THIS GRASS IS FAST!

Mach 1® Ultradwarf Bermuda, this grass is Fast!

USES: Golf greens, croquet lawns, grass tennis courts, lawn bowling

Mach 1 Ultradwarf is a premium greens-grade grass that delivers golf's purest, fastest bermudagrass putting greens, most comparable to bentgrass. Mach 1's finer leaf blades, shorter leaf length, and closer internodes create exceptionally dense putting surfaces that putt true with no swirling grain. Some of the world's most elite clubs have selected Mach 1 to differentiate themselves and deliver the highest quality greens possible for their members and guests. Mach 1 is produced exclusively in the United States by Modern Turf, with a foundation farm in Rembert, South Carolina, and is represented outside of the U.S. by Atlas Turf International. To learn more, follow us @mach1_greens or visit mach1greens.com

FEATURES & BENEFITS

More than 20 years of research, development and high-level greens production yields the following:

Features

- **This Grass is Fast!** Can roll 15 on the Stimpmeter with proper maintenance for tournament conditions. Mach 1 easily rolls 12 to 13 on a daily basis under proper management.
- **Putts True**: No swirling grain common to other ultradwarfs. Unmatched consistency for tournament-worthy putting conditions.
- **Advanced Density:** Highly dense turf creates a smooth surface. Higher shoot density than other ultradwarfs tested. More lateral stems in comparison to other ultradwarf bermudagrasses.
- **Fine, Velvety Texture:** Exhibits smaller leaf blades, shorter leaf length, and shorter internodes compared to other ultradwarf bermudas on the market.
- **Dwarf Growth Habit:** Terminal height no higher than 2-inches. Very low vertical terminal height growth characteristic.
- **Thicker Stolons:** Larger stolon diameter for faster grow-in and enhanced speed in recovery from damage or wear. Prolific stolon production.

- **Area of Adaptation:** A warm-season turfgrass, well-suited for warm-season climates. Turf covers recommended in the Transition Zone.
- **Stable Cultivar:** No mutations, no off-types noted after nearly two decades of research.
- **Color:** Medium green (N135A) to dark green (N134A).
- **Sprigs:** Currently harvested as sprigs only.
- **No seedheads.** Ever.

Benefits

- **Premium Putting Surface:** Extremely dense, smooth, highest quality for golfers of all levels. Comparable to bentgrass for ball roll and trueness.
- **Faster Grow-In**: Faster than TifEagle, among others, for quick turnaround on golf course renovations.
- **Low Height of Cut:** H.O.C. bench height as low as 0.070-inches for tournament-ready greens. Effective H.O.C. in the field as low as 0.40-inch.
- **Less Fertilizer:** Uses 10 to 25% Less Nitrogen fertilizer than other bermudagrasses tested.
- **Lower Inputs:** Efficient uptake of PGRs and fertilizers at lower rates.
- **Tolerates Drought:** Heat and drought tolerant.
- **Early Spring Green-Up:** Earlier spring green-up than TifEagle, which up until now had been the standard. Recent testing at the University of Tennessee shows Mach 1 to green up before TifEagle with Champion two weeks behind TifEagle.
- **Shade Tolerance:** Better than TifEagle, similar to Champion and MiniVerde.

Characteristics SImilar to Other Bermudas:

- Thatch production is similar to other ultradwarfs.
- Nematode tolerance similar to other ultradwarfs.
- Rhizome development is similar to other ultradwarfs.
- Rooting depth is normal for an ultradwarf bermuda.

COMPARATIVE RESEARCH STATS

(to be turned into charts)

Source: US PP31,139 P3 (Mach 1) & PP 35087 (Tif3D)

For Faster Greens, Size Matters!

Why does Mach 1 produce faster, tighter, and smoother putting surfaces than other ultradwarfs? Mach 1 has a thinner leaf blade, shorter leaf length, shorter internode and larger stolons than other ultradwarfs tested.

Finer Leaf Blade Width

The leaf blade width of Mach 1 is finer than three hybrid ultradwarf bermudagrass cultivars tested.

- **8.7%** less wide than **Champion and MiniVerde**
- **12.5%** less wide than **TifEagle**

Shorter Leaf Length

Quantitative assessments of leaf blade lengths showed Mach 1 to have a very short leaf blade length. The leaf blade length was dramatically shorter than three hybrid ultradwarf bermudagrass cultivars.

- **67.6%** shorter than **Champion** (conversely, Champion is 308.5% longer than Mach 1),
- **74.3%** shorter than **MiniVerde** (conversely, MiniVerde is 389.4% longer than Mach 1),
- **73.1%** shorter than **TifEagle** (conversely, TifEagle is 372.3% longer than Mach 1)

Comparing data from the University of Georgia in its US Plant Patent PP 35087

Tif3D was shown to have significantly longer leaf length than Mach 1.

