



Aberdeen Plant Materials Center

United States
Department of
Agriculture

2005 Annual Technical Report

**Natural Resources
Conservation Service**

Aberdeen, Idaho

March 2006



Contents

Introduction

On-Center Activities

Foundation Seed Production
2005 Field Annual Plan of Operations
1998 Hybrid Poplar Initial Evaluation Planting – 2005 Progress Report
Great Basin Native Plant Selection and Increase Project – FY 2004 Annual Report
Caribou – Targhee National Forest Native Grass Initial Evaluation – Preliminary Report July, 2005
Caribou – Targhee National Forest Native Grass Initial Evaluation – 2005 Progress Report
USDA Forest Service Region 1 Native Grass and Forb Initial Evaluation – 2005 Progress Report
Craters of the Moon National Monument 2004 Annual Report
Craters of the Moon National Monument 2004 Annual Report (Summary)
Journey® Established Grass Tolerance Trial
Basin Wildrye Advanced Evaluation

Off-Center Activities

Coffee Point Off-Center Advanced Test Site – 2005 Summary of Progress
Orchard Display Nursery – Establishment Year (2005) Evaluations
Arbon Valley Willow Trial, 2005

Field Planting, Demonstration and District Seed Increase Evaluation Summaries

Idaho Summaries
Utah Summaries

Public Information Activities

Year 2004 Aberdeen Plant Materials Center Progress Report of Activities
Technical Note 7: Mixing Seed with Rice Hulls
Technical Note 33: Plant and Seed Vendors for Idaho, Montana, Nevada, eastern Oregon, Utah, eastern Washington, Wyoming
Technical Note 44: Using Windbreaks to Reduce Odors Associated with Livestock Production Facilities
Technical Note 45: Temporary Storage and Handling of Container, Bareroot and Cutting Stock
Technical Note 48: Emerald Ash Borer
Plant Guide – Bottlebrush Squirreltail and Big Squirreltail
Plant Guide – Mountain Brome
Plant Guide – Slender Wheatgrass
Aberdeen Center Seeks to Restore Damaged Landscapes
Plant Society to Visit Aberdeen Center
Plant Materials Center to Host Foreign Scientist
Aberdeen, Idaho Plant Materials Center Cooperates with Great Basin Native Plant Selection and Increase Project
Orchard Display Nursery Brochure
New Display Nursery Planted
Weed Barrier Fabric Maintenance for Conservation Tree Plantings

Interagency Riparian Wetland Project

View from a Wetland Newsletter, Number 11 (2005)
Information Series No. 18 Streambank Soil Bioengineering Considerations for Semi-Arid Climates
Information Series No. 19 Simple Identification Key to Common Willows, Cottonwoods, Alder, Birch, and Dogwood of the Intermountain West
A Five-day Introductory Technical Training Course in Watershed Assessment, Management and Rehabilitation for Afghan Department of Forest and Range Personnel
Planting Recommendations for EWP Treatments on the Santa Clara River from Swiss Village to St. George, Utah
Trip Report for Camas NWR March 16, 2005
Slate Creek Project August 9, 2005

ON-CENTER ACTIVITIES

Foundation Seed Production at Aberdeen Plant Materials Center

A major responsibility of the Aberdeen Plant Materials Center is the production of Foundation quality seed of the plant releases from the Center. Foundation seed is made available to the University of Idaho Agricultural Experiment Station, Idaho Crop Improvement Association, Utah Crop Improvement Association, other plant materials centers and cooperating agencies. Seed is distributed as provided for by allocation and exchange or other written agreements. Foundation seed of recent releases may also be provided to soil conservation districts for registered or certified seed production under District Seed Increase (DSI) programs.

The following table illustrates seed shipments from the Aberdeen Plant Materials Center for Fiscal year 1997 through 2005:

Cultivar	1997	1998	1999	2000	2001	2002	2003	2004	2005	TOTAL POUNDS
POUNDS PLS										
Anatone bluebunch wheatgrass	-	-	-	-	-	-	-	20 ^{2/}	250	270
Appar prairie flax	150	950	115	320	300	470	65	0	848	3218
Bannock thickspike wheatgrass	175	425	610	275	250	550	25	0	1110	3420
Delar small burnet	0	550	0	451	150	75	0	1250	945	3421
Ephraim crested wheatgrass	1000	100	50	260	455	696	0	200	0	2761
Goldar bluebunch wheatgrass	200	200	370	175	100	375	250	200	200	2070
Hycrest crested wheatgrass	1550	0 ^{1/}	0	0	0	0	0	0	0	1550
Magnar basin wildrye	250	180	901	517	1035	490	150	245	0	3768
Maple Grove Lewis flax	-	-	-	-	-	-	-	240 ^{2/}	280	520
Nezpar Indian ricegrass	325	350	100	900	150	75	340	0	300	2540
P-27 Siberian wheatgrass	1000	200	25	150	200	500	0	0	0	2075
Penstemon "Clearwater Selection"	-	1 ^{2/}	0	1	10	1	10	4	8	35
Penstemon "Richfield Selection"	-	6 ^{2/}	5	5	1	7	6	3	11	44
Paiute orchardgrass	250	0	250	101	450	200	0	0	0	1251
Regar meadow brome	0	305	800	670	1061	207	50	50	0	3143
Rush intermediate wheatgrass	400	1820	1000	215	525	0	0	0	800	4760
S. R. P. fourwing saltbush	-	-	-	-	-	25 ^{2/}	5	2	16	48
Sodar streambank wheatgrass	100	250	100	860	500	500	200	0	625	3135
Tegmar dwarf intermediate wheatgrass	0	200	0	100	0	0	0	200	0	500
Northern Cold Desert winterfat	-	-	-	-	-	8 ^{2/}	3	8	20	39
TOTAL POUNDS	5400	5537	4326	5000	5187	4179	1104	2422	5413	38,568

^{1/} Foundation seed production of Hycrest crested wheatgrass was transferred to Meeker, Colorado Environmental Plant Center.

^{2/} New germplasm releases.

Aberdeen Plant Materials Center2005 FIELD ANNUAL PLAN OF OPERATIONHOME FARM

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
1	1.7	Wildlife Food Plot (2005)	Establish and maintain wheat for wildlife.
2	2.3	Wildlife Food Plot (2005)	Establish and maintain wheat for wildlife.
3	1.8	Anatone Bluebunch (2005)	Establish and manage for Certified seed production.
4	1.4	Constructed Wetland Ponds (1992)	Manage per constructed Wetland project plan.
5	2.4	Magnar (2000)	Manage for residue production.
6	2.4	Anatone Bluebunch (2004)	Manage for Certified seed production.
7	3.2	Regar (2003)	Manage for Foundation seed production.
8	3.2	Ephraim (2003)	Manage for Foundation seed production.
9	3.2	Maple Grove (2005)	Establish and manage for Certified seed production.
10	3.2	Potatoes (2005)	U of I will plant potatoes.
11	1.1	Anatone Bluebunch (2002)	Manage for Certified seed production.
11	0.2	9076402 Mutton grass (2002)	Manage for increase and potential release.
12	1.4	USFS Forbs (2004) Great Basin Forbs (2005)	Evaluate for potential release. Establish and evaluate for potential release.
13N	0.1	Penstemon (2003)	Manage for Certified seed production.
13S	1.3	Fallow (2003)	Fallow as needed to control weeds.
14	1.2	Woody Display Nursery (1995)	Maintain display of woody conservation plants. Manage Durar/Covar cover crop.
15	1.4	Field windbreak (2000)	Maintain Simon poplar field windbreak.
16	1.0	Fallow	Fallow as needed for weed control.
17	0.5	Hybrid Poplars (1998)	Manage and evaluate according to project plan.
18-19	0.9	Fourwing and winterfat (1999)	Manage for Certified seed production.

20 1.5 Grass Display Nursery (2002) Manage for display.

Headquarters

Maintain buildings and grounds.

Aberdeen Plant Materials Center

2005 FIELD ANNUAL PLAN OF OPERATION

FISH AND GAME FARM

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
21W	2.3	Alfalfa (2001)	Manage for hay production and wildlife benefits.
21E	1.4	Pipe yard (2004)	Maintain permanent yard for pipe storage.
21N	1.3	Bozoisky Cover crop	Maintain as needed for permanent cover.
22W	1.5	Bannock (2003)	Manage for Foundation seed production.
22E	2.6	Goldar (2002)	Manage for Foundation seed production.
22E	1.3	Willow IEP (1984)	Maintain as needed.
23W	2.4	Wildlife Food Plot (2005)	Establish and maintain wheat for wildlife use.
23M	--	Windbreak	Maintain and irrigate as needed.
23E	2.2	Bannock (2005)	Establish and manage for Foundation seed production.
24	1.1	Windbreaks	Maintain and irrigate as needed.
24W	2.2	Paiute (2001)	Manage for Foundation seed production.
24E	1.5	Durar Cover Crop	Maintain as needed.
25	5.1	Alfalfa (2003)	Manage for hay production and wildlife benefits.
26W	1.0	Bozoisky Cover crop (2005)	Establish and maintain as needed for permanent cover.
26E	2.7	Willow Increase Block (1994)	Irrigate according to irrigation plan and control weeds. Maintain Durar/Covar mix between rows for permanent cover.
27W	2.2	Bozoisky Cover crop (2005)	Establish and maintain as needed for permanent cover.
27E	2.2	Wildlife Food Plot (2005)	Establish and maintain wheat for wildlife use.
28	5.3	Alfalfa (2004)	Establish and manage for hay production and wildlife benefits.
29W	1.3	Willows (1994)	Irrigate and control weeds according to Wetland Project plan.
29E	1.2	Wildlife Food Plot (2005)	Establish and maintain corn for wildlife use.
	2.5	Potatoes	U of I will plant potatoes.

