

MANAGING ENVIRONMENTAL PRESSURE

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The logo for the Society of Turfgrass Researchers International (STRI) features the acronym "STRI" in white, bold, sans-serif capital letters. To the right of the text is a stylized graphic of green grass blades of varying heights, set against a dark green rectangular background.

Way of Thinking

"Changing The Nature of Your Greens" introduced the idea of greenkeeping as environmental management. The article gives an understanding of the nature of the grasses and it shows how to achieve the finer species by setting the environment correctly. For the finer grasses to flourish they need the environmental pressures to be managed properly. This way of thinking has become known as The Disturbance Theory.

A New Wheel

Traditional greenkeeping method has always sought to use environmental stress to encourage the finer grasses. BUT, it is a different world from the days of Old Tom and we have to adopt slightly different strategies when trying to create putting surfaces dominated by the finer grasses. Modern golf demands year-round play and ever-quicker putting surfaces and our industry has provided us with an arsenal of super effective machines designed to help us satisfy the situation. As a result, the pressures impacting on our turf are more intense than ever and the finer grasses don't like too much pressure. It is becoming more and more difficult to favour the finer grasses but it is not impossible. The Disturbance Theory aims to bring greenkeeping for the finer grasses up-to-date for everyone's sake.

Pressure's On

You'll be pleased to know that modern day environmental pressure now comes in the forms of disturbance and competition as well as stress. To achieve the finer grasses you just need to understand both the nature and impact of these pressures and then use them properly. Success is reliant on your powers of observation as well as your skill as a greenkeeper.

Stress Actually...

Stress is more precisely defined as the environmental constraints to growth. This may include droughting, starving, shading, drenching, freezing, soil compaction and potentially soil acidity and salinity. These are all the elements that restrict the growing environment. Environmental stress can be used to positively select desirable species over those less tolerant. The problem with stress is that it comes in many different forms that each exert different types of selection pressure. So, when thinking and talking about *stress* we need to be clear about its exact nature and individual impact. Take note, stress tolerators aren't necessarily tolerant to all stresses and

so salinity can easily kill a drought tolerant plant. (see the article "The Salt of the Earth" for more detail).

Now Not Stress

Disturbance is the physical damage occurring within the environment. This is particularly pertinent for golf greens, which rely on regular mowing as its fundamental preparation treatment. As you can imagine, regular disturbance imposes a huge selection pressure on the environment. Quick growing weeds are the natural beneficiaries if there is too much damage and too often. Naturally slow growers won't thrive if they are being knocked back all the time. Disturbance includes wear, disease, pitch mark damage as well as the mechanical treatments. The articles "Do Not Disturb" and "Is Verticutting Necessary?" cover the issue of disturbance in relation to the surface preparations.

And Not Least

The final environmental pressure is competition. This is the battle between plants to survive and possibly assume dominance within the environment. Some plants have evolved to naturally assume dominance given the right conditions. The bents and fescues will do this if you let them, BUT their competitive edge will struggle to exert itself if the stress and/or disturbance are overriding. Constant hacking will not allow plants to force themselves on the situation. You need to ease the wider pressure to let the better nature of the finer grasses take over. "Competitive Edge" takes a look into this area.

All is Everything

These pressures do not act in isolation, they work together to all create the nature of the growing environment. As turf managers, we simply need to move towards the environmental balance that is suited for the desired species. Of course this isn't going to be easy. We already know that the innate pressures are naturally high and with the golfers level of expectation the environment is usually intense. Who said it was going to be easy? Believe me that all you need to do is understand the pressures acting on your environment and work to direct them in a positive way. Take heart from all the Greenkeepers who are already on the road and heading forward. This is the early days of the Disturbance Theory but greenkeepers have been doing this for years.

An Environmental Year

Let me quickly run through the seasons to give you an idea on how to think in a *Disturbance Theory* way. To recap on the ideas of CNOYG; for the finer grasses to flourish we need to minimize disturbance and control beneficial stress to let competition take hold. Overseeding is required to continually improve your starting point. Simple stuff. We minimize disturbance through considerate winter management and with our year-round mechanical maintenance. To reduce the level of disturbance pressure we can cut fertiliser and irrigation inputs to minimise

the need for aggressive verticutting and mowing. We can play with droughting as a beneficial stress against the annual meadowgrass given the chance. The vegetation will soon change if you manage the environmental pressures considerably. Here's what you need to do...

Spring

In spring we need to boost growth sufficiently to generate recovery growth and allow the early season surface preparations to take place. The use of sulphate of ammonia feeds will bring acidity stress to bear against the annual meadow-grass if chosen. Verticut and scarify to prepare the surfaces by all means but don't go over the top. Top dress to prepare your surfaces without getting too aggressive. Minimise disturbance within reason and growth.

Summer

Once you have created your surfaces, try to keep them quiet so that their playing qualities don't quickly grow out and constantly require regular aggressive verticutting treatments to get them back. Top dress and roll/iron to create firm, fast and true surfaces rather than constantly verticutting and scalping. Use ironing to add the polish. You must also prevent the development of dry patch stress with spiking, the use of wetting agents and focused irrigation. With this in place you can confidently exert drought pressure towards the end of summer (given the chance) to weaken the annual meadow-grass in preparation for the late summer/early autumn overseeding programme. Rather than burning-out the annual meadow-grass why not try for a touch of *easier* anthracnose basal rot? Minimise disturbance and control stress to let competition take hold later in the summer.

Autumn

Prevent undue weakness moving into autumn with the use of a low NK plus Iron turf hardener. Really remove thatch at this time because the meadow-grass isn't seeding into the gaps. This is the natural time to overseed to get more of the good stuff in. Always use top rated seed. Renovate whilst growth is strong to bring quick recovery. Get the fixture list organized well enough to allow a couple of weeks minor disruption afterwards (a late Captains day can ruin your plans for the year). To overseed properly it really needs to be carried out with a couple of months establishment growth still available. Connect the seed with the soil at the correct depth. Top dress to perfect the playing surfaces for a prolonged autumn playing season. Take care with the establishment. Raise the height of cut and continue to vibratory roll or hand mow to maintain playing qualities through until the end of the season. Disturb only for overseeding sake and minimise all else as growth tails off. Always prevent disease disturbance through integrated control methods as they aim to favour the finer grasses anyway.

Winterwear

Winter play can be very damaging. The wear disturbance is magnified at this time when plant growth tails off and the turf has less strength to recover. Try to keep the players off when they are damaging the surfaces. Simply provide decent alternatives and they won't grumble too much. Also, do not be stupid with your cutting height at this time of year, it might be the difference between long-term success and failure. Raise the height of cut early. Greenkeeping isn't about making friends all the time. Vibratory rollers can still help if dovetailed with aeration. Don't disturb the surfaces with aeration if ground conditions aren't right. Enforce pitch mark repair. Only verticut at this time if you want annual meadow-grass. Minimise disturbance. Minimise disturbance. Minimise disturbance.

The Way Forward

So much of greenkeeping is about the attitude of the head man. If you want the finer grasses you have to try to understand your own turfgrass environment and be prepared to manage the pressures properly. Dogmatic recommendations aren't much help but they can help you stay focused in the right area. It is very simple; we want to create an *environment* that is more suited to the development of the finer grasses. To be successful in this approach you just need to be alive to any opportunities that will allow you to manipulate or regulate the pressures. This isn't rocket science, it just means you tuning in better to the environmental conditions. You can do it. If you are patient enough then the finer grasses will come. Give yourself 5 years and stop fretting. Be confident enough to make the finer grasses happen and it will make your life easier. Better surfaces for longer in the year. No pressure from me.

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