Cercospora Leaf Spot of Rose[1]

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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 has been little investigated, 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 Black 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 cultivar 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

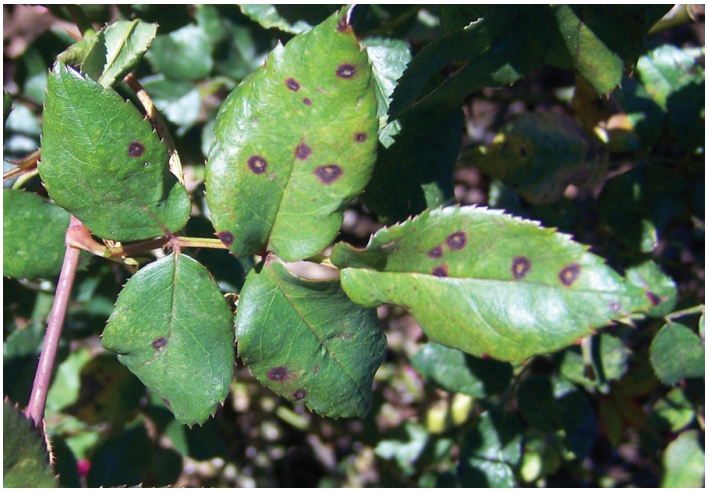

Figure 1a. Leaves infected with *Cercospora rosicola*.
Credits: J. Mangandi, UF-GCREC

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this point, the center of the spots turns tan to almost gray as the cells become brown and die.

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).

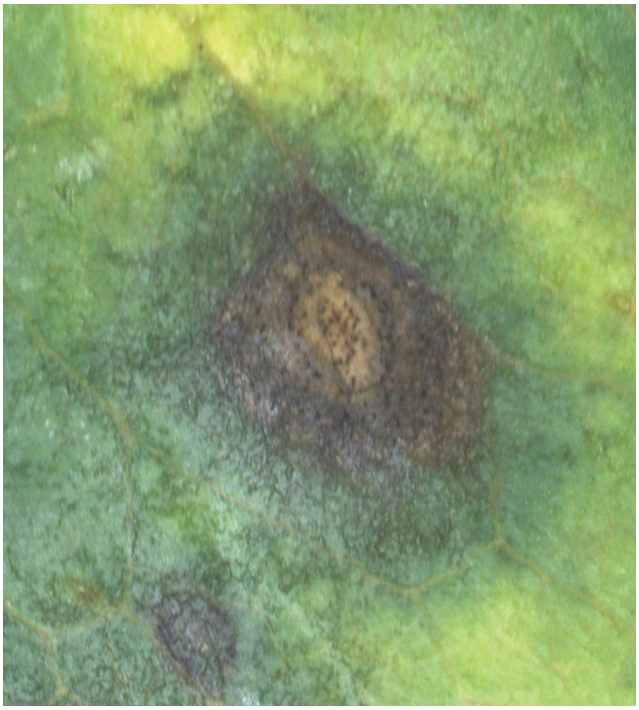

Figure 1b. Cercospora leaf spot with typical circular lesion and a necrotic center, 10x.
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Figure 2a. Conidiophores
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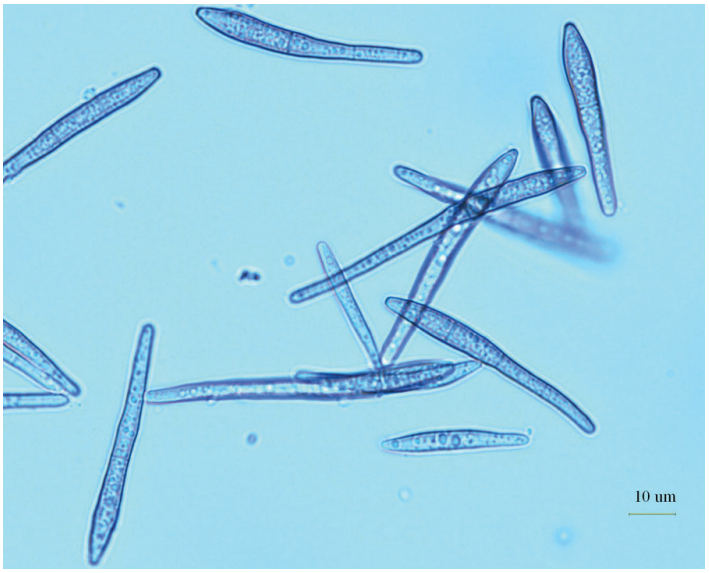