- **4.7** mm leaf length for Mach 1
- 10 mm leaf length for Tif3D
- **50%+** shorter leaf length for Mach 1 vs. Tif3D

Shorter Internode Length

Shorter internodes, the distance between leaf clusters, creates a higher density of turf. The shorter, the better. Quantitative assessments of internode lengths showed Mach 1 to have a much shorter internode length. The internode length of Mach 1 was significantly shorter than three hybrid ultradwarf bermudagrass cultivars measured. Mach 1 internodes measure:

- **54.1%** shorter than **Champion**
- **56.8%** shorter than **MiniVerde**
- **57.3%** shorter than **TifEagle**

Larger Stolon Diameter

- Having a slightly wider stolon can be advantageous for energy storage and in injury recuperative ability. Mach 1 has far less rhizomes than the older 328 Bermudagrass and therefore the Mach 1's stolons become important in providing energy storage sites. Wider stolons can also be helpful when harvesting sprigs to vegetatively plant Mach 1 as the wider stolons could be considered hardier and less apt to damage during sprig digging or transport. Quantitative assessments of stolon diameters showed Mach 1's stolon width to possess:

SPECIFIC HERBICIDE TOLERANCES

- **11.5%** greater stolon width than **Champion**
- **8.0%** greater stolon width than **MiniVerde**
- **12.6%** greater stolon width than **TifEagle**

SPECIFIC HERBICIDE TOLERANCES

Glyphosate Herbicide Resistance:

Mach 1 has shown better tolerance to light rates of Roundup than other ultradwarfs in greenhouse situations.

PGRs

Mach 1 reacts well to low PGR rates with growth regulators such as Primo. See maintenance instructions for further details.

TESTIMONIAL PULL QUOTES

“It’s going great! We haven’t had a lot of good weather, wind blowing 30 mph after some clouds, and they still look amazing!”

> — Tony Price, Golf Course Superintendent, 5 days after sprigging Mach 1 at Atlantic Fields Golf Club, Hobe Sound, FL

“Mach 1 is a great ultradwarf bermuda grass. We planted the sprigs in mid-April 2022 and they fully grew in within 6 weeks on new greens cavities. We were able to open the new greens for our membership on July 1st 2022. My experience with Mach 1 is that it is a very fine-bladed variety able to produce a wonderful putting surface because of its extreme density. It has a heavy stolon mat in the upper 1” of the soil profile that produces its density. It has nice rooting ability and responds favorably to low rates of plant growth regulators. The thing that really stood out to me during my time growing it is the purity of the planting stock and the ease of producing a really good putting surface through regular applications of Primo, light topdressings, and regular grooming and brushing practices. It also thrives under low mowing heights, we regularly mowed our greens at 0.07” to produce green speeds in excess of 12’ every day for our membership.``

> — Graham Kornmeyer, CGCS, Southern Trace Country Club, Shreveport, LA

“I have been managing ultradwarf bermuda turf for putting surfaces for over 25 years and have found Mach 1 provides a high-quality putting surface in southeastern Louisiana. Its qualities include evenly distributed color, high leaf-blade density, and very clean ball roll and speed. It performs well throughout all four seasons. The turf speed is easily managed in between 9 and 15 depending on the green contours.”

> — Brett Vitrano, Golf Course Superintendent, English Turn Golf & Country Club, New Orleans, Louisiana

“The Mach1 performed beyond our expectations. We covered once this past winter for 4 days with the low temperature being 16° and having no issues transitioning in the spring. We truly love the color variation that it gives against the fairways and approaches. It really stands out against the 419 Bermuda. The Mach1 grow-in was faster than expected. We had full coverage within 6 weeks and opened for play at 8 weeks ... We opened to rave reviews with no complaints or “they’ll be good next summer“ comments from the golfers. The greens were perfect for the first tee time on opening day.”

— Chad Wyrick, Golf Course Superintendent, River Oaks Golf Club,

Statesville, North Carolina.

“I've worked on most of the ultradwarf bermudas available today. After our grow-in last summer, and how the transition has been this year, I can confidently say Mach 1 is the superior ultradwarf by far. The plant is small, and the leaves tend to grow more vertically, making a smooth and consistent ball speed easily achievable. With light grooming, light vertical mowing, and topdressing, we have an extremely high-quality product that I am proud of. With our fungicide and fertility program, Mach 1 doesn't seem to have any off-type grasses or hereditary diseases that I have experienced with other ultradwarf greens in my region. I would 110% recommend this grass for anyone who is looking for an ultradwarf bermuda.”

— Landon Morgan, Golf Course Superintendent, The Revival Golf Club at The Crescent, Salisbury, NC

MACH 1 - HISTORY OF THE CULTIVAR

Mach 1 Ultradwarf Bermudagrass was developed by Rod Lingle, CGCS, a golf course superintendent for more than 40 years, and originator of The Lingle System of ultradwarf bermudagrass management. Lingle, widely recognized for his expertise, has been honored by the Tennessee Turfgrass Association and is a frequent lecturer on ultradwarf issues for the Golf Course Superintendents Association of America, among others.

