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Blankney Golf Club

Report on the Golf Course

Report date: Tuesday 7th November 2023

Consultant: Ben Morgan

Date of visit: Tuesday 7th November 2023

Visit objective: To inspect the course and assess it for health for the winter season.

Present: Mr John Hart – Head Greenkeeper
Mr Alec Bradley - General Manager
Mr Ben Morgan – Consultant Agronomist STRI Group Ltd

Weather: Overcast with light rain and average temperature of 10°C

Introduction

Our previous visit was on the 19th of May 2023. The previous report outlines plans to treat the chafer grubs with a strong application of Acelepryn (Chlorantraniliprole) @ 600ml/Ha, continue with thatch management in the upper profile of the greens, manage turf disease and moisture through summer – all of which were achieved.

The document details the following:

Executive Summary

- The 2023 season was extremely wet with a total of 160mm of rain falling in October. It was the wettest October for 200 years according to the Met Office. This created challenges for clubs nationally who struggled to keep courses open and maintain the surfaces.
- The greens were renovated at the end of season with 8mm hollow tines to remove thatch and replace with top dressing sand. There was evidence of sand channels through the profile on inspection and the sand was starting to dilute the thatch in the 0-20mm zone of the profile.
- The team applied a total of 80-tonnes of sand on the greens this season. This was showing signs of improvements with the sward and profile.
- The team took the opportunity to overseed the greens afterwards with a blend of browntop bent (*Agrostis capillaris*). This showed signs of germination in the sward.
- The greens were infected with Anthracnose Patch (*Colletotrichum cereale*) and take-all Patch (*Gaeumannomyces graminis*) this summer. At the time of the visit there were visible signs of the Take-all patch in dead rings on a few greens, but there were no signs of Anthracnose.
- There was a huge difference in firmness between the older traditional push-up greens and the USGA sand-based greens. The older greens were much firmer with less thatch and the sand greens had more thatch and were softer underfoot. This is common with sand greens and means they may need targeted thatch removal program to get them back on track.

- This thatch acts as a sponge on the surface of the greens and retains water. It can sometimes trick you into thinking the whole greens is poorly draining, but in fact it's just the upper 0-20mm which is holding water.
- On inspection of the soil profiles the older push up greens were incredibly healthy. The sand USGA greens had signs of black layer (Hydrogen sulphide gas produced by anaerobic conditions). This indicated that deeper aeration will be needed to flush the water out of the profile and allow water to be released.
- The greens were due to be fed with a combination of Ferro-kelp (Iron and seaweed). This will help to toughen up the turf in preparation for the winter ahead.
- The rooting depth was good on all of the greens which showed that they were being managed well. The greens are managed on a low nitrogen program which makes them sustainable and promotes bentgrass within the sward.
- The annual meadow-grass (*Poa annua*) looked yellow and weak in places. This is a good thing because it will give you an opportunity to overseed and convert the greens into high percentage bent greens. It is the annual meadow-grass which usually gets diseases so is essential that while we are discouraging it, we still keep it happy and disease free so that we maintain a healthy surface for play.
- The tees had a good grass coverage and were now on winter mats for protection. A number of them may need relevelling as a long-term program.
- The fairways have been difficult to keep mown due to wet conditions and worm casting. The team are working hard to find solutions to this. They are investigating new machinery technology in the form of powered brushes. The Club has also employed a portable matt policy. The team were also thinking of marking the perimeter of the fairways by spraying liquid iron. Try these options and see how they get on. You could also look to mow them with rotary machinery rather than cylinder when conditions allow.

Essential Actions

- Verti-drain the greens using 8mm needle tines to the maximum depth using zero heave. This will punch through the aeration pan at 150mm depth and allow water to release from the profile of the greens. This can be done every 4-6-weeks through winter weather depending.
- Slit tine the greens every 2-3-weeks to keep sliced channels through the profile which allow water to release from the greens profile. This form of aeration is incredibly fast and low disturbance.
- A penetrant wetting agent can be applied following any aeration treatment to help to flush excess water from the soil. This will not replace the aeration but will compliment it.
- A black layer treatment such as Oxyrush or Liquid Aeration could be used to improve the health of the greens. These products contain Hydrogen Peroxide which cleans the black layer away and dissolves it into oxygen. These are a short-term fix and would not replace good aeration and drainage.
- To improve the drainage of the greens for winter you would consider sand banding them with the Immants Sandcat. This machine sliced through the profile to a depth of 150mm and replaces the slits with kiln dried sand. The idea of this would be to create drainage channels across the surface and remove water from the greens.