Aberdeen Plant Materials Center

2005 FIELD ANNUAL PLAN OF OPERATION (continued)

FISH AND GAME FARM

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
30W	0.7	Windbreak/Guard Row	Maintain and irrigate as needed.
30W	2.5	USFS Grasses (2005) Wildlife Food Plot (2005)	Establish and evaluate for potential release. Establish and maintain corn for wildlife use.
30E	2.3	USFS Grasses (2004)	Evaluate for potential release.
31	1.5 3.75	Wildlife Food Plot DOD Western w.g. (2005)	Establish and maintain corn for wildlife use. Establish and maintain for seed increase.
32	6.2	Windbreak IEP (1982)	Maintain as needed.

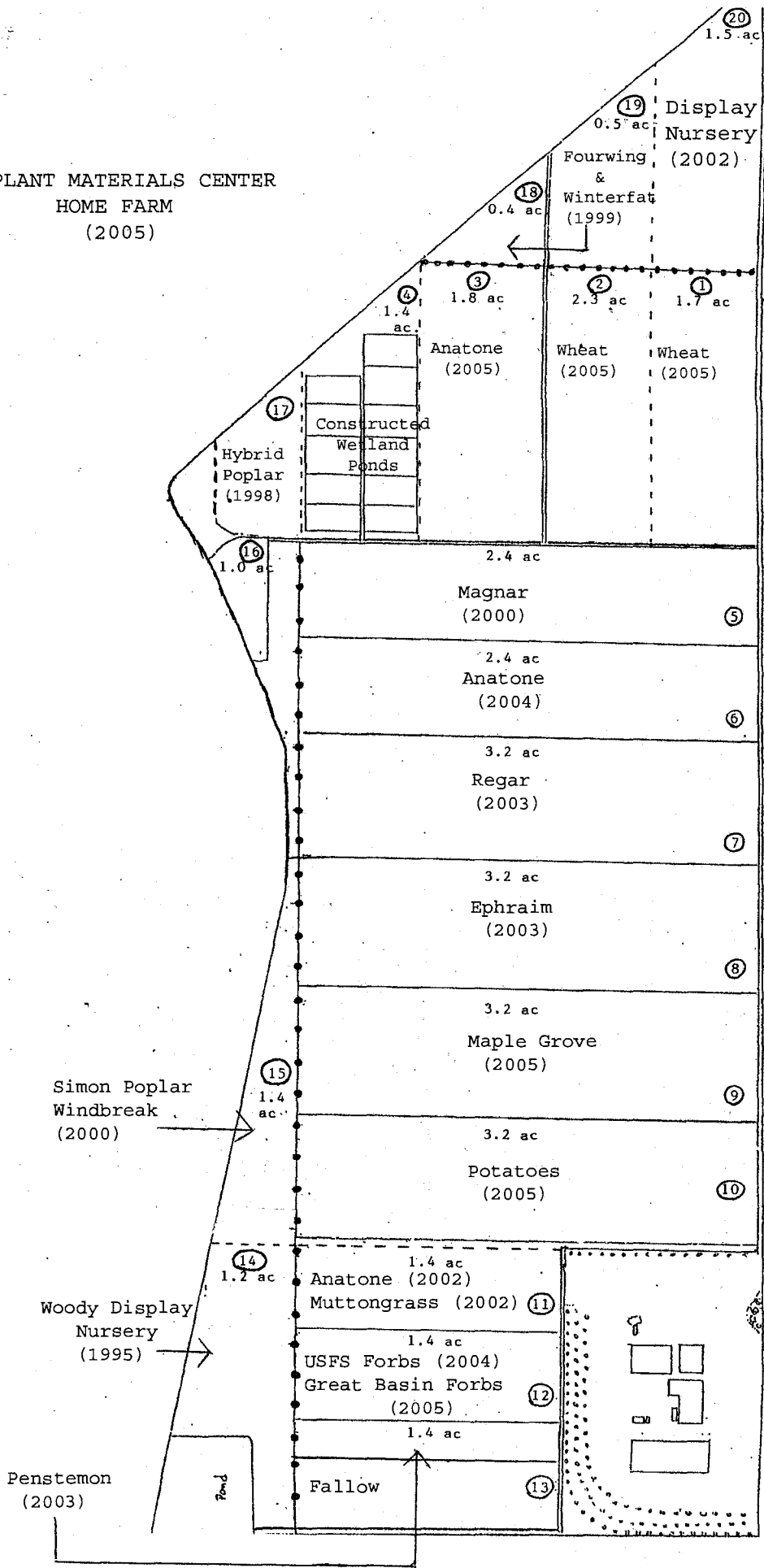
Any hay grown will not be cut prior to June 15 and not after September 1. Hay will be irrigated after last cut to first fall frost to achieve regrowth prior to winter dormancy.

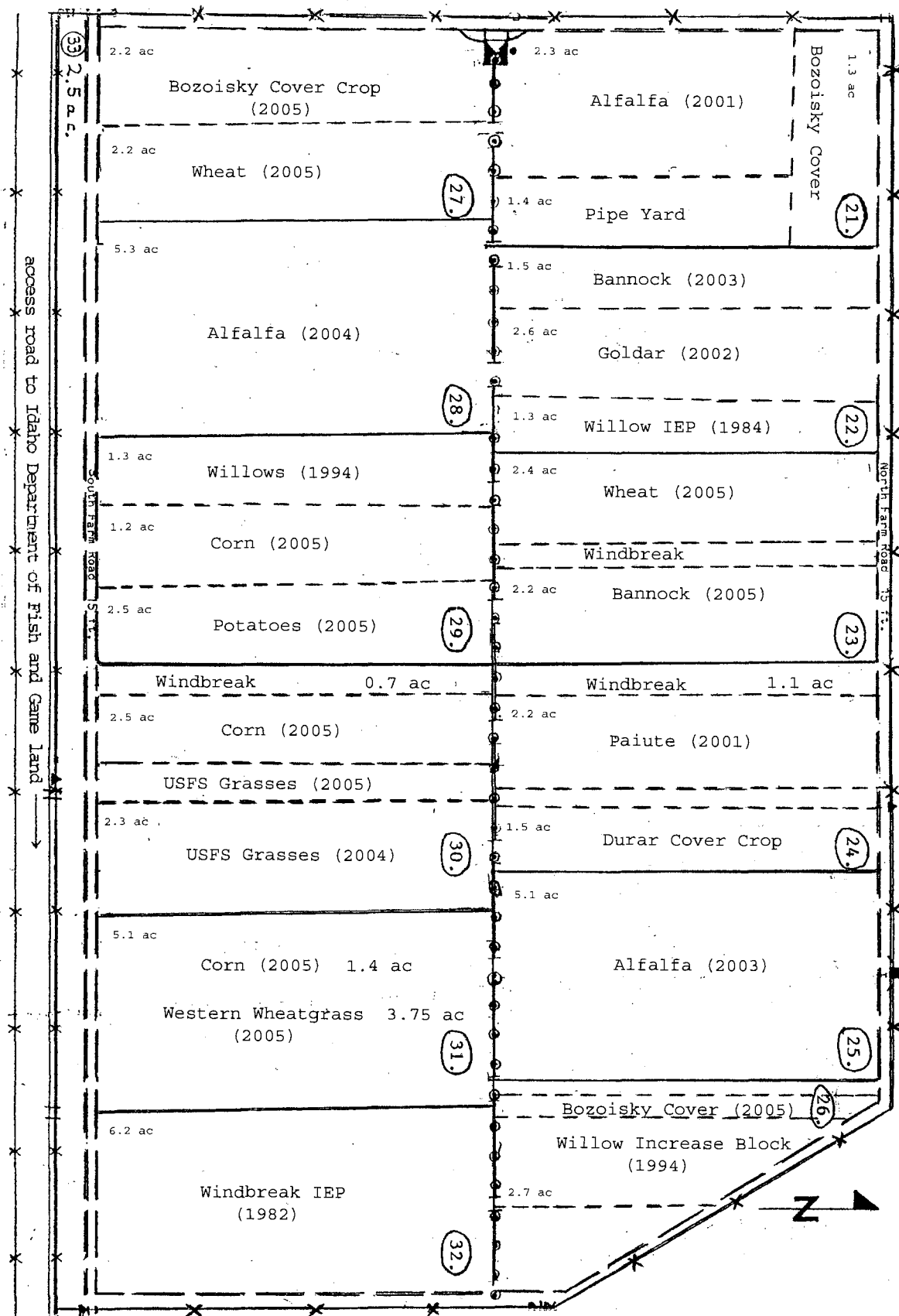
Irrigated, permanent grass cover seedings will not be mowed prior to July 1 and not after August 1 and will be irrigated a minimum of 3 times. Non-irrigated grass cover seedings will not be mowed. Early mowing or mowing of non-irrigated grass cover requires notification to and inspection by Fish and Game.

BREWINGTON FARM (U of I)

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
410	2.0 2.0	DOD Siberian w.g. (2005) DOD Slender w.g. (2005)	Establish and maintain for seed increase. Establish and maintain for seed increase.

