Lessons Learned With Ultradwarf Bermudagrasses in Florida

Observations from a decade of successful putting green management

BY TODD LOWE



Light and frequent verticutting and sand topdressing are adequate for maintaining good playing conditions on most ultradwarf greens, but it is necessary to allow the time for these practices to occur.

Ultradwarf bermudagrasses (TifEagle, Champion, and Mini-Verde) were developed in the 1990s and began being established on Florida golf courses in 1997. These early pioneers laid the groundwork for other golf courses in the South to develop maintenance practices that offered improved putting green smoothness and speed when compared to older varieties like Tifdwarf or Tifgreen. Early research showed TifEagle, Champion, and Mini-Verde provided consistently better playing conditions than other varieties in university trials (Morris, 2003), and such characteristics have proven superior on golf courses as well. In fact, ultradwarfs have now become the standard for putting greens in Florida.

We have learned many things about these grasses in the past 15 years, and this article addresses a few key observations that may surprise some readers and hopefully will prove useful at your facility. Every region is different regarding the effects of climate and peak-season play, and these regional observations may differ slightly from yours, depending on location.

LESSON ONE

Ultradwarfs are not just for high-end golf courses. One of the first lessons learned is that ultradwarfs perform well under a wide range of management regimes. For the first few years, only high-end golf facilities converted their greens to ultradwarfs, and many of these golf courses employed intensive turf management programs to produce fast green speeds. Due mostly to the success of these early programs, it was thought that ultradwarfs required aggressive surface management and low mowing. These grasses soon became analogous with championship conditioning and very fast speeds.

Championship conditioning through aggressive management deterred some golf courses from converting

©2013 by United States Golf Association. All rights reserved.
Please see Policies for the Reuse of USGA Green Section Publications. Subscribe to the *USGA Green Section Record*.

Green Section Record Vol. 51 (1)
January 11, 2013
TGIF Record Number 214407

to an ultradwarf early on. It was not uncommon to hear comments such as "an ultradwarf would not be a good fit for our course because our golfers cannot play on fast greens" or "we can't afford an ultradwarf because we cannot verticut and topdress greens every seven days." While the ultradwarfs can produce faster speeds than Tifdwarf, they can also produce similar conditions, if desired. Over the past decade, we have seen ultradwarfs be successful on less-intensive programs, and we have learned that they do not require extremely low mowing or aggressive verticutting to maintain acceptable playing conditions. Every golf facility has its own unique set of standards and expectations. Those that demand firm and fast putting surfaces often employ an aggressive surface management plan to achieve such conditions. However, ultradwarfs can be maintained under a less-intensive and more economical agronomic plan while producing speeds of 8 to 10 feet as measured using a Stimpmeter, and even faster during the winter play season.

Some golf facilities also have excellent success with maintaining fast greens without mowing low. Early on, many ultradwarf greens were maintained at or below a height of cut of 0.10 inch to produce consistently fast putting greens. While some golf courses still mow low, we have observed faster/smoother greens with innovative fertility and grooming (Lowe, 2012). These improved fertility programs have resulted in consistent growth and playability, and they drastically reduced the need for low mowing heights to provide fast putting speeds. While this is a new concept for many Florida golf course superintendents, it has been successfully implemented at several golf courses for nearly a decade. We are hopeful these innovative programs will continue to gain popularity as higher mowing creates deeper roots and healthier turf.

LESSON TWO

Effective thatch management does not require overly aggressive cultivation. There are a variety of core aeration and surface management (verticutting, grooming, and brushing) programs employed on Florida golf courses. Early reports from turfgrass researchers discussed the tendency of ultradwarfs to produce more thatch and organic matter than Tifdwarf bermudagrass (Gray and White, 1999; Guertal and White, 1998). As a result, aggressive turf management programs were developed at many golf courses to dilute thatch and organic matter. Early on, we visited some golf courses that utilized as many as five or more aerations annually using half-inch-diameter hollow tines or larger. Since then, aeration equipment technology has improved and procedures have been refined. Consequently, turf managers are able to remove more soil cores with each aeration event and increase organic matter dilution (Lowe, 2011; Oatis, 2002; O'Brien and Hartwiger, 2003). We have learned that acceptable organic matter dilution can take place with less invasive procedures and less disruption to golfers. Furthermore, other practices like "venting" with small-diameter solid tines, also known as needle or pencil tines, are



It was originally thought that aggressive verticutting and sand topdressing were necessary to maintain proper thatch and surface quality on all ultradwarf bermudagrass greens. Dethatching is still employed on some greens but generally as part of summertime core aerations.

