
TO

KØBENHAVNS GOLFKLUB

AGRONOMY REPORT ON THE GOLF COURSE

February 2012

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GOLF COURSE AGRONOMY

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Date of Inspection – 7 August 2012

1.0 PRESENT

- 1.1 The course was inspected Martin Nilsson.
- 1.2 Matters arising were discussed with Hans Ole Voight, Lars Obel, Mogens Nielsen and Steen Christian Pederson.

2.0 COURSE CONDITION

- 2.1 The technical condition of the course has continued to progress over the past year. It was reported too there was a good early start to the season, when the greens picked up quickly, and since then have provided a smooth ball roll at medium pace quite consistently. Of late, the only cause for complaint has been the height and thickness of the rough, which is out of the Club's control.
- 2.2 The impression gained was the Club has now passed the 80% success mark in managing the structure of the course to provide optimum playability in the special circumstances of the deer park and the limitations arising from nil-pesticide use. As such, ongoing progress will call for exceptional measures and micro-management to fill the gaps where results to date have not been perfect, operations that in most situations can be limited by labour availability.
- 2.3 Special features for attention identified by the Club covered:
 - A requirement for maximum consistency within and between greens;
 - Weed infestations in green surrounds, on fairways and on tees;
 - The desirability of smoother, firmer foregreens;
 - Reducing muddiness on fairways outside the main growing season and providing smoother surfaces underfoot.

3.0 RESOURCES AND EQUIPMENT

- 3.1 I understand the Club is not yet in a position to brush the fairways routinely, but has had a demonstration and the operation was thought successful. If

the Sisis brush follows contours well I do not see an advantage to trying other makes, e.g. Campey or Greentek.

- 3.2** There has been much investment in new mowers this year. To get the best out of the mowing fleet it is very important to carry out daily checks and adjustments, and to re-sharpen the blades frequently. Maximising the amount of time the mechanic can spend in the workshop can make a lot of difference to the results achieved by this most fundamental of on-course operations. Over and above, frequency of cutting and timing of operations has a big impact too, factors that are greatly affected by the availability of manpower.
- 3.3** The Club indicated an aim for the course to be in the top ten in the country. I think it is very difficult to compare a unique, old-established course with a modern facility and any subjective judgement will depend on a huge range of factors. But a particular point for debate in how practical it will be to achieve this target will be how much time can be spent on attention to detail, which in turn means how many staff can be afforded.

4.0 GREENS

- 4.1** The Fescue-dominated turf that is the typical ground cover on greens had a good density, texture and completeness, with a moderate vigour, and was firm underfoot. The subsidiary Bentgrass was somewhat woolly in places, and tufts of Perennial Ryegrass stood out here and there. However, the Bentgrass and Ryegrass were fairly minor issues to be corrected by routine operations, as per programme. Broadleaved weed infestations too were minor, with just small patches of clover (*Trifolium*) and Mouse-ear (*Cerastium*) to be taken out by hand, as and when time permits.
- 4.2** However, there are still a few greens with a higher than desirable percentage of unstable Meadowgrass in the mix. This *Poa* was yellow (e.g. at 10th and 18th) or had died back (e.g. in sections of the 1st and 3rd) due to Foliar Anthracnose disease. Fescue re-colonisation to replace Meadowgrass has been slow in these cases, and I do not think it is a coincidence it is these four greens are the most influenced above and/or below ground by the proximity of large trees. Another green that looked different to the norm was the 12th, where the rootzone makeup is different: the grass mix here is good quality, but it had a lower vigour and was dotted over aeration holes.
- 4.3** Further areas of weakness were found on the green extensions at, e.g. the 4th, 8th and 15th. Here too the turf has been thinned by Foliar Anthracnose affecting patches of meadowgrass. In addition, it was noted the soil beneath these areas was especially dry, which was affecting their ability to recover by re-colonisation and/or from overseeding. In comparison, the extension areas at the 1st and 10th have improved greatly since last year.
- 4.4** Beneath the turf, typical organic matter build up was 12-15 mm of fibrous thatch. The top 3-4 cm of the profiles was dry. Deeper down, moisture levels varied when measured with a probe. The moisture content of the soils at 5 cm was typically 14-15% which is fine, but readings of 13%, 16%, 11%, 8% and 4% could also be found within the same green. In some places these variations in dryness impacted on the condition of the putting surface, but in others it did not.

