Greens Go Hollow Core

Tony Mears, Course Manager at Dinsdale Spa GC, and Henry Bechelet, Turfgrass Agronomist, STRI, look at the establishment of a new green from hollow tine cores.

This year at Dinsdale Spa Golf Club we established the cover of a newly constructed USGA type green using hollow tine cores taken from the other greens. We used this method to maintain consistent playing surfaces across the course.

▲ Digging out the pit in ideal conditions

By way of background, Tony has been a Greenkeeper for 29 years and Course Manager at Dinsdale Spa Golf Club since 1981. Henry has been in the industry since joining the STRI in 1991 and Agronomist to Dinsdale Spa GC since 2001. Over the years, we have developed a good working relationship. We maintain regular contact and discuss all aspects of the course maintenance. This case study is a good example of how the relationship between a greenkeeper and agronomist works.

Dinsdale Spa Golf Club was formally founded in 1910, although the course had been in existence for some years before. The course is relatively flat, parkland in nature, and is set upon a heavy clay loam soil. In recent years, a great deal of developmental work has been undertaken to improve the condition and quality of the course. The club has embarked on a rolling programme of greens reconstruction to improve their year round playability and additional land has also been purchased to increase the yardage of the course.

THE PREVIOUS PROGRAMME OF GREEN REPLACEMENT

Tony and his team have been reconstructing the greens since 1997. Each year at least one of the original clay based greens has been replaced with a new sand based construction. The new greens have all been constructed according to the USGA Method for Golf Green Construction (1993).

Tony has managed to source the same materials over the years to keep the new greens consistent with each other, the rootzone came from Bathgates. The work is always carried out in-house apart from bringing in a single contracted digger driver for excavation and placement work. The Dinsdale greenkeeping team are now highly skilled at new green construction. This has enabled the successful development of the new greens at a reasonable cost. The reconstruction costs have always been around £15,000 - £16,000 per green.

Until now, the new greens have all been surfaced using the turf lifted from the existing green. This was done mainly to retain a consistent set of surfaces across the course. The sward comprises a good blend of bent and annual meadow grass species. This provides good playing surfaces and is quick to establish on a sand based rootzone, if managed correctly. If laid in October the new greens are ready for play by the following May.

In general, this programme of replacement is proving very successful and will continue until all of the soil based greens are reconstructed. The all round quality of the new greens is far superior to the ones they replaced.

THE DEVELOPMENT OF NEW LAND

As already mentioned, the length of the course has been an issue - 6090 yards, Par 71, SSS 69. To improve the layout and yardage it was decided to extend into an adjacent field. A golf course architect was engaged before purchasing the land to outline the potential for its development and the necessary work and costs involved. After consultation with the members, the 4.5 acre field was purchased in 2003 to be used in the development of two new holes.

The new land development required the construction of two new greens with the luxury of a couple of years for establishment. Once again, they would be constructed to the USGA guidelines but since both greens were totally new, we did not have any existing turf to use. We had a problem.

▲ Spreading the rootzone

▲ Laying the cores

▲ Rolling the surface

▲ The early stages of establishment in April

All the new developments have held consistency as the top priority. On the face of it, our options were to establish the greens from seed or from imported turf and both these methods would bring inconsistency and neither appeared particularly attractive. We were both left chewing on the problem of how to establish the new surfaces and retain consistency.

The initial suggestion to establish the greens from hollow tine cores was provided by Dr Ian McClements, Senior Agronomist for STRI covering Ireland. Henry asked his colleagues for input, via email, after explaining the problem. The suggestion to use cores was then backed up by Steve Gingell, STRI Agronomist, who had seen the results of using the technique while on an exchange visit to the New Zealand Sports Turf Institute.

Apparently, this technique is commonly used in both the USA and New Zealand to establish turf nurseries and, in special cases, playing surfaces. Henry got in email contact with Alex Glasgow, Agronomist from the NZSTI, who was extremely helpful and provided a detailed explanation of the procedure.

We discussed all the possible options for development between ourselves but in the end, the decision to proceed using cores was made by Tony. Throughout the decision making process Tony always received full support from the Chairman of Green, Dennis Armstrong, which was a great help.

It was always quite a risky decision, being a new technique, but Tony felt confident enough in the sense of the advice and the support provided by STRI to go ahead. Above all, we wanted to maintain consistency and so it was considered the best option. In any case, with two years to establish, it was felt that we had plenty of time to iron out any potential problems should they arise.

THE METHOD FOR ESTABLISHING A GOLF GREEN FROM HOLLOW TINE CORES

So, the construction of the first new green began in September 2003, which you'll remember as being ideally dry. Once again, the work was carried out using the USGA method, using suitably tested and approved materials. The surfacing work was carried out in March 2004. The procedure reads as follows:

CORING

Specific greens were cored at the end of March 2004, using 16mm tines set at 75mm spacings. We took the cores from the nine newer sand based greens to limit the level of organic matter and prevent the contamination of the upper profile with soil. These cores were a good mix of organic matter and sandy top dressing rather than being thick with thatch. The cores were stockpiled for a couple of days before use while the required quantity was gathered.

