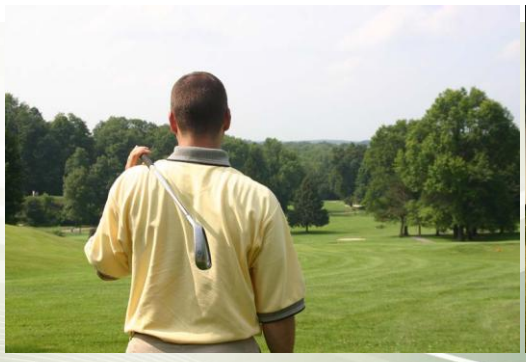
# Advisory Report on the 5th Green

**Sports Facility Name:** **Mid Herts Golf Club**

**Report Date:** **29th November 2011**

**Consultant:** **Charles Henderson**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| **Report Title** | **Advisory Report on the Golf Course** |
| **Sports Facility Name** | **Mid Herts Golf Club** |
| **Date of Visit** | **17th November 2011** |
| **Visit Objective** | **To review the condition of the 5th Green, provide reasoning for existing condition and make recommendations for ongoing improvement.** |
| **Present** | **Mr Charles Henderson – Turfgrass Agronomist – STRI Ltd** |

## Introduction and Background

Mid Herts Golf Club have been assisted by the STRI for a number of years, during this time the course has continued to develop positively under the stewardship of the Course Manager.

Throughout the last few years, the 5th Green has been a source of complications both within normal maintenance practices and indeed reactions to approved and extensively trialled selective graminicides.

Following a negative reaction to a selective graminicide the green was reconstructed. This was completed with a standard pipe drainage system and new rootzone. From here it was re-turfed with bentgrass/fescue turf some three years ago.

The STRI completed their annual advisory visit on the 8th September 2011, during this visit the 5th green was reviewed and discussed extensively. The poor growing environment, namely light levels and shade from surrounding trees was duly discussed.

During October 2011, the Course Manager identified a lack of rooting and slight deterioration in turf condition. From this, the following email was issued by the STRI to assist the club in managing the issue.

Following on from our conversation regarding the 5th green, please find enclosed a summary of recommendations.

Should the condition prevail or become more severe do not hesitate to contact me and we can arrange an emergency drop in visit.

**Key Points**

Conditions described

- Root depth and mass appear to have reduced significantly in recent days/weeks.
- Condition more prevalent in shaded areas of the green.

**Possible Causes**

- Commencing of cooler temperatures has result in slowed root growth.
- Changing angle of the sun has resulted in increasing levels of shade in areas of the green. The 5th green is extremely shaded as described in previous reports.
- Possible presence of nematodes.

**Advice given**

- Commence light and frequent feeding. Apply 2-3kg/ha of actual nitrogen every 14 days to achieve light growth. Use Ammonium sulphate based fertiliser.
- Incorporate potassium and phosphorus into the liquid feed. Continue until November only.
- Apply Iron every 14 days to manage disease.
- If possible apply a preventative systemic fungicide chemical with other greens as scheduled.
- Apply seaweed ASAP.
- Monitor moisture carefully and run at moderate levels.
- Commence spiking ASAP and as frequently as possible (identify root limit and try to penetrate that depth).
- Reduce wear (triplex) on sensitive areas of the green.
- Raise mowing height where practical.
- Reduce frequency where practical.
- Collect soil samples and send off to Colin Fleming. Contact him directly for collection procedure. Also expect this to take several months.

Further recommendations can be discussed in 2012.

*Dr Colin Fleming, Principal Scientific Officer, Applied Plant Science Division, Agri-Food and Biosciences Institute (AFBI), Belfast*

**Key objectives**

- Keep turf density up as high as possible.
- Keep moss and algae invasion low as possible, treat upon first site with Iron.
- Improve root depth moving forward.

Further to the above comments, the following was also issued with regards to the 5th green in the August advisory report.

**New Green**

The 5th green which has been subject to some damage historically and has since been re-turfed was also subject to discussion.

It is apparent from measurements taken on site that this green is notably firmer than other greens. As such, the key objective for this green should be to reduce firmness back in line with other greens on the course.

For this renovation I would recommend at most that a 14-16mm solid tine and sand dressing be carried out. Moving forward it will be imperative that in comparison to other greens, we reduce either the rate or/or frequency of sand topped dressing to allow a level of thatch accumulation to

occur. This will assist in softening the greens and also altering species composition back to a more poa dominated surface as with other greens on the course.

This is initially a step backward in terms of agronomic goals, however the most important objective at this point in time should be to achieve uniformity with other greens on the course.

Following continued deterioration the STRI visited the site on the 17th November whilst in the area and reviewed the condition of the green. The following report highlights key observations, discussion and recommendations moving forward.

## Key Obsersations and Discussion

A site visit was carried out on November 17th around 2.30pm to assess the condition of the green in line with previous correspondence.

The following key observations were made:

- Turf cover over the green and surrounds was poorer than desirable and consisted of between 40-80% turf cover.
- Bentgrass growth was extremely soft in nature and leaves were 'curling' in search of light.
- Mowing heights and frequency appeared to have been relaxed at the time of the visit, along with recommendations made.
- Algal slime (algrea) presence had colonised the bare ground left by thinning turf cover.
- Very small amounts of moss were visible.
- Root depth was shallower than normal for bentgrass greens (40-45mm) and root mass was also low with new roots at depth being minimal.
- *Poa annua* plants present within the green appeared sufficiently developed and in a 'healthy' state in comparison to bentgrass plants.

