Hanna 006

The University of Georgia

College of Agricultural and Environmental Sciences
Department of Crop and Soil Sciences

April 30, 1997

To: Dr. Jerry Cherry

From: David E. Kissel Dave Kissel

Re: Cultivar Application Recommended for Release

At a phone meeting of the Plant Cultivar and Germplasm Release Committee on April 8, our committee considered an application for release of a turfgrass cultivar, TifEagle Bermudagrass, developed by Wayne Hanna. The committee has now approved this application and we recommend its release. The release application is enclosed. TifEagle is a fine textured dwarf bermudagrass with quality similar to Tifdwarf when mowed at 6 to 12 mm mowing heights and superior quality at mowing heights less than 6 mm. Tifdwarf is the industry standard to which TifEagle should be compared.

I will arrange a meeting of the licensing committee in the near future to discuss marketing of TifEagle.

Copy: Gale A. Buchanan
Earl Elsner
John Ingle
Joe Bouton
Gary Couvillon
Wayne Hanna

Miller Plant Sciences Building • Athens, Georgia 30602-7272 U.S.A. • (706) 542-2461 • FAX (706) 542-0914

Original

APPLICATION FOR APPROVAL AND NAMING OF NEW CULTIVARS

1. Crop: Cynodon dactylon (L.) Pers. x C. transvaalensis Butt-Davy

2. Experimental No. or Name: TW72

3. Pedigree and History of Cultivar: On January 12, 1988, dormant stolons of Tifway 2 were treated with 4000 and 7000 rads of Cobalt 60 gamma radiation. Treated stolons were placed on steam-sterilized soil in 45 cm x 60 cm wooden flats and covered with 6 mm soil in the greenhouse. Elongating stolons were routinely examined for dwarf and aberrant types. Sixteen and 48 putative mutants were propagated as single sprig propagules from the 4000 and 7000 rads treatments, respectively. On 11 July 1988, these putative mutants were planted in the center of 1.8 m x 2.6 m plots and allowed to spread and cover plots. In April, 1989 and 1990, plots were mowed three times per week at 6 mm. In July 1990, a dense fine-textured off-type grass that did well at 6 mm mowing height was observed in the plot of putative mutant number 2 which were originally selected as a fine-textured off-type. The dense off-type plant was vegetatively increased and became TW72 or TifEagle.

4. Description of Cultivar: TifEagle is a fine-textured dwarf bermudagrass. Turf quality of TifEagle was similar to Tifdwarf at 6 to 12 mm mowing heights in certain years (Tables 1,7,8,9,11,12, 14 and 17)✓ and significantly better than Tifdwarf in other years (Tables 3,5,6,16, and 18)✓ in five experiments conducted from 1991 to 1996 at Tifton, GA. Overall mean for turf quality from Oakridge Golf Course and Marshwood Golf Course at The Landings in Savannah, GA; Banyan Golf Club in West Palm Beach, FL and Jupiter Golf Course in Stuart, FL was significantly higher for TifEagle than for Tifdwarf when mowed at 3 or 4 mm. Turf quality ratings for individual locations (Marshwood, Oakridge and Banyan) were also significantly higher for TifEagle than for Tifdwarf (Table 21). At Pinehurst Resort and Country Club (#4 Course), TifEagle had significantly better turf quality (while color, texture, and density were similar) compared to Tifdwarf when mowed at 5 mm (Table 24). Turf quality tended to be better for TifEagle than for Tifgreen when mowed at 3 mm on the Memphis Country Club, Memphis, TN (Table 22). When mowed at 4 to 5 mm, turf quality for TifEagle and Tifdwarf were similar at Ft. Lauderdale, FL in 1994 and 1995 (Tables 25 and 26). Mowed at 25 mm at Lake Wales, FL, turf quality, color and density were similar for TifEagle and Tifdwarf (Table 27). Quality of TifEagle mowed at 3 to 5 mm equalled or exceeded that of Tifdwarf at Auburn (Attachment 1).

Turf color of TifEagle was either equal (Tables 5,7,8,9,10,11, 12,13,14,15 and 17) or exceeded (Tables 2,4, and 19) that of Tifdwarf. TifEagle has a subtle lighter green color than Tifdwarf that is reflected in less of a reddish tinge in the fall and early spring when nights are cool. Greenup in the spring was similar for TifEagle and Tifdwarf (Tables 4,13,15,19 and Attachment 1). Color is significantly better for TifEagle compared to Tifdwarf at 3 mm since more leaf remains on the plant (Table 23).

We apply no fungicides on our turf research area and observed no diseases except for a small amount of dollar spot in the spring if nitrogen fertilization was low. There was no significant difference between TifEagle and Tifdwarf for incidence of dollar spot at Tifton (Tables 5 and 8).

After one year of establishment, TifEagle showed more tawny mole cricket non-preference than Tifdwarf in most tests (Tables 6,13,15, and 19). In early stages of establishment, incidence of mole crickets was similar for Tifdwarf and TifEagle (Tables 4,7, 8,12, and 17). 1996 was an excellent year to test for non-preference of different grasses by mole crickets. Much of the lower quality of Tifdwarf compared to TifEagle in Tifton tests in 1996 was due to mole cricket damage since no insecticides are sprayed on the experimental area.

Stimp meter values were higher for TifEagle than for Tifdwarf in both 1995 and 1996 at the Oakridge Course at The Landings and at Auburn, AL (Table 23 and Attachment 1).

Seed heads on the hybrid bermudagrasses are most prominent in about mid-June. TifEagle showed significantly less seed heads than Tifdwarf (Table 20 and Attachment 1).

Thatch accumulation for TifEagle was equal to or higher than for Tifdwarf (Tables 5,8,11 and Attachment 1).

<u>Poa trivialis</u> was successfully overseeded into TifEagle at Oakridge and Marshwood Golf Courses, Banyan Golf Club, Jupiter Island Club and The Ocean Golf Course at Kiawah Island, SC (George Frye-Superintendent)

Both TifEagle and Tifdwarf showed poor drought resistance when planted on a deep sand at Crystal Lake and not defoliated (Table 28). In a replicated study under a rainout shelter, Tifdwarf and TifEagle appeared to be similar in maintaining turf quality under drought stress (Table 29). TifEagle tended to loose more color

than Tifdwarf with extended drought stress, especially after the first dry-down period (Table 30).

All post-emergence herbicides, especially Trimec, tended to reduce quality of TifEagle. TifEagle recovered from most damage within a month after treatment for all herbicides except Trimec (Table 31). There were only small differences in 1X and 2X rates (Table 32).

TifEagle tended to produce more stolons and have shorter and narrower leaves than Tifdwarf while internode length tended to be similar for the two hybrids (Tables 33 and 34). Dormant stolon weight was the same for TifEagle and Tifdwarf (Table 35).

5. Station at which Cultivar was Developed: University of Georgia Coastal Plain Experiment Station.

6. Plant Scientist(s) Who Developed the Cultivar: Wayne Hanna. The following had a significant input in testing and developing the data in this application: Earl Elsner (GSDC); Patrick O'Brien and John Foy (USGA); Monica Elliot (UF); E. Guertal, R.H. Walker and C.Y. Ward (Auburn); Jim Hook and B.J. Johnson (UGA); Golf Course Superintendents - Ralph Hinz, Alan Young, Bobby Sisk, Rob Kloska, George Frye, Tommy Brown and Rodney Lingle; and Southern Turf Nurseries.

7. In What Respect is the New Cultivar Superior to the Cultivar Now in Use?
   a. High quality and stimp at 3 or 4 mm cutting heights
   b. Better tawny mole cricket non-preference after one or more years of establishment.

8. Method of Propagation: Vegetative

9. Amount of Breeder Seed Stocks Available (if applicable): 225 sq. ft.

10. Amount of Foundation Seed Stocks Available (if applicable): 2 acres (12 acres by June, 1997).

11. Amount of Cutting or Bud Material Available for Vegetatively Propagated Material for Nursery Distribution (if applicable): 12 acres by August, 1997.

12. Is There Likely to be Unusual Difficulty Encountered in the Production of Any Class of Seed Stocks? Explain. No.

13. Three Suggested Names for the New Cultivar:
TifEagle, Tift 72, Tift TW72

14. Name Approved by Plant Cultivar and Germplasm Release Committee:
TifEagle

15. Form of intellectural property protection: Patent

16. Is a royalty assessment recommended: x Yes ___ No

RECOMMENDED BY:

A. _____
Originating Scientist

B. _____
Department Head

C. _____
Chairperson, Division of
Commodity Committee

D. _____
Associate Director of
Appropriate Station

E. _____
Chairperson, GAES Plant
Cultivar and Germplasm
Release Committee

APPROVED:

_____
Director of Experiment Stations

Summary of Tests Where TifEagle Was Included

1. 1991 Increase blocks (10 m x 10 m) - Date from 1992-1995 (Tables 1 to 6.
2. 1992 Greens test - Data from 1993-1996 (Table 7 to 10).
3. 1993 Greens test - Data from 1994-1996 (Tables 11 to 13).
4. 1994 Greens test - Data from 1995-1996 (Tables 14 to 16).
5. 1995 Greens test - Data from 1995-1996 (Tables 17 to 19).
6. 1996 Seed production on bermudagrasses - Data from 1996 (Table 20).
7. Quality ratings on golf courses (Tables 21 and 22).
8. Color and stimp meter readings on golf courses (Table 23).
9. Quality, color, texture and density at Pinehurst, NC (Table 24).
10. Quality at Ft. Lauderdale, FL (Tables 25 and 26).
11. Quality, color and density at Lake Wales, FL (Table 27).
12. Drought resistance (Tables 28 to 30).
13. Herbicide tests (Tables 31 and 32).
14. Morphological measurements (Tables 33 to 35).
15. Auburn University data (Attachment 1).

Table 1. 1992 ratings on turf increase blocks of bermurdagrass hybrids established in 1991.(turfb92)

	Quality					
Entry	6/23	8/4*	9/1	9/25	11/23	Average
MI53	8.0	8.0	7.0	7.3	7.0	7.4
Tifdwarf	6.8	8.0	8.3	8.0	7.7	7.6
Tifgreen	7.0	7.5	7.0	7.3	6.7	7.2
TW61	7.3	6.5	7.0	7.3	6.7	7.0
TifEagle	**8.0**	**8.0**	**8.3**	**8.0**	**7.7**	**7.9**
T582	8.0	7.0	8.0	8.0	8.3	7.9
Anova	.0001	.0357	.0002	.1119	.0297	.0072
CV	4	5	4	5	8	2
5% LSD	0.4	0.9	0.5	0.7	1.0	0.4

Quality
1 = poor
9 = best

Note: Four random ratings were made on 10 m x 10m increase blocks established in 1991. Mowed at 6 mm.

Table 2. 1992 rating on turf inrease blocks of bermudagrass hybrids hybrids established in 1991.(turfb92)

	Color				
Entry	11/23	12/4*	12/10	1/11	Average
MI53	4.0	3.7	3.0	2.3	3.3
Tifdwarf	4.0	2.0	1.0	2.3	2.3
Tifgreen	3.0	3.0	2.0	2.0	2.5
TW61	3.0	2.3	2.3	2.0	2.4
TifEagle	4.0	3.0	2.0	3.7	3.2
T582	5.0	5.0	5.0	3.3	4.6
Anova	.0001	.0001	.0001	.0028	.0001
CV	.	11	9	17	5
5% LSD	.	0.7	0.4	0.8	0.3

Color
1 = brown
5 = dark green

Note: Four randon ratings were made on 10 m x 10 m increase blocks established in 1991. Mowed at 6mm.

Table 3. 1993 quality ratings taken on turf increase blocks of bermudagrass hybrid planted in 1991.((t95-96)(turfb93))

Entry	Quality 4/23	06/9	7/16	9/16	10/19	11/23	Average
MI53	7.8	8.0	7.5	6.0	7.8	9.0	7.7
Tifdwarf	7.5	8.0	7.8	8.0	8.0	7.8	7.8
Tifgreen	7.0	8.0	7.3	7.0	7.8	7.8	7.4
TW61	7.3	8.5	7.0	6.5	6.8	6.5	7.1
TifEagle	8.3	8.8	8.8	9.0	8.5	8.5	8.6
T582	8.5	8.0	8.3	8.8	9.0	9.0	8.6
Anova	.0164	.0155	.0012	.0001	.0001	.0001	.0001
CV	7	4	6	7	5	6	3
5% LSD	.91	.49	.72	.80	.65	.71	.37

Quality ratings:

1 = poor
9 = best

Quality ratings on 11/23, some low quality ratings due to mole cricket damage.

Four randon ratings were made on 10m x 10 m increase blocks established in 1991.Plots were mowed at 6 mm.

Table 4. 1993 greenup, color and mole cricket damage ratings taken on turf increase blocks of bermudagrass hybrids planted in 1991.((t95-96)(turfb93))

	Greenup	Color			Mole cricket damage		
Entry	3/30	4/23	12/17	Average	10/20	12/17	Average
MI53	2.0	4.0	5.5	4.8	1.0	1.0	1.0
Tifdwarf	3.3	5.0	4.0	4.5	3.5	4.8	4.1
Tifgreen	3.5	3.5	3.0	3.3	2.8	2.8	2.8
TW61	1.5	3.8	3.8	3.8	2.5	5.3	3.9
TifEagle	3.8	5.0	3.0	4.0	3.3	4.3	3.8
T582	2.5	4.0	7.0	5.5	1.8	1.5	
Anova	.0001	.0001	.0001	.0001	.0001	.0001	.0001
CV	16	10	8	6	21	18	12
5% LSD	.67	.44	.49	.40	.79	.34	.52

Greenup ratings: 1 = brown
5 = green

Color ratings: 1 = brown
5 = green

Mole cricket damage ratings on 10/20:
1 = no mole cricket damage
5 = susceptible

Mole cricket damage ratings on 12/17
1 = no mole cricket damage
9 = susceptible

Four random ratings were taken on 10m x 10m increase blocks established in 1991. Plots were mowed at 6mm.

