The
UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
and
UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
and
NORTH DAKOTA
AGRICULTURAL EXPERIMENT STATION
and
SOUTH DAKOTA
AGRICULTURAL EXPERIMENT STATION

ANNOUNCE THE RELEASE OF SELECTED "NATURAL" GERMPLASM OF

BADLANDS ECOTYPE LITTLE BLUESTEM

The United States Department of Agriculture, Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service); the United States Department of Agriculture, Agricultural Research Service; the North Dakota Agricultural Experiment Station; and the South Dakota Agricultural Experiment Station announce the naming and release of selected natural germplasm of Badlands ecotype little bluestem, *Schizachyrium scoparium* (Michx.) Nash.

This little bluestem selection has been assigned NRCS accession numbers ND-4115 and 9036131, and the Plant Introduction (PI) number is 591813. Badlands ecotype little bluestem has been developed to provide an adapted seed source with a broad genetic base for use in the Northern Great Plains, primarily as a component in range seeding mixtures. Secondary uses include prairie restoration, reduced maintenance plantings, and xeric landscaping.

ORIGIN: Badlands ecotype little bluestem is a composite of 68 accessions (Table 1) selected from an initial evaluation nursery of 588 accessions. All accessions were vegetatively collected in September 1979 from native grasslands in North Dakota, South Dakota, and Minnesota (Tober et al. 1981). Selected plants comprising the Badlands ecotype originated from North Dakota and South Dakota. The intent of the field selection was to obtain a broad genetic base of native plant material from diverse range sites within representative Major Land Resource Areas (USDA 1981). Two to four sites per county were sampled, and six vegetative subsamples were collected at each site. A description of the collection area was documented for each accession. Clonal material of each accession was propagated and transplanted in 1980 to a spaced-plant initial evaluation nursery with a 12-replicate randomized complete block design. The released cultivars Blaze, Camper, Cimarron and Aldous were included as standard checks.

The initial evaluation nursery contained more than 7,000 individual plants and was located at the USDA, Agricultural Research Service, Northern Great Plains Research Laboratory, Mandan, North Dakota. Plant characteristics that were evaluated from 1980-84 included: vigor, leafiness, phenology, lodging, plant size, and disease

resistance. Phenotypic variation in plant size, color, leaf width, and phenology were evident across the planting. Leaf spot disease caused primarily by *Phyllosticta andropogonivora* was identified and found to be widespread in the nursery from 1984-87 (Krupinsky and Tober 1990). Selection was practiced among accessions for resistance to leaf spot disease. The nutritive quality of selected little bluestem clones was documented (Karn and Tober 1990).

The 68 accessions that comprise the genetic base of Badlands ecotype little bluestem originate from plants collected in southwestern North Dakota and western and central South Dakota. The selected plants originated from a broad array of different range sites, including the "badlands" regions of both states. Selected plants were similar in phenology and were rated superior to the nursery average for vigor, leafiness, seed production, and disease resistance (Tober et al. 1984). The goal in plant selection was not to specifically select a few outstanding plants, but to representatively select a diverse group of vigorous little bluestem genotypes that would have a broad genetic base to facilitate adaptation to the harsh sites typical of this species. This extensive genetic variation is desirable when establishing native plantings and range seedings where species longevity and adaptation to the climatic extremes and soil variations of the Northern Great Plains are essential.

Clonal material was propagated from the 68 selected accessions and transplanted in 1984 to an isolated breeder's seed increase nursery arranged in a five-replicate, randomized complete block design. Seed harvested annually from the breeder's seed increase nursery was used to establish a 1-acre Generation 2 (comparable to Foundation) seed production field in 1989.

ECOTYPE DESCRIPTION: Little bluestem is an erect, medium-tall, perennial, warm-season bunchgrass with a deep fibrous root system. Basal portions of stems and leaf sheaths are somewhat flattened and leaves are slightly folded. Leaves become reddish-brown at maturity and mature seeds are fluffy white. Little bluestem reproduces from tillers, short rhizomes and seed. Badlands ecotype little bluestem does not differ significantly from a general plant description of the species; however, plants may be somewhat leafier and have improved seed production and increased overall plant vigor when compared to the typical northern plains ecotype of little bluestem. Variation in plant size, leaf width, and color are considered normal within the population.