PLANT MATERIALS CENTER
HOME FARM
(2005)





FISH & GAME FARM
2005

2005 Progress Report
1998 Hybrid Poplar Initial Evaluation Planting
Field 17, Aberdeen PMC
Loren St. John, Team Leader

The purpose of the Hybrid Poplar Initial Evaluation Planting is to evaluate accessions of hybrid poplar currently being grown in Oregon and Washington for adaptability to northern Utah and the Upper Snake River Plain of southeast Idaho. Hybrid poplar used for fiber, fuel and other lumber products is becoming a large agroforestry business in Oregon, Washington, and western Idaho. Presently there is no commercial production of hybrid poplar in southeast Idaho or northern Utah.

Five accessions of hybrid poplar considered to be very productive and the most cold tolerant were obtained from Mount Jefferson Farms, Salem, Oregon. These accessions were planted in a complete randomized block design with 'Imperial', 'Siouxland', 'Robust', and 'Canam' as standards of comparison. The cuttings planted were dormant, 9 inches long and approximately 3/4 inch in diameter. The standards of comparison were collected at the PMC after spring growth had initiated.

Weed barrier material was installed in the clean-tilled field prior to planting. The cuttings were then hand planted through the weed barrier on May 28, 1998 so that only one bud was above the soil surface. Planting a cutting with only one bud above the soil surface increases the chance that the cutting will develop a single trunk which is desirable for wood production. Weed control needs were minimal because of the installation of weed barrier material. On June 1, 1999 forty-three plots were re-planted. The replacements were for those plots that did not establish during the first growing season. The evaluation planting is irrigated with a solid-set handline sprinkler system.

Between-row weed control was accomplished with mechanical cultivation between 1998 and 2000. The between-row area was seeded to a mixture of 'Durar' hard fescue and 'Bighorn' sheep fescue (3.5 pounds PLS per acre of each species) in June, 2001. The grass seeding is well established and controlling weeds.

In March, 2003 before buds began to break, the trees were pruned to remove all basal branches to encourage a single dominant trunk that is preferred for saw logs. No more than 50 percent of the branches on a single tree were removed. During each growing season sprouts and side branches below the prune line are removed periodically.

The plots were evaluated on September 16, 2005 and the data is summarized in Table 1. An Abney Level was used to measure plant height. Accession no. 9076418 (OP-367) and 9076421 (52-225) continued to have the best survival. Robust was the tallest (mean plant height 14.8 m – 48.5 feet). Accession no. 9076418 (OP-367) had the largest D.B.H. (mean 27.9 cm – 10.9 inches). This accession continues to appear to be the best adapted to the soil and climate in the Snake River Plains of southeastern Idaho. Accession no. 9076418 (OP-367) and Robust had the best vigor ratings from the original planting. No pests were observed on the plants this year.

Of the plots re-planted in 1999, Robust had the best survival and Siouxland had the tallest average height. Imperial had the largest mean D.B.H. (17.8 cm – 7.0 inches) of the plots that were re-planted in 1999.

The planting will again be pruned early next year during dormancy to reduce side branching and will be evaluated next fall. The plots will be harvested in 4 years to evaluate wood production.

Table 1.
2005 Evaluation Data
1998 Hybrid Poplar Initial Evaluation Planting

Accession Number	Number Survived	Percent Survival	Plant Height (m)			D.B.H. ^{1/}	Vigor ^{2/}
			Minimum	Mean	Maximum	Mean (cm)	
9076418 (OP-367)	8	88.9	12.5	14.6	17.1	27.9	1.5
9076419 (184-411)	1	11.1	--	--	7.9	7.0	3.0
9076420 (50-197)	0	0.0	--	--	--	--	9.0
9076421 (52-225)	6	66.7	8.2	8.6	14.9	12.3	6.6
9076422 (15-29)	3	33.3	6.1	4.8	11.0	5.4	6.6
Canam	2	22.2	5.5	7.1	8.8	10.8	7.0
Robust	3	33.3	13.7	14.8	17.1	20.5	2.7
Siouxland	5	55.5	9.8	12.1	15.2	19.5	2.8
Imperial	5	55.5	9.4	12.1	12.2	19.4	3.4

Re-planted Hybrid Poplar 1999

Accession Number	Number Re-planted	Percent Survival	Plant Height (m)			D.B.H. ^{1/}	Vigor ^{2/}
			Minimum	Avg.	Maximum	Mean (cm)	
9076418 (OP-367)	1	0	--	--	--	--	9.0
9076419 (184-411)	8	12	--	--	7.9	9.2	3.0
9076420 (50-197)	8	0	--	--	--	--	9.0
9076421 (52-225)	1	0	--	--	--	--	9.0
9076422 (15-29)	4	0	--	--	--	--	9.0
Canam	7	57	2.8	4.9	11.9	5.5	7.7
Robust	6	83	9.8	9.9	14.3	15.4	4.2
Siouxland	4	50	10.1	10.5	11.0	7.5	6.3
Imperial	4	25	--	--	14.0	17.8	7.5

^{1/} D.B.H. is diameter at breast height (1.4 m from ground surface)

^{2/} Rated 1 – 9, with 1 best, 9 worst

**Great Basin Native Plant Selection and Increase Project
FY 2004 Annual Report**

Project Title: Establishment and Maintenance of Certified Generation 1 (G1) Seed

Project Location: NRCS Aberdeen, ID Plant Materials Center

Principal Investigators: Loren St. John, Center Manager, Aberdeen, ID
Dan Ogle, Plant Materials Specialist, Boise, ID

Contact Information: Aberdeen Plant Materials Center, P.O. Box 296, Aberdeen, ID 83210. Email – Loren.Stjohn@id.usda.gov

Plant Materials Specialist, USDA-NRCS, 9173 West Barnes Drive, Suite C, Boise, ID 83709. Email - Dan.Ogle@id.usda.gov

Description of Project: Production of Certified Generation 1 (G1) seed of Maple Grove Germplasm Lewis flax, Anatone Germplasm bluebunch wheatgrass, Snake River Plains Germplasm fourwing saltbush and Northern Cold Desert Germplasm winterfat to facilitate commercial seed production. Evaluate procedures for production of rooted cuttings of fourwing saltbush. Establish demonstration planting near Boise, ID.

Status Report:

Seed Production

Maple Grove Germplasm Lewis Flax – Officially released July 22, 2004. Seeded 1.8 acre field on May 31, 2002. Produced 615 pounds of seed in 2003. Shipped 240 pounds of Certified seed to commercial seed growers in 2004. Due to windstorm after swathing in 2004, only 30 pounds of seed was salvaged. Seed field plowed due to weed competition. New seed field to be established spring, 2005.

Anatone Germplasm bluebunch wheatgrass – Released officially March 5, 2004. Seeded 1.0 acre field on May 31, 2002. Produced 240 pounds of seed in 2003. Shipped 20 pounds of Certified seed to commercial seed growers in 2004. Produced 472 pounds in 2004 (seed analysis pending). New seed field (2.4 acres) established in May 2004.

Snake River Plains Germplasm fourwing saltbush – Produced 45 pounds of seed in 2003 and 2004. Shipped 2 pounds of Certified seed to commercial growers in 2004.

Northern Cold Desert Germplasm winterfat - Produced 15 and 10 pounds of seed in 2003 and 2004 respectively. Shipped 8 pounds of Certified seed to commercial growers in 2004.

Propagation Studies

Propagation of rooted fourwing saltbush from cuttings:

On August 12, 2004 cuttings were taken from mature fourwing saltbush (*Atriplex canescens*) Snake River Plains Germplasm at the Aberdeen Plant Materials Center home farm. Cuttings were made with the base approximately 1/8 to 3/16" diameter. Cuttings were placed in five gallon buckets lined with wet burlap sacs to prevent drying out. Cuttings were then transported back to the greenhouse for trimming. Field cuttings were trimmed down to approximately seven inches long and all leaves and shoots were removed except the apical shoot on the cutting. Cuttings were then dipped in Rootone® rooting hormone with fungicide. The cuttings were then placed in 40 cubic inch conetainers filled with a 1:1:1 soil mixture of peat, sand and perlite. Each conetainer contained two cuttings. Total elapsed time between cutting in the field and planting into soil was under two hours. Containers were then soaked manually with a hose and garden mist nozzle to field capacity. Planted cuttings were left in the headhouse overnight before moving into greenhouse.

Plants were maintained in the PMC greenhouse. Temperatures were maintained between 70 and 85 degrees F. Supplementary lighting was employed from 1900 to 2300 daily.

The trial was divided into two treatments involving different watering regimes. The first treatment, called hereafter traditional, was a watering schedule of 30 minutes of overhead spray on Tuesday and 60 minutes on Thursday of each week. The second treatment, misting, involved repeated mistings of 15 seconds every 20 minutes during the warm portions of the day (0700 to 2300).

Survival 9/27/04 (cutting + 6 weeks)

MIST	Survival	%	TRADITIONAL	Survival	%
♀	32/38	84	♀	0/40	0
♀	22/40	55	♀	12/40	30
♀	22/40	55	♀	8/40	20
♀	15/40	38	♀	0/40	0
♂	12/40	30	♂	5/40	13
TOTAL	103/198	52		25/200	13

Misting resulted in an overall survival of 52 percent versus 13 percent survival for the cuttings under traditional irrigation.

Greenhouse seedling establishment study: to evaluate fourwing saltbush seedling emergence based upon number of propagules planted per cell (5 versus 10 per cell) and to identify number of days to emergence, growth rates and transplant dates. As reported in 2002, 75 percent of the seedlings had red stems and 25 percent had white stems at time of transplant. The question arose as to whether or not this phenological difference could be

an indication of the sex of the plant. Plants are being maintained in the field to determine if this is possible.

