



COURSE CONSULTING SERVICE

Onsite Visit Report

SaddleBrooke Ranch Golf Club Oracle, Arizona

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Present:

Aaron Thomas, Golf Course Superintendent
Brian Whitlark, USGA Green Section

United States Golf Association

Brian Whitlark, Senior Consulting Agronomist | Green Section | West Region
3677 E Turnberry Ct. | Gilbert, AZ | (480) 215-1958 | bwhitlark@usga.org

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

Executive Summary

Thank you for the invitation to return to the SaddleBrooke Ranch Golf Club to conduct a Course Consulting Service (CCS) visit on behalf of the USGA Green Section. It has been nearly two years since my last visit to Saddlebrooke Ranch, and it was great to see significant improvement in the bermudagrass coverage in fairways. It was also great to see the recent resurfacing of putting greens with MiniVerde bermudagrass only eight to ten weeks ago. Additionally, congratulations on hiring Mr. Aaron Thomas as your new golf course superintendent. I have had the pleasure of working with Aaron for many years at the Marriott Camelback golf courses, and Saddlebrooke Ranch is in very good hands with Mr. Thomas now leading the way. During this course tour, we were able to visit the maintenance facility as well as see the entire golf course. A brief summary of the topics discussed during this course tour is included below:

- **Putting greens.** The new MiniVerde ultradwarf bermudagrass greens are only eight weeks old on the back nine and ten weeks old on the front nine. On both nines, the new bermudagrass is in excellent health and the grow-in has gone very successfully. Given the success of the grow-in, it is now time to shift the focus to producing a playing surface. Finally, it is important to note that these new greens should not be overseeded and, hopefully, the goal will be to never overseed.
- **Fairways.** I am happy to report the condition of the fairways has improved substantially since my last visit to the golf course. A combination of sprigging, sodding and not overseeding strategic holes has led to the significant improvement. All the fairways should not be overseeded at least one more year to bolster the bermudagrass base which will allow you to consider overseeding in the fall of 2022.
- **Roughs.** The roughs have not been overseeded yet there are still areas with significant turf thinning while other areas have very healthy bermudagrass. The inconsistent bermudagrass coverage on roughs is a bit puzzling; however, it is good to see that efforts over the past six to seven weeks have made significant progress in improving the bermudagrass coverage. We will discuss the importance of improving the rootzone conditions as well as some strategies to improve turf coverage in the high-traffic areas.
- **Trees and overgrown vegetation.** There are areas of the golf course with trees and overgrown desert vegetation that block views of golf holes and the surrounding areas. It will be important to work through the golf course to remove trees and overgrown vegetation to open up these views.

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Putting Greens

Observations

1. Young MiniVerde Bermudagrass Greens

The front nine greens were sprigged ten weeks ago and the back nine greens were sprigged about eight weeks ago, both with MiniVerde ultradwarf bermudagrass. I have seen many grow-ins over the past five to six years, and the health and density of these MiniVerde bermudagrass at such a young age are among the best I have seen. Compliments are extended to everyone on the turf care team for producing such a successful grow-in.



At only ten weeks old, it is great to see such good density and cover on these new MiniVerde bermudagrass greens.

2. Thatch Pad

When evaluating greens' maturity and assessing their ability to withstand play, I have found it very useful to measure the thatch pad. On the ten-week-old greens on the front nine, the thatch pad is about 1/4 inch. On the younger back nine greens, the thatch pad is only probably 1/8 inch. After only about two months, the development of the strength of these greens is excellent; however, the thatch pad will need to develop to about 1/2 inch at the minimum to be strong enough to hold up to daily play. I am optimistic the thatch pad will develop with no problems over the next eight weeks.



The thatch pad in this ten-week-old green is about 1/4 inch thick and will need to develop to about 1/2 inch before the greens will be ready for play.