Badlands ecotype little bluestem varies in mature height from 25 to 40 inches, depending on the site and plant density. Plant height averages approximately 40 inches in cultivated seed production rows under irrigation at the Bismarck Plant Materials Center. Plant color also varies from a light to dark green with occasional light blue plants. Phenology varies up to 2 weeks within the population. Average first anthesis at Bismarck, North Dakota, is late July, which is about 4 weeks earlier than Blaze or Camper. The average date when the first seed matures at Bismarck is late August.

Little bluestem is a native species widely distributed over the temperate parts of North America, particularly in the more westerly and drier areas of the Great Plains. It is often the dominant species of upland prairie plant communities, particularly on calcareous, sandy or gravelly soils on ridges, steep slopes, or other exposed sites, which provide droughty growing conditions. Associated species include western wheatgrass, green needlegrass, needleandthread, sideoats grama, and blue grama

in the drier mixed grass prairie; and big bluestem, Indiangrass, and switchgrass in the tall grass prairie.

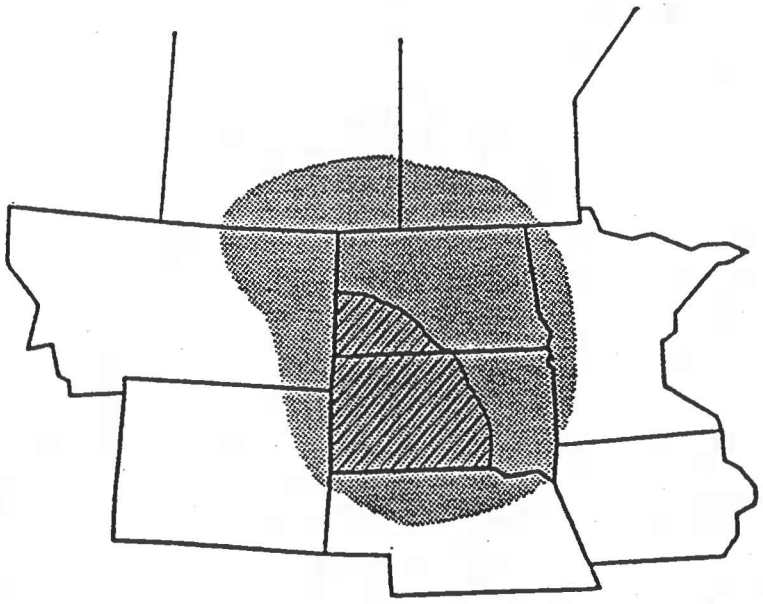
SITE DESCRIPTION: The collection area of the 68 selected plants includes two Major Land Resource Regions; the Northern Great Plains Spring Wheat Region, and the Western Great Plains Range and Irrigated Region. Within these two regions, selected plants originated from the following Major Land Resource Areas: 53C, 54, 55B, 55C, 58C, 58D, 60A, 61, 62, 63A, 63B, 64, 65, and 66.

The climate of the area is temperate with temperature extremes being the normal. Winter temperatures of -40°F may occur in the northern part of this region. Killing frosts often occur in late May. The average annual temperature within this area varies from about 40 to 52°F. More than one-half of the average annual precipitation falls during the growing season. Precipitation in winter is snow. The freeze-free period of this area varies from 80 days at higher elevations in the Black Hills of South Dakota, to 150 days in the sandhills region of south-central South Dakota. The average growing season is approximately 120 to 140 days. Average annual precipitation within the collection area varied from 12 to 23 inches, with an average of 17.5 inches. Elevation varied from 1,250 to 4,440 feet and averaged slightly over 2,100 feet. The average slope on the sites where the plants were collected was about 8 percent and ranged from flat to 30 percent. Ten different range sites were represented, with approximately 80 percent of the plants originating on silty, shallow, thin upland, and sandy range sites. Many of the plants (33 percent) originated from silty range sites.

