

COURSE CONSULTING SERVICE

Onsite Visit Report

Recreation Centers at Sun City

Sun City, Arizona

Visit Date May 2, 2022

Present:

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

Executive Summary

Thank you for your kind hospitality and the invitation to return to the golf courses at the Recreation Centers at Sun City to conduct a Course Consulting Service visit on behalf of the USGA Green Section. During this visit, we were able to spend about an hour on the South Golf Course to start the morning, followed by the North Golf Course, Lakes West, Riverview, and ended the day on Willowcreek and briefly on Willowbrook. The biggest topic at this time of year is always transition from the overseeded grass to bermudagrass, and it was great to see that on all courses in most areas, the bermudagrass is healing nicely. I am optimistic you will have strong bermudagrass within the next six to eight weeks. On the South Golf Course, the big news is this course was nonoverseeded on fairways and, as expected, the bermudagrass is healthy and green, and this strategy yielded 13% water savings. The other big topic is that the large lake that has been leaking water for years will be dredged and relined this summer and reportedly is expected to save upwards of 700 acre-feet of water annually. A brief summary of the topics discussed in this report is included below:

- Putting greens. The health of the turf including the emerging bermudagrass was excellent on all golf courses. However, there is room for improvement in the quality of cut. We will also discuss regrassing greens with the goal to eliminate overseeding.
- **Green surrounds.** Higher rounds and four to five golf carts per foursome or fivesome have resulted in increased cart traffic and in some locations increased turf damage from compacted soils. With these compacted soils, it is not surprising to see a high population of purple nutsedge around greens.
- **Maintenance facility.** It was great to finally see construction underway on the new maintenance facility on Lakes East and Lakes West. The role of the maintenance facility is extremely important in the overall operational efficiency of each golf course under the Sun City umbrella.
- **Bunkers.** In general, the bunkers on the golf courses are too firm to facilitate a typical bunker shot using the bounce on the sand wedge. We will discuss methods to soften bunkers.
- **Fairways.** It was excellent to see the elimination of overseeding on the South Golf Course and, even more so, to hear the comments have been positive from golfers. This concept is gaining popularity in Southern Arizona and with a new hybrid bermudagrass, would deliver a far superior playing surface than the common bermudagrass and would allow you to not overseed and save a significant amount of water. We will also discuss turf reduction and the soil moisture sensor study on the North Golf Course and Lakes West.
- Equipment replacement. There was some discussion about the USGA's recommendation on when to turn over maintenance equipment. In general, we suggest equipment be replaced at about 3,000 hours to avoid escalating equipment repair costs and to maintain efficient equipment operations at the course. It was reported that RCSC are generally replacing equipment after over 4,000 or even over 5,000 hours. As such, you are maximizing the useful life of the equipment; however, there are some compromises with rising equipment repair budgets and equipment managers must spend time on repairs rather than daily maintenance.



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Putting Greens

Observations

1. Good Overseed Conditions

We observed good overseed conditions on all the golf courses we were able to visit on May 2, 2022. It was also good to see from soil profile samples healthy bermudagrass emerging. This overseed season was a good one for the courses at the Recreation Centers at Sun City. Compliments are extended to the golf course superintendents and their teams for producing such good conditions.

2. Organic Matter

Soil profile samples were collected on the South, North, Lakes West, Riverview, Willowbrook and Willowcreek golf courses. In all cases other than Willowcreek and to some extent the North greens, we did not see a significant layer of elevated organic matter in the surface of the greens. Similar to our observations last year, we did observe elevated organic matter in the Willowcreek greens and water could be squeezed from the surface layer.



Soil profiles collected from one green on each of the courses we visited show a variety of organic surface layers. The most consistent profiles were found on North, Lakes West and Riverview, while the highest surface organic was observed on North and Willow Creek.

3. Surface Algae and Signs of Turf Thinning on Willowcreek No. 1

We observed black surface algae in localized areas on this green and, in concert, some turf thinning.



4. Swinecress on Willowbrook No. 9

We observed swinecress contamination in this putting green.

