BUILDING RESILIENCE TO TACKLE DISEASE SUSTAINABLY

Nature is incredible.

Every day we're learning more about the way the natural world offers solutions to a host of issues. Research has revealed that the human microbiome is related to incidence of allergies and a raft of other health concerns, and during lockdown we witnessed nature's ability to heal and rejuvenate when undisturbed by human impact.

Managing turf sustainably means working in harmony with the environment to achieve the best results. Golf course turf is under stress from the intensity of play, climatic conditions, and from the maintenance required to produce high-quality playing surfaces. These stresses weaken the plant eventually leaving it susceptible to disease. Pathogens live in the soil and so disease is an inevitability. Turf managers have had an array of products for protecting the plant and controlling disease, but facing the withdrawal of a number of active ingredients and concerns about the inability to rotate those that remain, some are going back to basics and reimagining turf management from the ground up.

Focus on building resilience

The answer lies in the natural processes that protect plants. The soil microbial world is fascinatingly diverse, with bacteria, fungi, protozoa and nematodes performing many different functions, including thatch and organic material degradation, nutrient recycling and fending off attacks from the pathogens that live alongside them. Soil microbes can naturally reduce pathogens through direct predation, competition for space, by creating barriers around plant roots and by degrading the thatch layer that harbours pathogens.

Bacteria and fungi, including mycorrhizal fungi, form barriers around plants to prevent pathogens invading them. In return, a symbiotic association is created where those microbes feed from the plant's exudates. It's in their interest not to allow that plant to be attacked and killed. The soil is a busy place where microbes and pathogens compete for food and space. An increase in beneficial soil microbes means they can out-compete the pathogens, and as a result there are less issues.

On golf courses we can inadvertently do a lot to prevent these natural processes working. Some fertilisers may have a high salt content which hinders microbial activity. Chemicals used to control disease can also reduce the activity of beneficial microbes, reducing thatch degradation and nutrient availability. Turf managers can work more sustainably by building the plant's natural resilience through focusing on maintaining healthy, balanced soil.

Root profile of creeping bentgrass, JCB Golf & Country Club

Keeping it simple to maintain high standards

At the JCB Golf & Country Club in Staffordshire they have done just that.

"From the start of construction, we had the opportunity to grow the golf course in with a strong consideration towards sustainability," explained Course Manager Callum Wark. "It was important for us to focus on soil biology from the outset and Symbio was the clear option. A biological management programme combined with sound greenkeeping practices is helping us deliver clean, high quality creeping bentgrass surfaces with next to no disease incidence on a daily basis. We concentrate on doing the basics really well, keeping things simple, and building natural resilience in the plant to reduce chemical inputs.

"We spray fortnightly applications of Symbio Compost Tea, Biotabs and a combination of effective biostimulants and nutrients and I believe this plays a crucial role in disease prevention. Every site is different, but I'm confident we've developed an effective management plan. It's taken two to three years to refine, but we've got something that really works for us.

"Like many clubs, the expectations of committees, members and owners is increasing and disease or disease scars of any kind is considered unacceptable. Due to the mild conditions experienced at the start of the year, we predicted to be one to two weeks ahead in terms of growth and establishment. This meant slightly earlier applications of azoxystrobin to combat one of our problem pathogens, Gaeumannomyces graminis.

"We're a new construction with a high pH, so Take-All Patch was always likely to be an issue. We're working to lower the pH and as a result we have less incidence of it each year. Other than one more application at the end of the year, this is planned to be our only fungicide applications of the year.

"Any withdrawal of fungicides will force changes to annual maintenance and management plans as the safety net will eventually be removed from a disease management perspective. Sound greenkeeping will be essential, and significantly increased resource requirements will be a concern.

"Sharing information within the industry is crucial. If your disease management plan and method works, let's share it rather than watch our peers struggle. We all know the challenges we have before us, so let's help each other out."

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Working in partnership with SYMBIO

Callum Wark, JCB Golf & Country Club

18th hole, JCB Golf & Country Club

Creeping bentgrass greens, JCB Golf & Country Club