

## SUMMER MANAGEMENT OF SAN JOSE SCALE IN PEACH ORCHARDS

by

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San Jose scale (SJS) is an insect pest of tree fruit that is becoming more widespread in southern New Jersey orchards. Recent postharvest evaluations by the Rutgers Fruit IPM program have found varying degrees of infestation in about half of the early varieties evaluated. Marked fruit were found in nearly every block of Sentry peach sampled from 3 different growing regions in Gloucester County, and in one Cumberland County orchard. In addition, light scale infestations have been found in some of the later varieties scouted. While this has been a limited sampling, and only a few samples had any significant amount of injury, these populations could cause serious problems by late summer if left unchecked.

Several factors may be influencing the proliferation of San Jose scale: failure to apply dormant oils; loss and increased restriction of O.P. insecticides, especially PennCap-M several years ago; and a string of warm falls and mild winters in recent years.

### ***Biology***

Any control program targeting an agricultural pest begins with an understanding of its biology. Immature scales overwinter under a waxy coating. They mature sometime in May and the males emerge from beneath their scales to look for females to mate with. The female stays beneath its scale and never emerges. Unlike most insects San Jose scale produces no eggs, rather the female gives live birth to immature nymphs called “crawlers”. These tiny yellowish insects resemble large mites and can be seen with a hand lens.

Scales multiply rapidly when the weather is hot and dry. It has been estimated that with ideal conditions, the descendants of a single female could multiply to 30 million by the end of one season! Rain, wind, birds or work crews moving through the orchard can spread crawlers. There are two and sometimes three generations in a season. The first generation crawlers emerge about 4-6 weeks after apple bloom (about May 26 in southern New Jersey). Each female will produce about 10 crawlers a day for about 6 weeks. Second generation crawlers are present from late July through August. During some years a third generation may overlap with the end of the second generation, extending the emergence into early fall.

It is the second generation and possible third that causes the most difficulty. On early varieties, the crawlers spread unchecked during late July and

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August after the fruit is harvested and the trees are no longer sprayed. A warm fall may encourage additional late development after sprayers have been put away. Dead limbs may appear by late August after large populations have built up and are feeding heavily on the bark. Tree death may be apparent in the next spring, especially in younger orchards.

The most fruit injury is usually exhibited on middle and late season varieties that ripen at the peak of second generation crawler emergence. Seven years of postharvest data collected by the Fruit IPM program clearly show that there is a higher percentage of injury on August ripening fruit. (Fig 1). The reason is simple: Imidan, only weakly effective, is the only insecticide labeled for San Jose Scale on peach that has a PHI of less than 21 days. The most effective materials labeled are Diazinon and Guthion. Both have PHI's of 21 days. This means that varieties that harvest around middle to late August are virtually unprotected right through the peak of second generation crawler emergence (plenty of time for a scale infestation to cause significant injury). The same problem applies to early fruit that ripen during the peak of the first generation (i.e. early to mid June). The exception here is that Provado (0 PHI), when applied for aphids, will control scale in the rare instance that the crawlers and aphids coincide. Provado is not currently labeled for scale control on Peach.



### ***A summer and spring program for Scale Control***

Once a SJS problem is identified, the program outlined below should bring the infestation under control within one year.

**Monitoring:** Locate a branch that is encrusted with scales. These are nearly round, measure up 1.6 mm in diameter, and appear ashy colored. Make a trap by wrapping electricians tape around a twig near the scales. Wrap a second layer of clear double-sided scotch tape over the electricians tape. If this not available, coat the electricians tape with a thin layer of Vaseline. Check the trap every few days until crawlers are found. Crawlers are only a little larger than mites, orange or yellow in color, have six legs and one pair of antennae. The first crawlers will signal the emergence and the need for insecticides.

**Treatment:** Insecticide coverage should be initiated about a week after the first crawlers are observed (about the first week of August). Continue applications throughout the emergence or until the PHI prohibits application (for August ripening varieties apply Diazinon up to 3 weeks prior to harvest and follow with Imidan 2 weeks prior to harvest). In late summer cut out all dead and dying wood

and remove it from the orchard. Apply dormant oil the following spring with Lorsban 4E, Supracide or Diazinon. If conditions are too cold for oil, the insecticide can be applied alone. Use Diazinon again during the first generation emergence in June. All applications, especially the dormant ones, should be solid and made as dilute as possible.

### Rutgers Fruit IPM Postharvest Data 1995-2001

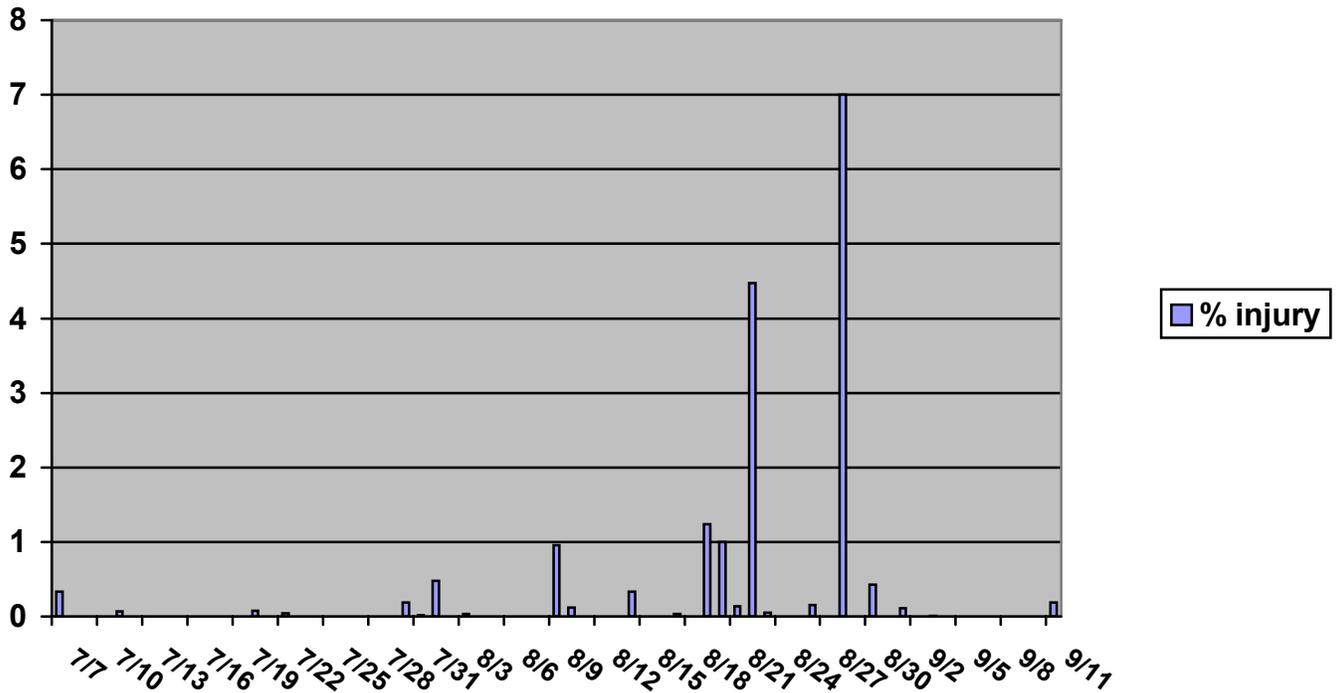


Figure 1. Percent San Jose Scale injury by ripening date. Combined data 1995-2001.