INTO THE FAIRY RING ZONE

Of all the challenges faced, fairy ring is one where an Integrated Turf Management (ITM) programme is crucial to achieving consistent levels of control – and must be maintained year-on-year to prevent problems resurfacing.

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Targeting the fungi responsible for fairy ring itself is only one part of the picture.

The fungi is physically altering the state of the soil – and the damage to turf is as a result of those changes.

Therefore, the control strategy is a combination of reinstating the soil quality and enabling the plant to overcome the conditions, along with a fungicide programme to reduce the fungi itself to prevent its continued activity.

Since many fungi species can result in fairy ring, it is important to identify and understand which is affecting the turf, and where they are impacting on the soil.

Some species, primarily the Type 2 and Type 3 fairy ring, survive and thrive in the thatch or surface organic matter, mostly resulting in little or no physical damage to turf. However, these visible fairy rings can result in the faster break down of organic matter to release nutrients, which stimulates an unsightly flush of dark green turf growth. That can also impact on playing surface inconsistency.

Remember the green rings of stimulated growth are probably the result of the previous year's fungal activity releasing additional nutrients. Their effects are most noticeable on surfaces that are being kept nutritionally lean. Feeding the turf can help to mask some of the visual impacts and it is also worth considering the use of pigment for the same effect, where the result would be in keeping with the course.

The mycelium of all fairy ring can occur at different depths in the soil profile, which will implicate the strategies for cultural and chemical control.

Understanding where the fungi is active is critical in getting the best out of management practices.

Fairy rings on a course. Photo by John Kaminski

Its zone of activity may be apparent by inspecting soil cores placed in a plastic bag with plenty of moisture and left in a warm place for two to three days, where mycelium growth can be identified.

The cores and soil testing also allow an assessment of thatch levels, since reducing thatch as the host for fairy ring fungi is a good start for lowering the impact. You can also use the cores to check for areas of hydrophobicity, or dry patch, which is symptomatic of the fairy ring pathogen activity when it breaks down organic matter – and is a primary reason for turf root die back and plant loss.

Any measures to mitigate dry patch, such as the use of wetting agents, aeration and irrigation – including hand watering affected spots to prevent localised patches of soil drying out – will help counteract the effects of the fairy ring.

That can be further combined with measure to improve plant health and minimise the effects of the soil conditions. Effective nutrition is paramount, with tools such as Primo Maxx II to encourage root retention, along with the potential for biostimulants and pigments to reduce any additional abiotic stress effects on the plant.

Chemical controls

When it comes to the chemical control, the aim is to target the pathogen early in the cycle to maintain the soil conditions favourable to turf growth, as well as prevent further development of fairy ring.

Extensive research in the US indicates that fungicide application is best focused when soil temperatures consistently reach 12.5°C to 15.5°C. Reporting of successive years of trials showed 50–75% improvement in control throughout the season with application to soils at 15.5°C, compared to 10°C. As soils warmed up further, the results were progressively less effective, with up to 70% greater area affected from treatment when soils reached 24°C.

Weather records can help to pinpoint typical timings to optimise applications for individual course locations. Data from the Syngenta turf website, for example, shows that in the south west soil temperatures may consistently reach 12.5°C as early as mid-April, but for north west England that would more normally be mid-May and for eastern areas of Scotland the end of May or early June.

> The aim is to target the pathogen early, to maintain soil conditions favour-able to turf growth.

New WeatherPro services on the Syngenta website provide seven-day forecasts of soil temperatures in clear visual map representation, which could help indicate when stable conditions have been reached for Heritage application.

Application advice

Since the target is in the thatch or soil profile, the use of soil nozzles is always recommended, with a water volume of at least 600 litres per hectare. The coarse droplet size and high velocity will minimise retention on the leaf and ensure more product gets down to the base. Irrigation immediately after application – ideally within minutes – further helps move the product down, or apply after a heavy dew or drizzle.

If the fungi is active in the thatch, that may be sufficient to get the fungicide where it is best required. However, if the mycelium is active deeper in the soil profile, a tank mix with a wetting agent could help with penetration down to the active fungi zone. The action of a wetting agent to move the water down but then hold it in the root zone could prove highly targeted. If the soil zone of activity is not known, best practice is to water application in to a depth of two to four millimetres.

With very limited fungicide options for fairy ring control in the UK, new research this year will be evaluating and comparing programmes including the existing standard, Heritage, with a new Syngenta fungicide active that is currently in registration. The research, on multiple sites across the UK, will also evaluate application technique and treatment with Qualibra wetting agent.

Continue the conversation

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Soil cores can be used to identify the zone of fairy ring fungi activity Photograph © John Kaminski Ph.D.