Cercospora Leaf Spot of Rose[1]

Jozer Mangandi and Natalia A. Peres[2]

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* commonly affects roses, 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 (Figures 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 (Figure 1b). At this point, the center of the spots turns tan to almost gray as the cells become brown and die.

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

1. This document is PP267, one of a series of the Plant Pathology Department, UF/IFAS Extension. Original publication date May 2009. Revised July 2012 and December 2015. Reviewed September 2018. Visit the EDIS website at http://edis.ifas.ufl.edu.

2. Jozer Mangandi, Ph.D., former graduate student, Department of Horticultural Sciences; and Natalia A. Peres, professor, Department of Plant Pathology, UF/IFAS Gulf Coast Research and Education Center; UF/IFAS Extension, Gainesville, FL 32611.

In advanced necrotic lesions, groups of small tufts of conidiophores can be found. Conidiophores develop from masses of fungal tissue called stroma (Figure 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 (Figure 2b).

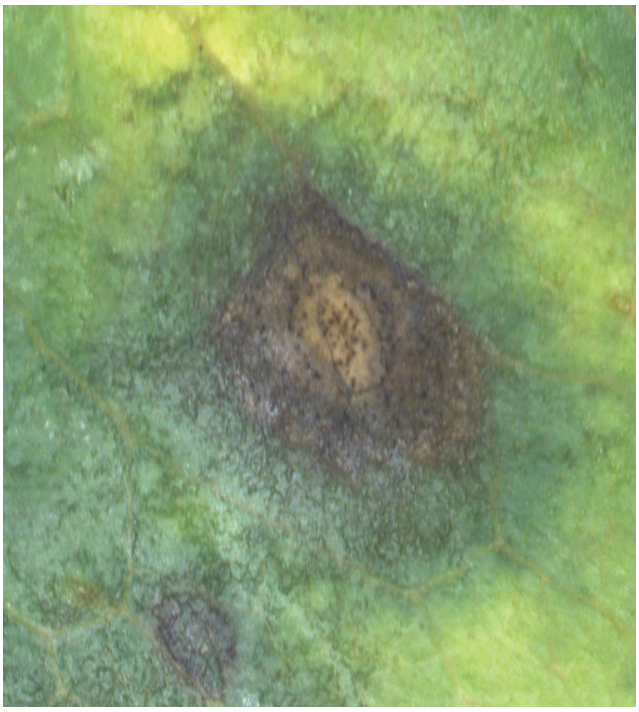

Figure 1b. Cercospora leaf spot with typical circular lesion and a necrotic center, 10x.
Credits: J. Mangandi, UF/IFAS

Figure 2a. Conidiophores.
Credits: J. Mangandi, UF/IFAS

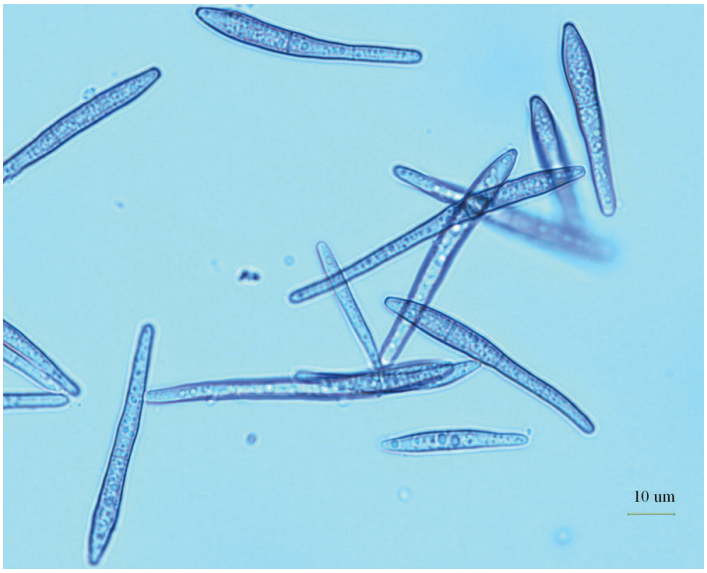

Figure 2b. Conidia of *Cercospora rosicola*, 400x.
Credits: J. Mangandi, UF/IFAS

Control

Research trials have shown that Cercospora leaf spot is not significant when programs to control black spot and powdery mildew are used. Of twenty-five 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, 2, and 3. 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 use by professional pesticide applicators for control of Cercospora leaf spot on roses.

