Considering change?

Be prepared!

In the final article of this two part series, Steve Isaac, Director of Golf Course Management at the R&A, goes through the dos and don'ts of working towards a healthier environment

In June 2006, The R&A employed the STRI to undertake a project which ran for six years with the purpose of following the impact of a maintenance package aimed at producing firmer, healthier greens at five golf clubs across England; Cold Ashby, Knowle, Leek, The South Buckinghamshire and Wilmslow.

All of the courses involved could be considered to have a 'parkland' designation. The programme concluded at the end of 2012.

After six years, all clubs noted improvements in year round putting surface performance and especially winter play. However, they all had to overcome a variety of hurdles to achieve results.

For anyone considering following their path, take heed of the following conclusions from the project, as they might make the journey considerably smoother for you and your course.

Bear in mind that these comments relate to a certain type of course and while they may well be applicable to most courses across the UK, there may be the opportunity for a more rapid change with different techniques on more open courses on lighter soils, such as links and heathland designations.

Planning

An initial assessment is essential. This should determine the status of each green, set reasonable objectives and draw up a programme for improvement over a set period. It must include analysis of species composition, drainage, shade and thatch content.

A benchmark needs to be set for these criteria, and for objective performance measurements. Each green needs to be considered separately to identify the specific issues to be addressed, even to a more local level in terms of areas within putting surfaces that are subject to drainage and shade problems.

Means of objectively measuring the playing performance of putting surfaces must be implemented from day one and undertaken on a regular enough basis to pick up trends. Choose a minimum of three (preferably six) indicator greens representative of the whole, so the best, worst and average, plus the putting green and, if available, a new construction.

Essential assessments and minimum frequencies are considered to be:

- firmness using a Clegg Impact Hammer on a monthly basis (up to fortnightly from March to November)
- volumetric soil moisture content using a Theta Probe on a monthly basis when taking firmness readings (up to fortnightly from March to November)
- reliability using the R&A Holing Out Test on a weekly basis
- green speed on a weekly basis
- trueness and smoothness using the STRI Trueness Meter® at least twice a year
- organic matter content once a year
- botanical analysis once a year

The cost of the initial phase of the project should be determined, both in financial terms and the likely disruption required from remedial treatments.

Do not expect costs to go down immediately as investment may be required to address problems before savings can be made.

There are, however, potential long term gains once immediate problems are overcome, eg reduced chemical usage and increased revenue from a longer season on the main greens.

The decision to proceed with a programme of improvement must be discussed and approved with club officials and members, with detail about what the programme involves and a commitment to implementing it for at least a three - year period.

Expectations must be realistic and managed.

Implementation

The course management team must achieve the right balance between sward improvement and playing quality. Focusing totally on playing quality can dramatically slow progress. Concentrating too much on sward improvement can see a dip in playing quality which could deter the club from proceeding further.

For those starting from a position where excessive organic matter, poor drainage and shade promote annual meadowgrass (Poa annua) dominance and inadequate year round playability, the initial stages of the process do not involve a change in grass composition but rather the development of the environment in which fine grasses can grow.

Good drainage is the first prerequisite in promoting firmer greens. Only when this has been achieved can fine grasses be encouraged. It is essential that the causes of drainage issues are clearly identified at the outset.

These may include underlying problems with soil quality or old drainage systems, poor contouring encouraging water collection, shade or excessive organic matter.

Depending on the severity of your problems, improving drainage, reducing shade and bringing organic matter under control can cause significant disturbance. Progress will be quicker with work that creates more disruption, eg coring, deep scarification and topdressing, but more gradual progress can be made with less disruptive programmes.

The same applies to the approach to other maintenance practices that have an impact on turf health and species composition, such as irrigation, fertiliser and pesticide use.

Although part of the aim of the programme is to see the minimum use of such resources, a rapid

reduction when the sward composition remains dominated by annual meadowgrass will result in serious stress and deterioration in playing performance. The rate of reduction needs to be aligned to managing stress and retaining an acceptable level of surface quality.

The April 2012 issue of the STRI's Bulletin reported on a club that in just nine months reduced the organic matter in the 0-20mm range of the profile from just over 11% to under 5%! This was achieved through an intensive programme involving two coring and three deep scarification (two with sand injection) treatments; a level of disruption that few clubs could tolerate. However, clubs need to be made aware of the options available to them and the consequences of any action taken.

Throughout the programme, the maintenance schedule will need to be amended and refined to take into account progress made. For example, once organic matter is at or near the desired level, the degree of disruptive treatment can be relaxed.

Better drainage, less shade and organic matter under control will produce a situation whereby even annual meadowgrass is under less stress and the programme can put more emphasis on reducing inputs such as water, fertiliser and pesticides.