**Pictures showing turf cover and root depth/quantity present at the time of the visit.**

All the symptoms present over the greens are typically associated with heavy shade. Leaves become softer and curled in growth as they search for adequate amounts of light. The plant focuses its efforts into additional leaf growth reducing resources invested in root development.

**Pictures showing shade levels present on the 5th Greens**

At this stage, it is still recommended that tests are conducted for nematodes to rule them out as a possible cause, but we remain relatively sure the primary cause of the sudden deterioration in turf quality is due to insufficient light.

The STRI can review use of their specialist Hemi-view system to quantify and estimate light values on the green if any further assurance is needed.

## Future Recommendations and Expectations

Having reviewed the greens condition in November, the STRI remain confident with the advice given during the email has provided every chance for turf cover to survive such persistent low light levels combined with newly installed turf, pure cultivared strains of bentgrass and fescue, and ongoing wear through daily use.

Several high profile courses throughout the South East have struggled with newly installed and/or planted fescue/bentgrass greens where shade has been present.

Several issues impact such greens through the early stages of development in shaded environments:

- Soil fungi and bacteria have to develop within the rootzone to assist with nutrient uptake of newly establishing bent grasses and fescues.
- Bent grasses still have a relatively high light requirement but are the most suitable option available for inland courses.
- Organic matter requires time to develop to sufficient levels for soil microbes to develop.
- Root bounce (sudden retraction of roots to shallow depths) is commonly experienced within 1.5-3 years of installing new turf.

The STRI has seen such greens gradually mature with the helpful ingression of native *poa annua* plants in the greens. *Poa annua* can provide a useful mechanism through which turf cover can be achieved. As was observed on the 5$^{th}$ green, where present *poa annua* does have the capacity to survive low light levels, through dormancy survival techniques, which are usually less than ideal on healthy greens but in this case will be useful.

Moving forward, the STRI feels that no significant gain will come from complete resurfacing or re-turfing of the green and many of the same issues will be experienced in the following years. However, the following advice is offered to assist in improving the existing situation.

**Key Objectives:**

- Completely remove shade causing trees or thin out as much as practically possible. The club will have to realise that tree removal will have an accumulative effect, the more trees removed the more light and air will be received by the green.
- Eliminate any further winter damage.
- Regain sufficient turf cover and density over the green.
- Increase the rate of invasion by native/natural strands of poa annua.
- Improve turf health and growth through summer.

In order to assist in achieving this, the following recommendations are detailed moving forward.

**Raise Height of Cut and Reduce mowing Frequency**

Cutting does produce wear and stress on grass plants and in this case should be reduced in frequency from its usual maintenance levels. Mowing frequency should be kept to minimal levels whilst not letting grass growth becoming excessively long, this will be best determined by the course manager.

Mowing heights should be increased to 8mm in length to allow the plant to increase its light intake capacity and rooting depth potential, helping to reduce winter damage.

**Tree Removal**

At the earliest opportunity the club should seek to remove as many of the prohibitive trees as possible. It is likely that the vast majority of the trees would have to be removed in order to notably improve light quality over the green.

It is recommended the club monitor shade angles and select trees accordingly, but as suggested almost all may have to go to achieve notable improvement. Furthermore the club will have to check on permission for removal of trees with any necessary authority such as the land owner or council.

**Winter Use**

From this point in the year growth rates will start to decline rapidly, from this recovery of the green from its existing condition will be slow. If the club are to continue using the green we can expect to see no recovery and further decline in its condition.

It is unlikely that the club can expect the green to return to a usable condition this winter. As such it is strongly recommended the club focus on having the green notably improved for April/May 2012. The STRI recommends taking the green out of use.

**Iron Sulphate**

From this point, over the course of winter the development of moss and during mild periods, algae will be a key concern. The application of Iron sulphate (consider the use of traditional Iron Sulphate) will be critical in minimising this activity. As such it is recommended that 10-14 daily applications of Iron are used over winter as weather allows.

Where small bits of moss start to ingress, handweed/plug these out as soon as possible. Keep a very close eye out for silver tipped moss and remove immediately where identified.

**Spring 2012**

Likely some 'patchy' re-growth may start to commence mid March 2012, it is from this point remedial works can commence to achieve the listed key objectives.

- Review the green condition and assess algae and moss content at this stage. Please contact myself to discuss further at this point.

- At the earliest growth opportunity de-thatch (poa busters) the green over 2-3 passes once the surface (and algae) has dried. Iron sulphate will assist in this process. The objective is clean the surface and allow room for existing plants to spread and new *poa* plant to establish.

- Commence seeding once natural growth is attainable. It is likely that potassium nitrate applications will provide the most effective method of achieving this. This may take several light and frequent applications.

- In April repeat the process, but where applicable collect seed head (from clippings on other greens) and spread over the greens to increase rate of poa ingression. Clippings may contribute to surface litter so be careful with amounts as could further encourage algae depending on weather.

It would be advisable to use the STRI advisory visit for 2012 at this point. From here an ongoing programme can be established to aid the ongoing grow-in of the green.

## Summary

It is apparent that drainage and construction of the 5$^{th}$ green is of a sufficient nature and has been suitably installed and turf density issues are primarily related to the extreme shade levels.

Reasons why newly establishing grass fails in such environments are outlined within the report, but it is understood much further knowledge and research is required to fully understand the extent of the deterioration experienced at Mid Herts GC.

We have outlined recommendations to assist the club in moving forward, but feel the key at this stage is to remove the shade limitation entirely and rejuvenate the turf cover already present. The club should progress to remove excessive nematode presence as a potential/contributory cause, as a matter of course, testing may take several months before notable results are received.

Signed

**Charles Henderson *(H.N.D, B.Arts*)**
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