- 4.5 Drainage rates were reported to be very good. There have been no problems with persistent standing water, even at the 18th. At the 17th, the centre of the green has been improved by adding Axis into the top layer, where the grass cover has responded positively to a change in the growing environment.

5.0 GREENS MANAGEMENT PROGRAMME

- 5.1 The fundamentals of the core management programme are giving excellent results and I do not see a need for radical changes. This will include hollow tining and overseeding with Fescues at least once per year to keep fibre build up under control and to refresh the grass mix with new plantings. As to other key items:

- Reducing the amount of star tining and doing more with the Procore is maintaining a satisfactory level of surface perforation in summer, which is a primary objective.
- Monthly verticutting and top dressing is smoothing the greens and is maintaining firmness by diluting the thatch layer adequately.
- A height of cut of 4.5 mm does not seem too long. Nevertheless, to keep Bentgrass finely textured and to cut down the tufts of Perennial Ryegrass, brushing needs to be frequent and the mowers must be as sharp as possible at all times. Fitting brushes to the green mower units will be an advantage.

- 5.2 To bring the 3rd green into line with the norm is a case for extra overseeding at four week intervals to fill in the gaps in cover. The same was advised at the 10th. Also at the 10th, consider trenching the green margin to prune off feeder roots from the trees to a depth of 45-50 cm.

- 5.3 At the 1st, there were good signs of Fescue colonisation this year, so I advised changing the overseeding mixture to one containing Fescues, rather than Bentgrass. Here too, extra overseeding will be required to help fill in the thin turf in the middle of the green that has been damaged by Foliar Anthracnose. In addition, I recommended re-colonisation is supported by hand watering and wetting agent to help new seeds germinate and help residual plants re-colonise in a situation where the soil was particularly dry. The same overseeding and focused hand watering was required on the weak green extensions at, e.g. the 8th and 4th.

- 5.4 At the 18th the location of the green is such a problem that overseeding with Fescues is very unlikely to be of benefit. The site is so often in the dark due to shade from the surrounding trees. Here, continue to overseed with Bentgrass as routine, ideally with narrow diameter hollow tining, applying two or three treatments over the spring and summer. Also I advise intensifying the input of fertiliser throughout the spring and summer, using 4.0.8 every 4-6 weeks to give maximum uniformity. One or two extra feeds with 4.0.8 will help the 12th green too, where fertilisers will wash out of the rootzone more quickly than on the average green.

- 5.5** Introducing Axis into the top layer at the 17th looks to have had good benefits, and might help the 18th too, by improving water balance in the upper profile. You might include this in the autumn programme.
- 5.6** Lastly, we discussed the potential value of taking measurements to monitor the progress of the management programme. However, the features that are measureable are already optimal, as demonstrated by STRI, so I do not think statistics will tell us much unless there is a major change in the course management policy. Nevertheless, the moisture meter will be a useful tool for refining irrigation input, taking measurements in conjunction with an assessment of turf condition to decide on requirements for general irrigation and/or spot watering, and by this means enhancing uniformity throughout.