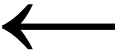

Establishment of Demonstration Planting near Boise

BLM burned site in fall of 2002. Site was sprayed by PMC in May, 2003 and 2004 with Roundup and 2,4-D at 64 oz and 16 oz. per acre respectively. Excellent kill was achieved. Due to limited breakdown of dead grass clumps that would inhibit proper seed placement with drill and to ensure a clean seedbed, the decision was made to lightly cultivate the site with a culti-packer the day before seeding. The demonstration planting was seeded November 16, 2004. There are 82 accessions of 27 native and introduced grass, forb and shrub species planted in 7 x 60 foot plots. Plots will be evaluated in 2005 to document establishment and plant performance. A plot map and description of the accessions planted was developed to allow for self guided tour of the demonstration nursery and is attached:

NRCS Aberdeen Plant Materials Center

Display Nursery, Orchard, Idaho

(Planted November 16, 2004)

		*=Introduced species	
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White River Indian Ricegrass	Thurber's Needlegrass
Nezpar Indian Ricegrass	Sherman Sandberg Bluegrass
Paloma Indian Ricegrass	High Plains Sandberg Bluegrass
Rimrock Indian Ricegrass	Mountain Home Sandberg Bluegrass
Ribstone Indian Ricegrass	Toole County, MT Sandberg Bluegrass
Sand Hollow Bottlebrush Squirreltail	Hanford Source Sandberg Bluegrass
Fish Creek Bottlebrush Squirreltail	Nordan Crested Wheatgrass*
Toe Jam Bottlebrush Squirreltail	Hycrest Crested Wheatgrass*
9019219 Bottlebrush Squirreltail	CD-II Crested Wheatgrass*
Shaniko Plateau Bottlebrush Squirreltail	Ephraim Crested Wheatgrass*
Bannock Thickspike Wheatgrass	Douglas Crested Wheatgrass*
Sodar Thickspike Wheatgrass	Roadcrest Crested Wheatgrass*
Critana Thickspike Wheatgrass	P-27 Siberian Wheatgrass*
Schwendimar Thickspike Wheatgrass	Vavilov Siberian Wheatgrass*
Pryor Slender Wheatgrass	Luna Pubescent Wheatgrass*
San Luis Slender Wheatgrass	Manska Pubescent Wheatgrass*
Revenue Slender Wheatgrass	Greenleaf Pubescent Wheatgrass*
Rosana Western Wheatgrass	Rush Pubescent Wheatgrass*
Rodan Western Wheatgrass	Eejay Altai Wildrye*
Arriba Western Wheatgrass	Pearl Altai Wildrye*
Goldar Bluebunch Wheatgrass	Prairieland Altai Wildrye*
Anatone Bluebunch Wheatgrass	Tetra-can Russian Wildrye*
Columbia Bluebunch Wheatgrass	Bozoisky Select Russian Wildrye*
Jim Creek Bluebunch Wheatgrass	Syn-A Russian Wildrye*
Wahluke Bluebunch Wheatgrass	Mankota Russian Wildrye*
P-5 Bluebunch Wheatgrass	Eagle Western Yarrow
P-7 Bluebunch Wheatgrass	Great Northern Western Yarrow
P-12 Bluebunch Wheatgrass	Timp Utah Sweetvetch
P-15 Bluebunch Wheatgrass	Richfield Selection Firecracker Penstemon
Secar Snake River Wheatgrass	Scarlet Globemallow
Expedition Snake River Wheatgrass	Maple Grove Lewis Flax
E-26 Snake River Wheatgrass	Appar Blue Flax*
SERDP Snake River Wheatgrass	Wyoming Big Sagebrush
Magnar Basin Wildrye	Snake River Plains 4-Wing Saltbush
Trailhead Basin Wildrye	Wytana 4-Wing Saltbush
Washoe Basin Wildrye	Rincon 4-Wing Saltbush
U70-01 Basin Wildrye	9016134 Gardner's Saltbush
U108-02 Basin Wildrye	Northern Cold Desert Winterfat
U100-01 Basin Wildrye	Hatch Winterfat
Initial Point Sheep Fescue	Open Range Winterfat
Covar Sheep Fescue	Immigrant Forage Kochia*

On November 16, 2004 the Aberdeen Plant Materials Center and the Idaho/Utah Plant Materials Specialist planted a new display nursery at the Orchard test site southeast of Boise. The display nursery is in cooperation with the Great Basin Native Plant Selection and Increase Project.

The Great Basin Native Plant Selection and Increase Project is a group of cooperators from the Bureau of Land Management, Forest Service, Agricultural Research Service, Utah Division of Wildlife Resources, Utah Crop Improvement Association and the Natural Resources Conservation Service who are collaborating to develop and increase native plant materials for the Great Basin and Intermountain West.

There are 82 accessions of 27 native and introduced grass, forb and shrub species planted in 7 X 60 foot plots. The purpose of this display nursery is to allow agency personnel and land owners to view these plants in action and see firsthand how the plants perform in the low precipitation environment (10 – 12 inch annual precipitation) of Southwestern Idaho. The display will also be useful in comparing different releases from within a species or in comparing native and introduced species with similar environmental requirements. The following descriptions begin at the northeastern corner plot and proceed west. Descriptions pick up again at the southeastern corner and return westward.

Ricegrass, Indian (*Achnatherum hymenoides*=*Oryzopsis hymenoides*=*Stipa hymenoides*)

White River, test material from Logan, UT ARS

'Nezpar' released by Aberdeen, ID PMC, 1978

'Paloma' released by Los Lunas, NM PMC, 1974

'Rimrock' released by Bridger, MT PMC, 1996

Ribstone Germplasm released by Logan, UT ARS, 2004

A native perennial, very drought tolerant bunchgrass adapted to well drained sandy to clayey soils and dry desert ranges. Seed is very slow to germinate due to a thick seed coat resulting in high seed dormancy. To improve seed germination, the seed can be treated in sulfuric acid, mechanically scarified, or dormant fall planted to allow for a cool moist stratification. Untreated seed requires a greater depth of planting than most species to promote seed germination. Recommended sites are sunny exposures in 7 inches or more precipitation zones with sandy or gravelly soils (10 inch plus rainfall areas result in most successful seedings). It grows on raw subsoil from lowlands into high mountains. Recommended planting depth is 1.5 inches in loamy soils to 3 inches on sandy to gravelly soils. It is very palatable, considered excellent winter forage, and the seed production enhances forage value because of high protein and fat content in the seed. It is also considered an excellent plant for wildlife habitat seedings. Good grazing management is necessary if stands are to persist. 'Nezpar' is a northern variety with improved germination characteristics. 'Paloma' is best adapted to southern semi-desert areas. 'Rimrock' and Ribstone Germplasm are northern varieties selected for better seed retention characteristics. White River comes from northwestern Colorado and was selected for high germinability. Average seeds per ft² at 1 lb. rate 5. Recommend pure stand rate 6 lb./ac.

Squirreltail, Bottlebrush (*Elymus elymoides* ssp. *elymoides* or ssp. *californicus* and *Elymus multisetus*)

Sand Hollow Germplasm released by Logan, UT ARS, 1996

Fish Creek Germplasm released by Logan, UT ARS, 2003

Toe Jam Creek Germplasm released by Logan, UT ARS, 2003

9019219, test material from Bridger, MT PMC

Shaniko Plateau, source identified release from L&H Seed

Bottlebrush squirreltail is a short-lived perennial, drought tolerant, cool season, native bunchgrass. It is short to medium sized (6 to 22 inches tall), tufted and has fair forage value in winter and spring and poor forage value in summer when seedheads are present. The bristly awns are objectionable to grazing animals and cause difficulties in seed handling, planting and harvesting. This species is often an increaser on poor condition to improving rangelands. It is adapted to a wide variety of soils including saline soils in the 8-18 inch precipitation zones. It is hoped it will have attributes that will enable it to establish a foothold in annual rangelands dominated by cheatgrass or medusahead rye. ARS and NRCS have released three squirreltail accessions, Sand Hollow Selected Germplasm (*E. multisetus*) in 1996; Toe Jam Selected Germplasm (*E. elymoides* ssp. *californicus*) in 2003; and Fish Creek Selected Germplasm (*E. elymoides* ssp. *elymoides*) in 2003. Sand Hollow is best adapted to sandy foothill rangelands receiving 12 inches or more annual precipitation in the lower Snake River Plains. Toe Jam is best adapted to loam to sandy loam soils in the Great Basin and lower to middle Snake River Plains receiving 8-14 inches of precipitation. Fish

Creek is best adapted to sandy loam to silt loam to clay loam soils receiving 10 inches or more annual precipitation in the middle to upper Snake River Plains. Average seeds per ft² at 1 lb. rate 4. Seeding rate 7 lb./ac.