3. Soil Profile

It was reported that the greens were stripped to remove approximately 4 inches of material, new rootzone material was applied, and the greens were tilled to create a consistent rootzone mixture. Soil profiles collected on several greens confirmed there is a uniform rootzone with no layers that will limit root development or restrict water movement. In general, we found roots extending from 3 to 4 inches in these young greens.



It is good to see a homogenous soil profile with no layers to limit water movement and root development.

4. Soil Salinity

As expected, soil salinity values were measured with a handheld salinity meter at very low levels of only 0.2 to 0.3 mS/cm.

5. Localized Thinning

We did observe some very small areas with localized thinning on the very front portion of No. 4 and in the middle of No. 15. It was interesting to hear that the reason for the thinning on No. 15 was a result of sprig material laid down too thin in this area, and it has yet to fully recover. There is ample time prior to opening for these small areas to fill in.

Recommendations

1. Shift to Producing a Putting Surface

The grow-in has gone very successfully. The greens have full turf coverage and good density and are beginning to mature enough to develop some sod strength. As such, you can now shift to producing a putting surface over the next eight weeks.

- First and foremost, we discussed lowering the mowing height to 0.200 inches and ultimately working down in slow, incremental reductions of 0.005 to 0.010 inches to achieve a bench height of 0.125 to 0.140 inches at the time of opening.
- Each time you reduce the mowing height, it is recommended to plan on double cutting the greens. The more often you mow, the tighter the surfaces will become prior to opening.

2. Nitrogen Inputs

We discussed scaling back on nitrogen inputs and applying a spray application weekly at 0.15 to 0.20 pounds of nitrogen per 1,000 square feet. In the very small localized thinning areas, utilize a granular nitrogen and hand spread and water in to expedite recovery. Given the high phosphorus in the irrigation water, there should be no need to add P to the system.

3. Plant Growth Regulator

It was great to hear you have already begun using the Anuew™ plant growth regulator. It is suggested to continue at low rates on your 280 growing degree day interval.

4. Routine Sand Applications

With the frequent nitrogen applications and the nitrogen already in the soil, it is easy to grow organic matter to an excessive level in the top 1/8 inch of the greens, which results in a thin dark organic matter layer that restricts water movement and can ultimately result in turf thinning. I have seen this happen at other courses within the past couple years. To avoid this, continue with routine sand applications once weekly. For now, you can use the generic USGA construction sand, but as you lower heights and move closer to opening for play, it is recommended to shift to the West Coast Premium sand; even better, as you move into the fall, utilize the West Coast 30/70 sand.

5. Surface Management

It is now time to begin more frequent surface management practices on these greens. These practices include vertical mowing, grooming and brushing.

- **Vertical mowing.** The term vertical mowing is used, but I'd rather use the term vertigrooming. Vertigrooming is a nonaggressive practice that uses vertical mowing blades at shallow depth to cut leaf blades growing horizontally along the ground and any aerial stolons. In general, during the summer months, vertical mowing blades should be set anywhere from 0.060 to 0.090 inches below the bottom of the rollers. In the shoulder seasons in spring and fall when temperatures are lower and growth is not as aggressive, the blades should be raised to a range between even with the bottom of the rollers and down to about 0.040 to 0.050 inches below the bottom of the rollers. There should be no need to conduct any vertical mowing events during the winter months. The key to these events is to encourage upright growth; this is not a thatch-reduction process. When you begin aerating, you can set the blades lower at 0.125 to 0.140 inches below the bottom of the rollers for the most aggressive vertical mowing, which should only be once or twice annually. You may wish to experiment with both carbide- and non-carbide-tipped blades. Some courses prefer the non-carbide-tipped blades due to less tearing. If time permits, utilize the backtrack method when vertigrooming.
- **Grooming.** Grooming is a practice that can be employed every time the mowers are sent out to mow greens during the active growing season. The goal with grooming blades is not to see the lines, but rather to cut any leaf blades growing horizontally above the ground. At some point in the year, courses often see aerial stems or stolons above the canopy and the groomers are helpful to cut these. The grooming blades should be set in the counter-rotational direction to the reels and should be set at a height between 0.070 and 0.100 inches above the bottom of the rollers. If you should set the groomers in the forward rotation, the depth can be much more aggressive, between even with the bottom of the rollers up to about 0.040 inches above the bottom of the rollers. It was great to hear you have a groomer gauge on order as this is an excellent tool to more accurately set the height of these blades. Maintain a record of height settings through the year.