6.0 GREEN SURROUNDS

- 6.1** The redevelopment of the green surrounds has been a positive benefit to the course and these areas remain fundamentally in good shape. The one course-wide issue is clover infestation, which is increasing year on year. On a localised basis a point for attention is the texture of the grass where it has deteriorated due to clumps of Perennial Ryegrass coming through in zones of focused foot traffic, at e.g. 1st and 2nd. A further concern raised was that the turf seemed too soft in spring, resulting in some adverse marking when mowing at 8 mm.
- 6.2** There is no answer to clover without resorting to treatments with selective herbicides. Adding extra fertiliser might at best disguise the clover a little, but I expect this effect would be minimal given the fineness of the turf type, and it will add to mowing demand. Mechanical operations to remove clover are more likely to encourage it than remove it, because the Fescue will be slower to recover from damage than the clover itself. The one sure way of eliminating clover is by applying selective herbicides, either as a general or spot treatment. As such, I hope the expected new regulations on pesticide use in Denmark will allow some limited applications of chemical weed control, and the park authorities will be sympathetic. The line of last resort is physical removal of patches and re-sodding, which will be a huge task year on year, and will place a very, very high demand on the turf nursery.
- 6.3** Until the position on pesticide use is clearer, I suggest winter re-sodding focuses on the removal of clumps of Perennial Ryegrass in aprons, e.g. at the 1st and 2nd.
- 6.4** I found the turf quite firm on the day and the results of mowing were smooth at 10 mm, other than where some extra top dressing is needed to build up settlement at the 16th. There was some significant thatch at the turf base, but the depth was not excessive. It was reported that when problems with mowing were experienced in spring these were alleviated when mowing at 10 mm. I suggest sticking at this 10 mm height, rather than take on a lot of work to hollow tine and top dress all around the greens. There are more important tasks to be dealt with.
- 6.5** Past issues with bunker sand selection seem to have been resolved. A sand depth of 5-7 cm is exactly right, but this will need monitoring and regular redistribution to ensure uniformity and the provision of minimum amounts overall.

6.6 The Club proposed a target of improving the run up to greens, to make these firmer and smoother. The removal of clover here will again depend on the availability of selective herbicides. It will be straightforward to smooth and firm extended areas in front of greens by top dressing alone. I do not see a need to hollow tine as well, only to solid tine when ground conditions are moist and to vertidrain in winter. You might work on an area of some 10-20 m in front of each green as a supplement to the routine top dressing programme on greens, but apply extra amounts in the first instance to make a quicker impact. However, do be cautious about mowing at 10 mm (as would be ideal), because there is no irrigation, which means the turf has the potential to burn up quickly in dry weather and lose cover. I suggest getting the turf firm and smooth, and then to review whether or not to go further with closer mowing and extra irrigation installation. I do not see a requirement for overseeding at this stage.

7.0 FAIRWAYS

7.1 The grass cover on fairways looked well, with a strong vigour and density. The turf was a degree woolly, but I expected it to improve quickly with more frequent mowing, preferably at times when the turf is dry. Brushing will enhance progress towards a finer texture, as planned.

7.2 Weeds are a problem, especially clover and plantain (*Plantago*). Picking out the plantains was discussed, but it will be a herculean task and very short term in effect. The plantains will grow in hoofmarks, and damage by the deer will not be eliminated.

7.3 Having said that, the risk of hoofmarks and muddiness in autumn and winter can be reduced by sand top dressing the fairways at the end of summer. The work should be timed for growing weather so the sand is quickly absorbed when applied in large quantities. It will not be practical to go to the maximum in terms of the amount of sand to be applied at one time without irrigation cover, but I think you will get a positive result with a spreading rate of 25-30 tonnes/ha per year over 3-4 years. A good sand for the purpose will be Kongsbro 0/4. Fairways that will benefit from this treatment most will be the 1st, 10th, 11th, 13th and 18th.

7.4 I cannot over-emphasise the necessity of vertidrainage fairways in winter every year. This is absolutely fundamental to good management. I would not advise aerating with a Shockwave or similar as an alternative. The Shockwave can leave long term marking and risks the surfaces cracking in a dry spring if cover is less than complete.

8.0 NEXT VISIT

8.1 It was proposed a late summer inspection is carried out in 2013, to view the course at a different time of the year. Of course if I can be of any further help in the meantime, I hope the Club will be in touch.

D M STANSFIELD
16 August 2012