Figure 2b. Conidia of *Cercospora rosicola*, 400x.
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Control

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 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. Fungicide resistance is usually low with multi-site inhibitor fungicides (group M).

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

Active ingredient	Fungicide group	Trade name
Copper oxychloride	M1	Agri Star® COC DF, Agri Star® COC WP
Copper oxychloride + Copper sulfate	M1	C-O-C-S® WDG
Sulfur	M2	Arysta Sulfur 6L, Micro Sulf®, Microthiol® Disperss®
Mancozeb	M3	Dithane® 75DF Rainshield®, Fore™ 80WP Rainshield®, Koverall™, Penncozeb™ 75DF
Maneb	M3	Maneb 75DF, Maneb 80WP
Chlorothalonil	M5	Daconil Ultrex® Turf Care®, Daconil Weatherstik®, Echo® 720 T&O, Echo® Zn T&O, Ensign™ 720, Ensign® 82.5% T&O, Initiate® 720, Prokoz Mainsail™ 6.0 F, Prokoz Mainsail™ WDG
Chlorothalonil + thiophanate-methyl	M5+1	Spectro™ 90WDG T&O
Thiophanate-methyl	1	3336® F, Nufarm T-Methyl SPC 4.5 F, Nufarm T-Methyl SPC 50 WSB, Quali-Pro® TM 85 WDG
Propiconazole	3	Fitness™, Nufarm Propiconazole SPC 14.3 MEC, Procoz Mainsail™ 6.0 F, Procoz Mainsail™ WDG, Quali-Pro® Propiconazole 14.3
Thiophanate-methyl + Iprodine	1 + 2	Nufarm TM+IP SPC
Bacillus subtilis	NC	Cease®
Potassium bicarbonate	NC	Milstop®
Reynoutria sachalinensis	NC	Regalia®
Neem oil	NC	Trilogy®

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; NC= not classified. Source: http://www.frac.info/ (Fungicide Resistance Action Committee, FRAC).

Always read a current product label before applying any chemicals.

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

Active ingredient	Fungicide group	Trade name
Copper hydroxide	M1	Hi-Yield® Copper
Copper Sulfate	M1	Bonide® Copper Dust
Copper Octanoate	M1	Bonide® Liquid Copper, Natural Guard Copper Soap
Sulfur	M2	Bonide® Sulfur, Ferti-lome® Dusting Sulfur, Hi-Yield® Dusting Wettable Sulphur
Mancozeb	M3	Bonide® Mancozeb
Chlorothalonil	M5	Bonide® Fungonil, Ferti-lome® Broad Spectrum, Hi-Yield® Vegetable, Flower, Fruit and Ornamental Fungicide, Ortho® Disease B Gon™ Garden Fungicide, Monterey Fruit Tree, Vegetable & Ornamental Fungicide
Myclobutanil	3	Spectracide Immunox® Multi-Purpose Fungicide
Propiconazole	3	Ferti-lome® Liquid Systemic Fungicide, Bonide® Infuse
Neem Oil	NC	Monterey Neem Oil, Natural Guard Neem Concentrate, Green Light® Neem Concentrate, Green Light® Rose Defense®
Acetamiprid + Triticonazole	NC + 3	Ortho® Bug B Gon® Insect & Disease Control, Ortho® Rose & Flower insect & Disease Control

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