

**Dr Kate Entwistle begins a regular series of articles on turf disease by taking a personal look at the most common to strike on UK golf courses. She also offers to examine any problems you might be having on your own courses.**

# Turf Diseases

## So what's new?



Above: Darkly pigmented fungal hyphae on affected plant tissues

It's probably fair to say that during any one year, the majority of turf samples that I receive for disease analysis, are identified as having a disease problem which you would not be too surprised to see at that time of the year. This is because, generally speaking, diseases are seasonal, the reason for this is that the overriding factor that affects disease development, is the prevailing environmental conditions.

Virtually all turf diseases are caused by fungi so it is crucial to remember that it is not the disease that we are trying to control but the fungus which causes the disease. Fungal requirements for growth and development are fairly well understood. However, since it is in the interest of

the fungus to remain alive, its ability to survive adverse environmental conditions and to adapt to changes in its environment, make it both interesting and exciting for me to study and a potential nightmare for you to manage and control.

Over recent years I have seen changes in the diseases which are affecting cool-season turfgrasses, both in the type of fungi which are causing damage and the way in which a given fungus shows its effect.

I started studying turf diseases over 11 years ago and I learned quickly that disease identification is not simply a matter of identifying a fungus. The turf is a living system with its inherent and ever-changing microbial population of fungi and bacteria.

They will react to our management practices, as does the turf, and our aim has to be to manage the system so that the balance is always in favour of the turf. This is no mean feat given the ever increasing demands which are being made of our greens which result in the turf being kept under severe stress for much of the year. The fungus is always waiting to attack. You may well be able to identify several potential disease causing fungi on any given turf sample at any time during the year, but the skill in accurate disease identification comes with experience and a knowledge of turf management as a whole.

In case you are of the opinion that turf diseases remain the same year after year, I'd like to give you an

# Turf Diseases

So what's new?

Easy if you've got one

overview of how certain diseases have changed quite noticeably with the times.

## Fusarium patch

The one disease which will be no stranger to any turf manager. I have to admit that I find it mildly frustrating that people tend to call this disease 'fusarium' rather than 'fusarium patch' because 'fusarium' is a genus or group name for fungi and 'fusarium patch' is the common name for a disease. However, fusarium patch is not caused by a fungus from the fusarium group of fungi and fungi from the genus fusarium cause diseases on turf which look nothing like fusarium patch. Confused? - I hope not, but if I appear confused when you say to me that you have fusarium on your greens and I see fusarium patch, maybe now you'll appreciate why.

Anyway, fusarium patch is probably the most common fungal disease to affect cool season turf grasses and, I'd probably be right in saying, will have been seen by all Greenkeepers at some time during their career. It has always been considered a disease which affects turf under cool, wet conditions and one which can cause severe damage if allowed to develop under snow cover. However, this disease has been seen to be active during the autumn months and, indeed, it is possible to see the damage being caused by the pathogen throughout the year. In itself, the fungus which causes this disease is not really a strong pathogen but instead, is content to live saprophytically on dead and decaying plant material until the conditions allow it to actively cause disease. Fusarium patch is caused by a fungus which is always ready to attack.

Right: Take-all patch. A different symptom expression of the same disease

Below: General Take-all patch

## Red thread

Rather an attractive disease which causes the turf to take on a red/pink appearance. It has generally been considered a disease of the summer months and an indicator of low fertility. However, no more. Recently, this disease has been seen on the turf year-round and the sclerotia, or red needles, which characterise this disease can now be seen throughout the winter and spring months. An indicator of low fertility - not necessarily true any more either. Red thread can now cause significant damage on turf being maintained under adequate nutrition and although this disease is generally only superficial, its detrimental effect on the visual quality of the sward can not be denied.

## Take-all patch

I have to admit that this is one of my favourites. It's gone through name changes over the years (not uncommon for turf diseases) but the fungus that causes the problem remains the same. Unlike many of the fungi which cause disease on turf, this one is actively aggressive. It is not too happy trying to survive as a saprophyte, instead, it prefers to live pathogenically causing disease whenever it can. It is one of several so-called ectotrophic root infecting (ERI) fungi which cause disease on turf and others of its kind have been seen recently causing damage in the UK. All of these type of fungi are similar in appearance. They are all characterised by dark runner hyphae on the roots and underground plant material. They produce similar-looking microscopic fruiting structures (although not always in the field) and they produce similar symptoms on the turf. Take-all patch disease has always been regarded as a disease of bent grasses but this is not strictly



true. The fungus is capable of attacking other grasses apart from bents and we have seen several outbreaks of take-all patch on *Poa annua* over recent years. If you see a patch disease, it's not necessarily take-all patch and if it's not, but you treat it as though it is, you may well not achieve any degree of control.