©2013 by United States Golf Association. All rights reserved.
Please see Policies for the Reuse of USGA Green Section Publications. Subscribe to the *USGA Green Section Record*.

also valuable, especially during the peak winter play season.

Verticutting procedures for ultradwarf greens have nearly come full circle. It was initially thought that aggressive dethatching with units like the Mataway, Graden, or SISIS was going to be standard for ultradwarfs in Florida. Turf thinning and slow recovery occurred at some courses, and other implements like carbide-tipped blades became viable alternatives. Many courses have simply continued "grooming" with thin-bladed verticutters, along with prudent nitrogen fertility and frequent sand topdressing to maintain excellent surface smoothness. Light and frequent programs have been the most successful for good surface management, and it is necessary to allow time for such procedures to take place. Aggressive verticutting/dethatching is still employed at some courses, but it usually takes place in conjunction with summertime core aeration.

Aeration and verticutting are still necessary throughout the year to provide optimum playability, but effective thatch management requires a "holistic" program, beginning with proper nitrogen inputs. We have learned that the ultradwarfs, and perhaps Tifdwarf as well, simply do not require as much nitrogen as traditional programs for bermudagrass putting greens. Historically, putting greens in Florida have been maintained on annual diets as high as 18 to 24 pounds of nitrogen per 1,000 square feet for Tifdwarf bermudagrass (especially overseeded Tifdwarf). Nitrogen fertility has been reduced over the years with improved product efficacy and the ability to "spoon-feed" putting greens on a weekly basis. While some researchers continue to advocate very high nitrogen diets, USGA Green Section agronomists feel that less nitrogen is better for the turf and the game of golf. The average fertilization program in Florida is still quite high at 0.75 to 1 pound nitrogen per 1,000 square feet per growing month, but it is trending downwards, with many golf facilities at nearly half that rate (Foy, 2011). Ultradwarfs perform well at lower nitrogen inputs, but increased thatch management programs will be necessary to provide acceptable playing conditions if nitrogen fertility for ultradwarfs is kept similar to Tifdwarf.

LESSON THREE

Most ultradwarf greens are still growing strong, but their lifespan remains a mystery. A question asked during many Turfgrass Advisory Service visits concerns the longevity of ultradwarf greens. The article Making a Change mentioned that the "lifespan" of Tifdwarf greens in Florida averaged between 10 and 15 years (Foy, 2003). It also discussed several key factors to evaluate before renovating Tifdwarf bermudagrass greens, including proper construction, loss of surface area from encroachment, and off-type contamination. It was initially thought that maintaining lower mowing heights on ultradwarf bermudagrasses would discourage encroachment from the surrounding rough-type bermudagrass, yet such intrusions still occur on ultradwarf greens. Encroachment reduces putting surface area over time, and it is necessary to eventually regrass/renovate greens to recapture lost putting surface perimeters.

Off-type bermudagrass contamination is a major concern on Tifdwarf bermudagrass putting greens, as they perform poorly at certain times of the year and cause significant turf damage. Some ultradwarf putting greens planted over a decade ago are still quite pure and continue to provide excellent playing conditions. However, we have seen a significant increase in off-type bermudagrasses in ultradwarf putting greens in recent years (Lowe



Encroachment from surrounding rough-type bermudagrass occurs on ultradwarf putting greens. This probe was used to locate the underlying gravel layer that was installed as part of putting green construction, which showed that the surrounding Tifway bermudagrass encroached nearly two feet after nine years.

©2013 by United States Golf Association. All rights reserved.
Please see Policies for the Reuse of USGA Green Section Publications. Subscribe to the *USGA Green Section Record*.