PLANT PERFORMANCE: Badlands ecotype little bluestem has been compared to Blaze, Camper, Aldous, and Cimarron in initial evaluation trials at the Bismarck Plant Materials Center since 1989. Badlands ecotype was the only entry to produce viable seed every year. Blaze and Camper (originating from Nebraska and Kansas) were approximately 4 weeks later in maturity and generally did not produce viable seed by the end of the growing season. Aldous and Cimarron (originating from Kansas) remained vegetative throughout the growing season and had severe winter injury. Vigor and foliage abundance ratings were comparable for Badlands ecotype, Blaze, and Camper. Vigor and foliage abundance ratings were considerably lower for Aldous and Cimarron because of winter injury.

Limited quantities of Badlands ecotype little bluestem seed were made available for field plantings in 1994. Five sites in North Dakota were selected and planted using native mixtures which included Badlands ecotype little bluestem (Table 2). Seeding rates for little bluestem varied, depending upon the percent desired in the mix. Second year stand ratings averaged fair, even though all five sites had moderate to abundant weed competition. Seedling vigor and adaptation, on the average, were rated good. Density varied from a low of one plant per square yard to a high of seven plants per square yard. The average density was three plants per square yard.

The collection area of Badlands ecotype little bluestem (lined) and the projected area of adaptation (shaded) are indicated on the following map.



MANAGEMENT CONSIDERATIONS: Establishment, seed production, grazing rotations, and other management considerations for Badlands ecotype little bluestem do not differ from that which is recommended for the species. Proper grazing would include removing no more than one-half of the new growth during the grazing season. Forage quality declines with growth stage, dropping rapidly after anthesis occurs. Prescribed burning in late winter or spring will increase seed production and improve forage quality. Without proper grazing or prescribed burning, little bluestem can form dead centers. However, if burned during very dry conditions, the crown of the plants can suffer severe damage (USDA 1995).

Seed can be harvested by combining or stripping. As seed is light, air should be reduced or closed off on most combines. Seed strippers can be used after seeds have reached the "full-fluff" stage, but before shattering occurs. Variable seed maturity is common, even on the same plant.

RELEASE JUSTIFICATION: There are no adapted northern origin sources of little bluestem currently available for range seeding in the Northern Great Plains (Tober and Chamrad 1992). Common seed of northern origin is generally not available commercially. Badlands ecotype little bluestem has been developed to fill this need.

AVAILABILITY OF PLANT MATERIALS: Generation 2 seed, equivalent to Foundation Seed, of Badlands ecotype little bluestem is available from the USDA-NRCS Plant Materials Center, 3308 University Drive, Bismarck, North Dakota 58504-7564. Limited quantities of Generation 3 seed, equivalent to Certified Seed, will be available from commercial vendors beginning in the fall of 1996. Certification is limited to three generations.

PREPARED BY: Dwight A. Tober, Michael J. Knudson, and Nancy K. Jensen, USDA-NRCS Plant Materials Center, 3308 University Drive, Bismarck, North Dakota 58504; and Russell J. Haas, USDA-NRCS, P. O. Box 1458, Bismarck, North Dakota 58502.

REFERENCES:

Karn, J.F. and D.A. Tober. 1990. Nutritive quality of little bluestem clones selected for phenotypic variability. Grass and Forage Science 45:289-294.

Krupinsky, J.M. and D.A. Tober. 1990. Leaf spot disease of little bluestem, big bluestem, and sand bluestem caused by *Phyllosticta andropogonivora*. Plant Disease 74:442-445.

Tober, D.A., E.T. Jacobson, and R.J. Haas. 1981. Vegetative assembly and evaluation of little bluestem for conservation use in the Northern Great Plains. p. 10. *In:* Abstracts SRM 34th Ann. Mtg., Tulsa, OK, Feb 9-13.

Tober, D.A., E.T. Jacobson, and R.J. Haas. 1984. Selection of superior little bluestem ecotypes for conservation use in the Northern Great Plains. No. 198. *In:* Abstracts SRM 37th Ann. Mtg., Rapid City, SD, Feb 12-17.