Trade name	Active ingredient	Fungicide group
Heritage, Strobe 2L	Azoxystrobin	11
Captan 50 WP, Captan 50 W, Captec 4L	Captan	M4
Spectro 90 WDG	Chlorotalonil + thiophanate-methyl	M5 + 1
Many brands available: ArmorTech CLT 720, ArmorTech CLT 825, Chlorothalonil 720, Concert II, Daconil Ultrex Turf Care, Docket DF, Echo 720 Turf and Ornamental, Echo ZN T&O, Esign 82.5, Initiate 720 Flowable Fungicide, Legend, Phoenix Pegasus 6L	Chlorothalonil	M5
Palladium	Cyprodinil + Fludioxonil	9 + 12
Copper Count N	Copper ammonium complex	M1
Champ DP Dry Prill, Champ Formula 2 Flowable	Copper hydroxide	M1
Badge SC	Copper hydroxide + Copper oxychloride	M1
C-O-C-S WDG	Copper oxychloride sulfate	M1
Junction	Copper + Mancozeb	M1 + M3
Pageant Intrinsic Brand Fungicide	Boscalid + Pyraclostrobin	7 + 11
Disarm 480 SC, Disarm G	Fluoxastrobin	11
Dithane 75 DF Rainshield, Koverall, Fore 80WP Rainshield, Manzate Max T&O, Pentathlon DF	Mancozeb	M3
Maneb 75 DF, Maneb 80 WP	Maneb	M3
Eagle 20EW, Eagle 40WP	Myclobutanil	3
Banner Maxx, Procon Z, Propensity 1.3 ME	Propiconazole	3
Insignia Fungicide	Pyraclostrobin	11
Kumulus DF Fungicide/Acaricide, Sulfur 6L, Sulfur 90 W, THAT flowable Sulfur, Thiolux Jet	Sulfur	M2
3336 F, Fungo Flo, Incognito 85 WDG, Nufarm T-Methyl SPC 4.5 F, OHP 6672 4.5 F, Tm 4.5	Thiophanate-methyl	1
Trinity Fungicide	Triticonazole	3
Ziram 76 DF, Ziram granuflo	Ziram	M3

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). Not all legally available products sold in Florida are listed. For such a list, contact the Florida Department of Agriculture. Be sure to read a current product label before applying any chemicals.

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

Trade name	Active ingredient	Fungicide group
Hi-Yield Captan Fungicide, Bonide Captan 50W, Ortho Home Orchard Spray	Captan	M4
Ferti-lome Lawn and Garden Fungicide, Bonide Fung-onil Multipurpose Fungicide, Ortho Garden Disease Control, Hi-Yield Daconil	Chlorothalonil	M5
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 with zinc	Mancozeb	M3
Spectracide Immunox Multipurpose Fungicide	Myclobutanil	3
Ferti-lome Systemic Fungicide, Bonide Infuse	Propiconazole	3
Bonide Sulfur Plant Fungicide, Ferti-lome Dusting Sulphur, Green Light Wettable Dusting Sulphur, Hi-Yield Dusting Wettable Sulphur, 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
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). Not all legally available products sold in Florida are listed. For such a list, contact the Florida Department of Agriculture. Be sure to read a current product label before applying any chemicals.		

Table 3. Biopesticides registered to control Cercospora spot on roses.

Trade name	Active ingredient
Sporan EC	Clove oil+ Rosemary Oil+ Thyme oil
JMS Stylet-Oil, Organic JMS Stylet Oil	Parafinic Oil
Saf-t-side	Petroleum Oil
Bonide Rose Rx 3-in-1, Ferti-lome Triple Action Plus, Monterey 70% Neem Oil	Neem Oil
Bonide Remedy, Milstop	Potassium bicarbonate
Not all legally available products sold in Florida are listed. For such a list, contact the Florida Department of Agriculture. Be sure to read a current product label before applying any chemicals	