



AU Centennial A New Dwarf Centipedegrass



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Information contained herein is available to all persons without regard to race, color, sex, or national origin.

AU Centennial A New Dwarf Centipedegrass

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INTRODUCTION

CENTIPEDEGRASS (*Ermochloa ophiuroides* (Munro) Hack.) is a popular warm season turfgrass in much of the South. Its advantages over other turfgrasses include reduced mowing frequency, lower fertilizer requirements, dense sod, and fewer weed problems. However, centipedegrass is far from perfect. It spreads slowly when sprigged into new lawns; its color (both winter and summer) is often less than desirable; it is a sporadic seed producer; it is prone to suffer stand decline; and it is often quite coarse in texture.

While traditional breeding techniques have been used successfully in the improvement of many other turf species, little progress has been made through traditional techniques in centipedegrass improvement. This has been largely attributed to the relative scarcity of natural genetic variation in this species. Therefore, a mutation breeding program was initiated at the Alabama Agricultural Experiment Station, in 1976. The objectives of this program were to create new sources of genetic variation and to utilize them in the development of improved centipedegrass cultivars.

DEVELOPMENT OF AU CENTENNIAL CENTIPEDEGRASS

The centipedegrass cultivar AU Centennial (previously reported as AC-17) is a vegetative increase of a single plant selected from the mutation breeding program initiated in 1976. Common centipedegrass

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seeds were irradiated with ^{60}Co at 30 or 40 KR. Approximately 8,000 seedlings were generated from these seeds and were maintained in the greenhouse in flats for 4 months. At that time, 95 plants were selected on the basis of turf potential, vigor, and morphological differentiation from common centipedegrass to establish a spaced plant nursery.

In 1979, 44 individual plants were selected on the same basis as described from the 95 plants. These were sprigged into 3 x 5-foot plots in a randomized complete block design with three replications at the Auburn University Turfgrass Research Area, and in 2 x 4-foot plots in a randomized complete block design with three replications at the Gulf Coast Substation, Fairhope, Alabama, in 1980. In 1983, AU Centennial was selected from these individuals as having the most desirable turf characteristics.

Turf Quality

AU Centennial's uniqueness is due in large part to its dwarf characteristics, table 1. Although its leaves are approximately the same length and width as common centipedegrass where the two varieties are growing in pots under greenhouse conditions, mowed turf of AU Centennial has a significantly finer texture, table 2. The shorter internode length of AU Centennial makes a much denser and lower growing sod and seedheads it produces are much shorter and less objectionable in appearance than other cultivars.

Turf quality, as measured by subjective visual estimates of quality parameters, was consistently high for AU Centennial, table 2. The variety was also considerably lower growing. Spring greenup occurred as rapidly for AU Centennial as for the other cultivars, and its color was as good as, or better than, other cultivars regardless of season.

TABLE 1. MORPHOLOGICAL CHARACTERISTICS OF CENTIPEDEGRASS

Selection	Blade length ¹	Blade width ²	Internode length ³	Seedhead height ⁴
	<i>In.</i>	<i>In.</i>	<i>In.</i>	<i>In.</i>
AU Centennial	1.0 a	0.16	0.05	4.2
Common	1.2 a	0.16	0.08	7.0
Oklawn	---	---	---	7.4

*Means followed by the same letter are not significantly different at $P=0.05$ using Duncan's New Multiple Range Test.

¹Greenhouse measurements on the fourth blade from the tip of the stolon at its widest point.

²Greenhouse measurements of the fourth blade from the tip of the stolon.

³Greenhouse measurements on the fourth internode from the tip of the stolon.

⁴Field measurements at Auburn, Alabama. Height was recorded as the distance from the ground to the tip of the seedhead.

TABLE 2. TURF QUALITY CHARACTERISTICS OF CENTIPEDEGRASS MAINTAINED AS TURF AT FAIRHOPE, ALABAMA

Selection	Texture ¹	Growth habit ²	Spring green up ³	Color ⁴		Dormant winter color ⁵
				Spring	Summer	
AU Centennial	7.3 a*	8.3 a	7.3 a	3.7 a	4.7 a	1.7 b
Common	5.3 b	5.0 b	8.0 a	3.3 a	4.7 a	3.7 b
Oklawn	4.0 b	3.0 b	8.3 a	1.7 b	3.7 a	7.3 a

*Means followed by the same letter are not significantly different at P = 0.05 using Duncan's New Multiple Range Test.

¹1-10 with 10 = finest texture.

²1-10 with 10 = most dwarf.

³1-10 with 91-100 percent green cover.

⁴1-10 with 10 = dark green, 5 = acceptable, 1 = chlorotic.

⁵1-10 with 10 = dark brown.

Cold Tolerance

Cold tolerance was evaluated in the laboratory by subjecting sprigs from cold hardened plants to decreasing temperatures in a growth chamber. Temperatures were lowered 2 degrees per hour to 21°, 19°, or 16°F. The sprigs were then planted in greenhouse flats and evaluated for percent survival after 21 days. AU Centennial showed equivalent cold tolerance to Oklawn, a cold hardy variety, at 21°F, table 3. At 19°F, AU Centennial exhibited considerably better survival than either common or Oklawn. With temperatures of 16°F, survival for all three cultivars was poor. Field observations at Auburn, Alabama, have also indicated good cold tolerance.

