



Supplement to UC IPM Pest Management Guidelines: Citrus

Grower: _____ Block: _____ Date: _____

Comments: _____

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.

How to monitor fruit in all orchards

1. Once a month during August, September, and October, walk around 20 trees in each quadrant (N, S, E, W) of the block, and record the total number of fruits examined, and the number of fruits with more than 10 scales (noticeable patches of scales).
2. Calculate the percentage of fruit with more than 10 scales.

Date sampled	Total number of fruits examined	Number of fruits with more than 10 scales	Percentage of fruit with more than 10 scales

How to monitor *Aphytis* parasitism of California red scale in citrus orchards

1. In orchards where biological control agents such as *Aphytis* and *Comperiella* wasps are relied upon to control scale, visually monitor all stages of scales on twigs, fruit, and leaves in August, September, and October.
2. Collect 10 scale-infested fruits (preferably from different areas of the block).
3. Do not take more than one to two fruits per tree, avoiding trees in the outside rows.
4. Record the number of 2nd- and 3rd-instar California red scales and the number of these that are parasitized. To determine if a scale is parasitized, flip the cover over and search for *Aphytis* eggs, larvae and pupae or *Comperiella* larvae and pupae. Calculate the percentage parasitism: number parasitized / total number of 2nd and 3rd instar scales examined.
5. If biological control is functioning properly, the percentage parasitism should increase from just a few percent in August to a high percentage in October.
6. Guidelines for determining when parasitism is at sufficient levels vary by growing region, cultivar, and whether or not fruit is sent to a packinghouse that employs high pressure washers to remove scale.

Fruit Number	Number of 2nd- and 3rd-instar scales examined	Number of parasitized 2nd- and 3rd-instar scales	Percentage parasitism
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
Block Average:			

How to monitor fruit in bins (at harvest)

1. At harvest, look at the fruit on the surface of at least 10 bins from areas throughout the block.
2. Count the number of scale-infested and uninfested fruit.
3. Calculate the percentage of fruit with scale, fruit with scales / total fruit evaluated.
4. If 5% or more of the fruit is infested in a block, that block may need spray application in the following season.

Bins	Total number of fruits examined	Number of fruits with scales	Percentage of fruit with scale
Bin 1			
Bin 2			
Bin 3			
Bin 4			
Bin 5			
Bin 6			
Bin 7			
Bin 8			
Bin 9			
Bin 10			
		Block average percentage infestation	