- **Brushing.** The white Greens Perfection™ brushes are excellent on ultradwarf bermudagrass greens. The height settings for brushes are essentially the same as the groomers. Some have set brushes a bit more aggressively than groomers given that there is much less chance of scalping or injuring the leaf blades with the brushes compared to the groomers. The groomer gauge should be used to set the brush height.

6. No Overseeding

It is imperative that the greens are not overseeded this fall and, ideally, the greens would never be overseeded for the life of these MiniVerde ultradwarf bermudagrass surfaces. The nonoverseeded surfaces will deliver much more consistency across the entire golfing season when compared to overseeded greens and therefore are better for both playability and turf health. For more information on nonoverseeded ultradwarf greens, please review the following articles:

- [Course Care: Non-Overseeded Ultradwarf Bermudagrass Greens \(usga.org\)](https://www.usga.org/learn/industry/industry-articles/course-care-non-overseeded-ultradwarf-bermudagrass-greens)
- [Non-overseeded ultradwarf bermudagrass greens \(azgolf.org\)](https://www.azgolf.org/non-overseeded-ultradwarf-bermudagrass-greens)
- [Weed Control In Non-Overseeded Bermudagrass Greens \(usga.org\)](https://www.usga.org/learn/industry/industry-articles/weed-control-in-non-overseeded-bermudagrass-greens)
- [Can't Stop Your Ball on the Green?](https://www.usga.org/learn/industry/industry-articles/can-t-stop-your-ball-on-the-green)

Fairways

Observations

1. Excellent Improvement

It was excellent to see the significant improvement in the bermudagrass health and density on fairways since my last visit. It is clear the strong efforts to utilize sprigging, sodding and not overseeding have proved extremely beneficial. A combination of overseeding and not overseeding was utilized this past fall and winter and, not surprisingly, the nonoverseeded fairways have thick, healthy bermudagrass while the overseeded fairways have weaker bermudagrass stands. However, it is good to report that even the overseeded fairways have good bermudagrass cover with some localized turf thinning areas. Hole Nos. 4 and 15 probably have the most areas of thin bermudagrass in recovery stages.

2. Soil Profiles

Soil profiles collected during this course tour confirmed what I had seen during my last visit, with shallow soils with organic matter growing on top of decomposed granite. The majority of the roots are growing within the top 3 inches of the organic matter that has accumulated on top of the decomposed granite soil.



A thick, dark organic matter layer resides above the decomposed granite soil inhabiting a majority of the roots. It is good to see a thin sand/organic layer at the surface of the fairways from the sand topdressing program.

3. Sand Topdressing

It was great to hear that sand topdressing has been employed on fairways over the past three years. Soil profile samples confirmed there is a thin layer of sand near the surface of the fairways.

4. Aeration and Vertical Mowing

It was great to see the recent core aeration and vertical mowing completed on fairways.

5. Salinity

The handheld salinity meter revealed salinity levels in fairways range from about one mS/cm to about 3 mS/cm. As a guideline, the health of the bermudagrass will not decline until the salinity meter reads over 10 or even 11 mS/cm. However, when salinity values creep up to 4 to 5 mS/cm, the overseeded perennial ryegrass will show signs of stress.

Recommendations

1. Soil Improvement

As we discussed in the last CCS report, one of the main strategies to improve both bermudagrass and overseeded ryegrass health on these fairways is to improve the rootzone conditions. This is a process that will take five years or more but can be realized through a routine aeration and sand topdressing program.