In 1998, Lingle discovered Mach 1 on a segregated patch of grass in the Mid-South, United States. The grass caught his attention because of its fine texture, dwarf growth habit, and deep green color. He collected one single sprig comprising a short lateral stem with multiple nodes, that was then planted in a one-gallon pot with sterilized soil and transferred to his research facility in Olive Branch, Mississippi, to begin expansion. All expansion was performed from the growth of this original sprig. It was then further cut into individual sprigs and planted in 2 gallon pots on cement slabs and later in a greenhouse. This was then propagated into a 1500 sq. ft. growth area and managed under golf course conditions at very close mowing to confirm the purity of the grass. Lingle studied the grass for a decade before taking it to full-scale testing from 2008 to 2015.

In 2018, Lingle enlisted the expertise of Hank Kerfoot and his team at Modern Turf, a highly respected sod farm and sprigging service based in Rembert, South Carolina, that specializes in certified, high-quality turfgrasses for the golf and sports turf industries. Lingle transferred some of his foundation material to Modern Turf's sod farm fields. The fields grew in and were expanded for sprig production. While Modern Turf focuses on domestic production and sales of Mach 1, longtime business associate John Holmes and the team at Atlas Turf International distribute the grass for international golf course projects worldwide.

MAINTENANCE GUIDELINES

Mach 1 Maintenance Guidelines

Excerpted from The Lingle System of Ultradwarf Management

Test Green Management:

Growth Regulator – Primo 3 to 4 ounces of product weekly during the summer. Less Primo in the spring and fall – 1 to 2 ounces weekly. Mach 1 responds favorably to Primo and this is very important to producing a smooth, fast putting surface.

Brushing --- Year-round except for during topdressing. I adjusted the brushing depth from .080 Clearances during the summer to .100 Clearances during the winter months. If the green started to look a little thin, I would skip brushing for a week or so, until the grass looked thicker.

Groomer--- Typical Groomer set up varies with the forward rotation or counter rotation of the groomer. I used John Deere Counter rotating groomers set up at .090 above the ground or 0. I only used the groomers after sand topdressing. Most of the time it was brushing.

Verticutting frequency--- Vertical mowing is done more often when the grass is growing fastest. In the middle of the summer it should usually be done lightly once a week. In the spring and fall it may only be done once a month, depending upon necessity. I do not like to use the carbide tipped blades, I recommend the thin spring steel blades like the old Toro blades.

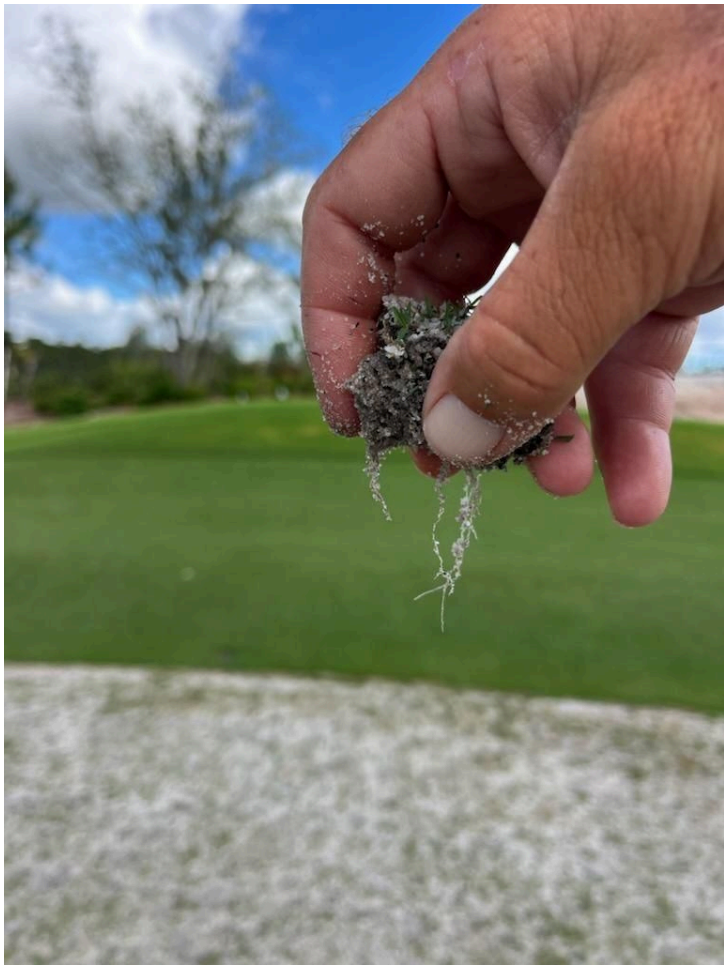
Depth depends upon how worn the blades are. New blades are usually set around 0 or even with the ground. Worn blades are set anywhere between 0 and - .075 below 0 or the ground. It's a visual adjustment.