- Apply a turf hardener liquid such as Liquid Iron at 10-20L per hectare every three weeks to the greens. This will help to toughen up the sward. Alternatively, you could apply this as a granular using a lawn sand 3.0.0++7% Fe or 3.0.3 turf hardener at 20-30g/m^2.
- Continue aerating the greens through winter so that you keep adding oxygen to the soil and allow gas exchange.
- Treat the Take-all Patch (*Gaeumannomyces graminis*) on the greens by spot spraying using a clean knapsack with a mix of Heritage (*Azoxystrobin*) @ 500g/Ha and Manganese liquid. This should be soaked into the patches to kill spores through the profile. Then overseed the areas afterwards with browntop bent (*Agrostis capillaris*).
- Start identifying any trees close to the greens which would benefit turf health if they were removed. This can be done as a long-term program and new Scotts Pine (*Pinus sylvestris*) and English Oak (*Quercus robur*) planted in their place – well away from the greens and to the north to stop them casting shade.
- Organise a trial of the 'Fairway Snake' which is a rope designed to be trailed behind two machines and knocks down wormcasts without smearing. This is available from Belchim through Origin Amenity. It would also be worth trialling a set of powered brushes such as the Redexim Top-Brush 6000 (Or similar). These could be used to clean up the fairways before mowing. They would reduce the amount of worm mud clogging on the machinery rollers.
- As a short term solution the team suggested spraying the fairways with soluble iron to give them some definition for winter. This would be a good idea and would improve visual presentation at the same time.

Record of Site Conditions

Photo 1: The greens had a good coverage in general. They had just received an application of seaweed and iron as a liquid. The team manage the greens very sustainably.

Photo 2: The species composition was predominantly bentgrass supported in places by annual meadow-grass. It was the annual meadow-grass which was diseases in the sward.

Photo 3: The annual meadow-grass seen here looked yellow and weakened due to the cold humid conditions and infection from Fusarium Patch.

Photo 4: An example of a fresh pitch mark. It is important for golfers to keep on top of repairs. This also highlights the surfaces were softer in places due to the heavy rain and build up of thatch.

Photo 5: The traditional older push up greens had really nice soil which was healthy with no black layer. The thatch was also visibly lower.

Photo 6: The newer USGA greens were thatchy and had black layer in the profile. These types of green are notorious for building thatch and are also very susceptible to black layer.

Photo 7: The profile has new rooting throughout visible by the new white rooting in the upper profile. This was positive and showed the recent aeration work has relieved compaction and helped with rooting.

Photo 8: Take-all patch was seen on a number of the greens. This is a summer disease and mainly affects bentgrass. It can be controlled chemically and can be overseeded afterwards to repair the scars.

Photo 9: Moss has moved into any weakened bare areas of the greens. This can be controlled chemically and also culturally by increasing the sward coverage.

Photo 10: A number of greens had trees close to the surfaces which were casting shadows on the turf. These can have a detrimental effect on turf health long-term.

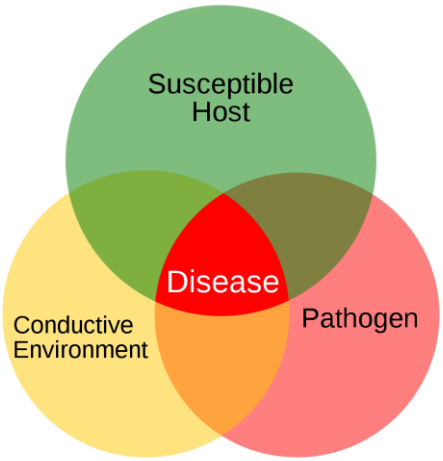
Photo 11: The fairways had good coverage and had recovered well after the droughts of 2018 and 2022. They suffer badly from worm castings which hold the team back from mowing in winter.

Photo 12: The soils beneath the surfaces were low in thatch and rich dark fertile soil. This maybe the cause of encouraging worm casts.