Wheatgrass, Thickspike (*Elymus lanceolatus* ssp. *lanceolatus*=*Agropyron dasystachyum*)

'Bannock' released by Aberdeen, ID PMC, 1995

'Sodar' released by Aberdeen, ID PMC, 1954

'Critana' released by Bridger, MT PMC, 1971

'Schwendimar' released by Pullman, WA PMC 1994

A long-lived, native mildly sod-forming grass widely distributed in the northern part of the Intermountain Region. Drought tolerance, early spring growth, fair palatability, but low forage production characterizes this species. More drought tolerant than western wheatgrass, it is well suited for wind erosion control on medium to coarse-textured soils. It is best utilized as forage until early fall. It tolerates moderate grazing and considerable trampling. Adapted to disturbed range sites and dry areas subject to erosion, roadsides, and waterways in the 8-18 inch precipitation zones. Use as a native component in rangeland mixes. Planting depth 1/4 to 1/2 inch. Improved varieties include 'Bannock', 'Schwendimar', 'Critana' and 'Elbee'. Bannock is noted for its rapid establishment, moderate sod formation and greater forage production. Critana is more drought tolerant, exhibits good seedling vigor and readily establishes on critical areas. Schwendimar is noted for quick stabilization of coarse textured soils along the Columbia River. Average seeds per ft² at 1 lb. rate 3. Recommend pure stand rate 6 lb./ac.

Wheatgrass, Slender (*Elymus trachycaulus trachycaulus*=*Agropyron trachycaulum*)

'Pryor' released by Bridger, MT PMC, 1988

'San Luis' released by Upper Colorado Environmental Plant Center, 1984

'Revenue' released by Canada Department of Agriculture, 1970

Slender wheatgrass is a short-lived perennial (3-5 years) native bunchgrass with good seedling vigor and moderate palatability. It is valuable in erosion-control seed mixes because of its rapid development, moderate salt tolerance, and compatibility with other species. It is well adapted as a cover crop to improve soil tilth and to increase organic matter in saline sites. It tolerates a wide range of conditions and adapts well to high altitude ranges and more favorable sites on mountain brush areas receiving 10 inches or more annual precipitation. It is excellent in aspen and tall mountain brush areas and is shade tolerant. Planting depth 1/2 to 3/4 inch. 'Revenue' is a Canadian variety, selected for salinity tolerance, seed set, and forage yield. 'San Luis' is a southern variety adapted to high elevations. 'Pryor' is a northern variety, selected for superior salt tolerance, drought tolerance, and seedling vigor. Average seeds per ft² at 1 lb. rate 3.0. Recommend pure stand rate 6 lb./ac. Limit slender wheatgrass to 1 pound PLS per acre in native mixes. Higher rates effect the establishment of slower developing native species.

Wheatgrass, Western (*Pascopyrum smithii*=*Agropyron smithii*)

'Rosana' released by Bridger, MT PMC, 1972

'Rodan' released by ND ARS, 1983

'Arriba' released by Los Lunas, NM PMC, 1973

A long-lived, late maturing, widely distributed, winter hardy, strongly rhizomatous, native grass with coarse blue-green leaves. Western wheatgrass begins spring growth later than most wheatgrasses and is typified by poor germination and low seedling vigor. When used as pasture it is considered to be an excellent source of spring and early summer forage with protein content of 16 to 18 percent. However, forage quality rapidly declines as plants mature. It provides winter grazing if protein supplements are provided. Protein content of western wheatgrass is usually a little higher (4-5 percent) than other wheatgrasses once cured. Plantings usually result in scattered stands that spread in 3 to 4 years to site dominance. Western wheatgrass is the most aggressive native sod grass available. Once established, it becomes very persistent and provides excellent soil binding erosion control characteristics. It is productive native hay in above normal precipitation years, under water spreading, and other supplemental water irrigation systems. It is particularly productive in clayey swales and silty waterways, and has moderate to high salt tolerance. Adapted to lowlands prone to early season flooding with precipitation at or above 12 inches (use 14 inch + for areas that receive 50 percent or greater winter precipitation) and most mountain brush areas. Planting depth 1/4 to 1/2 inch. Adapted varieties include 'Rosana' (northern variety), 'Rodan' (northern variety), and 'Arriba' (southern variety). Other releases include 'Barton', 'Flintlock', and 'Walsh'. Average seeds per ft² at 1 lb. PLS rate is 3. Recommended pure stand seeding rate 6 PLS lb./ac. Not recommended in pure stands. Recommended 50% mixed stand seeding rate 3.0 lb./ac.

Wheatgrass, Bluebunch (*Pseudoroegneria spicata* = *Agropyron spicatum*)

'Goldar' released by Aberdeen, ID PMC, 1989

'Anatone' released by Aberdeen, ID PMC, 2004

'Columbia' released by Logan, UT ARS, 2004

Wahluke Source Identified release from BFI Seed, 2002

P-5, test material from Logan, UT ARS

'P-7' released by Logan, UT ARS, 2001

P-12, test material from Logan, UT ARS

P-15, test material from Logan, UT ARS

A long-lived, drought-tolerant, widespread native bunchgrass. It begins growth early in spring and again with the onset of fall rains. It is highly palatable and recovers rapidly after grazing but has low resistance to repeated or heavy grazing. It is not recommended as a hay crop. Several years are required for stand to obtain full productivity due to poor seedling vigor. Allow seedlings to reach maturity (seedhead development) before grazing. Recommended sites include foothills and valleys with 10-20 inches precipitation, sagebrush, ponderosa pine, mountain brush and juniper-pinyon ranges. Low plant vigor results in poor stands on sites above 6500-ft. elevation. Planting depth 1/4 to 1/2 inch. Adapted varieties are 'Anatone' for use above 10" precipitation and 'Goldar' and 'P7' for use above 12" precipitation. P-12 and P-15 are predecessor populations for the ARS release 'Columbia'. Both were collected near Lind, WA in a 10" precipitation area. 'Secar' (See Snake River Wheatgrass), previously considered to be bluebunch wheatgrass but found to be a subspecies of thickspike wheatgrass, is more drought tolerant than bluebunch wheatgrass in lower precipitation areas (8-12"). Wahluke is a source identified release collected from a 6" precipitation site in Franklin County, WA. Average seeds per ft² at 1 lb. rate 3. Recommend pure stand rate 7.0 lb./ac.,

Wheatgrass, Snake River (*Elymus wawawaiensis* formerly *Pseudoroegneria spicata*)

'Secar' released by Pullman, WA PMC, 1980

Expedition, test material from Logan, UT ARS

SERDP, test material from Logan, UT ARS

Jim Creek Source Identified release from BFI Seed, 2000

E-26, test material from Logan, UT ARS

Snake River wheatgrass is a native of the canyons of the Snake River and its tributaries in Washington, eastern Oregon, and western to northern Idaho. It is similar in appearance to bluebunch wheatgrass, but differs morphologically in having narrower, acuminate (pointed) to aciculate (needle-like) glumes, a more imbricate (overlapping) spike, and glabrate (without hairs) basal leaf sheaths. It is adaptable to most bluebunch wheatgrass areas but is best suited for the lower precipitation areas (8 to 12 inches). (See bluebunch wheatgrass). The only variety is 'Secar'. It is an early maturing bunchgrass with good seedling vigor and establishes well in native seed mixes. Secar is considered more drought tolerant than previously released bluebunch wheatgrasses. Expedition is said to have improved seedling establishment under drought stress compared to 'Secar' and is slated for release in the near future. Average seeds per ft² at 1 lb. rate 3. Recommend pure stand rate 7 lb./ac.

Wildrye, Basin (*Leymus cinereus* = *Elymus cinereus*)

'Magnar' released by Aberdeen, ID PMC, 1979

'Trailhead' released by Bridger, MT PMC, 1991

Washoe Germplasm, released by Bridger, MT PMC 2002

U70-01, test material from Great Basin Research Center, UTDWR

U108-02, test material from Great Basin Research Center, UTDWR

U100-01, test material from Great Basin Research Center, UTDWR

A slowly spreading, robust, large native bunchgrass. Basin wildrye is tall, coarse, long-lived, and highly palatable early in spring and becoming low in palatability as it matures. It is useful for calving pasture and wildlife forage and cover. Poor seedling vigor usually results in sparse stands, but one of the highest producing species once established. Do not graze new seedlings until seedheads are evident or no sooner than the end of the second growing season. Mature plants are unpalatable and need to be managed for use at earlier periods with grazing management scheduled to maintain a 10 to 12 inch stubble height to avoid removing the growing point of this species. Great care must be taken to avoid close grazing or clipping which may result in plant loss in a single season. Winter grazing with protein supplements utilize old coarse growth. Best adapted to moderately saline or alkaline lowlands, flood plains, and flow in areas with high water holding capacity. Especially suited to deep, fine textured clayey to loamy soils that receive 8-12 inches precipitation. Plantings have been established in rainfall areas as low as 5 inches, however basin

wildrye plantings are not recommended in areas with less than 8 inches annual precipitation. Particularly well suited for many juniper areas; performs well throughout the mountain brush zone and in aspen openings. Planting depth 1/2 to 3/4 inch. Adapted cultivars are 'Magnar' (blue-green upright leaves) and 'Trailhead' (green overhanging leaves) selected for excellent drought tolerance. 'Washoe' was selected for its high tolerance to acidic conditions and should be useful in mine reclamation situations. Average seeds per ft² at 1 lb. rate 3. Recommend pure stand seeding rate 7 lb./ac. Basin wildrye is highly recommended for native species mixtures.

