



Buckeye Yard & Garden onLine (s)



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Be Alert for Magnolia Scale AND its Predators

Authors: Joe Boggs (/node/51)

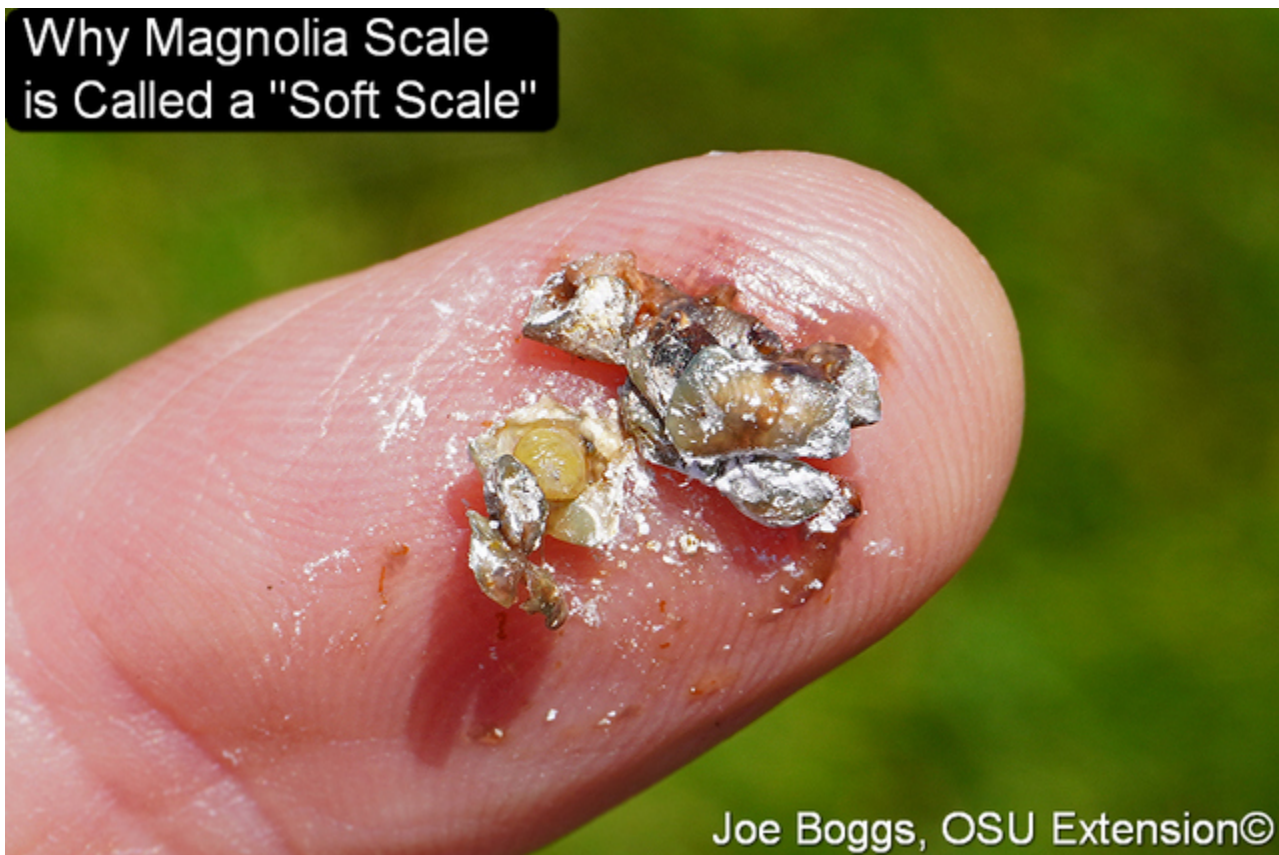
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(<https://bygl.osu.edu/sites/default/files/field/image/1%20Early-Season%20Females%202022%201.jpg>)

Magnolia scale (*Neolecanium cornuparvum*) is a type of "soft scale" so named because the females are hidden beneath a helmet-like soft leathery covering that provides limited protection. Soft scales can be squashed!



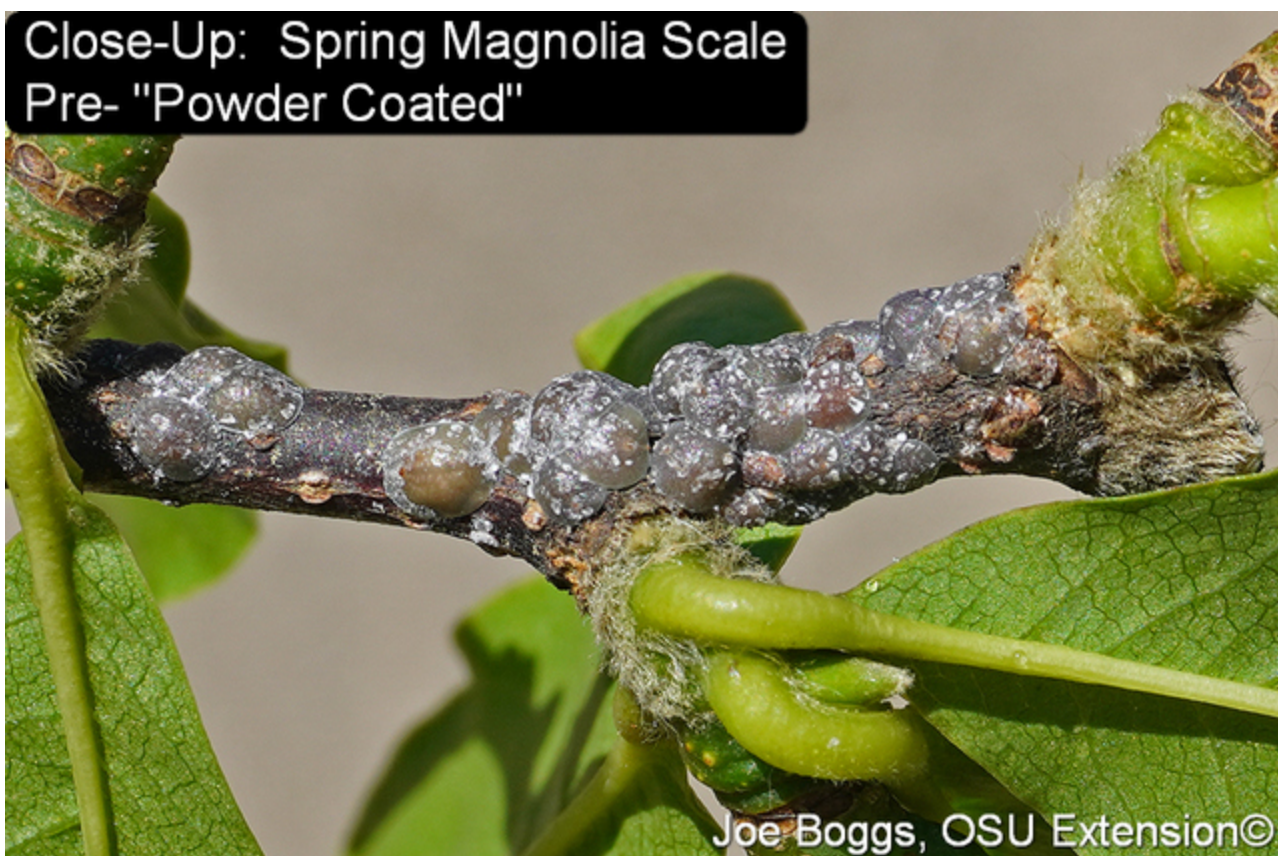
This native insect is one of the largest soft scales found in Ohio with mature females measuring as much as 1/2" in diameter. The size and overall shape of **mature** magnolia scale females commonly make it a poster child for soft scales.

