



COURSE CONSULTING SERVICE

Onsite Visit Report

Delray Beach Golf Club Delray Beach, Florida

Visit Date: May 3, 2018

Present:

Mr. Rodney Brown, Golf Course Superintendent
Mr. Pete Arvanitis, Golf Course Superintendent, Southwinds Golf Course
Mr. Tom Roegner, General Manager
Mr. Tommi Ylijoki, Head Golf Professional
Mr. Todd Lowe, USGA Agronomist

United States Golf Association

Todd Lowe, Agronomist | Green Section
127 Naomi Place | Rotonda West, FL 33947
(C) 941-661-0167 | (O) 941-828-2625 | tlowe@usga.org

The USGA Green Section develops and disseminates sustainable management practices that produce better playing conditions for better golf.

Background

It was a pleasure visiting Delray Beach Golf Club on behalf of the USGA Green Section. I was asked to provide a general assessment of the facility, addressing several short-term and long-term considerations, which may be taking place in the next few years.

Executive Summary

Several topics were discussed during the visit and this report is a summary of the observations and recommendations that were made. The most important topics included:

Putting Greens	2
Observations.....	3
Recommendations	3
Tees, Fairways and Rough	5
Observations.....	5
Recommendations	6



Putting Greens

Observations

1. **Considerable improvements in turf health and quality have taken place this past year.**
 - Nematode suppression through timely chemical treatments have helped to improve turf rooting and overall health.
 - Improved irrigation management, with the use of a moisture probe and hand watering dry areas as needed have helped maintain consistent growth and performance as well.
2. **Goosegrass emergence is being suppressed through spot treatments with selective herbicides, but management programs should be increased.**
3. **Soil samples revealed overall healthy roots extending at least 2 inches into the soil and deeper in healthier areas.**
4. **An aggressive bermudagrass off-type comprises a considerable amount of the putting surface at Delray Beach Golf Club (see Image 2, below).**
5. **The putting green on Hole 18 at Lakeview is extremely small (see Image 3, next page).**
 - An extensive review of Lakeview was not performed, but the practice green and Hole 18 were observed, and I feel that other putting greens at Lakeview may be small as well.
6. **It was mentioned that long-range improvement plans are being made to address age-related issues in the next two to three years.**

Recommendations

1. **Continue applying plant protectants to help manage nematode populations.**
 - Even though it seems that fluopyram (Indemnify®) is providing mixed results, it is among the most effective for managing sting nematodes. A nematode fact sheet is included with this report and discusses other nematicides to consider as well.

Image 2. The darker green patch in this image is an “off-type” that has emerged from the surrounding rough. However, it is currently performing better than the TifEagle, due to its deeper root system.



- Chronically dry and weak areas might also improve with some supplemental amendments like Mirimichi or Comand® compost, mixed with topdressing sand.

2. Continue effectively managing irrigation with soil moisture probes and hand watering.

- I was pleased to learn that a moisture probe was purchased since the previous visit and that Mr. Brown is using it on a regular basis to maintain appropriate soil moisture within the putting green rootzone.
- Nematodes cause a reduction in turfgrass rooting and decrease the turf's ability to uptake water and nutrients, so it is imperative stressed areas remain moist.

3. Expand current goosegrass control measures to reduce weed establishment and maintain improved putting green smoothness.

- The current spot application treatments of selective herbicides seem to be effective on goosegrass plantlets, so expand treatments to the other existing goosegrass plants at this time.
- Other options for managing goosegrass on bermudagrass greens include preemergence treatments with Scott's Goose and Crab herbicide, postemergence selective use of foramsulfuron (Revolver®), spot applications of a nonselective herbicide like glyphosate (Roundup) with a "weed wand" and/or physical removal with a knife.
- I recently visited a local golf club where the green committee chairman was maintaining pure bermudagrass greens by physically removing goosegrass plants with a knife. If two staff removed 10 goosegrass plants from each green every day, this would equate to more than 2,500 plants removed from putting greens each week!