Fescue, Sheep (*Festuca ovina*)

Initial Point, source identified test material collected by Idaho BLM

'Covar' released by Pullman, WA PMC, 1977

A long-lived short stature introduced bunchgrass with short leaf blades. It is more drought tolerant than other fescues. Production is low, but groundcover and root production is excellent. It is used for turf, highway plantings, airport landing strips, burned over timberland and reclamation areas where a long-lived, persistent, competitive ground cover is needed. Not recommended for pasture or hay. Sheep fescue is best adapted to 10+ inch precipitation zones. A very good erosion control and understory species that competes well with weeds. Early spring seedings are recommended. Only pure stands or mixtures with hard fescue are recommended. Planting depth 0-1/4 inch. Adapted varieties are 'Covar' and 'Bighorn'. Average seed per ft² is 16 at a 1 lb. rate. Recommended pure stand rate is 4 lb./ac.

Needlegrass, Thurber's (*Achnatherum thurberianum*=*Stipa thurberiana*)

Orchard, test material from USDA FS Intermountain Shrub Lab

A medium height, cool season, native bunchgrass. It is very drought tolerant and often found on well drained, rocky sites and southern exposures in the 8-16 inch rainfall zones. It has fine leaves and is fair to good forage in the early spring when most species are not productive and can green-up in fall with rainfall. It is currently under development by the Forest Service. Native seed collections should specify "Source Identified" seed. Average seeds per ft² at 1 lb. rate 3. Seeding rate 7 lb./ac.

Bluegrass, Sandberg (*Poa secunda* =*P. sandbergii*=*P. ampla*)

'Sherman' released by Pullman, WA PMC, 1945

High Plains Germplasm released by Bridger, MT PMC 2000

Mountain Home, test material from USDA FS Intermountain Shrub Lab

Toole County, MT, source identified release from L&H Seed

Hanford Source, source identified release from L&H Seed

Sandberg bluegrass is a small, low producing, very drought tolerant, native, perennial bunchgrass that grows in small tufts usually no larger than 6-8 inches in diameter. It is widely distributed throughout western range plant communities where it is considered an important grass for soil stabilization and forage for wildlife. It is best adapted to medium to heavy textured soils. It is found from 1,000 feet in Washington to 12,000 feet in northern New Mexico. It is adapted to 8-20 inches of moisture annually. It is tolerant of heavy trampling. Forage yields are very low, seed viability is generally poor, and forage quality declines rapidly in mid to late spring as it matures. It is one of the first grasses to green-up in the spring. Due to its low stature, Sandberg bluegrass can withstand heavy grazing pressure. On large areas of western semi-desert rangelands, overgrazing has depleted most of the desirable bunchgrasses except Sandberg bluegrass. It provides little to no forage in summer and fall unless fall rains occur. 'High Plains' Selected Class Germplasm is a recent release from Bridger PMC. 'Sherman' is a large statured plant previously released as big bluegrass (*Poa ampla*) Plant at 1/4 inch or less depth. Average seeds/ft² at one pound rate 21. Recommended pure stand seeding rate 2 lb./ac. It is best utilized in low rainfall area native mixes.

Wheatgrass, Crested Standard type-AGDE2 (*Agropyron desertorum*)

'Nordan' released by ND AES, 1953

A very long-lived, drought tolerant bunchgrass adapted to a wide range of sites and precipitation zones as low as 9-10 inches. Growth begins early in the spring and again with fall moisture. Palatability is excellent in the spring and late fall, less during summer dormancy and after seed formation. It has very vigorous seedlings. Adapted to foothills with 9-16 inches precipitation, sagebrush, ponderosa pine, mountain brush, and juniper-pinyon ranges. Expect low vigor and poor stands above 6500 feet elevation. This species is more drought tolerant than Fairway type crested wheatgrasses. Planting depth 1/4 to 1/2 inch. Adapted varieties are 'Nordan' and 'Summit'. Average seeds per ft² at 1 lb. rate 4. Recommend pure stand rate 5 lb./ac.

Wheatgrass, Crested CD-II and Hycrest-hybrids (*Agropyron cristatum* x *A. desertorum*)

'Hycrest' released by Logan, UT ARS, 1984

'CD-II' released by Logan, UT ARS, 1996

A hybrid cross between Standard type and induced tetraploid Fairway type crested wheatgrass. Seedlings are extremely vigorous during germination and early establishment. Survives under greater competition than other crested wheatgrasses. Yields more forage (15-20%) in younger stands; is an outstanding seed producer, but more stemmy. Occupies same sites as standard and Fairway crested wheatgrass. Especially useful in drier sagebrush - cheatgrass sites. Survives in areas with 9-16 inches precipitation. Does not persist as well as Standard type crested wheatgrass or Siberian wheatgrass in very droughty sites. Planting depth 1/4 to 1/2 inch. Cultivars include 'CD-II' and 'Hycrest'. Average seeds per ft² at 1 lb. rate 4. Recommend pure stand rate 5 lb./ac.

Wheatgrass, Crested Fairway type-AGCR (*Agropyron cristatum*)

'Ephraim' released by USFS, 1983

'Douglas' released by Logan, UT ARS, 1994

'Roadcrest' released by Logan, UT ARS, 1998

A very long-lived, drought-tolerant, vigorous introduced bunchgrass. Similar to standard crested wheatgrass but shorter, earlier maturing, with finer stems and leaves. Establishes on similar sites (10-18 inches precipitation) as standard and grows more effectively than standard at higher elevations. This species does not survive as well as standard crested wheatgrass under severe drought conditions. Planting depth 1/4 to 1/2 inch. Adapted varieties are 'Fairway' and 'Ephraim'. 'Ephraim', is a tetraploid variety of *A. cristatum* that is weakly rhizomatous in higher rainfall areas. 'Roadcrest' is a turf-type with short rhizomes and is recommended for low maintenance lawns. 'Douglas' crested wheatgrass is the first hexaploid on the market. Douglas is characterized as having larger seed, broader leaves and stays green longer into the early summer than other types mentioned above, but requires 14 inches of precipitation or more for long-term survival. It also establishes easily, but produces less forage. Because it stays green longer than other types, it is a preferred forage selection. Douglas is not as drought resistant as Nordan, Summit, Hycrest or CD-II. Other cultivars available but less adapted include 'Parkway', 'Kirk' and 'Ruff'. Average seeds per ft² at 1 lb. rate 4. Recommend pure stand rate 5.0 lb./ac.

Wheatgrass, Siberian (*Agropyron fragile* = *A. sibiricum*)

'P-27' released by Aberdeen, ID PMC, 1953

'Vavilov' released by Logan, UT ARS, 1994

Similar to crested wheatgrass, Siberian wheatgrass has finer leaves, and retains its greenness and palatability later into the summer than crested wheatgrass. It yields less than most crested wheatgrass cultivars. It occupies sites where standard crested wheatgrass will grow but is more drought tolerant (7-16 inches of precipitation) and is especially useful on juniper sites. Once established, it is reported to be well adapted to light-sandy, droughty soils and can withstand extended periods of drought better than crested wheatgrasses. Planting depth 1/4 to 1/2 inch. Adapted varieties include 'P-27' and 'Vavilov' (improved seedling vigor). Average seeds per ft² at 1 lb. rate 4. Recommend pure stand rate 6 lb./ac.

Wheatgrass, Pubescent (*Thinopyrum intermedium* = *Elytrigia intermedia* = *Agropyron trichophorum*)

'Luna' released by Los Lunas, NM PMC, 1963

'Manska' released by ARS, ND, 1992

'Greenleaf' released by Canada Department of Agriculture, 1966

'Rush' released by Aberdeen, ID PMC, 1994

A long-lived, late maturing, introduced, sod-forming grass adapted to low-fertility sites and coarse to medium textured soils. Very similar to intermediate wheatgrass (pubescence on leaves and seed heads) but slightly more drought-resistant, alkali tolerant, and somewhat less palatable. It is better adapted for pasture than for hay. Its ability to remain green during the summer, when soil moisture is limited, is a significant characteristic. Adapted to foothills with 11-18 inches precipitation, this species is excellent for situations where only one to two irrigations are possible, because it readily responds to irrigation with increased forage production, but can also withstand extended drought periods when irrigation water is not available. Useful on disturbed sites for soil stabilization and erosion control. It is not shade tolerant, but is moderately tolerant of saline soil conditions. It is very useful for erosion control on a wide range of sites. Suggested varieties are 'Luna' (most commonly used), 'Rush' (released for high seedling vigor and establishment) as well as 'Manska' and 'Greenleaf'. Average seeds per ft² at 1 lb. rate 2. Recommend pure stand rate 8 lb./ac.

Wildrye, Altai (*Leymus angustus*=*Elymus angustus*)

'Eejay' released by Agriculture Canada, 1989

'Pearl' released by Agriculture Canada, 1989

'Prairieland' released by Agriculture Canada, 1976

A winter hardy, drought resistant, long-lived, cool season introduced bunchgrass, sometimes with short rhizomes. It is known to root and use moisture to depths of 15 feet. Basal leaves are somewhat coarse, but very palatable during the late summer and early fall (protein levels of 8 percent are common in standing winter-feed). In northern regions it is commonly swathed into windrows and utilized as forage for winter feeding operations. Adapted to moderately deep to deep loams to clay loams with 14 inch or greater rainfall. It can withstand saline conditions almost as well as tall wheatgrass and is also almost as productive as tall wheatgrass on saline sites. Seedlings develop slowly and good seedbed preparation and weed control is essential. 'Eejay', 'Pearl', 'Mustang' and 'Prairieland' are released varieties. Average seeds per ft² at 1 lb. rate 2. Recommended pure stand rate 10 lb./ac.