Tober, D.A. and A.D. Chamrad. 1992. Warm-season grasses in the Northern Great Plains. Rangelands 14:227-230.

USDA Soil Conservation Service. 1981. Land Resource Regions and Major Land Resource Areas of the United States. Agr. Handb. 296. U.S. Gov. Print. Office, Washington, D.C.

USDA Natural Resources Conservation Service. 1995. Hay and pasture management, little bluestem. USDA, NRCS, Columbia, MO.

APPROVALS:

State Conservationist ACTING
United States Department of Agriculture
Natural Resources Conservation Service
Bismarck, North Dakota

3-5-96
Date

State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Huron, South Dakota

3-18-96
Date

Administrator
United States Department of Agriculture
for Agricultural Research Service
Washington, D.C.

APR 15 1996
Date

Director
North Dakota State University
Agricultural Experiment Station
Fargo, North Dakota

3/10/96
Date

Director
South Dakota State University
Agricultural Experiment Station
Brookings, South Dakota

3-22-96
Date

Table 1. Selected plants comprising Badlands ecotype little bluestem.

ACCESSION NUMBER	COUNTY/STATE	ELEVATION (FEET)	MEAN ANNUAL PRECIPITATION (INCHES)	EXPOSURE	SLOPE %	RANGE SITE	MAJOR LAND RESOURCE AREA	LEGAL DESCRIPTION	COLLECTOR
9009593	Emmons, ND	1950	17	N	12	sandy	54	NW1/4NW1/4SW1/4 sec 8, T. 133 N., R. 77 W.	F. Hobbs
9009601	Morton, ND	1800	16	E	15	shallow	54	NE1/4SW1/4NW1/4 sec. 7, T. 134 N., R. 81 W.	L. Lake
9009603	Morton, ND	2120	16	S	7	sandy	54	SW1/4SW1/4SW1/4 sec. 34, T. 140 N., R. 83 W.	L. Lake
9009607	Sioux, ND	____	15	S	8	silty	54	SW1/4NW1/4SE1/4 sec. 17, T. 130 N., R. 81 W.	D. Van Daalen
9009613	Golden Valley, ND	____	14	SW	12	thin upland	54	sec. 16, T. 140 N., R. 104 W.	L. Dolyniuk
9009621	Bowman, ND	2900	12	NE	9	shallow clay	58	SW1/4SW1/4SW1/4 sec. 20 T. 130 N., R. 106 W.	F. Gerth
9009625	Grant, ND	2200	16	SE	1	subirrigated	54	SE1/4NE1/4NW1/4 sec. 6, T. 134 N., R. 86 W.	D. Emch
9009628	Grant, ND	2300	16	SE	20	shallow	54	NW1/4NW1/4NE1/4 sec. 23, T. 136 N., R. 87 W.	D. Emch
9009633	Mercer, ND	1900	16	SE	2	silty	54	NE1/4NE1/4NE1/4 sec. 21, T. 144 N., R. 87 W.	D. Tagestad
9009646	McKenzie, ND	2341	14	N	8	clayey	58	SE1/4SW1/4NE1/4, sec. 9, T. 148 N., R. 103 W.	K. Sullivan
9009647	McKenzie, ND	2550	14	S	8	silty	58	SE1/4SW1/4NE1/4 sec. 14, T. 151 N., R. 100 W.	E. Nordsven
9009871	Kingsbury, SD	1740	20	N	10	thin upland	55	NW1/4SW1/4SW1/4 sec. 16, T. 110 N., R. 56 W.	D. Bohn
9009878	Miner, SD	1570	22	S	3	silty	55	NW1/4/NW1/4NE1/4 sec. 17, T. 108 N., R. 56 W.	D. LaPlant
9009887	Gregory, SD	2216	20	NE	4	sandy	66	NE1/4SW1/4 sec. 5, T. 96 N., R. 71 W.	C. Miller
9009894	Brule, SD	1430	19	SW	9	silty	63	NE1/4NE1/4SW1/4 sec. 11, T. 101 N., R. 71 W.	W. Vander Vorste
9009895	Buffalo, SD	1530	17	W	4	clayey	63	SW1/4SW1/4NW1/4 sec. 29, T. 108 N., R. 72 W.	W. Vander Vorste
9009899	Charles Mix, SD	1300	23	E	10	thin upland	63	SE1/4SE1/4SW1/4 sec. 9, T. 95 N., R. 65 W.	W. Noble K. Hoffman

Table 1. Selected plants comprising Badlands ecotype little bluestem.