Fully Mature Magnolia Scale Female



However, magnolia scale females change their appearance as they mature throughout the spring and summer. The current magnolia scale females look nothing like the “fully inflated” (puffed-up) helmet-like mature scale pictured above.

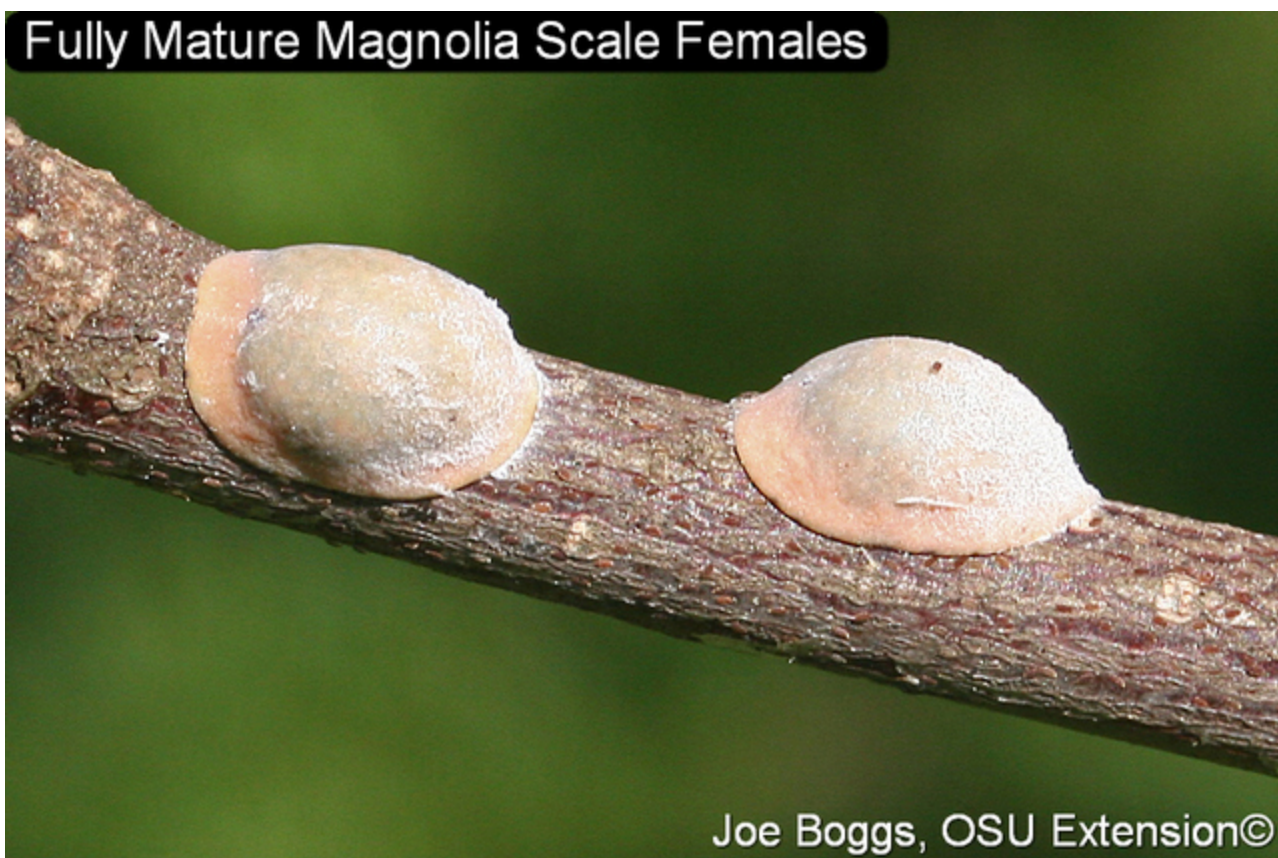
The females are still somewhat flattened and dark gray to grayish-brown making them difficult to detect as they blend with the bark. You may need to look closely at the magnolia stems to spot the scales.



The females change their appearance again when they become covered in a heavy coating of white, powdery exudate making them look like they're powder coated. The white coating makes the scales easier to detect; however, it may also cause them to be mistaken for mealybugs.



