

## A Review of *Rhizoctonia* Species Attacking Turfgrasses

Modern turfgrass pathology began in 1914 with the identification of *Rhizoctonia solani* as the causal agent of brown patch in creeping bentgrass. Bordeaux mixture was used against *Rhizoctonia* blight, as the disease is also known, as early as 1917, but the pathogen remains a major threat in warm humid and tropical climatic zones. Brown patch has been observed on at least 12 species of turfgrasses: tall fescue, St. Augustinegrass, zoysiagrass and creeping bentgrass are especially vulnerable.

At least 4 species of *Rhizoctonia* cause disease in turfgrasses: *R. solani* (brownpatch), *R. oryzae* (leaf & sheath spot), *R. zeae* (leaf & sheath spot) and *R. cerealis* (yellow patch). In all cases the primary tissues attacked are at or above the soil surface—the effect of *Rhizoctonia* on host root systems is unknown. Many other *Rhizoctonia* species are non-pathogenic and may actually be useful as biocontrol agents against the pathogenic species.

Symptoms of brown patch differ according to turfgrass species and maintenance practices, such as mowing height, fertilization and irrigation. The “smoke ring” of *R. solani* mycelium observed on wet greens of creeping bentgrass will not be seen on fairway-height bentgrass, or on other turfgrass species. Similarly, an irregular, silver-grey to light brown leaf lesion with a thin brown border is diagnostic of brown patch on Kentucky bluegrass and tall fescue, but only if they are mowed at least 5 cm high. In all cases, however, brown or straw-colored patches or rings from a few centimeters to more than a meter in diameter develop in diseased turf. Brown patch attacks cool-season turfgrasses during warm, humid summer weather, whereas warm season grasses are most susceptible in spring and fall.

Yellow patch, caused by *R. cerealis*, also known as cool-weather brown patch, develops during prolonged wet periods at temperatures below 20°C. Both cool and warm season turfgrasses may be attacked. Chlorosis and death of leaf tissue results in the formation of straw colored patches or irregular rings in field situations, which may be confused with some types of superficial fairy rings. Distinct foliar lesions are absent, as is the “smoke ring” of brown patch.

*R. zeae* and *R. oryzae* produce foliar lesions that are often similar to those of *R. solani*, including water-soaked lesions at the base of leaf sheaths.

However, the association of either pathogen with gross field symptoms (such as the brown patches associated with *R. solani*) has not been established.

The authors conclude with a call for more research on such basic biological questions as the ecological role of *Rhizoctonia* spp. in turfgrass thatch, and their ability to cause root rots in the various turfgrass species.

(From: L. Burpee and B. Martin, 1992. *Biology of Rhizoctonia Species Associated with Turfgrasses*. *Plant Disease* 76(2): 112-117.)

## Herbicide Trials on Bentgrass

Researchers at the University of Georgia screened 9 herbicides for use on creeping bentgrass greens for the preemergent control of crabgrass and goosegrass. The investigators note that only 2 materials are currently labeled for this purpose, dithiopyr and bensulide plus oxadiazon, due to the extreme sensitivity of creeping bentgrass to herbicides. Treatments were applied at 1x, 2x, and 3x the label rate to established ‘Pennncross’ bentgrass in early March in both 1989 and 1990. Plots were subsequently evaluated for injury until late May.

Previous studies with pendimethalin, prodiamine, and oxadiazon have shown that timing of application is critical, as materials which are relatively safe when applied in early spring can cause severe injury when applied at the same rate later in the season.

Oxadiazon, pendimethalin, fenoxaprop, oryzalin and benefin plus oryzalin caused unacceptable levels of injury to the bentgrass, while trifluralin plus benefin, dithiopyr, and prodiamine were all safe at up to 3x the label rate. The authors emphasize that these results hold only for single applications in late winter or early spring, and that multiple or later applications could cause severe turfgrass injury.

(From: S.R. Shim and B.J. Johnson, 1992. *Response of Creeping Bentgrass to Spring-applied Herbicides*. *HortScience* 27(3): 237-239.)



## Scanning the Journals

*A review of current journal articles*

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# 3