TABLE 3. EFFECTS OF COLD TEMPERATURES EXPOSURES ON PERCENT SURVIVAL OF CENTIPEDEGRASS SELECTIONS

Selection	Survival, by exposure temperatures		
	21°F	19°F	16°F
	<i>Pct.</i>	<i>Pct.</i>	<i>Pct.</i>
AU Centennial	81 a*	52 a	7 a
Common	42 b	20 b	5 a
Oklawn	72 a	27 b	0 b

REPRODUCTIVE CHARACTERISTICS

AU Centennial produces fewer seedheads and fewer seed per head than the other centipedegrasses, table 4. The open pollinated seed produced by AU Centennial are largely sterile. Therefore, in spite of a slower spread rate, vegetative propagation of this new mutant appears the only method for increase and distribution. During sod increase, rigid control of seedheads is necessary to prevent an

TABLE 4. REPRODUCTIVE CHARACTERISTICS OF CENTIPEDEGRASS MAINTAINED AT AUBURN, ALABAMA

Selection	Spread rate ¹	Seedheads/ sq. yd.	Spikelets/ seedhead	Seeds/ seedhead	Fertility
		No.	No.	No.	Pct.
AU Centennial	2.3 b*	1,160 ab ²	12.8 b	0.8 b	5.8 b
Common	8.7 a	2,147 bc	---	---	---
Oklawn	7.7 a	3,237 a	16.7	7.6 a	45.5 a

*Means followed by the same letter are not significantly different at P = 0.05 using Duncan's New Multiple Range Test.

¹1-10 with 10 = fastest spread rate.

²Although 1,160 seedheads per sq yd. are shown for AU Centennial, these were not judged to be detrimental to turf quality because of their small size.

occasional fertile seed from becoming a possible source of contamination in the sod.

RELEASE AND DISTRIBUTION OF AU CENTENNIAL

AU Centennial centipede grass was officially released by the Alabama Agricultural Experiment Station of Auburn University in 1983, the Experiment Station's centennial year. Foundation class sod is being produced by the Alabama Crop Improvement Association and will be initially made available to sod growers in the following fashion:

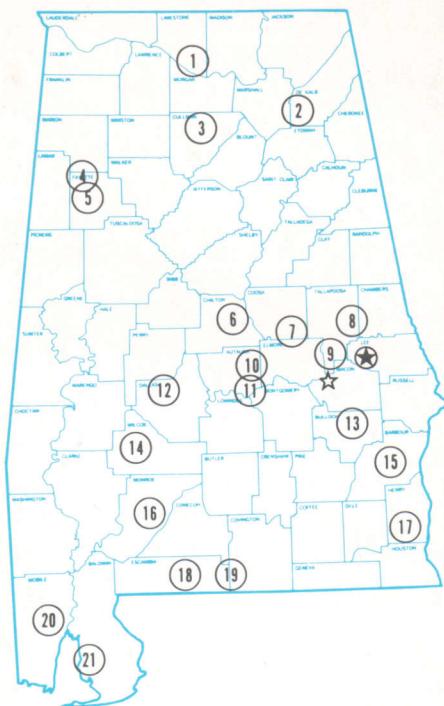
1. All sales of Foundation class sod will be made by the Alabama Crop Improvement Association (ACIA).
2. Initial sod sales will be by public auction, to be held at the ACIA building in Auburn, tentatively in mid-summer, 1985.
3. Six 200-square-yard lots will tentatively be offered at that time.
4. No more than two lots will be sold to any one firm, and purchasers must be established Alabama sod producers.
5. Formal notification of the auction will be made at least 30 days before it takes place.

This system of distribution is being utilized to ensure that sufficient sod is provided to individuals to allow rapid increase and movement into the retail market place. It is also an earnest attempt to allow all Alabama sod producers an equal opportunity to participate in the increase of this new cultivar.

Alabama's Agricultural Experiment Station System

AUBURN UNIVERSITY

With an agricultural research unit in every major soil area, Auburn University serves the needs of field crop, livestock, forestry, and horticultural producers in each region in Alabama. Every citizen of the State has a stake in this research program, since any advantage from new and more economical ways of producing and handling farm products directly benefits the consuming public.



Research Unit Identification

- ★ Main Agricultural Experiment Station, Auburn.
- ☆ E. V. Smith Research Center, Shorter.

1. Tennessee Valley Substation, Belle Mina.
2. Sand Mountain Substation, Crossville.
3. North Alabama Horticulture Substation, Cullman.
4. Upper Coastal Plain Substation, Winfield.
5. Forestry Unit, Fayette County.
6. Chilton Area Horticulture Substation, Clanton.
7. Forestry Unit, Coosa County.
8. Piedmont Substation, Camp Hill.
9. Plant Breeding Unit, Tallassee.
10. Forestry Unit, Autauga County.
11. Prattville Experiment Field, Prattville.
12. Black Belt Substation, Marion Junction.
13. The Turnipseed-Ikenberry Place, Union Springs.
14. Lower Coastal Plain Substation, Camden.
15. Forestry Unit, Barbour County.
16. Monroeville Experiment Field, Monroeville.
17. Wiregrass Substation, Headland.
18. Brewton Experiment Field, Brewton.
19. Solon Dixon Forestry Education Center, Covington and Escambia counties.
20. Ornamental Horticulture Substation, Spring Hill.
21. Gulf Coast Substation, Fairhope.