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Take-All Patch on Turfgrass: *Gaeumannomyces graminis*

Introduction

Take-all Patch is a disease caused by the fungus *Gaeumannomyces graminis*. Bentgrasses (*Agrostis* spp.) are the most frequently injured species and may be killed by this pathogen. Bluegrasses (*Poa* spp.) and fescues (*Festuca* spp.) are sometimes attacked, but those grasses usually do not sustain severe infections and are more likely to survive under conditions where bentgrasses are killed.

Golf course putting greens or bentgrass fairways are the sites where this disease is most likely to occur. Newly seeded sites tend to be most susceptible to this fungus, especially where bentgrass is being established on soil with a high pH. The problem has been known to occur on where turfgrass is planted on recently cleared forest sites, soils with a high sand content, or soil that has been recently fumigated. it may also occur where a site has been recently or heavily limed. Over time (several years), this problem often disappears. It is thought that as other organisms build up in the soil, they out-compete this pathogen.

Symptoms and Signs

Symptoms of Take-all are most likely to appear in late spring as small sunken, water-soaked patches of turfgrass. Where turfgrass is stressed, the affected grass may initially appear red-brown before dying and turning a dull brown color. The roots and crown of infected plants become dark brown to black.

Small circular areas of dull brown grass continue to expand throughout the growing season, spreading

Figure 1: Symptoms of Take-all Patch on turfgrass.

in size up to about 1 meter in diameter. Where mixed with other species such a bluegrasses or fescues, as the infected bentgrass dies out and the patch expands, the center often becomes dominated by the other grass species, giving it a frog-eye" appearance. In pure bentgrass plantings, all of the grass may be killed leaving behind a circular area of dull brown grass that does not quickly recover.

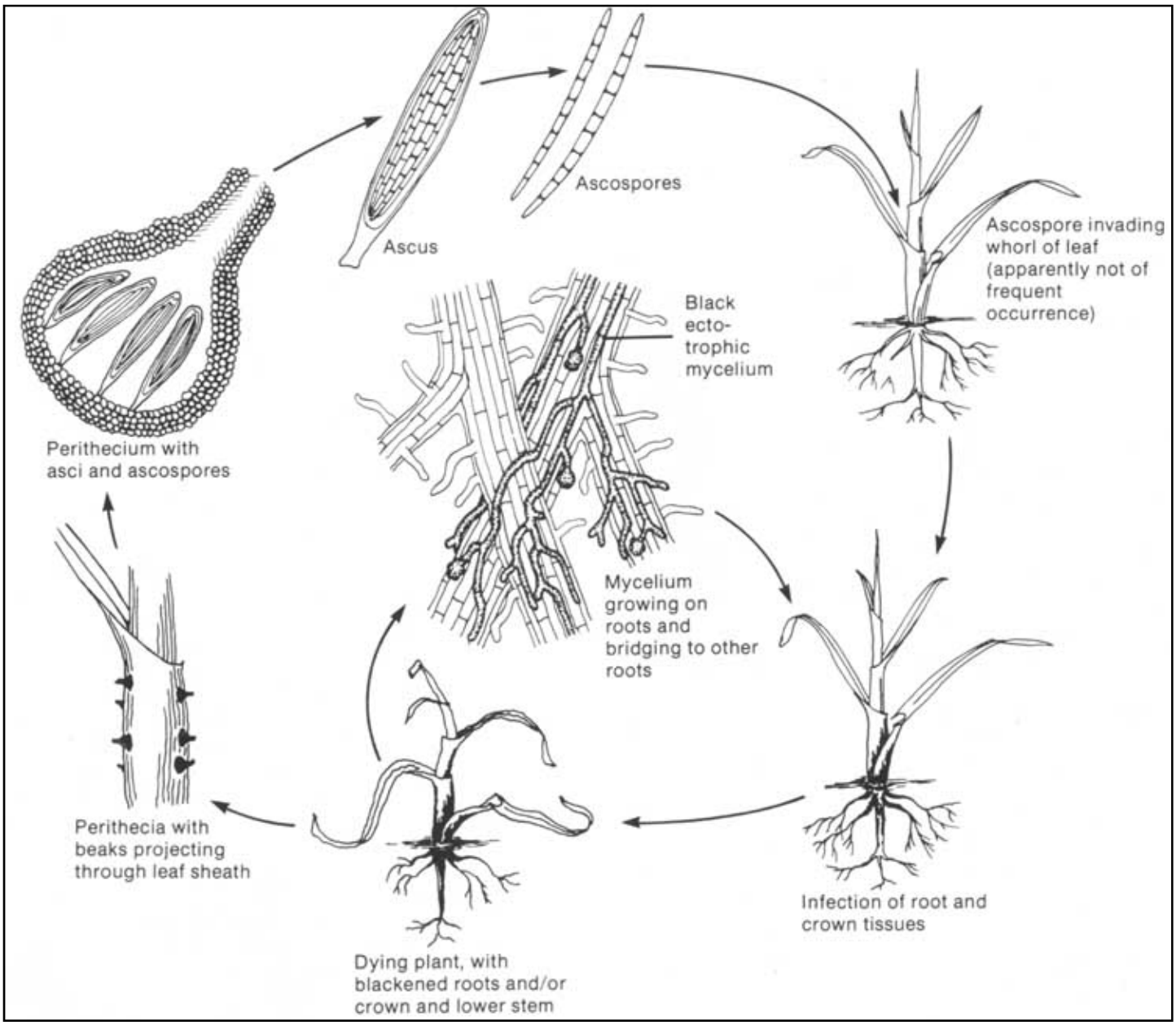
Figure 2: Dark mycelium in roots of plants infected with Take-all Patch fungus.