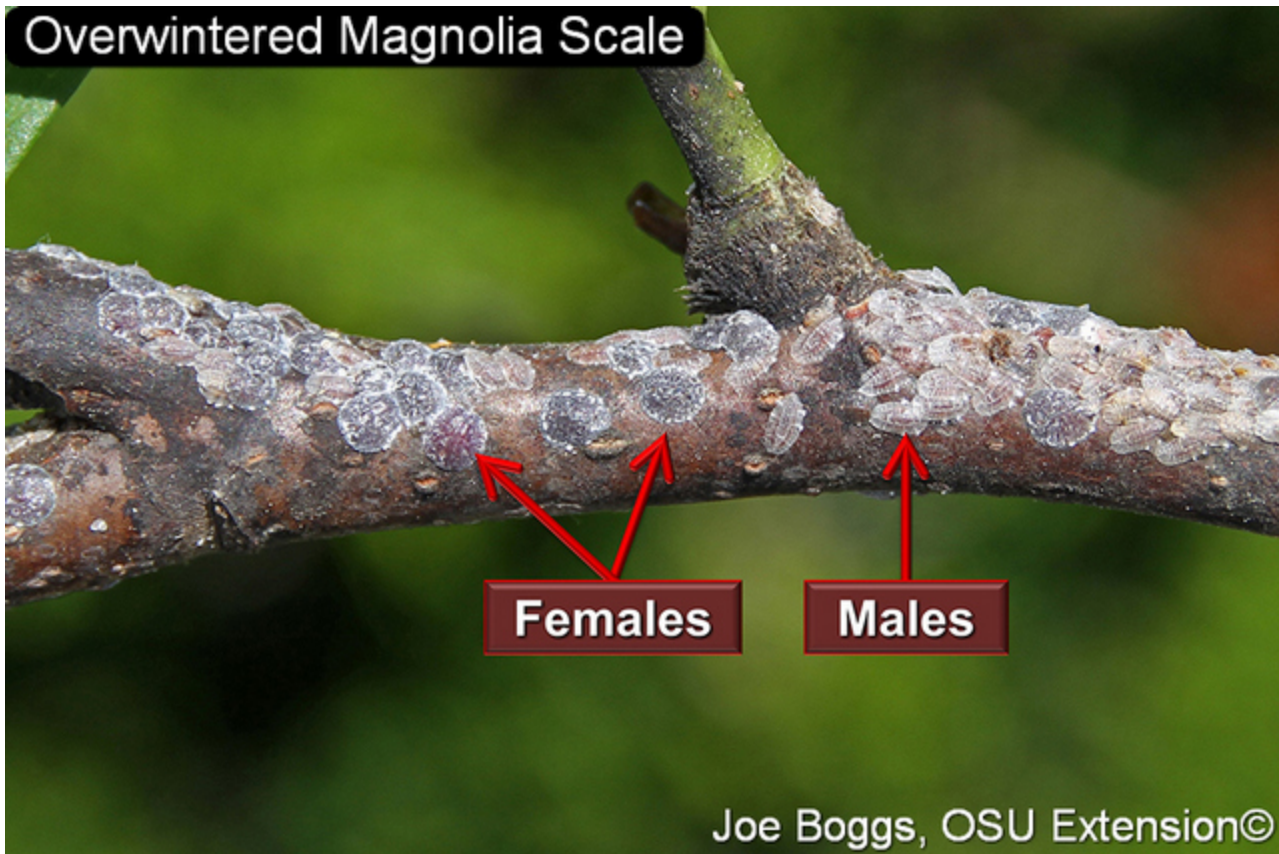
Eventually, they shed the powdery coating as they rapidly expand to their final size and acquire their characteristic helmet-like shape. This generally occurs in late summer.



Life Cycle

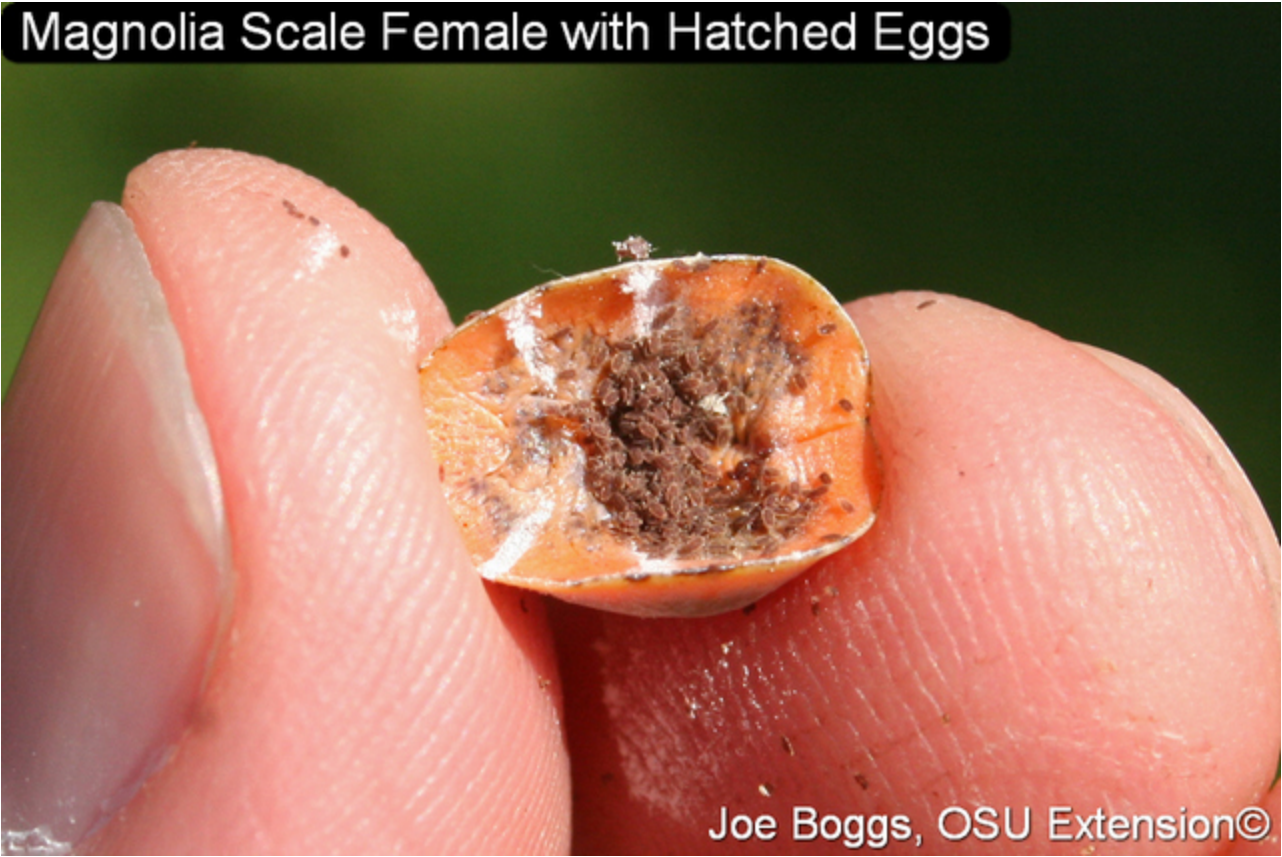
Magnolia scale has one generation per season. Females and males spend the winter as first instar dark-colored nymphs attached to the stems of their host plant. Their resemblance to lenticels makes them inconspicuous. The nymphs mature in the spring with the males developing into small gnat-like insects that fly to females and mate.