Recommendations

Greens

- To maintain the high standard of the greens it would be recommended to maintain healthy nutrition through the winter. This can be done by using liquids to spoon feed the greens or using a granular feed. The downside to a liquid option is that they can be difficult to apply when the conditions are wet. A granular option provides a good solution. An analysis such as 3.0.0+7%Fe or similar would work well. These products are often referred to as lawn sands. These are low nitrogen fertilisers which gives a small boost of growth but also protect the turf with a strong application of iron sulphate. These can be applied as low as 20g/m^2 if they are a micro granular, or 35g/m^2 if they are a mini granular – to avoid speckling.
- The Take-all Patch (*Gaeumannomyces graminis*) disease will need some treatment this autumn to ensure that it is fully inactive. Apply a combination of Heritage (*Azoxystrobin*) @ 500g/Ha and Manganese liquid applying it by spot spraying with a knapsack if it is only smaller areas affected, or a blanket spray if more areas have appeared. This is a summer disease that mainly affects bentgrasses so it should also go on its own due to the colder weather patterns.
- Fusarium Patch (Microdochium nivale) could be an issue in the next few months due to the wet and humid conditions. To protect the turf, you can apply: Ascernity (*Benzovindiflupyr & Difenoconazole*) @ 3L/Ha or Instrata Elite (*Difenoconazole & Fludioxonil*) @ 3L/Ha over the next months while the temperatures are mild, and then apply Medallion (*Fludioxonil*) @ 3L/Ha once the temperature start to freeze and drop below 5°C.
- These fungicides can either be combined with or supported with Liquid iron 6%Fe at 10-20L/Ha and Potassium Phosphite (PO^3) @ 5-10/Ha (3.5kg of Phosphite/Ha).



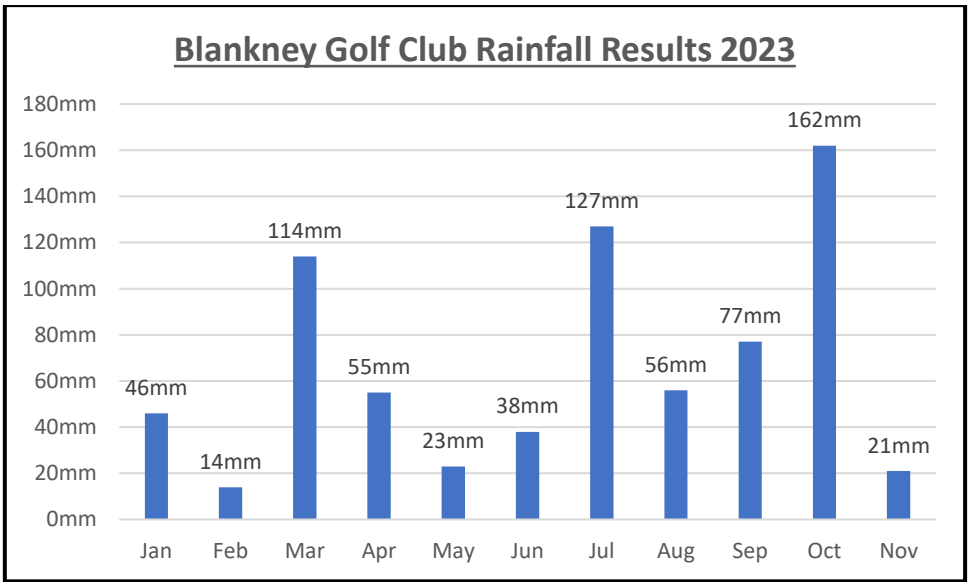
- The key to tackling disease is to consult the turf disease triangle seen above. For disease to develop, all three sides of the triangle must be present. Here lies the answer to reducing the amount of disease seen on the greens. If you can eliminate one or more of the triangles sides by removing the: Environment, Host, or the pathogen – you will have good success reducing disease naturally.
    - Environment – this can be done by removing trees and increasing light/air, reducing thatch which acts as an environment for disease to live.
    - Host – Remove the annual meadow-grass (Poa annua) which is susceptible to the disease and replace it with browntop bent (Agrostis capillaris) which is less susceptible.
    - Pathogen – This can be removed by spraying fungicides and turf hardeners.
- Trees were casting shade on a number of greens which will have a few negative impacts on turf health: (a). Dew on the surfaces for longer in the day causing a wet leaf and a perfect

environment for disease growth (b). Frost on the greens for longer leading to delays or temporary greens in winter (c). Less sunlight hours per day which leads to lower photosynthesis (d). Wetter conditions leading to the promotion of annual meadow-grass (*Poa annua*). We do not need to remove all trees but may need to trim or remove key trees casting major light on the putting surfaces. The woodland is part of what makes the course so attractive so careful management is all that is required. The wood could then be used sustainably on site for furniture, tee markers, water hazard markers, etc.

