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Citrus—California Red Scale Fruit Count Monitoring

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 fruit examined, and the number of fruit with more than 10 scales (noticeable patches of scales).
2. Calculate the percentage of fruit with more than 10 scale.

| Date sampled | Total # fruit examined | # fruit > 10 scale | % fruit > 10 scales |
|--------------|------------------------|--------------------|---------------------|
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How to monitor parasitism in *Aphytis*-release blocks

1. In orchards where biological control agents such as *Aphytis* and *Comperiella* wasps are used to control scale, visually monitor all stages of scales on twigs, fruit, and leaves in August, September, and October.
2. Collect 10 scale-infested fruit (preferably from different areas of the block).
3. Do not take more than one to two fruit per tree, avoiding trees in the outside rows.
4. Record the number of second- and third-instar 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: #parasitized/total # 2nd and 3rd instar scales examined.
5. If biological control is functioning properly, you should see percent parasitism 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 are sent to a packinghouse that employs high pressure washers to remove scale.

| Fruit No. | # 2 nd - and 3 rd -instar scales examined | # parasitized 2 nd - and 3 rd -instar scales | % parasitism |
|---------------|---|--|--------------|
| 1 | | | |
| 2 | | | |
| 3 | | | |
| 4 | | | |
| 5 | | | |
| 6 | | | |
| 7 | | | |
| 8 | | | |
| 9 | | | |
| 10 | | | |
| Block Average | | | |