The schedule will need to be adjusted to take into account inconsistencies within and between greens. It is important that the course management team is not afraid to amend the programme if something does not work or when there is a better alternative.

When working on a thatch reduction programme intensive aeration can result in nutrient release from the residual organic matter, so the fertiliser regime will need to be adjusted as this source of nutrition promotes growth and when it diminishes.

Initial overseeding of finer grasses should be delayed until organic matter is adequately reduced. The best value from initial overseeding will be once organic matter content to the top 20 mm of the profile has been reduced to a maximum level of 10%, with favourable conditions below.

When in a position to start overseeding, some trial work may be required to determine the most effective technique. This relates to the timing of the work as well as the machinery used and aftercare.

For those undertaking overseeding once a suitable environment has been created, browntop bentgrass is likely to work better than fescue if the sward is dominated by annual meadowgrass.

With an increasing bent content and further refinement of the maintenance programme a bent/fescue mix can be employed. In the first year of overseeding there may be a low uptake but this will increase with time.

Native bent and fescue grasses may colonise in addition to those introduced via overseeding.

Use the proportion of bent in the sward to indicate when the greatest chance of achieving results with fescue is likely. It is suggested that at least 40% bentgrass content, distributed evenly across a green, is required before this situation will arise.

Eventually, the proportion of finer grasses will come to dominate the sward and it may then be appropriate to switch to fescue-only seed.

To give seedling grasses every chance of growing to maturity, amendments to the maintenance schedule, particularly in relation to operations that could damage seedlings such as mowing height, verticutting and top dressing, will have to be factored in.

However, do not go to extremes and try to implement work that balances the needs of the seedlings with those of the golfer.

While the advice for most wishing to go down this route will be to reduce inputs, it will be necessary to guard against reducing them to too low a level.

This particularly applies to situations where organic matter has been reduced to within the target range and this potential source of nutrition is no longer making a notable contribution to growth.

In such instances, too little fertiliser and inadequate protection against pests and diseases can cause an unnecessary downturn in playing quality.

Getting this right is something of a balancing act and will demand all of the greenkeeper's experience.

about the author

Steve Isaac

Steve Isaac was an agronomist at the Sports Turf Research Institute (STRI) for 17 years. He then became responsible in 2003 for The R&A's golf course sustainability programme, working to protect the enjoyment of the game and to safeguard the financial operations of golf facilities, in a manner which preserves natural environments and enhances community engagement.

Results and reporting

Recording maintenance inputs and measuring performance throughout the programme is essential. Such information will help define trends, act as a future record, inform management practices and give an objective rather than a subjective viewpoint.

Analyse your data. Simply collecting a large set of numbers is a waste of time.

Keep a record of the cost of any action taken to bring about a better environment, eg drainage, tree removal and additional maintenance operations. The decision makers in the club who are not greenkeepers may not be able to follow an argument for investment and trust in the programme if it is based on agronomy; they will have a better understanding of the financial implications – estimated costs and forecasted savings/increase in revenue.

Keep a detailed record of anything that causes a slower rate of success or reduced impact from treatments such as wet summers. Include these as part of your reasoning behind the value of the programme. They must not be seen as excuses!

Use the analysed data to report on successes, and failures, to club management.

Be aware that the intensity of work required to control a significant organic matter problem can result in an initial increase in annual meadowgrass content, due to the degree of disturbance involved. Once organic matter control has been achieved, and greater stability prevails in relation to surface preparations, the proportion of finer grasses may increase from native sources or from overseeding.

During the process everybody should be kept updated, including club official presence on site inspections, to visually show the results. Seeing IS believing – use a camera!

Annual presentations to committee and members should be considered, to inform on progress.

Summary

A clear pathway from soft, wet, disease-prone putting surfaces to firm, dry greens that perform well year round was the original hope for this project. The theory is sound, but there are many obstacles to overcome at any club wishing to achieve this aim, such as available resources, acceptance of disruption to play, internal politics and short-term thinking.

If you have successfully implemented a programme to produce a healthier putting surface environment and, in doing so, increased the proportion of finer grasses, The R&A would be delighted to hear from you. Send details of your achievements to Steve Isaac, Director – Golf Course Management, The R&A, St Andrews, KY16 9JD.

The outcomes of the project provide support for the theoretical pathway and also highlight the problems you may well face in taking it.

To enhance your chances of success, make sure you:

- *measure playability throughout the year to demonstrate that any disruption is short term and that it brings long term improvement*
- *record costs as every club wants to see the value of their investment, and you will have to invest in your greens to bring about the desired results*
- *communicate at every level to ensure that you take people with you. This includes your team as well as club management and golfers*

Although this project has come to a conclusion, this is not the end of The R&A's interest in the clubs involved.

We intend keeping in touch with them and monitoring their progress.

They are all committed to the process, which has demanded a radical change in approach for some, and their journey has only just begun!