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Fulya Baysal-Gurel

Tennessee State University

Chasity A. Phillips

Tennessee State University

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Black Spot of Rose

Dr. Fulya Baysal-Gurel and Chasity A. Phillips

***Otis L. Floyd Nursery Research Center
College of Agriculture
Tennessee State University
fbaysalg@tnstate.edu***

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Black spot (*Diplocarpon rosae*) is a destructive leaf disease of rose in the landscape and nursery production. The disease is active during moist, cool weather with relatively high humidity, and can be limited by intense heat and dry conditions (1). The ideal temperature for active growth of the disease is 75°F, however, temperatures above 85°F limit the spread of this disease (2).

Symptoms and Signs

Black spot affects overall health of roses by causing defoliation, decreased quality and quantity of blooms, and increased susceptibility to other stressors. Infected leaves will exhibit small brown to black leaf spots outlined with feathery, irregular shaped borders (Figure 1). Yellow halos may form around the spots causing premature dropping of the leaves. Lower leaves are usually affected first and will move upward as the season progresses (3). Symptoms can also occur on the canes that usually appear as purple blotches on immature wood, but later turns to black. Branches are rarely killed by stem lesions. Infection sites on the canes and fallen leaves will provide a place for the pathogen to overwinter for the next season.



Figure 1. Symptoms of black spot on rose leaves

Disease Management

Black spot of rose can be managed easily with a resistant variety of options. 'Wildberry Breeze', 'White Dawn', 'My Girl', 'Golden Eyes', 'Moje Hammarberg', 'Brite Eyes', 'Kashmir', 'Hansa' and Knock-Out Series are highly resistant to black spot in Tennessee (4). Selecting resistant varieties will be critical for the prevention of the disease.

Plant debris from previous seasons may serve as inoculum source, therefore, sanitation practices are critical. Fallen leaves and plant debris needs to be collected and buried or burned offsite. It's also important not to let the plant become heavy and overgrown with too much foliage; pruning can help for better air circulation and reducing the infection sites. Another excellent practice is to space the plants appropriately when planting to create good air circulation to promote quick drying of foliage. Avoid overhead irrigation if possible or water in the early morning hours to avoid constant moisture on foliage to minimize the germination of the disease spores (3). Scouting and early diagnosis of infected plants are critical for preventing spread of black spot disease and implementation of effective disease control strategies. If you would like to confirm that black spot has infected your roses, you can submit a sample to your local university's plant diagnostic laboratory.

Black spot of rose, if necessary, can be treated with fungicide applications when the weather or environmental conditions are conducive to disease development on susceptible rose varieties. Typically, spray applications are made on a 7-, 14- or 21-day interval, depending

upon the level of disease pressure. Pathogen resistance to fungicides is well known. The performance of many fungicides has been affected to some degree by pathogens developing resistance. Using different mode of action fungicides in a rotation program is important due to risk for resistance development. Due to waxy coating of rose leaves, a spreader/sticker (adjuvant) should be included in the spray program.

Tennessee State University Ornamental Pathology program conducted a study to evaluate fungicides to control black spot on rose ‘Queen Elizabeth’ and ‘Louis Philippe’. Treatments were Broadform SC (4 fl oz/100 gal and 8 fl oz/100 gal)(a.i. fluopyram + trifloxystrobin), Orkestra Intrinsic SC (8 fl oz/100 gal)(a.i. fluxapyroxad + pyraclostrobin), Mural 45WG (7 oz/100 gal)(a.i. benzovindiflupyr + azoxystrobin), Eagle 20EW (8 fl oz/100 gal)(a.i. myclobutanil). Treatments were applied as foliar application on a 14-day interval. Black spot infection occurred naturally and disease pressure was moderate to high on ‘Queen Elizabeth’ plants with non-treated control plants showing 38% foliar disease severity. Disease pressure was low on ‘Louise Philippe’ plants with non-treated control plants showing 13% foliar disease severity. All fungicide treatments reduced disease severity significantly compared to the non-treated controls in both trials. The treatments that most effectively reduced black spot severity were the high and low rates of Broadform, Eagle 20EW and Mural for ‘Queen Elizabeth’ trial and the high rate of Broadform, Eagle 20EW and Mural for ‘Louise Philippe’ trial (5).

By incorporating products that have different mode of action in fungicide rotation plan (Table 1), nursery producers can likely maintain good protection against black spot.

Table 1. Fungicides with effectiveness against black spot on rose

Fungicide	Active Ingredient	FRAC Code	Rate/100 gal
3336 F	thiophanate methyl	1	12-16 fl oz
Banner MAXX II EC	propiconazole	3	5-8 fl oz
Broadform SC	fluopyram + trifloxystrobin	7 + 11	4-8 oz
Compass O 50WDG	trifloxystrobin	11	2-4 oz
Concert II 4.3SE	propiconazole + chlorothalonil	3 + M05	22-35 fl oz
Daconil Ultrex	chlorothalonil	M05	1 lb
Daconil Weather Stik	chlorothalonil	M05	1 pt
Eagle 20EW	myclobutanil	3	8 fl oz
Heritage	azoxystrobin	11	4-8 oz
Mural 45WG	azoxystrobin + benzovindiflupyr	11 + 7	7 oz
Torque	tebuconazole	3	4-10 fl oz
Tourney	metconazole	3	1-4 oz

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For additional information, contact your local nursery specialist office at:

Tennessee State University
College of Agriculture
3500 John A. Merritt Blvd., Box 9635 Nashville, TN 3720-1561
<http://www.tnstate.edu/extension>

Tennessee State University, Otis L. Floyd Nursery Research Center
472 Cadillac Lane McMinnville, TN 37110 <http://www.tnstate.edu/agriculture/nrc/>

Precautionary Statement

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Disclaimer

This publication contains pesticide recommendations that are subject to change at any time. The recommendations in this publication are provided only as a guide. It is always the pesticide applicator's responsibility, by law, to read and follow all current label directions for the specific pesticide being used. The label always takes precedence over the recommendations found in this publication. Use of trade, brand, or active ingredient names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others that may be of similar and suitable composition, nor does it guarantee or warrant the standard of the product. The author(s) and Tennessee State University assume no liability resulting from the use of these recommendations.

Dr. Chandra Reddy, Dean, Tennessee State University, College of Agriculture
Dr. Latif Lighari, Associate Dean Extension, Tennessee State University, College of Agriculture
Dr. Nick Gawel, Superintendent, Otis L. Floyd Nursery Research Center, Tennessee State University, College of Agriculture

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