5. Patchy Bermudagrass on Lakes West Greens

The Lakes West greens were built in 1972 and, at 50 years old, it was not surprising to see Apache bermudagrass in these greens. These patches have different growth rates and can impact ball roll.



6. Inconsistent Quality of Cut

While we observed healthy turf on all greens, we did observe inconsistent quality of cut. On the South Golf Course and Lakes West, the effective height of cut as viewed through the prism gauge was similar to the mower setting. However, on the North Golf Course and Willowcreek, the effective height of cut was well above the bench setting and there were high incidences of uncut leaf blades. This is also the case on the Riverview Golf Course; however, this course had recently received a more aggressive sand topdressing application which, understandably, impacted the quality of cut.





Recommendations

1. Organic Matter Management

There are four primary keys to managing organic matter in putting greens – aeration, sand topdressing, limiting nitrogen inputs, and limiting irrigation.

- Aeration. Core aeration is critical on greens to remove a small portion of organic matter and offer an ideal opportunity to apply heavy sand topdressing to help dilute surface organic matter. Ideally, the greens on all golf courses would receive three passes during the summer aeration event including a solid deep tine able to penetrate 8 to 10 inches, followed by a hollow tine with 5/8-inch outside-diameter tines on a tight spacing of 1.5 by 2 inches, followed by a second pass with the same tine diameter and spacing. This is a labor-intensive process but one that is important to improve water infiltration on greens, reduce compaction, and provide plenty of voids to incorporate sand. As Mr. Stoffel pointed out on the Riverview greens, there are localized areas where this amount of aeration will cause damage. Each superintendent must identify these areas and either avoid aeration altogether, or limit to only one pass.
- **Sand topdressing.** Ideally, the courses would quantify the amount of sand applied to greens during each sand topdressing event and during aeration and run a cumulative total through the year. A good guideline is to apply a minimum of 2,500 pounds of sand per 1,000 square feet. Based on our observations, it appears the courses are applying enough sand to keep pace with organic matter production. However, it would be great to see slightly more sand applied, especially during the bermudagrass growing season. It appears this may be most important on Willowcreek where there is an elevated organic layer in the top 1½ inches of the greens.
- Limiting nitrogen inputs. The greens on all the golf courses are mature enough now to begin limiting the amount of annual nitrogen. A good guideline is to apply about 4 pounds of nitrogen per 1,000 square feet per year.
- Limiting irrigation. Limiting the amount of water and the frequency at which water is applied to greens is good for the greens' health, good for playability, and this strategy limits organic matter production. Studies have shown that reducing water inputs helps to encourage more active microbial activity, which helps break down organic matter. Furthermore, the limited water inputs reduce organic matter production and reduce turf growth, which helps reduce mowing requirements. Limiting water to greens can be an uncomfortable change for course managers and therefore it is recommended to begin with just one or two greens on the golf courses to experiment with this different irrigation regime. Ideally, you would irrigate only once or twice per week during the winter months and only three times per week during the summer months. Run times on greens may need to be only seven to ten minutes, and only run one or two sprinklers on a green and on opposite sides of the green to avoid water sheeting off the greens. There is no point in deep watering if the water doesn't work its way into the rootzone.

2. Improving Quality of Cut

There is room for improvement in the quality of cut on the putting greens.

- Ideally, putting green mowers would be checked for height of cut across the width of the reel and face the bedknives and/or backlap every time the mowers are used.
- When you are purchasing new mowers, purchase the 14-blade reels to help increase the frequency of clip.
- Every time a mower leaves the maintenance facility, it should cut 20-pound paper across the entire reel.



 Many courses will have secondary reels that they use for two or three days after sand topdressing so they always have a fresh set of sharp reels and bedknives ready to go.

This is an area that should never be compromised as it is so critical to producing quality putting greens. For more information on this topic, please review the following article: <u>Managing Mower</u> <u>Setup to Achieve Quality Putting Surfaces</u>.

3. Swinecress Control

For swinecress control on the Willowbrook greens, you may consider using the Anderson's granular product with trimec. This is a postemergence product. You could also consider using one of the Andersons granular broadleaf weed control products. Postemergence control can be achieved in most warm-season and cool-season turf species with herbicides containing clopyralid or three-way herbicide combinations containing 2,4-D, mecoprop and dicamba.

