

# Calculating Costs Confidently

A thorough analysis is a must when comparing operating costs between creeping bentgrass and ultradwarf bermudagrass putting greens.

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(Above left) As ultradwarfs increase in popularity in the Southeast, golfers naturally want to learn more about the economic and management implications of converting their bentgrass greens to ultradwarf bermudagrass. (Above right) When surveying superintendents in the Southeast who have converted bentgrass greens to an ultradwarf bermudagrass, core aeration requirements for ultradwarfs remain about the same or even less than bentgrass.

Choices are good. Selecting the better choice can be difficult. As decision makers at golf facilities in the Southeast contemplate whether creeping bentgrass or an ultradwarf bermudagrass better suits their greens, part of their due diligence is comparing annual operating costs. As USGA Green Section agronomists, we often field emails and phone calls asking the question, "What is the annual operating cost differential between creeping bentgrass and ultradwarf bermudagrass putting greens?" This is an excellent

question to ask, but a difficult one to answer without site-specific facts. Therefore, the purpose of this article is to help decision makers answer this question by providing a cost-comparison worksheet of bentgrass versus ultradwarf bermudagrass greens in the Southeast.

## WHY OPERATING COSTS ARE DIFFICULT TO QUANTIFY

Operating costs are difficult to quantify for two primary reasons. First, an accurate accounting of current operating

costs for creeping bentgrass is not easy to ascertain. Most golf course budgets are allocated by line items, not by playing area of the golf course. For example, the labor line item includes all labor hours. Unless the superintendent accounts for wages devoted to putting green maintenance items, e.g., hand watering, mowing, spraying, etc., these figures are not readily available within the current budget format. Second, the standard to which the ultradwarf bermudagrass is going to be maintained must be known before



(Above left) Fans are a key survival tool for bentgrass greens, but they are not necessary for ultradwarfs. (Above right) Fungicide use and frequency decrease significantly with ultradwarf putting greens when compared to bentgrass greens.



(Above left) To enhance and maintain optimal surface conditions, more sand topdressing is needed for ultradwarf bermudagrass greens than for bentgrass. (Above right) Many golf facilities switch to triplex mowing after converting from bentgrass to an ultradwarf to take advantage of a big cost reduction.

future cost estimates can be calculated. The higher the standard, the greater maintenance costs will be.

The good news is that the cost of maintaining creeping bentgrass putting greens and ultradwarf bermudagrass putting greens can be estimated with a good deal of precision. The bad news is that this analysis will require patience and homework on the part of decision makers at the local level.

## HELPING WITH THE HOMEWORK

The cost-comparison worksheet located at the end of this article was created with multiple goals in mind to assist decision makers. The first goal was to provide a comprehensive analysis focusing on most aspects of routine putting green management. The second goal was to provide information on general trends observed in the Southeast region to assist with estimating ultradwarf costs. Helpful information generated from a 2013 survey led by the USGA Green Section and Dr. Mike Goatley of Virginia Tech University is included as well. The survey contains responses from approximately 40 golf course superintendents

who made the conversion from creeping bentgrass to ultradwarf bermudagrass putting greens. They shared their experiences on a wide variety of maintenance practices and whether operating costs increased, decreased, or stayed the same when they shifted to an ultradwarf bermudagrass.

## CONCLUSION

As the economic climate of golf changes and additional options present themselves, it is important for decision makers to have resources available to aid in their analysis. In the debate of creeping bentgrass versus ultradwarf bermudagrass greens, one facet of the decision is annual operating costs. This article has provided a tool to assist in this process. Please be advised that there are other tangible and intangible factors to consider, including conversion costs, revenue before and after a conversion, capital costs, playability expectations, and risk of turfgrass loss. If you would like further assistance with a cost-comparison analysis or other facets of this decision, contact your regional USGA Green Section agronomist to schedule a USGA Course Consultation Visit.

## ADDITIONAL RESOURCES

O'Brien, P., and C. Hartwiger. 2011. [A time to change: The ultradwarf bermudagrass putting green golf model is solid in the southern USA](#). USGA Green Section Record. February 25. 49(8): p. 1-5. TGIF Record **175760**.

O'Brien, P. 2009. [Changing turfgrasses for changing times: Creating a new business model by way of an agronomic decision makes a golf course even better](#). USGA Green Section Record. September/October. 47(5): p. 20-24. TGIF Record **154311**.

Hartwiger, C. 2001. [Opportunity knocks with the ultradwarfs: Success with an ultradwarf might be easier than you think](#). USGA Green Section Record. September/October. 39(5): p. 1-5. TGIF Record **75375**.

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(Above left) Light vertical mowing frequency to control turf grain increases significantly after converting greens from creeping bentgrass to an ultradwarf. (Above right) Winter turf covers are essential at northern sites in the transition zone to prevent cold-temperature injury to ultradwarf bermudagrass.

