

California Red Scale

Biofix (beginning of male flight): Low numbers of males were caught on pheromone cards during the weeks of March 22-March 29, 1999 in Tulare and Kern Counties

Lower developmental threshold: 53°F

Current Accumulated Degree Day Units (as of June 21, 1999):

Kern: 1072 DD

S. Tulare: 931 DD

N. Tulare: 1000 DD

Fresno: 936 DD

Madera: 784 DD

Second flight of males occurs: 1100 DD

Second crawler activity occurs: 1750 DD

The first emergence of CRS crawlers in the Lindcove area was seen the week of May 17, but significant activity began the week of the 24th at about 470 DD after the first males were caught on sticky cards; a bit earlier than the expected 550 DD. Red scale crawlers also began emerging the same week in Kern county. Because of the cool springs, crawler activity started at a later date in 1998 and 1999 compared to 1997 (Fig. 1 & 2). In addition, crawlers have continued to emerge for a longer time (more than 6 weeks).

Even though the crawlers are continuing to emerge, the second male flight is about to begin (Fig. 1). We expect the second flight to begin sometime during the week of June 28 in most citrus growing regions. Figure 1 shows that Lindcove is running a little warmer than last year on this date, but is still much cooler than the warm spring of 1997. If we accumulate 30 degree-days per day, which translates to a daily high temperature of 96° and a low of 70°, we should see the second emergence of crawlers at 1750 DD sometime during the last week of July.

Fig. 1

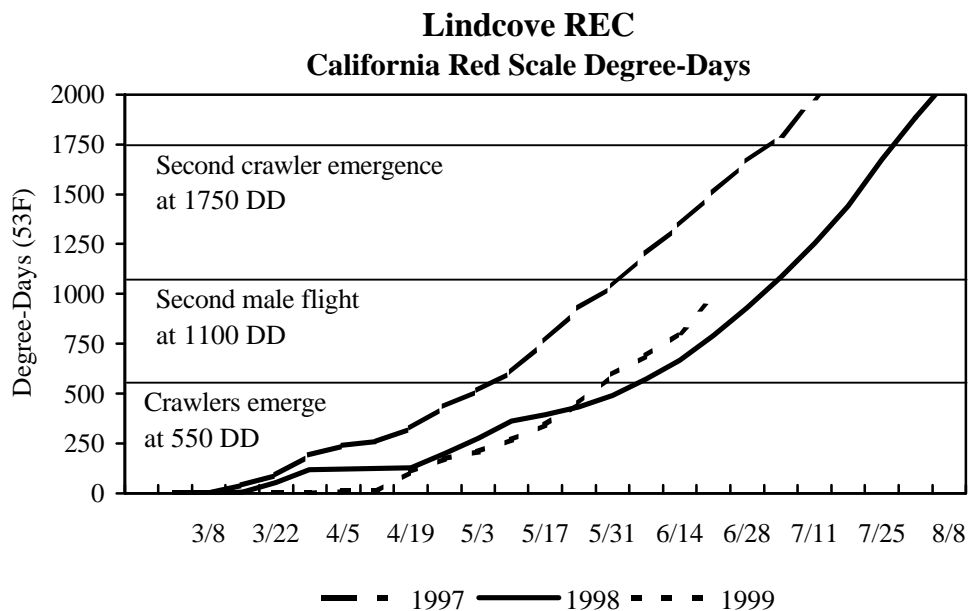
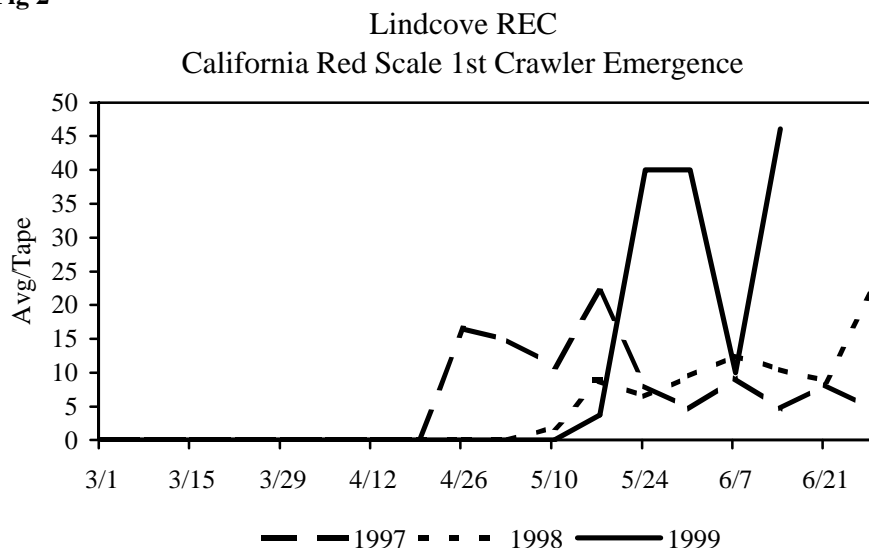


Fig 2

The reason that you need to be aware of crawler activity is because pesticide applications are more effective if they are timed properly. Organophosphate (Lorsban and Supracide) and carbamate (Sevin) insecticides work best if applied when the crawlers have just settled. Therefore, the best timing for these pesticides is just after peak crawler activity has occurred, usually 1-2 weeks after the crawlers begin to emerge. Crawler emergence can be monitored using double-sticky tape wrapped around branches and changed weekly to catch crawlers as they move along the branch. Notice in Figure 2 that crawler emergence begins and peaks at different times from year to year. In warm years (1997), the bulk of the crawlers emerged over a 3-4 week period and the peak period is fairly obvious. In cool years (1998 & 1999), emergence lasts much longer and it is not certain when is the best time to spray. There are several methods to determine the best time to spray in a warm year; 1) detect when the crawlers first emerge using sticky tape and then wait for 1-2 weeks for them to finish emerging before you spray or, 2) calculate degree days and wait until about 650 degree days after the males began to fly before you spray. In a cool year, you simply have to wait a few weeks longer and hope that the insecticide residues will kill the scale crawlers as they continue to emerge. The organophosphates and carbamates will also kill most of the scale if they are sprayed at other times of the year. However, the pesticides do a better job when applied while most of the population is a young stage. **The only really poor time to spray insecticides for red scale control is while the males are flying. This is because most of the population consists of recently mated females and that is the hardest stage to kill with insecticides.**

The insect growth regulators Esteem (Knack) and Applaud kill the scale as it molts and so are best applied when the crawlers settle down as white caps. Oil smothers the insect and so the best application timing for this pesticide is also when the scale have settled as whitecaps. For these insecticides you want to wait longer before you spray than you would for the organophosphates and carbamates. A good way to evaluate the scale for this spray timing is to watch for white caps on old fruit (shiners) or on new fruit in the orchard. The insect growth regulators will not kill crawlers or whitecaps, so don't expect these stages to die and go away.

See our website at www.uckac.edu/citrusent for weekly updates on California red scale activity throughout the San Joaquin Valley.

Beth Grafton-Cardwell
University of California
Cooperative Extension
Bethgc@uckac.edu
(559) 646-6500

Greg Montez
Gregm@uckac.edu