4. Begin to prepare long-range improvement plans for a possible upcoming renovation in the next few years.

- Age-related issues on bermudagrass putting greens in our region include reduced surface and internal drainage, reduced size from rough encroachment and increased putting surface contamination with "off-types" (see [Is it Time for a Facelift](#)).

Image 3. Putting green shrinkage from rough encroachment is an issue at all facilities in our region. This image is an extreme case on Hole 18 at Lakeview, but it happens on all putting greens over time.



- It was mentioned that the putting greens were more than likely completely rebuilt in 2002. If so, the renovation may consist of simply resurfacing putting greens with new grass and not completely removing the existing drain tiles or gravel.
- An undisturbed core analysis with an accredited lab like [Turf and Soil Diagnostics](#) can help provide greater insight into drainage characteristics of your rootzone and gravel.
- I also recommend that drain lines be located and cleaned by Jim Hill with [Innovative Drain Technologies](#).
- If regrassing only, then the putting greens can be expanded back to their original size and the current contaminated greens can be regrassed with new TifEagle™ bermudagrass. The upper organic layer should be completely removed and surface tie-in's improved to provide a smooth transition from the putting surface into the surrounding rough.

Tees, Fairways and Rough

Observations

- 1. Improvement in turf quality has taken place throughout much of the facility, especially in fairways, due to more attentive maintenance procedures in fertilization, weed management and irrigation.**
 - Like the fairways, great improvements were observed on the practice tee, as a uniform, healthy and dense stand of turf exists throughout much of the area.
- 2. A more aggressive weed management program is in place, causing some slight discoloration of the base bermudagrass, but this is only a temporary visual issue.**
- 3. Some additional thinning was observed on teeing grounds, as the winter overseed has transitioned and as some weeds had established rather aggressively within the tees.**
 - The tee on Hole 6, and any other small tees where space is available, should be enlarged by recapturing the original perimeter through scalping (see Image 4, below).

Image 4. Weak turf conditions on the tees from weed management, overseed transition and small size. The tee on Hole 6, pictured right, can be expanded by simply recapturing lost teeing ground through mowing. The yellow line represents the original tee perimeter that should be scalped at this time.



4. **Consistency in rough was discussed, as it was mentioned that some golfer concerns have been voiced recently.**
5. **Irrigation consistencies were discussed, particularly with regard to a possible upcoming renovation and improving irrigation design, efficiency and control.**

Recommendations

1. **Continue killing weeds and encouraging a dense stand of bermudagrass turf through timely herbicide applications and turf fertilization.**
 - A weak turf is open to weed invasion and then becomes more difficult to maintain uniform turf quality. Maintaining healthy turf through appropriate fertility programs is essential to keeping weed invasion at a minimum (see Webcast: [How Fertilization Affects your Golf Course](#)).
 - There are a variety of preemergence and postemergence herbicides for managing turfgrass weeds on golf courses. It was questioned during the visit whether indaziflam (Specticle®) was a good product to apply at Delray Beach Golf Club. I have seen some facilities with sensitivity to Specticle, causing reduced turf vigor and overall growth/quality. However, there may be adequate organic matter within the soil to help offset problems seen at other facilities. The only way to know is to apply Specticle to certain areas and then to evaluate its performance over time. There are alternative preemergence herbicides that can be used, especially just prior to the peak winter play season.
 - Several areas contain a high degree of mature goosegrass plants, which are difficult to kill with most selective herbicides. The “triple threat” has shown some good results in killing mature goosegrass plants at other facilities. This combination may cause temporary turf discoloration and care needs to be taken as to communicating this to golfers. I recommend contacting your local Syngenta representative for more information.
2. **Enlarging teeing area by reclaiming adjacent rough through lower mowing.**
 - The teeing ground on Hole 6 was addressed during the visit, but there may be other tees (especially on par 3 holes), where some of the teeing ground has been lost due to mowing it at rough height.
 - This area can simply be scalped down through lower mowing to reclaim it and to begin utilizing it as teeing ground once again. The tees on only a few holes were evaluated and there may be some additional holes where this practice can take place.
3. **Continue moving maintenance programs outward, as resources allow.**
 - Great strides in turf improvement have taken place down the middle of each hole, with regard to turf density through fertilization, enhanced maintenance and weed management.
 - The rough has been overtaken over time with a variety of turfgrass weeds, making uniformity and consistency difficult. New mowers have been purchased and will soon be used to help mow roughs more regularly to enhance quality, but I also recommend continuing weed management programs through herbicides, beginning with primary rough and extending outward, as resources allow.
4. **Consider the following items when addressing long-range improvements.**
 - Irrigation Improvements: An irrigation system is perhaps the most important component on a modern golf course, as it helps deliver necessary water and nutrients to the turf. Having the irrigation system evaluated by an irrigation consultant, like Dave Ragan, Mike Pignato or Russ Geiger, is recommended.

