

Curlew National Grasslands Off-Center Advanced Test Site  
1997 Progress Report  
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## INTRODUCTION

The purpose of the Curlew National Grasslands Off-Center Advanced Test Site is to evaluate the potential of grasses for livestock and wildlife forage on sagebrush-grass range sites in southeast Idaho. The site is located in MLRA 13, Eastern Idaho Plateaus of the Northwestern Wheat and Range Region of the Intermountain United States. This report describes progress of work completed in 1997.

The site is located approximately 5 miles north of Holbrook, Idaho in the East Richards Pasture. The soils are silt loam and it is a Loamy, 12-16 inch range site. The elevation is 5030 feet. For a detailed description of the project site characteristics and methods see the Curlew National Grasslands Off-Center Advanced Test Site - 1993-94 Progress Report.

## 1997 EVALUATIONS AND DISCUSSION

Precipitation during the 1997 crop year was above normal for southeast Idaho. Precipitation was much above normal during the winter and summer months.

The inter-center strain trial was evaluated on August 5, 1997. Data collected included plant density, plant height, forage production and vigor. The data is summarized in Table 1. Plant density, height, and forage production data were collected by the same procedure as in past years with the exception of location of forage sample collections. All plots showed decreased plant growth and vigor where previous samples had been collected, so the clipping frame was moved adjacent to previous clipping sites to sample plants representative of the entire plot. Forage samples were allowed to air-dry until August 21 when they were weighed and the data converted to pounds per acre, dry weight basis.

Due to extreme variability in the data, one-way analysis of variance (ANOVA) and means separation tests were not performed on the forage production data as in previous years. Evaluation data is summarized in Table 1.

Plant density for the intermediate wheatgrass accessions ranged from 0.3 plants per square foot for 'Oahe' to 2.0 for 'Slate' and 'Rush'. Plant height for the intermediate wheatgrass accessions ranged from 11.0 cm for Oahe to 82.8 cm for 'Rush'. Vigor for the intermediate wheatgrass accessions ranged from 2.3 (best) for Rush to 7.8 (poorest) for Oahe. Forage production ranged from 74 pounds per acre (air-dried) for 'Oahe' to 1515 pounds per acre for Slate. The average forage production for the Intermediate wheatgrass accessions was 791 pounds per acre. In 1996, the average forage production was 760 pounds per acre.

The thickspike wheatgrass plots have not been able to compete with the volunteer crested wheatgrass which established in the plots. Only three accessions remain; 'Bannock', SL Hybrid, and PI 236663. Bannock had the best plant density (1.0), vigor (6.3) and was the tallest (34.0 cm) and most productive (130 pounds per acre). The average forage production for the thickspike wheatgrass accessions was 28 pounds per acre. In 1996, the average forage production was 155 pounds per acre.

Plant density of the alfalfa accessions ranged from 0.3 plants per square foot for 'Ranger' to 1.3 for 'Spreader II' and 'Servalra'. Servalra was the tallest accession. Vigor ranged from 8.0 (poorest) for Ranger to 4.0 (best) for Spreader II. Spreader II had the most forage production, 1515 pounds per acre. Although the alfalfa accessions suffered from poor establishment and competition from cheatgrass since they were planted, forage production has continued to increase. The average forage production from the alfalfa accessions in 1995, 1996 and 1997 were 273, 293, and 593 pounds per acre, respectively.

Eight accessions in the Display Nursery which established fairly uniform stands and are well adapted to the region were clipped to obtain forage production data and are shown as follows:

	pounds per acre
Whitmar beardless wheatgrass	1115
Goldar bluebunch wheatgrass	706
Magnar basin wildrye	1635
Trailhead basin wildrye	1338
Prairieland Altai wildrye	1004
Regar meadow brome	2081
Paddock meadow brome	1709
Fleet meadow brome	1561

A public tour of the Off-Center Test Site was held on June 26, 1997 to observe the plant materials. The attachment to this report was given to tour participants and describes the plant varieties planted at the test site which are best adapted to the area.

1997 is the last year of annual evaluations of the site. A summary of evaluation data is currently being prepared and a final report will be completed in the near future.

