



C. transvaalensis (CTR 1111) plot on April 15, 1994.



Same C. transvaalensis (CTR 1111) plot on Oct. 10, 1994.

Bermudagrass Selections for South Florida Golf Course Putting Greens

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Wanted: Bermudagrass that will stay green and healthy all year long when cut at 1/8 inch, even with 300+ rounds of golf per day in January; does not require overseeding; requires minimal fertilizer and water; tolerates minimal sunshine and 30+ inches of rain during the late summer months; cold-tolerance would be a real plus as would the ability to smile on national TV when the cameras zoom in for the last shot! If you have the features and are willing to tolerate the abuse the snowbirds and native golfers slice out each day, please contact us immediately!

It is not possible to have perfect putting greens every day of the year in Florida. However, everyone in the industry strives for this goal, and the tourists and club members expect it! A major component of a good putting green is the bermudagrass cultivar planted on that green. The standard today is the cultivar Tifdwarf, a grass which was first introduced in the mid-1960's by the USDA research center in Tifton, Georgia. According to Dr. Glenn W. Burton, 'Tifdwarf' is believed to have originated as a natural mutant in the vegetative stolons of 'Tifgreen', another cultivar that was introduced in the 1960's. 'Tifgreen' was a F_1 hybrid between *Cynodon dactylon* and *Cynodon transvaalensis* (Burton, 1992).

These grasses were developed almost 30 years ago. While the grasses have not changed, the golf industry and management practices have changed dramatically! We have exasperated that problem in Florida by not maintaining a strong turfgrass certification program, but that is another story. The goal of the current project at the Fort Lauderdale Research and Education Center is to evaluate bermudagrasses for their ability to tolerate currently used management practices and our unique Florida environment. The standard for comparison is 'Tifdwarf'.

The bermudagrass selections that have been planted are listed below. PF11 was planted in May 1994. All other grasses were planted May or June 1993. The Quality Dwarf and Classic Dwarf have been used commercially in Florida for at least five years. However, to my knowledge, they have never been evaluated in replicated trials with the 'Tifdwarf' standard.

'Tifdwarf': Foundation material was provided by the Georgia Seed Development Commission in Athens, GA. Again this is the standard for comparing all other selections.

'Tifgreen': Foundation material was provided by the Georgia Seed Development Commission in Athens, GA. This was included since many older courses still have this cultivar on their putting greens.

Quality Dwarf: A 'Tifdwarf'-type selection made by Dr. G. C. Horn from a putting green in Florida. This material was provided by Quality Grassing and Services, Inc. in Lithia, FL.

Classic Dwarf: A 'Tifdwarf'-type selection made by Dr. G. C. Horn from a putting green in Florida. This material was provided by Classic Dwarf, Inc. in Newberry, FL.

PF11: A 'Tifdwarf'-type selection made by Mr. Paul Frank and provided by Mr. Frank, Wilderness Country Club, Naples, FL. This grass demonstrated tolerance to sting nematodes in a greenhouse study conducted by Dr. Robin Giblin-Davis.

TW72: An induced mutant of 'Tifway' provided by Dr. Wayne Hanna, USDA, Tifton, GA.

T596: An induced mutant of 'Tifdwarf' provided by Dr. Wayne Hanna, USDA, Tifton, GA.

CTR 1111, CTR 2352, CTR 2570, CTR 3048, CTR 2747: These five grasses are *Cynodon transvaalensis* selections provided by Dr. Charles Taliaferro, Oklahoma State University, Stillwater, OK. *C. transvaalensis* is one of the parents of 'Tifgreen' bermudagrass and likewise 'Tifdwarf'. This diploid grass provides the fine texture, softness, and increased density to the hybrid bermudagrasses (Burton, 1992).

Materials and Methods: A 10,000-square-foot putting green was built at the FLREC in October 1992. The FGCSA budget was limited so the green was not built according to USGA specifications. The native topsoil which is a well-drained sand was scraped by the contractor and leveled. A nutrient amended root-zone mix was placed on top of the scraped area. The mix was composed of 85% sand and 15% Canadian sphagnum peat moss. The root-zone mix was then fumigated with methyl bromide. The black plastic remained in place (replaced once in February) until the following summer when the grasses were planted.

Grasses were planted in 8-foot by 10-foot plots with 1-foot borders between each plot. Each grass was replicated four times

Table: Quality scores of bermudagrass selections on FGCSA Research Green at the Fort Lauderdale Research and Education Center (May through October 1994).

