

California Red Scale – Preparing for the First Flight

	1st male flight (predicted)	1st gen. crawlers (predicted)	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	Apr 3	?							
Tulare	Apr 10	?							
Fresno	Apr 17	?							

Red Scale Lower Developmental Threshold: 53°F

Current DD (as of April 7) - Kern: 12 DD, Tulare: 0, Fresno: 0

The first flight of California red scale at the Lindcove Citrus Field Station in Tulare County has not started yet. We did, however, capture two male CRS in a block in Kern County which we will use to establish the biofix for that county. Last year’s biofix for Kern and Tulare County was the last week of February and for Fresno County the first week of March. This year, the wet and cold weather has prevented red scale from developing and male scale from flying. The lower developmental threshold, which is the temperature at which California red scale begin development is 53°F. The average daily temperature for March 2006 in the San Joaquin Valley was 49°F and so scale just couldn’t develop. We expect male scales to begin flying in Tulare and Fresno during the next week or two. Crawlers will emerge 550 degree-days later. If the rain quits and the weather warms up, then the scale population will develop more rapidly and the crawlers may emerge in about 6 weeks. Everything depends on the air temperatures.

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>.

Katydids

Katydids are a serious problem because citrus growers have shifted to using soft pesticides such as Esteem for California red scale and Success for citrus thrips instead of organophosphate insecticides. Katydids are very sensitive to organophosphate insecticides. In stone fruits, Success works very well for controlling katydids. However, in citrus, katydid emergence continues for a much longer period of time and Success treatments for citrus thrips are not necessarily timed for small katydid instars or the residues don’t last long enough to control the nymphs that emerge later in the season. In the last 4-5 years, growers have routinely tank-mixed low rates of organophosphates (Lorsban, Dibrom, Cygon) or pyrethroids (Danitol, Baythroid, Renounce) with Success thrips treatments to control katydid, or treated with a full rate of pyrethroid for both pests. A newly registered insecticide that has a lot of promise for katydid control is Micromite (diflubenzuron). It is an insect growth regulator that prevents the nymphs from molting properly. It won’t kill the katydids until they molt and so it takes about 7-10 days to take full effect. Therefore the best use of this chemical is prior to petal fall when there is no fruit available for them to damaged.

Cottony Cushion Scale

We discovered last year that yellow sticky cards that are hung on the outside of the tree will catch vedalia beetles as they are arriving in citrus orchards. This winter we hung traps in 7 cottony cushion scale-infested citrus orchards. We caught beetles on the traps in 4 of the 7 sites during late February and early March. For the blocks that vedalia arrived in this is a good, early arrival of vedalia, giving them plenty of time to reproduce and control the cottony cushion scale. Yellow sticky traps are a great early warning system to find out if you have vedalia arriving – try it yourself next year.

We are surveying a number of orchards and cottony cushion scale levels seem to be low this year. Remember that vedalia needs 6-8 weeks to clean up a cottony cushion scale population and it needs to do that before insecticide treatments kill them or the heat of summer arrives. Thus, the best time for vedalia beetle activity is the March-May period. When vedalia arrives late (May-June) it 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 after the vedalia declines naturally in June. If the vedalia does not sufficiently control the cottony cushion scale by June, then Supracide, Malathion, Sevin, or Applaud can be used to further reduce the scale population. Our studies are showing that these insecticides works best when applied in June or July when the adult females are dead and the population consists of small nymphs 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.

We have a small colony of vedalia beetles at the Kearney Ag Center, and if anyone needs a starter colony for their orchard, they can contact Ping Gu (646-6597) ping@uckac.edu.

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/pdf/8051.pdf> .

Citrus Peelminer

Citrus peelminer lures were not very effective for catching moths in 2005. They worked well in the fall but functioned poorly in the spring and summer. Jocelyn Millar is reworking the synthesis of this pheromone and we hope to have some available soon. Meanwhile, we are using the 2005 pheromone caps in traps in willows, walnuts, oleander, olives and stone fruits to detect the ‘biofix’ for citrus peelminer. The lower developmental threshold for citrus peelminer is 58°F (even higher than red scale). The cold weather in March and early April has prevented this pest from developing. When the peelminer moths begin to fly, we will report it on our peelminer web page (<http://citrusent.uckac.edu/PeelminerDD.htm>). Generally, it is the third generation of citrus peelminer that attacks citrus (June-July). We will have more information on citrus peelminer as the season progresses.

Citrus Leafminer

Citrus leafminer is now infesting many backyard citrus trees and some commercial citrus in Imperial, Riverside, Orange, San Diego and San Bernardino counties (updated maps at http://citrusent.uckac.edu/citrus_leafminer_distribution.htm). In addition, two instances of citrus leafminer have been identified at nurseries in Ventura County and these have been destroyed. We expect that leafminer will continue to expand its range and reach the San Joaquin Valley in the next 1-3 years.

While the damage that the leafminer causes to spring and fall flush of mature citrus trees is ugly, insecticides are not very effective and leafminer will not depress yield. Therefore, we recommend that you ignore this pest in mature citrus. Kris Godfrey (CDFA Biological Control Program), Peggy Mauk (UCCE Riverside), and Dr. Robert Luck (UC Riverside Entomology) have funding to determine which parasites are attacking the peelminer in southern California and find ways to augment them. This pest should eventually be well-controlled by natural enemies. Some of the same parasites that attack leafminer also attack peelminer and so having both pests present should improve biological control.

Citrus leafminer will heavily damage flush of nursery citrus and newly planted citrus and could affect growth and development of young plants. Therefore treatments may be necessary in these situations. In foreign countries, such as Israel, growers apply Admire to 1-2 year old trees to reduce the leafminer infestations and maximize growth of the trees. Peggy Mauk is researching additional insecticides to aid the citrus industry.

Jocelyn Millar (UC Riverside Entomology) recently identified and synthesized a highly effective citrus leafminer pheromone. Philipp Kirsch of IPM Development Company is producing the citrus leafminer pheromone and if you have a high risk situation and would like to know if citrus leafminer is in your area you can contact IPM Development to buy lures. semiochem@aol.com, 971-327-7129.

Citrus Red Mite Field Day

Dr. Beth Grafton-Cardwell

(UC Riverside, stationed at Kearney Ag Center)

Lindcove Research and Extension Center

22963 Carson Ave, Exeter CA

call (559) 592-2408 for directions to the center

April 13, 2006

10:00-11:00 a.m.

New Conference Center

We will discuss citrus red mite and the damage it causes to citrus. This session will teach you to recognize the different stages of citrus red mite. We will discuss how to sample for citrus red mite and the best ways to manage this pest. We will also review the life stages of the predatory mite, *Euseius tularensis*. Due to the wet weather we are conducting this event inside the new conference center. We will have insect samples under the microscope for you to see the different stages. Also, we will have leaf samples from the field for you to look at and demonstrate how you would sample for this pest in the field.

1 hour of Continuing Education credit has been requested

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

For information or to subscribe or unsubscribe please send an email to gregm@uckac.edu or call (559)646-6597

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