Table 5. 1994 ratings on turf increase blocks of bermudagrass planted in 1991.(Turff94)

Entry	Quality					Color			Dollar spot		Thatch
									No Fungicide	Fungicide	mm
	5/13	7/8	8/19	11/27	Average	11/27	12/31*	Average	6/3		1/11/95
Tifdwarf	8.5	7.5	8.3	8.5	8.2	8.0	3.0	5.5	1.5	1.0	15.1
Tifgreen	8.0	5.3	7.0	6.3	6.6	6.5	2.0	4.3	1.3	1.0	10.4
TifEagle	**8.8**	**8.5**	**9.0**	**9.0**	**8.8**	**7.8**	**2.5**	**5.1**	**2.3**	**1.3**	**20.1**
Anova	.1780	.0004	.0002	.0005	.0001	.0027	.8022	.0478	.1537	.4219	.0001
CV	6	8	4	6	3	5	40	11	38	27	5
5% LSD	.86	.95	.49	.86	.39	.64	1.73	.97	1.1	.49	1.4

Quality ratings:
1 = poor
9 = best

Color ratings:
11/27: 1 = brown, 9 = green
12/31: 1 = brown, 5 = green

Fungicide Treatment
Dollar spot:
1 = none
5 = 100%

* Color rating on 12/31 was rated after first light frost.

Four random ratings were made on 10m x 10m increase blocks established in 1991.
Plots were mowed at 6mm.

Table 6. 1995 ratings on (Oct. 5) on increase blocks of bermudagrass hybrids established in 1991.(turff95)

Entry	Quality	Mole Cricket Damage
Tifdwarf	8.3	3.0
Tifgreen	8.3	3.0
TifEagle	9.0	1.5
Anova: Rep	.0701	.1170
Entry	.0156	.0156
CV	3	23
5% LSD	0.5	1.0

Quality ratings
1 = poor
9 = best

Mole Cricket Damage rating
0 = none
5 = susceptible

Note: Four random ratings were made on 10 m x 10 m increase blocks established in 1991.

Table 7. 1993 ratings on 1992 greens test planted 5/18/92.(Greent93)

Entry	Green up	Quality								Color			Mole cricket damage		
	3/30	4/23	6/9	7/16	9/16	10/19	11/23	12/17	Average	11/23	12/17	Average	10/20	12/17	Average
MI22	2.0	7.0	7.5	8.0	7.0	8.0	8.0	7.5	7.6	4.0	5.0	4.5	1.5	1.5	1.5
MI40	1.5	7.0	7.5	7.0	7.5	7.0	7.5	7.5	7.3	4.0	5.0	4.5	1.0	1.0	1.0
MI43	1.5	8.0	8.5	7.5	7.0	7.5	7.0	7.5	4.6	4.0	5.0	4.5	1.5	2.0	[illegible]
MI5	2.5	7.0	7.5	7.5	7.0	8.0	8.0	8.0	4.6	4.0	5.0	4.5	1.0	1.5	1.3
Tifdwarf	**4.0**	**8.5**	**8.0**	**9.0**	**9.0**	**9.0**	**7.0**	**8.5**	**8.4**	**3.0**	**3.0**	**3.0**	**3.0**	**3.5**	**3.3**
Tifgreen	3.0	8.0	7.0	8.0	7.0	7.5	8.0	8.0	7.6	3.5	4.0	3.8	3.0	3.5	3.3
TW61	2.0	7.5	7.5	7.0	7.0	5.5	5.0	5.0	6.4	4.0	3.0	3.5	3.0	4.5	3.8
TifEagle	**4.0**	**8.5**	**8.5**	**9.0**	**7.5**	**8.5**	**8.0**	**9.0**	**8.4**	**3.5**	**2.5**	**3.0**	**2.5**	**2.5**	**2.5**
T501	1.0	6.5	7.0	7.5	6.0	7.0	7.0	7.5	6.9	4.0	5.5	4.8	1.5	1.5	1.5
T504	3.5	8.0	7.0	5.5	8.0	8.0	7.5	8.5	7.5	4.0	2.5	3.3	2.5	3.5	3.0
T513	2.0	7.5	7.0	7.0	7.0	8.0	7.5	9.0	7.6	4.0	6.0	5.0	2.5	2.5	2.5
T529	3.0	7.0	6.0	6.0	6.5	5.5	6.5	6.0	6.2	3.0	6.0	4.5	1.5	2.0	1.8
T54	2.5	6.5	5.5	6.0	6.0	5.0	4.5	5.5	5.6	3.5	5.0	4.3	3.0	3.0	3.0
T562	2.0	7.5	7.5	7.0	7.0	7.0	7.0	7.5	7.2	4.0	4.5	4.3	1.5	2.0	1.8
T563	2.0	7.0	6.0	5.0	5.0	6.0	6.5	7.0	6.1	3.0	3.0	3.0	2.0	1.5	1.8
T570	4.5	9.0	8.5	9.0	9.0	9.0	8.0	9.0	8.8	4.0	2.0	3.0	2.5	2.5	2.5
T7	2.0	7.0	8.0	8.0	6.5	7.5	7.5	7.5	7.4	4.0	5.0	4.5	1.0	1.0	1.0
559	2.0	6.0	6.0	6.0	6.5	5.5	6.0	6.0	6.0	2.0	5.0	3.5	1.0	1.0	1.0
72-117	2.0	7.5	7.0	7.5	6.5	6.5	8.0	7.5	7.2	4.0	5.0	4.5	1.0	1.0	[illegible]
72-16	1.5	7.5	7.5	7.5	6.5	8.0	8.0	8.5	4.6	4.0	5.0	4.5	1.0	1.0	[illegible]
Anova	.0005	.0391	.0013	.0001	.0001	.0001	.0001	.0001	.0001	.0069	.0001	.0002	.0027	.0001	.0002
CV	25	9	8	8	7	10	7	7	3	12	15	10	31	27	27
5% LSD	1.2	1.4	1.2	1.1	.9	1.4	1.1	1.0	0.5	.8	1.3	0.8	1.2	1.2	1.2

green up ratings: 1 = brown, 5 = green

quality ratings: 1 = poor, 9 = best

Color ratings: 1 = brown, 5 = green

mole cricket damage ratings: 1 = no mole crickets, 5 = susceptible

Quality ratings on 6/9 was rated before nitrogen applied.

Quality ratings on 11-23, some low quality rates due to mole cricket damage.

Test consisted of 2.6 m x 2.9 m plots with two replications.

Test cut at 6 mm.

Table 8. 1994 ratings on 1992 greens test planted in 5-8-92.(greent94)

Entry	Quality					Color				Thatch	Dollar spot
	5/13	7/8	8/19	11/27	Average	2/11*	11/27	12/31**	Average	1/11/95	6/3
MI22	8.5	7.0	6.0	7.0	7.1	1.5	7.0	4.0	4.2	12.0	1.0
MI40	8.0	7.0	6.0	7.0	7.0	1.0	6.5	4.0	3.8	13.3	1.5
MI43	7.5	7.0	6.0	6.5	6.8	1.5	6.5	4.0	4.0	11.8	1.0
MI5	8.0	7.0	6.0	5.5	6.6	1.5	7.0	4.0	4.2	12.8	1.0
Tifdwarf	**9.0**	8.0	8.5	6.5	8.0	**3.0**	6.5	1.0	3.5	**13.8**	**2.0**
Tifgreen	8.0	6.0	6.5	7.5	7.0	3.0	7.0	2.0	4.0	11.3	1.5
TW61	7.0	7.0	7.0	8.0	7.3	2.0	9.0	3.0	4.7	9.8	1.0
TifEagle	**9.0**	**8.5**	**9.0**	**6.0**	**8.1**	**2.5**	**6.5**	**1.0**	**3.3**	**20.5**	**1.5**
T501	8.0	7.0	5.5	7.0	6.9	2.0	6.5	4.0	4.2	11.8	1.0
T504	8.5	6.5	7.0	7.0	7.3	2.5	6.5	1.5	3.5	11.3	1.5
T513	8.0	6.0	6.5	8.0	7.1	3.0	6.5	4.0	4.5	7.5	1.0
T529	5.0	4.5	5.0	7.5	5.5	2.0	8.0	4.0	4.7	8.8	1.0
T54	5.0	5.0	6.5	7.0	5.9	2.0	6.5	4.0	4.2	11.5	1.0
T562	7.0	7.0	6.0	7.0	6.8	1.0	6.5	4.0	3.8	12.8	1.0
T563	6.0	4.5	5.5	7.0	5.8	2.5	7.0	3.0	4.2	8.8	1.0
T570	9.0	8.0	7.5	4.5	7.3	2.5	4.5	1.0	2.7	14.5	1.0
T7	8.0	7.0	6.0	7.0	7.0	1.5	6.5	4.0	4.0	11.5	1.0
559	5.0	3.5	5.5	8.0	5.5	1.5	7.5	3.5	4.2	11.3	1.0
72-117	8.0	7.0	6.0	7.5	7.1	1.0	7.0	4.0	4.0	11.0	1.0
72-16	7.5	7.0	6.0	4.5	6.3	2.0	5.5	4.0	3.8	13.3	1.0
Anova	.0165	.7894	.2585	.3299	.0001	.3299	.0705	.0553	.0076	.0625	.3299
CV	6	9	8	9	4	24	11	15	9	18	27
5% LSD	1.0	1.2	1.1	1.3	0.6	0.9	1.5	1.0	0.8	4.5	0.7

Quality ratings:
1 = poor
9 = best

Color ratings:
11/27: 1 = brown, 9 = green
12/31 & 2/11: 1 = brown, 5 = green

Dollar spot ratings
1 = none
5 = 100%

Thatch thickness is in mm.
* Color ratings on 2/11 were made for greenup.
** Color ratings on 12/31 were made after first light frost.
Test consisted of 2.6 m x 2.9 m plots with two replications.

Table 9. 1995 ratings on 1992 greens test.(Greent95)

Entry	Quality on:					Color on:			Mole Cricket Damage
	5/25*	7/11**	10/4	11/9	Average	7/11	11/27+	Average	10/4
MI22	7.5	8.0	8.0	7.5	7.8	8.0	7.0	7.5	0.0
Tift 94	7.5	7.0	8.0	7.0	7.4	7.5	6.5	7.0	0.0
MI43	7.5	8.0	7.5	7.0	7.5	7.5	7.0	7.3	0.0
MI5	7.5	8.0	7.5	6.5	7.4	8.0	7.0	7.5	0.0
Tifdwarf	8.0	8.5	8.5	8.0	8.3	8.5	2.5	5.5	2.0
Tifgreen	7.5	7.0	7.0	7.0	7.1	6.5	3.0	4.8	2.5
TW61	7.5	7.0	7.5	6.5	7.1	7.5	6.5	7.0	3.5
TifEagle	7.5	8.0	8.5	7.5	7.9	8.0	3.0	5.5	2.5
T501	6.5	7.0	5.0	7.0	6.4	7.0	7.0	7.0	1.0
T504	8.0	7.5	8.0	7.5	7.8	6.5	3.0	4.8	2.0
T513	6.0	7.0	7.5	7.0	6.9	6.0	6.5	6.3	1.0
T529	5.0	3.5	4.5	5.5	4.6	4.5	6.0	5.3	2.0
T54	5.0	5.0	5.0	5.0	5.0	6.5	4.5	5.5	1.5
T562	8.0	7.5	6.5	6.5	7.1	7.5	7.0	7.3	0.0
T563	5.5	3.5	4.5	5.0	4.6	5.0	3.5	4.3	1.5
T570	8.0	9.0	9.0	9.0	8.8	8.0	2.5	5.3	1.5
T7	7.5	7.0	7.5	7.5	7.4	7.0	7.0	7.0	0.5
559	5.0	5.0	5.0	5.0	5.0	6.5	3.0	4.8	0.0
72-117	8.0	7.0	7.0	6.5	7.1	7.0	7.0	7.0	1.0
72-16	8.0	7.0	6.5	7.5	7.3	7.0	7.0	7.0	0.0
Anova									
Rep	1.0	.8154	.8252	1.0	.8296	.1189	.3793	.1021	.5454
Entry	.0001	.0001	.0001	.0001	.0001	.0051	.0001	.0001	.0027
CV	7	10	10	8	5	11	10	8	68
5% LSD	1.1	1.4	1.5	1.1	0.8	1.6	1.1	1.1	1.6

Quality ratings: 1 = poor, 9 = best

Color ratings: 1 = brown, 9 = dark green

Mole cricket damage ratings: 0 = none, 5 = worst

Greens were cut at 8 mm three times per week.
*Heading lowered ratings of some plots.
**Plots were low in nitrogen.
+rated after cold weather and light frosts.

Note: Test consisted of 2.6 m x 2.9 m plots with two replications planted 5-18-92.

Table 10. 1996 ratings for greenup and color on Turf bermudagrasses in 1992 green test.(Greent96)

	Rated April 7	
Entry	Greenup	Color
MI22	7.0	8.0
MI40	7.0	8.0
MI43	7.0	7.5
MI5	5.5	7.5
Tifdwarf	5.0	5.0
Tifgreen	4.0	4.5
TW61	3.0	7.0
TifEagle	**5.5**	**6.0**
T501	3.5	7.0
T504	6.0	6.5
T513	7.0	3.0
T529	2.5	6.0
T54	2.5	5.5
T562	7.0	8.0
T563	2.0	3.0
T570	7.0	7.0
T7	7.0	8.0
559	2.5	5.5
72-117	6.5	7.5
72-16	5.5	7.5
range	2--8	3--8
Anova:		
entry	.0001	.0001
rep	.1339	.1864
CV	16	11
5% LSD	1.7	1.4

Greenup:
1 = poor
9 = best

Color
1 = brown
9 = dark green

* 513 is nice but light green.

Note: Test consisted of 2.6 m x 2.9 m plots with two replications mowed at 5 mm. Planted on 5-18-92.

