

# LOUISIANA PLANT PATHOLOGY

DISEASE IDENTIFICATION AND MANAGEMENT SERIES

LSU  
AgCenter  
Research & Extension

## Angular Leaf Spot of Strawberries

*Xanthomonas fragariae* Kennedy and King

Angular leaf spot, caused by the bacterium *Xanthomonas fragariae*, is a common disease of strawberries in Louisiana, particularly during periods of cool, wet weather.

The bacterium infects all aboveground parts of the plant except the fruit, and the foliar phase of the disease is the most damaging. If left untreated, the disease can affect production by reducing the amount of foliage available for photosynthesis.

The disease develops primarily on the younger foliage – especially the younger foliage of vigorously growing plants. Initial symptoms are visible on the lower surfaces of the leaves as small, light green spots that have a translucent, water-soaked appearance when viewed with light shining from behind the leaf (Figure 1). Under moist, humid conditions, a milky, bacterial exudate may be visible on these spots (Figure 2). As the lesions expand, they become angular in shape because the leaf veins restrict their growth, and as disease continues to develop, the lesions become brown and necrotic and are visible on both leaf surfaces (Figure 3).

*Xanthomonas fragariae* can survive from year to year in infested debris from the previous crop, but it is more likely to be introduced into a field or home garden through infected transplants. The bacteria in the debris or transplants spreads primarily by splashing water, but it also can be spread by workers in the fields handling plants when foliage is wet. The optimum conditions for disease development are when daytime temperatures are in the 60s and leaves are wet from rain that occurs over an extended period of time.

Because there are not available strawberry varieties that are resistant to angular leaf spot, management of this disease relies primarily on the use of certified, disease-free transplants. If the disease makes its way into your field, avoid the use of overhead irrigation and physically remove infected leaves, if possible. Increasing the spacing between



Figure 1. Early symptoms of angular leaf spot.



Figure 2. Stages in the development of angular leaf spot. Young lesions appear water-soaked and often have a drop of bacterial exudate associated with them. Older lesions appear brown and necrotic.

plants will improve airflow and promote drying of the foliage that will slow disease development.

Because the pathogen is a bacterium, only copper-containing fungicides are effective for control of this disease. Fungicides should be applied as soon as symptoms are first observed and continued as long as conditions are suitable for disease development. Note, however, that these fungicides will protect only the plant tissues that have been sprayed and that they must be reapplied on a regular basis (every seven to 10 days) to provide adequate protection. Another caution regarding the use of copper-based fungicides is that the repeated application of copper fungicides (six to seven applications in a season) can cause stunting of the plants and reduce fruit production.



Figure 3. Advanced symptoms of angular leaf spot.

Visit our website: [www.lsuagcenter.com](http://www.lsuagcenter.com)

**Author**

Donald M. Ferrin, PhD  
Department of Plant Pathology  
and Crop Physiology

**Photo Credits**

Donald M. Ferrin

Louisiana State University Agricultural Center, William B. Richardson, Chancellor  
Louisiana Agricultural Experiment Station, David J. Boethel, Vice Chancellor and Director  
Louisiana Cooperative Extension Service, Paul D. Coreil, Vice Chancellor and Director

Pub. 3177

(online only)

12/10

The LSU AgCenter is a statewide campus of the LSU System and provides equal opportunities in programs and employment.