

2023 season memo

California red scale

California red scale is a key pest of citrus in the SJV. Its life cycle starts as crawlers produced by overwintering females from the past season. Crawlers move and find a suitable place to start feeding. Once they have settled, they do not move.

What's happening with the SJV CRS population?

As of May 22, first generation crawlers have emerged, and populations consist of white caps (first instar) and molts. Second instars may also be present, based on location of your orchard. California red scale populations are monitored using degree day units accumulated after the first-generation male flight (Biofix). 2023 Biofix was declared in April 11. Degree days for four counties



County	DD	Life stage
Kern	571	First generation immatures present. Spray if needed.
Tulare	505	
Fresno	550	
Madera	501	

When to spray?

Crawlers and first instars are the most susceptible stage (thin wax layer). The first and second generations have more synchronized population. Current population in the SJV immatures of the first generation.

CRS management: mating disruption, insecticides, *Aphytis*!

- Monitor males using trap cards, treat at a threshold.
- Goal is to maintain CRS below the level that results in <5% fruit infestation.

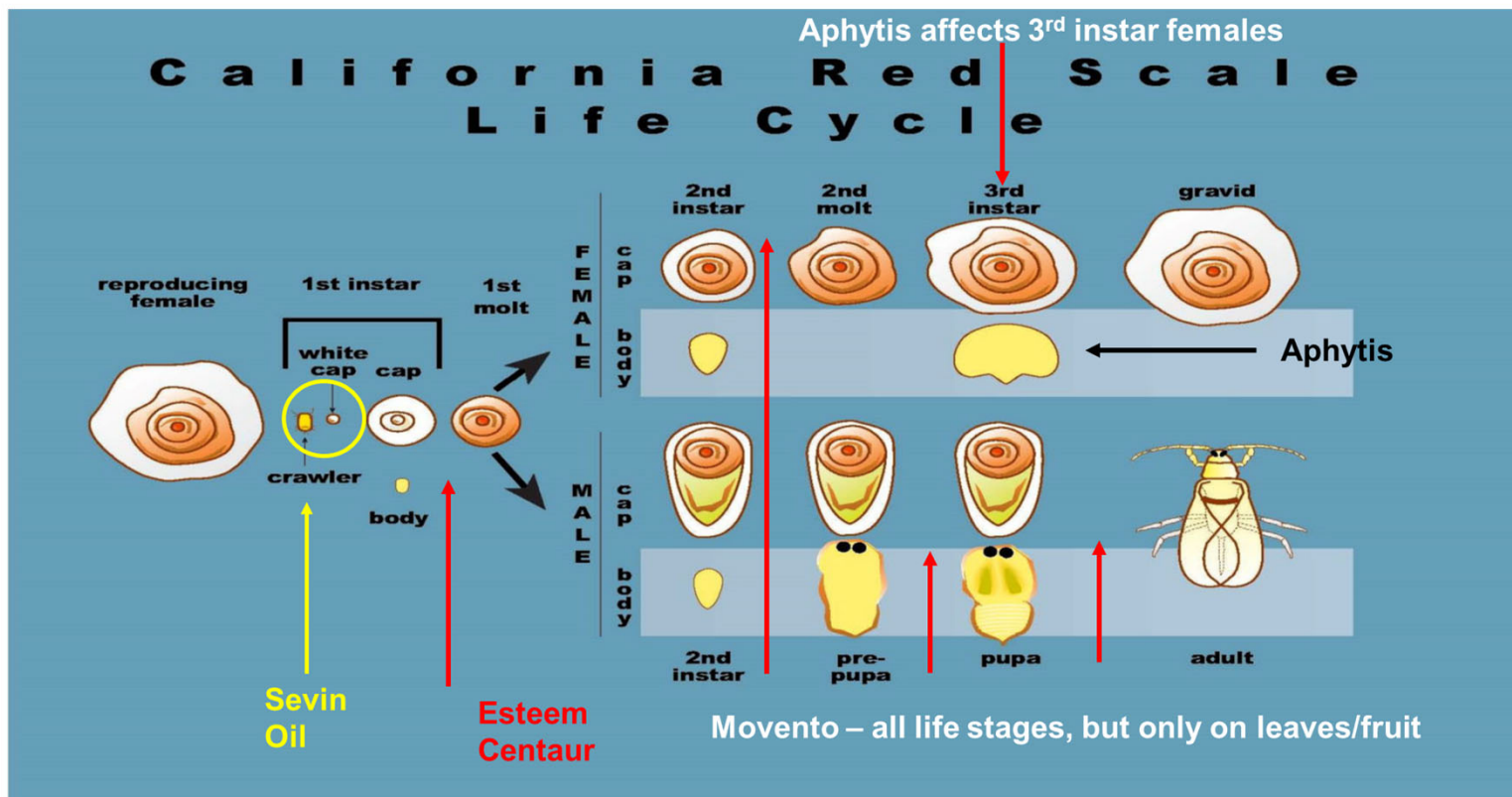
Numbers on pheromone cards, what does it mean?

- ***Aphytis* release blocks** – pheromone cards overestimate scale numbers, as *Aphytis* attacks third instar females.
- **Insect growth regulator/mating disruption** – pheromone cards underestimate scale numbers as these treatments affect males more than they affect females. Use a threshold of 50 scales per flight.
- **Movento/Admire** – not a reliable predictor, especially if you have a history of scale infestation as these products do not kill scale on wood or scale.

California red scale management choices – UCIPM Guidelines

Management choices	Efficacy	Selectivity	Spectrum
Mating disruption (Checkmate CRS)	Moderate: Effectiveness varies	Nontoxic	Narrow: CRS
<i>Aphytis melinus</i>	Moderate: effectiveness varies	Nontoxic	Narrow: CRS
Oils (415, omni)	Moderate: short residual	Short term effect on all arthropods	Broad: most pests
Esteem (Pyriproxyfen)	Moderate: Emerging resistance issues	Toxic to beetles	Narrow: CRS
Centaur (Buprofezin)	Moderate	Toxic to beetles	Interm: CRS, Citricola
Movento (Spirotetramat)	Moderate: Doesn't control scale on wood	Toxic to predatory mites	Interm: CRS, ACP
Sevin (Carbaryl)	Moderate: Resistance issues	Toxic to most natural enemies	Broad; CRS, Citricola scale, FRB

How to use life cycle for making pest management choices?



Recommendations for chemical control of California red scale

- Timing: treat the stage that is most sensitive
- Treat generations 1 or 2 when the scale population is uniform in stage (exception is spirotetramat, which seems to work in fall)
- Use the selective insecticides that allow natural enemies to survive when you can
- Rotate products to avoid resistance
- Good coverage: 750-1500 gpa/acre (7000-15000 l/ha) (spirotetramat 250 gpa/acre)
- Drive slowly! < 1.5 mph (2.4 kph)

Links to Pesticide trials on CRS

- [CRS trial 2012](#) [CRS Trial 2012-2](#)
- [CRS trial 2014](#)
- [CRS trial 2015](#)
- [CRS trial 2016](#)
- [CRS trial 2017](#)
- [CRS trial 2018](#)
- [CRS trial 2019](#)