



BUG BIZ

Pest Management and Insect Identification Series



Crape Myrtle Bark Scale

Scientific name: *Eriococcus lagerstroemiae* Kuwana (Insecta: Hemiptera: Eriococcidae)

Introduction

The crape myrtle bark scale, *Eriococcus lagerstroemiae* Kuwana, is a newly introduced insect pest of crape myrtle, *Lagerstroemia* spp. L. (Myrtales: Lythraceae) (Figure 1).

Native to Asia, the crape scale bark scale first was reported in the United States during 2004 on crape myrtles in a landscape plant nursery in Richardson, Texas (Dallas County). During the next 10 years, this pest has spread to 31 cities in eight states at a rapid rate.

Although scale feeding has not been proven to injure the plant, heavy scale infestations are associated with sooty mold, which reduces the aesthetic value of crape myrtles and their flowers and causes stunted plant growth.

Distribution

Eriococcus lagerstroemiae recently has spread throughout much of the southeastern United States. According to EDDMapS (Early Detection and Distribution Mapping System 2015), this scale has been detected in Alabama, Arkansas, Louisiana, Mississippi, Missouri, New Mexico, Oklahoma, Tennessee, Texas and Virginia (Figure 2).

Description

Eggs: The eggs are 0.2 to 0.4 millimeters (0.008 to 0.016 inches) long, 0.1 to 0.2 millimeters (0.004 to 0.008 inches) wide, pink and surrounded with white filaments (Figure 3). Eggs are laid inside the white covering secreted by the female.

Nymphs

Nymphs of *Eriococcus lagerstroemiae*, are pink and mobile (Figure 4). Crawlers (newly hatched nymphs) are 0.3 to 0.5 millimeters (0.012 to 0.020 inches) long and 0.1 to 0.2 millimeters (0.004 to 0.008 inches) wide. After hatching, crawlers settle on the wooden parts of the stem (Figures 5 and 6). Direct observations suggest there are three nymphal stages in the female and five in the male.

Nymphs can walk and settle in different sections of the stem. Because nymphs feed on sap, they secrete large amounts of honeydew.

Male pre-pupa and pupa

Second instar males feed for a brief time and then build a white sac. Pre-pupae, pupae and males develop inside this white sac (Figures 7 and



Figure 1. Crape myrtle tree.

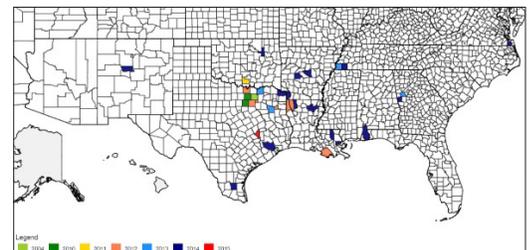


Figure 2. Geographic distribution of *Eriococcus lagerstroemiae* in the United States since 2004. Source: <http://www.eddmaps.org/cmbs/>; data retrieved July 2015.

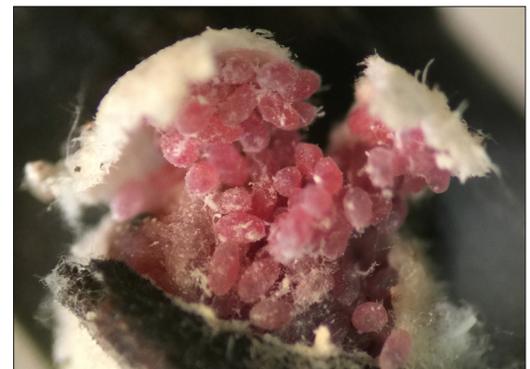


Figure 3. Eggs of *Eriococcus lagerstroemiae*.

8). Male pre-pupae are 0.8 to 1 millimeter (0.03 to 0.04 inches) long and 0.3 to 0.5 millimeters (0.012 to 0.02 inches) wide, and male pupae are 1 to 1.3 millimeters (0.04 to 0.05 inches) long and 0.4 to 0.6 millimeters (0.016 to 0.024 inches) wide. Both are pink, nonfeeding and immobile.

Males

Males are pink, winged and have two long white filaments at tip of the abdomen (Figure 9). The fore wings have reduced venation, and the hind wings have been lost altogether, along with the mouthparts. Males have one pair of eyes in dorsal side and another pair of eyes in the ventral side of the head (Figure 10).

Females

Females are 1.1 to 2.9 millimeters (0.043 to 0.114 inches) long, 0.6 to 1.8 millimeters (0.024 to 0.071 inches) wide, wingless, pink and sessile (Figures 11 and 12). The size of the female varies based on the location of settling and the presence of eggs inside the abdomen. Fertilized females produce a white ovisac (Figure 13) that could function as a barrier against natural enemies and a mechanism to increase humidity. After all eggs are laid, a female will decrease in size and die.

