



Technical Article- Take All Patch Disease

During an agronomy visit earlier this week it was concerning to see the damage done to golf greens by take all patch disease. Whilst the disease had not been active since last autumn, the scars left behind were very evident, with the colonization of the scars by moss and clumpy annual meadow grass. The result was a very bumpy playing surface.

The interesting thing about the outbreak of take all was that the greenkeeper had been advised not to treat the disease in any way and to let it naturally decline. There is in fact a phenomenon called take all decline where the disease does naturally go down slowly as antagonists build up in the soil. What was not considered however was the greens had a high population of bent and combined with alkaline soil and irrigation water the site was ideal for a severe outbreak.

Take all patch is an important disease on bent grass, particularly newly established stands of creeping bent grass turf. The disease first appears in late spring or early summer, as a patch of bronze or bleached turf. The center of the patch eventually dies and is can give rise to weeds, particularly annual meadow grass. Patches range from 10-15 cm in diameter at first, but may grow into large patches, 50cm in diameter over a period of years. Plants affected have shallow root systems and are easily pulled out of the ground. Black runner hyphae of the fungus can be observed on crowns and roots microscopically.

The pathogen can survive on thatch and dead tissue as dormant mycelium. The fungus attacks crown and root tissues of the plant during the cool, wet weather of the spring and fall. It is most severe on newly seeded or over-sown established bent grass. Development can be favored by applications of lime and by high soil pH.



Left image- Typical appearance of take all on a Bent/Annual Meadow Grass Golf Green. Annual meadow grass in centre of ring. Dying ring of Bent

Right image- Typical appearance of take all on creeping bent golf green. Grass is completely killed off including centre of patch.

How to treat Take All Patch Disease

Advice on the best way to treat take all varies according to individual conditions and the likelihood of a severe outbreak occurring.

In most cases a strobilurin fungicide should be applied at the initial stages of a take all outbreak. Sometimes more than 1 application are necessary. After this further fungicide applications do not usually give any more control and it is best to manage the turf to favour the natural disappearance of the disease due to take all decline.

Proper nitrogen fertility is important in managing take-all patch. Urea-based fertilizers tend to be effective in managing the disease when applied at adequate levels to creeping bent grass turf stands. Liming should be avoided in areas where take-all is a problem as an alkaline pH favours the disease. Soil pH should be below 6.5, preferably between 5.5 and 6.0.

Manganese deficiency has shown to greatly enhance take-all patch development, therefore adequate manganese fertility should be practiced depending on soil and tissue analyses.

Excessive irrigation should be avoided as well and wetting agents can be used to stop grass with damaged root systems drying out.

Biological Control

The interesting phenomenon called "take-all decline," associated with wheat monoculture, has been described in many parts of the world. When this happens, the disease declines to an insignificant level after several years of being severe.

Root-colonizing bacteria, that are antagonistic to the take-all fungus, build up in the soil to make it suppressive to take-all. An important aspect of suppression is the production of antibiotics by the bacteria that inhibit the growth of the fungus on the root. Take-all decline is one of the classic examples of "biological control" of a plant disease and has been extensively studied.

Further Advice and Assistance

I have attached 2 articles written by American Universities which describe take all as it occurs under cool season (i.e. UK and N Europe conditions) and on warm season grasses (i.e. Mediterranean conditions) and both offer sensible advice on the identification and management of take all disease.

HITAS Consulting Ltd have laboratories and expert technical staff who can diagnose disease and recommend the most effective treatment. If you need assistance, please contact us by phone or email and send in a turf sample for examination if this possible. We will be pleased to assist in any way we can.