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Rhizoctonia Brown Patch

by Kevin Mathias

Two papers were presented on Rhizoctonia Brown Patch at the recent Turfgrass Disease Symposium held in Columbus, Ohio. The papers presented and the authors were: Rhizoctonia Brown Patch — Symptoms, Diagnosis and Distribution by B.G. Joyner and Techniques Used in the Identification of *Rhizoctonia solani* and Related Organisms by L.L. Burpee.

Turfgrass diseases caused by the causal agent, Rhizoctonia, exhibit a range of symptoms dependent upon the height of cut, the turfgrass type, and the season of the year. Under close mowed turf and during the summer months, the usual symptom is circular shaped matted turf with individual leaves completely blighted. Coloration of the affected area will range from purplish green during the early stage of disease development and will rapidly change to brown. If weather conditions are appropriate, high humidity and +85°F temperature, the typical "smoke-ring" symptom will develop. Diseased turf may vary from several inches to several feet in diameter and the time period for blighting may take only 6-8 hours.

Under high mowed turf, such as in roughs and home lawns, initial symptoms will be irregular blighted areas ranging in size from several feet up to 40 feet in diameter. The direction of movement is affected by watering practices and drainage patterns. Once again the period of symptom expression is extremely rapid. Individual lesions are not always distinct and in some situations may appear to resemble leafspot while in other situations a blighting of the leaf will occur from the tip down. All major turfgrass types in this area are affected by this disease.

Cool weather brown patch is active at the 60-65° regime and will normally appear during the spring and fall months. It appears to be more predominant on the bentgrasses under putting green management. Affected turf will have a bleached appearance and individual leaves will maintain an upright growth pattern versus the matted appearance for the warm disease counterpart. Affected areas will have a circular pattern.

Burpee's paper identified three species of Rhizoctonia which are associated with turfgrass diseases in the United

States. These species are *Rhizoctonia solani*, the warm weather causal agent; *Rhizoctonia ceralis*, the cool weather causal agent; and *Rhizoctonia oracizi*, the causal agent on St. Augustinegrass and on rice. The species *solani* and *ceralis* appear to be the major causal agents in the area.

Laboratory differentiation of the Rhizoctonia species is performed in a number of different ways. The steps normally employed are nuclear staining, cultural characteristics, anastomosis compatibility, and sporulation characteristics. *R. solani* is multinucleate having brown pigmentation on PDA and displays different anastomosis strains. This pathogen also has the ability to sporulate on an agar medium. *R. ceralis* is binucleate and when cultured on PDA will produce a white to buff color. Different anastomosis strains are present and the pathogen has not yet been shown to sporulate on an agar medium.

During the question and answer period an interesting point was mentioned by Smiley from Cornell. He reported that during fungicide field evaluations he observed an increased incidence of cool weather brown patch when various types of fungicides were applied in the fall for snow mold control. When products containing pentachloronitrobenzene (e.g. Terrachlor 75, Terrachlor 106, and Actidione RZ) were applied in December very slight cool season brown patch was noted in the late winter. However, if Actidione alone (e.g. Actidione T6F) or with thiram (e.g. Actidione Thiram) was applied greater disease incidence at the higher rates (8 oz./1,000 sq. ft.) were observed. This was also the case for Tersan SP and for Tersan SP and Actidione T6F in combination.

Warm weather brown patch in this area appeared to cause considerable damage to turf in August 1978. The severity of the disease was extremely intense and field evaluations often led to improper diagnosis. Microscopic identification in conjunction with field diagnosis is the only positive means of determining the causal agent. Both cool and warm weather brown patch can be diagnosed from Phythium incited diseases by using field and microscopic identification techniques. The following is a brief table of characteristics for Rhizoctonia and Phythium.

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