ACCESSION NUMBER	COUNTY/STATE	ELEVATION (FEET)	MEAN ANNUAL PRECIPITATION (INCHES)	EXPOSURE	SLOPE %	RANGE SITE	MAJOR LAND RESOURCE AREA	LEGAL DESCRIPTION	COLLECTOR
9009900	Charles Mix, SD	1590	23	SW	8	thin upland	55	SW1/4SW1/4SW1/4 sec. 31, T. 97 N., R. 65 W.	K. Hoffman P. Rolston
9009901	Charles Mix, SD	1540	22	NE	9	silty	55	NW1/4SW1/4NW1/4 sec. 21, T. 97 N., R. 66 W.	W. Noble K. Hoffman
9009902	Douglas, SD	1360	20	S	4	shallow gravel	55	SE1/4NW1/4NW1/4 sec. 18, T. 100 N., R. 66 W.	D. Bowes
9009903	Douglas, SD	1375	21	N	4	silty	55	SE1/4SE1/4SE1/4 sec. 9, T. 98 N., R. 64 W.	D. Bowes
9009906	Davison, SD	1270	20	S	20	thin upland	55	NE1/4NE1/4NW1/4 sec. 25, T. 103 N., R. 60 W.	D. Bolen G. Kruse
9009907	Davison, SD	1350	22	E	6	silty	55	SE1/4SE1/4NW1/4 sec. 16, T. 101 N., R. 60 W.	D. Bolen G. Kruse
9009910	Aurora, SD	1449	20	—	0	silty	55	NW1/4SE1/4SW1/4 sec. 16, T. 103 N., R. 63 W.	G. Kruse C. Gerken
9009924	Jerauld, SD	1800	19	NE	10	thin upland	53	SW1/4SE1/4NE1/4 sec. 13, T. 107 N., R. 65 W.	N. Reff
9009925	Jerauld, SD	1320	20	SW	4	silty	55	SE1/4SW1/4SE1/4 sec. 26, T. 107 N., R. 63 W.	N. Reff
9009926	Sanborn, SD	1310	21	—	3	silty	55	NW1/4NE1/4NW1/4 sec. 1, T. 107 N., R. 60 W.	E. Boschee
9009927	Sanborn, SD	1250	21	—	4	sandy	55	SE1/4SE1/4SW1/4 sec. 16, T. 106 N., R. 61 W.	E. Boschee
9009939	Faulk, SD	1760	17	NE	6	silty	53	SW1/4SE1/4SW1/4 sec. 16, T. 117 N., R. 70 W.	E. Boschee
9009940	Beadle, SD	1345	17	W	2	silty	55	SE1/4NE1/4NW1/4 sec. 27, T. 109 N., R. 63 W.	F. Stroup
9009954	Hand, SD	1530	17	SW	8	silty	55	SE1/4NE1/4NE1/4 sec. 7, T. 114 N., R. 66 W.	L. Rezek
9009955	Spink, SD	1320	19	S	1	sandy	55	NW1/4NW1/4NW1/4 sec. 23, T. 114 N., R. 64 W.	K. Houska
9009957	Spink, SD	1310	19	SW	4	sandy	55	SW1/4SE1/4SW1/4 sec. 15, T. 116 N., R. 65 W.	K. Houska
9009967	Perkins, SD	2675	17	E	6	silty	54	SE1/4NW1/4NW1/4 sec. 34, T. 21 N., R. 10 E.	K. Whipple

Table 1. Selected plants comprising Badlands ecotype little bluestem.

