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Crape Myrtle Bark Scale: A New Exotic Pest

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A relatively new exotic scale pest of crape myrtle (*Lagerstroemia*) is threatening the use and appearance (Fig. 1) of crape myrtles in urban landscapes in and near Texas.

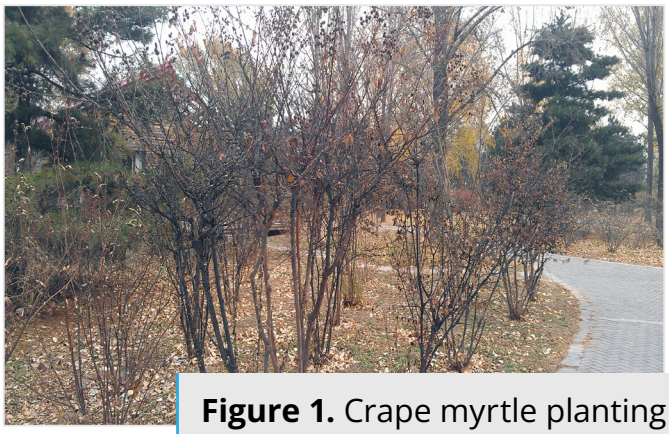

Figure 1. Crape myrtle planting infested by CMBS in China.

Crape myrtles are prized for their beauty and relative freedom from pests in the United States. This pest (Fig. 2) is causing concern because it is spreading fast, and crape myrtles are planted in landscapes throughout the South and in many other parts of the United States (Fig. 3). As a crop, it brings in $46 million in farm wholesale value per year.



Figure 2. A crape myrtle twig, about the size of a pencil, covered with overwintering nymphs and pupae of crape myrtle bark scale. A bigger branch in the background is covered with sooty mold as a result of CMBS infestation.



Figure 3. Healthy crape myrtle in a landscape. *Photo courtesy James Robbins, University of Arkansas Cooperative Extension Service*

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When first discovered in the United States, this insect was identified as the azalea bark scale (*Eriococcus azalea*); however, crape myrtle has never before been reported as a host plant for azalea bark scale. This scale lives and thrives on crape myrtle, suggesting a different identity for it.

The most likely culprit is a scale insect found in China, Japan, and Korea. In its native range, this scale, tentatively identified as crape myrtle bark scale (CMBS, *Eriococcus lagerstroemia*), feeds on crape myrtles and pomegranates. DNA studies are under way to determine its true identity.

Since the initial discovery in 2004 by a landscape company in Richardson, TX, the insect has blemished many crape myrtles in the Dallas/Fort Worth area. It causes extensive honeydew deposits and the growth of black sooty mold.

By 2012 it had spread to Ardmore, OK, and Shreveport, LA. In 2013, it was reported in Tyler, TX; Houma, LA (60 miles southwest of New Orleans); and Germantown, TN (near Memphis). In January 2014, it was confirmed to be infesting trees in Little Rock, AR.

Although the insect is infesting crape myrtles only in the southeastern United States, its distribution in its native China ranges from Beijing (USDA Cold Hardiness Zone 6) to Guangzhou, Guangdong Province (Cold Hardiness Zone 10).

Description

Crape myrtle bark scale is relatively easy to identify. It is one of the only scales known to infest crape myrtles. Adult females are felt-like white or gray encrustations that stick to crape myrtle parts ranging from small twigs to large trunks. When crushed, these scales exude pink "blood"-like liquid.

On new growth and in heavy infestations, the scales may be distributed more uniformly on the branch (Figs. 4 through 6). Up close, CMBS is white to gray and about 2 mm (0.08 inch, a bit longer than the thickness of a dime) long. Look closely and you may see dozens of pink eggs or crawlers.

Most gardeners are first alerted to CMBS by the presence of black sooty mold on the bark. In more southern



Figure 4. Heavy CMBS infestation on current-year growth.



Figure 5. Infestation of CMBS on a spent flower.



Figure 6. CMBS that have settled under loose bark, which makes them harder to control by direct contact insecticide or lady beetles.

areas, sooty mold may be mistaken for that of the crape myrtle aphid (*Tinocallis kahawaluokalani*), a common insect pest in some areas. However, the presence of the white adult scales on the bark and twigs, and the pink blood exuded when crushed, distinguishes this scale from crape myrtle aphids (Fig. 7).

Crape myrtle bark scales may aggregate toward the undersides of young horizontal branches instead of the parts exposed to the sun (Fig. 8).



Figure 7. "Bleeding" from a fingernail scraping confirming live overwintering CMBS.



Figure 8. CMBS infestations that are exposed to the sun (left), may look different from those in the shade (right) on the same twig.

Life Cycle

As the female nymph matures, it secretes waxy white threads that become felted or matted into a thick whitish to grayish scale covering its entire body. Adult females under this covering are wingless and sessile (attached and unable to move).

The adult female lays eggs under the covering from May to September and then dies. Like other scale insects, the first-instar (first-stage) nymphs have legs and are mobile, thus the term *crawlers*. These crawlers emerge from under the "mother scale" and disperse within a day or two.

Based on observations from areas in China with similar USDA hardiness zones, two to three generations of the scale may occur per year in Zone 8, and up to three or four generations in Zones 9 and 10 (Tables 1 and 2). A suspected fourth generation of the scale has been observed in the Dallas area.

It is possible that these scale insects overwinter (spend the winter) as adult females or eggs. In Arkansas, crawlers and later-stage nymphs have overwintered under loose bark and in cracks and crevices.

