

APPLICATION FOR APPROVAL OF  X  CULTIVARS       ASSOCIATE CULTIVARS

1. Crop: ~~Centipede grass~~
2. Experimental no. or name: TC312 *Zif Pl. n*
3. Pedigree and history: Common centipede grass was recurrently irradiated with 12 Kr Cobalt-60 gamma radiation for 3 generations beginning in 1977. In each generation, 1500 plants were spaced on .3 m centers in isolation and allowed to interpollinate. Seeds were bulk harvested from all plants in the plot and re-irradiated for the next generation. 4500 plants from the 3rd cycle were space-planted on .3 m centers in May, 1980 at Blairsville, GA on a Congaree Clay Loam and became well-established. No winter-kill was observed from the 1980-81 winter, probably because the plot was not mowed. In 1981, the plot was mowed monthly at 2 inches. About 30% of the plants survived the 1981-82 winter (-23°C). Another 2300 plants from the 5th cycle of irradiation were planted in May, 1983 adjacent to the 1980 Blairsville planting. TC312 is bulk harvested seed from the 1980 and 1983 planted plots that survived a low of -28°C during the 1984-85 winter.
4. Description: TC312 appears to have quality, color and greenup characteristics similar to common under favorable growing conditions (Tables 1-4). TC312 grew more rapidly, showed more vigor and had better quality than common on a soil Cecil Sandy Clay Loam of pH = 4.3 (Tables 5 and 6). Growth was reduced 5% for TC312 on a soil with pH = 4.3 compared to pH = 5.2 while growth was reduced 35% for common on the same soils. TC312 produces more stolons that grow faster and have more leaves than does common (Table 7). On 6-26-86, 500 plants of each TC312, common and Tennessee Tuff were each transplanted to 6 x 41 feet plots adjacent to the Mountain Station Headquarters and became well-established. A 5-23-87 rating showed that 95, 70 and 20% of the plants of TC312, common and Tennessee Turf, respectively survived the 1986-87 winter (-14°C). In 1993, we produced 9.6 lbs. of seed on a 3575 sq. ft. plot that was established from seed in June, 1992.
5. Station(s) where developed: Forage and Turf, Agricultural Research Service, USDA, and the Georgia Coastal Plain Experiment Station, University of Georgia, College of Agriculture, Tifton, Georgia.
6. Participating scientist(s): Wayne Hanna, Jim Dobson, Ronny Duncan, Dennis Thompson, Ray Dickens (AL) and Joel Barber (OK).
7. In what respect is the new cultivar superior to the cultivar now in use? or reasons for proposing release as an associate cultivar. TC312 makes available the first seed-propagated commercial cultivar with a known pedigree. The availability of a seed-propagated, named cultivar will enhance the use of this turfgrass species across the south. It performed as well as 'common' in Georgia, Alabama and Oklahoma (states where tested). Preliminary data indicates that TC312 may have more cold tolerance and acid soil tolerance than common but more testing is needed.
8. Method of propagation: Seed
9. Amount of breeder seed stocks available (if applicable): 12 lbs.
10. Amount of foundation seed stocks available (if applicable): NA

1. Seed production  
2. Sod production  
Went hardness - ptt

11. Amount of cutting or bud material available for vegetatively propagated material for nursery distribution (if applicable): NA
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 cultivar. ~~Tiff~~ <sup>Shall</sup> Tiff 312
14. Name approved by plant cultivar and germplasm release committee.
15. Form of intellectual property protection: Plant Variety Protection
16. Is a royalty assessment recommended:  Yes  No

RECOMMENDED BY:

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|---|---|
| A. <u><i>W. K. ...</i></u><br>Originating Scientist                                   | B. <u><i>E. Ford ...</i></u><br>Department Research Leader  |
| C. <u><i>David E. Kissel</i></u><br>Department Head                                   | D. <u><i>David E. Kissel</i></u><br>Chairperson, GAES Plant Cultivar<br>and Germplasm Release Committee |
| E. <u><i>Dale A. Buchanan</i></u><br>Associate Director of the<br>Appropriate Station |   |

APPROVED:

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Director of Experiment Stations

Table 1. 1991 ratings<sup>1</sup> on centipedegrass cultivars planted on 6-8-88 at Tifton, GA<sup>2</sup>.