Table 11. 1994 quality, color and thatch thickness ratings on 1993 greens test. (Greena94)

	Quality					Color			Thatch(mm)
Entry	5/13	7/8	8/19	11/27	Average	Spring	12/31	Average	1/11/95
D01	9.0	9.0	8.5	8.0	8.6	5.0	4.0	4.5	20.8
D02	7.0	6.5	8.0	7.5	7.3	3.0	4.0	3.5	18.3
D03	8.0	7.5	7.5	7.0	7.5	4.0	4.0	4.0	16.8
D04	6.0	6.5	7.0	5.5	6.3	4.0	4.0	4.0	17.8
D05	9.0	6.0	9.0	9.0	8.3	4.5	1.0	2.8	17.5
D06	8.0	8.5	8.5	7.0	8.0	5.0	4.0	4.5	19.8
D07	7.0	6.5	8.0	8.5	7.5	3.0	4.0	3.5	17.5
D08	8.5	8.5	8.0	8.0	8.3	5.0	4.0	4.5	20.3
D09	7.5	8.0	7.5	7.0	7.5	5.0	4.0	4.5	17.5
D10	8.0	7.0	7.5	8.0	7.6	3.0	4.0	3.5	20.8
D11	7.0	6.5	8.0	6.0	6.9	4.0	4.0	4.0	19.0
D12	4.5	5.5	6.0	5.5	5.4	3.5	4.0	3.8	15.8
D13	6.5	7.5	7.0	7.5	7.1	5.0	4.0	4.5	17.3
D14	8.0	7.0	7.5	7.0	7.4	4.0	4.0	4.0	17.8
D15	7.0	6.0	7.0	5.0	6.3	3.0	4.0	3.5	16.3
D16	5.5	6.0	7.0	5.0	5.9	4.0	4.0	4.0	19.0
D17	7.0	6.5	7.0	6.0	6.6	3.5	4.0	3.8	16.5
D18	7.0	6.5	8.0	7.0	7.1	3.0	4.0	3.5	19.0
D19	7.0	7.5	7.5	7.0	7.3	3.5	4.0	3.8	18.0
D20	9.0	8.0	8.5	7.5	8.3	5.0	4.0	4.5	20.5
D21	8.0	9.0	9.0	8.0	8.5	5.0	4.0	4.5	20.5
D22	5.0	6.0	5.0	3.5	4.9	3.0	4.0	3.5	16.5
D23	8.0	7.0	7.5	5.0	6.9	4.0	4.0	4.0	18.8
D24	7.5	8.5	8.0	7.5	7.9	5.0	4.0	4.5	21.3
D25	7.5	7.5	8.5	8.0	7.9	4.0	4.0	4.0	18.0
D26	8.0	7.0	8.5	5.5	7.3	4.0	4.0	4.0	17.0
D27	5.0	6.5	6.5	6.5	6.1	3.5	4.0	3.8	16.0
D28	6.0	6.5	7.5	7.0	6.8	4.0	4.0	4.0	23.0
D29	5.0	5.0	5.0	6.0	5.3	4.0	4.0	4.0	16.0
D30	8.0	9.0	8.0	8.0	8.3	5.0	4.0	4.5	18.5
D31	7.0	8.0	7.5	6.0	7.1	5.0	4.0	4.5	17.0
D32	8.0	9.0	8.0	7.0	8.0	5.0	4.0	4.5	19.8
Tifway	.	.	**7.5**	**8.0**	.	.	**4.0**	.	**13.0**
Tift 94	.	.	**7.5**	**8.0**	.	.	**4.0**	.	**13.3**
TifEagle	.	.	**9.0**	**8.5**	.	.	**1.0**	.	**14.0**
Tifdwarf	.	.	9.0	8.0	.	.	1.0	.	12.8
Anova	.0001	.0001	.0001	.0001	.0001	.0001	0	.0001	.7073
CV	6	7	7	11	5	6	0	3	7
5% LSD	.82	1.03	1.05	1.54	0.74	.53	0	0.27	2.5

Quality ratings:
1 = poor
9 = best

Color ratings:
1 = brown
5 = dark green

Quality ratings on 7/8 and 8/19 mowed at 12 mm.
Color ratings on 12/31 were after one light frost.
Test consisted of 2.6 m x 2.4 m plots with two replications.
Mowed at 12 mm.

Table 12. 1995 ratings for quality, color, and mole cricket damage on 1993 Greens Test.(greena95)

Entry	Quality					Color			Mole Cricket Damage
	5/25*	7/11**	10/4	11/9	Average	7/11	11/27+	Average	10/4
D01	7.0	8.0	6.5	7.0	7.1	7.5	4.0	5.8	0.0
D02	7.0	5.5	7.5	8.0	7.0	5.5	7.0	6.3	0.5
D03	7.0	7.0	7.0	7.5	7.1	6.5	6.5	6.5	1.5
D04	6.5	5.0	7.0	6.5	6.3	5.0	7.0	6.0	2.0
D05	5.5	5.5	5.5	5.5	5.5	8.5	3.0	5.8	4.5
D06	6.0	7.5	6.5	7.0	6.8	7.0	7.0	7.0	1.0
D07	7.0	5.5	7.5	6.5	6.6	5.0	7.0	6.0	1.0
D08	7.5	8.0	7.0	7.5	7.5	8.0	7.0	7.5	0.0
D09	6.5	7.5	6.5	6.5	6.8	7.5	4.5	6.0	0.5
D10	7.5	6.0	7.0	7.5	7.0	6.0	7.5	6.8	0.5
D11	8.0	4.5	7.0	7.0	6.6	6.0	6.5	6.3	0.0
D12	5.0	5.0	5.0	5.0	5.0	6.0	4.0	5.0	2.5
D13	7.0	6.5	5.5	5.5	6.1	6.5	5.5	6.0	1.0
D14	6.0	8.0	8.5	7.5	7.5	8.0	7.5	7.8	1.0
D15	6.5	5.0	6.5	7.0	6.3	5.5	6.0	5.8	0.5
D16	6.0	5.5	5.5	5.0	5.5	7.0	4.5	5.8	2.5
D17	6.0	4.5	4.5	5.5	5.1	5.0	5.5	5.3	1.0
D18	7.0	5.5	7.5	7.5	6.9	6.0	7.0	6.5	0.5
D19	5.5	6.5	4.5	6.0	5.6	6.0	6.0	6.0	3.0
D20	6.0	7.5	7.5	7.5	7.1	7.5	7.5	7.5	0.5
D21	6.0	8.0	7.0	7.0	7.0	8.0	6.5	7.3	0.5
D22	6.5	5.5	4.5	6.0	5.6	6.5	7.0	6.8	1.5
D23	5.5	7.0	4.5	5.5	5.6	7.5	3.0	5.3	1.0
D24	7.5	8.0	7.5	7.5	7.6	7.0	7.0	7.0	0.0
D25	7.0	6.5	7.5	6.5	6.9	6.0	6.5	6.3	0.0
D26	7.0	7.0	6.5	7.0	6.9	6.5	6.5	6.5	1.0
D27	5.0	5.5	7.5	7.0	6.3	6.0	6.5	6.3	0.0
D28	6.5	6.0	6.0	6.0	6.1	6.5	3.5	5.0	0.0
D29	7.0	5.0	4.5	5.0	5.4	5.5	4.5	5.0	0.0
D30	6.5	7.5	8.0	7.5	7.4	7.5	7.5	7.5	0.5
D31	7.0	6.5	6.0	6.0	6.4	8.0	7.0	7.5	3.5
D32	7.0	7.5	7.5	7.0	7.3	7.0	6.5	6.8	1.0
Tift 94	**6.5**	**8.0**	**7.5**	**8.0**	**7.5**	**8.0**	**7.5**	**7.8**	**0.5**
Tifway	6.5	7.5	7.0	7.5	7.1	8.0	6.5	7.3	0.5
TifEagle	**8.5**	**7.5**	**7.5**	**8.0**	**7.9**	**7.5**	**3.0**	**5.3**	**3.0**
Tifdwarf	7.5	7.0	7.5	7.0	7.3	7.0	3.0	5.0	3.5
Anova:									
Entry	.4066	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0002
Rep	.6611	1.0	.8557	.1646	.4958	.0466	.0595	.7624	.8968
CV	16	12	10	9	6	9	9	6	80
5% LSD	2.1	1.5	1.3	1.2	0.9	1.3	1.1	0.8	1.8

Quality ratings: 1 = poor; 9 = best

Color ratings: 1 = brown; 9 = dark green

Mole cricket damage ratings: 0 = none; 5 = susceptible

Cut at 8 mm three times a week.

**Plots were low on nitrogen.

*Heading lowered ratings of some.

+Rated after cold weather and light frost.

Note: Test consisted of 2.6 m x 2.4 m plots with two replications.

Table 13. 1996 ratings for greenup, color and mole cricket damage 1993 greens test.(greena96)

	Ratings on April 7		
Entry	Greenup	Color	Mole Cricket Damage
D01	5.5	7.0	1.0
D02	6.0	8.0	1.0
D03	4.0	8.0	1.0
D04	2.5	7.0	1.0
D05	2.5	4.0	1.0
D06	6.0	8.0	1.0
D07	5.5	8.0	1.0
D08	6.5	8.0	1.0
D09	4.0	7.5	1.0
D10	6.0	8.0	1.0
D11	6.0	8.0	1.0
D12	4.5	7.5	1.0
D13	2.0	7.0	1.0
D14	5.5	8.0	1.0
D15	5.5	7.0	1.0
D16	2.0	6.5	1.0
D17	3.5	7.0	1.0
D18	6.0	8.0	1.0
D19	5.5	5.0	1.0
D20	6.0	8.0	1.0
D21	5.5	8.0	1.0
D22	3.5	8.0	1.0
D23	2.0	7.5	1.0
D24	6.5	8.0	1.0
D25	5.5	9.0	1.0
D26	4.0	6.0	1.0
D27	4.0	7.0	1.0
D28	2.5	5.5	1.0
D29	4.0	5.0	1.0
D30	6.0	8.0	1.0
D31	2.0	7.5	1.0
D32	5.5	7.5	1.0
Tift 94	7.5	4.5	1.0
Tifway	6.5	8.0	1.0
TifEagle	**6.0**	**8.5**	**2.0**
Tifdwarf	**5.5**	**8.5**	**3.5**
range	2--8	1--9	1--4
Anova:			
entry	.0001	.0158	.0001
rep	.1932	.5433	.3242
CV	17	16	11
5% LSD	1.6	2.3	0.2

Greenup:
1 = worst
9 = best

Color:
1 = brown
9 = dark green

Mole Cricket Damage:
1 =none
9 = susceptible

Note: Test consisted of 2.6 m x 2.4 m plots with two replications. Plots mowed at 12 mm.

Table 14. 1995 ratings on 1994 Very Dwarf reens Test planted 5-23-94. (turf95b)

Entry	Quality on:					Color on:		
	5/25*	7/11**	10/4	11/9	Average	7/11	11/27+	Average
1	8.0	5.5	6.0	6.0	6.4	7.5	6.5	7.0
2	7.0	6.0	6.0	6.0	6.3	7.0	4.0	5.5
3	6.0	5.5	5.5	6.0	5.8	6.0	7.0	6.5
4	6.5	6.0	7.0	8.0	6.9	7.0	8.0	7.5
5	7.0	5.5	6.0	6.5	6.3	6.0	7.0	6.5
6	7.0	5.5	5.0	5.0	5.6	6.0	6.5	6.3
7	7.0	7.5	7.0	7.5	7.3	7.5	8.0	7.8
8	6.5	5.5	7.0	7.0	6.5	7.5	5.5	6.5
9	7.0	6.5	5.5	5.0	6.0	6.0	5.0	5.5
10	7.0	7.5	7.5	6.5	7.1	7.0	6.5	6.8
11	7.5	6.5	6.0	5.0	6.3	7.0	6.5	6.8
12	6.5	6.5	7.0	7.5	6.9	7.0	4.0	5.5
13	6.5	7.5	5.5	7.5	6.8	6.0	7.0	6.5
14	7.5	7.0	5.0	5.5	6.3	6.5	7.0	6.8
15	4.5	5.0	5.0	7.5	5.5	6.0	6.0	6.0
16	7.5	7.0	6.5	7.0	7.0	6.0	6.5	6.3
17	6.5	6.0	6.0	6.5	6.3	6.5	6.5	6.5
18	8.5	9.0	8.0	8.5	8.5	9.0	7.0	8.0
19	7.0	6.0	7.0	7.0	6.8	7.0	7.5	7.3
20	5.5	5.5	5.0	6.0	5.5	7.0	6.0	6.5
21	7.0	8.0	8.5	8.0	7.9	8.0	8.0	8.0
22	7.0	8.0	4.5	5.5	6.3	8.0	5.5	6.8
23	5.5	5.5	6.5	7.5	6.3	7.0	6.5	6.8
24	7.0	7.0	6.0	6.5	6.6	6.0	6.5	6.3
25	8.5	9.0	7.0	7.0	7.9	8.0	4.5	6.3
26	6.0	6.0	5.5	7.0	6.1	8.0	6.5	7.3
27	6.5	6.0	8.0	8.0	7.1	6.5	3.5	5.0
28	7.0	6.0	6.5	7.0	6.6	6.5	7.0	6.8
29	7.0	7.0	6.0	6.5	6.6	6.5	7.0	6.8
30	7.0	6.5	7.0	8.0	7.1	7.5	8.0	7.8
31	5.5	6.5	6.5	8.0	6.6	8.5	6.5	7.5
32	7.0	6.0	7.5	7.5	7.0	6.5	5.0	5.8
33	7.0	6.5	7.0	6.0	6.6	7.5	5.5	6.5
34	8.0	6.0	6.0	5.5	6.4	7.0	5.5	6.3
35	7.0	5.0	5.5	5.5	5.8	6.0	6.0	6.0
36	6.5	7.0	6.0	6.0	6.4	7.5	5.0	6.3
37	7.5	5.0	5.0	6.5	6.0	6.0	6.0	6.0
38	7.0	5.5	6.0	5.0	5.9	6.5	4.0	5.3
39	6.0	6.0	6.5	7.5	6.5	6.5	7.5	7.0
40	6.0	6.0	6.5	6.5	6.3	7.5	7.5	7.5
41	6.5	7.0	6.5	7.0	6.8	7.0	7.0	7.0
42	6.5	8.0	6.0	7.0	6.9	6.5	7.5	7.0
43	7.5	8.0	4.5	5.5	6.4	7.0	7.0	7.0
44	7.0	6.0	7.0	8.0	7.0	8.0	7.5	7.8
45	7.0	5.0	6.0	6.0	6.0	7.0	6.0	6.5
Tifdwarf	**8.5**	**9.0**	**8.5**	**7.5**	**8.4**	**9.0**	**3.0**	**6.0**
Tifgreen	7.0	7.5	8.0	7.5	7.5	6.0	3.5	4.8
TifEagle	**9.0**	**9.0**	**9.0**	**8.5**	**8.9**	**9.0**	**3.0**	**6.0**
Anova:Rep	.0950	.7612	.4660	.4291	.6544	.8299	.0898	.1470
Entry	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
CV	8	10	13	9	6	7	12	6
5%LSD	1.1	1.3	1.7	1.3	0.9	0.9	1.4	0.8

Quality ratings: 1 = poor, 9 = best. Color ratings: 1 = brown, 9 = dark green.

Plots were cut at 6 mm three times per week.

*Heading lowered ratings of some plots.

**Plots were low on nitrogen.

+Rated after cold weather and light frosts.

Note: Test consisted of 2.4 m x 2.7 m plots and two replications.

