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USGA GREEN SECTION TURF ADVISORY SERVICE REPORT

**GREENBRIAR OCEANAIRE COUNTRY CLUB
WARETOWN, NEW JERSEY**

May 24, 2010

Present: Mr. Mark Kriews, Superintendent
Mr. Harry Leonard, Owner, H & M Golf Course Maintenance Co.
Mr. Jim Ritter, General Manager
Mr. Bill Lundy, Chairman of the Golf Committee
Mr. Barry Rockland, Member of the Board of Directors
Mr. Bob Misner, Member of the Board of Directors
Mr. Adam C. Moeller, USGA

INTRODUCTION

It was my pleasure to make a Turf Advisory Service visit to Greenbriar Oceanaire Country Club on Monday, May 24, 2010. The following report is offered as a summary of the major points discussed during the visit.

The golf course had good turf health at the time of my visit. Primary emphasis during our tour was directed towards the putting green management program. Other topics of discussion included putting green microenvironments, fairway and tee management programs, plant growth regulator and wetting agent usage, and putting green collection areas. General comments regarding the golf course maintenance operation are also included in this report.

PUTTING GREEN ROOTZONE MANAGEMENT

The accumulation of organic matter (thatch/mat) and fine soil particles (silt/clay) are the most destructive changes that occur in sand based rootzones over time. Excessive organic matter compromises root development, soil oxygen, drainage, surface characteristics, and pesticide efficacy while predisposing the turf to scalping, ball marks, mechanical injury, localized dry spot, excessive surface moisture retention, and increased disease/insect activity. Seasonal core cultivation and regular sand topdressing are the best strategies to control organic matter and maintain optimal soil physical properties (i.e. drainage, soil aeration, compaction resistance).

Core Cultivation

Core cultivation is being performed in the spring and the fall with 5/16" diameter hollow tines on a 2 x 2" spacing. Cores are harvested and the cultivation channels are backfilled with sand topdressing immediately afterwards. This set up only impacts $\approx 4\%$ of the putting green surface area annually. As a result, surface organic matter is not being controlled and likely increasing beyond the existing amount. Organic matter thickness ($\approx 1.5"$) is already well beyond desirable ($\approx 0.25-0.5"$) and a more aggressive program is necessary to reduce the excessive layer. Use 1/2-5/8" diameter hollow tines on a close (1.25-1.5") spacing for future cultivation events. This will ease backfilling procedures and result in increase sand in the upper profile while removing a greater amount of organic matter. If the existing coring program continues, these surfaces are extremely prone to become much softer and experience all the aforementioned maladies listed above.

Sand Topdressing

Light, frequent sand topdressing uniformly dilutes organic matter as it accumulates during the growing season. Regular topdressing also improves surface characteristics such as smoothness, ball roll, and overall consistency. Topdressing is only being applied during cultivation events and 1-2 times during the season. As a result, surface

organic matter has developed in layers which, when combined with the existing cultivation program, explains why the organic matter levels are so high. Sand topdressing every 1-2 weeks throughout the growing season at a rate of 0.75 – 1 cu. ft. per 1,000 sq. ft is recommended. Note: 1 cu. ft. \approx 100 lbs. dry sand. Assuming the sand is dry, this rate is light enough to filter through the dense turf canopy with 1-2 passes with a brush attachment. As the amount of sand increases in the upper profile, surface playability will continue to improve and more importantly, rootzone functionality will remain intact.



Surface performance will decline if the rootzone management program is not modified with more aggressive cultivation and topdressing. Additionally, turf health is subject to significant and rapid decline under hot and wet conditions because organic matter holds water tightly.

PUTTING GREEN MICROENVIRONMENTS

Turfgrass cannot grow and develop without adequate sunlight and air circulation. There is no superintendent, construction method, maintenance practice, or product that can overcome these critical physiological requirements. Tree removals are not permitted anywhere on the golf course property which is very concerning. Sunlight appeared to be acceptable on greens we thoroughly examined. Air circulation, however, is very poor around two putting green microenvironments.