- Enlarging Tees: A general recommendation for adequate teeing area is to provide 100 square feet for every 1,000 rounds played on a particular tee (see [Tailor Made](#)). Small tees remain worn from daily play, as there is not enough time between tee stall rotations for adequate turf recovery.
- Golfer Enjoyment: To make the game of golf more sustainable, improvements in golfer enjoyment should be considered with any long-term renovation. While I am not a golf course architect, I recommend improvements like installing more forward tees for shorter hitters, wider landing areas in fairways, fewer bunkers and fewer trees in areas adjacent to common landing areas. Such improvements will not only enhance golfer enjoyment but will increase pace of play and reduce resources.
- Improving Turfgrass Variety: I recommend that tees, fairways and roughs be resurfaced with an improved turfgrass variety like Celebration® or Bimini™ during the renovation to kill all of the existing weeds and enhance turf consistency and uniformity. It is important that the golf course be managed appropriately following regrassing to maintain consistent turf quality, but regrassing using the no-till technique is recommended to start off again with a clean slate.
- Bunker Refurbishment: Bunkers change in shape, form and function over time through weathering processes and daily maintenance. The bunkers at Delray Beach Golf Club have taken on an elevated appearance as the bunker sand has migrated into the adjacent lips over time through wind. This has created an elevated appearance on the bunkers at Delray Beach Golf Club. Also, the sand becomes contaminated with the underlying subsoil, causing it to appear off-color and play more inconsistently. This is common on golf courses in our region and is the reason why they are refurbished from time to time.

Closing Statements

Thank you for the opportunity to visit and discuss your golf course maintenance operation as part of the USGA Green Section's Course Consulting Service. In addition to this visit and report, please do not hesitate to contact our office at any time during the year with further questions to take full advantage of our service.

USGA Green Section Record

If you would like to receive the USGA's electronic publication, the *Green Section Record*, [click here](#). It is free, informative and sent directly to you via email every two weeks.

Respectfully submitted,



Todd Lowe, Agronomist
USGA Green Section

About the USGA Course Consulting Service

As a not-for-profit agency that is free from commercial connections, the USGA Course Consulting Service is dedicated to providing impartial, expert guidance on decisions that can affect the playing quality, operational efficiency and sustainability of your course.

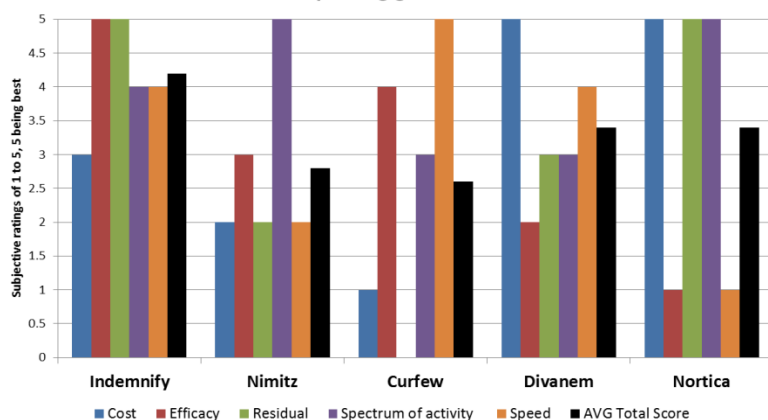
First started in 1953, the USGA Course Consulting Service permits individual facilities to reap the benefits of on-site visits by highly skilled USGA agronomists located in Green Section offices throughout the country.