The females remain immobile, and eggs are produced in late summer to early fall. The eggs are held internally until they hatch creating the illusion that the females are giving birth to the first instar nymphs (= crawlers). The unusually long period that females develop eggs means that **eggs hatch from early August throughout September in Ohio.**

Magnolia Scale Female with Hatched Eggs



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Mature Magnolia Scale Females with Crawlers



Joe Boggs, OSU Extension©

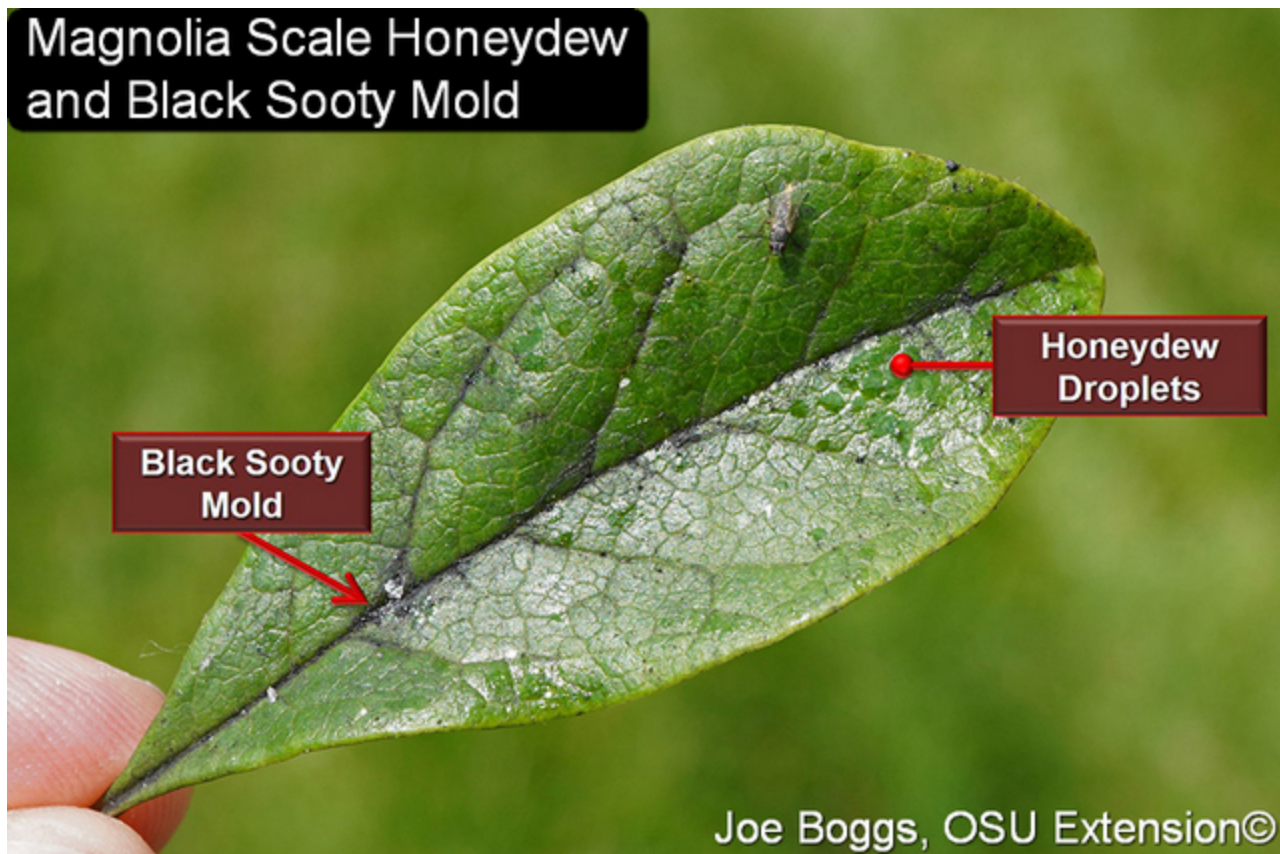


The first instar crawlers are highly mobile but become immobile once they insert their piercing-sucking mouthparts into stems. This is the overwintering stage.

Impact

As with all soft scales, magnolia scale adults and nymphs insert their piercing-sucking mouthparts into phloem vessels. They tap plant sap to acquire both carbohydrates which provide energy as well as amino acids which are the building blocks for proteins and enzymes.

However, the phloem sap contains only trace amounts of amino acids compared to huge amounts of dissolved carbohydrates. This means the scale must process a large quantity of sap to extract the necessary amino acids. They discharge the excess sugar-rich liquid from their anus in the form of a sticky, sugary "honeydew" which is just a nice name for scale diarrhea.



Magnolia scale is notorious for producing copious quantities of sticky, drippy honeydew. The sugary liquid may cause heavily infested trees to literally buzz with insect activity as flies, bees, and wasps seek a sweet treat. A high percentage of the flies are often members of the blow fly family, Calliphoridae. Their maggots may have a taste for decaying flesh, but adults like sweets.

Flies Drawn to Honeydew From Magnolia Scale



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The honeydew drips onto the leaves and stems of the host plant as well as understory plants to eventually become colonized by black sooty molds. Although the molds cause no harm to the overall health of infested trees, the blackened leaves can seriously reduce the aesthetic appeal of heavily infested trees.



As with most soft scales, magnolia scale is seldom a direct killer of established landscape trees. However, a substantial loss of sap from a heavy scale infestation represents a serious loss of energy resources to the trees. The accumulated stress coupled with other stress-producing conditions may cause leaf yellowing and loss, branch dieback and canopy thinning, and even the death of entire trees.

This native scale has a strong affinity for non-native magnolias and associated hybrids. Common hosts include star magnolia (*Magnolia stellate*), lily magnolia (*M. liliiflora*), and saucer magnolia (*Magnolia* × *soulangeana*). Native magnolias are more resistant perhaps because of natural defenses that developed through a shared evolutionary history with magnolia scale.