Selection	May 4 ^a	May 17	June 6	June 20	July 5	July 27	Aug 16	Sept 8	Sept 22	Oct 7	Oct 21
Tifdwarf	6.8 a	6.6 a	6.5 ab	4.4 bcd	6.5 a	6.1 a	6.4 a	7.0 a	6.0 a	5.3 a	7.4 a
Tifgreen	5.9 b	5.5 b	5.4 d	3.4 e	4.8 b	5.0 b	3.5 b	3.5 c	3.1 c	2.8 bc	2.9 ef
Quality	7.0 a	6.8 a	6.6 a	5.3 a	6.8 a	6.4 a	6.3 a	7.0 a	5.5 ab	5.2 a	6.9 a
Classic	6.8 a	6.5 a	6.4 ab	5.0 ab	6.5 a	6.1 a	5.9 a	6.4 a	5.1 b	4.9 a	5.8 c
TW72	6.8 a	6.6 a	6.1 bc	4.4 bcd	6.4 a	6.0 a	6.3 a	6.0 b	5.5 ab	5.0 a	6.6 ab
T596	6.8 a	6.4 a	6.5 ab	4.6 abc	6.3 a	6.0 a	6.0 a	6.5 ab	5.9 a	4.9 a	6.5 bc
CTR 1111	5.1 c	4.8 c	5.8 cd	4.1 cde	4.8 b	4.3 c	3.5 b	3.1 c	2.8 cd	2.5 c	2.8 f
CTR 2352	5.0 cd	4.5 c	5.5 d	3.8 de	4.5 bc	4.0 c	3.8 c	3.4 c	2.6 cd	2.5 c	3.4 ef
CTR 2570	4.5 de	3.9 d	3.4 f	2.5 f	2.9 d	2.8 d	2.6 c	2.4 d	2.3 d	2.6 bc	3.6 e
CTR 3048	4.1 e	4.3 cd	4.9 e	3.6 de	4.0 c	4.0 c	4.0 b	3.3 c	3.3 c	3.1 b	4.5 d
CTR 2747	4.9 cd	4.4 cd	4.8 e	3.5 e	4.4 bc	3.6 c	3.5 b	2.9 cd	2.8 cd	2.6 bc	3.4 ef
Height^b (in.)	0.188	0.188	0.180	0.180	0.160	0.160	0.160	0.170	0.165	0.165	0.160

^aQuality scores based on color and density using a scale of 1 (poor quality) to 10 (best quality).

Values presented are means of four replicate plots.

Values in the same column followed by the same letter are not significantly different at P = 0.05 according to Waller Duncan K - ratio t test.

^bPlots are cut six days per week with a walk-behind greens mower. 0.188 = 3/16 in.; 0.156 = 5/32 in.

in a randomized complete block design. Grass materials were not uniformly propagated since they came from six different sources. In general we were able to plant sixteen 2-inch plugs into each plot using 18 inch centers. If material was not received free of soil or potting mix, plants were washed thoroughly before planting.

After the grasses had covered the plot area, maintenance and fertilization practices have been and will continue to be conducted according to normal practices for putting greens in southern Florida. This includes 18 lbs. N and K₂O per 1,000 sq. ft. per year (12 lbs. from November through April and 6 lbs from May through October). The mowing height was initially 3/16 inch. It has been gradually lowered to 7/32 inch and will be lowered this winter to 1/8 inch. The plots will not be overseeded for the winter months. Plots are verticut and top dressed on a regular basis - twice each month, alternating procedures each week. Plots are monitored for pests, but pesticides are used only when justified.

Plots are evaluated for quality twice each month or when some event natural or man-made causes a noticeable change in quality. Quality is based on a combination of color, and density. We use a scale of 1 to 10 with 1 equivalent to the lowest quality grass and 10 equivalent to the best grass. Only absolutely perfect grass would receive a rating of 10. Plots are rated by myself and Marcus Prevatte. Our scores are then averaged and the average score used for statistical analysis.

Results: The grasses were grown-in very differently from the normal methods used on a golf course. We had to be absolutely certain that no cross contamination occurred. Therefore, we had almost complete coverage of the plots before any physically disruptive maintenance (mowing, verticutting, etc.) was used. No data was collected concerning the grow-in period since the grasses were planted at different time and, more importantly, provided by different sources who used different methods for growing the plugs. During the winter of 1993-94, the height of cut was slowly lowered to 3/16 inch.

The results from the past year illustrate why research takes time (a long time) and why researchers are reluctant to share results before the experiment is completed. The *C. transvaalensis*

selections looked absolutely beautiful last winter and spring. For those who attended the 1994 South Florida Turfgrass Exposition in April, you saw for yourself that all the grasses, including 'Tifgreen', were of equal high quality. Everyone was excited about the *C. transvaalensis* selections because they did indeed have a very fine texture. "Almost like bentgrass" was the common refrain.

However, the grasses had not yet lived through a summer at a typical putting green height. The quality scores collected during the summer and late fall are provided in Table 1. Scores from PF11 are not included as it was planted in May 1994 whereas the others had been planted the year before. As the summer progressed, the 'Tifgreen' hybrid bermudagrass and the *C. transvaalensis* significantly declined in quality. These grasses are starting to recover as the temperatures decrease this fall. We plan to lower the cutting height to 1/8 this winter and will maintain that height for as long as possible. In other words, the grasses will be subjected to the worse possible conditions for growing grass. If none of them survive, we will raise the height of cut. We will keep you informed of the results from this project, but please be patient. This is a long term project! Please feel free to visit the plots at any time or make special plans with a group to come to the Fort Lauderdale Research and Education Center on March 16, 1995 for the annual University of Florida Turfgrass Field Day and South Florida Turfgrass Exposition.

References Cited: Burton, G. W. 1992. Breeding improved turfgrasses. Pages 759-776 in: Turfgrasses. D. V. Waddington, R. N. Carrow, and R. C. Shearman, co-eds. American Society of Agronomy, Madison, WI.

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