PLACEMENT OF CORES

The cores were barrowed onto the green and evenly sprinkled onto the surface with a shovel to a depth of 25 mm. Raking was not any help, as it tended to drag clumps of cores around. The cores were moist when laid and not easily moved around.

OVERSEEDING

Once the cores had been laid, the green was overseeded with pure bentgrass. Top quality cultivars were chosen based on their ratings in the Turfgrass Seed booklet. The seed was applied at a rather liberal rate of 35g/m2.

ROLLING

The green was then rolled using a hand roller. This served to settle the surface down.

FERTILISATION

Based on soil analysis and discussions we agreed to concentrate on growing-in initially with monthly applications of balanced fertiliser - 12-3-9 at 35 g/m2. The common mistake that people make when growing in new turf is that they begin to maintain it as fine turf too early. We would save the greenkeeping for later.

IRRIGATION

Early spring 2004 was dry for a time and the cores quickly became dry and dusty and needed to be watered. The organic matter in the cores makes the surface prone to drying out extremely quickly. We made sure to irrigate as much as possible to keep the surface moist and bring the new sward through.

MOWING

It was recommended that mowing be undertaken as often as necessary at an initial cutting height of 12mm. Very soon, this turned into every other day.

WHAT HAPPENED NEXT?

From then on everything went pretty much as planned. Tony took full charge of the maintenance operations and Henry popped in at regular intervals to discuss the progress. It was a very interesting time for us both.

The cores began to regenerate and establish a cover almost immediately. In using cores we are sowing mature plants. This was mainly the annual meadow grass rather than the bentgrass component of the sward. Tony commenced mowing within the month using a hand mower set at 12mm boxing off the clippings.

Next came the bentgrass establishment from seed, which was truly amazing. By early June, the base of the sward was thick with newly emerging seedlings. It seems that the protective cover given by the annual meadow grass coupled with the contact with the moist cores below provided the ideal environment for the establishment of the bentgrass seedlings.

Our discussions from this time emphasised the need to keep growth moving with regular fertiliser and irrigation inputs. We kept the irrigation input high and, during the day, through the dry May/June weather to keep the establishment moving and prevent wilting of the new seedlings. The monthly fertiliser applications also maintained good growing conditions. Mowing at 12mm was required four times a week. An additional overseeding was made in June to ensure the establishment of a balanced sward dominated by the finer grasses.

It is interesting to note that the turf base was never actually thatch by nature. Even though we were irrigating regularly from the outset, the cores seemed to break down nicely right from the start. The turf base was nice and open and the cores were well integrated with sand and so broke down well. The use of cores from established greens may have brought with them a fully functioning microbial environment. There seemed to be no adverse affect from using the cores. Rooting was strong and down to 10cm by the start of July.

From then on, it was all very straight forward. Through the summer we kept growth moving and continued mowing at 12mm. We weren't really tempted to fine down too early and just kept concentrating on growing in. We had to hold back Tony's greenkeeping instincts through this time.

Irrigation wasn't necessary in the summer of 2004 but regular feeding was required as and when. There was some minor Fusarium patch disease activity but no Take-all. We used fungicide to keep disease activity at bay.

It was such a good establishment that the decision was made to change the emphasis this autumn. We double verticut and topdressed in mid September to begin the greenkeeping. The green was also overseeded at this time and an autumn feed - 4-6-8 + fe at 35 g/m2 - applied to sustain healthy, rather than lush, growth.

▲ The green at the start of August

▲ The sward at the end of the first year

The surface was already very fine by now and could have easily been brought into play. The sward comprises a tight and even mix of predominantly bent with annual meadow grass species. The strange thing is that it already looks mature rather than being new. It appeared consistent with the others and I am sure will play the same given time. We have the whole of 2005 for the greenkeeping.

Up to the end of October, the green was being mown three times a week at 10mm. The plan for the upcoming winter was to sustain turf health and harden off the sward by using low NK + Fe turf tonic type products. Mowing will be undertaken when necessary at a cutting height of 10mm. Frequent switching will be carried out to remove dew. We will keep monitoring for disease activity and treat when necessary.

CONCLUSION

We are both very pleased with the initial results of this method. The second new green was surfaced in the same way in autumn 2004 without any qualms. We used this technique for a specific reason - to retain consistency. It was the right option for our situation because we had time on our side. It will be interesting to see how long it takes for the autumn sowing to fully mature. Overall, this is certainly a good method for establishing turf nurseries and in special cases playing surfaces.

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