

In the first of a two-part series, Steve Isaac, Director of Golf Course Management at The R&A, describes the successes and failures of five clubs aiming to achieve better year-round putting greens



# A better environment ...the key to better greens

**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 in England.**

The selected courses, which could all be considered to fall within the parkland designation, volunteered to take part in this project and STRI agronomists made their first visits later that year.

The programme concluded at the end of 2012 with a final agronomic visit.

In the interim, STRI agronomists visited each course twice a year and gave advice with a view to producing healthier turf and drier, firmer

putting surfaces, thus developing an environment which favours the desirable browntop bent and fine fescue grasses. Objective tools were used to assess progress in terms of putting green firmness, trueness, smoothness, speed and soil moisture content, though this was restricted to the last three years of the project as the STRI Programme was not available before then.

After six years, all clubs noted improvements in year-round putting surface performance and, especially, winter play. Collected data showed the development of firmer, more consistent surfaces with enhanced drainage which suffered less from climatic stress or disease incidence.

Reduction in thatch was not as significant as had been hoped, not

helped by a series of wet summers and difficulty in achieving the recommended works necessary to make a real impact.

Consequently, increases in the finer grasses were not, generally, as notable as expected but some clubs have seen clear evidence that this is happening.

Firmness did increase over the period – suggesting that there is not a simple relationship between firmness and the percentage of organic matter at any given depth below the surface; the structure of the thatch, how well it is diluted, its homogeneity and water-holding capacity are important factors which are not drawn out from a laboratory test of organic matter content.

The results firm up attitudes to green management.



**MAIN LEFT:** David Croxton, pictured right, reviews progress on the Cold Ashby greens

**MAIN RIGHT:** Golfers putting out on the firmer Knowle greens

**INSET LEFT:** Firmer surfaces at Cold Ashby but still a long way to go to control organic matter

**INSET RIGHT:** Although still averaging 12% organic matter in the top 0-20 mm, the healthier rootzone is producing better greens at Knowle

**RIGHT:** The shaded 7th green at Leek

**Coming Soon...**

Steve goes through the do's and don'ts of working towards a healthier environment.





### **Cold Ashby Golf Club, Northamptonshire**

A proprietary club, Cold Ashby achieved a 33% reduction in nitrogen input, from 175kg per hectare to 115kg per hectare per year, with healthier greens as a consequence. Bent content increased by around 10%.

Their greens dipped in and out of the objective assessment target ranges, suggesting organic matter content well above the desired level, averaging at 16.9% in the top 0-20 mm as opposed to the target range of 4-6%, remains an impediment to consistent surface performance.

David Croxton, Course Manager at Cold Ashby, made the salient point that his involvement in the project had been “a successful exercise that required a great deal of commitment on all sides.” He added:

“It would have been easy to give up after three years but, in retrospect, that would have been a mistake.

“It was probably a valuable learning experience for both the advisor and the club.”



### **Knowle Golf Club, Bristol**

At Knowle, a private members club, all greens are now within the target range for hardness whereas they were soft at the start of the project.

Smoothness has improved markedly, with this measure and trueness now hitting the ‘Routine Target’ range.

At the start of the project, annual meadow-grass was very much the dominant grass on the greens (averaging 66%). Bent grass is now on a par or present to an even higher level than annual meadow-grass, with greens averaging 56% bent content.

Ryan Coles, Secretary/Manager at the Club commented: “Although making a mediocre start due to internal problems, we have certainly moved forward in the last three years and are now seeing major progress being made. We’ve worked hard to communicate our aims to our members and to raise their awareness of what we are trying to do.

The majority understand that some short-term disruption to play is needed from time to time and this patience has been rewarded as the

greens have received many plaudits from the membership.

“Due to the general economic climate, these are difficult times for members’ golf clubs such as Knowle. It is not easy to correlate the link between the condition of greens and our membership levels, where of course we derive the vast majority of our income. It’s fair to say we’re not losing members to other golf clubs and a significant number of those joining us are established golfers from other clubs.”

### **Leek Golf Club, Staffordshire**

The green to the par 3 7th hole at Leek, a private members club, sits under a row of tall *Leylandii* which protect the car park from balls flying to the left of the green. At the start of the project, the green was soft, wet and dominated by disease-prone annual meadow-grass.

Thanks to the installation of drainage and a thatch dilution programme it is now a firmer (from below 70 gravities to consistently within the 80-100 gravity target range), drier, smoother, truer and faster putting surface.

Generally, Leek saw an increase

in hardness from below their target range to above this range over the course of the project. This represents an improvement of 43%, and could well be a result of their 10-15% reduction in volumetric soil water content. By the end of the project, Leek had hit or was much closer to target ranges for hardness, soil moisture content, organic matter content at 40-60 mm, smoothness and green speed. The result was the production of greens that were firm throughout last year's very wet summer and last winter. Leek kept play on the greens throughout this period, except for when there was an overnight frost or snow cover.

