



HOME | INSECTS, PESTS, AND DISEASES | PEST, DISEASE AND WEED IDENTIFICATION | PLANT DISEASE IDENTIFICATION AND CONTROL | TREE FRUIT INSECT PEST - SAN JOSE SCALE

## Tree Fruit Insect Pest - San Jose Scale

The San Jose scale, *Quadraspidiotus perniciosus*, is a pest of fruit trees, but it attacks many other trees as well as shrubs.

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**Scales on new growth and fruit produce deep purplish-red coloration in the tissue. Photo by G. Krawczyk.**

Once established, most scale insects are difficult and expensive to control.

### Description and life cycle

Female scales are very prolific and over a 6-week period can produce approximately 400 young. San Jose scale produce living young called crawlers; most other scales produce eggs. Crawlers move around for a short period in search of a suitable place to settle. It

takes 25 days for males to mature and 31 days for females.

### Generations

There are two to three generations of the San Jose scale each year. The scale overwinters as immature blackcaps; adults mature during the bloom period. Males emerge and mate at petal fall. First-generation crawlers begin appearing in early June in southern areas and continue for a month. These crawlers develop into mature adults by late July. Second-generation adults appear from late July to early September; and, if a third generation occurs, it appears in late October to early November. The

life cycle is completed in about 37 days. Crawlers can usually be found from early June until a hard frost in the fall.

Crawlers are lemon-colored and very small, 1/25 inch long. When they settle, they secrete a waxy substance that produces a grayish-yellow scale covering which becomes darker with age. The male scale is oblong, with a small black spot near one end, and is much smaller than the female. Color varies with age; very young females are round and nearly white but turn dark gray as they mature. There is a characteristic black spot in the center of the scale.

Scales on new growth and fruit produce deep purplish-red coloration in the tissue. When scales are removed from the fruit, a light-colored bull's eye is evident. Additional injury to the tree is caused by loss of plant sap, which depletes vigor and decreases yield. Prolonged attack causes cracking and splitting of the wood; if the scale is not controlled, the tree may die.

## Monitoring

Sex pheromone traps are available for monitoring male adult emergence. These traps should be hung in trees with known or suspected overwintering scale populations. Traps should be placed at the pink stage and monitored weekly. Later in the season, usually from early to mid-June also the crawlers can be monitored. Locate infested branches and wrap black electrician's tape, with the sticky side out, around the branch at each end of the infestation. Coat the middle section of the tape with a very thin film of petroleum jelly. Check the tape often for the presence of crawlers trapped in the jelly. Apply an insecticide when the first crawler is observed. If fruit is to be exported, levels greater than 0.1 percent of harvested fruit should be treated the following spring. If branches or limbs infested with scales are found during pruning, treatments should be applied at the appropriate time.

## Cultural management

Prune out infested branches to reduce the population and improve spray penetration. Several species of tiny parasitoid wasps (*Aphytis* and *Encarsia*) exist that can provide effective biological control of San Jose scale in most years if not disrupted with broad spectrum insecticide sprays.

## Chemical management

Scales are especially difficult to control on large trees with rough bark. The secret to successful control is coverage with high water volume. If scales are present, then trees would benefit from an oil at the dormant or delayed dormant period. An insecticide can also be applied at early petal fall to

control the males before they mate with the females if populations are high. Later in the season, usually from early to mid-June, the crawlers can be targeted with chemical spray applications if the oil sprays were not sufficiently effective. Specific chemical recommendations for home gardeners are in [Fruit Production for the Home Gardener](#) , and recommendations for commercial growers are in the [Penn State Tree Fruit Production Guide](#) .

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