

### California Red Scale

**Predicted Events:**

Biofix: March 19 (South Valley and Foothill) and March 26 (Central Valley and Madera)

Lower developmental threshold: 53°F

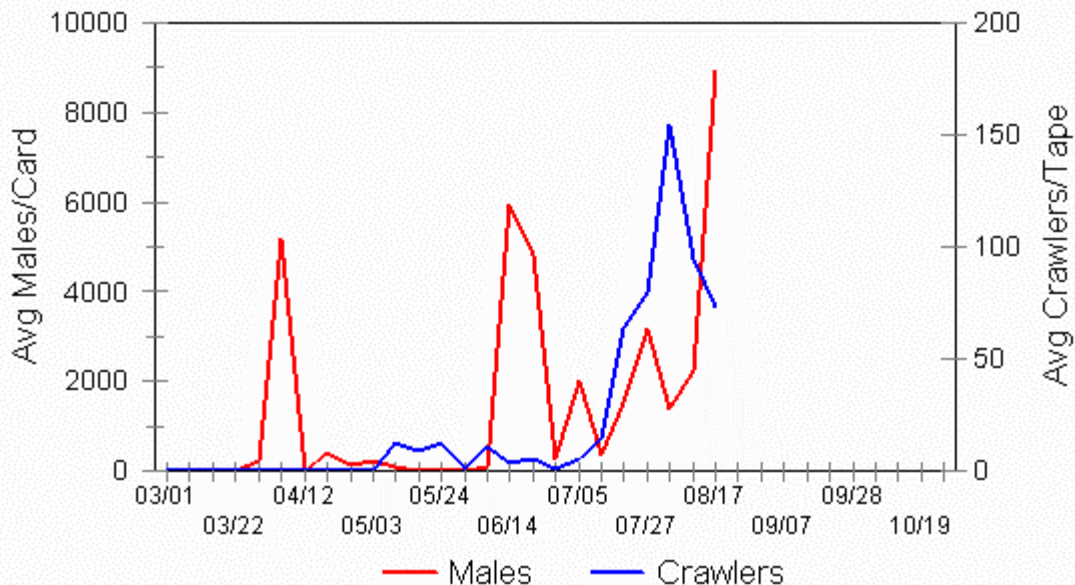
	1 <sup>st</sup> male flight	1 <sup>st</sup> crawlers	2 <sup>nd</sup> male flight	2 <sup>nd</sup> crawlers	3 <sup>rd</sup> male flight	3 <sup>rd</sup> crawlers	4 <sup>th</sup> male flight
Degree Days from the 1 <sup>st</sup> male flight	biofix	550 DD	1100 DD	1650 DD	2200 DD	2750 DD	3300 DD

Table 1. Observed degree day units and estimated start of the 4<sup>th</sup> male flight

Region	Current DD Accumulated (as of Aug 16, 2001)	Estimated Start of 4 <sup>th</sup> male flight
Kern	3070	Aug 24-28
Foothills	2940	Aug 28-30
S. Tulare	2740	1 <sup>st</sup> week of September
N. Tulare	2850	1 <sup>st</sup> week of September
Fresno	2770	2 <sup>nd</sup> week of September
Madera	2340	End of September

Table 1 shows that the third generation of crawler emergence (2750 DD) is underway for most of the citrus growing regions. In our Lindcove Research and Extension Center blocks, we are observing heavy numbers of males from the third flight and it will be difficult to tell this flight from the fourth flight except by degree-days. The fourth flight begins 3300 DD after the first male flight began. Table 1 shows our estimates of when the 4<sup>th</sup> flight is likely to occur in various regions of the San Joaquin Valley. Pheromone cards should be changed or set out just before these dates in order to record the fourth flight. For even greater accuracy, you can put your own degree-day calculating device in each orchard. California red scale degree-days for all citrus growing regions of the San Joaquin Valley are updated weekly on our web site: <http://www.uckac.edu/citrusent>.

