

# Learning & Development

## MANAGING TURF DISEASE THROUGH EFFECTIVE ITM

By Simon Elsworth

**An outbreak of turf disease can ruin all the hard work put into preparing the playing surface for any sporting event. Integrated Turf Management (ITM) has an essential role in countering turf disease, through a carefully controlled combination of nutrition, irrigation and maintenance.**

Some turf managers and agronomists refer to ITM as an “Art”, inferring a level of mystery with little science or technical skill involved. In reality, it takes a greater level of knowledge of all the facets of turf management, and a better understanding of the way they interact – combined with the best practical know-how of the turf manager – to make ITM work effectively.

Turf disease problems are undoubtedly on the increase for all turf managers: Earlier disease attacks; More aggressive pathogens; New disease appearing; Longer periods of disease attack.

Turf disease issues are being exacerbated by: Climate change; Environmental pressures reducing managers’ options; Player demand for ever higher quality turf.

The fact is turf quality judged as fine by players 10 years ago, would be deemed unacceptable by many today. The pressures placed on turf – and those responsible for its management – have increased accordingly.

### THE TURF DISEASE TRIANGLE



The incidence of turf disease will be affected by: Environmental conditions, Disease pathogens present, The type of turf - All three factors must be present and, with an ITM plan, turf managers must decide which of the factors they can successfully influence to redress problems more effectively, and where the role of fungicides can be most effectively employed to minimise the impact on turf quality.

### THE ENVIRONMENT

If environmental conditions are not suitable disease development will be slower, or may cease altogether. Managers must also recognise turf stress brought on by environmental conditions, such as drought or water logging, can also make turf more susceptible to disease attack.

The weather is the primary factor in the equation and, for the most part, is outside the turf managers’ influence. However, modern weather forecasting can predict when disease will strike and can enable managers to tailor turf management programmes to prevent damage. [www.greencast.co.uk](http://www.greencast.co.uk) gives local disease forecasts and weather information to support the implementation of an ITM plan.

Furthermore, there are management practices that will influence the local environmental conditions and may, where practical, be adjusted by turf managers: Irrigation, Drainage, Turf nutrition, Mowing height, Maintenance programmes.

Recognising where there are environmental weaknesses can help predict where disease may be a greater problem, such as a shaded green that lies damp for most of the day will be more susceptible to Fusarium Patch, for example. Although it may not be practical to cut back surrounding trees, it may be a focus for remedial drainage work, to sweep off dew first each morning and to treat as a priority with a preventative fungicide if disease is forecast.

Turf managers do also need to understand the environmental conditions that favour each individual turf disease pathogen. Alleviating the conditions conducive to Fusarium, for example, may make the turf more susceptible to Anthracnose.

### THE DISEASE PATHOGENS

Detailed analysis of most fine turf situations will reveal many of the primary disease pathogens are already present in the thatch or basal leaves – awaiting the right conditions to break out. The role of ITM is to minimise those conditions.

However, disease can also spread from outside sources. Domestic lawns, roadside verges and untreated amenity grass areas can all give rise to aerial infections.

Effective use of fungicide programmes will assure high quality turf in the short term by suppressing the disease pathogens. It will also reduce the

disease pressure and the sources of inoculum to enable ITM practices to work more effectively in the long term.

For effective treatment, turf managers must be able to identify the target pathogen and understand the best route for its control – both in the selection of the appropriate fungicide and its application timing, as well as the optimum ITM solutions.

### THE TURF

The composition of the turf – in terms of grass species and variety – is a key factor in the susceptibility to disease. However, disease is only one element of turf management, and other attributes of the turf use will be the primary factors in selection. In the short term, it will be a matter of managing the turf that is there, although in the longer term it may be possible to change the composition of turf through seed and management.

In most cases bents and fescues provide the most consistent surfaces and the inherent disease and stress resistance will have an important role in maximising the success of ITM strategies. While they have proven difficult to maintain at the low cutting heights required to achieve satisfactory ball speed on many soil types, the advent of the PGR to achieve better quality turf at raised cutting height could further extend the attraction of fescues and bent turf.

*Poa annua* is found in many fine turf situations and, with the right management, can produce outstanding quality playing surfaces. However, *Poa* is generally far more susceptible to disease attack, which can be made worse with heavy play and low cutting height.

Rye-grass provides the most hard-wearing, resilient sports turf surface of immense value in an ITM regime, but has traditionally proven difficult to create a high quality tight-cut surface. New varieties, which can be cut down to 5mm, may increase the attractiveness, but will still require intensive management and nutrition to maintain quality.

### FUNGICIDE ROLE

ITM can minimise the effects of disease, but in many practical situations it cannot eliminate the problem sufficiently to maintain high quality turf all year round.

Fungicides remain a key component of turf disease control within an ITM programme. A good ITM plan will, however, help to achieve the best results from any fungicide application, as well as extending the length of time of protection – which could help to reduce the total number of fungicide applications required over the course of the season.

The key elements of fungicide selection are product choice and application timing. For product choice, the aim is obviously to select a fungicide that will give good control of the primary target pathogen. Secondly, since there will be a number of pathogens present at lower levels, an effective broad spectrum fungicide will help reduce the level of other diseases. An application in July where Anthracnose is a problem, for example, may also control Take-all, Leaf Spot, Brown Patch, Rust and Fairy Ring that may occur at the same time, as well as reducing any Fusarium Patch that could flare up when conditions turn cool and wet in the autumn.

More recently, with the advent of more effective preventative fungicides, ITM plans have begun to look at fungicide application prior to disease symptoms breaking out, which can provide better results from lower inputs of modern products with lower environmental impact, and avoid issues of visible damage.

Utilising the knowledge of how different fungicides physically work on the developing fungicide pathogen, STRI trials have shown the best turf quality can be maintained by well-timed applications after disease has landed on the turf leaf, but before it has had the chance to germinate and penetrate into the plant. Later applications still have curative activity and will stop disease sporulating and spreading, but prevention is better than cure.

### ROTATION, ROTATION, ROTATION

An effective ITM fungicide plan must also include provision for fungicide rotation, using products with different modes of action to minimise the risk of disease developing resistance to any one group of fungicides. If a pathogen population begins to build up resistance to a dicaboximide fungicide, for example, switching to a demethylation inhibitor (DMI) would still offer complete control. The STRI ([www.stri.co.uk](http://www.stri.co.uk)) provides a valuable list of product groups and activity to minimise risk of resistance developing.

### HOW DO YOU MAKE AN ITM PLAN?

**Site assessment** – Identifying what pests and disease are likely to pose a threat and where the risk is highest. Create a map of high risk situations.

**Set thresholds** – Decide what level of pest or disease damage is acceptable to managers and players, and when action will be required.

**Identify management options** – Look at all available options, including cultural, biological, genetic and chemical. How should each one be used and to what degree?

**Build pest profiles** – Record outbreaks on your turf area: type of disease; conditions that favour it; treatments to control etc. Accurate identification of pests and disease is essential to put in place the right plans.

**Create a proactive turf management plan** – How you are going to treat the problem. Record work carried out to control the pests and disease.

**Evaluation** – monitor the results and continue to update the plan: did the treatments work?; can anything else be done to improve conditions in future?

Simon Elsworth is Head of Syngenta Professional Products for the UK and Ireland, including development of the specialist turf business and the web-based decision support system for turf managers, [www.greencast.co.uk](http://www.greencast.co.uk)



**Count on it.**