

**BOTHWELL CASTLE GOLF CLUB**

**SUMMER AGRONOMY REPORT ON  
THE CONDITION OF THE GOLF COURSE**

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**21<sup>st</sup> July 2008**

**RJW/PC**

## **BOTHWELL CASTLE GOLF CLUB**

### **SUMMER AGRONOMY REPORT ON THE CONDITION OF THE GOLF COURSE**

#### **Object of visit**

To review the summer condition of the golf course  
and confirm future course maintenance requirements

#### **Date of visit**

18<sup>th</sup> July 2008

#### **Present**

Mr. John Duncan (Captain)  
Mr. Gavin Greave (Green Convenor)  
Mr. Jim Callaghan (General Manager)  
Mr. Gary Anderson (Course Manager)  
Mr. Richard Windows (STRI)

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## **I EXECUTIVE SUMMARY**

- The golf course is in good order and is playing well. Many positive comments regarding its condition are currently being received.
- Work to improve the firmness and drainage of the greens remains the main objective over the next couple of years. This means regular hollow coring, top dressing and aeration. By committing to this programme you will make progress regarding the year round playing quality and consistency of the greens without having to reconstruct the surfaces.
- As the greens firm it is important to complement them with firm and consistent green approaches. The primary objective being the extension of aeration and top dressing into these sections to remove/dilute thatch.
- The fairway drainage programme is impressive. Pipe drainage is being complemented with sand slitting. This winter the fairways to 12, 15 and 18 shall receive the focus of the work. To retain the drainage performance of the sand slits sand top dressing is required annually and sand banding may be required in the future.
- Too much sand was added to the bunkers, which made the surfaces soft and prone to plugging in dry weather. The excess sand will be removed accordingly to provide firmer lies.

## **II GREENS**

### ***OBSERVATIONS & COMMENTS***

The greens were performing well during the visit. The amended maintenance programme of recent years involving relaxed surface preparations combined with less fertiliser inputs is without doubt producing more consistent surfaces. Botanical quality in terms of increasing populations of bentgrass is being fuelled by these subtle changes. They are also proving to be much easier to manage. However, while the progress in recent years has been good there is still a long way to go to fulfil the potential of the greens at Bothwell.

Underfoot softness continues to be the major issue to the majority of greens with the exception of those built to USGA guidelines, e.g. 2, 4, 14 and 16. This softness is caused by a combination of dense thatch accumulations in the upper soil profile and compaction of the underlying soils. To provide objective measurements on the thatch removal/dilution process samples have been taken from the 13<sup>th</sup> green and 18<sup>th</sup> green and submitted to the laboratory for loss on ignition tests. To determine the levels of thatch through different depths of the upper soil profile, measurements were taken at various depths as shown below.

	13 <sup>th</sup> green	18 <sup>th</sup> green
0-20 mm	14.4	12.9
20-40 mm	8.4	8.3
40-60 mm	4.5	3.4
60-80 mm	3.5	4.0

Unfortunately, the thatch levels beneath both greens are excessively high between 0-20 mm and 20-40 mm. Levels from 40-80 mm are good and well under control. Our target for the 0-20 mm range is 5-6% and between 20-40 mm is 4%. To monitor our progress in this regard samples should be submitted for retesting every spring/summer. The four new sand based greens to (e.g. 4, 15 etc.) support much less organic matter than the others on the course, which is why they are firmer underfoot.

Samples were also taken from these greens for routine chemical analysis. The results from this showed that pH was a little low at 4.8, phosphate levels were also low at 7-10 mg/litre but potassium levels were satisfactory.

### ***DISCUSSION***

So, the greens have improved greatly over the past year. They are much healthier, are easier to manage and are simply playing better. While this is good, the major problem with the greens (with the exception of the sand based greens) continues to be from thatch and compaction issues in the soil profiles. This results in soft, overly receptive greens and deterioration in wet weather periods.

In order to improve the firmness, surface drainage, year round playing quality as well as laying the foundations for accelerated botanical improvement that will deliver improved consistency, we must implement and commit to an intensive programme of hollow coring and top dressing. Using large tines during periods of active growth will hasten progress. Communicate to the golfers the benefit of this work. They will soon see the success of the operation, as year round playing quality will soon improve. Believe me,

they will understand and provide their support when they have better surfaces for longer in the year.

To obtain the objective of a sandy soil profile that is free from compaction we will need to commit to this programme for at least 2-3 years. Once we complete this phase, focus will then turn to accelerating sward species change towards surfaces dominated by browntop bentgrass. This will enhance the consistency of year round performance.