Table 1. Curlew Grasslands Off-Center Advanced Test Site, Inter-center Strain Trial.  
Summary of 1997 Evaluation Data

<u>Accession</u>	<u>1/ Source</u> (per ft <sup>2</sup> )	<u>Plant Density</u> (cm)	<u>Plant Height</u> pounds per acre	<u>Vigor</u>	<u>Forage Production</u>
<b>Intermediate Wheatgrass (<i>Elytrigia intermedia</i>)</b>					
Slate	ARS-Nebraska	2.0	71.5	2.7	1515
Manska	ARS-North Dakota	1.5	55.3	4.0	809
Rush	Aberdeen PMC	2.0	82.8	2.3	1255
Luna	Los Lunas PMC	1.8	80.0	3.3	827
Greenleaf	Canada	1.5	50.3	4.3	1217
Reliant	ARS-North Dakota	1.5	56.8	3.0	1013
Mandan	ARS-North Dakota	1.8	60.0	2.8	836
Topar	Aberdeen PMC	0.5	23.3	7.0	409
Tegmar	Aberdeen PMC	0.8	21.3	7.3	288
AI Hybrid	ARS-Utah	0.8	42.8	6.0	288
Greenar	Pullman PMC	1.3	56.5	4.3	957
Oahe	AES-South Dakota	0.3	11.0	7.8	74
Amur	Los Lunas PMC	0.0	0.0	9.0	0
				Mean	791
<b>Thickspike Wheatgrass (<i>Elymus lanceolatus</i>)</b>					
Critana	Bridger PMC	0.0	0.0	9.0	0
Bannock	Aberdeen PMC	1.0	34.0	6.3	130
Schwendimar	Pullman PMC	0.0	0.0	9.0	0
SL Hybrid	ARS-Utah	0.5	5.8	7.8	19
PI-236664	Pullman PMC	0.0	0.0	9.0	0
Sodar	Aberdeen PMC	0.0	0.0	9.0	0
PI-236663	Pullman PMC	0.5	7.8	7.5	46
				Mean	28
<b>Alfalfa (<i>Medicago sativa</i>)</b>					
Spreador II	Commercial	1.3	38.8	4.0	1515
Travois	Commercial	1.0	33.0	5.0	716
Servelra	Commercial	1.3	43.5	4.0	1041
Ladak	Commercial	0.5	22.8	6.8	130
Ranger	Commercial	0.3	8.3	8.0	158
Baker	Commercial	0.0	0.0	9.0	0
				Mean	593

1/ Rated 1-9 with 1 best, 9 dead.

## **Curlew Off-Center Test Site Display Nursery All-Stars**

### **'Ephraim' Fairway Crested Wheatgrass (*Agropyron cristatum*)**

A very long lived, drought tolerant, vigorous, introduced bunchgrass from Siberia. Early maturing, with fine stems and leaves which are extremely palatable early in spring becoming less palatable during summer dormancy and after seed formation. Ephraim is weakly rhizomatous in higher rainfall areas. Adapted to a wide range of soils and areas which receive at least 8-10 inches annual precipitation. Recommended for range seedings and critical area stabilization. Released by USFS and NRCS, 1983.

### **'P-27' Siberian wheatgrass (*Agropyron fragile*)**

An introduced bunchgrass similar to crested wheatgrass but has finer leaves and retains palatability later into the summer as compared to crested wheatgrass. Once established it can withstand extended periods of drought better than most crested varieties. Especially adapted to droughty sites with a wide range of soil textures. Will persist on sites with as little as 4-8 inches annual precipitation. Recommended for range seedings. Released by NRCS and Experiment Stations, 1953.

### **'Prairieland' Altai Wildrye (*Leymus angustus*)**

A long lived, bunchgrass sometimes with short rhizomes from northern Asia. Tolerant of cold, drought, and saline conditions. Seedlings develop slowly and good seedbed preparation and weed control are essential. Coarse, erect, basal leaves retain much of their nutritive value throughout the summer and fall. Adapted to clay and clay-loam soils with 12-16 inches annual precipitation. Useful for fall and winter grazing as leaves stay erect in deep soil. Released by Agriculture Canada, 1976.

### **Basin Wildrye (*Leymus cinereus*)**

'Magnar' released by Aberdeen PMC, 1979

'Trailhead' released by Bridger, MT PMC, 1991

A slightly spreading, robust grass native to the Intermountain U.S. Tall, coarse, and long-lived. Poor seedling vigor may result in sparse stands, but once established, highly productive. Relatively poor palatability in summer but is a good source of energy during winter. Adapted to lowlands with deep, fine textured soils that receive at least 10-14 inches annual precipitation. Because of its stiffness, it provides excellent cover for both wildlife and livestock calving and cover for upland game.

### **'Covar' Sheep Fescue (*Festuca ovina*)**

Long lived, short statured bunchgrass with short leaf blades indigenous to northern hemisphere. Used as a durable turfgrass on sandy soils and for erosion control. Ground cover and root production is excellent and is cold and drought tolerant once established. Best adapted to 10-18 inch precipitation zones. Not intended for grazing because forage production is minimal. Recommended for erosion control, turf and critical area stabilization. Released by Pullman, WA PMC, 1977.

