Southern Blight Management for Woody Ornamentals

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Southern blight is caused by the fungus *Sclerotium rolfsii* which can infect more than 500 species of plants (Aycock, 1966; Domsch et al., 1980; Farr et al., 1989). Some susceptible nursery crops include hydrangea, crabapple, grape, althea, apple, dogwood, peach, azalea, forsythia, phlox, and arborvitae. Although southern blight can infect plants over a broad range of temperatures, the pathogen favors temperatures between 80 -95°F and wet/humid conditions.

Fig. 1. The fungus that causes southern blight produces a white matt of mycelium and small varying colored sclerotia.

Symptoms

The first visible symptom of southern blight is wilting or flagging of the leaves and immature shoots. Soon after wilting, the plant will turn brown and die (**Fig. 2**). Infected plants in the process of decline sometimes exhibit brown, water-soaked or sunken cankers on the stem near the soil line (**Fig. 1**). If wood mulch is present, it may be hiding or covering this sunken discolored canker from view.

Causal Agent and Disease Cycle

The fungal pathogen responsible for southern blight produces abundant white, highly branched; septate mycelium that spreads out in the shape of a fan. When the fungal mycelia contacts a plant stem, it begins to break down the tissue, eventually girdling the plant at the soil line. The key distinguishing sign of southern blight is the production of small sclerotia (**Fig. 1**). Sclerotia can be light tan to dark reddish brown in color. Sclerotia and mycelium are the inoculum sources of the disease. Sclerotia can remain dormant in the soil for many years (Aycock, 1966; Punja, 1985). The fungal pathogen may be spread to adjacent fields or nurseries through infected plant material, plant debris, soil, tools and other cultural practices.

Disease Management

It is difficult to control a southern blight outbreak once it has begun so prevention is the best method for managing this disease. If infected plants are found, they should be removed from the nursery along with the top layer of soil immediately surrounding the plant and destroyed as quickly as possible. If southern blight has been a reoccurring disease, it's best to avoid planting susceptible plants in that field for several years.

Fig. 2. Symptoms of southern blight can progress rapidly. Within a few days, the apple tree in the middle has wilted and died.

If one is forced to work with a field previously infested with southern blight, all plant debris should be removed before cultivating or preparing the land. To prevent contaminating other parts of the nursery, remove all soil and plant debris from equipment before moving to the next field.

For smaller areas such as a propagation bed, soil solarization is another management practice that can aid in the control southern blight. Solarization is the practice of placing a clear plastic sheet over the soil, which allows the sun's radiant energy to heat the soil underneath. Solarization during the hot summer months can increase soil temperature to levels (140°F) that kill the sclerotia in the soil. Aerated steam heat (160-180°F for 30 min.) is another method that can be used to treat small nursery and propagation beds.

Certain soil amendments like aged compost, oat straw, corn straw, cotton gin trash, neem oil and pine bark extracts can be used to control the southern blight disease. These amendments help the colonization of the biological agents (Bulluck and Ristaino, 2002). Fertilizers such as ammonium, calcium nitrate, and calcium sulfate have also shown to be effective for southern blight management (Mullen, 2001).

When combined with good nursery management practices, application of selected fungicides (**Table 1**) or biopesticides would be the most effective method to protect the plants, which are susceptible to the southern blight disease. As the disease is more abundant during summer months, the first fungicide or biopesticide application should be done at the beginning of the summer (late May to Mid June). Several fungal and bacterial antagonists have been evaluated *in vitro* or in the field to control *S. rolfsii*: *Trichoderma* spp., *Penicillium* spp., *Gliocladium virens*, *Bacillus subtilis*.

Table 1. Selected lists of fungicide groups that may help prevent southern blight.

Active Ingredient	FRAC code	Notes
Azoxystrobin	11	Apply every 7 to 21 days for spray application or every 7 to 28 days for drench application, when conditions are favorable for disease development. Do not make more than 2 applications per year per crop.
Cyprodinil + Fludioxonil	9 and 12	Apply every 7 to 21 days when conditions are favorable for disease development.
Fluaxastrobin	11	Apply every 7 to 21 days for crown spray or every 14 to 28 days for surface/drench spray when conditions are favorable for disease development.
Flutolanil	7	Apply every 21 to 28 days at the first sign of disease or when conditions are favorable for development. Do not make more than 4 applications per year per crop.
Pentachloronitrobenzene	14	Incorporate to a depth of 6 to 7 inches or apply in a sufficient volume of water to ensure uniform ground coverage prior to planting.
Tebuconazole	3	Apply every 14 days at the first sign of disease or when conditions are favorable for disease development. Do not make more than 3 applications per year per crop.
Triticonazole	3	Apply every 7 to 21 days when conditions are favorable for disease development.

NOTE: Before applying ANY disease management product, be sure to: 1) read the label to be sure that the product is allowed for the crop and the disease you intend to control; 2) read and understand the safety precautions and application restrictions.

References

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