# Putting Green Operating Cost Analysis: Creeping Bentgrass Versus Ultradwarf Bermudagrass

The supplemental worksheet below is designed to provide guidance for a superintendent wanting to estimate both the current cost of maintaining bentgrass greens and the cost of maintaining an ultradwarf bermudagrass. To aid in estimating ultradwarf costs, the USGA Green Section and Dr. Mike Goatley of Virginia Tech University surveyed approximately 40 golf course superintendents with experience managing both creeping bentgrass and ultradwarf bermudagrass on the same golf course. The survey was first conducted in 2009 and an expanded version was conducted again in 2013. Unless otherwise noted, all data presented below are from the 2013 survey. For a detailed presentation on the specifics of this survey, please see the webcast [CONSIDER THE COST: Examining a USGA Survey in the Bentgrass Versus Ultradwarf Bermudagrass Cost-Comparison Discussion](#).

Process/Material	Bentgrass Costs (annual)	Ultradwarf Costs (annual)
<p><b>DISEASE CONTROL</b> For ultradwarfs, diseases of most concern are leaf spot, fairy ring, Rhizoctonia zeae, Curvularia, and spring dead spot.</p> <p>Preventative treatments common for fairy ring, spring dead spot, and sometimes Rhizoctonia zeae; curative programs for most other diseases.</p> <p>Contact superintendents in your area with a similar budget and quality standards for their costs.</p> <p>Survey Results — 98 percent spend less on fungicides on an ultradwarf green compared to a bentgrass green. Out of 41 respondents, only one spent more on ultradwarf.</p> <p>Labor Cost = (number of applications) x (hours per application) x (hourly rate). (NOTE: Use this formula for labor cost calculations in other sections as well.)</p> <p>Product Cost — Calculate the cost for the total quantity of plant protectants expected to be applied.</p>		
<p><b>INSECT CONTROL</b> Curative treatment for ultradwarfs; more tolerant to insect activity.</p> <p>Survey Results — 100 percent of respondents spend less on insecticides on ultradwarf greens compared to bentgrass.</p> <p>Review insect activity for past three years.</p> <p>Labor cost</p> <p>Product cost</p>		
<p><b>PLANT GROWTH REGULATORS (PGRS)</b> Routine applications are made to ultradwarfs during the growing season. Rates lower in spring/fall; higher in summer.</p> <p>Application frequency: once or twice per week.</p> <p>Survey Results — 88 percent spend the same or more on PGRs for ultradwarf greens compared to bentgrass. 76 percent apply PGRs more frequently to ultradwarf greens.</p> <p>Labor cost</p> <p>Product cost</p>		
<p><b>WETTING AGENTS</b> Routine applications made during the year for ultradwarfs.</p> <p>Labor cost</p> <p>Product cost</p> <p>Survey Results — 58 percent use the same amount of wetting agents on ultradwarfs compared to bentgrass greens. 28 percent used more wetting agents on ultradwarf greens than on bentgrass greens. 34 percent applied wetting agents more frequently to ultradwarf greens.</p>		

<p><b>MACRONUTRIENT FERTILIZATION (N,P,K)</b>  Granular and liquid materials are used on ultradwarfs.</p> <p>Trend is to use more granular products with routine applications for ultradwarfs.</p> <p>Survey Results — 43 percent use the same and 31 percent use more total nitrogen annually on ultradwarf greens. 45 percent apply nitrogen more frequently to ultradwarf greens.</p> <p>Labor cost  Product cost</p>		
<p><b>MICRONUTRIENT FERTILIZER</b>  Micronutrient products are used routinely on ultradwarfs.</p> <p>Survey Results — 54 percent applied micronutrients at the same frequency on ultradwarf and bentgrass greens.</p> <p>Labor cost  Product cost</p>		
<p><b>NEMATICIDES</b>  Nematicide use will vary on ultradwarfs.</p> <p>Nematode assays done annually at sites with past nematode activity.</p> <p>Survey Results — 68 percent use the same amount of nematicides on ultradwarf and bentgrass greens, whereas 17 percent used more nematicides on ultradwarf greens.</p> <p>Assay cost  Labor cost  Product cost</p>		
<p><b>HERBICIDES</b>  Herbicide use varies by golf course.</p> <p>Preemergence treatments seldom applied to ultradwarfs.</p> <p>Postemergence treatments used as needed.</p> <p>Consider weed pressure on your course.</p> <p>Survey Results — 29 percent spend more for herbicides with bentgrass greens, 29 percent spend more with ultradwarf greens, and 42 percent spend the same on herbicides regardless of species.</p> <p>Labor cost  Product cost</p>		
<p><b>TURF COLORANTS (DYES, PIGMENTS, OR PAINTS)</b>  Turf colorants are used on ultradwarfs.</p> <p>If paint is used, budget for one or two applications. If pigment is used, budget for applications every 14 days between mid-November and mid-March. Use varies by location.</p> <p>Average annual cost for turf colorants was \$1,900 and average annual labor was 33 hours.</p> <p>Labor cost  Product cost</p>		
<p><b>HAND WATERING AND WILT WATCHING</b>  Ultradwarfs require much less wilt watching and hand watering than bentgrass greens.</p> <p>Survey Results — 76 percent hand-watered bentgrass more than ultradwarfs and 21 percent do the same amount of hand watering on bentgrass and ultradwarf greens.</p> <p>Labor cost</p>		