Management

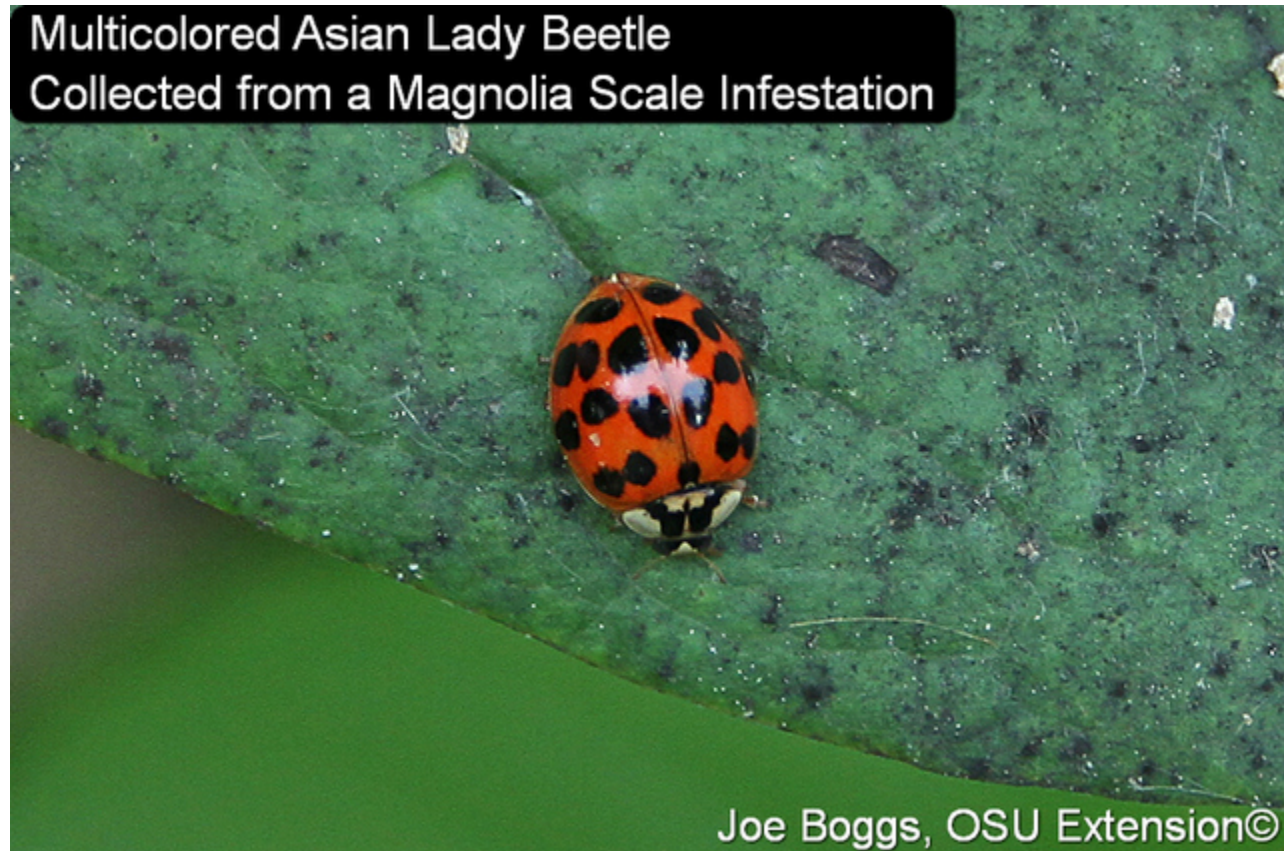
1. Host Range. Host selection is a highly effective first line of defense against magnolia scale. As noted above, the native magnolia scale can wreak havoc on non-native magnolias and associated hybrids which never developed defenses against this sap-sucking pest. So, planting native magnolias can significantly reduce the impact of magnolia scale. Of course, this management approach limits enjoying the full range of colors and forms offered by all magnolias available for Ohio landscapes, so it's important to closely monitor non-native magnolias and apply the management tools outlined below.

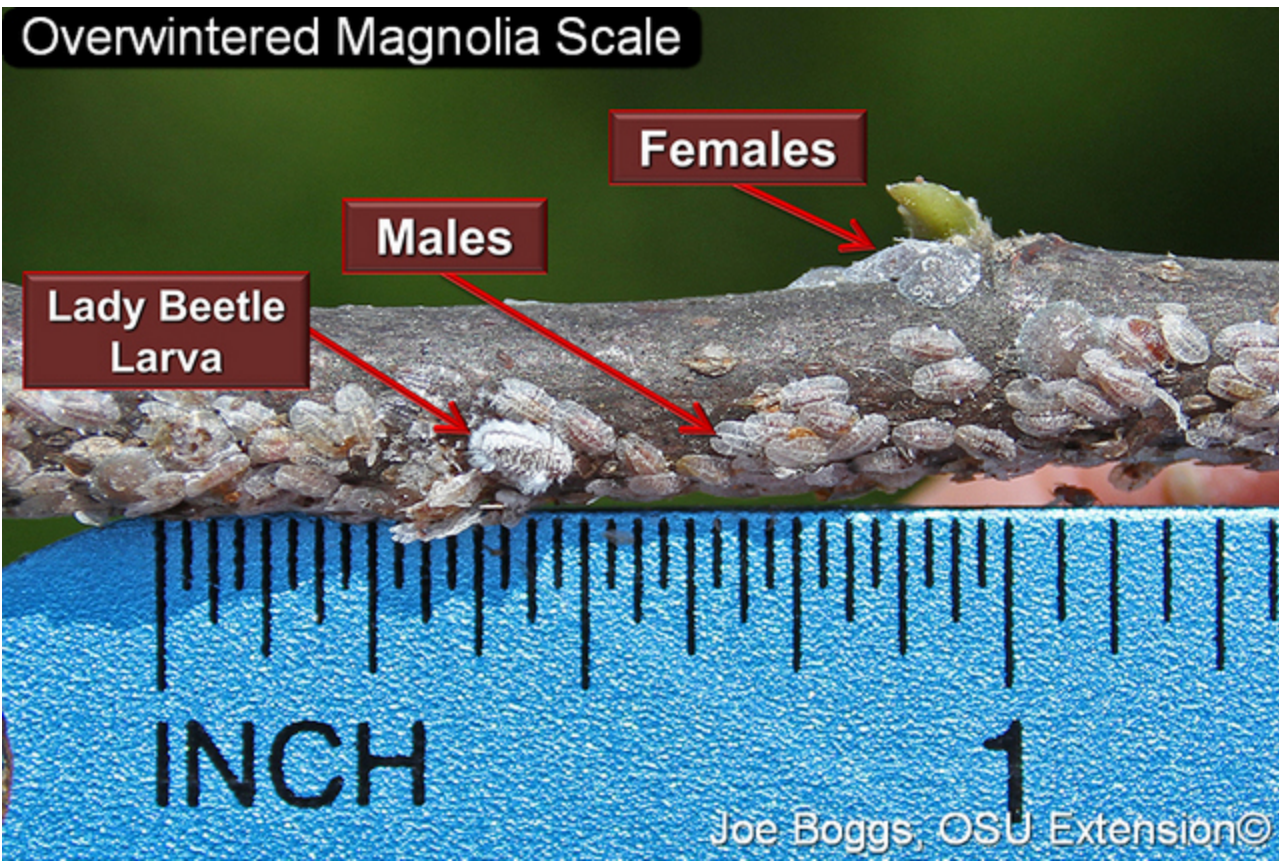
2. Tree Health Management. Maintaining healthy trees is an important component of magnolia scale management, particularly for non-native magnolias. The first and best approach to managing this native scale is to reduce tree stress-inducing conditions such as watering trees during a drought.

