

California Red Scale – First Crawler Emergence

	1st male flight	1 st gen Crawlers	2nd male flight (predicted)	2nd gen. crawlers	3rd male flight	3rd gen. crawlers	4th male flight	4th gen. crawlers	5th male flight
Estimated Degree Days	Poor biofix	Crawler biofix	550 DD from crawler biofix	1100 DD	1650 DD	2200 DD	2750 DD	3300 DD	3850 DD
Kern	Apr 3	May 8	6/5						
Tulare	Apr 3	May 8	6/5						
Fresno	Apr 10	May 15	6/12						

Red Scale Lower Developmental Threshold: 53°F

Current DD (as of May 12) calculated using the 1st crawlers as the biofix:

Kern: 133 DD, Tulare: 120, Fresno: 0

It has been a very confusing year to try and find a biofix for first male red scale flight. February was very warm and in a few areas some red scale males flew. Then March and April were very cold and wet and nothing happened. Usually the males fly in March, but this year they didn't fly until April. Usually we use the first male flight as the biofix in March to predict 1st crawler activity the first week of May. Well, that simply didn't work this year. Our crawler tapes showed crawler activity started the second week of May in Tulare County, even though we hadn't accumulated enough degree day units from the April biofix (550 DD). Now is a good time to spray for red scale if you are treating the first generation of scale. We believe these crawlers are from mated females that have survived the winter and not from the current season, but there may be a second peak of crawlers from newly mated females in the next 5 – 10 days. We are using the 1st crawler activity as our biofix and we should expect to see the next male flight in 550 degree days. We are currently accumulating 15 to 20 degree-days per day, a sum that is more normal for late June and early July. If these temperatures continue, a second flight of scale should occur the first and second weeks of June. If you are trapping for red scale males and crawlers and would consider sharing your data, this would help us to firm up our predictions for the upcoming generations of red scale. Please contact Greg Montez at gregm@uckac.edu or call 559-646-6597. Degree-day calculations for CRS as well as weather summaries for selected weather stations are maintained on our website:

<http://citrusent.uckac.edu/DegreeDay.htm>.

Citrus Peelminer

Citrus peelminer synthetic pheromone lures were not very effective in catching moths in spring 2005. They worked well in the fall but functioned poorly in the spring and summer. Jocelyn Millar (UC Riverside) is reworking the synthesis of this pheromone and we are testing it during the 2nd flight of peelminer (early June). We hope to have a more effective lure available by the third flight in late June. Meanwhile, we are using last year's formulation of pheromone caps in willows, walnuts, oleander, olives and stone fruits to detect the 2006 biofix for citrus peelminer. The biofix in those crops occurred the week of April 10, 2006 which is very similar to last year <http://citrusent.uckac.edu/PeelminerDD06.htm>. The lower developmental threshold for citrus peelminer is 58°F (higher than red scale which is 53°F).

We expect to see the second peelminer flight during the last week of May or first week of June. It is the third flight of citrus peelminer that lays eggs on grapefruit and pummelo (June-July) and it is the fifth flight that attacks susceptible orange varieties. If you would like to place a pheromone trap in one or more of your orchards and/or update your orchards on our web site, please contact Greg Montez (646-6597). At this point, we only have the 2005 pheromone lures, but as soon as we get more effective lures we will make them available to you.

Earwigs

David Haviland, Beth Grafton-Cardwell and Robert Walther

Farm Advisors Craig Kallsen and David Haviland in Kern County continue to receive a relatively large number of calls regarding earwigs. We have heard that this is a big earwig year for Tulare County as well. In most cases the calls are from growers with young trees where the earwigs are hiding in the trunk wraps and are coming out at night to feed on young foliage. This type of damage occurs on several types of 1st and 2nd year citrus trees, nuts and stone fruit trees, and sometimes grapevines. Unique to citrus, however, is that earwigs sometimes also damage young fruit on mature citrus. Damage usually occurs from late bloom until fruit is about 1 inch in size. The damage varies and can look like small slashes or broader deeper scars as those shown below. The damage is often near the button and causes the fruit to fall off of the tree. The scar can look similar to scars caused by cutworm. To determine which pest is in the orchard, look for the actual insects. Earwigs will not be easily found during the day and will chew leaves as well as fruit. Cutworms will be feeding during the day and will tend to feed on the newest leaves and young fruit. Either pest can be shaken from the tree using a beating sheet. Examples of earwig, cutworm and katydid damage can be viewed in ANR Publication 8090, "Photographic Guide to Citrus Fruit Scarring" that is available at UC Extension Offices or can be downloaded at <http://anrcatalog.ucdavis.edu/pdf/8090.pdf>.



Earwig Fruit Damage



Earwig Leaf Damage

Earwig Lifecycle. In the San Joaquin Valley climate, earwigs can be found year-round. However, they are most prevalent in the spring and fall when the temperatures are mild and there is moisture at the soil surface. During the winter, earwigs go below ground and live individually or as pairs in small earthen cells. In the spring they lay eggs that hatch into first instar larvae that are tended to by their mother until they molt. Once they molt they leave the cell and move about on their own. There is only one generation per year and females usually produce 2 broods. In the heat of the summer, when the soil surface dries, earwigs go below ground to seek out shade and moisture. The exception to this rule is young trees where the tree wraps provide a year-round shaded moist area in which to live.

1 - 2 year old trees. Because of ants, earwigs, darkling beetles, and occasionally termites, it is very important to inspect trunk wraps for pests and remove wraps from newly planted trees as soon as it is safe to do so (when they are just past the age of sensitivity to sunburn and rabbits, usually 1-2 years old). The most effective control method for earwigs in young citrus is to apply granular or liquid Lorsban directly into the tree wraps with a hand applicator or wand. Foliar sprays to the canopy of young trees can also be used but are not very effective, since the majority of the earwigs are living in the protected area of the trunk wraps.

Mature citrus. In mature trees, you can use visual searches or a beating sheet to determine if earwigs, cutworms or katydids are causing damage to new fruit. While the earwigs are mostly nocturnal, if they are in heavy densities they will be in the canopy during the day. If you don't find anything on the beating sheet, but you see damaged fruit, then dig around in the leaf litter under the tree to see if the earwigs are present there. Where significant numbers of earwigs are found and scarring is occurring, growers can use broad spectrum foliar thrips treatments such as Carzol, Dimethoate (Cygon), Baythroid, or Danitol to help reduce the earwigs. These treatments will reduce, but not eliminate earwigs since they spend most of their time on the ground.

The Citrus IPM Newsletter is published by the University of California Citrus Entomology Laboratory at the Kearney Agricultural Research Center.

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