<p><b>USE OF TURF COVERS</b></p> <p>Ultradwarfs require covers when conditions warrant; frequency based upon geographic location.</p> <p>Calculate how often over the past three to five years golf courses in your area have covered ultradwarf greens.</p> <p>Labor cost — estimate based upon average cost of nearby courses.</p>		
<p><b>CORE AERATION</b></p> <p>Based on the survey, average ultradwarf aeration frequency is as follows: 51 percent aerate once per year, 38 percent aerate twice per year, 11 percent aerate more than twice per year.</p> <p>Sand cost (fill holes)</p> <p>Tine cost</p> <p>Labor cost</p> <p>Survey Results — 45 percent aerate ultradwarf greens the same number of times as bentgrass greens while 45 percent reported fewer aeration events.</p>		
<p><b>VENTING — SOLID TINE OR WATER AERATION</b></p> <p>Performed as needed for ultradwarfs.</p> <p>Survey Results — 86 percent performed the same or fewer venting operations on ultradwarf compared to bentgrass greens.</p> <p>Labor cost</p> <p>Tine cost</p>		
<p><b>TOPDRESSING SAND</b></p> <p>Topdressing applied during growing season every seven to 14 days on ultradwarfs; volume varies by season. Topdressing sand also applied after aeration to fill holes.</p> <p>Survey Results — 79 percent use more sand topdressing with ultradwarf greens while 18 percent use the same amount as bentgrass greens. Overall, 78 percent purchased more sand topdressing for ultradwarf compared to bentgrass greens (2009 data).</p> <p>Sand cost</p> <p>Labor cost</p>		
<p><b>VERTIGROOMING (LIGHT VERTICAL MOWING — DEPTH LESS THAN 0.1 INCH)</b></p> <p>Performed as needed on ultradwarfs; varies seasonally. On average, weekly during summer and every 14 days or so during spring and fall.</p> <p>For guidance on total numbers, contact superintendents in your area with a similar budget and quality standards.</p> <p>Survey Results — 76 percent do more vertical mowings on ultradwarf greens than on bentgrass greens (2009 data). 19 percent vertigroom ultradwarf greens six to 10 times per year. 19 percent vertigroom ultradwarf greens more than 25 times per year. If expectations for playing quality are high, budget for higher frequency vertigrooming.</p> <p>Labor cost</p> <p>Other costs such as mower wear and tear and vertical mower blade costs are difficult to calculate.</p> <p>NOTE: 43 percent of respondents performed deep vertical mowing (i.e., greater than 0.1-inch deep) on ultradwarf greens fewer than 10 times per year.</p>		

<p><b>SOIL AMENDMENTS</b></p> <p>May be used with ultradwarf bermudagrass or bentgrass to increase soil cation exchange capacity (CEC).</p> <p>Labor cost</p> <p>Product cost</p>		
<p><b>FANS</b></p> <p>Fans rarely used for ultradwarfs, whereas fans commonly used throughout summer for bentgrass greens.</p> <p>Electricity cost</p> <p>Parts and supplies cost — e.g., general wear and tear to fans, winterizing, repainting, etc.</p> <p>Labor cost — e.g., repair, winterizing, relocation for winter, etc.</p>		
<p><b>MOWING — TYPE AND FREQUENCY</b></p> <p>Mower type on bentgrass? Mower type on an ultradwarf?</p> <p>Mowing frequency for bentgrass versus ultradwarfs. Consider the number of times greens are mowed annually. Include double mowings if performed or planned.</p> <p>Labor costs</p> <p>Other difficult-to-calculate costs include bedknife replacement, sharpening procedures, etc.</p> <p>Survey Results — 40 percent use triplexes on ultradwarfs, 35 percent use walk-behind mowers, and 25 percent use a combination of both mower types.</p> <p>Survey Results — 25 percent mow less often with ultradwarfs, 35 percent mow more often, and 40 percent mow the same amount as bentgrass.</p>		
<p><b>ROLLING</b></p> <p>Performed on ultradwarfs to increase smoothness and green speed, including after aeration.</p> <p>Survey Results — 52 percent roll ultradwarf greens more often than bentgrass, 30 percent roll the same amount, and 18 percent roll less often (2009 data). 43 percent of respondents roll their greens more than 50 times per year.</p> <p>Labor cost</p>		
<p><b>BRUSHING/GROOMING</b></p> <p>Consider if done as a separate practice. Typically, greens are groomed or brushed during mowing.</p> <p>Survey Results — 67 percent groom ultradwarf greens more often than bentgrass greens, 30 percent groom the same amount, and just 3 percent groom less often (2009 data).</p> <p>Labor cost</p>		
<p><b>HOLE CHANGING</b></p> <p>Determine number of times holes changed annually for bentgrass and ultradwarf.</p> <p>Labor cost</p>		
<p><b>TOTAL COST</b></p>		