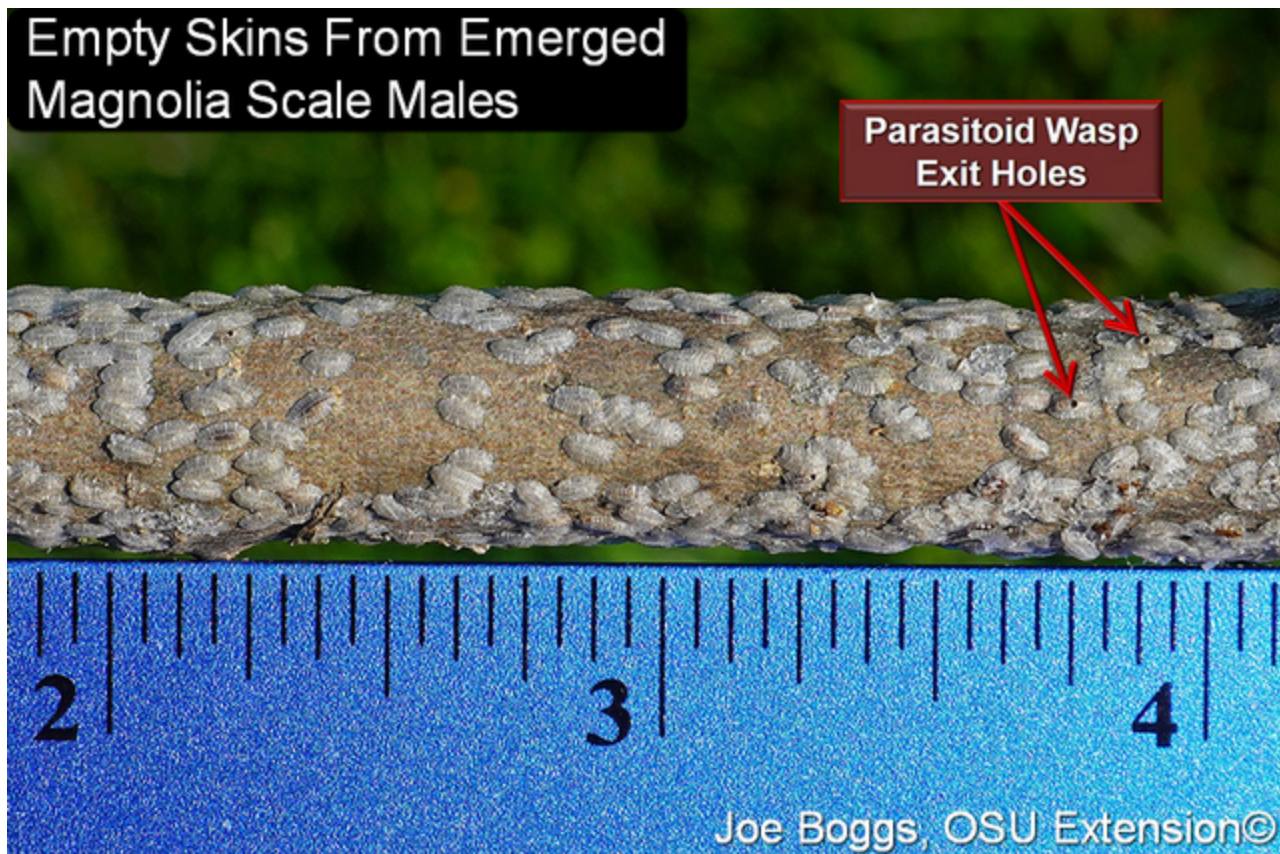
Although providing proper soil fertility is an important component of tree health management, fertilizer

applications should be used with caution, particularly high nitrogen applications. Numerous studies have shown that high nitrogen benefits sap-sucking insects by increasing the amino acid concentration in the sap. High nitrogen applications are almost a sure-fire recipe for high scale populations.

3. The 3-Ps: Predators, Parasitoids, and Pathogens can have a significant impact on soft scales including magnolia scale. The 3-Ps include native enemies of magnolia scale as well as non-natives.



