

## Incidents of Walnut Scale Are Increasing

*Carolyn DeBuse, UCCE Farm Advisor, Solano and Yolo Counties*

*Janine Hasey, UCCE Farm Advisor, Sutter and Yuba Counties*

*Bill Krueger, UCCE Farm Advisor, Glenn County*

The infestation of scale insects in walnuts has been on the rise since 2004. Several conventional and organic orchards alike have seen an increase in walnut scale. Previously it was believed that scale insect populations were kept in check by natural predators and parasitoids. This no longer seems to be working in many locations. Reasons for this are unclear. Past use of broad range insecticides may have suppressed scale populations more than understood. The phasing out of these chemicals in favor of pesticides specifically aimed at only one insect or group of insects such as the use insect growth regulators (IGRs) or pheromone mating disruption for codling moth may have resulted in increased scale populations. It may also be the case that there are a few pesticides that are suppressing the natural predators and parasitoids at higher levels in the orchards. It has been shown that pyrethroids, spinosad, spinetoram, and neonicotinoids used in-season may decrease natural predators and parasitoids while not controlling the scale. Heavy applications of kaolin clay used in organics to discourage codling moth egg laying and in many orchards to decrease sun burning also discourages parasitoids from laying on scale if they are coated with clay. Any or all of these factors or some unknown factor could be playing a part in promoting scale populations. Be on the lookout and monitor your orchard so that scale does not get out of hand.



Walnut scale

(<http://ipm/PMG/r881300311.html>)

This is a great time to start monitoring for scale. Look for scale on prunings. Before leafing out you can easily look at the fruit wood and monitor for the presence of scale and determine which species are involved. Walnut scale and San Jose scale are armored scale that will over winter as adults. Walnut scale will be grouped together in a “daisy” flower shape with the males clustered around the larger females. Their coatings will be a whitish grey. San Jose scale over winter in the black cap stage with their waxy coatings colored black and grouped randomly or found separately along the branches. These two are the most problematic scale found in walnuts with heavy populations killing fruit wood or even splitting bark on larger scaffolds if numerous enough. The other commonly found scale not known

to cause economic damage in walnuts include frosted scale, European fruit lecanium scale, and Italian pear scale which resides under lichens and moss. High populations of any scale insects should be treated.

If treatment of scale is needed, an effective time to treat is delayed dormant in March before leafing occurs to achieve best coverage and to avoid killing natural enemies. If a high level of parasitism is observed, treatments may be delayed until after crawlers emerge in late spring, normally in May. Monitor for crawlers by encircling small branches that have adult scale present with double sided sticky tape. Remove and examine the tape with a hand lens for crawlers twice a week. Treat the orchard as the population of crawlers peaks. Italian pear scale is controlled by lichen or moss removal, typically with copper.

## Control Options

There are several control options available for orchards with heavy walnut or San Jose scale populations, minimal parasitism, weakened or dying fruitwood, and for in-season control, crawlers detected on sticky tape:

- The insect growth regulator Seize 35 WP. Coverage is very important. Use rates are 4 to 5 oz product/acre and a nonionic surfactant may be used to increase efficacy. Because it is an insect growth regulator, it may take the summer for scale to cycle out.
- Supracide 25WP at 8 lbs product/acre. Do not combine with oil or use more than once per growing season.
- Lorsban 4 EC at 4 pts product/acre. Do not make more than two applications per season.
- Narrow range oils can suppress low to moderate populations during the summer. Recommended for in-season control only directed at the crawlers. Do not apply to drought or diseased stressed trees or in temperatures over 90°F. This is the option for organic orchards.

In some orchards where heavy walnut scale and extensive dieback has been observed, we've also seen an increase in the fungal diseases Botryosphaeria and Phomopsis that cause cankers in infected limbs. We believe that the scale weakens these limbs and predisposes them to infection. Dead and dying wood should be pruned and removed, and scale should be treated in these orchards. For more information on these canker diseases and management guidelines, see [http://cesutter.ucdavis.edu/newsletterfiles/Sacramento\\_Valley\\_Walnut\\_News20862.pdf](http://cesutter.ucdavis.edu/newsletterfiles/Sacramento_Valley_Walnut_News20862.pdf)

For more information on scale, go to the UC IPM website; [www.ipm.ucdavis.edu](http://www.ipm.ucdavis.edu) or re-read the article in our May 2009 Walnut Newsletter at your cooperative extension websites.



San Jose scale

(<http://ipm/PMG/r881300411.html>)