Wildrye, Russian (*Psathyrostachys juncea*=*Elymus junceus*)

'Tetracan' released by Agriculture Canada, 1988

'Bozoisky-Select' released by Logan, UT ARS, 1984

'Mankota' released by ND, ARS, 1991

Syn A, test material from Logan, UT ARS

A long-lived introduced very drought tolerant bunchgrass. Grows rapidly in the spring and produces abundant basal leaves that remain green and palatable through summer and fall as long as soil moisture is available. It endures close grazing better than most grasses. It cures well on the stump (better than most cool season grasses) and makes excellent late fall and winter feed. Russian wildrye is not suited for hay production due to the predominance of basal leaves, which makes it difficult to harvest. Once established, it competes effectively against undesirable plants and it withstands drought as effectively and is more palatable than crested wheatgrass. However, most varieties have been erratic in establishment, demonstrate poor seedling vigor, and provide poor soil protection. Seed in areas receiving at least 8 inches of precipitation. Adapted to sagebrush, mountain brush, juniper-pinyon, and moderately saline sites. Useful on soils too alkaline for crested wheatgrass and too dry for tall wheatgrass. Planting depth 1/4 to 1/2 inch; and is very sensitive to deeper placement. Highest production occurs in wide row spacing of >18 inches. On steep slopes it should be planted on the contour. 'Vinal', an earlier variety, has poor seedling vigor and is not recommended. Canadian releases include 'Swift', which was selected for seedling vigor, and 'Cabree', selected both for seedling vigor and reduced seed shattering. U.S. releases include 'Bozoisky-Select', selected for increased seedling vigor and forage production and 'Mankota', selected for establishment from deeper seeding depths. In plantings in the Intermountain West, Bozoisky-Select and Mankota should be the varieties of choice. Average seeds per ft² at 1 lb. rate 4. Recommend pure stand seeding rate 6 lb./ac.

Yarrow, Western (*Achillea millefolium*)

Eagle, source identified release from Geertson Seed Farms

Great Northern released by Bridger, MT PMC, 2004

Western yarrow is a perennial forb (member of the sunflower family) and is one of the most widely distributed forbs in the western United States. Native ecotypes are white flowered while Eurasian ecotypes are pink to yellow flowered. It can be found from the valley bottoms to the subalpine zone. Greatest areas of occurrence are mountain brush, aspen, and open timber. It has some shade, drought, and grazing tolerance and can be found in sandy to loamy soils ranging from weakly basic to weakly acid. Yarrow spreads by seed and rhizomes; does an especially good job on disturbed and depleted areas. It may invade adjacent areas that have proper growing conditions. Fall seeding is recommended. Depth of seeding should not exceed 1/4 inch. Western yarrow should be seeded in mixtures with other species. It is easily transplanted. It has been successfully used in plantings that receive as little as 8 inches effective precipitation. Bridger PMC has recently released Great Northern Germplasm from a source in northwestern Montana. Average seeds per ft² at 1 lb. rate 95. Pure stand seeding rate 0.25 lb./ac. Not recommended for pure stands.

Sweetvetch, Utah (Northern) (*Hedysarum boreale*)

'Timp' released by Upper Colorado Environmental Plant Center, 1994

Utah or Northern sweetvetch is a native perennial legume. This species occurs in the foothills and upland areas that receive 10 or more inches of precipitation. Sweetvetch prefers well-drained soils ranging from rocky, gravelly, and sandy to heavy clay. Its deep taproot enables it to take advantage of deep soil moisture

that results in considerable drought resistance and winter hardiness. Seed should be fall seeded at 1/8 inch to 3/4 inch deep. It is very slow to establish in mixed stands and requires alternate row planting to provide optimum establishment. Livestock and big game graze this species when available. Spring green up occurs early, and basal leaves remain green throughout the winter. 'Timp' is a release from Meeker PMC. Average seeds per ft² at 1 lb. rate 2. Pure stand seeding rate 18 lb./ac. Not recommended for pure stands.

Penstemon, Firecracker (*Penstemon eatonii*)

Richfield Selected Germplasm, released by Aberdeen, ID PMC, 1994

A perennial, erect, cool season, short-lived, good reseeder, native forb that has a fibrous root system, stems that are decumbent or reclining, leaves that are slightly pubescent, flowers on upright stems that are bright red and bloom in mid summer through early fall. It is adapted to sagebrush, juniper and ponderosa pine zones at 3,300 to 8,000 feet elevation in 10-16 inch precipitation zones. It does best in full sunlight and can survive cold winter temperatures if snow insulates the plant. It does not do well in poorly drained areas. Potential uses include erosion control, diversity and beautification. The Richfield Selection is a release of firecracker penstemon from Aberdeen PMC. Due to hard seed, plant penstemon species in late fall-early winter at soil surface to 1/8-inch depth. Average seeds per ft² at 1 lb. rate 7. Not recommended in pure stands.

Globemallow, Scarlet (*Sphaeralcea coccinea*)

Test material from Great Basin Research Center

Scarlet globemallow is a native, low-spreading perennial with creeping rhizomes. This species has considerable drought resistance with greatest area of occurrence is between 7 and 12 inches annual precipitation. It establishes especially well on disturbed sites. It is an excellent soil stabilization species in native species mixtures on harsh sites. Fall seeding is recommended. A hard seed coat often prevents germination. Seed should not be planted deeper than 1/4 inch. Average seeds per ft² at 1 lb. rate 17. Pure stand seeding rate 3 lb./ac. Not recommended in pure stands.

Flax, Lewis and Blue (*Linum lewisii* and *Linum perenne*)

Maple Grove Germplasm, released by Aberdeen, ID PMC, 2004

'Appar' released by Aberdeen, ID PMC, 1980

Blue flax is an introduced, perennial, semi-evergreen, blue-flowered forb that prefers well-drained soils that range from moderately basic to weakly acidic. It prefers growing in the open, but does have some shade tolerance. It is intolerant of poor drainage, flooding and high water tables. This species grows well in 10-18 inch precipitation areas including all three big sagebrush types, juniper and mountain brush communities. It has been successfully seeded in the salt desert shrub type. Flax does well seeded in mixtures with other species. It can be surface seeded on a disturbed seedbed and should not be seeded deeper than 1/8 inch. This semi-evergreen forb is eaten readily by big game especially during spring and winter and upland game and songbirds relish seeds. This species does well seeded on disturbed sites. 'Appar' was released for its superior forage and seed production and palatability to livestock and wildlife. Recent research has identified 'Appar' as introduced from European origins. Maple Grove Germplasm (*Linum lewisii*) is a new native release by the USDA FS and Aberdeen PMC. Average seeds per ft² at 1 lb. rate 6. Pure stand seeding rate 4 lb./ac. Not recommended in pure stands.

Sagebrush, Wyoming Big (*Artemisia tridentata ssp. wyomingensis*)

Test material from BLM Seed Warehouse, Boise, ID

Big sagebrush with its 4 major subspecies (basin, Wyoming, mountain, spicate) is a widely occurring, landscape dominating native shrub ranging in height from 1 to 15 feet. The lower forms generally have several main stems arising from the base; the tall forms often have a single trunk. Big sagebrush grows in a variety of soils on arid plains, valleys, and foothills to mountain slopes in the 8-18 inch rainfall areas. It is frequently associated with such shrubs as shadscale, rubber rabbitbrush, green rabbitbrush, fourwing saltbush, spiny hopsage, gray horsebrush, winterfat, broom snakeweed, antelope bitterbrush, snowberry, and serviceberry. Big sagebrush is one of the more nutritious shrubs on western winter game ranges. Palatability of the different populations of this shrub to mule deer, sheep, and other animals varies widely. It is one of the best shrubs available for use in revegetation of depleted winter game ranges in the Intermountain West. Big sagebrush establishes rapidly from direct broadcast seeding on disturbed surfaces. It is useful for stabilizing washes, gullies, road-cuts, and other raw, exposed sites. It is widely seeded on big game improvement projects. Plants spread well by natural seeding and furnish considerable browse soon after seeding. Big sagebrush is aggressive and persistent and sometimes forms closed stands, which require control measures to improve species diversity. 'Hobble Creek' is a robust, palatable form of

mountain big sagebrush adapted to areas with 14 inches or more precipitation and deeper soils. 'Gordon Creek' is a release of Wyoming big sagebrush adapted to 10-14 inches precipitation. Wildland seed collection is a common practice and Source Identified seed is recommended when using wildland collected seed. Use of freshly harvested seed is also recommended. Seed at 0-1/8 inch depth. Average seeds per ft² at 1 lb. rate; Basin 39, Mountain 45, Wyoming 39. Not recommended for pure seedings. Recommended rates in mixes are approximately 1/40 of a pound PLS per acre.