4. Patches on Lakes West Greens

I'm afraid there is really no management practice that will alleviate the patches on the Lakes West greens. When the time is appropriate, you should consider regrassing these greens and upgrading to MiniVerde or TifEagle bermudagrass.

5. Upgrading to Ultradwarf Bermudagrass

Under the fairways section of this report, we will discuss options to not overseed fairways and in conjunction, if you could upgrade to one of the ultradwarf bermudagrasses, you can entertain the idea of eliminating overseeding on your golf courses for the future.

- The success rate for nonoverseeded ultradwarf greens is very high in Southern Arizona, and this is a topic that I would recommend that we discuss in greater detail when the time comes for a putting green resurfacing project.
- Just south of RCSC is the Eagles Nest Golf Course at Pebble Creek, where they recently
 upgraded to MiniVerde bermudagrass. One of the courses at Sun City Grand also recently
 upgraded to MiniVerde bermudagrass, and both courses have eliminated overseeding.

Green Surrounds

Observations

1. Localized Areas of Weak Turf and Soil Compaction

Other than the putting greens, the green surrounds are the most important area of the golf course. The quality of turf is somewhat inconsistent among the golf courses at Sun City in the green surrounds. We observed localized areas of turf thinning and heavy soil compaction. A prime example is the left side of No. 18 green Riverview where concentrated cart traffic has worn the turf down to bare soil.





2. Localized Dry Areas

We observed localized dry areas in close proximity to greens on several golf courses. These dry areas limit the ability of bermudagrass to recover from overseeding.

3. High Nutsedge Population

damaging turf.

In general, the green surrounds at the courses at Sun City have a high nutsedge population.

Recommendations

1. Improving Turf Quality and Reducing Cart-related Compaction

There is room for improvement in the quality of turf in green surrounds, and a big portion of yielding improvement will be to limit cart traffic. Courses generally use a combination of stakes and ropes to detour carts from driving in areas where turf has been damaged and needs time to recover. Signage can also be useful, but only if golfers obey the signs. Furthermore, most golf courses have returned to limiting groups to two carts per foursome. This can potentially reduce your cart traffic by half. It is also recommended to increase the nitrogen fertility specifically in green surrounds and conduct multiple aeration events.

2. Addressing Dry Areas

Especially at this time of year, it is important to pay attention to all the localized dry areas in green surrounds and adjust sprinklers and run times as necessary. Additionally, it would be great to use small portable sprinklers to place in these localized dry areas and allow to water for up to 24 hours to fully soak the soil.

3. Nutsedge Control

Over the next couple months, it is recommended to use chemicals such as Manage[®], Sedgehammer[®] or Monument[®] and plan on two or three applications for nutsedge control. About the third week of July, it is recommended to switch to using Celero[®] and plan to spray three applications in late July, late August and late September to make a significant positive impact on reducing nutsedge around greens.



Maintenance Facility

Observations

1. New Construction on Lakes East and West

It was so great to finally see the new construction underway on the maintenance facility for the Lakes East and Lakes West courses. A new block construction is well underway for a facility that will encompass slightly over 13,000 square feet.



A view in front of (left) the new maintenance facility and inside the mechanic work area (right) shows this new 13,000 square foot building will be a huge asset to the agronomic operation.

2. Importance of Maintenance Facilities

I cannot overemphasize the importance of the positive impact that a well-designed turf care facility has on the operational efficiency of the entire turf care operation.

- I work with golf courses with poorly located maintenance facilities. Their operational efficiency is severely negatively impacted due to the amount of time lost in transport to and from the maintenance facility, not to mention the additional wear and tear on equipment and the additional fuel used.
- The culture of the agronomic team begins with the environment at the turf care facility. I have seen the improvement in the overall employee morale and work completed on the golf course as a result of renovations and upgrades to the turf care facilities. Mark Krick, a veteran golf course superintendent in Colorado, wrote an excellent piece for *Golf Course Management* on the importance of the turf care facility: <u>It Starts in the Shop</u>.

