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# W277 Japanese Maple Scale: An Important New Insect Pest in the Nursery and Landscape

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# An Important New Insect Pest in the Nursery and Landscape

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## Introductory Information

A relatively new pest has been identified in Tennessee and several other states that is proving to be a difficult pest to control. The insect is Japanese maple scale (*Lopholeucaspis japonica* Cockerell), and, unfortunately, it infests many more plant species than just Japanese maple. The insect's small size and ability to blend in with natural variation in bark coloration make it a challenging scale to detect until populations are high and the scale has spread to large areas of the nursery. Some nurseries have had shipments rejected because of the presence of this pest on plants.

## Appearance

Japanese maple scale (JMS) is a small, oystershell-shaped, armored scale (Figure 1). The waxy coating over the body is white, but the female, eggs and crawlers (the immature stage) are lavender (Figures 2 and 3). Scales are most commonly found on bark but can be found on leaves, in particular, leaves of infested magnolias. Beware of confusing JMS with white peach scale (*Pseudaulacaspis pentagona* Targioni-Tozzetti) (Figure 4). Adult female white peach scale has a distinctive "fried egg" appearance and clusters of males give bark a fluffy appearance.

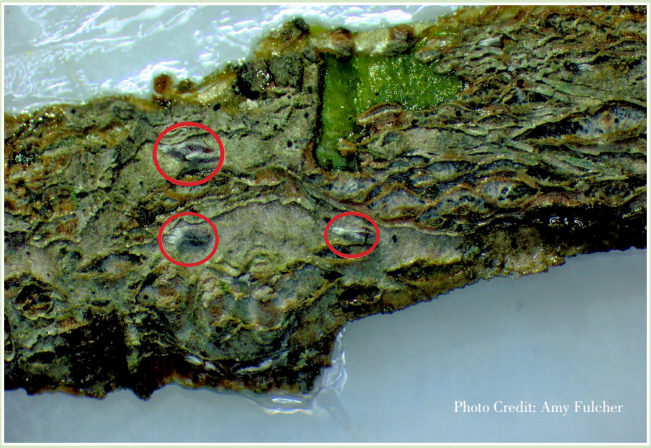


*Figure 1. Immature Japanese maple scale on holly.*


*Figure 2. Japanese maple scale eggs beneath the adult female.*


*Figure 3. Japanese maple scale crawler.*


*Figure 4. White peach scale can resemble Japanese maple scale. White peach scale is characterized by a "fried egg" appearance of individual adult females and a fluffy appearance created by a dense infestation of males.*

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## Life Cycle

JMS life cycle isn't completely understood. The insect overwinters on trunks and branches as a small but visible immature scale that matures in spring. Females lay about 25 eggs under their body. Eggs are estimated to develop in April and May, with egg hatch and crawler emergence likely to occur in mid-May in Middle Tennessee. In other areas, crawler hatch coincides with bloom of *Syringa reticulata* 'Ivory Silk' and *Hydrangea quercifolia*. JMS has two generations a year in states similar in climate to Tennessee. A second generation is likely in Tennessee, with egg hatch estimated to begin around August 1. JMS has extended crawler hatch, which causes the first and second generations to overlap. Some variation in timing across Tennessee is likely.

## Host Plants and Range

JMS has an extremely wide host range that includes *Acer, Amelanchier, Camellia, Carpinus, Cercis, Cladrastis, Cornus, Cotoneaster, Euonymus, Fraxinus, Gledistia, Ilex, Itea, Ligustrum, Magnolia, Malus, Prunus, Pyracantha, Pyrus, Salix, Stewartia, Styrax, Syringa, Tilia, Ulmus, Zelkova* and others. JMS is a serious pest of orchard and ornamental crops in the former Soviet Union and is considered to have come to the U.S. from Asia. Samples have been positively identified from large areas along the East Coast, including Connecticut, the District of Columbia, Delaware, Georgia, Maryland, New Jersey, Pennsylvania, Rhode Island and Virginia, as well as Kentucky and Tennessee.