### **'Durar' Hard Fescue (*Festuca trachyphylla*)**

A very fine leafed, low growing bunchgrass introduced from Europe. Produces a dense root system excellent for erosion control on critical areas. Seedlings are slow to establish but persist through the development of abundant, fibrous roots. Best adapted to 10-18 inch precipitation zones and a wide range of soil types. Used for reclamation areas where a low growing, competitive cover is needed. Released by Pullman, WA PMC, 1949.

**'Whitmar' Beardless Wheatgrass (*Pseudoroegneria spicata* ssp. *inermis*)**

Long lived, drought tolerant, native bunchgrass very similar to bluebunch wheatgrass except awns are missing. It begins growth in early spring and readily greens up after fall rains. Highly palatable and recovers rapidly after grazing but does not tolerate repeated grazing. Best adapted to areas receiving at least 8 inches annual precipitation and a wide range of soil types. Recommended for range seeding mixtures to re-establish native plant communities. Released by Pullman, WA PMC, 1946.

**'Goldar' Bluebunch Wheatgrass (*Pseudoroegneria spicata* ssp. *spicata*)**

Long lived, drought tolerant, native bunchgrass valuable in the Intermountain west. It begins growth in early spring and readily greens up after fall rains. Highly palatable and recovers rapidly after grazing but does not tolerate repeated grazing. Best adapted to areas receiving at least 10 inches annual precipitation and a wide range of soil types. Recommended for range seeding mixtures to re-establish native plant communities. Released by Aberdeen PMC, 1989.

**'Sodar' Streambank wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*)**

A long lived, native sod forming grass widely distributed in the Intermountain region. It is drought resistant and has excellent seedling vigor. Because of its low growth form, it is not suited for forage production. This creeping sod former is adapted to fine-medium textured soils with 10-18 inches annual precipitation. Primarily used for erosion control where a low growing vegetative cover is needed. Released by Aberdeen PMC, 1954.

**'Rosana' Western Wheatgrass (*Pascopyrum smithii*)**

Native, widely distributed and strongly rhizomatous. Begins spring growth later than most wheatgrasses and is typified by poor germination, low seedling vigor and low quality forage. Plantings usually result in scattered stands that spread to dominate the site in 3-4 years. Very productive in clayey swales and waterways with annual precipitation above 12 inches. This is the most aggressive native sod grass available to provide excellent soil binding for erosion control. Released by Bridger, MT PMC, 1972.

**Tall Wheatgrass (*Elytrigia elongata*)**

'Alkar' released by Pullman, WA PMC, 1951

'Jose' released by Los Lunas, NM PMC, 1965

Perennial tall-growing, vigorous, very late maturing introduced bunchgrass from Turkey and Russia. It is very tolerant of salt, alkali and shallow water tables. Palatability is fair early in the growing season, but mature plants become unpalatable. Can provide winter forage if supplemental protein is provided. Has a very wide range of soil and climate adaptation and is useful for erosion control on critical areas. Especially adapted to salty sites where the water table is shallow.

**'Manchar' Smooth Brome (*Bromus inermis*)**

Perennial, sod-forming grass introduced from eastern Europe. Very palatable, productive, and shade tolerant. Seedlings are often weak, but once established, spreads vegetatively to provide full stands. Stands tend to become sodbound over time, requiring occasional ripping and high fertility. Will go dormant during high summer temperatures. A very useful plant for erosion control, pasture and hay in areas receiving at least 14 inches annual precipitation. Released by NRCS and Experiment Stations, 1946.

**'Appar' Lewis Flax (*Linum perenne* ssp. *lewisii*)**

A native, perennial semi-evergreen forb that is readily eaten by livestock and wildlife especially during spring and summer. The flowers are an attractive shade of blue and add color to the landscape. Prefers well drained soils and is intolerant of areas with poor drainage or high water tables. Best used as a component of a seed mixture for range seedings or for critical area stabilization. Recent research has identified Appar as a naturalized, introduced species from European origins. Released by Aberdeen PMC, 1980.

**'Eski' Sainfoin (*Onobrychis viciaefolia*)**

A leafy, early blooming, non-bloating legume introduced from Europe. Is highly palatable but is not as productive as alfalfa. Stands seldom persist more than 10 years

due to susceptibility to stem and root rot. Adapted to deep, medium-textured soils and areas with at least 16 inches annual precipitation. Not tolerant of excessively wet soils or frequent irrigation. More compatible in mixtures with bunchgrasses than with sod grasses. Flowers are attractive to bees. Released by MT Experiment Station, 1964.

