

San Jose Scale, (*Quadraspidiotus perniciosus*) and Its Control

Cooperative Extension Service
College of Agriculture and
Home Economics



Guide H-428

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This publication is scheduled to be updated and reissued 4/06.

DESCRIPTION OF THE PEST

San Jose scale overwinter predominantly in the partially grown, second nymphal instar known as the “black cap” or “sooty-black” stage. Nearly all scales surviving 10°F are in this stage, but in very mild seasons some mated females may survive.

In late January, these nymphs resume their growth. Immature male and female scales are indistinguishable until their first molt. At this time, the scale covering of the male becomes elongated, while the female’s remains circular. Male scales usually molt four times. Following the final molt, adult males emerge as tiny, yellow winged insects.

The males then begin to mate with the females, who remain under their scale covering. After about two months the females begin giving birth to live young. In early April, crawlers begin to emerge from under the edge of the female’s scale covering.

These tiny, yellow crawlers wander randomly until they find a suitable place to settle. Upon settling, the tiny crawlers insert their mouthparts into the host plant, feed, and secrete a white, waxy material. This stage is usually referred to as the “white cap” stage.

In most areas of New Mexico, there are four generations. The summer generations overlap, and crawlers are present throughout the summer and fall. These insects are very prolific; the progeny from one fertile female could be well over 30,000,000 in a single season.

DAMAGE

If infestations of this insect are left unchecked, the population may cause the death of trees in the

orchard. Infested trees show a general decrease in vigor and thin foliage, which is usually more or less yellowed and spotted due to the scales. Terminals characteristically die first. Infested fruit develop a reddish purple ring surrounding each spot where a scale settles.

BIOLOGICAL CONTROL

The twice-stabbed lady beetle (*Chilocorus orbus*), so named because its shiny black body is marked with two bright red dots on the wing covers, and another small beetle, *Cybocephalus californicus*, are natural enemies of the San Jose scale. Also, a number of small Chalcid and Aphelinid wasps are parasites of this scale. These predators and parasites are helpful in reducing this scale pest. However, pesticides used during the season can disrupt these natural controls, allowing the scales to increase rapidly. Oil sprays and biological controls are acceptable organic methods for control of this pest.

MONITORING

Check the fruit at harvest for the presence of scale. Monitor for the scale during the dormant period by checking tree prunings to make sure this pest has not developed in tree tops.

Due to the damage potential of this pest, growers should consider annual use of dormant oil sprays. In heavy populations, it may be necessary to apply an organophosphate insecticide plus oil spray during the delayed dormant period. If the dormant oil sprays provide inadequate control, pesticides

also are effective when applied soon after the emergence of the scale crawlers. This usually occurs in May.

Growers may use pheromone traps in March to monitor for San Jose male scale flights. Double-sided sticky tape may be used to monitor for crawlers in April and May. Pesticide treatments should be timed for 600 to 700 degree-days (DD) after the beginning of the moth flight or 200 DD after the crawlers begin to emerge.

INSECTICIDES LABELED FOR USE ON SAN JOSE SCALE

1. Narrow range oil (Superior, Supreme)
2. Narrow range oil plus Diazinon 50WP or chlorpyrifos (Lorsban 4 EC).
3. Methidathion (Supracice 2EC)

4. Diazinon 50 WP or chlorpyrifos (Lorsban 4EC) may be used as crawler treatments.

*Be sure to read and closely follow all pesticide label instructions.

REFERENCES

Metcalf, Flint, and Metcalf. Destructive and Useful Insects, Fourth Edition, McGraw-Hill Book Company, 1962.

University of California, IPM Pest Management Guidelines, January 1996.

Oklahoma State University Extension Agents' Handbook of Insects Plant Disease and Weed Control, January 1999.