CAES
The Connecticut Agricultural Experiment Station
Putting Science to Work for Society since 1875

Dr. Yonghao Li
Department of Plant Pathology and Ecology
The Connecticut Agricultural Experiment Station
123 Huntington Street, P. O. Box 1106
New Haven, CT 06504

Phone: (203) 974-8601
Fax: (203) 974-8502
Email: Yonghao.Li@ct.gov
Website: www.ct.gov/caes

Founded in 1875
Putting science to work for society

BLACK SPOT OF ROSE

Black spot is one of the most common and serious fungal diseases on outdoor rose plantings. The disease occurs all over the world wherever roses are grown. Infection of the leaves can result in dark brown spots and yellowing, which results in defoliation and an unsightly appearance.

SYMPTOMS AND DIAGNOSTICS

The initial symptom of the disease includes small, brown spots with feathery margins on leaves. Lesions enlarge with circular or irregular shapes and become dark brown to black in color (Figure 1). The size of the lesions can vary among varieties, but often ranges between 1/16 and 1/2 inch in diameter. Leaf tissues that surround the lesions can turn yellow and the entire leaf may drop (Figure 2). Symptoms are first observed in the lower canopy of rose plants and progress upward during the growing season. Early defoliation can reduce flower buds and make plants more susceptible to winter injuries. When one-year-old canes are infected, raised, purplish-red spots or blotches are noticeable on stems which, in turn, become blackened and blistered. Although lesions on canes rarely kill branches, the fungus can overwinter on infected stems and serve as a continuing source of inoculum during the season.

DISEASE DEVELOPMENT

Black spot of rose is caused by the fungus *Marssonina rosae*. The pathogen can overwinter in diseased plant debris including

Figure 1. Dark brown spots on leaves.

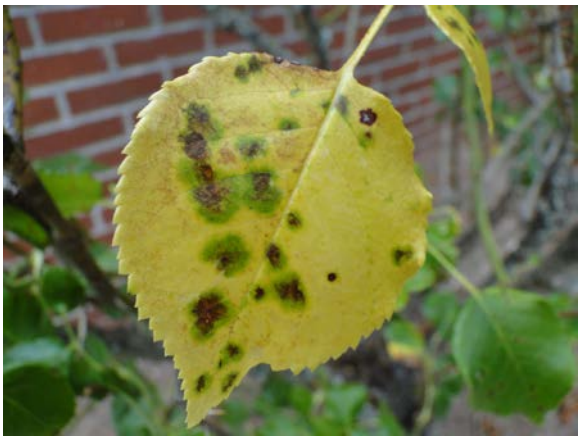

Figure 2. Yellowing of an infected leaf .

leaves and stems in spore-bearing structures called ascervuli. Spores are dispersed from inoculum sources to newly emerging leaves by rain splash and irrigation water in the spring. These early infections start the disease cycle for the season. Fungal spores formed on these infected leaves then spread to other leaves and plants and repeat over and over again during the growing season. Spore germination requires water or high relative humidity (>90%) for at least 7 hours. The optimal temperatures for spore germination and disease development are 65°F to 75°F, respectively. So, warm temperatures and wet/or moist conditions that leave a film of water on the leaves are favorable for disease development. Summer temperatures above 90°F can slow the disease and limit the epidemics.

MANAGEMENT

Resistant Cultivars: Using genetic resistance is the most effective way to control black spot. Resistant rose varieties include Nearly Wild (pink shrub), Jens Munk (pink shrub), Albo-plena rugosa rose (white shrub), Henry Hudson (light pink shrub), David Thompson (red shrub), Charles Albanel (pink shrub), John Cabot (red climber), William Baffin (dark pink climber), J.P. Connell (yellow shrub), and Louis Jolliet (pink climber). Resistance of rose varieties to black spot may vary from region to region since different pathogenic races of the fungus exist.

Cultural practices: Select sunny and open areas for roses and space plants properly to allow good air circulation. Avoid overhead irrigation that may disperse fungal inoculum and provide favorable conditions for fungal infections. If an overhead irrigation system is used, plants should be watered in the early morning to allow water on the leaves to dry during the day. Rake and remove fallen leaves in the fall and prune out diseased canes in the spring to reduce inoculum. Do not put diseased plant materials into compost piles; they should be discarded or buried.

Fungicides: For susceptible roses, fungicide sprays are needed to prevent the disease. Fungicide applications should be initiated around budbreak and continued at 7- to 14-day intervals whenever weather conditions are favorable for the disease. Fungicides that are registered in Connecticut include chlorothalonil, triforine, thiophanate-methyl, captan, mancozeb, fixed copper, and sulfur. Please read and follow label directions when you purchase and use fungicides.

June 2016