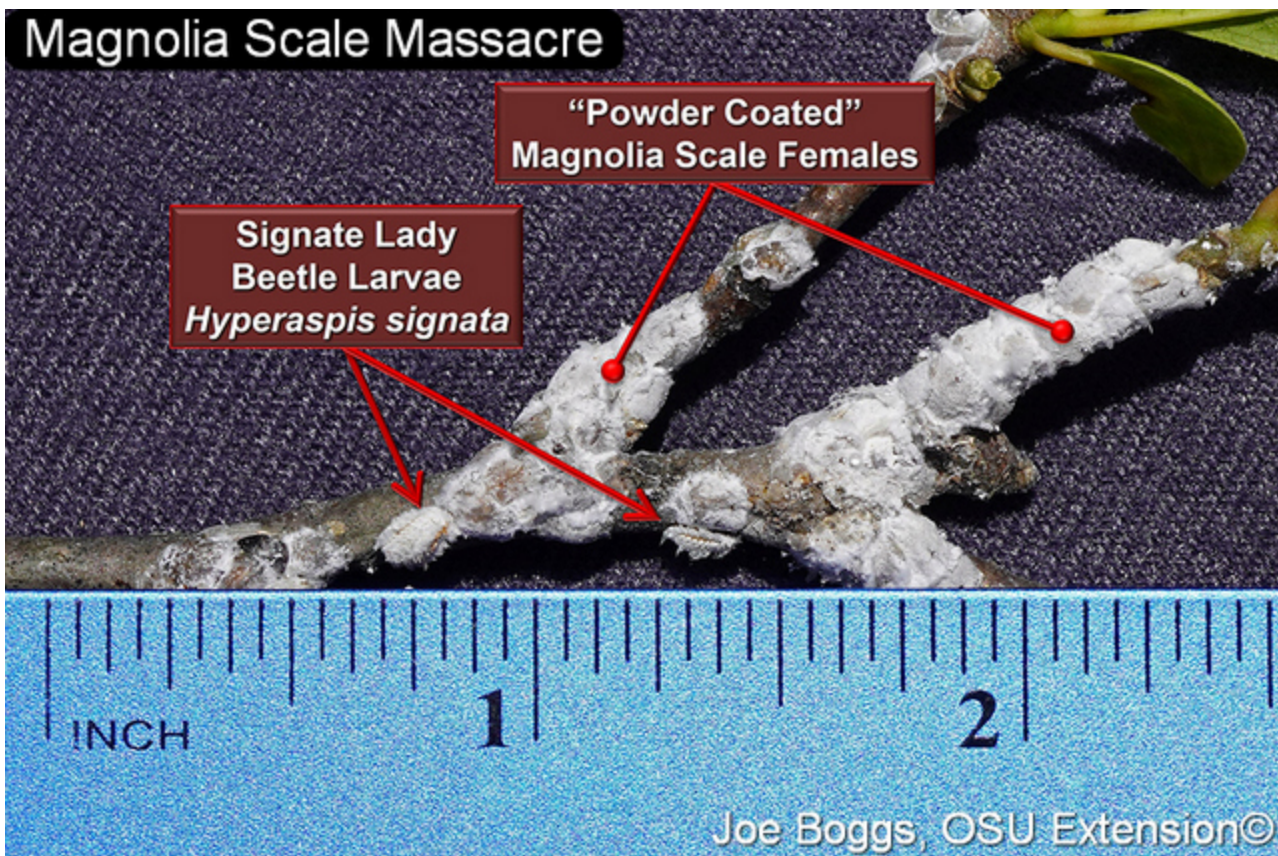
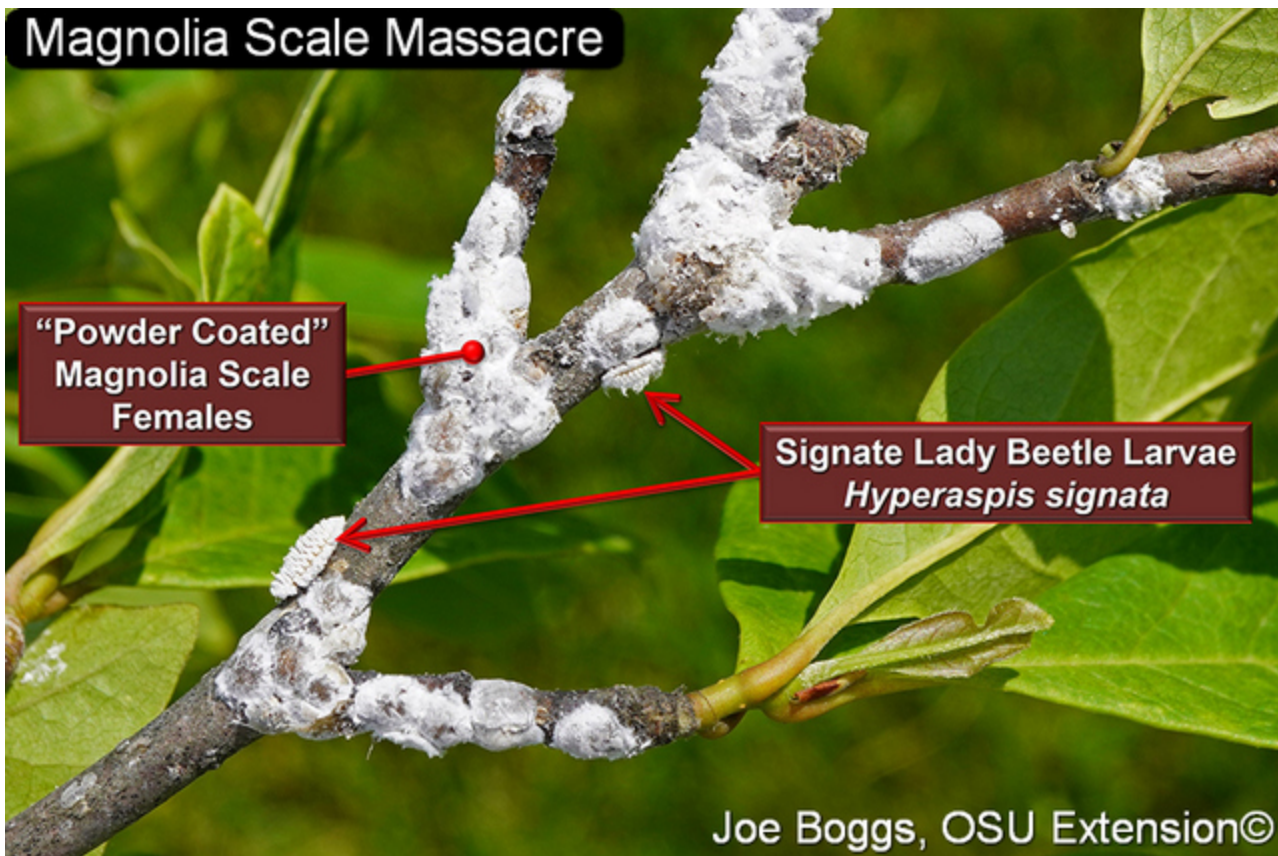




I've observed the impact of predators first-hand with magnolia scale. Last season, I watched **Signate Lady Beetle** (*Hyperaspis signata*) larvae decimate magnolia scale infesting a small saucer magnolia in my home landscape. I was relying on this "private stock" of magnolia scale to photo-document the different phases of the scale for BYGL Alerts.