### ***SUMMARY***

The following summarises the objectives discussed during the visit...

- Implement hollow coring using 15 mm tines a couple of times a year when growth is strong and the weather is dry.
- Combine aeration with heavy top dressing to fill the core holes. In addition, sustain routine inputs of top dressing through the main season to increase the sand content of the upper soil profile.
- Drill and Fill selected greens (3, 8, 10 and 15) and deep aerate all the greens to improve drainage through the soil profile.
- Sustain the current fertiliser and surface preparation programme.
- Manage disease effectively.

### ***RECOMMENDATIONS***

The following recommendations section serves to deal with these goals.

#### **1) THATCH REMOVAL**

This is the most important operation to achieve. We need to use large tines a couple of times a year to ensure we make progress. This will be disruptive so explain to the members the longer-term benefits of improved conditions for longer in the year. As discussed, implement the operation as early as possible in the autumn. Early to mid September would be ideal and should be scheduled for this time next year after a reorganisation of the fixture list. However, for this year, it would seem the first two weeks in October is the only time when this work can be accommodated. While this is not ideal it will have to do. The following should be the programme of work...

- Treat the greens with an appropriate systemic fungicide such as azoxystrobin (Heritage) or mycobutanil (Masalon).
- Feed to provide vigour for recovery.
- Double verticut the greens before to clean out any fresh thatch accumulations. Be relatively aggressive here.

- Use 15-16 mm hollow coring tines set to a hole spacing of 50 x 50 mm. A shallow penetration depth of 40-50 mm is all that is required as this is where the problems lie.
- Clear the cores. Then comes the hard work. Heavy applications of top dressing should be made to ensure the core holes are filled to the surface. As we need to be looking to apply the material at a rate of 5-6 kg/m<sup>2</sup> you should budget to use up 40-50 tonnes for this operation. Hand brush the sand down the open aeration holes.
- Finish with rolling to restore the surface. Try to get a Turf Iron for this job to help accelerate the production of smoother surfaces.

This operation except the verticutting should be repeated at an opportune time in the early spring when there is some growth. The sand based greens can be omitted from this operation as the autumn coring will be sufficient to get on top of the small amount of organic matter beneath these greens.

## **2) ROUTINE TOP DRESSING**

You are steadily increasing the amount of sand applied to the greens. However, we need to do more to reach the target of around 130-150 tonnes per year. If 40 tonnes is used up after each coring operation this leaves another 50-60 tonnes to be applied lightly through the growing season with these being concentrated through the April to early June period.

As the pH of the greens is rather low, increasing the frequency of top dressing with a slightly more alkaline product (as all sands are) should be sufficient to gently increase the pH back up to around 5.0. We will keep this situation under surveillance over the next few years.

## **3) AERATION**

We are pleased with the routine aeration programme which has steadily evolved over the past couple of years. It therefore requires no change. However, as discussed in the last report, Drill and Fill aeration shall be completed to 3, 8, 10 and 15 in the next few weeks. This operation will improve surface drainage and increase the sand content of the upper soil profile. Depending upon the success of this work, you should look to budget and plan for one treatment each year for the next 2-3 years.

## **4) FERTILISER PROGRAMME**

You have implemented a really good fertiliser programme this year, which has worked well in terms of providing consistent surfaces without excessive growth. This has meant the surface preparations have not been intense and further accumulations of thatch have been minimised. Do not change the current philosophy.

As soil phosphate levels are low, it would be sensible to apply some phosphate in the autumn. Therefore, change the 4:0:8 feed to one containing some phosphate such as the 6:5:10 product from Scotts – we still want the nitrogen source to be ammonium sulphate.

## **5) SURFACE PREPARATIONS**

We are delighted with the amended surface preparation programme. The routine cutting height has been raised slightly to around 3.5 mm, which is on the low side but the turf is comfortable at this height and appropriate pace is being obtained. Verticutting has also been relaxed because less fertiliser has been applied. Rolling is achieved as required. These subtle changes are easing the pressure on the turf and delivering more consistent playing qualities.

Once we have improved the underlying soil conditions we will move to the next phase of greenkeeping, which will involve relaxing disturbance pressure to favour the development of the finer grasses. As we are not there yet so do what is necessary to provide appropriate surfaces for the golfer. This does not mean forget about relaxing disturbance pressure but just make sure we do not get ahead of ourselves. For the next couple of years (at least) sward species composition change is less important in comparison to the removal of and dilution of thatch.

