

Agronomy Report on the Golf Course



Broadstone Golf Club

Report Date: 24 June 2011

Consultant: Steve Gingell



STRI is completely independent and has no alliances to commercial products, services or contractors. This ensures that our design, project management and advisory services provide the best solutions for each individual client.

If you have any queries with regard to this report please call +44 (0)1274 565131

Agronomy Report on the Golf Course

Broadstone Golf Club

Date of Visit: 20 June 2011

Visit Objective: To undertake an inspection of the golf course and provide recommendations for maintenance

Executive Summary

The spring has been extremely dry and relatively cool but very windy. This has put considerable stress on many of the sandier and heathland type golf courses where fairways have burnt out quite badly. However in the last couple of weeks there has been around 75 mm of rainfall and this has to a large extent rectified much of the damage caused by the drought.

The greens at Broadstone suffered through the spring in the usual manner with the meadow-grasses becoming quite weak and not growing actively which seems to be a common theme at this time of the year for the types of meadow-grass prevalent on such a course. However, on the day of the visit the greens were performing well with a good uniform density of sward, extremely smooth ball roll but a slight lack of trueness.

This report looks at a number of the areas where the Club wishes to move things on and discusses the ongoing practices within the soil profile.

Greens

OBSERVATIONS

The table below represents the key observations on the day of the visit. The measure for thatch depth is graded as follows:

The key for a highly organic surface would be 'th'. This progresses through 'th + td', 'td + th' to 'td' which indicates very little thatch development.

Green	Thatch depth (mm)	Root Depth (mm)
1	10 td+th then 25 th+td	75
2	10 td+th then 30 th	70
3	10 td then 25 td+th	75
6	10 td+th then 25 th+td	75
8	10 td+th then 25 th+td	75
17	10 td+th then 30 th	70
18	10 td+th then 20 th	70+



Typical profile showing the layer of new top dressing, the residual thatch and root depth

Pests and Disease

The change in weather conditions had led to an outbreak of Fusarium which had been treated. There was also some evidence of Red thread within the sward.

Green Performance

The STRI Programme was not undertaken over the course as a whole but a few measurements were made. The firmness of greens was around 90 gravities on the 0.5 kg Clegg Impact Hammer when dropped from 0.5 m. This is well within the target range of 80 to 100 or probably more accurately 90 to 110 gravities for a heathland type course. The moisture content, bearing in mind the recent rainfall, was around 40%.

Green speed before any operations were carried out was around 8½ ft. A second cut was undertaken which increased green speed to around 8 ft. 9 in., a Turf Iron was used which brought about a further increase in speed to 9 ft. 9 in. and a turf vibratory roller increased it again to around 9½ ft.

Sward Content

The sward consists mainly of a blend of meadow-grasses with some well refined bentgrasses being observed. It is considered that the bentgrass is continuing to increase.

Sward Health

The general condition of the greens was reasonable at the time of the visit albeit they were slightly yellow with some yellow tuft becoming apparent. The greens are probably due the next liquid feed in the near future.

DISCUSSION

Soil Profile

The soil profile in the past has been difficult to change probably due to the very low pH levels. A gradual increase in pH has led to a breaking down of some of the organic matter and a pretty much uniform profile was seen across all the greens sampled which indicated around 8 to 10 mm of new dressing following the increased top dressing regime. Below this organic matter were found to varying depths of between 15 and 30 mm. It was very dark and becoming slightly more defined, indicating some changes. This was very pleasing but clearly indicates the need for continued removal of organic matter to ensure that the green surfaces become much drier. This is also supported by the relatively high moisture contents following rainfall. Ideally moisture content should come down to around 30% very quickly after rainfall when the greens would be firmer and play better and also begin to support increased levels of bentgrass.

Therefore aeration of greens needs to be continued with solid tining and occasional micro-hollow tining with the top dressing consisting initially of the 90/10 Banks sand mix, reducing to a 95/5 mix and eventually in about a year's time or slightly less, a full sand mix. The aim should be to apply at least 100 tons per annum to the green surfaces using the spinning disc spreader which in reality will mean dressing once every couple of weeks through the growing season.

The benefit of this will be that the greens will build away from the problem layers at depth, they will become firmer and hence perform better.

There may be some merit in using one of the 50 mm coring type systems now coming onto the market to drill cores down into the profile to a depth of around 4 to 5 m, and then backfill with gravel and replace the hole cup. If carried out intensively on the greens this can have a significant impact on drainage with limited evidence of visible drain lines. The main contact for this system is Dale Gleed of DSG Sports Turf & Horticulture, tel: 07771 392944.

Green Performance

It was very pleasing to see the good ball roll performance on the day with very smooth greens being noted and only occasional bobble mainly when putts were very long and a lot of energy was being put into the ball. There was quite a lot of snaking which although not significantly off the line certainly indicated that trueness was not perhaps as good as we would normally expect.

A discussion was held on the merits of the True Iron and the vibrating rollers and a small test was undertaken to see the resulting difference in green performance. There was clearly an improvement in green speed and whilst this was not a fully scientific trial it did show the benefit of the Turf Iron over other systems. However, when purchasing such equipment you should consider the practicalities of having it on site, its ergonomics v. other systems and the benefits. On discussion it was felt that perhaps the Turf Iron would give a longer effect than the vibrating rollers and this could be measured to see whether this in fact was true.

I would however encourage the Club to undertake a second trial with the Turf Iron alongside one of the GreenTek adjustable vibrating rollers before purchase as these may be a better comparison with the old turf rollers available at the Club.