One thing that is an absolute is you do not need to heavy vertical mow any ultradwarf. It does not recover well from heavy vertical mowing. If you do it right, light frequent vertical mowing is the way to go and this has been Proven at more than one location.

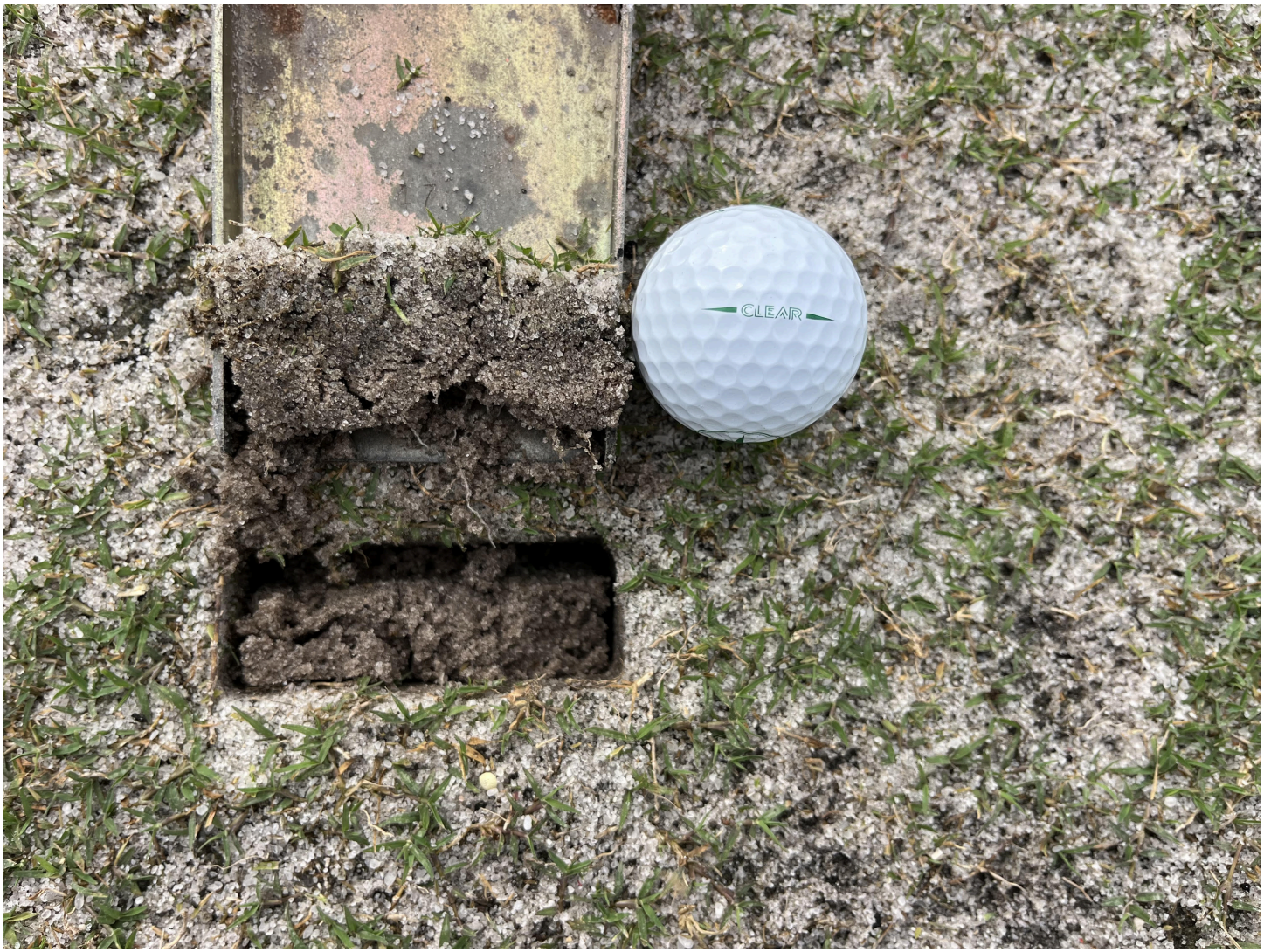
Topdressing—The most important cultural practice we do to greens. Again, frequency is determined by the rate of growth. Faster growth = more topdressing. The topdressing frequency recommendation is once a week light topdressing in the summer and less often in the spring and fall. Again these frequencies are best based on experience. The sand quality and particle size is very important. Most everyone uses a sand that is too small!!! People have the idea that smaller is better and long term it can get you in trouble and this has been proven. The 2 best topdressing sands that I ever used were both within the USGA recommendations for greens. The real key is to not have any particles larger than 1mm in diameter in the sand and to keep the very fines to below 5% if possible. There is much more to this, as I could write 3 pages on the size of topdressing sand and I will do this later. The sand does not have to be dry, if you have the right spreader. In fact I prefer a little moisture to the sand to hold down the sand dust. Silicosis of the lungs is a real danger and I don't like my employees to breathe any more of the silica than they have to.