The 1st green is encircled with a dense forested area which severely restricts air movement across the surface. Tree removals are not possible and even if it was an option, hundreds of removals would be needed to increase air flow substantially. As a result, installing and oscillating fan to supplement air flow is recommended. Without adequate air circulation, the turf and soil will remain wet longer and be more predisposed to turf pathogens and wear injury due to the increased relative humidity and wet conditions. A large ($\geq 50''$) oscillating fan placed in the back left corner of the green should improve turf conditions immensely. Some concern about the proximity of homes to the placement of a fan was discussed during the visit. It would be surprising if noise from the fan would be noticed from the surrounding areas. Interestingly, the larger the fan, the quieter it is when operating. The maintenance department has already investigated basic cost estimates but some additional information can be found in the enclosed reprint ***The Cost of Blowing Wind***.

The 9th green also is pocketed and has very poor air circulation. Tree removals are not possible in this location and adding a fan to supplement air flow is the only option. The 9th green does not have as poor of air circulation as the 1st green. However, this environment is far from ideal and would benefit tremendously from the addition of a turf fan.

PLANT GROWTH REGULATORS

Poa annua encroachment on golf courses overtime is extremely common in the Northeast. Prevention strategies revolve around basic approaches for producing healthy turfgrass (i.e. proper irrigation, moderate cutting heights and fertilization, and ideal growing environments). These cultural practices are frequently supplemented with use of plant growth regulators (PGRs) Trimit (paclobutrazol) or Cutless (flurprimidol). Both of these products are root absorbed plant growth regulators that must be watered in slightly within 24 hours of application for adequate growth suppression. These products work by interfering with gibberellin synthesis early in the biosynthesis pathway. As a result, they regulate *Poa annua* more so than bentgrass, giving it a competitive advantage to increase over time. Grass top growth is reduced but lateral growth is not, and in some research trials, becomes stimulated, increasing divot/ball mark recovery. Improved turf density, rooting, water use efficiency, and ball roll are other notable benefits of these PGR's. Basically, these products work the same and either of them would be effective at reducing *Poa annua* populations. Applications should start early in the spring following the second or third mowing. Applications should continue throughout the summer months but are often lowered slightly if *Poa annua* discoloration is unacceptable. The combination of this type of plant growth regulator, summer stress, and/or the application of a DMI fungicide can be a lethal combination for *Poa annua*. Primo (trinexapac-ethyl) is often tank-mixed with Cutless on bentgrass and/or *Poa annua*/bentgrass greens during July and August stress periods to work as a safener. From my perspective, this is not necessary on the greens since *Poa annua* populations are $< 5\%$. On the tees and fairways, a Primo and Cutless program is an option since *Poa annua* is higher. A new product, Legacy (flurprimidol

and trinexapac-ethyl), is a premixed combination of Cutless and Primo and could be used instead with equal *Poa annua* control as mixing the products yourself. If summer weather conditions are not very stressful and/or turf discoloration is not a concern, Trimmit or Cutless applications at regular application rates may be continued. These products should not be tank mixed or applied to *Poa annua* or bentgrass within four weeks of a high rate of a DMI fungicide application. The following are applications rates for Trimmit, Cutless, and Legacy that should provide good results:

Trimmit

On greens, Trimmit applied at rates of 12-16 oz. per acre every 2-3 weeks in the spring/fall will be very effective. For fairways and tees, Trimmit applied at 16-24 oz. per acre every 3-4 weeks in the spring/fall will be very effective. Continue these applications during the summer months but reducing the rate slightly may be warranted.

Cutless

Cutless 50W application rates are similar. Putting green applications of 6-8 oz. per acre every 2-3 weeks have worked well for many courses. On fairways and tees, applications rates of 12-16 oz. per acre every 3-4 weeks are suggested. If you acquire the new Cutless MEC formulation, the rates are essentially 3x greater. For example, if you wanted to apply 8 oz. per acre of Cutless 50W, the equivalent rate for the MEC formulation is 24 oz. per acre. Continue these applications during the summer months but reducing these rates slightly may be warranted.

Legacy

Rates of 8-20 oz. per acre of Legacy applied every 2-4 weeks is common on fairways. This product is still relatively new but should provide equal *Poa annua* control as Cutless tank-mixed with Primo. Continue these applications during the summer months but reducing the rate slightly may be needed.