## Feeding and Damage

Unlike soft-scale insects, JMS does not feed on the phloem (plant vascular tissue). Instead, it feeds directly on plant storage cells, causing the cells to rupture and collapse. Damage is often not as severe as with other scale pests, but populations can grow to extremely high levels, causing both branch dieback and plant death (Figure 5). The loss of saleable plants and rejected shipments appears to be this pest's greatest threat to the U.S. nursery industry.

## Scouting

JMS can be challenging to detect. The small, white adults are difficult to see and often blend in with light-colored bark or lenticels, especially when infestation levels are low (Figure 6). On shrubs and multi-stem trees, focus initial scouting at the base of the plant from the soil line to approximately 8 inches above the soil line. On standard-form trees, look on the trunk and scaffold branches, in particular at the branch collar. JMS is easier to see in the dormant season when foliage is not hindering the view and the waxy coating appears brighter. JMS is often hidden within the protected interior of dense plants. During the growing season and on evergreen hosts such as *Ilex*, pull outer branches aside to expose the interior stems while scouting.


*Figure 5. Japanese maple scale can develop a large population quickly.*

*Figure 6. Small JMS populations can be difficult to detect.*

To monitor for egg development, a dissecting scope is often necessary. A hand lens may not offer sufficient magnification to readily detect eggs. A small sticky trap can be made by wrapping a JMS-infested branch with double-sided tape or by coating regular clear, tan or white tape with a very thin layer of petroleum jelly. Use flagging tape to mark the branch and check the sticky traps for the purple crawlers several times a

week using a hand lens (minimum 16x magnification), which will reveal the trapped crawlers. Start monitoring the sticky traps a week before emergence is expected in the spring and summer. It is important to focus scouting efforts at the edge of the tape, as most crawlers will be trapped as soon as they come into contact with the tape. Be sure to secure the edge of the tape to the bark so that crawlers cannot crawl under the tape.

## Control

Control of JMS is challenging for several reasons. Crawler hatch occurs over an extended period of time. Close observation suggests that the protective waxy coating begins to form just three days after hatch, limiting the window in which contact sprays can be effectively used. JMS is especially difficult to control in *Ilex* and other heavily sheared plants with a dense canopy. A contact insecticide spray must effectively penetrate the canopy to provide an adequate level of coverage needed for control. Numerous factors affect spray coverage, including plant species, height, density, age, number of plant rows between alleyways, in-row spacing, planting pattern, pruning, as well as the sprayer and pesticide application (nozzle type and placement, pressure, tractor speed, etc.). The middle rows in blocks with multiple rows may require that the insecticide be applied with a handgun or a smaller airblast sprayer narrow enough to travel in each row. Use water-sensitive paper to verify adequate spray penetration and coverage on plants infested with JMS, especially where multiple trees per block are planted and in dense landscape plantings (Figure 7). Calibrate sprayers annually to ensure the intended rate is being applied.

Thorough applications of horticultural or superior oil during the dormant period in late winter are an important component of achieving successful control. Additionally, insecticide sprays should be used to target each flush of crawlers during the spring and summer. Recommended insecticides include the insect growth regulators pyriproxyfen (Distance) or buprofezin (Talus 40SC) and the neonicotinoid clothianidin (Arena 50 WDG). Horticultural oil (at 0.5 to 1 percent) can be tank-mixed with Distance or Talus 40SC for improved control. Change sticky traps 2-3 weeks after the first crawlers emerge. If crawlers continue to be caught on the fresh traps, make a second insecticide application.


*Figure 7. Tree shown is on the edge of the field. The outward-facing side of the tree (left) receives more spray and JMS are absent from this portion of the tree. The inward-facing side of the tree (right) is more protected and receives less direct spray coverage. Scale populations have built up on this part of the tree.*

## References (and Internet Sites)

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