



The changing face of plant protection products in the turf and amenity sector

Like them or not, plant protection products (PPP) have a role to play in the maintenance and upkeep of good quality playing surfaces and surrounding areas, whether they be a fungicide, insecticide, or herbicide.

Always under scrutiny, the rules regarding PPPs, their availability and application have been under the spotlight in recent times, perhaps more now than ever before. We speak to Dr Colin Mumford, Bayer technical manager, who explains the recent changes and gives his predictions for the future.

The integrated approach

PPPs should only be considered and integrated into a maintenance programme once all the relevant cultural and biological practices have been taken into account and carried out where practicable.

Cultural methods are the physical actions performed by a turf professional. These include scarifying to reduce organic matter, aerating to relieve compaction, or simply mowing to control the height of the turf canopy.

Biological practices essentially introduce live constituents to the turf. Examples of this include over seeding to introduce new grass varieties or species to improve the sward composition or applying entomopathogenic nematodes to control nuisance insect pests, such as chafer grubs and leatherjackets.

All the while, when carrying out cultural and biological practices, the monitoring of influencing factors is equally important in modern day groundsmanship. Measuring, recording, and analysing factors such as the weather will enable the calculation of growth degree days and growth potential, for example. This enables management decisions to be as informed as possible. The use of PPPs should be the final piece in the 'integrated jigsaw'.



Influencing factors include:

- Weather
- Growth degree days
- Growth potential
- Nutrient status
- Organic matter content
- Soil pH
- Soil moisture
- Evapotranspiration
- Irrigation efficiency
- Water quality
- Stage in lifecycle of weed, pest or disease

Pesticide withdrawals

The regulations regarding PPPs are constantly reviewed and changes to them can occur. The changes are made to ensure products don't exceed thresholds for a wide range of issues, such as toxicology (safety to humans) and eco-toxicology (safety to the environment). All UK registered products are reviewed by the Chemicals Regulation Division (CRD) periodically, to ensure that a product still meets the regulatory requirements.

A number of active ingredients (AI), which are the main ingredient in a pesticide product, have been withdrawn in recent times, due to changes in the regulations concerning PPPs. Insecticides containing imidacloprid or chlorpyrifos, which were important for the control of chafer grubs and leatherjackets, had their authorisation withdrawn in 2016 and 2015 respectively.

While fungicides containing myclobutanil or prochloraz were also withdrawn, more recently, iprodione, an important contact-acting curative AI, was removed from the market in 2018.

2019 will see the loss of further products as the sales of herbicides and fungicides that contain glufosinate and propiconazole will end this year. With constant changes in legislation, it is likely there will be further losses of AIs in the future as existing products may not comply with new rules.

So, what can manufacturers of PPPs do to retain products in the future? The answer is quite simple, surpass the regulatory requirements, but this is not as easy as it sounds.

The future landscape for PPPs

Manufacturers of PPPs will have to adapt to the regulations as they change over time. An example of one change is the requirement for manufacturers to show the minimum effective amount of an AI that a product requires to achieve control of a weed, pest, or disease. This is ably demonstrated in the image below that compares the amount of AI in an iprodione containing fungicide with a newer product that is a combination of an SDHI (succinate dehydrogenase inhibitor) and a strobilurin.



In the case of fungicides, lower AI loading is achieved by producing products with turf specific formulations that optimise the efficacy of an AI by getting it to the disease pathogen in a more effective manner. The flip side of the lower AI loading in a fungicide, is that the timing of the application will become more important.

The majority of new fungicides will target preventative or early curative applications and will be less effective if applied at the later stages of a disease's development.



Fig: Typical preventative and early curative application timings for Microdochium patch

Product stewardship

An important aspect of retaining products for future use is the stewardship of the product. Using a product in accordance with its label requirements will ensure its correct use. Labels are legal documents and their contents can change year-on-year, so it's important to always read the label, and not rely on knowledge of the product from using it previously.

The label will tell you what personal protection equipment is required, when, where, and how much or often you can apply the product, and if a buffer zone is required when treating turf in close proximity to a watercourse.

PPPs remain an essential tool for the majority of groundsmen and greenkeepers to achieve a good standard of playing surface. While the sports turf industry has lost chemistry in recent years, we expect new and existing products with improved technology and regulatory foresight to continue to be available to tackle weeds, pests and disease.