Adding 0.1-0.2 lbs A.N. per 1000 sq. ft. (urea works well) should be included with each application to help promote lateral growth of creeping bentgrass and to maintain turf vigor. Ultimately, reducing *Poa annua* populations is a long-term goal but I suspect a noticeable change in the populations within the first few years. A Trimmit or Cutless program is strongly recommended for the greens, fairways, and tees. If resources are limited, exclude the tees from a PGR program.

FAIRWAYS

Cart Traffic

Many locations throughout the golf course have portions of fairways that are extremely prone to high traffic patterns due to the design of the hole. For instance, on the 6th fairway, all the traffic flows down the center of the fairway. When you factor in the play

volume with creeping bentgrass, a species with only moderate traffic tolerance, it is not a surprise that these areas have had poor turf quality in the past. From my perspective, the most cost effective solution would be to put forth all effort into educating the members about the damage their golf carts are causing. Instituting a 90 degree rule and/or cart path only on select holes should also be considered. Shifting traffic patterns as much as possible via signage, roping, and any other means necessary is recommended. Unfortunately, this process is labor intensive and does not always work. Nonetheless, these are the best viable options short of reconstructing portions of these areas to accommodate better traffic flow.



The drive zone on the 6th hole is perhaps the most heavily trafficked area on fairways throughout the golf course. Using more signage, ropes, etc. and a 90 degree rule might help this area.

Height of Cut

The existing height of cut is 0.500 inches. Most clubs of similar stature and quality are lowering their height of cut to achieve a better playing surface, not raising it. At this height, the fairways may appear to be more conducive to a golf ball lie that is often more desirable for high handicap players. However, the aesthetic quality, uniformity, grass texture, and upright growth characteristics are essentially lost. Creeping bentgrass grows laterally. As the height of cut increases, the grass blades lay over more and golf ball lie is not really improved. For different grasses that have more upright growth habits, however, raising the height of cut often will improve golf ball lie. With bentgrass, the golf ball may sit up slightly more with a higher height of cut but certainly not to a great degree. This height of cut involves numerous agronomic concerns such as

increased organic matter production, proneness to scalping, soft/spongy surfaces with minimal ball roll, increases grain formation and leggy appearance, increased moisture retention, and elevated disease and insect pressures.

If the current height of cut remains for a long period of time, I suspect the playability of the fairways and the reliability of the turfgrass will become extremely unpredictable and variable in the immediate future. Although this height of cut may be appealing to a significant portion of the membership, the grass species on the fairways is not conducive to this height of cut and problems are very likely to arise in the future as a result.

TEES

Divot recovery on tees is often poor from seed due to the wear and tear of normal maintenance and typical watering regime used on tees. As a result, most of the recovery is a result of lateral growth. Often, divot issues arise primarily due to the lack of usable teeing area on the hole. In general, the following rule of thumb should be used when designing teeing surfaces:

“100 sq. ft. of usable teeing area is necessary for every 1,000 rounds of golf played annually for par 4's and par 5's. Double this figure for par 3's, the 1st and 10th tees, and any other holes from which irons are regularly struck.”

NOTE: Unlevel areas, the edges and back of the tee within two club lengths, and areas blocked from use by vegetation cannot be considered usable for the purpose of this rule of thumb.

The forward tee on the 15th hole does not appear to be large enough for two sets of markers. Expanding and/or constructing a new forward tee is recommended. Other tees throughout the golf course likely suffer from the same ailment and should be expanded as resources allow.

The primary tee on the 9th hole suffers from poor drainage at the subgrade. Install 1-2 lateral drain lines to capture surface and internal water movement. A digital level or a similar device should be used to determine the most effective direction for these lateral drainage lines.

FAIRWAY AND TEE ROOTZONE MANAGEMENT

Seasonal core cultivation and verticutting are recommended for the tees and fairways. Core cultivation with 5/8" diameter hollow tines is recommended for early fall. This cultivation will remove organic matter through the entire depth of the surface layer. Verticut the tees and fairways twice in the spring to a 1/4-1/2" depth. Verticutting will improve upright growth characteristics and remove surface organic matter.