- For aeration, continue to utilize the pull-behind aerator and supplement with the Aerway machine. We discussed purchasing a Toro® 864 model for greater surface disruption. We also discussed the value of a machine such as the Imants® ShockWave which would work well in these challenging soils.
- It is strongly recommended to increase sand topdressing efforts on fairways. Ideally over the next two years, you would increase sand inputs to a range from 80 to 110 tons per acre. As much as about 40 tons per acre can be applied in one application.

The combination of a frequent aeration program and a more robust sand topdressing program will yield significant and positive benefits, but it will take a few years. There is one additional component of the fairway improvement program which has also shown very positive benefits at other golf courses, and this is drainage.

2. Drainage

It is imperative to be able to move water through the rootzone and to be able to water dry areas adequately without creating chronic wet areas nearby. Greater moisture consistency can be achieved with a solid drainage system.

- For example, we discussed installing drainage on the par-3 No. 5 to facilitate adequate watering of the mounds along the left side of this hole and avoid saturated conditions in the low area along the right side of this hole.
- Please refer to the satellite image below which demonstrates an example of how an effective drainage network should be installed on a turf area such as this. Keep in mind that drainage lines should be cut approximately 1.5 to 2 feet deep and backfilled with sand and a sand/soil or sand/peat mixture in the top 5 to 6 inches. There should be no gravel placed in the drain lines.

An example of a drainage layout on No. 5. The main drain exits into the desert and should be open ended. According to elevations on the satellite image, this is the lowest elevation. Field elevation measurements will be more accurate and may require a slightly different design, but this layout offers a good example of how the drain lines should be installed to drain this hole properly.



3. No Overseeding

It was great to hear there are plans to not overseed all the fairways at least one more year. The primary objective of not overseeding fairways is to reestablish a healthy and strong bermudagrass base which can tolerate overseeding in the future.

- In preparation for winter dormancy, be sure to apply about 2 pounds of nitrogen per 1,000 square feet between mid-September and mid-November to encourage the bermudagrass to extend its growth into the late fall and expedite growth in the spring.

Roughs

Observations

1. Nonoverseeded but Inconsistent Turf Coverage

Although the majority of the rough area was not overseeded, the bermudagrass density and health were inconsistent. There were numerous areas of bare ground and thin bermudagrass cover. While some of these areas clearly were a result of golf cart traffic ingress/egress areas from cart paths, some turf thinning was observed in areas where traffic is clearly not the cause. It appears that the majority of the problems were related to inadequate soil moisture.



Despite not overseeding, we observed thin turf coverage in localized areas in roughs. Strategies are being deployed to achieve full turf cover.

2. Concentrated Traffic Areas

There are several holes on the golf course with concentrated traffic areas such as where carts leave the first fairway on Nos. 10 and 11. There are also areas that concentrate traffic as carts leave the fairway on No. 3 where there are trees and a small desert area that restrict cart traffic flow.

Cart traffic is concentrated due to trees and bunkers on the right side of No. 1, resulting in compacted soil and turf damage.





The desert outcropping right of No. 3 concentrates cart traffic leaving the fairway and returning to the cart path. It would be wise to remove the trees and the desert and replace with turf.



These three areas on Nos. 10 and 11 severely concentrate cart traffic and there is bare ground on either side of these crossings.

3. Poor Soil

The soil in the roughs is worse than in the fairways. This DG (decomposed granite) soil is heavily compacted and limits water movement and rooting.

Recommendations

1. Reestablishing Bermudagrass

It was great to see that Mr. Thomas and his agronomic team are hard at work reestablishing bermudagrass in roughs through a multifaceted approach utilizing sprigs, sodding, and aeration plugs harvested from fairways. All of these strategies will work, and I am optimistic that you can achieve 90% or greater turf coverage before the onset of cooler temperatures.

2. Omitting Preemergence Herbicides

Given the weak conditions in roughs, it is recommended to avoid using preemergence herbicides in the fall. You could potentially spray in the spring, and a granular Ronstar® application may be the best and safest product to use.

