PUBLICATIONS
1992

Forage Research in Texas, 1992

Evaluation of Bluestem Plant Introductions in Southeast Texas

G. W. Evers

Summary

'Gordo' bluestem (*Dichanthium aristatum*) is used as a hay crop in southeast Texas but has poor spring growth and lacks cold tolerance. Gordo bluestem, 7 varieties of warm-season perennial grasses, and 417 plant introductions of the *Bothriochloa* and *Dichanthium* genus were planted in 6-ft rows at the Texas Agricultural Research Station in Angleton and rated for persistence and spring growth. Seven plant introductions (PI) were identified that had superior spring growth to Gordo bluestem.

Introduction

Gordo bluestem is a member of the Old World bluestem complex, which was released in the 1940's by the Soil Conservation Service from their plant introduction nursery at San Antonio, Texas. It is used as a hay crop on the poorly drained clay soils in southeast Texas. Dallisgrass (*Paspalum dilatatum* Poir.) and common bermudagrass [*Cynodon dactylon* (L.) Pers.] are also adapted to these soils but are relatively low yielding per harvest because of their low growth habit.

Keywords: bluestems / southeast Texas.

Gordo bluestem has two major limitations. One is poor spring growth. Although it initiates growth in early April, growth rate is slow until June, which delays the first hay cutting until early July. The second problem is limited cold tolerance, which restricts its growing area to south of Interstate Highway 10. The objective of this study was to evaluate Old World bluestem germplasm (*Bothriochloa - Dichanthium*) for early growth and persistence on the poorly drained clay soils in southeast Texas.

Procedure

In April 1988, seed of 417 PI's were obtained from the Southern Region Plant Introduction Station at Experiment, Georgia. The test site was at the Texas Agricultural Research Station at Angleton

on Lake Charles clay. Plant introductions plus Gordo, 'Medio', 'Pretoria 90' (*Dichanthium annulatum* Stapf.), and 'WW Spar' [*Bothriochloa caucasica* (Trin.) C. E. Hubbard] bluestems, 'Kleingrass 75' (*Panicum coloratum* L.), 'Alamo' switchgrass (*Panicum virgatum* L.), buffelgrass, PI 409704 (*Cenchrus ciliaris* L.), and 'Bell' rhodesgrass (*Chloris gayana* Kunth.) were hand-seeded in 6-ft rows on a prepared seedbed from June 6 to 10, 1988. Fifty lb phosphorus/A were applied at planting. The first significant rainfall after planting occurred on June 23. Gramoxone (paraquat) was applied at 0.5 lb active ingredient/A on June 28 to control weeds before the planted grasses emerged. Grazon P + D (picloram and 2,4-D) was applied at 1 qt/A on December 19 to control broadleaf weeds and volunteer clover.

On March 27, 1989, 72-40-20 lb/A of nitrogen-phosphorus-potassium (N-P-K), respectively, were applied. Entries were rated (0 = dead; 5 = best growth) for spring growth on May 3 and mowed off on May 5. Summer growth was rated on July 28. Persistence and spring growth were rated again the next year on April 9, 1990.

Results and Discussion

Pretoria 90 bluestem and 59 of the PI's did not survive the first year. The loss of these entries was probably due to their lack of adaptability to poorly drained soils rather than to lack of cold tolerance. Gordo bluestem had a score of 3 for early growth on May 3, 1989, but eight PI's had a score of 5 (Table 1). At the rating for summer growth on July 28, 1989, Gordo bluestem scored a 4. The only entries with a score of 5 were PI's 283191, 300793, and 301940. Kleingrass and seven PI's had the same score as Gordo.

Table 1. Ratings of standard forages and plant introductions grown at Angleton that scored 5 on at least one date.

	..... mo.-day-year		
Entry	5-3-89	7-28-89	4-9-90
Alamo switchgrass	4†	3	5
Bell rhodesgrass	1	3	0
409704 buffelgrass	1	1	0
Selection 75 kleingrass	4	4	3
Gordo bluestem	3	4	2
Medio bluestem	2	2	2
Pretoria 90 bluestem	0	0	0
WW Spar bluestem	3	2	2
PI 215342	5	3	2
PI 283191	5	5	4
PI 300793	5	5	1
PI 300897	5	4	4
PI 301939	5	4	1
PI 301940	5	5	1
PI 302040	5	4	2
PI 380755	5	4	4
PI 219976	4	4	5
PI 300852	3	4	5
PI 300874	4	4	5
PI 301597	4	3	5

† Score 0 = dead; 5 = best growth.

Entries were rated for spring growth again on April 9, 1990, a month earlier than the year before. Gordo bluestem had a score of only 2, which is typical of its poor spring growth. Alamo switchgrass and four PI's had a score of 5. There were 35 additional PI's with a score of 4 that are not listed in Table 1. Of the PI's listed in the table, seven appear to have a distinct advantage in spring growth over Gordo bluestem. These entries need to be compared with Gordo in a small-plot study to determine total forage production and its distribution through the growing season. A list of all PI's tested is available upon request.