	Quality						Greenup		Color			
	5/31		8/14		9/24		3/28		5/31		11/5	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Common	7.0	8.3	8.0	9.0	7.0	6.7	3.0	1.7	3.0	3.7	3.7	3.3
TC312	7.0	9.0	7.7	8.3	6.0	6.0	2.3	2.3	3.0	4.0	3.7	3.0
LSD (0.05)	1.4	0.7	0.8	0.7	2.8	2.5	1.4	1.5	1.0	0.7	0.8	1.4

<sup>1</sup>Greenup: 1 = brown, 5 = green; Quality: 1 = poor, 9 = best; Color: 1 = brown, 5 = green.

<sup>2</sup>Experiment had 3 replications of 11.0 x 12.6 ft. plots. Test received 500 lbs/A 5-10-15 in March of each year. Plots were irrigated to prevent extreme stress. Each plot was divided to receive a total of 1 lb. N (low) or 3 lbs. N (high) per 1000 sq. feet total each year. Nitrogen as ammonium nitrate was applied in June and August of each year. Test had 8 entries.

Table 2. 1992 ratings<sup>1</sup> on centipedegrass cultivars planted on 6-8-88 at Tifton, GA<sup>2</sup>.

	Quality								Color					
	5/1		6/18		8/4		9/1		9/25		11/23		11/23	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Common	7.7	7.7	8.3	7.3	7.7	7.3	8.0	8.7	7.3	8.3	8.0	8.0	3.0	3.0
TC312	7.0	6.0	8.0	7.0	7.3	6.7	8.0	7.7	6.7	7.0	7.7	7.0	3.3	3.3
LSD(0.05)	1.3	1.5	1.5	2.0	1.6	2.2	0.8	1.6	1.3	3.4	1.2	2.3	0.5	0.5

<sup>1</sup>Quality: 1 = poor, 9 = best; Color: 1 = brown, 5 = green.

<sup>2</sup>Experiment had 3 replications of 11.0 x 12.6 ft. plots. Test received 500 lbs/A 5-10-15 in March of each year. Plots were irrigated to prevent extreme stress. Each plot was divided to receive a total of 1 lb. N (low) or 3 lbs. N (high) per 1000 sq. feet total each year. Nitrogen as ammonium nitrate was applied in June and August of each year. Test had 8 entries.

Table 3. 1993 ratings<sup>1</sup> on centipedegrass cultivars planted on 6-8-88 at Tifton, GA<sup>2</sup>.

	Greenup		Quality						Color			
	3/30		6/9		7/16		9/16		10/19		10/19	
	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High
Common	2.0	2.0	5.5	8.0	7.5	8.5	8.5	9.0	8.0	8.5	4.0	5.0
TC312	2.0	2.0	5.5	7.5	8.0	8.5	8.0	8.0	7.0	7.5	4.0	5.0
LSD (0.05)	1.3	2.0	2.5	2.8	3.8	4.4	3.4	4.5	3.4	4.8	0.9	2.1

<sup>1</sup>Greenup: 1 = brown, 5 = green; Quality: 1 = poor, 9 = best; Color: 1 = brown, 5 = green.

<sup>2</sup>Experiment had 3 replications of 11.0 x 12.6 ft. plots. Test received 500 lbs/A 5-10-15 in March of each year. Plots were irrigated to prevent extreme stress. Each plot was divided to receive a total of 1 lb. N (low) or 3 lbs. N (high) per 1000 sq. feet total each year. Nitrogen as ammonium nitrate was applied in June and August of each year. Test had 8 entries.

