

Managing Japanese Maple Scale in Kentucky Nurseries

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Fast Facts

- Japanese maple scale (JMS) is an invasive armored scale pest that can be an important pest of maples in production nurseries. They can be found on maples, elm, magnolia, and holly amongst many other hosts.
- JMS is small and superficially resembles white peach scale and oystershell scale. The outer covering is oyster shell-shaped, under 2mm in length, and usually coated with a white wax.
- Symptoms of JMS include leaf drop, branch dieback, and possibly the death of small trees.
- Management is difficult for this pest and relies on either repeated scouting and treatment for crawlers with horticulture oil spray, insect growth regulators, or contact insecticides or the use of systemic treatments of imidacloprid or dinotefuran.



Figure 1: Japanese maple scales are small, armored scale pests that produce large populations on dozens of different kinds of plants we grow in production nurseries. (Photo: Brian Kunkel, University of Delaware, Bugwood.org)

Potential Hosts

In Kentucky, Japanese maple scales are primarily found in production nurseries on plants being grown for retail. They can be found feeding on maple, redbud, dogwood, magnolia, serviceberry, hornbeam, wintercreeper, ash, and holly plants, just to name a few. North Carolina State Extension publications report that this scale has been recorded on 45 genera in 27 families.

Symptoms and Pest Description

Scale insects are “sucking pests”, meaning they use a needle-like mouth to siphon fluids from plants. Early in an infestation, the plant will appear less vigorous and may even appear to be water stressed. Leaf yellowing and twig dieback are common symptoms of armored scale pests such as the JMS. These scales can be difficult to detect due to their small size and the camouflaging effect that their wax covers provide. This can lead to populations building to lethal levels, causing stock loss in production nurseries.

Japanese maple scale is a small, armored scale. Armored scales have a waxy covering that is visible to us but hides the actual insect that lives underneath it. The coating of this species is about 2/25th of an inch long (or just under 2 mm), white, oyster shaped, and has a bronze-colored football at the tip of one end. The white on the waxy covering can eventually be rubbed off, leaving the oyster shell portion brown, mottled, and difficult to see. When the waxy coating is flipped over, you will find a small purple insect. Eggs are also purple in color.



Figure 1. Figure 2: Japanese maples scales have an oyster shell shaped waxy covering that is usually coated with a white wax. There is a bronze football shape at the tip of the cover as well. In some cases, the white fluff may have been rubbed off as well. (Photo: John A. Davidson, Univ. of Md, College Pk, Bugwood.org)

Life Cycle in Kentucky

Surveys in central Kentucky have shown two generations per year for Japanese maple scale. In states to the north, like Pennsylvania, they report one generation per year. Southern neighbors, like Tennessee and Georgia, report two. Kentucky has a mixed climate and is considered a transitional zone between southern and northern climates. This could mean we have variation year to year on the number of generations produced.

JMS can adapt its lifecycle to the climate in which it is living. In cooler climates, they overwinter as a fertilized female beneath their waxy coating. In warmer climates, they overwinter as an immature nymph that will resume feeding in the spring. This second style is what has been observed in central and northern Kentucky. In April and May, the scales that overwintered will feed and complete their development to adulthood. Individual females will lay approximately 25 purple eggs beneath their scale cover in May. Crawlers, the mobile life stage for scale insects, will emerge from

the eggs and find a spot on the plant to settle and begin growing their waxy cover. This first generation will then feed, completing development by August. They will then produce eggs that hatch in early August, feed, and then overwinter into the next year.

University of Tennessee and Tennessee State research has observed overlap of the two generations. JMS has extended, staggered egg hatches resulting in crawlers being seen for longer periods of time.

Management

Japanese maple scale management can begin with dormant oil applications in the early spring or in the fall. Dormant oil is unlikely to eliminate an infestation but does help to suppress populations to more manageable levels.

Armored scale insect control often focuses on treating the immature, crawler stage of the pest before they develop their waxy coating. In most species, there are distinct periods of crawler emergence that simplify the treatment schedule for them. Due to the possible overlap of generations and the extended amount of time that eggs may hatch with this species, JMS crawler management becomes more complicated. JMS crawlers are also a unique challenge in that they may begin to produce their waxy coating (which lessens the effectiveness of insecticides) within 3 days of hatching, offering limited time that a manager may have success.

To monitor for JMS crawlers, you can make direct observations on susceptible or infested plants. You would be looking for tiny purple ovals moving on the twigs. You can also set a sticky trap for the crawlers

using double-sided tape or electrical tape. Wrap the tape around a twig near scale populations or around the trunk, be sure the sticky side is facing out if it is not double-sided sticky tape. The trap would need to be set in May and then replaced every 2-3 weeks to maintain usefulness. When you observe crawler activity, you can treat them with insect growth regulator (IGR) products like pyriproxyfen or buprofezin. When these are mixed with a 0.5-1% summer oil solution you should see improved management.

The other approach to scale management is the use of systemic insecticides. In nursery production, both imidacloprid and dinotefuran are systemic options for JMS. Soil drench application of either chemical can be made in spring or fall, but spring is recommended in this case. They would need to be applied annually in order to be effective. Imidacloprid may take longer to be effective, with suppression in the first year of treatment followed by management in the second year. Tennessee State researchers found that dinotefuran provides quick management after application. The drawback was a lack of control 90 days after application, which could lead to the second generation of scales not being managed. A follow up application of dinotefuran was also not successful. Dinotefuran users may need to treat the second generation of crawlers directly with insect growth regulators or contact insecticides.

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CAUTION! Pesticide recommendations in this publication are registered for use in Kentucky, USA ONLY! The use of some products may not be legal in your state or country. Please check with your local county agent or regulatory official before using any pesticide mentioned in this publication.

Of course, **ALWAYS READ AND FOLLOW LABEL DIRECTIONS FOR SAFE USE OF ANY PESTICIDE!**