**6) PRIMO-MAXX GROWTH REGULATOR**

There is significant merit in the use of this product next year. With its use, the surfaces will be more consistent through the day (in terms of pace) and less aggressive treatments will be required to provide optimum playing quality. To get a handle on its performance, it would be worth making a couple of applications to the greens for the rest of the season. Apply at 0.4 l/ha in 350 litres of water every 21 days. To minimise any chances of discolouration tank mix with a liquid iron or nitrogen product.

**7) DISEASE CONTROL**

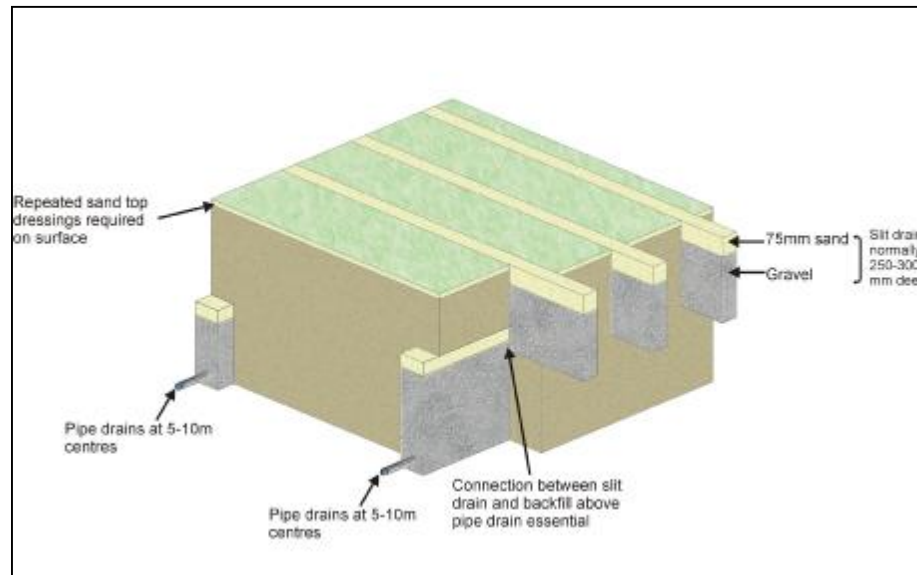
Make sure an application of systemic fungicide is applied before the autumn coring, especially as it is being achieved rather late. A product with a true systemic action such as azoxystrobin (Heritage) or mycobutanil (Masalon) would be most effective, as this will give better and longer-term control. Be vigilant with disease outbreaks through the rest of the autumn and apply fungicide if necessary tailoring the active ingredient to the weather conditions, temperatures and growth at the time of application.

### **III GREEN APPROACHES**

As we have discussed in previous reports, it is our objective to improve the firmness of the greens and to complement the firm greens with firm green approaches to allow the running game to be played. In essence, we want surfaces that reliably take and release the ball from incoming shots. To achieve this, we need to increase maintenance work to the green approaches to improve their firmness and consistency. At present, the presence of excess thatch is resulting in overly soft conditions to facilitate this ideal ball to turf interaction. For this reason, you need to extend the greens hollow coring work into all the approaches over the next few years. What is more, the continued programme of deep aeration is required along with routine top dressing, feeding, occasional verticutting and winter traffic management.

### **IV FAIRWAYS**

Drainage improvement is the major objective to the fairways in order to extend the length of the playing season and minimise their vulnerability to softening and closure during wet winter periods. The work achieved in this regard to date has been very good. Pipe drainage (primary drainage) has been completed with sand slitting (secondary drainage) to many areas. This close season pipe drainage will be concentrated to the 1<sup>st</sup> fairway with sand slits being installed to 15, 18 and specific sections of 12.



The image above shows the layout of a drainage system as installed to the fairways. As we discussed during the visit and in previous reports, the performance of the sand slits will depend upon their condition at the surface. If the slits become sealed over by soil or thatch they will be less effective. Therefore, to ensure this does not happen, annual sand top dressing is required to the areas that have received sand slits.

If however their performance does deteriorate with time the connection between the slit and the surface can be restored by means of sand banding. At this stage this is considered unnecessary assuming you commit to a programme of sand top dressing. For budgeting purposes you will need to apply 4-6 kg/m<sup>2</sup> of sand to these areas each year.

## V BUNKERS

Too much sand was placed in the bunkers in the early season which resulted in soft lies and plugged balls. To rectify this problem, sand will be removed so a consistent depth of 100 mm will be achieved across the bunker floor.

**Signed**

**Richard Windows B.Sc. (Hons.) MBPR RIPTA**  
**Turfgrass Agronomist**  
**Official R & A Agronomist Scotland**