Table 4. Observations on centipedegrass cultivars in Alabama and Oklahoma

	Alabama <sup>1</sup>		Color Retention 10/23/89	Oklahoma <sup>2</sup>	
	1991 Quality			Quality	
	7/15	9/15		6/22/90	7/24/90
Oaklawn	7.9	8.0	3	6	6
Tenn. Hardy	7.1	8.0	1	4	5
Common	7.5	7.9	3	6	6
TC312	7.5	8.0	4	6	6
5% LSD	0.6	0.2			

<sup>1</sup>Auburn, Alabama: Est. 7-19-88 by Ray Dickens, Plots = 5 x 10 feet, 4 replications.

<sup>2</sup>Stillwater, Oklahoma: Est. 6-30-89 by Joel Barber, Plots = single, 10 x 20 feet.

Table 5. 1990 ratings on centipedegrass growing on low (4.3) and high (5.2) pH soils at Griffin, GA<sup>1</sup>. (Test conducted by Ronny Duncan).

Cultivar	Plant Diameter (cm)		Growth <sup>1</sup> reduction %	Radius cm		Growth <sup>1</sup> reduction %
	5/4			8/15		
	Low	High		Low	High	
Common	58	65	11	44	64	31
TC312	99	88	0	85	79	0
LSD (0.05)	17	30		30	48	

<sup>1</sup>Planted 6-inch plugs on 5-31-89 in center of 8 x 9 ft. plots. Two replications of each entry. Test consisted of 5 centipedegrass entries.

<sup>1</sup>Growth reduction due to low soil pH.

Table 6. 1991 ratings<sup>1</sup> on centipede grass growing on low (4.3) and high (5.2) pH soils at Griffin, GA<sup>2</sup>. (Test conducted by Ronny Duncan).

Cultivar	Plant Diameter (cm)		Growth <sup>1</sup> reduction %	Radius cm		Growth <sup>1</sup> reduction %	Quality		Vigor				
	Low	High		5/8	8/15		Low	High	5/8	8/15	Low	High	
Common	124	140	9	65	100	35	8.0	6.0	6.5	6.0	6.5	6.5	6.5
TC312	170	174	2	105	110	5	8.0	6.5	8.0	6.5	8.0	6.5	6.5
LSD (0.05)	52	76		15	60		2.5	3.4	1.9	3.2	2.1	2.7	2.7

<sup>1</sup>Quality: 1 = poor, 9 = best; Vigor: 1 = dead, 9 = best

<sup>2</sup>Planted 6-inch plugs on 5-31-89 in center of 8 x 9 ft. plots. Two replications of each entry. Test consisted of 5 centipede grass entries.

<sup>3</sup>Growth reduction due to low soil pH.

Table 7. Morphological characteristics<sup>1</sup> of centipedegrass cultivars grown in the greenhouse during 1993-94.

	Means		LSD (0.05)
	Common	TC312	
Total stolons	7.9	9.2	0.9
Total stolons longer than 5 cm	1.5	2.1	0.5
Length of longest stolon (cm)	12.2	14.4	2.4
Number of leaves on longest stolon	4.8	5.4	0.6
Total stolon length per plant (cm)	37.6	46.4	7.0
Total length of stolons 5.0 cm or longer (cm)	35.9	43.1	7.1
Length last elongated internode (cm)	3.5	3.5	0.4
Leaf length at the last elongated internode (cm)	7.4	7.2	1.2
Leaf width at the last elongated internode (mm)	6.1	5.9	0.4

<sup>1</sup>Transplanted 2.5 cm seedlings to 10 cm clay pots spaced 0.3 m apart in the greenhouse on 11-30-93. Greenhouse was maintained at 32°C ± 3. Seedlings were fertilized and watered to maintain healthy plants. Measurements made 1-11-94. Each mean represents measurements on 72 plants (Test had 18 replications and 4 plants per replication).