Life Cycle and Ecology

Females lay eggs inside the white ovisac. The quantity of eggs per female varies from 114 to 320 (Jiang et al., 1998). Crawlers hatch from eggs in about 12 days at 77 degree Fahrenheit and begin to search for a suitable feeding site.

Laboratory observations suggest that after each molting, nymphs can move and find a new feeding site. Under laboratory conditions, male pre-pupa and pupa live for 10 to 13 days at temperatures of 77 degrees Fahrenheit

Males and pupae do not feed because of the absence of mouthparts (Figure 9). Laboratory observations by LSU AgCenter scientists suggest males can live for six to eight days at 77 degrees Fahrenheit. The life cycle from egg to adult varies from 56 to 83 days in the field (Jiang et al., 1998).

Little is known about the biology of *Eriococcus lagerstroemiae* in North America. In China, this insect has two to four generations per year and is found at least as far north as 40th parallel north, which is the same latitude as the boundary between Kansas and Nebraska.

In Dallas, up to four generations a year were observed, with adults appearing in late April or early May (Robbins et al., 2014). Females lay eggs from May to September (Robbins et al., 2014). In Arkansas, first emergence of crawlers occurs beginning in mid-May to early June.

The crape myrtle bark scale can overwinter as eggs, nymphs, male pre-pupae, pupae and females (Jiang et al., 1998; Robbins et al., 2014). Scales colonize the leaves, branches, fruits, twigs, stems and trunks.

Natural enemies of this bark scale found in the United States mostly are predators. During April 2015 to June 2015, researchers found the following lady beetles preying on females and eggs of the crape myrtle bark scale in Shreveport, La.: twice-stabbed lady beetle, *Chilocorus stigma* (Say) (Coleoptera: Coccinellidae); multicolored Asian lady beetle, *Harmonia axyridis* (Pallas) (Coleoptera: Coccinellidae); and *Hyperaspis bigeminata* (Randall) (Coleoptera: Coccinellidae) (Figure 14). Observations from the Texas A&M Extension Service suggest twice-



Figure 4. Nymph of *Eriococcus lagerstroemiae* observed under microscope.



Figure 5. Nymphs of *Eriococcus lagerstroemiae* on branches.



Figure 6. Pink and dark yellow nymphs of *Eriococcus lagerstroemiae* on the bark of branches of crape myrtle.



Figure 7. Male pupae of *Eriococcus lagerstroemiae* enclosed by white felt covering, at left and taken out of covering (male was turned over on purpose), at right.



Figure 8. Male pupae of *Eriococcus lagerstroemiae*, with white covering removed on purpose. At left is pre-pupa, and at right is pupa. Note the difference in wing development.

stabbed lady beetles (*Chilocorus* sp.) are effective predators of this scale. However, control by lady beetles often is too late in the season to prevent aesthetic damage from sooty mold and residual wax.

Host Range

Host records reveal *Eriococcus lagerstroemiae* not only attack *Lagerstroemia* spp. but also other plant species in different plant families. In Asia, *Eriococcus lagerstroemiae* has been reported on plant species of ecological and economic importance, including *Buxus sinica* var. *insularis* (Korean boxwood) (Buxales: Buxaceae); *Anogeissus latifolia* (axlewood) (Myrtales: Combretaceae); *Diospyros kaki* (Japanese persimmon) (Ericales: Ebenaceae); *Glochidion puberum* (needlebush) (Malpighiales: Phyllanthaceae); *Mallotus japonicus* (food wrapper plant) (Malpighiales: Euphorbiaceae); *Dalbergia* sp. (Indian rosewood) (Fabales: Fabaceae); *Glycine max* (soybean) (Fabales: Fabaceae); *Ficus carica* (fig) (Rosales: Moraceae); *Myrtus* sp. (myrtus) (Myrtales: Myrtaceae); *Ligustrum obtusifolium* (border privet) (Lamiales: Oleaceae); *Punica granatum* (pomegranate) (Myrtales: Lythraceae); *Malus pumila* (paradise apple) (Rosales: Rosaceae); *Pseudocdonia sinensis* (Chinese quince) (Rosales: Rosaceae); *Rubus* sp. (blackberry) (Rosales: Rosaceae); and *Celtis sinensis* (Chinese hackberry) (Rosales: Cannabaceae). Despite this extensive record of various hosts in China, so far there is no information on the presence of this scale on other plant species in United States.

Economic Importance

The aesthetic value of crape myrtles is drastically reduced by black sooty mold associated with scale. Heavy accumulations of sooty mold can interfere with the plant photosynthesis and result in dieback of branches and decreases in flower production (Figure 15).