## Anthracnose

Known as basal rot by some and anthrax by others. Again this is an increasingly common disease of turf which is most well known for its part in the demise of *Poa annua* in areas subjected to heavy traffic. The fungus which causes this disease actively enters the intact plant cells by means of specialised structures which aid penetration. However, the fungus which causes anthracnose basal rot is also capable of causing foliar infections on all grasses. Over recent years, I have frequently seen a general decline in the overall quality of a sward during the summer months, which is caused by the presence of this fungus on the leaf tissues. When expressed in this way, the disease is referred to as anthracnose foliar blight. Anthracnose basal rot is not restricted to *Poa annua* but has also been seen to cause dramatic decline of creeping bent. Now there's something to think about.

## Dollar Spot

At one time, I thought I'd never see this disease away from trial plots! Dollar Spot was one of the more important turf diseases in the UK about 40 years ago and it is still regarded here as a disease which most commonly affects red fescues. The disease has not generally been seen over the last decade but the pathogen which causes it is still quite active in

turf and there have been recent reports of the fungus causing damage on *Poa annua* in the UK. In the USA and in other parts of Europe, Dollar Spot is the major disease affecting bent grasses and in my opinion, it is only a matter of time before we start to see more of this 'old' disease problem.

The list goes on with increases in the incidence of leaf spot diseases (*Drechslera* spp., *Bipolaris* spp. and even *Curvularia* spp. being identified over the last few years), the prevalence of yellow tuft, the increase in the severity of rust diseases and so on.

Why do turf diseases continue to plague us year after year and why do we seem unable to eradicate them? The answer is unfortunately quite simple. Diseases are (almost invariably) caused by fungi and it is in the interest of the fungus to survive and to cause disease. Many of the fungi which cause disease on turf are 'attacking' the turf most of the time, but their effects generally go unnoticed. It is only when the balance of favour weighs heavily on the side of the fungus that the disease development is so dramatic as to cause observable effects. If your aim is to eradicate fungal diseases for ever, think again. The fungus is capable of rapid adaptation to changes in prevailing conditions and any 'barriers' that you place in the way of its progress, will eventually be overcome. Your best approach is to work with them and to maintain the turf in such a way that even if it is attacked, it has the ability to recover rapidly. Know what to look for in the early stages of diseases and how to manage them so that their symptoms don't reach unacceptable levels. It's worth bearing in mind that many physiological disorders can produce



Photo courtesy of Barenbrug UK



symptoms which resemble certain turf diseases. This has been found to be the case on many occasions over the last couple of years and it has shown that if you wrongly assume the cause of the problem, you could waste much time, effort and money in applying control measures which at best, will have no effect. If you are in any doubt, get the problem analysed and put your mind at rest.

On a final note, for now anyway, I attended an interesting seminar recently where the speaker mentioned that with the advent of genetic engineering, turf diseases would be a thing of the past. I have to say that I totally disagree with this theory, but that's another article.

#### What turf disease issues would you like to read about?

Although I try to put together articles which are of topical interest and which hopefully make you think a little more about turf diseases and also stimulate some discussions, it is only through feedback that I can be sure that what I'm providing is what you need. I could write article after article on subjects that interest me, but that would be somewhat missing the point. If you have any comments on what you've read or heard about with regard to disease issues, or indeed if you would like to offer topics which you think should be covered in an article, please let either Scott at Greenkeeper International or myself know about it. If you think it's important you can be sure that others will too, so please get in touch.

#### Will you help?

This is a request for help from all Greenkeepers. As part of the work of The Turf Disease Centre, I am look-

ing to collect information on as many turf disease outbreaks across the UK, this year, as possible. The aim of the work is to prepare a 'map' of disease development throughout the year to see which parts of the UK get hit by each individual disease, which regions are most prone to disease development and which areas of the UK are showing new diseases or diseases which are now significant problems but may have been only minor inconveniences in the past. Obviously, I can't do this without your help and I appreciate that there are already many demands on your time. For this reason, I have set out a form on a single side of A4 which will take only a couple of minutes to fill in. The information that I am looking for is (i) which disease has developed on your course, (ii) when did it first show, (iii) when did the symptoms subside and (iv) what cultural or chemical measures, if any, did you take to control the disease. I will pool together all of the information that I receive and present it (as regularly as possible) in Greenkeeper International so that you can see how the disease on your course fits in with that across the UK as a whole. To send in disease data from your course, please contact either Scott or myself and we will send you a form which you can photocopy as often as you get disease and return the forms to me once completed. Your help with this is very much appreciated. Thank you.

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