Table 15. 1996 ratings on 1994 Very Dwarf Greens Test planted on 5-23-94. (Turf96b)

Entry	Greenup	Color			% Seed Heading	Mole Cricket Damage
	4/7	4/7	6/13	average	5/15	10/15
1	6.5	7.5	7.5	7.5	3.5	1.0
2	7.5	6.0	7.0	6.5	1.5	1.0
3	5.5	8.0	6.5	7.3	4.5	1.0
4	7.0	8.0	7.0	7.5	4.5	1.5
5	5.0	8.0	7.0	7.5	3.5	1.0
6	6.5	8.0	6.5	7.3	5.0	1.0
7	6.5	6.5	7.5	7.0	3.0	1.0
8	6.0	8.5	7.5	8.0	5.0	1.0
9	3.5	7.0	6.0	6.5	1.0	1.0
10	7.0	7.0	6.0	6.5	4.5	1.0
11	5.0	6.0	7.0	6.5	1.0	4.5
12	5.5	5.0	7.0	6.0	5.0	1.0
13	6.0	7.5	7.0	7.3	7.0	2.0
14	4.5	8.0	7.0	7.5	3.5	1.0
15	4.5	5.0	6.0	5.5	2.0	1.0
16	6.0	8.0	6.0	7.0	6.0	1.0
17	5.5	7.5	7.0	7.3	6.0	1.0
18	6.5	7.0	9.0	8.0	1.5	1.0
19	6.0	8.0	7.0	7.5	3.5	1.5
20	6.0	8.0	7.0	7.5	4.0	1.0
21	7.0	7.5	8.0	7.8	4.0	1.5
22	4.5	5.5	8.0	6.8	3.0	2.0
23	3.5	4.0	6.0	5.0	1.0	1.0
24	6.0	7.0	7.0	7.0	3.5	1.0
25	7.0	6.5	8.0	7.3	1.0	1.0
26	4.5	4.5	8.0	6.3	2.5	1.0
27	6.5	6.0	7.0	6.5	2.5	1.0
28	6.5	8.0	6.5	7.3	6.5	2.5
29	6.5	8.0	6.5	7.3	4.0	1.0
30	7.0	5.5	7.0	6.3	3.0	1.0
31	6.5	5.5	7.5	6.5	2.5	2.5
32	6.5	6.5	6.5	6.5	3.5	1.0
33	5.0	7.0	7.5	7.3	3.0	1.0
34	5.0	8.0	8.0	8.0	1.5	2.5
35	5.5	8.0	7.0	7.5	6.5	1.0
36	4.5	5.5	7.0	6.3	1.0	1.0
37	6.0	8.0	6.5	7.3	6.0	1.0
38	5.0	7.0	7.5	7.3	1.0	1.0
39	6.0	7.0	6.5	6.8	2.0	2.0
40	6.0	6.5	7.5	7.0	5.0	3.0
41	6.5	8.0	8.0	8.0	4.5	1.0
42	6.5	8.0	6.5	7.3	7.5	1.0
43	7.0	8.0	7.5	7.8	7.0	1.0
44	6.5	8.0	7.0	7.5	4.5	1.0
45	7.0	8.5	7.5	8.0	3.5	1.0
Tifdwarf	**6.5**	**6.0**	**8.5**	**7.3**	**1.0**	**9.0**
Tifgreen	**8.0**	**7.5**	**7.0**	**7.3**	**2.0**	**7.5**
TifEagle	**7.5**	**7.0**	**8.0**	**7.5**	**1.0**	**4.0**

Table 15. 1996 ratings on 1994 Very Dwarf Greens Test planted on 5-23-94. (Turf96b)

Entry	Greenup	Color			% Seed Heading	Mole Cricket Damage
	4/7	4/7	6/13	average	5/15	10/15
Anova						
Entry	.0001	.0001	.0001	.0001	.0001	.0001
Rep	.4519	.8165	.0487	.3884	.0227	.0063
CV	13	12	7	7	21	47
5% LSD	1.6	1.8	1.0	0.9	1.5	1.6

Mole cricket damage	
Entry	8/2
Tifdwarf	8.5
Tifgreen	6.5
TW72	3.0
Anova	.1226
CV	25
5% LSD	6.3

Greenup
1 = poor
9 = best

Color
1 = brown
9 = dark green

% Seed Heading
1 = no heads
9 = complete heads exserted

Mole cricket damage
1 = none
9 = susceptable

Dollar Spot
1 = none
5 = susceptible

4/7/96 - #11 very susceptable to mole cricket (rated 3)
6/13/96 - low on nitrogen
6/13/96 - on this date many low rateings due to heading
8/2/96 - low on nitrogen
8/23/96 - mower raised after this rating

Note: Test consisted of 2.4 m x 2.7 m plots and two replications mowed at 6

Table 16. 1996 ratings on 1994 Very Dwarf Greens Test planted on 5-23-94. (Turf96b)

Entry	Quality					
	6/13	8/2	8/23	9/12	10/15	average
1	6.0	4.5	4.5	4.5	6.0	5.1
2	7.0	5.5	5.0	6.5	5.5	5.9
3	6.0	5.0	5.5	6.0	5.5	5.6
4	6.0	6.0	6.0	6.5	7.5	6.4
5	6.0	5.0	5.0	5.0	5.0	5.2
6	7.0	4.0	3.5	4.5	4.5	4.7
7	6.0	6.0	6.5	7.5	7.0	6.6
8	5.5	5.0	6.0	5.5	6.0	5.6
9	6.0	5.0	4.0	7.5	4.5	5.4
10	7.0	5.5	4.5	6.0	6.5	5.9
11	6.5	5.5	6.0	5.0	5.5	5.7
12	5.5	5.5	4.5	5.0	6.0	5.3
13	6.0	5.5	5.5	6.0	6.0	5.8
14	5.0	5.0	6.0	6.0	6.5	5.7
15	5.0	4.0	3.0	3.5	5.5	4.2
16	7.0	6.0	6.5	6.5	8.0	6.8
17	6.0	5.5	6.5	6.0	6.5	6.1
18	6.5	7.0	7.0	7.5	9.0	7.4
19	6.5	6.5	6.0	6.0	7.0	6.4
20	5.5	5.5	5.0	4.5	5.5	5.2
21	8.0	6.0	5.0	6.5	8.5	6.8
22	7.0	6.5	6.5	7.0	6.5	6.7
23	4.5	3.5	5.0	4.5	5.0	4.5
24	6.5	5.5	6.0	6.5	6.5	6.2
25	8.0	6.0	5.0	7.5	6.0	6.5
26	5.5	5.5	5.5	5.0	6.0	5.5
27	5.5	5.5	6.0	5.5	5.0	5.5
28	7.0	5.5	6.5	6.0	6.5	6.3
29	8.0	6.5	6.5	7.0	6.5	6.9
30	6.0	5.5	4.5	6.0	7.0	5.8
31	5.5	6.0	4.5	6.5	6.5	5.8
32	6.0	5.0	5.5	5.5	6.5	5.7
33	5.5	6.0	6.0	7.5	8.0	6.6
34	8.0	6.0	5.0	6.0	5.5	6.1
35	5.5	5.0	5.0	5.5	4.5	5.1
36	7.0	5.5	5.0	6.0	6.5	6.0
37	6.5	4.0	5.0	4.0	4.0	4.7
38	5.0	5.0	5.0	4.5	4.0	4.7
39	7.0	6.0	5.0	6.0	6.0	6.0
40	5.5	5.0	5.0	5.5	5.5	5.3
41	7.0	6.0	4.5	6.5	8.5	6.5
42	6.0	6.5	5.0	7.0	8.0	6.5
43	6.5	6.5	5.5	6.5	5.5	6.1
44	6.0	5.5	5.0	6.5	6.5	5.9
45	6.5	4.5	5.0	5.5	6.5	5.6
Tifdwarf	**7.0**	**7.0**	**6.0**	**5.0**	**6.5**	**6.3**
Tifgreen	7.0	6.5	5.5	5.0	7.0	6.2
TifEagle	**8.5**	**8.5**	**8.5**	**7.5**	**8.5**	**8.3**

Table 16. 1996 ratings on 1994 Very Dwarf Greens Test planted on 5-23-94. (Turf96b)

Entry	Quality					
	6/13	8/2	8/23	9/12	10/15	average
Anova						
Entry	.0001	.0001	.0191	.0001	.0001	.0001
Rep	1.0	.0001	.0002	.0002	.6423	.0001
CV	8	9	18	12	14	6
5% LSD	1.1	1.1	2.0	1.4	1.8	0.7

Quality
1 = poor
9 = good

6/13/96 - low on nitrogen
6/13/96 - on this date many low rates due to heading
8/2/96 - low on nitrogen
8/23/96 - mower raised after this rating

Note: Test consisted of 2.4 m x 2.7 m plots and two replications mowed at 6 mm.

Table 17. 1995 ratings for mole cricket damage, quality and color on 1995 Greens Test planted 4-7-95.(Tifdwf95)

Entry	Quality			Color	Mole Cricket Damage
	10/5	11/9	Average	11/27	10/5
Tift 94	7.0	7.5	7.3	8.0	1.0
Tifdwarf	7.5	7.5	7.5	2.5	2.5
Tifgreen	5.5	6.0	5.8	3.5	2.5
TifEagle	**8.5**	**8.0**	**8.3**	**3.5**	**3.0**
T513	5.5	7.0	6.3	6.5	1.0
T557	5.0	6.0	5.5	3.5	2.0
T568	6.0	6.5	6.3	3.5	3.5
T569	6.5	5.5	6.0	2.5	3.0
T589	5.5	5.5	5.5	3.5	2.5
261	6.0	6.0	6.0	6.0	0.0
262	7.0	6.5	6.8	6.5	1.5
273	7.0	7.0	7.0	6.5	0.5
275	7.5	7.5	7.5	7.0	1.0
290	5.0	5.0	5.0	5.5	1.0
291	7.5	7.5	7.5	4.5	0.5
306	6.5	7.0	6.8	6.0	1.0
307	5.5	6.5	6.0	5.0	1.0
313	7.0	7.0	7.0	6.5	1.5
326	6.0	6.0	6.0	7.0	1.5
343	6.5	6.0	6.3	6.0	1.5
344	7.5	6.0	6.8	6.0	0.0
345	6.5	6.5	6.5	6.0	0.5
347	7.5	6.5	7.0	6.5	1.0
350	7.0	7.5	7.3	4.0	1.5
354	7.0	7.0	7.0	6.5	1.0
355	8.5	7.5	8.0	3.0	2.0
368	6.5	6.5	6.5	6.0	0.0
378	7.5	6.0	6.8	4.0	0.0
379	8.0	8.0	8.0	3.0	0.0
384	5.0	5.5	5.3	5.5	0.0
389	6.0	7.0	6.5	5.5	0.5
396	7.0	5.5	6.3	4.5	1.0
400	8.0	7.0	7.5	7.0	0.5
416	6.5	6.5	6.5	6.0	1.5
423	7.5	6.5	7.0	6.0	1.0
442	7.5	6.5	7.0	6.0	0.5
451	7.5	7.0	7.3	7.0	0.5
452	5.5	6.0	5.8	6.5	0.5
453	6.5	6.5	6.5	6.0	0.0
454	6.5	5.5	6.0	5.5	0.0

Table 17. 1995 ratings for mole cricket damage, quality and color on 1995 Greens Test planted 4-7-95.(Tifdwf95)

Entry	Quality			Color	Mole Cricket Damage
	10/5	11/9	Average	11/27	10/5
455	6.5	6.5	6.5	6.0	0.0
456	6.5	6.5	6.5	6.0	1.0
457	8.5	7.0	7.8	7.0	0.5
458	6.0	5.5	5.8	5.0	2.5
459	5.5	5.5	5.5	6.0	0.0
460	8.0	7.0	7.5	7.0	0.5
461	6.5	5.5	6.0	5.5	1.5
462	5.5	6.0	5.8	5.5	0.0
463	6.5	6.5	6.5	6.0	1.0
464	6.5	6.0	6.3	5.5	2.0
466	6.5	6.0	6.3	6.0	0.5
468	6.0	6.0	6.0	6.0	0.5
469	6.0	6.0	6.0	6.0	0.0
475	6.5	6.5	6.5	6.0	1.0
477	8.0	7.0	7.5	7.0	0.5
478	7.0	7.0	7.0	7.0	0.0
480	7.0	7.0	7.0	7.0	1.0
482	7.0	6.5	6.8	6.5	1.0
483	5.0	5.5	5.3	5.5	1.5
484	6.5	6.5	6.5	6.5	0.5
485	6.0	6.0	6.0	6.0	0.5
487	6.0	6.0	6.0	6.0	1.5
488	6.5	6.0	6.3	6.5	1.5
489	6.5	6.5	6.5	6.5	0.5
Anova: Rep	.8920	1.0	.9253	.0113	.0006
Entry	.0001	.0001	.0001	.0001	.0001
CV	10	9	7	12	76
5% LSD	1.3	1.2	0.9	1.3	1.5

Quality ratings: 1 = poor, 9 = best

Color ratings 1 = brown, 9 = dark green

Mole cricket damage 10/5 0 = none, 5 = susceptable

Note: Test consisted of 2.4 m x 2.4 m plots and two replications mowed at 6 mm.