ACCESSION NUMBER	COUNTY/STATE	ELEVATION (FEET)	MEAN ANNUAL PRECIPITATION (INCHES)	EXPOSURE	SLOPE %	RANGE SITE	MAJOR LAND RESOURCE AREA	LEGAL DESCRIPTION	COLLECTOR
9009968	Perkins, SD	2690	17	S	9	sandy	54	NE1/4SE1/4SE1/4 sec. 24, T. 18 N., R. 13 E.	R. Engel
9009969	Perkins, SD	2970	17	S	4	silty	58	SE1/4SE1/4SW1/4NW1/4 sec. 36, T. 13 N., R. 11 E.	K. Wipple
9009974	Ziebach, SD	2100	16	S	3	shallow	63	NW1/4SW1/4NW1/4 sec. 31, T. 12 N., R. 21 E.	M. Davis
9009977	Potter, SD	1990	17	NE	3	silty	53	NW1/4SW1/4NE1/4 sec. 30, T. 119 N., R. 73 W.	C. Olson
9009981	Hyde, SD	1950	14	S	4	silty	53	SE1/4/SE1/4NE1/4 sec. 1, T. 116 N., R. 71 W.	G. Waterson
9009982	Hyde, SD	1670	18	SW	___	silty	53	SE1/4SW1/4SE1/4 sec. 9, T. 114 N., R. 71 W.	G. Waterson L. Kuck
9009984	Lyman, SD	1900	17	NE	8	clayey	63	SE1/4SW1/4NW1/4 sec. 13, T. 107 N., R. 77 W.	F. Fite
9009985	Lyman, SD	1930	17	SW	4	shallow clay	63	NE1/4SW1/4SW1/4 sec. 13, T. 107 N., R. 77 W.	F. Fite
9009987	Lyman, SD	1400	17	NE	4	thin upland	63	NE1/4SW1/4SE1/4 sec. 32, T. 106 N., R. 71 W.	F. Fite
9009991	Corson, SD	2400	16	S	20	shallow	54	NW1/4SE1/4NE1/4 sec. 27, T. 22 N., R. 18 E.	R. Housman
9009992	Todd, SD	2700	18	S	25	shallow	66	SE1/4SE1/4SW1/4 sec. 29, T. 38 N., R. 28 W.	K. Kehrwald
9009994	Todd, SD	2860	17	SW	4	sands	65	SE1/4SE1/4SW1/4 sec. 32, T. 36 N., R. 31 W.	K. Kehrwald
9009999	Haakon, SD	2384	16	E	10	____	63	NW1/4 sec. 35, T. 1 N., R. 20 E.	M. Washechek
9010004	Hughes, SD	1540	17	N	30	thin upland	53	SE1/4SE1/4NE1/4 sec. 11, T. 110 N., R. 77 W.	H. Davis
9010007	Stanley, SD	1760	17	E	11	shallow	63	SE1/4SW1/4NW1/4 sec. 19, T. 5 N., R. 30 E.	D. Tober
9010009	Stanley, SD	2045	17	N	11	shallow	63	SW1/4NE1/4NW1/4 sec. 34, T. 7 N., R. 26 E.	D. Tober
9010010	Walworth, SD	1750	16	N	10	clayey	63	SW1/4SW1/4SE1/4 sec. 5, T. 124 N., R. 79 W.	D. Schapekahm

Table 1. Selected plants comprising Badlands ecotype little bluestem.