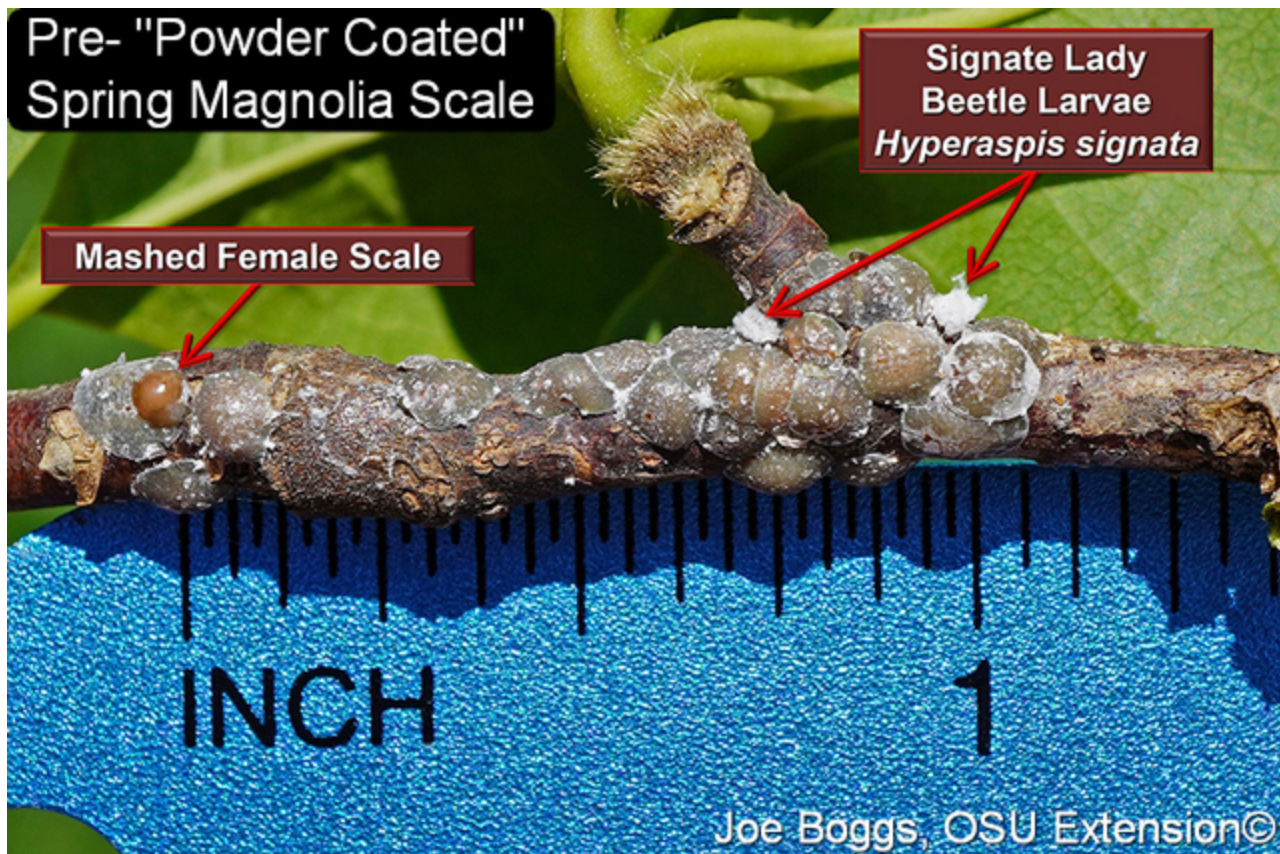
My wife is thrilled; I was not. You can read more about it in the BYGL Alert titled, "*Magnolia Massacre*" posted on July 16, 2021 [<https://bygl.osu.edu/node/1822> (<https://bygl.osu.edu/node/1822>)]. The images below were taken during the massacre. As you see, the Signate lady beetles have white wool-coated larvae that are wolves in sheep's clothing. The lady beetles look almost exactly like mealybugs.



The image below was taken yesterday on a star magnolia (*M. stellata*) growing in landscaping near my home in southwest Ohio. My magnolia was heavily infested last season; sadly, I can find no magnolia scale this season.



However, when I looked closely at this year's infestation, I found that Signate lady beetle larvae had also discovered my neighborhood infestation meaning the scales may not be long for this world. Unfortunately, it also means I'll need to find another infestation to monitor!



4. Scrub it Away. Physically removing soft scales using a dish scrubber or soft-bristled scrub brush is a direct approach to scale management. Although scrubbing away soft scale is best applied to small trees, it can be highly effective in reducing burgeoning scale populations. However, timing is important with the current maturing females providing a good target. Waiting until females develop into their mature form risks the small, flattened 1st instar nymphs escaping the scrubbing.



5. The Role of Insecticides. Integrated Pest Management (IPM) involves combining pest management tactics that fall under the general strategy headings of biological, physical, and chemical to keep pest populations below an acceptable threshold. A cornerstone of IPM is to never use one tactic at the expense of another. For example, the first choice for insecticides should be those with a limited impact on beneficial insects.

Topical insecticide applications targeting 1st instar crawlers later in the growing season can be effective. However, depending on the active ingredient(s) in the product, they can also kill bio-allies such as lady beetles. Also, multiple applications may be required owing to magnolia scale's extended egg hatch.

"Horticultural oils" (e.g., summer oils), as well as insecticidal soaps, can be effective on 1st instar crawlers and have a limited impact on beneficial insects. However, oils and soaps require direct contact to kill the scale crawlers and there is no residual activity. Consequently, multiple applications and thorough coverage are required throughout the scale egg hatch. Spring applications can also be effective; however, there is a risk of damaging flower buds.

The insect growth regulator (IGR) insecticides, pyriproxyfen (e.g. Distance IGR) and buprofezin (e.g. Talus), are also effective against 1st instar crawlers and will have a limited impact on beneficials. The same is true of insecticidal products based on the active ingredient azadiractin which also behaves as an IGR. Keep in mind that although azadiractin is found in the neem tree (*Azadirachta indica*), it is only found and extracted from neem seed kernels. It is not found in neem oil. However, neem oil can be used as a horticulture oil against soft scales.

Systemic neonicotinoids offer another effective option that minimizes impacts on beneficial insects. Products based on the active ingredients imidacloprid, dinotefuran, or thiamethoxam are highly effective

against magnolia scale if applied late in the season to target 1st instar crawlers.

Of course, as with any pesticide, it's critical to read and closely follow product label directions. Insecticide failures against magnolia scale (and other soft scales) are commonly traced to "applicator error" such as incorrect mixing or mistakes in making calculations leading to an insufficient amount of product being applied. Or, not maintaining recommended pre-treatment and/or post-treatment soil moisture with soil drench applications. The label is not only "the law;" it also provides information that maximizes efficacy while minimizing environmental impacts.

Tags

Magnolia Scale (/taxonomy/term/718)

Neolecanium cornuparvum (/taxonomy/term/1040)

Signate Lady Beetle (/taxonomy/term/1597)

Hyperaspis signata (/taxonomy/term/1599)

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