Table 18. 1996 quality ratings on 1994 dwarf bermundagrass selections in 1995 Greens Test planted on 4/7/95.(tifdwf96)

	Quality					
Entry	6/13	8/2	8/23	9/12	10/15	Average
T513	6.0	6.0	4.5	6.0	5.5	5.6
T557	6.0	5.0	5.0	4.0	5.5	5.1
T568	5.5	6.0	5.5	5.5	6.0	5.7
T569	5.5	5.0	5.0	5.0	5.5	5.2
T589	5.5	6.0	6.0	5.0	6.5	5.8
261	6.0	4.0	4.5	5.5	6.0	5.2
262	5.5	5.5	6.0	5.5	6.0	5.7
273	5.5	6.0	6.0	6.0	6.5	6.0
275	6.0	5.0	6.0	7.0	6.0	6.0
290	4.5	3.5	5.5	3.0	4.0	4.1
291	5.0	5.5	5.5	6.0	6.5	5.7
306	7.5	7.5	7.5	7.0	7.0	7.3
307	5.0	5.5	6.0	4.0	4.5	5.0
313	6.0	4.5	5.5	6.0	7.0	5.8
326	5.5	5.0	5.5	4.5	5.0	5.1
343	5.0	5.5	5.5	6.5	5.5	5.6
344	6.0	5.0	6.5	6.5	5.5	5.9
345	5.0	4.0	6.0	4.0	4.5	4.7
347	5.0	5.5	6.5	6.0	7.5	6.1
350	5.0	5.5	7.0	6.0	7.0	6.1
354	5.0	5.0	6.0	6.0	6.5	5.7
355	8.0	9.0	7.0	6.5	8.5	7.8
368	6.5	6.0	4.5	7.5	5.5	6.0
378	6.5	6.0	6.0	6.0	7.0	6.3
379	5.5	5.5	6.5	5.5	4.5	5.5
384	5.0	3.5	4.5	5.5	4.5	4.6
389	5.0	5.0	6.0	7.5	7.5	6.2
396	5.5	5.5	6.0	6.5	5.0	5.7
400	6.0	5.5	5.5	7.0	7.0	6.2
416	5.0	6.0	5.5	5.5	5.5	5.5
423	6.5	4.5	4.5	4.5	5.5	5.1
442	6.0	5.5	6.5	7.0	6.0	6.2
451	6.0	6.0	6.5	6.5	7.5	6.5
452	5.0	4.5	6.5	4.5	4.5	5.0
453	7.0	6.5	5.5	7.0	6.0	6.4
454	5.0	4.5	6.0	6.0	5.5	5.4
455	6.5	4.0	5.0	5.5	5.0	5.2
456	5.0	4.5	6.5	6.0	6.0	5.6
457	6.0	5.0	6.5	6.5	7.0	6.2
458	4.5	4.5	6.5	4.5	5.5	5.1
459	6.0	3.5	5.0	4.5	4.5	4.7
460	6.0	5.5	6.5	6.5	8.5	6.6
461	5.0	4.0	6.0	5.0	4.5	4.9
462	6.5	6.0	4.5	5.5	5.5	5.6
463	7.5	5.5	4.5	6.5	6.5	6.1
464	5.0	5.0	5.5	5.5	5.0	5.2
466	5.5	5.0	5.0	6.0	5.5	5.4
468	5.5	5.0	5.0	5.5	5.0	5.2
469	5.5	6.0	5.0	6.0	6.0	5.7
475	5.0	5.5	6.0	5.5	5.5	5.5
477	7.0	7.0	8.0	6.5	7.5	7.2
478	6.0	5.5	6.0	5.5	6.0	5.8
480	6.0	6.0	7.5	7.0	7.5	6.8
482	6.5	6.0	7.0	6.5	6.5	6.5
483	5.5	5.5	5.0	6.0	5.0	5.4
484	5.5	5.0	6.5	7.0	8.0	6.4
485	6.5	5.5	4.5	5.0	4.0	5.1

Table 18. 1996 quality ratings on 1994 dwarf bermudagrass selections in (cont) 1995 Greens Test planted on 4/7/95.(tifdwf96)

	Quality					
Entry	6/13	8/2	8/23	9/12	10/15	Average
487	5.5	6.0	6.5	7.0	7.0	6.4
488	5.0	5.0	5.5	5.5	5.5	5.3
489	5.5	6.0	6.0	5.0	6.5	5.8
MI40	8.0	7.5	5.5	6.5	7.5	7.0
Tifdwarf	6.5	8.0	6.0	6.0	7.0	6.7
Tifgreen	6.0	6.0	5.5	5.0	5.5	5.6
TifEagle	**9.0**	**9.0**	**8.0**	**7.0**	**8.5**	**8.3**
range	4-9	3-9	4-8	3-8	3-9	3-9
Anova						
Entry	.0001	.0001	.0001	.0009	.0001	.0001
Rep	.1292	1.0	.8976	.0414	.3353	.3653
CV	9	14	12	15	15	7
5% LSD	1.0	1.6	1.4	1.8	1.8	0.8

Quality
1 = poor
9 = good

6/13 - low on nitrogen
8/23 - Height on mower raised after rating

Note: Test consisted of 2.4 m x 2.4 m plots and two replications mowed at 6 mm.

Table 19. 1996 greenup, color, % seed heads and mole cricket damage ratings on dwarf bermudagrass selections in 1995 Greens Test planted 4-7-95. (tifdwf96)

Entry	Green up 4/7	Color 4/7	% Seed Heading 5/15	Mole Cricket Damage 10/15
T513	6.0	4.0	6.5	3.5
T557	4.0	6.5	3.0	8.0
T568	4.0	8.0	1.5	7.5
T569	3.5	6.0	2.0	9.0
T589	5.0	7.5	1.5	8.0
261	6.0	7.5	4.0	1.5
262	5.5	8.0	6.0	3.0
273	5.5	8.0	6.0	1.5
275	5.0	8.0	4.5	2.0
290	5.0	8.0	5.5	1.0
291	5.0	4.0	2.0	3.0
306	5.5	7.5	4.5	2.5
307	2.5	3.0	1.0	3.5
313	5.5	8.0	1.5	2.5
326	6.0	8.0	2.5	2.5
343	6.0	8.0	6.5	1.0
344	5.5	4.0	4.0	2.0
345	5.5	8.0	4.0	2.0
347	6.0	7.0	4.0	1.5
350	3.5	4.0	3.5	2.5
354	6.0	8.0	5.5	2.0
355	6.5	7.0	1.0	6.0
368	5.5	8.0	4.5	1.5
378	5.5	8.5	3.0	1.0
379	6.0	4.5	2.0	3.5
384	5.0	7.5	4.5	1.0
389	2.5	5.5	1.5	1.5
396	5.0	8.0	3.0	6.0
400	6.0	7.5	5.0	3.0
416	5.5	8.0	6.0	2.5
423	3.5	7.5	3.5	2.0
442	5.5	7.5	4.5	1.0
451	6.5	7.5	5.0	2.5
452	5.5	8.0	5.0	3.0
453	5.5	8.0	3.0	1.0
454	6.0	8.0	5.5	2.0
455	5.5	8.0	4.0	1.0
456	5.5	8.0	6.5	2.5
457	7.0	7.5	6.5	1.0
458	4.5	7.5	2.0	5.5
459	5.0	8.0	3.0	1.0
460	5.5	8.0	5.5	1.5
461	6.0	8.0	7.0	3.5
462	5.5	7.5	4.0	1.0
463	5.5	5.5	3.5	1.0
464	5.5	8.0	5.0	4.0
466	5.0	8.0	4.5	2.0
468	4.5	6.5	5.5	1.0
469	5.5	8.0	4.5	1.5
475	5.5	8.0	4.0	3.0
477	6.5	7.5	5.5	1.5
478	5.5	8.0	5.0	2.0
480	6.5	8.0	6.0	2.5
482	6.5	7.5	6.5	2.5
483	5.5	8.0	5.0	1.5

Table 19. 1996 greenup, color, % seed heads and mole cricket damage ratings on dwarf bermudagrass selections in 1995 Greens Test planted 4-7-95. (tifdwf96)

Entry	Green up 4/7	Color 4/7	% Seed Heading 5/15	Mole Cricket Damage 10/15
484	5.0	8.0	4.0	1.0
485	6.0	8.0	2.0	2.0
487	5.5	8.0	4.5	2.0
488	6.0	3.5	5.0	2.5
489	7.0	8.0	5.5	2.5
Tift 94	7.0	8.0	2.5	2.0
Tifdwarf	5.5	5.5	1.5	8.5
Tifgreen	6.0	7.5	2.0	8.0
TifEagle	**7.0**	**7.0**	**1.0**	**4.5**
Range	2-8	3-9	1-7	1-9
Anova				
Entry	.0035	.0001	.0001	.0001
Rep	.0039	.0636	.0279	.5678
CV	17	8	25	33
5% LSD	1.9	1.1	2.0	1.8

Mole Cricket Damage	
Entry	8/2
Tift94	2.5
Tifdwarf	6.5
Tifgreen	6.0
TifEagle	3.5
355	4.5
range	2-8
Anova	
Entry	.1826
Rep	.4320
CV	32
5% LSD	4.0

Mole cricket damage
1 = none
9 = susceptible

Color
1 = brown
9 = dark green

Green up
1 = poor
9 = best

Seed Heading
1 = no heads
9 = complete heads exserted

4/7/96 - T557, T568, T589 are susceptible to mole cricket damage both reps rated three.

Note: Test consisted of 2.4 m x 2.4 m plots and two replications mowed at 6 mm.

Table 20. Ratings for number of seed heads on turf bermudagrass on 6-11-96. (A1994,A1995,I1995,I1991)

	Test		Increase	
	1994	1995	1995	1991
TifEagle	**1.0**	**1.0**	**1.0**	**1.0**
Tifgreen	2.5	3.0		5.8
Tifdwarf	3.5	5.5	4.3	6.5
#355		1.0		
Anova:				
Rep	.1835	.3910	.5000	.9306
Entry	.0500	.0027	.0141	.0001
CV	17	13	34	17
5% LSD	1.7	1.1	2.0	1.3

Ratings: 1 = None
9 = 100% Heading

Note: 1994 and 1995 test each consisted of two replications. Four random ratings were made on the 1991 and 1995 increase plots (10 m x 10 m).

Table 21. Mean quality ratings on turf bermudagrass on various golf courses. /1

	Oakridge (The Landings) (Savannah, GA) /2				Marshwood (The Landings) (Savannah, GA) /3			Banyan (West Palm Beach, FL) /4			Jupiter Island (Hobe Sound, FL) /5	Overall
	9 Mar 95	9 Oct 95	27 Aug 96	$\bar{x}$	9 Mar 95	9 Oct 95	$\bar{x}$	14 Mar 95	9 July 96	$\bar{x}$	9 July 96	Means
TifEagle	8.0	8.0	9.0	8.6	8.5	8.5	8.5	8.0	7.0	7.5	9.0	8.3
Tifdwarf	5.5	6.0	4.0	5.2	6.5	5.5	6.0	5.5	3.0	4.3	7.5	5.4
t-test for significance				0.005			0.005			0.007		0.0001

/1 Data was analysed across dates (and locations) as paired comparisons using a 't' test for significance.
/2 Mowed at 3 mm. Green established 7-1-94. Superintendents Ralph Hinz and Alan Young.
/3 Mowed at 3 mm. Green established 5-4-94. Superintendents Ralph Hinz and Bobby Sisk.
/4 Mowed at 4 mm. Green established 3-14-94. Superintendent Dan Jones.
/5 Mowed at 5 mm. Green established 9-15-95. Herbicide burn was encountered at establishment. Superintendent Rob Kloska.

Note: Rating: 1 = poor, 9 = best. All greens had two random 6 m x 6 m blocks of Tifdwarf as a control. Ratings at each date consisted of a rating on Tifdwarf blocks and two random ratings on TifEagle.

Table 22. Rating (9-30-96) on bermudagrass turf established on 5-13-96 at Memphis Country Club.(Memp96)

Entry	Quality	Density	Color
Tifgreen	4.0 ± 1.0	3.5 ± 1.5	5.5 ± 0.5
TifEagle	**8.0 ± 0.0**	**7.5 ± 0.5**	**9.0 ± 0.0**

Notes: A) 1 = poor, open or brown and 9 = best, dense or dark green for quality, density and color, respectively.
B) Test mowed at 3 mm daily
C) At least 2/3 of the green has heavy shade in the AM. Algae was dense in the shaded area of Tifgreen but none was observed in TW72.
D) Rated with Carl Murphree(Rodney Lingle - Superintendent)
E) one-half of practice green was planted to each TifEagle and Tifgreen.

Table 23. Mean ratings for color and stimp on Turf Bermudagrass on various golf courses. /1

	COLOR Marshwood (The Landings) (Savannah, GA) /2			STIMP (feet) Oakridge (The Landings) (Savannah, GA) /3		
	9 Mar 95	9 Oct 95	$\bar{x}$	9 Oct 95	27 Aug96	$\bar{x}$
TifEagle	4.0	5.0	4.5	8.1	8.3	8.2
Tifdwarf	2.5	3.0	2.8	7.2	7.8	7.6
t-test for significance		0.006				0.04

/1 Data was analysed across dates as paired comparisons using a 't' test for significance.

/2 Mowed at 3 mm. Green established 5-4-94. Superintendents Ralph Hinz and Alan Young.

/3 Mowed at 3 mm. Green established 7-1-94. Superintendents Ralph Hinz and Bobby Sisk.

Note: Color: 1 = brown, 5 = green. All greens had two random 6 m x 6 m blocks of Tifdwarf as a control. Ratings at each date consisted of a rating on each Tifdwarf block and two random ratings on TifEagle.

Table 24. 1994 ratings on turf bermudagrass at Pinehurst Resort (#4 Course) and Country Club in Pinehurst, NC. (pine95)

Entry	Quality 10/8/95	Ratings on July 27,1994 Color	Texture	Density
CTR111	6.5	4.5	8.0	2.0
CTR2352	6.0	7.0	8.5	5.5
CTR2570	6.5	6.5	8.0	6.0
CTR2747	6.0	5.0	7.5	4.0
CTR3048	6.0	6.0	9.0	5.5
MI53	2.5	7.5	5.5	6.5
Tifdwarf	7.0	8.0	6.5	7.5
Tifgreen	6.5	8.0	6.5	7.5
TifEagle	8.0	8.0	6.5	8.0
T596	6.5	8.0	5.5	7.5
Anova: Rep	.0150	.5911	.2789	.2229
Entry	.0001	.0001	.0016	.0002
CV	6	6	8	11
5% LSD	0.8	0.9	1.3	1.5

Quality, Color, Texture, Density ratings: 1 = poor
9 = best

Rated by Tommy Brown (Superintendent).

Note: Planted June 28, 1993. Mowed at 5 mm.

Table 25. Quality scores of bermudagrass selections on FGCSA Research Green at the Fort Lauderdale esearch 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 b	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 b	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	0.188	0.180	0.180	0.160	0.160	0.170	0.165	0.165	0.160

[a]Quality 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.

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

Data from Monica Elliott

Table 26. 1995 quality ratings on Research Green at Ft. Lauderdale, FL planted May/June 1993.(FGCSA95)

Entry		3-15-95
1	Tifdwarf	6.3
2	Tifgreen	5.8
3	Quality Grass	7.8
4	Classis Dwarf	7.8
5	**TifEagle**	**8.3**
6	T596	7.8
7	CTR 1111	7.0
8	CTR 2352	7.0
9	CTR 2570	6.3
10	CTR 3048	7.3
11	CTR 2747	7.0
12		6.5
Anova:	Rep	.1788
	Entry	.4527
CV		21
5% LSD		2.1

Quality ratings: 1 = poor
9 = best

Note: Test consisted of 2.4 m x 3 m plots and four replications mowed at 4 mm. Test conducted by Monica Elliott.