Fertility --- For growing in a green from sprigs, granular fertility is best. No contest in my opinion. Using liquids to try and grow in a green usually causes trouble. I like a pound of N granular (preferably soluble N source) every 5 to 7 days. Once the green is grown in you should back off the N. When fertilizing a green you should always base your source of Fertilizer off of your soil test. Some greens will need different elements than others and one size does not fit all. I have managed Bermuda greens for 45 years and I have primarily used Granular fertility (70%) over Liquid fertility (30%). Liquid is used primarily for a quick fix (like makeup on a lady) and the granular is used for the foundation of the plant. Plants evolved taking fertility up through the root system for millions of years before man was on the planet. When I moved to Texas, Escondido golf course was using all liquid fertility wall to wall. It looked terrible. We switched to granular and it was amazing in the improvement of the course. The members were very impressed.

Some of the granular products I use are Potassium Nitrate, Anderson Contec DG, and some organics like Nature Safe and Sustain. Ideally, fertility should be applied as needed and not on a strict schedule. Only apply enough N to keep the proper canopy density and if you are thick enough do not apply N fertility. If you have only one small thin spot on your green you should just fertilize the thin spot. If you over apply fertilizer to an ultradwarf green you cannot keep it from becoming too thatchy and puffy, proper N management is a must.



Golfcrest Country Club, Pearland, Texas- **Mach 1® Ultradwarf Bermuda** installation



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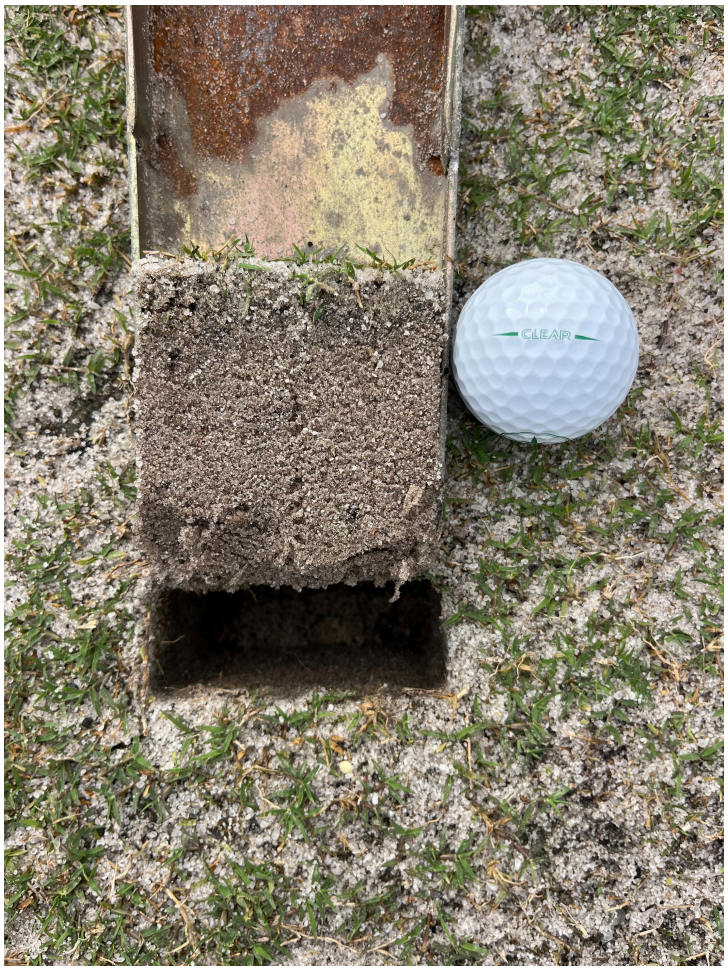