WETTING AGENTS

Wetting agents are necessary to prevent localized dry spot development on the greens, tees, and fairways. The high amount of surface organic matter also is alarming because this layer will be very prone to becoming water repellent if hot and dry conditions persist. Wetting agents should be regularly applied to prevent/minimize hydrophobic soil development. The amount of wetting agents currently on the market is overwhelming. Application strategies for each one may be different but numerous golf course superintendents have had success with sustaining adequate rootzone wetability through light and frequent applications of wetting agents on greens as opposed to heavier and infrequent programs. For instance, applying Primer Select at 3 oz. of product per 1000 sq. ft. every two weeks may sustain more uniform conditions as opposed to the 6 oz. of product per 1,000 sq. ft. program. On tees and fairways, apply wetting agents in the most cost effective manner and as necessary. Some will argue that wetting agents increase surface wetness and moisture retention. However, it is more likely that wetting agents reduce the water repellency of the organic matter layer at the surface and this is what is contributing to the extra moisture retention; not the wetting agent. Wetting agents should always be watered immediately following application to prevent tip burn. As discussed during the visit, wetting agents will not solve the underlying problem (high sand content soils and organic matter build up) but will be another tool necessary to manage moisture in these areas.

PUTTING GREEN COLLECTION AREAS

Many of the putting green complexes have creeping bentgrass collection areas that add interest and strategy to the approach shot. However, some of these areas seem unnecessary. For example, the right portion of the approach on the 12th hole is extremely severe and quite challenging to perform routine maintenance due to the steep slope. Over time, these areas should be resodded and converted to primary rough to reduce the maintenance costs associated with them.

GENERAL COMMENTS

As mentioned in the beginning of the report, the golf course had good turf health at the time of my visit. However, it is unlikely that the golf course conditions will remain intact over the next few years unless more resources are allocated towards the total operating budget. Creeping bentgrass is a high maintenance species and if management practices are not aligned with its requirements, it will perform poorly. In retrospect, a different grass species may have been better suited for the golf course. Regarding cultivar selections specifically, L93 is an excellent grass that has performed quite well throughout the cool humid region. Slow spring green up/growth unfortunately seems to be the Achilles heel of this cultivar. At this point, it does not seem cost effective to overseed or regrass with a different cultivar. Resource dollars are too valuable and would be of greater use for other areas of the golf course.

The total operating budget is very low for a golf course with the design features, fine turf acreage (i.e. bentgrass), and play volume. Labor typically consumes 60-65% of the total operating budget. Not surprisingly, available maintenance staff during the peak golf season also is low, which is only 9 full time employees. Most moderate to high end golf facilities require between 550-750 man hours per week (not including the superintendent) to maintain a consistent level of turf conditioning and playability. Quantifying employee hours required for each primary management practice (mowing, bunker raking, etc.) should be performed to identify future staffing adjustments based on desired expectations and course conditioning. Although high quality conditions have been produced with an undersized and overworked staff, these conditions can quickly deteriorate. Bottom line, maintenance staff adjustments should be proactive in order to sustain the current level of conditions. More labor translates into a more finely tuned and conditioned golf course. Higher labor forces also provide a greater insurance policy for managing turf during weather extremes. If resources become available, they need to be allocated towards the maintenance of the golf course.

CONCLUSION

This concludes my summary of the topics discussed during my visit to Greenbriar Oceanaire Country Club and I hope this report proves useful. Best of luck for a successful season and please feel free to call at any time throughout the year if I can be of additional assistance.

The Green Section appreciates your support of TAS and we encourage visiting the website <http://www.usga.org/Content.aspx?id=26223> to access regional updates that detail our observations across the region and provide a snapshot of the types of problems and conditions we are seeing in our travels.

Sincerely,



Adam C. Moeller, Agronomist
Green Section, Northeast Region

ACM:mbi

cc: Mr. Jim Ritter, General Manager

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Reprints: The Costs of Blowing Wind

http://www.usga.org/turf/green_section_record/2009/may_jun/blowing_wind_costs.pdf

A Breeze on Demand

(No link)

Required Maintenance Versus Available Labor – Are You Adequately Staffed?

<http://turf.lib.msu.edu/1980s/1988/880112.pdf>

Aeration and Topdressing for the 21st Century

<http://turf.lib.msu.edu/2000s/2003/030301.pdf>