

Advances in Controlling Three Blights: Pythium, Fusarium, Nigrospora

New Fungicides Against Pythium

P. SANDERS
Pennsylvania State University,
University Park

Pythium blight is a devastating foliar disease of turfgrasses particularly feared by turf managers because of the rapidity with which it can decimate large areas of established turf in hot, wet weather. Chemical control depends either on preventive treatment when environmental conditions favor disease development or on early diagnosis and appropriate postsymptom treatment. The fungicides available for suppression of Pythium blight up to now have been primarily protectant materials, requiring repeated and frequent applications. During 1981, two new systemic fungicides became available for control of Pythium blight on turfgrass: Subdue (2E) and Banol (6S). Subdue is fully registered for use on turfgrass. Banol is available in limited quantities in many areas of the United States under an experimental use permit; full registration is expected by summer 1982.

Subdue, an excellent fungicide for control of Pythium blight, has been under test at Penn State since 1976. The fungicide is effective at 1 fl oz/1,000 ft² on a 2-wk spray schedule. Highly tolerant isolates have been reported in some groups of fungi, including *Pythium* species. In fungal populations that have shown tolerance, there is research evidence that resistant isolates are present in nature and that resistant and tolerant nuclei coexist in the same strand of fungal hyphae.

Banol has been tested since 1977 and has also been excellent for suppression of Pythium blight. The recommended use rates are 1 $\frac{1}{3}$ -4 fl oz/1,000 ft², and the length of residual control appears to be strongly related to rate. Residual activity may last longer than 2 wk at the highest rate. There have been no reports of fungi tolerant to Banol to date, but two minor problems have been observed by researchers: 1) a few reports of erratic disease control and length of residual and 2) several reports of nonsystemicity in seedling grasses.

There is no perfect fungicide. Turf managers, who have been so long without long-term systemic protection from Pythium blight, are most fortunate to have the almost simultaneous release of two excellent materials. By alternating or

combining the use of Subdue and Banol, the prudent turf manager hopefully can look forward to their long-lived usefulness without the selection of resistant populations.

Seed Mixes for Fusarium Blight

V. A. GIBEAULT, R. AUTIO,
S. SPAULDING,
and V. B. YOUNGNER
University of California
at Riverside

Appealing color, density, texture, and overall uniformity make Kentucky bluegrass (*Poa pratensis*) the most commonly used cool-season turfgrass in the world. It is therefore of concern that during the summer Kentucky bluegrass can be damaged by Fusarium blight (*Fusarium roseum*). The disease causes blighting of leaves and severe root rot, and the grass dies. Perennial ryegrass (*Lolium perenne*) is another cool-season turfgrass adapted to climatic zones similar to those of Kentucky bluegrass. Excellent turf-type perennial ryegrass cultivars have been developed recently that closely resemble Kentucky bluegrass in color, texture, and overall appearance but are not susceptible to Fusarium blight.

In a study designed to find a practical, nonchemical method for controlling Fusarium blight in Kentucky bluegrass, 11 bluegrass/ryegrass mixes were evaluated at the University of California field station in Santa Ana. Park Kentucky bluegrass and a 1:1 blend of Manhattan and Pennfine perennial ryegrass were used in all treatments. The 11 treatments consisted of bluegrass at 100%, then at 5% decrements with corresponding increments in the perennial ryegrass blend to a 1:1 mix of the two species. All mixes were seeded at the rate of 3 lb/1,000 ft².

In the summer of 1978, Fusarium blight on the Park Kentucky bluegrass plots was devastating; about 30% of the plot area was killed. The amount of affected area decreased markedly in plots with only 5% ryegrass in the mix. The disease symptoms, in essence, were eliminated in all treatments containing 10% ryegrass or more.

These results show that mixing even small amounts of perennial ryegrass with Kentucky bluegrass can mask or control Fusarium blight. The amount of perennial ryegrass needed falls in the 10-15% range on a seed weight basis.

Recognizing Nigrospora Blight

D. C. THOMPSON,
M. CRAVEN FOWLER,
and R. W. SMILEY
Cornell University, Ithaca, NY

A disease easily confused with dollar spot (*Sclerotinia homoeocarpa*) occurs regularly on turfgrasses in New York. The disease is most severe on perennial ryegrass (*L. perenne*) and creeping red fescue (*Festuca rubra*) and least severe on all but a few cultivars of Kentucky bluegrass (*P. pratensis*). The disease is caused by a *Nigrospora* sp. tentatively identified as *N. sphaerica* (Sacc.) Mason. This fungus has also been implicated in a disease of Kentucky bluegrass in Minnesota and Michigan and of St. Augustinegrass (*Stenotaphrum secundatum*) in Texas and Florida. The pathogen is known to cause diseases of other Gramineae.

On turfgrasses in New York, the leaf lesions closely resemble those of dollar spot, except that on Touchdown Kentucky bluegrass the tan leaf lesions are bordered by a purple zone rather than the dark tan that characterizes dollar spot. Diseased patches in the field and the presence of aerial mycelia in the early morning are similar to dollar spot. The pathogen is easily isolated by standard diagnostic procedures.

Nigrospora blight occurs in New York during the summer when temperatures and humidity are high and the soil is droughty. Isolates of *Nigrospora* from ryegrass and bluegrass are not host-specific in greenhouse pathogenicity studies. A fungicide trial showed excellent control from applications of iprodione (Chipco 26019), quintozene (Acti-dione RZ), and chlorothalonil (Daconil). Mancozeb (Fore), captan (Captan), and ethazole (Koban) were ineffective. In vitro fungitoxicity studies indicated strong inhibition of *Nigrospora* by benomyl (Tersan 1991), iprodione, and quintozene (Terraclor); moderate inhibition by mancozeb, thiram (Tersan 75), and anilazine (Dyrene); and little inhibition by triadimefon (Bayleton) and chlorothalonil.

Difficulties with controlling "dollar spot" in the field appear to be occasionally associated with misidentification of the disease, then use of a fungicide ineffective against *Nigrospora* blight.

Additional details are presented in: Thompson, D. C. 1979. *Nigrospora* blight of turfgrasses. Proc. NY State Turfgrass Conf. 3:31-35.