Cercospora Leaf Spot of Rose¹

Jozer Mangandi and Natalia A. Peres²

Introduction

The primary foliar diseases of roses are black spot (caused by *Diplocarpon rosae*), powdery mildew (caused by *Podosphaera pannosa*) and Cercospora leaf spot (caused by *Cercospora rosicola*). Cercospora leaf spot is a little investigated disease, especially on varieties that belong to the groups of shrubs and ground cover roses. Although *C. rosicola* affects roses commonly, its impact is reduced when control measures for diseases such as black spot and powdery mildew is conducted. Other fungi such as *Alternaria alternata*, *Colletotrichum capsici* and *Glomerella cingulata* can also cause leaf spots on roses.

Causal Agent and Geographical Distribution

Fungi of the genus *Cercospora* are parasitic and infect a broad range of herbaceous plants. The main species affecting roses is *Cercospora rosicola* (*Mycosphaerella rosicola*, sexual stage). *C. rosicola* is distributed worldwide and was first reported on rose leaves in Florida in 1885.

Symptoms

Cercospora leaf spot is a disease often confused with black spot. Both diseases cause severe defoliation in heavily infected plants. The infection starts from the bottom of the canopy and progresses towards the tips where new growth is present. Lesions are primarily found in leaves but also in pedicels, stems, fruits and bracts. (See EDIS publication Cercospora Leaf Spot of Rose at <http://edis.ifas.ufl.edu/PP268>).

Symptoms of Cercospora leaf spot are circular spots usually 2-4 mm in diameter but single spots can be as large as 10 mm in diameter (Fig. 1a, 1b). The size is variable depending on the species or variety on which the lesions occur. When symptoms begin to appear, a small purplish area becomes apparent. In older lesions a small necrotic area develops and increases in size as the disease progress (Fig. 1b). At this point, the center of the spots turns tan to almost gray as the protoplast in the cells become brown and die.

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 2. Jozer Mangandi, graduate student, Department of Environmental Horticulture; Natalia A. Peres, assistant professor, Department of Plant Pathology, Gulf Coast Research and Education Center (REC)--Balm; Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, FL 32611.

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In advanced necrotic lesions, groups of small tufts of conidiophores can be found. Conidiophores develop from masses of fungal tissue called stroma (Fig. 2a). Stromata are dark brown and appear as black dots over the necrotic area of the leaves. Under the microscope, cylindrical, almost straight, septate conidia can be observed (Fig. 2b).

Fig. 1A. Leaves infected with *Cercospora rosicola*. Credits: J. Mangandi

Fig. 1B. *Cercospora* leaf spot with typical circular lesion and a necrotic center, 10x. Credits: J. Mangandi

Control

Research trials have shown that *Cercospora* leaf spot is not significant when programs to control black spot and powdery mildew are used. Of 25 rose cultivars tested in Alabama, differences in susceptibility to black spot and *Cercospora* leaf spot were observed. All cultivars were susceptible to both

Fig. 2A. Conidiophores Credits: J. Mangandi

Fig. 2B. Conidia of *Cercospora rosicola*, 400x. Credits: J. Mangandi

diseases, predominantly black spot, but only two cultivars, 'Petite Pink Scotch' and 'The Fairy' showed persistent, severe symptoms of *Cercospora* leaf spot.

The shrub rose 'Fuchsia Meidiland'[®] was reported as a susceptible cultivar in Alabama and North Carolina. In an experiment conducted to evaluate commercial fungicides for the control of *Cercospora* leaf spot in this cultivar, it was concluded that products such as Compass[™] and Daconil Ultrex[®] applied weekly as well as Eagle[®] and Heritage[®] applied twice monthly reduced severity of this disease to just few spots on the lower leaves.

Scheduled applications used to control black spot with fungicides such as Daconil Weather Stik[®], Immunox[®], and Halt[®] also provide control of *Cercospora* leaf spot. Fungicides labeled for control of *Cercospora* leaf spot of roses in Florida are listed

in Tables 1 and 2. For managing fungicide resistance, products with different modes of action should be used in rotations. All fungicides within the same group (with same number or letter) indicate the same active ingredient or similar mode of action.

Table 1. Fungicide products marketed for professional pesticide applicators for control of Cercospora leaf spot on roses.

Trade name	Active ingredient	Fungicide group
Spectro® 90 WDG	Chlorothalonil + thiophanate-methyl	M5+1
Daconil® Ultrex	Chlorothalonil	M5
Echo® 720 T&O, Echo® ZN T&O		
Esign® 720		
Prokoz® Mainsail 6.0 F, Prokoz® Mainsail WDG		
Champ® DP, Dry Prill	Copper hydroxide	M1
Champ® Formula 2 Flowable	Copper hydroxide + Copper oxychloride	M1
COC® DF, COC® WP		
C-O-C-S® WDG	Copper oxychloride sulfate	M1
Dithane® -75 DF Rainshield	Mancozeb	M3
Fore® 80WP Rainshield		
Penncozeb® 75 DF T&O		
Prokoz® Clevis	Mancozeb + Myclobutanil	M3 + 3
Maneb® 75 DF, Maneb® 80 WP	Maneb	M3
Procon® Z	Propiconazole	3
Micro Sulf®	Sulfur	M2
Microthiol® Dispers		

Fungicide Group (FRAC Code): Numbers (1-37) and letters (M) are used to distinguish the fungicidal mode of action groups. All fungicides within the same group (with same number or letter) indicate same active ingredient or similar mode of action. This information must be considered in making decisions about how to manage fungicide resistance. M=Multi-site inhibitors, fungicide resistance is low.

Source: <http://www.frac.info/> (Fungicide Resistance Action Committee, FRAC).

Be sure to read a current product label before applying any chemicals.

Table 2. Fungicide products marketed for homeowners for control of Cercospora leaf spot on roses.

Trade name	Active ingredient	Fungicide group
Hi-Yield® Captan Fungicide, Bonide® Captan fruit and Ornamental	Captan	M4
Ferti-lome® Liquid fungicide, Bonide® Fung-onil Multipurpose Fungicide, Monterey® Bravado Fungicide, Ortho® Garden Disease Control	Chlorothalonil	M5
Monterey® Liqui-Cop	Copper ammonium complex	M1
Ferti-lome® Blackspot Powdery Mildew Control, Hi-Yield® Copper Fungicide	Copper hydroxide	M1
Bonide® Copper Dust or Spray, Dexol® Bordeaux Powder	Copper Sulfate	M1
Bonide® Mancozeb Flowable	Mancozeb	M3
Spectracide® Immunox Multipurpose fungicide	Myclobutanil	3
Bonide® Rose Rx 3-in-1, Ferti-lome® Triple Action Plus, Monterey® 70% Neem oil	Neem Oil	NC
Bonide® Remedy	Potassium Bicarbonate	NC
Ferti-lome® Systematic Fungicide, Bonide® Infuse	Propiconazole	3
Bonide® Sulfur Plant Fungicide, Ferti-lome® Dusting Sulfur, Green Light® Wettable Dusting Sulfur, Hi-Yield® Dusting Wettable Sulfur, Safer Garden® Fungicide	Sulfur	M2
Bayer® Advanced Garden Disease Control for Roses, Flowers & Shrubs	Tebuconazole	3
Ferti-lome® Halt Systemic Fungicide, Green Light® Systemic Fungicide.	Thiophanate-methyl	1
Ortho® Rose Pride Rose & Shrub Disease Control	Triforine	3
Ziram®76 DF, Ziram® granuflo	Ziram	M3
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