlers	5th male flight
Estimated Degree Days	biofix	550 DD	1100 DD	1650 DD	2200 DD	2750 DD	3300 DD	3850 DD	4400 DD
Kern	Mar 8								
Tulare	Mar 15								
Fresno	Mar 22								

The biofix for CRS in Tulare County and the foothill citrus growing region, based on pheromone trapping data from the Lindcove Citrus Research Station, is being called for the week of March 15. The biofix for warmer areas in Kern County should therefore be the week of March 8, and for cooler areas of Fresno County, the week of March 22. You should have your pheromone cards out in the orchards now. We should begin to see crawlers emerging after 550 degree days have accumulated. Degree-day calculations for CRS will be maintained on our website at <http://citrusent.uckac.edu/DegreeDay.htm>. California red scale had more than 4 generations in 2003 because of the high fall temperatures and so we can expect to see heavy populations in a number of orchards in 2004.

**Cottony Cushion Scale – Look for Vedalia Beetles**

Cottony cushion scale populations seem to be lower this year, probably because the vedalia beetle did such a good job last year. Vedalia beetles have returned to many San Joaquin Valley orchards during March and should do an excellent job of eliminating cottony cushion scale. Usually, vedalia needs 6-8 weeks to clean up a cottony cushion scale population and it needs to do that before insecticide treatments kill it or the heat of summer arrives. Thus, the best time for vedalia beetle is the March-May period. When vedalia arrives late (May-June) it often doesn't have enough time to complete its work. Insecticides that are toxic to vedalia beetle include: pyrethroids (Danitol and Baythroid), neonicotinoids (Assail, Provado, Admire), and insect growth regulators (Esteem and Applaud). You should wait to use these insecticides in blocks with cottony cushion scale until the vedalia declines naturally in June. Vedalia beetle is better than pesticides for controlling cottony cushion scale. If the vedalia does not arrive in time, then Supracide, Malathion, Sevin, or Applaud can be used to reduce the cottony cushion scale. However, our studies are showing that these insecticides do not work well in Mar-May when the cottony cushion scale is in the adult stage. The insecticides work much better in June or July when the adult females are dead and the population consists of small stages on the leaves of the tree. So let the vedalia do its work now, and spray later if the population isn't cleaned up to your satisfaction.

If you would like to see photos of cottony cushion scale or vedalia beetle, see the brochure, "Stages of the Cottony Cushion Scale (*Icerya purchasi*) and its Natural Enemy, the Vedalia Beetle (*Rodolia cardinalis*)": <http://anrcatalog.ucdavis.edu/merchant.ihtml?pid=5525&step=4>.

## Citrus Cutworm – Time to Start Sampling for Worms

**Source of Temperature Data:** Lindcove Research and Extension Center

**Biofix:** January 12, 2004 for the Oroshi and Ivanhoe areas

**Lower developmental threshold:** 45.6°F

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

**Expect to find 1<sup>st</sup> and 2<sup>nd</sup> instar larvae:** 350-400 DD

**Apply microbials (Bt products):** 400-550 DD

**Current Accumulated Degree Day Units:** 340 DD

The citrus cutworm flight this season started out light, but moth capture has been steady or increasing since late February and it is possible that the peak moth flight has not yet occurred. Hatching of citrus cutworm eggs has started right on time, with the first larvae of the season being recorded for the week of March 8 at 310 degree-days (expected appearance of larvae at 350 DD). Note in the graph below, showing Oroshi Site 4 from the Citrus IPM Demonstration Program, that degree days were accumulating very slowly during February but in the first two weeks of March DD accumulation was rapid as the average daily temperature was well above 45.6°F. If the current trend of above-average temperatures holds, we should continue to see egg hatch and accelerated development of the larvae. This will mean that the more damaging, later instar cutworms will have pupated before the petal fall period, when young fruit is at risk. If the opposite occurs and the weather turns cold again, newly hatched cutworms will slow down their development and, on the positive side they will be vulnerable to predators and disease, but on the negative side they may also stretch out their development so that they are still present at petal fall. For citrus orchards with a history of cutworm damage, it is important to begin monitoring now so that treatment with microbials or cryolite, if necessary, is timed for the 1<sup>st</sup> and 2<sup>nd</sup> instar cutworms. Sample for larvae using visual counts, a sweep net or a beating sheet. We will keep you informed of the degree-day units as they accumulate at our website, <http://citrusent.uckac.edu/ccwdd.htm>.

**Treatment thresholds:** The treatment threshold is 15 worms (per 25 net shakes, per 1 hour search, or per 20 trees sampled with a beating sheet) before petal fall and 3-5 worms after petal fall. The threshold is lower after petal fall because the larvae prefer to feed on fruit. Kryocide and the microbial insecticides (Bt products such as Javelin, Dipel, MVP) work well before petal fall when the cutworms are young. Microbial pesticides are most effective when applied approximately 400 degree days after moths begin flying and when the population consists primarily of 1<sup>st</sup> and 2<sup>nd</sup> instar larvae. Often, growers will add a low amount of an organophosphate (Lorsban or dimethoate) or a pyrethroid (Baythroid or Danitol) to their thrips treatment to kill the cutworms and katydids at petal fall, or use a full rate of a pyrethroid for all three pests, rather than spraying for cutworm separately. 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 as Publication 3339 from UC DANR Communication Services (800-994-8849), or on the World Wide Web ([www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu)).