3. Soil Conditions

Ideally, the suggestions to improve soil conditions on fairways would be carried out into the roughs, including the sand topdressing. However, I realize economically that is likely not practical and therefore it is recommended to focus on the high-traffic areas for the sand topdressing. Additionally, where there are pinch points for cart traffic such as on No. 10 and 11 where carts must cross the bridge, we discussed cutting a large area out several inches deep, installing several inches of crumb rubber and resodding. You may consider removing 2 to 3 inches of soil in these localized areas and installing 1 to 1.5 inches of sand, then installing 1 to 1.5 inches of crumb rubber on top of the sand, followed by sodding with a washed sod or sand-based sod. Follow with routine topdressing with crumb rubber at approximately 100 pounds per 1,000 square feet three to four times annually.

4. No Overseeding

Many courses in Southern Arizona do not overseed roughs and, moving forward, it is strongly suggested to not overseed roughs at Saddlebrooke Ranch Golf Club. We did discuss overseeding a 10- to 12-foot band around greens to help with playability but, ideally, that would be the extent of the overseeding around greens.

Overgrown Trees and Vegetation

Observations and Recommendations

1. Obstructed Views

It is quite common in Southern Arizona to see golf courses with overgrown desert vegetation and trees. As this vegetation grows and increases in density, views across the golf course are obstructed and, at a course like Saddlebrooke Ranch, views across the mountains are obstructed. A good example where overgrown vegetation is obstructing views is on No. 13, shown in the image below.



The overgrown trees and desert vegetation lining the left side of this golf hole and bisecting the two fairways are obstructing views of the hole and the mountains beyond.

- While turf coverage is your priority right now, when time permits, it is recommended to begin working through the golf course to reduce and remove overgrown desert vegetation and trees. Some courses have found that using an outside contractor has been extremely beneficial to expedite this process without sacrificing necessary work on the golf course.

Soil and Water Tests

Observations and Recommendations

1. Results

A review of the most recent soil and water tests revealed this water does not contain elevated salts and is perfectly suitable for growing healthy turfgrass.

- One interesting note is the water does contain elevated phosphorus levels and, with this nutrient load, there will always be significant algae pressure in the lakes.
- Additionally, there should be no need to apply phosphorus to the turf. A review of the soil tests from greens, tees, fairways and roughs reveals there are no nutrient deficiencies and, in general, salts are low to moderate.
- The tests did show some elevated sodium levels on rough areas; however, that is due to poor soil water infiltration.

2. Improving Soil Water Infiltration

Given these test results, there are no recommendations to treat the water or soil, but rather focus on improving soil water infiltration through a combination of drainage installation, frequent aeration using multiple tools, and a robust sand topdressing program.

Closing Comments

It was great to have the opportunity to spend the morning with Mr. Thomas in his new role as golf course superintendent at Saddlebrooke Ranch. We were also able to spend some time with the assistant superintendents and the equipment manager and discuss future agronomic planning. It was great to see such significant improvement in the bermudagrass coverage in fairways, and I am eager to see the golf course at this time next year after one more year of not overseeding to see the health of the bermudagrass. It was encouraging to see the success of the MiniVerde bermudagrass grow-in on greens. I am eager to work with you through the next eight to ten weeks, shifting from grow-in to producing a playing surface. Please do not hesitate to reach out during this process. Thank you for an enjoyable and productive course visit and for your continued support of the USGA Green Section.

Respectfully submitted,



Brian Whitlark, Senior Consulting Agronomist
USGA Green Section

Distribution: Aaron Thomas, Golf Course Superintendent

Additional Considerations

The USGA appreciates your support of the Course Consulting Service. Please visit the [Green Section Record](#) to access regional updates that detail agronomist observations across the region. Also, please visit the [Water Resource Center](#) to learn about golf's use of water and how your facility can help conserve and protect our most important natural resource.

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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.