ACCESSION NUMBER	COUNTY/STATE	ELEVATION (FEET)	MEAN ANNUAL PRECIPITATION (INCHES)	EXPOSURE	SLOPE %	RANGE SITE	MAJOR LAND RESOURCE AREA	LEGAL DESCRIPTION	COLLECTOR
9010015	Dewey, SD	2150	17	---	15	shallow	54	SE1/4SE1/4SE1/4 sec. 18, T. 16 N., R. 25 E.	M. LaCompte
9010019	Mellette, SD	2500	18	E	15	shallow	64	SW1/4NE1/4SE1/4 sec. 25, T. 40 N., R. 29 W.	D. Steffen
9010023	Tripp, SD	2300	20	SW	12	sands	64	NW1/4NW1/4NW1/4 sec. 18, T. 97 N., R. 76 W.	V. Zutz
9010027	Butte, SD	3050	16	NE	10	shallow	61	NE1/4 sec. 2, T. 8 N., R. 3 E.	C. Logan
9010036	Custer, SD	3360	15	E	3	clayey	60	NW1/4NE1/4SW1/2 sec. 22, T. 3 S., R. 8 E.	K. Stiner
9010040	Fall River, SD	3700	14	SE	2	silty	61	NW1/4NW1/4SE1/4 sec. 1, T. 7 S., R. 5 E.	G. Pilker
9010041	Fall River, SD	3200	14	N	10	sandy	61	SW1/4SE1/4SE1/4 sec. 12, T. 8 S., R. 6 E.	G. Pilker
9010044	Jackson, SD	2300	17	N	15	thin upland	60	SW1/4NE1/4SE1/4 sec. 24, T. 3 S., R. 21 E.	S. Gammon
9010045	Jackson, SD	2430	17	N	4	thin upland	63	NE1/4NE1/4NE1/4 sec. 15, T. 2 S., R. 21 E.	S. Gammon
9010046	Jackson, SD	2390	17	NW	5	shallow to gravel	60	SE1/4NW1/4NE1/4 sec. 1, T. 43 N., R. 35 W.	S. Gammon
9010049	Bennett, SD	3300	18	NE	10	shallow	64	NE1/4NE1/4SE1/4 sec. 4, T. 38 N., R. 38 W.	B. Beeman
9010054	Shannon, SD	3530	17	W	10	sands	65	SE1/4NE1/4SE1/4 sec. 15, T. 35 N., R. 41 W.	E. Simmons
9010056	Pennington, SD	4440	19	S	1	silty	62	SW1/4NW1/4NW1/4, sec. 4, T. 1 S., R. 6 E.	R. March
9010058	Pennington, SD	2750	16	E	5	overflow	60	SE1/4NE1/4NW1/4 sec. 14, T. 2 S., R. 16 E.	L. Stirling
9010062	Lawrence, SD	3760	18	E	4	silty	61	SE1/4SW1/4SE1/4 sec. 34, T. 7 N., R. 4 E.	R. Hoffman
9010064	Meade, SD	2500	14	S	15	shallow	60	SW1/4SE1/4SW1/4 sec. 8, T. 5 N., R. 12 E.	J. Deppe
9010066	Meade, SD	2900	14	N	25	shallow	60	SW1/4SW1/4NW1/4 sec. 21, T. 7 N., R. 13 E.	J. Deppe

Table 2. First year field planting information for Badlands ecotype little bluestem.

MLRA	OFFICE	SEEDING MIXTURE	EVALUATION DATE	ACRES	SEED RATE PLS#/AC	SOIL MOIST	WEED COMP	STAND	SEEDLING VIGOR	PLANTS PER SQ. YD.	ADAPT-ATION
55A	Mohall ND	little bluestem (25%) switchgrass Indiangrass max. sunflower	09/01/94	0.5	0.8	1	7	7	4	1	3
55B	New Rockford ND	little bluestem (1 PLS#/AC) sideoats grama switchgrass blue grama sand bluestem big bluestem	08/09/94	20.0	1.0	1	7	5	3	2	3
55B	Ellendale ND	little bluestem (30%) switchgrass Indiangrass	08/09/94	30.0	5.0	5	5	3	3	2	3
55B	Jamestown ND	little bluestem (17%) western wheatgrass green needlegrass sideoats grama	08/23/94	30.0	2.0	2	5	3	1	7	3
					AVERAGE		6.0	4.5	2.8	3.0	3.0

Rating System

WEED COMPETITION:
- 1=NO WEEDS
- 3=SLIGHT WEEDS
- 5=MODERATE WEEDS
- 7=ABUNDANT WEEDS
- 9=VERY ABUNDANT WEEDS

ALL OTHER
- 1=EXCELLENT
- 3=GOOD
- 5=FAIR
- 7=POOR
- 9=VERY POOR