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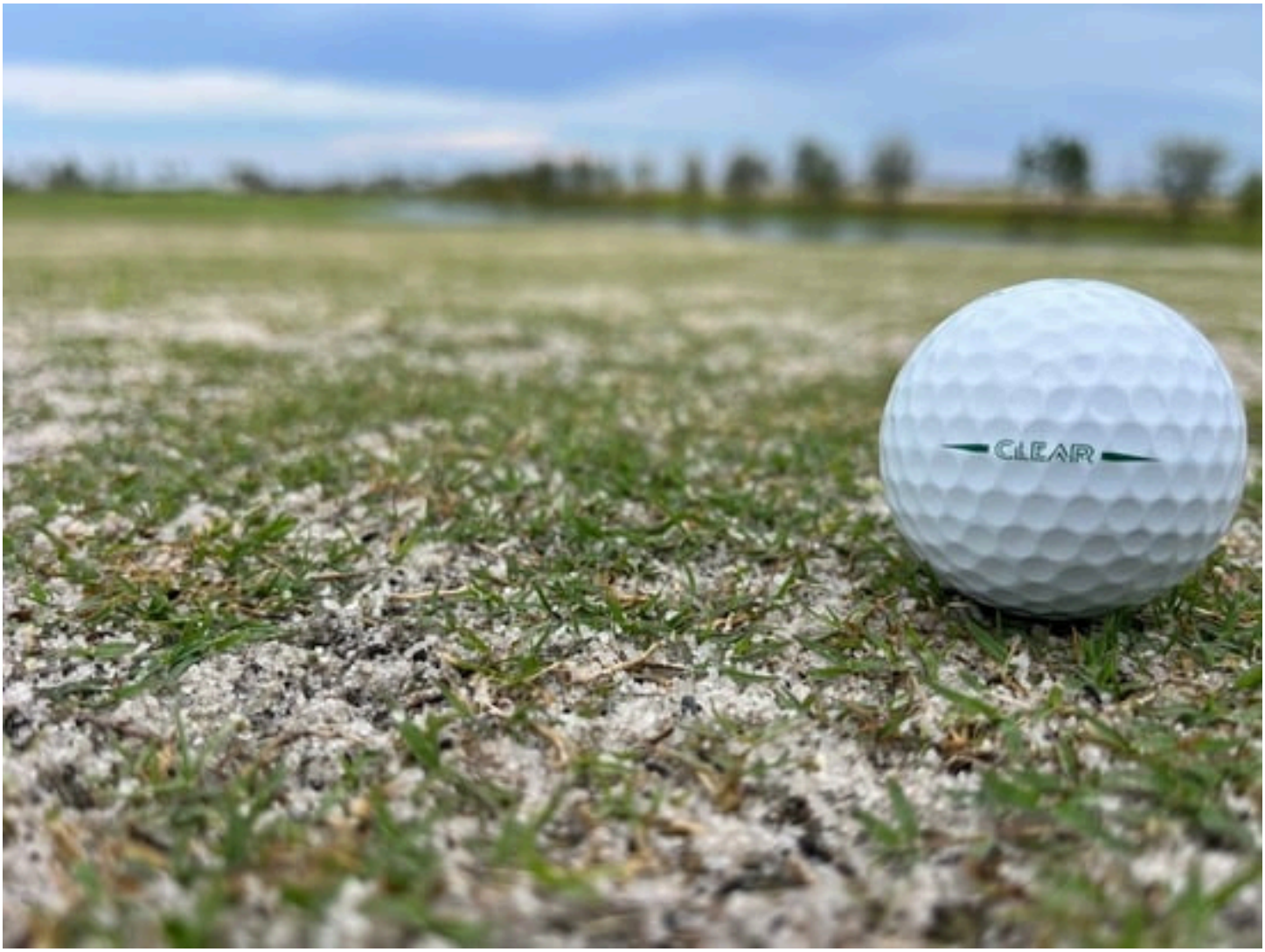

