

PMTF Newsletter – San Jose scale

Life history

San Jose scale (SJS) has two generations per year in Washington. SJS overwinters in the black-capped, immature stage. The males mature and then leave their scales and fly in search of females, which remain under scales and emit a pheromone to attract males. Each female is capable of producing several hundred crawlers over a 6-week period. Timing of the different stages varies from year to year, depending on temperatures. Usually, crawlers of the first generation appear in early June and may continue to be produced until early August. Within a few hours of being born, the crawlers settle onto bark, leaves, or fruit and insert their long, bristle-like beaks to begin feeding and then begin forming their scale covering. Females of the first generation mature in late July and second generation crawlers appear in August.



SJS overwinter on branches in the black-capped immature stage.

Life stages

Crawler: The female SJS produces live young. The newly hatched crawler of either sex is yellow. It has six legs, two antennae and a bristle-like sucking beak that is almost three times the length of its tiny, oval body. The crawler seeks a suitable site to settle and immediately begins to secrete a waxy covering over its body, which hardens into a scale. The scale turns from white to black and then to gray and goes through several molts before maturing.



Scale feed on apple by inserting a bristle-like sucking beak.

Adult: The mature male is a very small, yellowish-tan insect with wings and long antennae. The female is wingless and legless, and its yellow body is soft and globular.



An infested apple can have 1,000 or more scale on it.

Damage

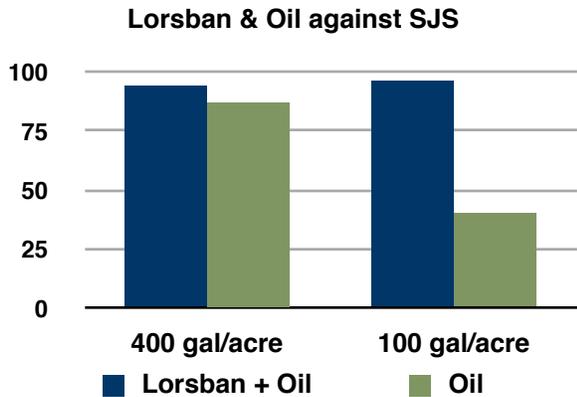
If neglected, scale populations can quickly grow into a problem because the insect multiplies so rapidly. An infested apple can have 1,000 or more scale on it. In addition to making fruit unmarketable, San Jose scale kills twigs and limbs. If not controlled, it can kill the tree. More commonly, infestations of SJS are light in commercial orchards. A small number of scales will infest an occasional fruit in or near the calyx.



The mature male is very small with wings and antennae.

Management options for San Jose Scale

Lorsban & Oil

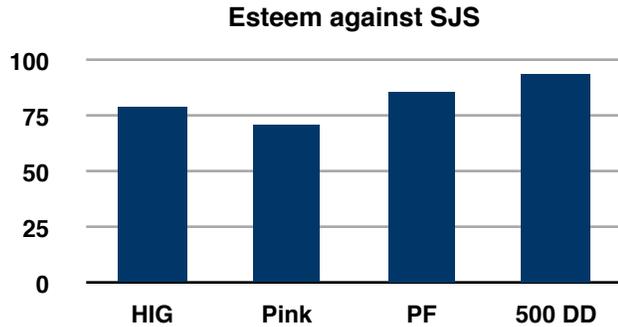


When spray coverage is optimized, oil alone provides good control.

Scales that are more mature in the fall are killed during the cold winters. The best approach to orchard protection is to prevent scales from becoming established. The overwintering black-capped stage is the target of the “half-inch-green” sprays. Traditionally this spray has combined Lorsban (chlorpyrifos) and horticultural oil and has provided excellent control of SJS as well as Pandemis leafroller. Recent studies have shown that when using high amounts of water oil alone provides excellent control with Lorsban adding little additional benefit. However, if growers are reducing spray volume, which impacts coverage, the addition of Lorsban, or another insecticide, adds significantly to control.

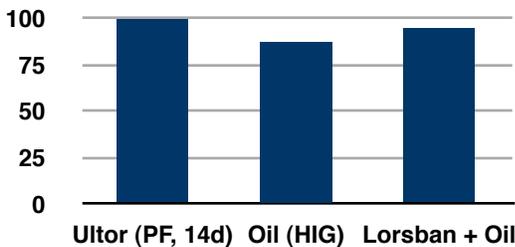
Esteem

Good results have been observed with Esteem as a Lorsban replacement at HIG. However, this timing does not provide any leafroller control. Esteem is also effective at the pink and petal fall timings, the latter which also provides control of leafrollers. A slightly later timing at 500 degree-days based on the SJS model (WSU-DAS) also provides good control.



Esteem can be used as a replacement for Lorsban or applied later in the season.

Ultror against SJS

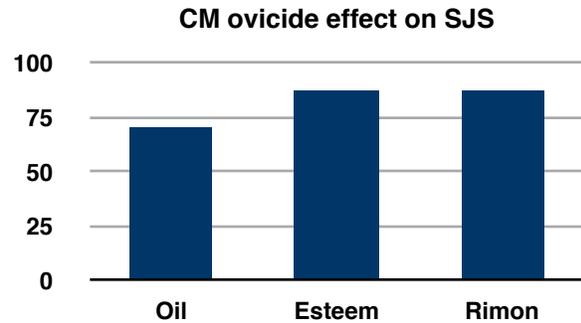


Ultror

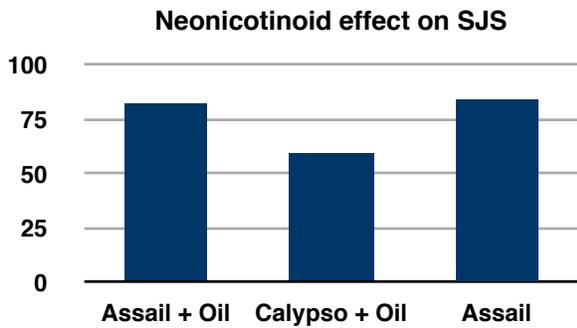
Two applications of Ultror, the first applied at petal fall and the second 14 days later, can provide good suppression of SJS.

Codling moth ovicides

Oil, Rimon, or Esteem timed to target codling moth eggs (275 DD and repeated at 14 day intervals for a total of 3 applications) can also provide suppression of SJS.



Neonicotinoid



Repeated applications of Assail and Calypso applied at traditional codling moth timing (425 DD, +21d) has shown suppression of SJS.

Summer oils

Summer oils applied at 1% v:v beginning at 375 CM DD and repeated for a total of 3 applications has been shown to suppress SJS.

Keys to control

Oil at half-inch-green

Using oil at the HIG stage, with or without Lorsban, can help to keep SJS from increasing in your orchard. Summer sprays can help to protect fruit but usually do not suppress existing infestations. They should be used as a supplement to early season sprays not a substitute.

Sprayer coverage

Coverage is very important when targeting scale, particularly when using oil. Oil only kills scale that it suffocates. Lower water volumes will reduce control.

Degree-day model

A degree day model is helpful for timing crawler sprays in June. Sprays should be applied between 400-500 SJS degree-days. Using the WSU Decision Aid System (DAS) can help you time applications.