Bunkers

Observations

1. Overly Firm Bunkers

We were able to use the USGA GS3 smart ball to measure firmness in bunkers on several golf courses during our course tour. In general, the condition of the bunkers is firmer than desired. The golf course where we found bunkers providing more optimal conditions was the Lakes West Golf Course where a bunker renovation had been recently completed. Conversely, the bunker left of green No. 10 on the North Golf Course was found to be excessively firm.



2. Sand Depth

In general, the bunkers have adequate sand. Overly firm bunkers are often associated with minimal sand; however, we observed sand depths ranging from 4 inches to 7 inches in most all areas inspected among the golf courses during our course tour. There were only a few very isolated areas where we found bunker depths with only 2 to 3 inches of sand. Wet conditions were found in bunker floors, especially in the isolated areas with shallow sand. The wet conditions add to compaction.



Wet conditions in the lowest area of bunkers cause compaction and firm playing conditions.

3. Gravel Contamination

On the Riverview Golf Course, we observed significant gravel contamination on the left greenside bunker of hole No. 1. In this bunker, the gravel Better Billy Bunker[®] liner has been compromised and, unfortunately, the gravel has severely contaminated the sand.

Recommendations

1. Short-term Improvements

In the short term, it is recommended to utilize a small rototiller to impact the top 2 to 3 inches of the sand in bunkers or use deeper tines on the mechanical bunker rake to fluff the sand. Another good option is to add sand to bunkers, and some have found that by maintaining a sand depth of 8 to 10 inches, especially in bunkers lined with one of these new durable liners that perch water, the deeper sand depth helps to provide drier conditions at the surface which ultimately lead to softer conditions. The deeper sand depth also protects against any interference with the hard, durable liner.

2. Monitoring Sand Depths

It is important to monitor the sand depth in bunkers. As golfers hit shots from the bunker floors, the majority of this sand gets splashed up onto the faces and needs to be pulled back down into the floors as often as once weekly. It will be important moving forward to more routinely check sand depths, especially in bunkers that receive the greatest amount of play. In general, these are greenside bunkers that are short and right of greens.



3. Testing for Sand Contamination/Establishing a Need for Sand Replacement

In general, it is recommended to replace the sand in bunkers about every seven to ten years; however, with increasing costs of sand and labor to replace the sand, many courses have extended this interval. You are nearing the time in which sand should be replaced on several courses.

• Prior to making this investment, it is recommended to do some physical sand testing in bunkers to identify if the sand has been contaminated with windblown silt and clay material, or if over time some of the sand has broken down into smaller particles. It is recommended to test the upper 2 inches of sand in a bunker such as the greenside bunker left of No. 10 green on the North Golf Course and also test the sand at the interface of the liner. It is recommended to compare this to the sand recently purchased and placed in the Lakes West bunkers.

Fairways

Observations

1. No Overseed on South Course

The South Golf Course fairways were not overseeded this year and were left to go dormant to save water and to experience the aesthetics and playability with nonoverseeded common bermudagrass fairways.

- It was good to hear that, in general, the golfers were understanding of the nonoverseeded fairways and, in fact, felt they continue to provide a good playing experience with the color enhancement from pigments.
- We did observe areas with thin turf density on May 2, and this is not surprising with the common bermudagrass. However, it is clear that the common bermudagrass is beginning to grow and the color was very good.
- It was reported that the nonoverseeded fairways yielded 13% water savings.

2. Strong Bermudagrass Emerging on Overseeded Courses

It is great to report that there is healthy bermudagrass emerging from winter dormancy on all overseeded fairways. I am very optimistic that you will transition well from the overseeded turf to bermudagrass. Of course, there will always be areas with thin turf density, and generally these will be isolated to localized dry areas and areas that have been damaged from concentrated golf cart traffic.

3. Inground Soil Moisture Sensors

On No. 9 fairway North and No. 1 fairway Lakes West, the superintendents have been participating in a demonstration study to evaluate the use of inground soil moisture sensors to improve soil moisture consistency and hopefully reduce water use.

