

New Tools to Combat Southern Blight in Bearded Irises

By

P. Michael Lockatell

One of the few blessings of being a landscape professional is having access to technical representatives of the major players in the agricultural chemical business. No commercial grower likes the prospects of applying pesticides, but extreme weather patterns plaguing the majority of the United States over the past few years has created suitable environments for damaging diseases and insects to flourish at the expense of our favorite garden plants.

After a series of rolling seasonal droughts, Central Virginia witnessed one of the wettest years on record. With the exception of a brief dry spell of about three weeks after Hurricane Isabel ravaged metro Richmond and surrounding communities, rain events have dominated local forecasts. Heavy downpours on the order of one to two inches in a matter of hours saturated heavy clay soils. Runoff from these heavy showers leached valuable nutrients out of the soil mass and created ideal growing conditions for some of the region's worst soil borne pathogens.

One such disease is *Sclerotium rolfsii* commonly referred to as Southern Blight or Mustard Seed Rot. Peanut farmers in the southeastern portion of the state have wrestled with this problem for years. Fungicide programs are an integral part of farm culture to bring peanut crops to productive maturity. Central Virginia's milder climate, Zone 7, allows this fungus to be present in local soils. Hybrid bearded irises are very susceptible to this pathogen, and my garden in Powhatan, VA suffered its first major outbreak during the wet spring of 2000.

Southern Blight will rot healthy leaf tissue of bearded iris fans at the top of the rhizome. "The fungus appears as a gray or tan cottony mass over leaf bases and adjacent soil and adjacent soil and rhizomes."¹ As this disease matures, small fruiting bodies or spherical sclerotia the size of mustard seeds can be detected at the infection site by using a good hand lens.

Contaminated plants are common pathways for the appearance of this disease. Once the fungus is introduced into the garden, existing bearded iris clumps under stress become easy targets. Summer night humidity and temperatures play primary roles in disease development. Other important factors such as water movement, footwear, hand tools and power equipment become the means for the pathogen to infect entire gardens. Sterilization of divided rhizomes with a 10% laundry bleach solution before planting is sound cultural practice to eliminate one avenue of infection by this pathogen.

After speaking with many iris growers about *S. rolfsii*, a remediation program to improve soil drainage was enacted in my Powhatan display garden. Growing space was raised by adding additional fill soil and modifying it with a coarse grade builder's sand. A local sand and gravel quarry supplies this product to area golf courses and the VA Department of Transportation (VDOT). Uniform particle size must meet strict specifications to be sold to these customers. The sand renovation was expensive and required a lot of work, but I decided to back up the remediation work with a fungicide labeled for Southern Blight control.

Terrachlor® 75% WP, PCNB (pentachloronitrobenzene) has been the fungicide of choice to combat *S. rolfsii* in bearded irises. It is packaged as a wettable powder and applied in solution as a soil drench before planting. These formulations can be spilled easily and become instantly airborne during the mixing phase of use. The applicator should be wearing boots, long sleeve shirt, rubber gloves and a respirator both mixing and applying this material. Despite toxicity associated with Terrachlor®, effective control can be obtained.

Following label instructions, uniform application of this material should be made after digging each hole to plant rhizome divisions. This fungicide will provide residual control of Southern Blight for two growing seasons. Multiple plantings of bearded irises should be placed on a staggered schedule of division. One bed divided and reinstalled one year, additional ones replanted in succeeding years. This rotation renews protection with Terrachlor® and allows for consistent flowering of mature clumps throughout the garden. This practice may become unnecessary in the future thanks to the development of a new class of fungicide products capable of controlling *S. rolfsii*.

Strobilurins are naturally occurring fungicides produced by various species of wood decay fungi including *Strobilurus tenacellus* and *Oudemansiella mucida*.² These organisms produce strobilurins as defensive mechanisms to out compete other fungi for scarce nutrients. Some 1,400 compounds based on strobilurin chemistry were tested for their efficacy before azoxystrobin was discovered in 1988.² Research proved this new chemical compound had extremely high levels of fungicidal activity with minimal phytotoxicity to ornamentals or turfgrass. Other benefits indicated were low mammalian toxicity and minimal environmental impact.

Zeneca formulated azoxystrobin into a product named Heritage®. Its active ingredient attacks target fungi, disrupting mitochondrial respiration by blocking the pathogen's ability to form ATP.² The absence of this vital energy life source causes fungal cells to die. Its combined preventative and curative activity inhibits the pathogen by blocking spore germination and infection. Heritage® can enter the ornamental plant through leaves, shoots and root system. This product exhibits translaminar activity by entering and diffusing through the leaf via spray solution. Once inside the plant, the azoxystrobin molecules translocate upward (acropetally) for uniform distribution.² This mode of action is not critical for Southern Blight, but it may prove to be a useful deterrent for *Didymella macrospora* (fungal leaf spot) and other fungi pathogens.