With the Caris Cup coming up soon there will be a need to gradually increase green performance and hopefully it will be possible to dry them out very slightly to maximise firmness and help to improve green speed. I would recommend one more aeration treatment within the next few days

but then look at using top dressing and other fine grooming operations to increase green speed to the desirable level. The ability to achieve high 9 ft. speeds with very little effort is testimony to the current good condition of the greens and there should be no issues for the Caris Cup.

Wetting Agents

The Club currently uses Revolution which appears to be working well. There was some concern that it might make the greens softer and whilst this is possible as it is known to hold slightly more moisture than other wetting agents, it is not likely to result in saturated conditions. It was interesting to see however that the thatch in the profile was quite darkened and whether this is related to the use of the wetting agent is unclear. Later in the year when we undertake the STRI Programme we will take organic matter samples to ascertain whether there is any correlation between the visual aspects within the profile and the scientific readings.

Irrigation

It was pleasing to hear that the first phase of the irrigation system is due to be started later in the year. This will help greatly to reduce the amount of water which needs to be applied to ensure reasonable plant health and coupled with good wetting agent treatment and other strategies it should be possible to use far less water on the green surfaces.

There has been a danger this spring when ground conditions have been quite dry and the wind has caused leaf scorch to be tempted to over-water when the evapotranspiration rates have been relatively low as a result of which I have seen many greens which are too wet. I don't believe this to be the case at Broadstone however as the firmness and development of organic matter does not support over-watering. However, there is a need to be a lot more accurate in measuring the amount of water applied or in fact needed and I would certainly recommend the purchase of the Theta Probe. These cost around £800 but give a very accurate reading of green moisture levels and therefore help to manage the amount of water which needs to be replaced.

Surrounds

The surrounds were looking in good condition with clear definition and very limited areas of bare ground with the exception of those on high points or very intense traffic routes where damage has occurred. It was good to see that the surrounds and approaches are being extended and the maintenance which takes place on greens is being carried out on surrounds also and this should be continued if at all possible.

Some clubs use an intermediate cut between green and surround to produce an enhanced level of definition and this might be something for the future.

There are some areas where surrounds and greens have been extended back to where they were originally and whilst this is useful and will help to assist with a second intermediate cut the new irrigation system needs to be tailored to meet the patterns and sizes of the greens at their likely greatest extent.

Where there are areas of weakness for the Caris Cup there are only a few weeks to make some progress in bringing some of the worked areas back into condition. The area to the rear of the 6th and the plateau may need to be turfed almost as a sacrificial turfing just to give some lie from which balls can be struck rather than from the bare ground which is currently present.

Over the winter there would be great benefit in undertaking a much more rigorous review of some of these areas, returfing or seeding as necessary. I would certainly support the further use of wetting agents and spiking to help to improve some of these problem mounds.

Fairways

The fairways around the course have greened up well with limited areas of bare ground. The discussion on irrigation installation on fairways would certainly be supported but probably at this stage undertaking an installation to cover those areas which are either heavily played or are known to be particularly droughted. The aim of irrigation on fairways, particularly on a sensitive heathland course, is not to create green grass but to prevent grass from fully dying out and bring about slightly increased recovery particularly in areas where balls tend to collect.

There are still a number of areas around the course relating to walkways, mounds etc., where grass cover has thinned out over the last couple of years due to difficult weather conditions. Some of these areas are extremely hard and therefore using an aerator is difficult as the tines easily become bent. There may be a need to consider using an air injection system to blast and decompact the areas before they can then be spiked or indeed to reconstruct some of the worst areas with deep cultivation to help to mix and improve the soil profile. The mixing in of additional sand/green waste would also be beneficial to sward health.

Approach to 2nd Green

The hillside at the 2nd green approach has always been very thin and struggles to support grass. A decision was made to increase the cut to semi-rough height and this has helped to retain much more grass cover and is probably quite a worthy feature of the hole (see photograph below). At the time of the visit it did need to be cut and there were still some areas of weakness which will need further work but it was a great improvement on what was seen before. The walk-on/walk-off area should ideally be regraded as this would help to improve the overall look of the hole.



STRI Programme

The third visit of the year was agreed to be the STRI Programme visit with the Programme being fully implemented in the 2012 agronomic year. This will cost a further £300. A detailed assessment will be undertaken on three greens, one being the best, one the worst and one intermediate. We will measure firmness and moisture content over the surfaces, green speed, trueness and smoothness and take core samples for testing. The results will be analysed in the report and a visual assessment of the sward surfaces will be discussed. We will also be able to undertake further trials with maintenance equipment such as those briefly carried out at the time of the current visit and follow this up by a course walk over the remainder of the holes not seen at the beginning of the day. The visit will take longer perhaps finishing mid-afternoon and the soil samples for organic matter content at four depths, pH, P and K are included in the additional cost of the visit.

Conclusions

The spring has been extremely testing particularly for heathland courses. The meadow-grasses have gone through their normal spring decline when they have not grown particularly well as we went from cold weather straight to conditions of stress. It is pleasing to note that the greens have come out of this well at Broadstone with good surfaces being achieved, albeit quite dense but very smooth and reasonably true. Green speed at the current density is acceptable and therefore will not need any significant fining down or thinning out.

The key recommendations are to continue to work on organic matter through its removal and also topping up with an increased level of top dressing as discussed earlier in the year. This will have a significant impact on both firmness and also the ability of the greens to drain more freely. There may be some benefit in using the newer core drainage type systems which are now available to maximise drainage potential on many of the green surfaces with minimal disruption.

Steve Gingell
STRI Area Manager South
Email: steve.gingell@stri.co.uk