Disease Cycle

The fungus overwinters as mycelium in the thatch layer or on tissues of perennial grass species. The fungus spreads by mycelium growing from plant to plant, invading the roots and crown of susceptible hosts. The fungus produces perithecia in the fall on infected plants. Ascospores from the perithecia may cause infection of aboveground parts in the spring, but this is probably rare. Symptoms begin to show up as the weather becomes warmer and drier.

Management Strategies

This disease may be difficult to manage, but correcting cultural, drainage and/or nutritional needs may help. If a soil test shows that nutrients such as potassium or phosphorus are low, then applications of fertilizer containing these nutrients may help. Otherwise, use a fertilizer that had acidifying properties (ammonium sulfate, etc.). Avoid applying additional lime, but if necessary, use a coarse grade of lime that will not produce a quick or drastic change in the soil pH.



Disease cycle for Take-all patch (caused by *Gaeumannomyces graminis*) (adapted from Asher and Shipton, 1981 and provided by APS Press, Compendium of Turfgrass Diseases, 2nd Edition)

In addition to a high pH level in the soil, other factors that favor this disease include poor drainage or excessive irrigation that produces high soil moisture. Water deeply but infrequently as needed, and check the pH of the water and any top dressings that are used on the site to avoid raising the pH. Minimizing the pH (keeping it below 5.5) will help to minimize the disease.

Some fungicides may be available to help manage this disease, but cultural practices should be corrected as well, and any other disease problems should be brought under control. Some products that may be registered for this use in New York State may be found in our turf fungicide table. Be certain any formulation of pesticide you purchase is registered for the intended use, and follow the label instructions. The label also contains information on how to apply the fungicide as well as any precautions.

Additional pesticides may be available for commercial turf applications. Commercial applications should refer to the appropriate pest management guidelines, or contact their local Cooperative Extension Office for more information on currently registered products.

Reference:

Compendium of Turfgrass Diseases, Third Edition, 2005. R.W. Smiley, P.H. Dernoeden and B.B. Clarke. APS Press.

Updated, SLJ 3/19

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