Head Greenkeeper John Turner reflected: "From Leek Golf Club's point of view, participating in the project was a huge success. The Clegg Hammer and the Moisture Meter are very useful tools for monitoring the greens firmness and soil moisture content, but collecting the data was something of a challenge at times. With a small staff and me as a working greenkeeper, I had to rely on the goodwill of our Greens Chairman to do the majority of the data recording.

"The readings showed up some interesting results which went a long way to resolve certain issues and highlight others. Leek's involvement in this project was crucial for me to confirm to the club that the practices I had put in place on taking over here were the correct way to push sustainability and its objectives forward to what, I am

happy to say, has proven itself in terms of all year round good playability."

STRI Agronomist, Paul Woodham, added: "Leek Golf Club has reaped the rewards of their hard work and desire to improve the performance of the greens which are now amongst the very best I see. Their ambitions and objectives are now to move forward from a position of strength, progressing in a sustainable manner which is the envy of many other courses".

### The South Buckinghamshire, Stoke Poges

This council run municipal course has seen nitrogen inputs reduce by 20% and hardness has increased so that figures now fall within the target range. Green speed has improved and is close to the target range, whilst height of cut has not gone lower than 4mm. Although still at a relatively low level (10-26%), bentgrass content has risen from starting values of 1-6%.

Paul Frost, Head Greenkeeper, commented: "Being part of the trial has been a great opportunity for the staff, council and golf course alike.

"The greens have improved greatly and this is backed by customer satisfaction surveys and retention of returning golfers. We will never know how much influence this has on revenue but I feel that the condition of the greens does play a major part in golfer satisfaction here.



**ABOVE:** Tree thinning and removal of undergrowth has brought about an improvement to the 6th green at The South Buckinghamshire



**RIGHT:** John Turner, left, taking objective measurements of the 18th green at Leek with the Club's STRI agronomist, Paul Woodham



**INSET MIDDLE RIGHT:** Paul Frost stands proudly outside the new maintenance facility at The South Buckinghamshire

**BELOW RIGHT:** Wilmslow Course Manager Steve Outram, discuss progress with Andy Fluck

**BELOW LEFT:** The still shaded 14th green at Wilmslow has shown great improvements in year-round playability following tree removal and drainage



“Winter play has improved hugely due to the greens’ ability to be in play much sooner than previously after heavy rain. This used to close the course sometimes for a day or two, but now we can get the greens playable in a fraction of the time.”

Putting the resources available to him into context, Paul added: “There are only seven staff, including myself, looking after three facilities; the golf course, a golf academy and a large multi-sports ground. This, and the weather over the summers of 2011 and 2012, has impacted on the amount of aeration, top dressing, etc, delivered to the greens. With more resources the greens may have been much more advanced than they already are.”

There are encouraging signs for the future with a major investment in infrastructure at The South Buckinghamshire.

A new £350,000 maintenance building has opened, and a £1.65 million clubhouse which will be able to host non-golf related functions is under construction. Golf is in good hands at The South Buckinghamshire, with the Academy driving the recruitment of new golfers and preparing them for the challenge of the main 18 hole course.

### **The Wilmslow Golf Club, Cheshire**

Spring smoothness was an issue at this private members club, as

for most UK courses with a mixed sward.

Over the course of the project this has improved to all greens, and is now almost within the target range. There is also much greater consistency in performance between greens. Micro-managing has led to improved consistency.

Trueness and green speed measurements at Wilmslow are mostly now in the ‘Tournament Target’ range.

It is very likely that this is a consequence of the low organic matter content figures recorded on the greens, plus improved drainage, and should suggest to other clubs across the country that they need to get down towards the STRI target range for organic matter (4-6% in the top 0-20mm of a soil profile and less than 4% lower down) in order to attain such a performance standard.

The 14th green started out as a shaded, wet green, dominated by a weak annual meadow-grass sward. Removal of trees and the installation of drainage resulted in a much healthier green with an increased proportion of browntop bent (8% more).

Andy Fluck, a Member of the Green Committee, reported that: “There has been a notable improvement in winter playing quality and consistency between greens.

Pressures were noted to green quality during the difficult early spring period and further advice was instrumental in being able

### **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.

to deliver stronger earlier growth as the season commences with the use of different inputs and fertiliser.

The clear message that came from our involvement was that it is essential to correctly identify the main limiting factors to progress of growth such as shade, poor or failing drainage, on a green to green basis and within separate areas on each green.

The regime of data collection and analysis enabled us to make informed decisions from what is fundamentally an early warning system.”

### **The future**

All of the clubs involved have expressed their intention to carry on with the programme that has been devised over the duration of the project, i.e. reduced inputs and maintenance set to hit target ranges for organic matter content, soil moisture content, hardness, smoothness and trueness.

### **Summary**

Golf clubs have facing increasing pressure during the economic downturn. Making savings through a more sustainable approach to greenkeeping is only attractive if it also brings better playing surfaces for more of the year and the chance to increase revenue, thereby giving them more of a chance to at least retain members and visiting golfers.

The wet summers of 2011 and 2012 limited the amount of top dressing that could be applied to the South Buckinghamshire greens. The wet summers of 2011 and 2012 limited the amount of top dressing that could be applied to the South Buckinghamshire greens.

