

**California Red Scale**

	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

Current Accumulated Degree Day units – lower developmental threshold 53°F

Region	Biofix	Current DD							
Kern	March 9	235 DD							
Foothills	March 9	185 DD							
S. Tulare	March 9	200 DD							
N. Tulare	March 9	190 DD							
Fresno	March 16	135 DD							
Madera	March 16	90 DD							

The biofix for CRS in the San Joaquin Valley ranged from March 9 – March 16, a week earlier than 2002. We will begin to see crawlers emerging when 550 degree days have been accumulated. A cooling trend in mid April this year has slowed the development of California red scale; therefore the best estimate for first generation crawler activity at this point would be the week of May 19.

**Cottony Cushion Scale**

Vedalia beetles arrived in most orchards during March and April and have done 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-April 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 avoid using these insecticides in blocks with cottony cushion scale because they will eliminate vedalia beetle. Vedalia beetle is better than pesticides for controlling cottony cushion scale. If the vedalia does not arrive in time, then Supracide, Malathion or Sevin need to be used to reduce the cottony cushion scale.

**Citricola Scale**

Lorsban is less usable as a citricola management tool because Japan is restricting Lorsban residues to very low levels. Growers are searching for alternatives. The neonicotinoids Provado, Assail and Admire can be fairly effective in controlling citricola scale. Your choice of which one to use depends on a number of factors. Admire, as a systemic, is the softest on beneficials, but it takes a month to move throughout the tree and must be applied when there is root flush so it will not help with early spring populations. The foliar insecticides Provado and Assail are fairly broad spectrum, killing most natural enemies for about a month. Both are toxic to vedalia beetles and do not control cottony cushion scale and so should not be used where cottony cushion scale is heavy. Both have been shown to reduce citricola scale at all times of year and have short re-entry and pre-harvest intervals. Provado has been shown to flare red scale and reduce predatory mites. We don't yet have data on Assail with regard to secondary pest problems, but if it is less disruptive than Provado, it would be the best choice for early season citricola scale control.

# Citrus Cutworm

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

**Biofix:** January 6, 2003 for the Oroquieta and Orange Cove 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:** 740 DD

The citrus cutworm flight started out very heavy in many locations this year, with captures above 100 moths per week. For the last three weeks, however, trap captures have been more moderate, and here in the middle of April we are seeing the moth flight ending in most places. High moth counts do not necessarily translate to large worm populations. And the reverse is true also – blocks with moderate moth counts can have very large worm populations. That is why it is very important for you to sample for larvae using visual counts, a sweep net or a beating sheet. As the degree-day count approaches the 800 mark, we see mostly third and fourth instar larvae. It is important at this time to be sampling for cutworms and determining if they will have pupated before petal fall occurs. We will keep you informed of the degree-day units as they accumulate the Internet at <http://www.uckac.edu/citrusent/>.

**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 cutworm are smaller instars. 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 (we are past that point now). After petal fall, Kryocide and the microbials don't work fast enough to prevent the cutworms from feeding on fruit. Often, growers will add a low amount of an organophosphate (Lorsban, Dimethoate) or 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 (<http://www.ipm.ucdavis.edu>).