#### **'Spredor II' Alfalfa (*Medicago sativa*)**

Alfalfa is a very productive, palatable, introduced legume with numerous varieties which have been developed for specific characteristics and purposes. Spredor II was specifically developed for its creeping or spreading ability for use in pasture seedings. Alfalfa requires fertile soil, adequate water and a good seedbed at establishment. Alfalfa requires a minimum of 12 inches annual precipitation in dryland areas and is not suited for sites with a shallow water table. Grazing management is important to maintain stands and prevent bloating by livestock.

#### **"Maybelle Source" Antelope Bitterbrush (*Purshia tridentata*)**

Antelope bitterbrush is a native shrub varying in stature from low, prostrate forms to erect forms, 3-6 feet tall. Is an important browse for mule deer and elk especially in winter. Best suited to deep, well-drained, medium to coarse textured soils and requires a minimum of 10 inches annual precipitation. Stands can be established by transplanting or seeding. Dormant seed to a depth of 1 inch at a rate of 1/2-1 pound per acre. Establishment may take 5-10 years. Test material from Upper Colorado Environmental Plant Center.

#### **Meadow Brome (*Bromus erectus*)**

'Regar' released by Aberdeen PMC, 1966

'Fleet' released by Agriculture Canada, 1987

Perennial, bunchgrass introduced from Turkey. Seedling vigor is strong and palatability to livestock and wildlife is excellent. Does not go dormant under high summer temperatures like smooth brome. Recovers quickly after grazing. Adapted for pasture seedings where annual precipitation is above 14 inches or under irrigation. Moderately shade tolerant and is winter hardy.

#### **'Bannock' Thickspike Wheatgrass (*Elymus lanceolatus* ssp. *lanceolatus*)**

A long lived, native sod forming grass widely distributed in the Intermountain region. It is drought tolerant and has excellent seedling vigor. Palatability is fair but forage production is limited. Is adapted to medium textured soils in areas with 8-16 inches annual precipitation. Primarily used as a component of a range seeding mixture for erosion control and critical area stabilization. Released by Aberdeen PMC, 1995.

#### **Intermediate Wheatgrass (*Elytrigia intermedia*)**

'Rush' released by Aberdeen PMC, 1994

'Greenar' released by NRCS and Experiment Stations, 1945

'Slate' released by Nebraska Experiment Station, 1969.

A mildly sod forming perennial introduced from Eurasia. Begins growth early in spring and remains green and palatable into the summer, producing large amounts of quality forage. Excellent for situations where only one or two irrigation applications are possible. Adapted to a wide range of soil types but needs 12-16 inches annual precipitation for dryland forage production and critical area stabilization. **Rush** was selected for rapid emergence after planting and its ability to compete with cheatgrass. **Greenar** was selected for forage production. **Slate** was selected for erect growth habit.

#### **'Luna' Pubescent Wheatgrass (*Elytrigia intermedia*)**

A mildly sod forming perennial introduced from Eurasia. Begins growth early in spring and remains green and palatable into the summer, producing large amounts of quality forage. Excellent for situations where only one or two irrigation applications are possible. Adapted to a wide range of soil types but needs 11-16 inches annual precipitation for dryland forage production and critical area stabilization. Luna was selected for drought resistance and seedling vigor. Released by Los Lunas, NM PMC, 1963.

**'Sherman' Big Bluegrass (*Poa secunda*)**

Bunchgrass native to northwest U.S. Well adapted to spring grazing, beginning growth as much as four weeks ahead of crested wheatgrass. Does become unpalatable earlier than most grasses. Low seedling vigor requires as much as 4-8 years to reach full productivity. Adapted to fine to medium textured soils and 9-15 inches annual precipitation. Recommended for range seedings and critical area stabilization. Released by Pullman, WA PMC, 1945.

**Commercial Sources of Seed**

This is a partial list of commercial seed vendors within the area. This list is by no means all-inclusive and is not an endorsement of these vendors.

**Idaho**

Farmers Merchant Inc.

467 US Hwy 26  
Blackfoot, ID 83221

(208)785-4460

Idaho Grimm  
Growers

395 S. Broadway  
Blackfoot, ID

83211  
(208)785-0830

Paul Seed &  
Grain

P.O. Box 156  
Paul, ID 83347

**Utah**

Intermountain Seed Co.

445 S 100 E  
Ephraim, UT 84627

(801)283-4383

Western Seeds  
Inc.

85 N 1600 E  
Tremonton, UT

84337  
(801)257-5460

Wheatland  
Seeds Inc.

1780 N Hwy 69  
Brigham City,  
UT

(801)734-9191

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