- The thatch layer found under the surface of the USGA greens needs continued attention. It will have negative impacts on turf health as well as playability. It is recommended to continue next season with the hollow coring with 12mm tines in autumn. It is also recommended to try and rip thatch out through the season using Greentek thatch away units (Or similar), or micro hollow cores pulling approx. 5mm diameter cores. These treatments should be closely followed by a light dressing of approx. 5-10-tonnes per hectare. Aim to dress every 3-4 weeks through summer and you should achieve roughly 60-80-tonnes per hectare through the year. This will help you 'dress away' from the thatch. If this builds up to approx. 5-10mm of dressing per year you will soon build the surfaces away from the problem and then solid tine aeration can help to degrade the thatch once its further down in the profile. Our main aim is to improve the playability and health of the greens, and this will help to achieve this.
- On inspection of the soil profile beneath the greens we found Black layer (Hydrogen sulphide gas produced by anaerobic conditions). This is a good indication of where an aeration pan starts in the soil and where water builds up as a perched water table above. This condition is not a long lasting and detrimental one, but it is a good indicator that the greens need better drainage and also more aeration.
    - Initially it would be recommended to verti-drain the greens using 8mm needle tines to the maximum depth of the machine (Usually 250-300mm). Turn the heave off the machine so that it does not lift the turf and destabilize the soil. This spiking action will puncture through the hard pan layer and will help the green to release water from the profile. You could also apply a liquid penetrant wetting agent afterwards to help with water movement. This will need to be repeated every 4-6 weeks through the winter to keep the water moving through the greens. The key is: aeration, aeration, aeration!
    - If this does not sort the problem then you may need to step up a gear and consider using the Immants Sandcat (Or similar) to slice through the greens profile and backfill the lines with kiln dried sand. This machine has a working depth of 150mm and creates sand slits through the surface which help to quickly transport water through the profile.
- There was moss on a number of greens which will have established as an opportunist species on any bare areas. Chemically this can be controlled by using iron sulphate as a soluble liquid. Culturally you can feed the greens consistently through the season to reduce the gaps in the sward and opportunities for it to establish. Mechanically you can remove it in summer using the scarification and verticutting units which will pluck the moss from the surface. This is especially effective if done after an application of iron sulphate to kill the moss. This is a job for next season ideally because if you target it in winter, it can create more bare areas of moss to establish.

Fairways

- The rainfall for 2023 was extremely high compared to previous years. This caused issues to the green staff who struggled to mow areas because of increased worm activity and wet/soft soils. The graph below shows the rainfall results for the year and as you can see October received huge amounts of rainfall over the month.



- On the plus side this has meant they have all recovered well after the droughts of 2018 & 2022 with full coverage.
- The downside is that when they try to mow them the amount of worm casts and debris is causing the job to become impossible. The mud from the casts collects on the mower rollers which raises the height of cut and stops the mowing efficiency. This is a national problem on golf courses and not specific to Blankney Golf Club. The problem has arisen since the revocation of the main worm control Ringer (*Carbendazim*). This product was cheap and very effective.
- The options now for golf courses are:
    - Powered brushes such as the Redexim Top-Brush 6000 (Or similar). These are tractor mounted and powered by hydraulics. They have a set of reverse driven brushes which flick the worm casts off the surface and chuck them forward. The idea is that you can brush all the surface before mowing which makes the job possible. It would be worth trialling this machine to see if it works on your fairways.
    - The fairways snake line sold by Belchim and distributed by Origin Amenity. This is a dew drag line which removes dew, clippings, and worm castings from fairway. It is designed with a weighted core which hugs the fairway contours with rolling action and is gentle to the turf.
    - There are some products on the market designed to acidify the surface and dispel worms to lower depths of the soil. The results of these is very inconsistent and not something you could highly recommend. It may be worth trying a few products on the market to see if they work on your soil. Do not build your hopes up on these though.
    - The Club now has a portable fairway matt policy so technically the preferred lies rule will not come into play for most. This means that if there is a bit of extra length to the turf it will not matter too much.

Tees

- The tees had a good coverage for the time of year and the Club now has a tee matt policy in place to protect the surfaces ready for next season.
- It was mentioned that the team have had some feedback about the levels of certain tees being uneven. This is common on tees around the country because often they are an area which mainly get fed once a year, divotted, and mown. Most of the summer the team have to concentrate on mowing the larger areas and struggle to focus on the tees.

- It would definitely be worth identifying any uneven tees out on the course and plan to relevel them. It would be a large benefit to the quality and playability of the course.
- This could be done by either of the following:
    - The tees in questions could be hollow cored at the end of the season using large 16mm diameter cores. The tees could then have targeted heavy top dressing with a 60/40 soil mix to top up the low areas and level it all up with a Truelute or a drag matt. The hollow core work will open up the surface and make it receptive to accepting extra dressing to level it up. These areas could then be overseeded with a tees mix (60% Fescue/40%Fine-leaf Perennial Ryegrass). This would be a low cost option and could be done once the tees are out of action for the winter.
    - If the levels are more severe and it is not possible to dress them back, you may need to remove the turf with a turf cutter in the areas and relevel them with some 60/40 rootzone. Once the areas are level you could compact the soil again and then relay the turf. This would be more intrusive to the tees and would require some recovery over winter but would yield instant results and would level up any very uneven areas.

Signed:

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