After the first molt, the nymphs become sessile. The males pupate and develop external wings during the last instar. Because the females do not disperse from the plant, these scales probably spread locally during the crawler stage via wind or birds. Long-distance transport most likely occurs when infested plant material is moved from one city to another.

Table 1. Life cycle of two generations of *Eriococcus lagerstroemia* in USDA Zone 8 (From He et al., 2008. Biological characteristic and control efficacy of *Eriococcus lagerstroemiae.* Chinese Bulletin of Entomology. 45:811–814.)					
Generation	**Egg**	**Nymph**	**Pupa**	**Male**	**Female**
1	Mid-May to late June	Late May to early August	Late June to late July	Mid-July to late August	Mid-July to mid-September
2	Late July to mid-September	Early August to mid-May	Mid-August to mid-May	Late August to mid-October; late April–late May	Mid-August to late October; early May to early June
This table is based on observations of CMBS in China. Although the USDA hardiness zones are the same, the life cycle stages may differ in the southeastern United States.					

Table 2. Life cycle of four generations of *Eriococcus lagerstroemia* in USDA Zones 9 and 10 (From Luo et al., 2000. "A Study on the Dynamics and Biological Characteristics of *Eriococcus lagerstroemiae* Kuwana Population in Guiyang." *Acta Entomologica Sinica.* 43:35–42.)					
Generation	**Egg**	**Nymph**	**Pupa**	**Male**	**Female**
1	Early April to mid-June	Mid-May to late July	Mid-June to mid-July	Late June to late July	Late June to late August
2	Early July to early September	Late July to mid-September	Early August to mid-September	Early August to late September	Mid-August to late October
3	Late August to late October	Early September to mid-April	Mid-September to mid-April	Late September to late April	Late September to early May
4	Late September to late February	Mid-October to mid-May	Mid-October to late May	Mid-October to late May	Late October to early June
This table is based on observations of CMBS in China. Although the USDA hardiness zones are the same, the life cycle stages may differ in the southeastern United States.					

Control

Based on our limited experience with this pest, CMBS appears to be difficult to control. Soil-applied neonicotinoids can suppress it significantly. Our current best suggestions for controlling this insect include:

- Before buying crape myrtles, inspect the nursery crop carefully for signs of CMBS infestations. Avoid crape myrtles with significant mechanical damage (Fig. 9).



Figure 9. An "easy entry" via an injury or pruning wound, where CMBS infestations may start.

- If your plants are heavily infested, wash the trunk and reachable limbs with a soft brush and mild solution of dishwashing soap and water. This will remove many of the female scale sand egg masses, making insecticide control more effective. Washing will also remove much of the black mold that builds up on the bark of infested trees.
- Horticultural oil has not yet been shown to be effective against this insect. However, it may be beneficial to apply horticultural oil in the winter at **dormant season rates** to the bark and crotches of the plants where the scales shelter. Use enough oil to reach behind loose bark and into cracks and crevices. Winter is an especially good time to treat for scales because the higher (dormant season) application rate can be used without damaging the plant. Cover the tree thoroughly with pesticide, especially when using oil.
- Systemic insecticides have shown the most promise in tests to date. Apply them to the root zone as a soil injection (Fig. 10) or drench (Fig 11).



Figure 10. Application of a systemic insecticide via soil injection to control CMBS.

- The best control was achieved between May and July by applications of clothianidin, dinotefuran (Greenlight Tree and Shrub Insect Control with Safari), imidacloprid (Merit or Bayer Advanced Garden Tree and Shrub Insect Control), and thiomethoxam (Meridian).



Figure 11. Systemic insecticide applied as a drench for CMBS control.

- When drenching the soil with a systemic insecticide, allow several weeks for the product reach throughout the plant. In one test, acetamiprid applied as a bark spray was ineffective.
- Some insect growth regulators (IGR) are recommended for control of other types of scales in woody ornamentals but have not yet been evaluated on CMBS.
- Some lady beetle species, especially the twice-stabbed lady beetle (Fig. 12), are effective predators of this scale.



Figure 12. Adult twice-stabbed lady beetle with several pre-pupae and pupae on a crape myrtle trunk. It is not unusual to see many lady beetle pupae on the trunk of an infested tree. Before pupating, these beetles cleaned most of the scales from this tree. Lady beetle pupae are the pre-adult stage of the lady beetle and are highly beneficial. They should not be disturbed or harmed.



Figure 13. Twice-stabbed lady beetle on a crape myrtle leaf that is heavily coated with black sooty mold.

However, control by lady beetles is often too late in the season to prevent aesthetic damage from sooty mold (Fig. 13).

For more general information about scale insects and their control, see *AgriLife Learn*.

No research has been conducted on whether any of the hundreds of crape myrtle cultivars have any natural resistance to this insect. However, observations from McKinney, TX, suggest that the scale may be worse on pure *L. fauriei* and *L. indica* × *L. fauriei* hybrids.

Although heavy scale infestations are seldom fatal, the aesthetic impacts are significant. Nurseries will incur higher costs to control the scale and maintain clean plants.

If you notice symptoms of scale insect infestation on your crape myrtles in areas of Texas not mentioned in this article, please contact Mengmeng Gu (*mgu@tamu.edu*, 979.845.8567), Mike Merchant (*m-merchant@tamu.edu*, 972.952.9204), or your local Texas A&M AgriLife Extension Service office.