Many ultradwarf greens were originally heavily verticut, but this practice became unpopular due to turf injury and prolonged recovery.

and Foy, 2012). Off-types grow in size and number each year, and maintaining consistently good playing conditions can be a difficult task on putting greens with 40 percent or more off-type contamination. If these off-types perform poorly, then it is recommended to renovate putting greens at some point.

We have also learned that ultra dwarfs are not bulletproof and are still stressed by similar factors that cause decline on Tifdwarf bermudagrass greens, including poor drainage, shade, and nematodes. A less-expensive alternative to conventional putting green renovation is no-till regrassing, where the turf and underlying soil are left intact and ultradwarf sprigs are planted into existing putting greens. It is unreasonable to expect significantly better playing conditions with ultradwarfs on putting greens that have failed previously with other grasses, unless the reasons for failure are addressed. Also, ultradwarfs are poor competitors and generally cannot overtake other grasses, even at low mowing heights. Increased off-types (most likely re-emergence of the previous grass) have been observed on many putting greens re-established using no-till methods throughout Florida.

In closing, perhaps the greatest benefit of being a USGA agronomist is visiting so many golf course superintendents and learning from their successes and failures. Superintendents are like chefs in that they all use different ingredients and recipes. While some superintendents still mow low, aggressively cultivate/verticut, and apply more nitrogen than is needed to produce quality surfaces, others have learned better techniques for managing their greens. The ultradwarfs burst onto the golf course scene over a decade ago, and we continue to improve techniques, refine fertility practices, and lower economic inputs, all the while providing conditions ranging from acceptable for the budget-conscious golfer to putting surfaces worthy of hosting the best players in the world.

LITERATURE CITED

Foy, John. 2003. Making a change. USGA Green Section Record. Jan./Feb. 41(1): p. 1-5. http://gsr.lib.msu.edu/2000s/2003/030101.pdf

Foy, John. 2011. Ultradwarf bermudagrass putting green fertility management. Florida Turf Digest. March/April. 28(2): p. 12-14, 16, 18, 19-20 http://www.thepaginator.com/view.php?ID=875

Gray, Jason, and Richard H. White. 1999. Maintaining the new dwarf greens-type bermudagrasses. Golf Course Management. 67(3): 52-55.

Guertal, Beth, and Richard H. White. 1998. Dwarf bermudagrasses demand unique care. Golf Course Management. 66(7): 58-60.

Lowe, Todd. 2011. The one, two punch for putting greens. United States Golf Association. May 26. p. [1]. https://www.usga.org/course_care/regional_updates/regional_reports/florida/The-One-Two-Punch-For-Putting-Greens---May-2011/

Lowe, Todd. 2012. Changing times in ultradwarf bermudagrass management. USGA Green Section Record. June 22. 50(13): p. 1-3. http://gsr.lib.msu.edu/article/lowe-changing-6-22-12.pdf

Lowe, Todd, and Foy, J. 2012. Off-types in ultradwarf putting greens. USGA Green Section Record. Jan. 20. 50(2): p. 1-5. http://gsr.lib.msu.edu/article/lowe-off-1-20-12.pdf

Morris, Kevin. 2003. Bentgrasses and bermudagrasses for today's putting greens. USGA Green Section Record. January/February. 41(1): p. 8-12. http://gsr.lib.msu.edu/2000s/2003/030108.pdf

Oatis, David A. 2002. Sometimes more is less. USGA Green Section Record. May/June. 40(3): p. 10-11. http://gsr.lib.msu.edu/2000s/2002/020510.pdf

O'Brien, Pat; Hartwiger, Chris. 2003. Aerification and sand topdressing for the 21st century. USGA Green Section Record. March/April. 41(2): p. 1-7. .http://gsr.lib.msu.edu/2000s/2003/030301.pdf

TODD LOWE *is a senior agronomist in the USGA Green Section's Florida Region.*

©2013 by United States Golf Association. All rights reserved. Please see Policies for the Reuse of USGA Green Section Publications. Subscribe to the *USGA Green Section Record*.