Citrus—California Red Scale Pheromone Trap Monitoring

Supplement to UC IPM Pest Management Guidelines: Citrus

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For Print Use Only

Grower: _____ **Block:** _____ **Date:** _____

Comments: _____

Pheromone traps can be used to monitor either weekly changes in male flights, or to track densities during flights, especially the fourth flight. Use the biofix of first male capture and degree-days to estimate when flights are occurring. Hang pheromone traps with a fresh lure in early March to detect the first male flight. Subsequent flights will occur at intervals of 1,100 degree-days after the biofix of first male flight (1,100 DD for 2nd flight; 2,200 DD for 3rd flight; 3,300 DD for 4th flight and 4,400 DD for 5th flight).

How to use pheromone traps for weekly monitoring of flights

1. Monitor 5 to 6 orchards that have a known population of California red scales every week, to determine when flights are occurring and time sprays.
2. Change the sticky cards weekly and the pheromone lure caps monthly through October.
3. Use 2 to 4 pheromone traps per 10-acre block; add two traps for each additional 10 acres.

How to use pheromone traps to determine areas of heavy scale infestation

1. Use 2 to 4 pheromone traps per 10-acre block; add 2 traps for each additional 10 acres.
2. Time placement of traps at the beginning of the biofix for the flight and remove them at the end of each flight and count scales and record the numbers. When densities are high, count the scales inside the squares (20% of the card) and multiply times 5 to estimate the total density.

In the past, when an average of more than 1,000 scales were trapped during the 4th flight and fruit was infested with scale at harvest, a pesticide application was planned for the next season. However, this threshold of 1,000 scales per flight developed in the 1980s is no longer a stand-alone tool for determining when treatments are necessary, it is critical to use other tactics, such as fruit and twig examination.

Note that pheromone cards are not reliable predictors of scale populations on their own. In all orchards in all growing regions, whether *Aphytis* wasps are released or not, conduct visual inspections of citrus fruit once a month during August, September, and October to confirm that fruit is free of scale.

Situation 1: Scale densities on traps may be high, but the fruit is free of scales:

- When spirotetramat (Movento) or imidacloprid (Admire) are used because they remove scales from leaves and fruit but not the wood of the tree.
- Aphytis prefer to attack virgin female scales and the males may escape parasitization, resulting in a high number of male scales on traps.

Situation 2: Very few male scales on traps, but scales are found on fruit:

- When insect growth regulators such as buprofezin or pyriproxyfen are used, the frequently molting male scales are more affected than female scales.
- When mating disruption is used, males can not find the trap cards and so their densities on traps are very low. A threshold of 50 scales per flight is helpful in determining if mating disruption is effective.

Block Number: _____ Block Size: _____

Trap date out	Trap date in	Total (or estimated) number of males per trap						
		Trap 1 Location:	**Trap 2 Location:**	**Trap 3 Location:**	**Trap 4 Location:**	**Trap 5 Location:**	**Trap 6 Location:**	**Average**