

Ophiobolus Patch Disease on Turf¹

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OPHIOBOLUS patch is a serious disease of turf in England and nearby continental areas, but only rarely has it been reported seriously affecting cultivated grasses in the U.S. Since the turf disease complex in western Washington closely resembles that in England in other respects (1), it was suspected that sooner or later *Ophiobolus* patch would be found here.

Following a mild winter and very wet spring, typical symptoms of *Ophiobolus* patch appeared on a new experimental putting green turf area near Puyallup, Wash., in June, 1960. However, perithecia of the causal fungus were not found until November, five months later.

Symptoms

The disease appeared first as light brown spots of turf with diameters of only a few inches. However, most of the affected areas increased rapidly in size; some became two feet or more in diameter. Both shoots and roots of the grass plants were severely attacked, with the result that handfuls of dead turf could be pulled up easily. Affected areas did not recover for several months. The original species (*Agrostis tenuis* Sibth. hort. var. *astoria*) did not re-invade some spots and re-invaded others very slowly,

starting in the centre. *Poa annua* L. and various weeds became established in many spots so that the eventual appearance was that of miniature Fairy Rings. The disease was much more striking on the *Agrostis* putting green turf than on an adjacent lawn turf composed of 60 per cent Creeping red fescue (*Festuca rubra* L. hort. var. Pennlawn) and 40 per cent Astoria bentgrass. Fescue filled in the affected spots in the latter case. Smith (5) lists certain varieties of *A. tenuis* as being susceptible and of *F. rubra* as resistant.

Similar spots appeared about the same time on Astoria bentgrass plots at Farm No. 1 at the Western Washington Experiment Station, five miles from the other site. An *Ophiobolus* with similar spore measurements was found recently in this material and also in bentgrass collected in January, 1961, from a fairway on a golf course near Tacoma, Wash.

The fungus more closely fits the description of *Ophiobolus graminis* Sacc. var. *avenae* E. M. Turner than that of the type variety. (*O. graminis* var. *graminis*). Sizes of asci and of ascospores for the type variety are reported somewhat differently by various workers, but they are smaller than those for the variety *avenae* as shown in Table 1.

Ophiobolus graminis var. *graminis* causes the common "take-all" disease of cereals. It is world-wide in distribution and is reported from all areas of the U.S. except the extreme south eastern states (7). It is usually most serious in the northern U.S. and in Canada. Sprague (7) states that it appears to be native to the Pacific Northwest.

Because *Ophiobolus* is so widely distributed in the grass family, it is surprising that it has been reported so seldom as a troublemaker on turf in the U.S. In 1932, Monteith and Dahl (3) briefly mentioned its occasional occurrence. However, none of the recent general bulletins on turf diseases even lists the fungus. Some golf course superintendents from eastern Washington have reported seeing such diseased

spots previously and Dr. Marion Harris of Washington State has stated that several years ago he found *Ophiobolus* in a sample of turf from a golf course at Walla Walla, Wash.

In his excellent description of this disease, Smith (4, 6) stated that applications of lime favoured development of the disease. Lime had not been used in our plots and the pH was 6.0.

Smith (4) reported that the disease could be controlled by use of ammonium sulphate or mono-ammonium phosphate fertilizer. He (4) and Jackson (2) also

showed that certain organic mercury fungicides were beneficial. The fungus appeared to be suppressed in our plots following applications of PMAS (10 per cent phenylmercury acetate) at $\frac{3}{4}$ ounce in 10 gallons of water per 1,000 square feet every two weeks.

1. Scientific paper No. 2078. Western Wash. Exper. Sta., Puyallup, Wash. Work was conducted under Project No. 1394.
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Table 1. Lengths of asci and ascospores of *Ophiobolus graminis* var. *graminis*, *O. graminis* var. *avenae* and the Washington collection on *Agrostis tenuis* hort. var. *astoria*.

Fungus	Source of data	Asci- Ascospores	Ascospores
<i>O. graminis</i> var. <i>graminis</i>	Sprague (7)	90-115 μ	60-90 μ (mostly 70-80 μ)
<i>O. graminis</i> var. <i>avenae</i>	Turner (8)	120-138 μ *	80-140 μ (mostly av. 101-117 μ)
Wash. Collection on <i>A. tenuis</i>	—	100-164 μ ** (av. 134 μ)	88-124 μ ** (av. 100 μ)

* Average range in length of three isolates.
 ** Average length of 50 asci and ascospores.

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