



# Amenity Forum Guidance Document

## Best Practice Note for Integrated Turf Management for Sports Turf Surfaces

### Integrated Turf Management for Sports Turf Surfaces

*The Sustainable Use Directive has been implemented in the UK. Its overall objective is to establish "... a framework to achieve a sustainable use of pesticides by reducing the risks and impacts of pesticide use both on human health and the environment and promoting the use of Integrated Pest Management and of alternative approaches or techniques such as non-chemical alternatives to pesticides". This leaflet focuses upon integrated management planning as applied to sports surfaces. Similar guidance for other surfaces is available on the Forum website*

[www.amenityforum.co.uk](http://www.amenityforum.co.uk)

As proactively implementing integrated management techniques is a core requirement of satisfying the Directive, it is worth thinking about what elements of your sport turf management plan should be included in IPM. In reality, every aspect has a role to play. IPM is all about finding the optimal solution on each golf green, tee, fairway, bowling green, winter sports pitch and beyond to encourage healthy, sustained growth of the grass and help it outcompete the pests, weeds and diseases throughout the year. There are many activities that can help to ensure the turfgrass is at its strongest and prevent or reduce the impact of pests, weeds and diseases, ensuring less need for pesticide use as well.

The starting point depends on the current position of the sports turf surface:

- If starting to build, a free draining root-zone is the start for all golf and winter sports turf surfaces. Grass species and cultivars can be chosen and the maintenance programme planned to encourage their growth without pest, weed or disease.
- Organic matter control is probably the number one cultural control that helps all elements of golf green and sports pitch management. For example, golf greens with excessive organic matter hold water at the surface, can be more susceptible to disease and are often far from smooth and true. Ripping into the turf surface will go some way to physically remove the existing organic matter and also create the aerobic conditions necessary to encourage microbial activity, which will help to naturally break down the remaining organic matter. Hollow coring or spiking and top dressing or deep scarification with sand injection and overseeding is ideal to impact as much organic matter as possible. However, it may be impossible to achieve the right conditions in one operation and so further planned light top dressings will help dilute any remaining thatch between removal operations.
- As water is required for grass growth but also for germination and infection by many of the important turfgrass pathogens, water management is of great importance. Two maintenance practices need to be considered; applying irrigation when grass plants require water and keeping the grass surface as dry as possible. From a disease management context, the rootzone should be watered to the depth of the roots as infrequently as possible. However, there is a fine line between sufficiently irrigating the rootzone and creating soft, wet surfaces that are less than optimal from a playability point of view.

- As well as the amount, the quality of the irrigation water is important. Alkaline irrigation can encourage the development of many turfgrass diseases. If such conditions apply, water conditioning units can be installed to reduce the pH before application.
- The period of leaf wetness is also key. It is advisable that water be applied as close to dawn as possible rather than late evening. Leaf surface remaining wet all night, encourage pathogens to germinate and potentially infect the grass plants. Dew should also be removed by switching, brushing or using dew removal products to reduce the time that the surface stays wet. This is best carried out first thing before mowing.
- As well as physically removing surface moisture, airflow and light penetration are important in drying off the turf surface, especially for golf putting greens susceptible to microdochium patch. Sports turf surfaces surrounded by trees or shrubbery can remain wet for much longer periods due to a lack of airflow. Judicious pruning (especially of lower branches on trees) can improve air flow and light penetration (morning sunlight being the optimum) helping the surface to dry faster and reducing the potential for infection. Areas that remain shaded and wet may also become populated with buttercup, dog lichen and mosses.
- Establishing or oversowing with desirable grass species, such as red fescue and bentgrass on golf and bowling greens, especially in combination with organic matter control (if necessary), helps to ensure 'fine' turf surfaces optimal for smooth and true golf greens. On sports pitches, perennial ryegrass and smooth stalked meadow-grass provide the optimal surface for football and rugby as they are hard wearing and optimal for growth in the UK.
- A fertiliser programme should be planned to supply optimal amounts to the grass plants. Plants with an optimal supply of nutrients will be much less likely to suffer from disease attack or allow encroachment of weeds. For example, grass swards, particularly those dominant in fescue or perennial ryegrass that are lacking nitrogen, are more susceptible to dollar spot and red thread, respectively. By ensuring adequate nitrogen is supplied, these low nutrition diseases can be greatly reduced. However, care with nitrogen use is required at the end of the growing season, as lush grass growth when the weather conditions are conducive can lead to severe microdochium patch outbreaks. Therefore, maintaining optimum nutrient levels is a balance between ensuring sufficient fertility is available to allow growth and prevent the low fertility diseases and ensuring too much is not applied, which will encourage the ingress of *Poa annua* and the high fertility diseases.
- Using fertilisers with an acidic source of nitrogen, such as ammonium sulphate, helps to ensure growth of desirable grass species, minimise annual meadow-grass ingress, minimise disease outbreaks and discourage earthworm presence.
- Consideration of the release pattern of fertilisers can help to prevent peaks and troughs in fertility. Slow release and controlled release fertilisers can 'drip feed' the grass, creating more even growth patterns with less stress to the plants and so reducing susceptibility to low fertility diseases.
- Annual meadow-grass, as well as being more susceptible to diseases such as anthracnose and microdochium patch, also tends to result in increased organic matter presence, leading to less smooth and true surfaces. Therefore, preventing ingress or development can help to reduce the swards susceptibility to disease outbreaks and improve playability.
- Using iron sulphate, especially over the autumn and winter period, can help to reduce diseases such as microdochium patch. This will also help darken the green colour of the grass and put any moss that has crept in over the winter at a disadvantage.

All of the above cultural methods of managing turf should lead to a healthier, stronger sward. much less susceptible to weed and disease ingress as it will have increased light penetration and airflow, adequate but not excessive fertility, better grass species in the sward and less organic matter to host pathogens leading to excellent playing surfaces.

However, to ensure optimal playing surfaces are maintained, a pesticide will generally be required at some stage to control outbreaks of disease or pest and weed ingress.

- From a disease point of view, determining an indicator green (the one that generally develops disease first), a shaded (or generally more susceptible) area of the sports pitch and using disease predicting websites, can help inform timing of fungicide application to ensure disease outbreaks are stopped quickly before excessive patches develop, potentially leading to scars and poor playing quality.
- Broad-leaved weeds, if present, should be controlled during the growing season when they will actively take up the herbicide and grass growth can be encouraged to close up the gaps left when the weeds are controlled.
- Insect pest outbreaks can be sporadic and so curative control is optimal. Regularly assessing areas for signs of damage or investigating bird and mammal activity will often determine infestations. For insects, such as leatherjackets, which are active at night, plastic sheeting (such as a split fertiliser bag) or damp hessian can be pinned out and checked very early in the morning for grub presence. However, some pests, such as chafer grubs, can occur in the same area year after year. Mapping damage caused by chafers will be helpful to determine insecticide application areas.

These are just some thoughts on how IPM might apply in a sports turf situation. The main thing is to plan in an integrated manner and, when using pesticides, ensuring they are used properly and following best practice for their use. A good starting point for the latter is to follow the Ten Golden Rules set out on the Amenity Forum website.