The crape myrtle is a flowering landscape tree dominant in the southeastern region of the United States, primarily because of its beautiful shape, stem color and extended flowering period. With more than \$46 million of farm-gate value per year (NASS, 2010), continued spread of *Eriococcus lagerstroemiae* may cause large losses to the landscape and nursery industries.

States with the most crape myrtle production are Texas (17 percent), Florida (16 percent), California (14 percent) and Louisiana (9 percent) (NASS, 2010). This abundance of host plants may have supported the rapid spread of *Eriococcus lagerstroemiae* in the United States.

Control

Control of this scale is difficult because of the protective white covering and bark crevices of the tree. Management recommendations still are being developed, but there are several physical treatment methods to reduce the number of scale insects. Those methods include washing infested trunks and limbs with a soft brush and mild solution of dishwashing soap, removing scales and sooty mold with pressurized water and a well-timed spray of horticultural oil to the bark right before bud break. (Be cautious because once summer arrives, oil should not be used.) In addition, rotating an insect growth regulator (i.e., Distance®) and ultrafine oils (i.e., SuffOil-X®) may help with long-term control and resistance management.

Chemical control with soil-applied systemic neonicotinoid insecticides, such as Dinotefuran (Zylam®, Greenlight Tree® or Safari®) and Imidacloprid (Merit® or Bayer's Advanced Garden Tree and Shrub



Figure 9. Lateral view of a male of *Eriococcus lagerstroemiae*.

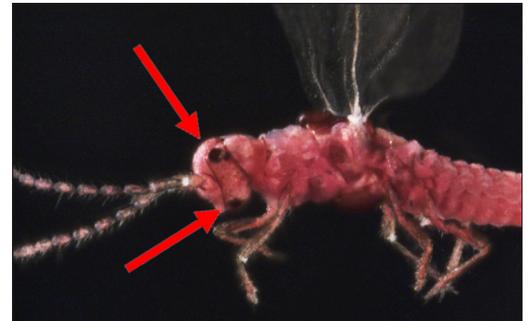


Figure 10. Lateral view of a male of *Eriococcus lagerstroemiae*. Arrows point at the dorsal and ventral eyes.



Figure 11. Female of *Eriococcus lagerstroemiae* laying eggs, with white ovisac removed on purpose.

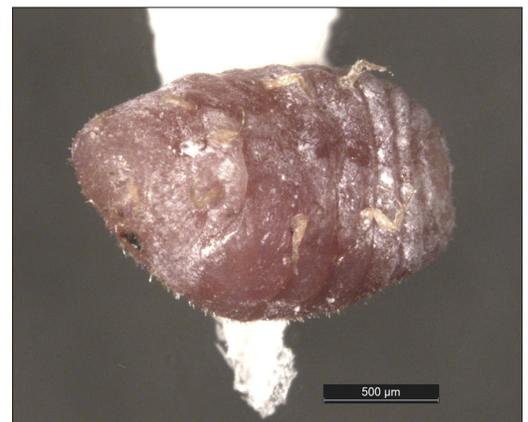


Figure 12. Front view of female of *Eriococcus lagerstroemiae* without ovisac.

Insect Control ®), is the most effective control method so far (Gu et al., 2014; Owings et al., 2015). Application should be made during May through early July. Products available to homeowners include Bayer's Advanced Garden Tree and Shrub Insect Control ® and Greenlight Tree and Shrub Insect Control with Safari ®. Allow several weeks for these insecticides to spread throughout the plant and to work.

Collaborative research efforts by Texas A&M University, the University of Florida, the LSU AgCenter and the University of Arkansas include the monitoring of scale densities, evaluation of the scale's cold tolerance, and testing biopesticides and alternative control measures to optimize management. The team also is screening commercial cultivars for resistance or tolerance that can be used in breeding programs in the near future.

Selected References

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Author: Zinan Wang, LSU AgCenter; Yan Chen, LSU AgCenter; Gary W. Knox, University of Florida North Florida Research and Education Center; Dennis Ring, LSU AgCenter; and Rodrigo Diaz, LSU AgCenter

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William B. Richardson, LSU Vice President for Agriculture
Louisiana State University Agricultural Center
Louisiana Agricultural Experiment Station
Louisiana Cooperative Extension Service
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Figure 13. Female of *Eriococcus lagerstroemiae* enclosed in white ovisac, at left, and without ovisac, at right.



Figure 14. Predators of crape myrtle bark scale include twice-stabbed lady beetle, *Chilocorus stigma* (A); *Hyperaspis bigeminata* (B); and multicolored Asian lady beetle, *Harmonia axyridis* (C).



Figure 15. Dieback of the branches from heavy accumulation of black sooty mold on a crape myrtle tree infested with *Eriococcus lagerstroemiae*.