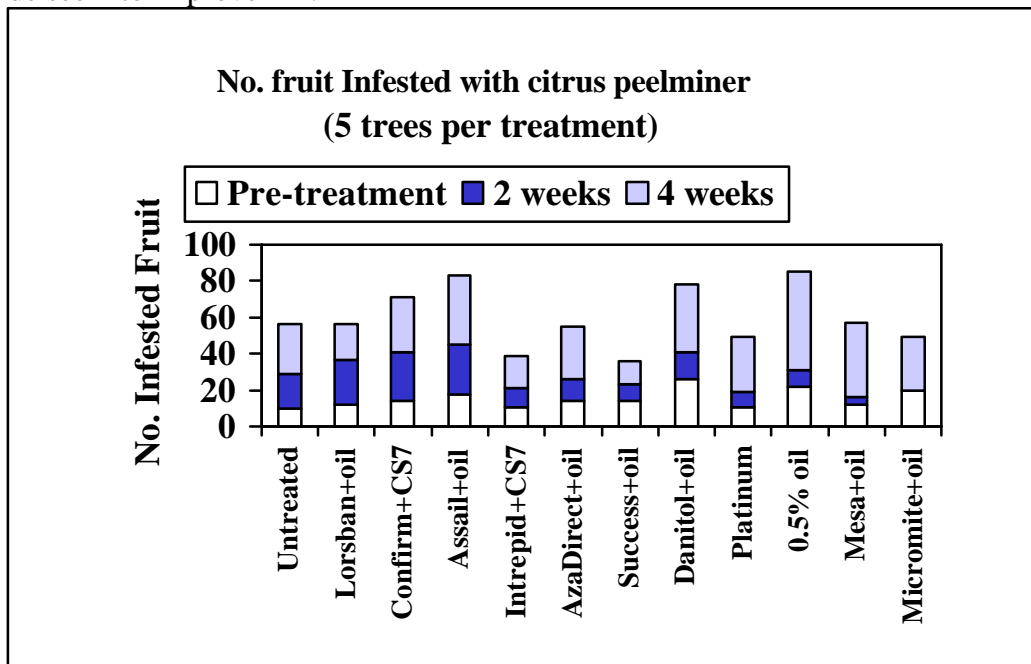
### California Red Scale 2001 Lindcove Citrus Field Station Block 22



# Citrus Peelminer

Citrus peelminer began to show up in a number of pummelo and grapefruit orchards in the Lindsay, Strathmore, Terra Bella and Kern County areas during the weeks of June 18 – July 2. Since that time, it has increased in numbers in most of the pummelo and grapefruit blocks in the San Joaquin Valley and is now beginning to infest navels, especially Fukumotos. While it can attack any variety of citrus, it definitely has favorites. It seems to prefer bigger fruit and so is attacking some of the earlier, faster growing varieties (Fukumotos, Atwoods, T.I.s). Citrus peelminer does not seem to do as well (only 1-5% fruit damage) in most other varieties of navels and Valencias. This pest is developing much more rapidly than expected and is completing a lifecycle in about 3 weeks. We have already observed at least two generations in the Lindsay area. Citrus peelminer has greatly expanded its geographical distribution and its host range this year. Citrus peelminer has been found infesting cotton stems and bolls, walnuts, plums, bell peppers, grape stems and fruit, avocados, and all varieties of citrus as well as ornamentals such as willows and oleander. The current theory as to why peelminer has suddenly changed its habits is that we have a new biotype or species in the San Joaquin Valley. We think that, after the 1998 freeze, bulk citrus infested with peelminer arrived at the packinghouses from Mexico and brought with it this new version of peelminer. To test this theory, we will be collecting specimens of peelminer from around the valley and a molecular biologist will determine their relatedness.

**Pesticide Trials:** A number of Pest Control Advisors, as well as my research team have conducted some pesticide trials to see if we can stop the spread of this pest. The results have been very disappointing. One or more of us have tried Admire, Provado, Supracide, Lorsban, Sevin, Success, Oil, Danitol, Baythroid, Agri-Mek, as well as a number of unregistered insecticides with and without oil. Some of these insecticides killed larvae that were mining the fruit (Success, Provado, Lorsban) but they did not seem to prevent more eggs being laid and new mines appearing in additional fruit 2-3 weeks later. Admire slowed larval growth a bit but did not prevent mining. If growers want to control this pest chemically, they will need to spray every three weeks. This is not a good prospect for either the pocketbook or the IPM program. The figure below shows the data for a trial in which individual grapefruit trees in the Lindsay area were hand-sprayed with various registered and unregistered insecticides (5 trees per treatment). A 0.5% concentration of oil or CS7 was added to each insecticide. The only treatment that stopped new mines from appearing was Micromite (diflubenzuron) and the effect lasted only for 2 weeks. After 4 weeks Micromite stopped controlling the peelminer, probably because the fruit was growing rapidly and so provided untreated rind. Micromite is not currently registered for citrus in California. Pest control advisors have observed that higher rates of oil (1%) in combination with an insecticide seem to improve kill.



**Parasite Releases:** Since June 2001 we have made 22 releases of the parasite *Cirrospilus coachellae* (reared at the UC Riverside Entomology Department by Marta Guillen) in Kern and Tulare County citrus. We started with the pummelos and grapefruit first because they were the most heavily infested with peelminer and we will expand to releasing in navel orchards as they become infested. We release small numbers of parasites in each orchard. This parasite should reproduce and spread throughout the San Joaquin Valley on its own during the next 1-2 years. Dave Headrick (Cal Poly San Luis Obispo) and his graduate students will be evaluating these releases in a number of orchards in the San Joaquin Valley. If you have a peelminer infestation in a susceptible variety of citrus, and are interested in avoiding insecticide treatments and having parasites released, please contact Beth Grafton-Cardwell (559-646-6591).