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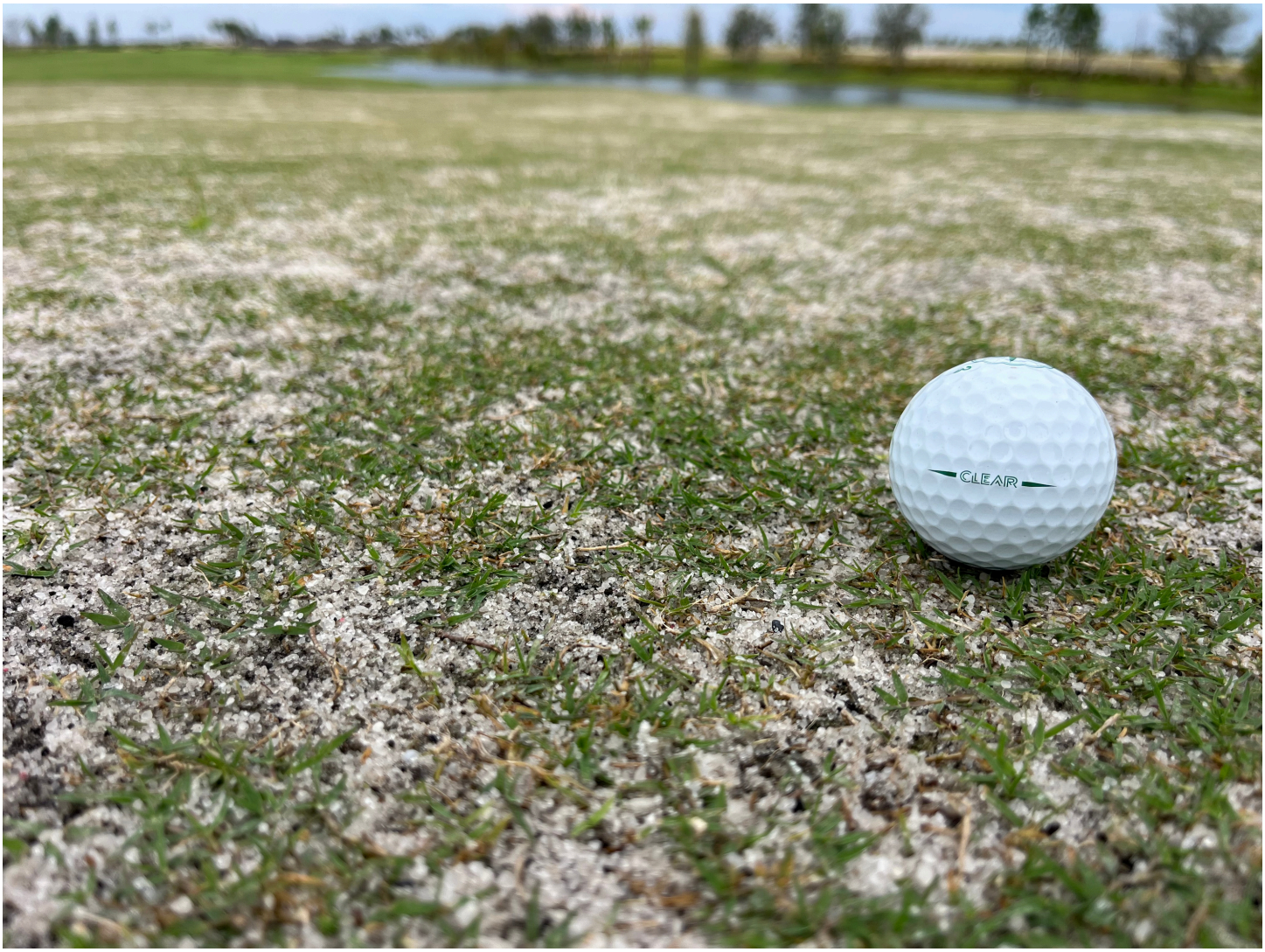

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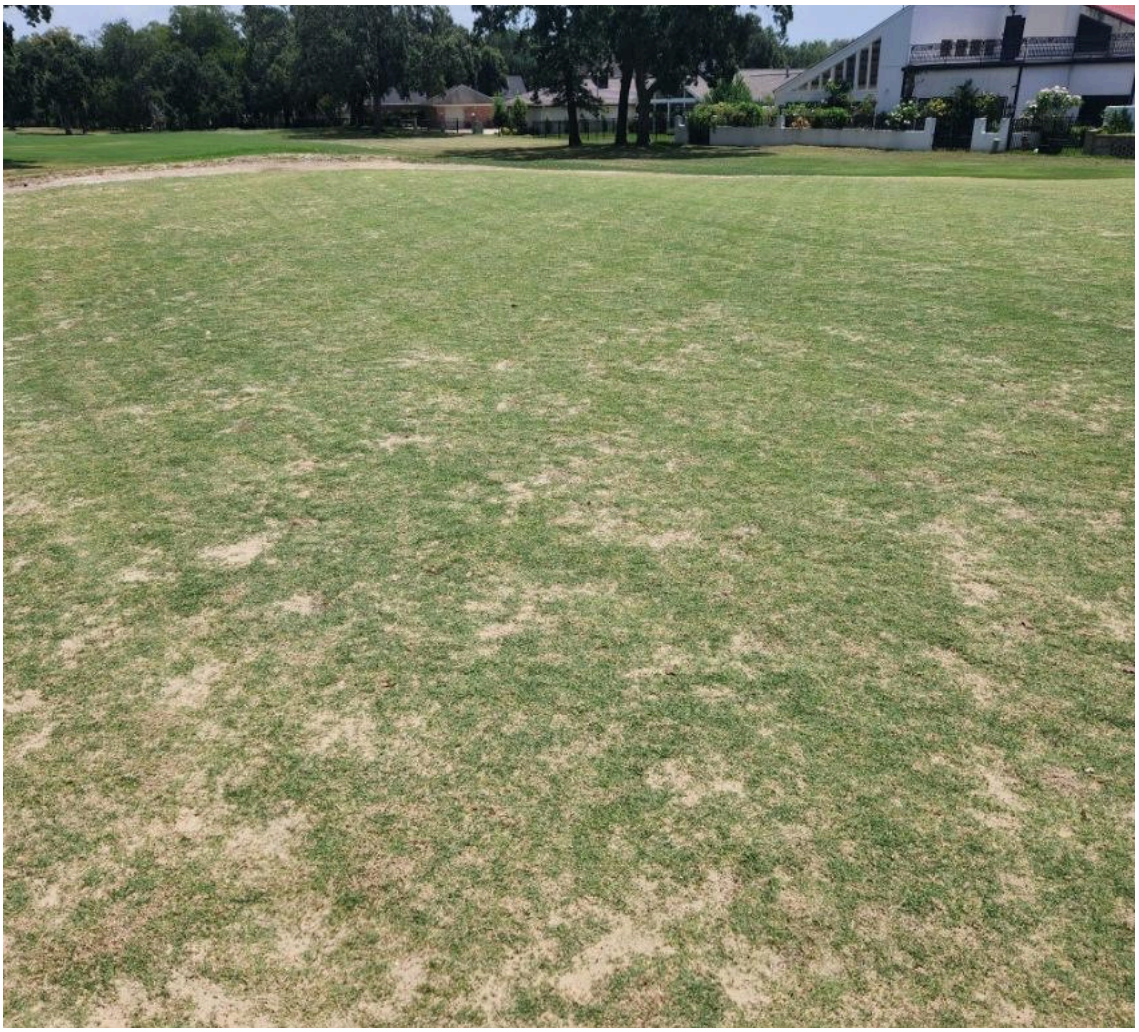