Table 27. 1993 ratings on density, color and quality of bermudagrass cultivars planted at Lake Wales, FL on 7/24/91.(lwales93)

Pedigree	Density	Color	Quality
Dwarf Zoysia	9.0	5.0	9.0
MI22	7.5	4.5	8.0
MI35	8.5	4.0	8.5
MI37	8.0	4.5	8.0
MI40	7.5	4.0	8.0
MI53	7.5	4.0	7.5
OM12	7.5	4.5	8.0
Tifdwarf	**9.0**	**4.0**	**8.5**
Tifgreen	**9.0**	3.5	9.0
TW61	7.0	5.0	8.0*
TifEagle	**9.0**	**3.0**	**9.0**
72-16	8.0	4.5	8.0
Anova	.0068	.0059	.3252
CV	6	9	7
5% LSD	1.0	0.8	1.3

Ratings were made on 3/25/93, two weeks after frost

Bermudagrass was mowed at 25 mm once per week

* TW61 was sectoring on both reps

Plots were establish with 16 5 cm plugs per plot on 0.9 m centers. There were two replications of each entry. Test conducted by Southern Turf Nurseries.

Table 28. 1993 quality and drought resistance ratings on turf planted at Crystal Lake on 6/5/92. (clake93a)

Entry	Quality 5/27	Drought Resistance 6/16	6/24
Tifdwarf	4.0	1.5	1.0
TW023	6.0	2.0	2.0
TW072	4.0	1.0	.
TW262	6.0	1.0	1.0
TW263	5.5	3.0	2.0
TW61	5.5	3.0	1.5
TW64	4.5	4.5	3.5
TW71	3.0	.	1.0
TifEagle	**4.0**	**1.0**	**1.0**
T007	4.5	2.5	2.5
T053	7.0	2.5	1.5
T054	5.5	1.5	1.0
T055	6.5	2.5	1.5
T057	7.0	2.0	1.0
T067	7.0	1.5	1.0
T080	6.5	3.5	3.0
T082	4.5	4.0	3.0
T086	7.5	2.0	1.0
T257	6.0	2.0	2.0
T501	6.0	3.0	2.0
T502	5.5	3.5	2.5
T503	5.0	1.5	1.0
T505	7.0	3.5	2.5
T510	3.0	3.0	2.5
T511	4.5	3.5	1.5
T512	6.5	1.5	1.5
T513	6.5	5.0	4.5
T515	6.5	3.5	2.0
T516	7.5	3.0	1.5
T528	5.5	2.0	1.5
T529	6.5	1.5	1.0
T531	3.0	2.5	1.5
T532	5.5	3.5	1.5
T533	4.0	4.0	2.0
T534	7.5	3.0	2.0
T535	6.0	4.0	2.5
T536	6.0	3.0	2.0
T537	6.0	2.0	1.5
T538	7.0	3.5	2.0
T539	5.5	2.0	1.0
T540	5.0	2.0	1.5
T541	4.0	3.0	2.5
T542	7.0	3.0	2.5
T543	6.0	2.5	1.5
T544	6.5	2.0	1.5
T545	7.5	2.5	2.0
T546	3.5	1.5	3.0

Table 28 (con't). 1993 quality and drought resistance ratings on turf planted at Crystal Lake on 6/5/92. (clake93a)

Entry	Quality 5/27	Drought Resistance 6/16	6/24
T547	3.0	1.5	2.0
T555	2.5	2.0	2.0
T556	3.5	1.5	2.0
T557	5.5	4.5	4.0
T559	6.0	4.0	3.0
T560	4.5	2.0	2.5
T561	6.3	2.0	1.0
T562	5.5	3.5	2.5
T563	7.0	3.5	1.0
T567	4.0	3.5	2.5
T568	8.0	4.5	4.0
T569	8.0	5.0	4.0
T571	3.5	1.0	2.0
T572	6.0	2.0	2.0
T573	5.0	1.0	1.0
T574	5.5	3.0	2.0
T575	6.0	2.5	1.0
T576	6.5	3.0	2.0
T577	7.5	3.0	2.0
T589	6.0	5.0	5.0
Anova	.0001	.0001	.0001
CV	16	25	27
5% LSD	1.9	1.4	1.1

Quality ratings:
1 = poor
9 = best

Drought resistance ratings:
1 = wilted
5 = turgid

T589 fine Dwarf

Test consisted of two uncut replications.

Table 29. 1996 ratings on turf bermudagrass for drought resistance in Rainout Shelter Test planted in 1995 at Tifton, Ga.(rain96)

	Quality												
Entry	6/13	6/18	6/23	7/3	x	7/12	7/24	8/2	8/13	8/19	8/25	8/29	x
Tifgreen	7.0	7.2	6.0	5.6	6.5	6.2	7.0	6.6	6.4	5.0	5.2	4.6	5.9
Tifdwarf	7.8	7.6	6.8	6.6	7.2	6.2	7.4	7.8	7.6	6.8	6.4	6.6	7.0
Tifway	7.8	7.2	6.2	5.6	6.7	7.4	7.8	8.4	8.0	6.2	6.4	5.8	7.1
Tift 94	7.2	6.6	6.2	5.4	6.4	7.0	7.4	8.2	7.6	7.2	7.2	7.0	7.4
TifEagle	**8.8**	**8.8**	**7.4**	**7.0**	**8.0**	**7.8**	**7.8**	**7.4**	**7.4**	**5.6**	**5.2**	**5.2**	**6.6**
T513	7.0	7.0	5.4	5.4	6.2	6.4	6.8	7.2	6.4	5.8	6.0	5.8	6.3
T557	6.2	6.4	4.6	4.2	5.4	6.2	6.8	6.4	6.8	5.4	5.2	5.4	6.0
T568	7.4	7.0	6.6	5.8	6.7	6.0	7.4	6.8	6.8	6.2	6.4	6.0	6.5
T569	6.8	6.2	6.0	5.0	6.0	6.0	7.2	7.0	6.6	5.4	5.6	5.4	6.2
T589	7.0	6.8	5.2	5.6	6.2	6.4	7.2	7.2	6.6	5.8	6.2	6.2	6.5
Range	6-9	6-9	3-8	3-8	3-9	6-8	6-8	6-9	5-9	4-8	4-8	3-8	3-9
Anova:													
ent	.0001	.0001	.0018	.0086	.0001	.0001	.0414	.0002	.0049	.0112	.0824	.0957	.0056
rep	.9193	.0456	.0589	.2960	.5414	.3949	.1112	.5221	.4554	.0533	.7163	.8249	.5159
CV	6	7	15	18	8	7	18	9	10	15	18	20	9
5% LSD	0.6	0.6	1.2	1.3	0.7	0.6	0.7	0.8	0.9	1.1	1.4	1.5	0.8

Quality
1 = poor
9 = best

Plot size was 1.5 m x 1.5 m and included five replications.

6/13/96 no drought stress observed.

Note: Test was cut at 6 mm from 6/13 to 8/29. There were two dry-down cyles: 6/13 to 7/3 and 7/12 to 8/29. Test was cut at 12 mm from 9/12 to 10/15. Test conducted in cooperation with Jim Hook.

Table 29. 1996 ratings on turf bermudagrass for drought resistance in Rainout Shelter Test planted in 1995.(rain96)

	Quality				
					overall
Entry	9/12	9/20	10/15	x	aveage
Tifgreen	6.0	4.0	5.4	5.1	5.9
Tifdwarf	6.4	4.8	5.6	5.6	6.8
Tifway	6.2	6.4	6.8	6.5	6.9
Tift 94	7.2	7.0	7.4	7.2	7.0
TifEagle	**6.0**	**4.4**	**5.0**	**5.1**	**6.8**
T513	5.8	5.6	5.8	5.7	6.2
T557	5.8	4.4	5.6	5.3	5.7
T568	6.6	5.0	5.6	5.7	6.5
T569	5.8	4.8	5.6	5.4	6.0
T589	6.4	5.8	6.4	6.2	6.3
Range	5-8	3-8	3-8	3-8	3-9
Anova:					
ent	.0531	.0032	.0203	.0037	.0023
rep	.2454	.7807	.0205	.4375	.9242
CV	11	22	17	14	8
5% LSD	0.9	1.5	1.3	1.0	.7

Quality
1 = poor
9 = best

Plot size was 1.5 m x 1.5 m and included five replications.
6/13/96 no drought stress observed.
Note: Test was cut at 6 mm from 6/13 to 8/29. There were two dry-down cycles; 6/13 to 7/3 and 7/12 to 8/29. Test was cut at 12 mm from 9/12 to 10/15. Test conducted in cooperation with Jim Hook

Table 30. 1996 ratings on turf bermudagrass for drought resistance in Rainout Shelter Test planted in 1995 at Tifton, Ga.(rain96)

	Seed Heading	Color										
Entry	5/15	6/26	7/3	x	7/12	8/25	8/29	x	9/12	9/20	x	overall average
Tifgreen	2.6	5.2	5.2	5.2	7.2	5.0	4.2	5.5	3.6	4.6	4.1	5.0
Tifdwarf	1.2	6.2	6.8	6.5	7.6	6.8	5.6	6.7	4.4	4.4	4.4	6.0
Tifway	1.8	5.6	5.6	5.6	7.8	6.0	5.2	6.3	4.6	6.8	5.7	5.9
Tift 94	2.6	5.4	5.4	5.4	7.6	7.2	7.2	7.3	5.4	7.4	6.4	6.5
TifEagle	**1.0**	**6.8**	**6.2**	**6.5**	**7.6**	**4.6**	**3.8**	**5.3**	**3.2**	**3.8**	**3.5**	**5.1**
T513	6.4	5.4	6.0	5.7	6.6	5.0	5.6	5.7	6.2	5.6	5.9	5.8
T557	3.4	3.8	4.2	4.0	5.6	4.4	4.4	4.8	4.0	4.8	4.4	4.5
T568	2.8	5.6	6.0	5.8	6.8	6.2	6.0	6.3	5.4	4.6	5.0	5.8
T569	3.8	4.8	5.2	5.0	6.8	5.8	5.6	6.1	5.2	5.2	5.2	5.5
T589	2.4	4.8	5.0	4.9	6.8	6.0	6.2	6.3	5.8	5.8	5.8	5.8
range	1-7	3-8	3-8	1-8	5-8	3-8	2-8	2-8	2-8	3-8	2-8	1-8
Anova												
entry	.0001	.0001	.0055	.0001	.0001	.0042	.0119	.0014	.0450	.0006	.0103	.0138
rep	.0057	.0255	.0094	.0059	.6422	.5942	.4361	.5738	.3284	.1879	.3755	.2418
CV	39	13	16	13	9	20	25	13	31	22	24	14
5% LSD	1.4	0.9	1.2	0.9	0.8	1.4	1.7	1.0	1.9	1.5	1.5	1.0

Seed heading
1 = no heads
9 = complete heads exserted

Color
1 = brown
9 = dark green

Plot size was 1.5 m x 1.5 m and included five replications.
6/13/96 no drought stress observed.
Note: Test was cut at 6 mm from 6/13 to 8/29. There were two dry-down cycles; 6/13 to 7/3 and 7/12 to 8/29. Test was cut at 12 mm from 9/12 to 10/15. Test conducted in cooperation with Jim Hook.

Table 31. 1996 ratings on quality and color for tolerance of three bermudagrass cultivars to post-emergence herbicides at Tifton, Georgia. Test had three replications of 0.9 m x 1.4 m plots. Plots were cut at 6mm and were treated 8-23-96.(post96)

