Agronomist's visit

Monday 17th August 2009

Our Agronomist, Iain Richardson made one of his frequent visits to the course on Monday 17th August 2009. Iain has been working with Donnington Grove for about eight years.

Core samples (5-6" deep and ¾ " in diameter) were taken away for analysis from the following greens a few weeks ago;

- 1st, 3rd, 6th, 12th, 13th, 18th,

The results from each green were then averaged out to give a reading for the course.

On this occasion Richard Lomax and Tim Brunsden accompanied Dave Knight around the course to monitor Iain's physical examination of the greens and to view the results from the laboratory of the core samples.

Main conclusions

- No compaction issues.
- No root zone issues.
- Thatch levels within guideline limits.
- Magnesium, Iron, Phosphorus and pH levels all normal.
- Sulphur levels low, but within guideline limits.
- Potassium levels high, but within guideline limits.
- Organic content low.
- CEC level low (poor nutrient retention).

Recommendations

- Increase Sulphur input.
- Take measures to increase levels of organic matter and nutrient retention by Vertidraining, Verticutting and Top Dressing at regular intervals (approx every 2 weeks).

History

Our greens are all sand based, as opposed to soil-based (push-up greens) and have not been altered from their original specifications of 90% sand and 10% organic matter.

They consist of a top layer of approximately 18" sand (60% medium coarse sand with a lower layer of sharp sand) together with a gravel base and are cut to 4mm. The European Tour cuts to 2mm which speeds the greens up, but these would not stand up to any heavy use or wind.

The greens are divided into the following layers, working from the bottom up.

- Base
- Root zone
- Thatch
- Grass

Base layer

Soil- based greens suffer from compaction, as can be demonstrated by squeezing mud or damp earth together. The compacted soil needs to be broken up and air needs to get into it. This is mainly achieved by Hollow Coring (or Tining) once or twice a year, where numerous small cores are removed from the greens. This aerates the soil and replaces the compacted soil with sand.

Sand-based greens are slightly different. Sand does not compact. Try squeezing sand together! These greens require aerating as per the soil-based greens, but do not need long cores of sand taken out to be replaced by more sand! Vertidraining or verticutting is the answer here. Vertidraining aerates the greens with a number of thin 13" spikes, which don't interfere with the golf. Verticutting is basically scarifying the top layer of the greens.

Root zone

There were no problems connected with the root zone.

Thatch

The thatch level comprises of all the detritus and fibre. It is important to keep this level between 12-15mm.

Too much thatch will leave the greens spongy. You would be able to feel this as you walked across them. Balls would simply stay where they landed. Too little and the greens become rock hard with no balls holding.

It is possible for this thatch layer to become compacted. If the thatch or fibre level becomes an issue we can hollow core it, but only to a depth of 1" as we do not need to reach the sand below. The fibre layer on all our greens are nice and loose, as Iain demonstrated to us by cutting into it and breaking it up showing a good density and feel.

The fibre content in the thatch is the amount of organic matter held in the surface. Low levels of organic matter, or nutrients in the fibre content leads to a loss of grass strength and results in a rock hard surface.
This is a problem with sand-based greens – The greens need to hold nutrients in the sand layer, therefore need organic matter to bind to the sand. With sand only, any nutrients introduced have nothing to bind onto and wash through quickly with rain. As our greens were originally 90% sand we have to build this nutrient content up. Deep hollow coring actually reduces the nutrient levels. This is one of the reasons why no hollow coring has taken place during the past year.

The CEC reading is the soil's ability to maintain organic matter/nutrients. It runs on a scale of 1-20, with 1 being the worst. Up to 3 years ago, our best reading was 1.5. This was mainly due to the unnecessary hollow coring. We are now gradually increasing the CEC towards the guideline levels of 5-15. The results for 17th August 2009 were 2.4. This low number can be partly attributed to the 3 wet years we have just had as the rain removes the oxygen from the soil.

Oxygen is also required to maintain the fibre. Vertidraining and cutting will help with this. Top dressing also helps as the sand particles opens up the fibres in the thatch allowing oxygen in.
It is important to have the correct grade of sand. We use medium coarse sand and are aiming to top dress about every 2 weeks when required.

If the wrong grade of sand is used i.e. fine, it will clog up around the medium coarse grains and in time develop a permanent layer which impedes drainage, root growth and leads to flooding. If the fibre layer is impeded the greens won't drain well. Our greens drain well after a heavy deluge.

Our greens have now reached the level where they are holding onto nutrients and we are now able to build this level up to within the guideline limits.

Greens can get hypoxic- over wet. i.e. no oxygen.
The 9th suffers from dampness due to a believed broken/blocked drain. The soil sample from this green on the 17th August showed that it was damper than the other greens, but had no diseases or compaction issues.

Grass

The greens are checked for coverage, mottling or varied grass colours are not of concern as they are simply different grass species.
The dark grass is bent grass and a lot of the yellow grass is caused by dampness, a dry spell will cure this.

Some of the greens are surrounded by meadow grass. This is a problem if it is allowed to take hold on the greens. The seeds root in any spaces in the sward and this leads to tufts or patches of thick grass. This is a big problem if you over feed the greens at any stage.

All the diseases associated with greens are already live in the soil. They only await the correct conditions to break out during the year.

Our greens are rolled and dressed before competitions in order to speed them up. This will slightly compress the thatch, which will then require vertidraining during the following week.

We hope this report has helped you to understand just how much science, as well as hard work and experience, goes into maintaining our greens in their excellent condition. If you have any further questions relating to the maintenance of our course just email committee@donnington-grove.com