For questions regarding this report or any other aspect of the USGA Course Consulting Service, please do not hesitate to contact our office.



Analysis of Nematode control options for bermudagrass putting greens



Turfgrass Parasitic Nematodes – Control options for bermudagrass putting greens

- There are a limited number of effective nematicides available for use in turfgrass
- No one nematicide controls all parasitic nematodes of significance
- Planning should start with:
 1. Quantifying impact of nematodes on turf performance, health (roots)
 2. Soil sampling using good methodology (see [General and Mist Extraction](#)) to determine nematodes of significance
 3. Budget, as costs can be significant

Long term (2 – 5 year) Nematode Control Strategies:

- Treat only when necessary:
 - Based on sampling and [nematode analysis](#), 2 to 4 times a year (based on growing season)
- Monitor for significant increases in any one nematode species – adjust treatments accordingly
- **Resistance Management – Indemnify®** (fluopyram is an [SDHI, FRAC Code 7](#) with medium to high resistance risk, over 12 pathogens with confirmed resistance):
 - Do not apply more than 5 to 6 SDHI chemical applications in 1 year (including Indemnify)¹
 - Emerald®, Exteris®, Honor®, Kabuto™, Lexicon®, Prostar®, Velista®, Xzemplar®
 - Carefully consider when these products are most useful and position them accordingly
 - Ex's: Spring Dead Spot, take-all or bermudagrass decline, Fairy ring, Rhizoctonia leaf and sheath spot (*R. zeae*)
 - Do not apply more than two SDHI materials sequentially before alternating to different chemical class active against same disease
 - Ex's: [Qol or strobilurin fungicides](#) FRAC Code 11, or DMI's (FRAC Code 3)
 - **FOR NEMATODES ONLY** - Do not apply Indemnify more than three times (over 1 to 2 years) without alternating to another nematicide. Should be based on nematodes of priority:
 1. Nimitz® has good overall spectrum of efficacy and systemicity as alternation (should make 3 applications)
 2. Curfew® is excellent knock-down but residual and lack of control of lance and root-knot nematodes inside roots are weaknesses
 3. Divanem® has good activity on root-knot and sting, but lack of systemicity and movement through thatch to soil limits coverage (good in conjunction with Indemnify)
 4. Nortica® can help alleviate some of the population pressure if application is timed correctly (good in conjunction with Indemnify)

• Cultural Practices:

- Reduce overall stresses such as:
 - Shade
 - Low mowing height
 - Drought stress – ensure good irrigation coverage
- Maintain balanced fertility (avoiding over-use of nitrogen)
 - Avoid excessive plant growth regulator use as substitute for fertilization
- Ensure good oxygen penetration to root system
 - Keep organic matter diluted with frequent hollow and solid tine aeration

• Nematode Control Products:

- Indemnify – a good overall nematicide to build program around (see analysis chart):
 - Strengths include efficacy and residual, disease control side benefit
 - Weaknesses are poor control of lance nematodes and cost
 - Belongs to SDHI chemical class:
 - Resistance may be impacted by fungicides in same chemical class
- Nimitz - systemic, activity on lance, granular is easy for spot treatments
 - 3 applications recommended
- Divanem – low water solubility, activity limited to top 1.5 inches of soil only, but good on root-knot and sting nematodes
 - Four applications every 2 weeks at 6.25 fl oz/Ac
- Curfew - fumigant with quick knock down of most ectoparasitic nematodes

The information provided is intended for general educational purposes only for USGA Course Consulting Service Customers. It is not an express or implied guarantee or warranty of performance, condition or results. Always follow label recommendations and instructions. Product references, if any, are not sponsored by or endorsed by the USGA.

¹Exteris is a combination fungicide product awaiting registration and containing fluopyram, the same active ingredient in Indemnify.