		Quality													
Entry	Treatment	8/22/96		8/30/96		9/6/96		9/9/96		9/12/96		9/20/96		Average	
		1x	2x	1x	2x	1x	2x	1x	2x	1x	2x	1x	2x	1x	2x
Tifdwarf	Diclofop	7.7	7.7	7.7	7.7	7.7	7.0	7.3	7.0	8.0	8.0	7.7	7.3	7.7	7.4
Tifdwarf	MSMA	7.7	7.7	7.3	7.7	7.0	7.3	6.7	6.3	7.7	7.3	6.3	6.3	7.1	7.1
Tifdwarf	MSMA + *	7.7	7.7	7.7	7.3	7.3	7.3	7.0	7.3	7.7	7.7	7.0	7.0	7.4	7.4
Tifdwarf	Imazaquin	7.3	7.3	6.7	7.0	6.0	6.3	6.0	6.0	6.3	6.7	6.0	6.3	6.4	6.6
Tifdwarf	Halosulfuron	8.0	8.0	7.3	7.7	6.7	7.0	6.7	7.0	6.7	7.0	6.3	7.0	6.9	7.3
Tifdwarf	Dicamba	8.0	7.3	8.3	7.7	7.7	7.7	7.3	6.7	8.0	7.3	6.7	6.7	7.7	7.2
Tifdwarf	2,4-D + **	8.3	8.3	8.7	8.7	8.7	8.7	8.3	8.3	8.7	8.7	7.7	7.7	8.4	8.4
	x	7.8	7.7	7.7	7.7	7.3	7.3	7.0	7.0	7.6	7.5	6.8	6.9	7.4	7.3
Tifgreen	Diclofop	7.7	7.3	7.3	7.0	7.0	6.7	6.7	6.0	7.3	7.0	7.3	7.3	7.2	6.9
Tifgreen	MSMA	7.7	7.7	7.7	7.7	7.7	7.3	7.3	7.0	7.3	7.0	7.3	7.3	7.5	7.3
Tifgreen	MSMA + *	8.0	7.7	7.7	7.3	7.3	7.3	7.0	6.7	7.0	7.3	7.7	7.7	7.4	7.3
Tifgreen	Imazaquin	8.0	8.0	7.3	7.0	7.3	7.3	7.0	6.7	7.0	7.0	7.0	7.0	7.3	7.2
Tifgreen	Halosulfuron	7.7	7.7	7.3	7.3	7.3	6.7	7.0	7.0	7.0	7.0	6.7	6.7	7.2	7.1
Tifgreen	Dicamba	7.3	7.3	7.0	6.7	7.0	6.7	6.3	6.3	7.0	6.3	6.7	6.3	6.9	6.6
Tifgreen	2,4-D + **	8.0	7.7	7.7	6.7	7.3	7.3	6.3	6.3	7.0	6.7	5.7	6.0	7.0	6.8
	x	7.8	7.6	7.4	7.1	7.3	7.0	6.8	6.6	7.1	6.9	6.9	6.9	7.2	7.0
TifEagle	**untreated**	**8.7**	**8.7**	**9.0**	**8.3**	**8.7**	**8.0**	**8.0**	**7.7**	**8.7**	**8.3**	**7.3**	**7.0**	**8.4**	**8.0**
TifEagle	**Diclofop**	**8.7**	**8.7**	**8.0**	**7.7**	**9.0**	**7.7**	**7.0**	**7.3**	**7.7**	**7.7**	**7.3**	**8.0**	**7.9**	**7.8**
TifEagle	**MSMA**	**8.7**	**8.7**	**8.7**	**8.3**	**8.3**	**8.0**	**7.3**	**7.3**	**7.7**	**8.0**	**7.0**	**7.7**	**7.9**	**8.0**
TifEagle	**MSMA + ***	**8.7**	**8.7**	**8.3**	**8.7**	**8.7**	**8.0**	**7.0**	**7.3**	**7.3**	**8.0**	**7.0**	**7.3**	**7.8**	**8.0**
TifEagle	**Imazaquin**	**8.3**	**8.7**	**8.0**	**8.0**	**7.7**	**7.3**	**7.7**	**7.7**	**8.0**	**8.0**	**7.0**	**7.7**	**7.8**	**7.9**
TifEagle	**Halosulfuron**	**8.7**	**8.7**	**9.0**	**8.7**	**8.3**	**8.3**	**8.0**	**7.7**	**8.0**	**8.3**	**7.7**	**7.7**	**8.3**	**8.2**
TifEagle	**Dicamba**	**8.7**	**8.3**	**8.3**	**8.3**	**8.3**	**8.7**	**6.7**	**7.7**	**7.3**	**8.0**	**6.7**	**7.3**	**7.7**	**8.1**
TifEagle	**2,4-D + ****	**7.3**	**8.0**	**7.3**	**7.3**	**6.7**	**7.3**	**6.0**	**5.7**	**6.7**	**6.7**	**5.7**	**5.7**	**6.6**	**6.8**
	x	**8.5**	**8.5**	**8.3**	**8.2**	**8.2**	**7.9**	**7.2**	**7.3**	**7.7**	**7.9**	**7.0**	**7.3**	**7.8**	**7.8**
overall means		8.0	8.0	7.8	7.7	7.6	7.4	7.0	7.0	7.4	7.4	6.9	7.0	7.5	7.4
Anova:															
Cultivar (C)		.0001		.0001		.0001		.0039		.0001		.2356		.0001	
Herbicide (H)		.5102		.0968		.4449		.3500		.1747		.0042		.2966	
C x H		.0001		.0003		.0105		.0001		.0001		.0002		.0001	
Rate (1x vs 2x)		.5267		.1547		.3419		.5740		1.0		.2779		.6167	
C * Rate		.3861		.5219		.6987		.6135		.4435		.5918		.6208	
H * Rate		.7860		.9330		.8946		.9845		.8872		.9805		.9680	
CV		5		9		13		11		10		11		8	
5% LSD Cultivar		0.7		0.5		0.7		0.4		0.6		0.6		0.2	
5% LSD Herbicide		0.3		0.5		0.7		0.6		0.6		0.6		0.4	
5% LSD Rate (1x vs 2x)		0.1		0.2		0.3		0.3		0.3		0.3		0.2	

* = Metribuzin
** = Mecoprop + dicamba
9/6/96 Two days since last cut (6 mm)

Quality
1 = poor
9 = best

Rates(22#pressure)
1x = 20 gal/A
2x = 40 gal/A

Note: Test conducted in cooperation with B.J. Johnson, who actually treated the plots.

Table 32. 1996 ratings on color for tolerance of three bermudagrass cultivar to post-emergence herbicides. Test had three replications of 0.9 m x 1.4 m plots. Plots were mowed at 6 mm and were treated 8-21-96.(post96)

Entry	Treatments	Color					
		8/30/96		9/6/96		Aveage	
		1x	2x	1x	2x	1x	2x
Tifdwarf	Diclofop	5.7	6.0	8.3	7.7	7.0	6.8
Tifdwarf	MSMA	7.0	7.3	8.0	7.7	7.5	7.5
Tifdwarf	MSMA + metribuzin	8.3	8.0	9.0	8.3	8.7	8.2
Tifdwarf	Imazaquin	6.7	7.0	7.0	7.7	6.8	7.3
Tifdwarf	Halosulfuron	8.0	7.7	8.0	8.3	8.0	8.0
Tifdwarf	Dicamba	8.3	8.0	8.3	8.7	8.3	8.3
Tifdwarf	2,4-D + mecoprop + dicamba	9.0	9.0	9.3	9.3	9.2	9.2
x		7.6	7.6	8.3	8.2	7.9	7.9
Tifgreen	Diclofop	7.0	7.0	7.0	7.0	7.0	7.0
Tifgreen	MSMA	8.3	8.0	8.0	7.3	8.2	7.7
Tifgreen	MSMA + metribuzin	7.7	7.7	7.7	7.3	7.7	7.5
Tifgreen	Imazaquin	6.7	6.0	7.7	7.0	7.2	6.5
Tifgreen	Halosulfuron	7.7	7.3	8.0	7.7	7.8	7.5
Tifgreen	Dicamba	7.3	7.0	7.7	7.3	7.5	7.2
Tifgreen	2,4-D + mecoprop + dicamba	7.0	7.0	7.3	7.0	7.2	7.0
x		7.3	7.1	7.6	7.2	7.5	7.2
TifEagle	**untreated**	**8.3**	**7.7**	**8.7**	**8.3**	**8.5**	**8.0**
TifEagle	**Diclofop**	**6.7**	**6.3**	**8.0**	**7.3**	**7.3**	**6.8**
TifEagle	**MSMA**	**7.7**	**7.3**	**8.0**	**8.0**	**7.8**	**7.7**
TifEagle	**MSMA + Metribuzin**	**8.0**	**7.7**	**8.3**	**8.3**	**8.2**	**8.0**
TifEagle	**Imazaquin**	**7.3**	**7.0**	**8.0**	**7.7**	**7.7**	**7.3**
TifEagle	**Halosulfuron**	**7.7**	**8.0**	**8.7**	**8.3**	**8.2**	**8.2**
TifEagle	**Dicamba**	**7.7**	**8.0**	**8.3**	**8.0**	**8.0**	**8.0**
TifEagle	**2,4-D + mecoprop + dicamba**	**8.0**	**7.7**	**7.7**	**8.0**	**7.8**	**7.8**
x		7.7	7.5	8.2	8.0	7.9	7.7
overall means		7.5	7.4	8.0	7.8	7.8	7.6
Anova:							
Cultivar (C)		.3301		.0001		.0124	
Herbicide (H)		.0002		.1125		.0026	
C * H		.0897		.2675		.2237	
Rate (1x vs 2x)		.4263		.1827		.2689	
Entry*Rate		.8600		.7027		.7789	
Treatment*Rate		.9996		.9960		.9998	
CV		15		11		12	
5% LSD Cultivar		0.5		0.7		0.5	
5% LSD Herbicide		0.8		0.7		0.7	
5% LSD Rate (1x vs 2x)		0.4		0.3		0.3	

9/6/96 two days since last cut (1/4 in)

Color
1 = Brown
10 = Green

Rates(20# press
1x = 20 gal/A
2x = 40 gal/A

Area: 24' x 29'
Plot size: 3' x 9'
Individual: 3' x 4 1/2'
Treated 8/21/96

Note: Test conducted in cooperation with B.J. Johnson who actually treated plots.

Table 33. 1993 measurements on number of stolons, length of longest stolon, leaf length (base of 1st fully extended internode) and internode length (1st fully extended at end of stolon).
((berm93) nruna93, runla93, leafa93, inodea93)

Entry	Number of stolons		Length of Longest stolon (cm)		Leaf length (cm)		Internode length (cm)	
	2/8	3/3	2/8	3/3	2/8	3/3	2/8	3/3
MI1	4.0	19.5	15.9	20.6	8.3	4.9	3.0	2.1
MI22	6.0	15.8	19.6	21.9	8.7	7.2	2.5	2.3
MI23	7.0	19.0	17.7	21.2	9.3	5.8	2.7	2.0
MI37	6.0	23.3	18.4	17.9	8.9	6.5	3.2	2.0
MI40	6.5	21.3	19.7	22.0	9.1	5.8	3.1	2.4
MI53	5.3	14.8	14.6	18.3	8.6	8.1	3.0	2.2
MI8	5.3	17.0	14.5	16.1	6.3	6.5	2.9	2.0
Tifdwarf	8.0	28.5	20.1	20.3	2.1	2.3	2.4	1.3
Tifgreen	10.0	26.8	20.0	22.7	4.8	2.9	2.6	1.8
Tifway	5.8	16.5	16.0	17.6	9.1	9.4	2.9	2.5
Tifway II	3.8	18.8	14.5	15.6	8.0	9.3	2.6	2.3
TW23	3.0	10.5	11.0	13.4	7.1	3.8	2.2	1.8
TW61	3.3	9.5	11.9	13.6	7.3	4.3	2.0	1.3
TW64	14.0	51.0	36.4	35.8	2.2	1.7	4.0	2.0
TifEagle	**14.3**	**40.3**	**19.4**	**30.9**	**1.0**	**0.3**	**2.4**	**1.6**
T582	2.5	5.5	7.7	7.3	2.4	2.5	1.7	1.2
Midiron	5.0	17.3	20.7	20.6	10.4	9.0	3.8	2.6
Anova	.0001	.0001	.0001	.0001	.0001	.0001	.0001	.0001
CV	49	43	33	29	26	33	23	23
5% LSD	4.4	12.7	4.7	4.6	1.7	1.4	.6	.3

Four replications were used for each cultivar. Each replication was a 10 cm plug taken from the field and placed in 20 cm pots in the green house.
Leaf length was taken on two leaves from each replication.
Internode length was taken on two stolons in each replication.

Table 34. Morphological characteristics of eight random stolons from turf bermudagrasses grown in the greenhouse from 10 cm plugs grown in 20 cm pots. Measurements taken 2-21-93.(ber93)

Internode [1]	Internode Length (mm)		Leaf Length (mm) [2]		Leaf Width (mm) [2]	
	TifEagle	Tifdwarf	TifEagle	Tifdwarf	TifEagle	Tifdwarf
	x	x	x	x	x	x
1	20.0 ± 2.6	21.1 ± 4.8	15.0 ± 5.6	17.1 ± 4.6	1.5 ± 0.3	1.6 ± 0.2
2	19.2 ± 2.2	24.6 ± 6.3	14.6 ± 5.9	18.6 ± 5.3	1.3 ± 0.3	1.7 ± 0.3
3	18.0 ± 2.7	24.5 ± 5.1	13.4 ± 5.3	20.7 ± 6.3	1.4 ± 0.4	1.7 ± 0.3
4	20.0 ± 2.9	23.4 ± 7.4	13.1 ± 5.7	21.0 ± 7.6	1.4 ± 0.3	1.7 ± 0.4
5	21.7 + 2.4	22.9 ± 6.0	13.0 ± 5.9	19.2 ± 4.0	1.5 ± 0.4	1.7 ± 0.4
6	21.0 ± 2.6	21.0 ± 4.9	10.5 ± 2.5	18.9 ± 8.1	1.5 ± 0.3	1.7 ± 0.4
7	17.4 ± 4.8	13.0 ± 4.2	12.6 ± 5.4	17.4 ± 6.1	1.5 ± 0.3	1.6 ± 0.3
8	17.3 ± 3.1	21.0 ± 2.8	10.6 ± 3.7	17.1 ± 11.2	1.6 ± 0.2	1.4 ± 0.4

1 1 is first fully extended internode at end of a stolon. 2 is second ...etc.

2 Width and length at base of each respective internode.

Table 35. Weight of dormant stolons from turf bermudagrass planted in 1991.(H972)

Entry	Means stolon weight(g)
TifEagle	3.6
Tifdwarf	4.5
Anova:	
Entry	.0714
Rep	.1347
CV	11
5% LSD	1.0

Note: Four replications of 10 cm plugs.

ATTACHMENT NO. 1

EXECUTIVE SUMMARY

EVALUATING BERMUDAGRASS FOR PUTTING GREENS

E.A. Guertal, R.H. Walker and C.Y. Ward
Auburn University

The experiment consists of 12 bermudagrass ecotypes or cultivars, each planted in replicated blocks on USGA or native soil putting greens. The objective of the research was to evaluate these bermudagrasses to determine their suitability as putting green grasses in the southeastern United States. Beginning in June, 1996 mowing heights of 1/8 and 3/16 inch were superimposed over the grasses. Grasses were mowed 6 out of 7 days, with grasses receiving the 1/8-inch mowing height treatment often double-mowed to prevent scalping and poor turf quality.

Data collection included: 1) evaluations of mole cricket damage (no significant difference due to grass type found), 2) quality ratings, 3) stimpmeter readings, 4) overseed quality ratings, 5) seedhead production counts, and, 6) spring greenup ratings. An additional study was initiated which evaluated ecotype/cultivar response to herbicide application. Preliminary evidence in this study indicates differences in ecotype/cultivar response to various herbicides.

Average stimpmeter readings for the grasses were greater at the 1/8 inch mowing height than at the 3/16 inch mowing height. Average stimp distances at the 1/8 inch height were 6.6 on June 28 and 8.2 feet on Sept. 19, and average distance at the 3/16 inch height were 6.4 on June 28 and 7.3 feet on Sept. 19. Stimpmeter readings were always higher on the USGA green when compared to those obtained on the native soil green. Grasses with high quality turf that had the best stimpmeter readings were TW72 and the ecotype, Lakewood, a selection from the Lakewood C.C. in New Orleans.

The ecotype from the Mobile #10 green of the Mobile C.C. (AL.) always had the fastest spring greenup, but this grass also exhibited undesirable traits of seedhead production and poor turf quality later in the season. None of the other *C. dactylon x C. transvaalensis* hybrids demonstrated superior ability to green up in the spring. In later quality ratings the grasses TW72, Mobile #9, T596, Texas and the Industry Check all exhibited high turf quality ratings. The ecotype from the #9 green of the Mobile Country Club and the cultivar TW72 both performed well at the 1/8-inch mowing height. These two grasses did not produce seedheads, as did several of the other grasses (Mobile #10, Lakewood, Tifgreen, Tifdwarf).