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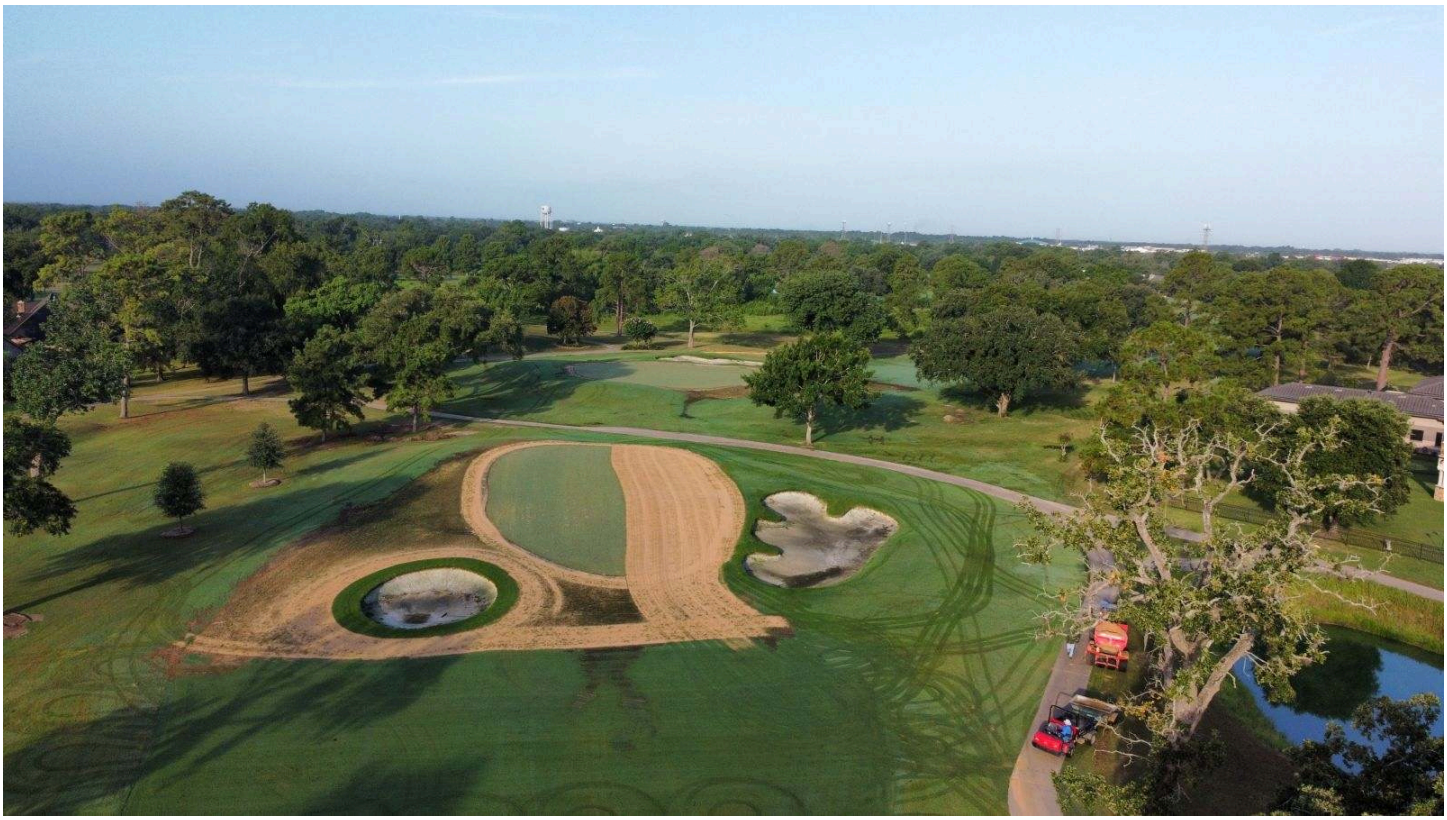

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