 It was excellent to hear from Mr. Hyppa of the strong improvement in the turf aesthetics and health in No. 1 fairway Lakes West as a result of utilizing the soil moisture data to make the necessary adjustments to sprinkler run times. He noted that the condition of this fairway has never been better.



• Unfortunately, there have been some communication issues with the inground soil moisture sensors that have caused some disruption in their use. I will reach out to the representatives from Spiio to encourage them to stop by and address these challenges with you.



Recommendations

1. Turf Upgrade Consideration

There is growing popularity in Southern Arizona and Southern Nevada to upgrade to a hybrid bermudagrass and eliminate overseeding. It was great to see that you have already begun to evaluate TifTuf on three of the Lakes West tees to see how this turf performs at your facility.

- Both McCormick Ranch Golf Course and Alta Mesa Country Club renovated one fairway on each golf course and did not overseed this year. The results were very good with the nonoverseeded TifTuf bermudagrass. A golf course in Yuma is upgrading to TifTuf this year with plans to not overseed the golf course, and Paradise Valley Country Club will be renovating one fairway this year with plans to evaluate several different zoysiagrasses and bermudagrasses with the intent to not overseed.
- We have learned that not overseeding will generally yield water savings of 1½ to 2 acre-feet per acre. Golf courses also report monetary savings of \$100,000 to over \$200,000 per year when they eliminate overseeding on fairways. The savings are a result of a combination of savings including labor, fuel, mower wear and tear, water and electricity savings, and now, a big savings is the cost of seed.
- We have discussed at length the importance of turf reduction for the Recreation Centers at Sun City. Now with this idea to convert to hybrid bermudagrass and eliminate overseeding, I'm confident that you can meet your water allotment goals and potentially reduce the amount of turf you will need to eliminate.
- One of the most compelling arguments to upgrade to hybrid bermudagrass and eliminate overseeding is that the golf course can remain open in the fall and conditions will be far superior in October and November when compared to an overseeded golf course. Additionally, there will be no awkward transition phase in the late spring/early summer.



Equipment Replacement

Observations

1. Maximizing Useful Life of Turf Care Equipment

It was reported that, in general, the equipment used to maintain the golf courses is not replaced until it reaches over 4,000 or even 5,000 hours in some cases. This means that the courses are not replacing pieces of turf care equipment until they have maximized their useful life.

- This type of strategy does reduce capital equipment replacement and is just one of many examples where the golf courses at the Recreation Centers at Sun City maintain these golf courses with minimal inputs and lower maintenance budgets than nearby courses, some of the lowest I see in all of my travels.
- Waiting to replace turf care equipment, especially mowers used every day, does not come without costs. As equipment exceeds about 3,000 hours, the equipment repair costs increase and you have to begin to replace expensive items such as reels, hoses, pumps and motors.
- Perhaps the most important drawback is that the equipment technicians must dedicate more time to repairing equipment rather than maintaining equipment. There is a big difference. Equipment repairs are costly and time consuming and reduce operational efficiency. They also take time away that the equipment technicians could otherwise be spending on maintaining equipment optimally and achieving the best quality of cut.
- While I'm not necessarily suggesting that you need to make a significant change and replace equipment on a more routine basis, the point of this section of the report is to raise awareness to members that there is a sacrifice associated with waiting to replace equipment well beyond the 3,000-hour mark. For further information on the topic of equipment replacement, please review the following link that contains multiple articles on this important subject: Equipment Management For Golf Courses (usga.org).

Closing Comments

It was great to return to the Recreation Centers at Sun City in early May to see how the golf courses are faring with bermudagrass recovery from overseeding and to discuss important topics such as turf reduction, lining the large lake and considerations for upgrading to hybrid bermudagrass and eliminating overseeding. Thank you for your continued support of the USGA Green Section. Please do not hesitate to contact me should you have any further questions or concerns.

Respectfully submitted,

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Additional Considerations

USGA Green Section Record

If you would like to receive the USGA's electronic publication, the *Green Section Record*, <u>click here</u>. It is free, informative and sent directly to you via email every two weeks.

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.