Variants of Tifdwarf showed differences in phenotypic behavior, and some of these ecotypes (Mobile #9) show promise as putting green grasses. The cultivar TW72 performed well in most tests, and tolerates a 1/8 inch mowing height very well. This mowing height was very stressful to many of the grasses, especially Tifgreen.

Percentage time devoted to research: PI (10%), Technicians and student labor (35%)

Summary of expenditures (fiscal year):

Salaries (Graduate student)	8,250.03
Student labor	1,286.25
Materials/supplies	5,088.54
Indirect Costs	2,339.97
Total	16,964.79

EVALUATING BERMUDAGRASS FOR PUTTING GREENS

AUBURN UNIVERSITY
AUBURN, AL

Principal Investigators: Elizabeth Guertal
Harold Walker
Coleman Ward

This annual report discusses 1996 research results from the bermudagrass cultivar/ecotype project at Auburn University. The objective of this research is to evaluate bermudagrass cultivars or ecotypes on both USGA and native soil putting greens.

The experiment consists of 12 bermudagrass ecotypes or cultivars, each planted in replicated blocks on USGA or native soil putting greens (Table 1). Each cultivar main block is 3 feet wide and 25 feet long. Beginning in June, 1996 each cultivar main block was split in half, and mowing heights of 1/8 and 3/16-inch were superimposed over the grasses. Mowing at these heights continued until October, 1996, when both greens were overseeded with *Poa trivialis*. A uniform 3/16 inch mowing height will be applied until the spring transition, when the 1/8 and 3/16 mowing heights will be reapplied for 1997.

Three additional test sites were established in the spring of 1996, all consisting of large unreplicated plots on golf course practice putting greens. Participating courses are: 1) Burningtree Country Club, Decatuer, AL., 2) Azalea City Golf Course, Mobile, AL, and, 3) Tupelo Country Club, Tupelo, MS. Data collection from these sites will only consist of visual ratings of turf quality, and other data the superintendent may wish to collect.

Table 1. Bermudagrass cultivars/ecotypes planted at Auburn University test site.

Cultivar or ecotype	Location/supplier	Type
Tifdwarf	Mobile #9 green, AL	ecotype
Tifdwarf†	Mobile #10 green, AL	ecotype
Tifgreen†	GA experiment station	cultivar
Tifdwarf†	GA experiment station	cultivar
Tifdwarf†	Lakewood C.C., LA	ecotype
Tifdwarf	Texas	ecotype
Tifdwarf	Turf industry check	cultivar
T596	GA experiment station	cultivar
‡TW72†	GA experiment station	cultivar
Tifdwarf	Gulfshores, AL	ecotype
2747-OK	Oklahoma State	C. transvaalensis
2352-OK	Oklahoma State	C. transvaalensis

† selected grasses planted at the 3 participating golf course sites.

Additional grasses tested at the 3 participating golf course sites:

Champion	Coastal turf	cultivar
MS Supreme	Mississippi State	cultivar
FloraDwarf	Florida	cultivar

‡ All data concerning TW72 not available for general release - confidential until patent is obtained.

Because of mismanagement of the plots extremely heavy thatch had developed on the putting greens (Table 2). Thus, in May, 1996 every plot was stripped as sod, and the grasses were allowed to regrow. Heavy topdressing was used to smooth the green, and spot applications of topdressing were applied to fill uneven spots that had developed in the USGA green. All additional management practices are provided in Table 3.

Table 2. Thatch depth of bermudagrasses on USGA and native soil greens (April 12, 1996).

Grass	USGA	native
	cm	
TW72	4.8 (0.1)†	4.5 (0.3)
Gulfshores	5.1 (0.2)	4.5 (0.2)
Mobile #9	4.9 (0.2)	4.3 (0.1)
Mobile #10	5.0 (0.4)	4.2 (0.2)
Lakewood	4.7 (0.2)	4.2 (0.2)
Texas	4.5 (0.4)	4.1 (0.2)
Tifdwarf	4.5 (0.3)	4.1 (0.3)
T596	4.4 (0.3)	3.9 (0.3)
Industry check	4.7 (0.3)	4.1 (0.2)
Tifgreen	5.0 (0.4)	3.8 (0.2)
OK 2747	4.5 (0.4)	3.5 (0.3)
OK 2362	4.5 (0.3)	3.4 (0.3)

† numbers in parentheses represent standard deviation about the mean.

Table 3. Management practices associated with USGA and native soil putting greens.

June 20, 1996	Aerify and topdress each green 2 lbs N/1000 ft^2 in June
July, 1996	2.0 lbs N/1000 ft^2
August, 1996	2.0 lbs N/1000 ft^2
September, 1996	1.0 lb N/1000 ft^2
October, 1996	Verticut and overseed (10 lbs Poa trivialis 'Sabre'/1000 ft^2) 1.0 lb N/1000 ft^2

Plots were mowed June-October at 1/8 or 3/16-inch 6 days out of 7. Due to severe scalping of turf plots receiving 1/8 mowing height were double cut for 4 weeks in late August and early September.

Data collection included: 1) mole cricket evaluation on Nov 21, 1995 (no significant difference in feeding due to grass type found), 2) quality ratings on Nov 23, 1995, May 31, 1996, July 12, 1996 and Sept 18, 1996, 3) overseeding quality rating on March 26, 1996, 4) seedhead production rating on July 12, 1996, 5) spring greenup rating on March 16, 1996, and, 6) morning and afternoon stimpmeter readings on June 28, 1996 and Sept 19, 1996.

Data collected before mowing height variables were imposed:

Green type (USGA or native) did not affect grass quality on Nov 23 or May 31, although overseeding quality, thatch production and spring greenup were all affected by the type of putting green. When averaged over both putting greens only the Mobile #10 grass consistently rated at the bottom in quality (Table 4).

Table 4. Quality ratings of bermudagrass cultivars/ecotypes, averaged over putting green type.

Grass	Nov 23, 1996	May 31, 1996
Tifdwarf	7.9 a†	4.5 c
Mobile #9	7.8 a	5.0 ab
Gulfshores	7.5 ab	3.9 c
Industry check	7.5 ab	4.5 abc
Lakewood	7.4 ab	4.0 c
Tifgreen	7.4 ab	4.4 bc
TW72	7.3 abc	4.9 ab
T596	7.3 abc	4.9 ab
Texas	7.0 bcd	5.1 a
OK2747	6.9 bcd	4.1 c
OK 2352	6.6 cd	3.9 c
Mobile #10	6.5 d	1.5 d

10: highest quality

† numbers within each date followed by the same letter are not significantly different at $\alpha = 0.05$.

The Mobile #10 grass suffered from winterkill, and low ratings reflect the patchiness of the turf as a result of that winterkill. Interestingly, the Mobile #10 grass is always the darkest green grass (Table 5), and it also has a very fine texture. This grass always scores highest in spring greenup ratings (significantly higher than any other grass), usually followed by the two *transvaalensis* selections. Unfortunately, the Mobile #10 grass produces many seedheads, a characteristics which renders it undesirable as a putting green grass. However, it might show promise as breeding stock for future crosses.

Table 5. Spring greenup of bermudagrass as affected by green type.

Grass	USGA	native
	greenup rating	
Tifdwarf	3.8 (0.5)	3.5 (0.6)
Mobile #9	3.5 (0.6)	3.5 (0.6
Gulfshores	3.5 (0.6)	3.3 (0.5)
Industry check	3.5 (0.6)	3.5 (0.6)
Lakewood	3.3 (0.5)	3.5 (0.6)
Tifgreen	3.3 (0.5)	3.3 (0.5)
TW72	3.0 (0.0)	3.5 (0.6)
T596	3.8 (0.5)	3.3 (0.5)
Texas	3.5 (0.6)	3.8 (0.5)
OK2747	3.8 (0.5)	6.0 (1.6)
OK 2352	5.0 (1.8)	3.5 (0.6)
Mobile #10	6.6 (0.5)	6.3 (0.3)

10: greenest

Data collected after mowing height variables were imposed:

Stimpmeter readings

Except for morning readings on June 28, 1996, stimpmeter readings were significantly affected by mowing height. When mowing height did affect stimp readings they were always lower in grasses mowed at the 3/16-inch height. Average stimp distances for the 1/8 inch mowing height were 6.6 feet on June 28 (am and pm) and 8.0 (am) and 8.3 (pm) on September 19. Average stimp distances for the 3/16 inch mowing height were 6.5 (am) and 6.3 (pm) feet on June 28 and 7.2 (am) and 7.4 (pm) on September 19.

Morning and afternoon stimpmeter readings were conducted to gain a sense of the growth rates of the grasses. In some cases, however, the stimp reading increased or did not change. Other factors such as fluctuating soil moisture, which would affect green firmness, probably created such results.

Only one set of stimpmeter readings (June 29, am) indicated a significant mowing height by grass type interaction. At all other reading times both the main effects of grass and mowing height affected stimpmeter readings. In general, the Mobile #10, TW72 and Lakewood grasses had the fastest stimpmeter readings. Readings from the Mobile #10 grass, however, were a result of largely bare turf, and not quality cover.

Quality

There was no grass type by mowing height interaction in the July 12 or Sept. 18 quality ratings. Both mowing height and grass type affected quality of the turf. Ratings were consistently higher on the USGA putting green than the native soil putting green. Three grasses that all received significantly low quality ratings were OK2747, OK2352 and Mobile #10. Grasses receiving consistently high quality ratings were TW72 and the Mobile #9 ecotype. These grasses also received high scores when mowed at 1/8 - inch, a mowing height which greatly decreased turf quality of many of the grasses, especially Tifgreen. Quality ratings of each grass increased as the mowing height increased. Average quality rating for grasses grown on the USGA green was 7.3, as compared to a quality rating of 6.6 on the native soil green.

Table 6. Quality ratings on July 12 as affected by green type, averaged over mowing height.

Grass	July 12	
	USGA	native
Mobile #9	8.5 a	8.5 ab
TW72	8.3 a	9.0 a
T596	8.0 a	8.1 abc
Texas	7.8 a	7.9 bcd
Industry check	7.6 a	8.1 abc
Tifdwarf	7.6 a	8.1 abc
Gulfshores	6.8 b	8.1 abc
Tifgreen	6.8 b	7.1 d
Lakewood	6.3 bc	7.3 cd
OK2747	5.5 cd	6.1 e
OK2352	5.4 d	5.0 f
Mobile #10	5.4 d	3.9 g

1: poor
9: best

Seedhead Production

The grass ecotypes Lakewood and Mobile #10 produced the most seedheads, with approximately 30% of the grass producing seedheads. The only other grasses that produced seedheads were Tifgreen, Tifdwarf, the Industry Check of Tifdwarf, and T596, which produced 22, 15, 12 and 12% seedheads, respectively. All remaining

grasses did not produce seedheads.

Conclusions

1. Variants of Tifdwarf show differences in phenotypic behavior.

2. A mowing height of 1/8-inch created poor turf quality in many of the grasses. In almost every grass it was necessary to utilize intensive management (double mowing, hand topdressing of spots) to maintain any turf quality.

3. A 1/8-inch mowing height maintained with 6 out of 7 days mowing often created scalped turf.

4. The cultivar TW72 shows promise as a putting green grass for the southeastern United States.

5. The ecotypes Lakewood and Mobile #9 should continue to be tested for their ability to become a bermudagrass cultivar for putting greens.

6. Other ecotypes, especially Mobile #10, might have limited use as selections for breeding programs with *transvaalensis* crosses.

Future Research

1. A study has been initiated to determined the effect of herbicide application of the bermudagrass cultivar and ecotypes. Preliminary ratings indicate the grasses respond quite differently.

2. Spring data collection will also include measurements of node number/length of stolon and shoot density/area.

3. It is anticipated that the 3 worst performing grasses will be eliminated in early spring, and replaced with the three grasses MS Supreme, FloraDwarf and Champion, if the breeders agree to this test.

Table A1. Turf quality of Tifdwarf and TifEagle bermudagrass mowed at 6 mm (1/4 inch) at Tifton, Georgia.

	Quality*									
		1991 test**			1992 test			1994 test		1995 test	
	1992***	1993	1994	1995	1993	1994	1995	1995	1996	1995	1996
Tifdwarf	7.6	7.8	8.2	8.3	8.4	8.0	8.3	8.4	6.3	7.5	6.7
TifEagle	7.9	8.6	8.8	9.0	8.4	8.1	7.9	8.9	8.3	8.3	8.3
5% LSD	0.4	0.4	0.4	0.5	0.5	0.6	0.8	0.9	0.7	0.9	0.8

* - Ratings: 1 = poor, 9 = best
** - Year planted
*** - Mean of yearly ratings

Table A2. Turf quality ratings on Tifdwarf and TifEagle bermudagrass mowed at 3(*), 4(**), or 5(***) mm.

	Turf Quality				
	The Landings - Savannah, GA		West Palm Beach	Hobe Sound, FL	Overall
	Oakridge(*)[1]	Marshwood(*)[2]	Banyan GC(**)[3]	Jupiter Island GC(***)[4]	Mean
Tifdwarf	5.2	6.0	4.3	7.5 ± 0.5	5.4
TifEagle	8.6	8.5	7.5	9.0 ± 0.5	8.3
	0.005	0.005	0.007		0.0001

[1]Established practice green on 7-1-84. Mean of 1995 and 1996 ratings.
[2]Established nursery green on 5-4-94. Mean of 1995 ratings.
[3]Established practice green on 3-14-94. Mean of 1995 and 1996 ratings.
[4]Established practice green on 9-15-95. Mean of 1996 ratings (one rating) (Mean ± SE).

Ratings: 1 = poor, 9 = best.

Table A3. Mean turf ratings of Tifdwarf, Tifgreen and TifEagle bermudagrass mowed at 3(*), approximately 4(**) and 5(***) mm height.

	Pinehurst, NC *4 Course(***)[1]		Ft. Lauderdale, FL (**)[2]		Memphis, TN	Auburn Univ.	
	Density	Quality	1994	1995	Memphis CC(*)[3]	USGA soil	Native soil
Tifdwarf	7.5	7.0	6.3	6.3	4.0 ± 1.0	7.6	8.1
TifEagle	8.0	8.0	6.0	8.3	8.0 ± 0.0	8.3	9.0
5% LSD	1.5	0.8	NS	2.1		NS	NS

[1]Planted nursery green on 6-28-93. Mean of 1994 and 1995.
[2]Planted plots in 1993.
[3]Planted 5-13-96. 1996 ratings. Mean ± SE. Control cultivar is Tifgreen.
[4]Renovated plots in 1996. 1996 ratings. 3 to 4.7 mm mowing height.

Ratings: 1 = poor, 9 = best.