Saltbush, Fourwing (*Atriplex canescens*)

Snake River Plains Germplasm, released by Aberdeen, ID PMC, 2001

'Wytana' released by Bridger, MT PMC, 1976

'Rincon' released by USDA FS, 1983

Fourwing saltbush is an upright native shrub from 1 to 6 feet tall depending on site conditions and genotype. It occurs as pistillate (female), staminate (male), or more rarely monoecious (female and male) bushes. The species grows in a variety of soil types from valley bottoms and plains to mountainous areas. It is well suited to deep, well-drained sandy soil, sand dunes, gravelly washes, mesas, ridges, and slopes, but vigorous plants have been found in heavy clays as well. It is frequently found intermixed with numerous shrub and grass species. It is primarily found in the 8-16 inch precipitation zones. Fourwing saltbush is one of the most valuable forage shrubs in arid rangelands because of its abundance, accessibility, palatability, size, evergreen habitat, nutritive value, rate of growth, and large volume of foliage. Its leaves, stems, and utricles provide browse in all seasons. It withstands extremely heavy browsing and often appears to be stimulated by use. Research indicates that some ecotypes of this species may resprout following fire. This species is also one of the most important shrubs for use in rehabilitation of depleted rangelands and in soil stabilization projects. It can be established by direct seeding and by bare root and container transplanting. Fall seeding results in the best stands. The cultivar 'Rincon' is a strain best adapted to the warmer-southern big sagebrush and juniper zones but also does well in the more mesic portions of salt desert shrub areas. Another cultivar is 'Wytana', a natural hybrid of fourwing saltbush and Gardner saltbush, with lower stature. It is best adapted to higher elevation northern great plain on clayey saline soils. The most recent release by Aberdeen PMC, Snake River Plains Germplasm has better cold tolerance than Rincon and is recommended for southern Idaho, northern Nevada and northern Utah. Wildland seed collection is a common practice and Source Identified seed is recommended when using wildland collected seed. Plant at 1/4-3/4 inch depth. Average seeds per ft² at 1 lb. rate 1.2. Not recommended for pure stands. Recommended rate in mixes is approximately 1/4 of a pound PLS per acre - dewinged.

Saltbush, Gardner or Nuttall (*Atriplex gardneri* = *A. nuttallii*)

9016134 test material from Bridger, MT PMC

Gardner saltbush is a low growing perennial shrub that is widespread throughout the Intermountain West including salt desert shrublands. It is usually found on saline heavy textured soils in drier sites than sagebrush or fourwing saltbush, but may be in association with them and is most common in areas receiving 6-12 inches of precipitation. On adapted sites, this species establishes and grows rapidly where few other species exist. It is sensitive to over grazing and many sites that historically supported this species are now lost. It produces excellent browse in all seasons for wildlife and livestock. Wildland seed collection is a common practice and Source Identified seed is recommended when using wildland collected seed. Plant at 1/4-3/4 inch depth. Average seeds per ft² at 1 lb. rate 2.6. Not recommended for pure stands. Recommended rate in mixes is approximately 1/4 of a pound PLS per acre. It is best to plant Gardner saltbush in separate rows from other species.

Winterfat (*Krascheninnikovia lanata* = *Ceratoides lanata* = *Eurotia lanata*)

Northern Cold Desert Germplasm released by Aberdeen PMC, 2001

'Hatch' released by USDA FS, 1985

Open Range Germplasm, released by Bridger, MT PMC, 2002

Winterfat is an erect or spreading native sub-shrub that shows wide variation in stature from dwarf forms less than 8 inches in height to larger forms to 4 feet in height. The dwarf forms are herbaceous above with a woody base; taller forms tend to be woody throughout. Winterfat is most abundant on lower foothills, plains, and valleys with dry saline to alkaline soils that receive 7 inches or more precipitation. Winterfat is a superior nutritious winter browse for livestock and big game. Sheep, cattle, antelope, elk, deer, and rabbits utilize winterfat. Even though it is relatively tolerant to browsing, over grazing has greatly reduced and even eliminated winterfat in some areas. Winterfat seed maintains viability for relatively short periods of time (6 months to 2 years) without special treatment. Seeds require an after-ripening period for

maximum germination and germinate best at warm temperatures (77 to 80°F). Winterfat may be established by seed or by transplanting in 9 inch or greater rainfall areas (attempts to establish winterfat in lower rainfall zones commonly fails). Young seedlings are generally vulnerable to spring frosts. The upright variety, 'Hatch', is best adapted to southern ranges and produces rapid growth. The most recent release by Aberdeen PMC, Northern Cold Desert Germplasm has better cold tolerance than past releases and is recommended for southern Idaho, northern Nevada and northern Utah. Bridger PMC released Open Range Selected Germplasm in 2002 for use in the Northern Rocky Mountains and Great Plains. Wildland seed collection is a common practice and Source Identified seed is recommended when using wildland collected seed. Average seeds per ft² at 1 lb. rate 2.8. Not recommended for pure stands. Recommended rates in mix are approximately 1/40 of a pound PLS per acre.

Kochia, Forage (*Kochia prostrata*)

'Immigrant' released by USDA FS, 1984

A semi-evergreen perennial sub-shrub introduced from southern Eurasia. On many desert and semidesert ranges, in Russia, it is considered a valuable forage shrub often associated with crested wheatgrass. It has been seeded in the Western United States for many years as a forage and reclamation plant on semiarid locations.

Forage kochia is adapted to basic soils but not suitable for neutral or acid soils. Successful plantings have occurred on soils ranging from sandy loam to heavy clay, with the most successful plantings on heavier soils. This shrub develops a fibrous root system with a large deep taproot, and has been established in areas that receive 5 to 27 inches of annual precipitation.

Forage kochia has demonstrated its adaptability to the juniper, basin big sagebrush, Wyoming big sagebrush, and greasewood-shadscale habitats. Important characteristics: ability to establish and persist on disturbed harsh soils, high salinity and drought tolerance, tolerance of extreme temperatures (-25°C to 104°C), low oxalate levels (lower than winterfat and fourwing saltbush), ability to spread slowly from seed, high seed production, moderate shade tolerance, fair palatability for livestock and big game, food and cover for upland game birds, good fire tolerance, compatibility with other perennials, competitiveness with annuals, and ability to increase fall and winter forage quality of perennial grass stands. The lower one-third of the plant remains green and succulent year around. The upper stems and seed stalks turn brown to red and dry after seed shatter (November to December).

Protein content during winter (upper dry stems 6%, lower green stems 8-9%) is higher than what occurs in antelope bitterbrush and true mountain mahogany. Summer protein content has been found to be over 13%. Sheep and deer find this shrub palatable year around. When established in annual communities such as halogeton or cheatgrass, forage kochia can compete with annuals by reducing their dominance, density, forage, and seed production. In perennial communities, this shrub fills in interspaces but has not been observed to reduce the density of established perennials.

It is compatible in mixtures with drought tolerant grasses. Direct seeding on rangeland is best accomplished in the fall or winter by broadcasting on top of disturbed or undisturbed soil. Seed viability is generally limited to one year and use of fresh seed with a current germination analysis is highly recommended. If drill seeded, seed should not be seeded deeper than 1/16-inch. Seeding can be in combination with other perennial species. One cultivar, 'Immigrant' has been released. Average seeds per ft² at 1 lb. rate 9.0. Recommended full seeding rate 1 lb./ac. It is not recommended in pure stands. Recommended rates in mix is approximately 1/40 of a pound PLS per acre.

Caribou-Targhee National Forest
Native Grass Initial Evaluation
2004-2005

Preliminary Report (July 18, 2005)

Derek J. Tilley, Range Conservationist (Plants)

Loren St. John, Team Leader Aberdeen Plant Materials Center

INTRODUCTION

The purpose of this study is to evaluate collections of two species of native short-lived perennial grasses for use in revegetation, stabilization and beautification projects in the USDA Forest Service, Caribou-Targhee National Forest (CTNF).

During the summer of 2004, CTNF collected 11 accessions of slender wheatgrass (*Elymus trachycaulus* [Link] ssp. *trachycaulus*) and 10 accessions of mountain brome (*Bromus marginatus* Nees ex Steudel). The collections were cleaned for future evaluation by the USDA-NRCS Aberdeen Plant Materials Center (PMC). Appendix 1 lists the accessions collected, the size of each collection and collection location. The initial establishment evaluation was conducted on June 15, 2005.

MATERIALS AND METHODS

Harvested seed collections were cleaned at the PMC seed cleaning facilities during the winter of 2005. Appendix 2 provides detailed information on seed cleaning equipment and calibrations used. Estimated viability was obtained using the kerosene heater “popping” method outlined in Ogle and Cornforth (2000) and was used to approximate pure live seed (PLS).

The trial is being conducted at the Aberdeen Plant Materials Center, Fish and Game farm located approximately 5 miles northeast of Aberdeen, Idaho. Experimental design was a randomized complete block with six replications. Individual plots were 20 feet long and contained one row; rows were planted on three foot centers. Experimental design also contained plots of known industry standards from each species for comparison. Soil at the site is a Declo silt loam with pH of 7.4 to 8.4. Average annual precipitation is 8.75 inches. Ground was plowed in the fall of 2004 and subsequently disked and roller packed in the spring of 2005 prior to planting.

Plots were seeded on May 19, 2005 using a hand-pushed belt seeder calibrated to drill 30 pure live seeds (PLS) per foot of row. Seeds were drilled to an approximate depth of one half inch. Border rows of ‘Tegmar’ intermediate wheatgrass (*Thinopyrum intermedium* [Host] Barkworth & D. Dewey) were planted on the outside of the blocks to eliminate edge effect. Plots were sprinkler irrigated for initial establishment and as needed throughout the growing season. Weeds were controlled with herbicide treatments and between row mechanical cultivation.

The first evaluation was conducted on June 15, 2005 (27 days after planting) when most of the plants from both species had reached a one to two leaf stage. Plots were evaluated for percent stand, plant density and seedling vigor. Percent stand was measured using a twenty foot rope marked with one foot increments stretched the length of the plot and

anchored at either end. Plants intercepting the one foot increments are summed and recorded as a percentage. Plant density was measured by counting seedlings found in the middle two feet of row and converted to average plants per foot of row. Seedling vigor is measured on an ordinal scale of one to nine (one being most healthy and nine being dead). Entire plots as well as individual plants within plots were viewed and given a rating based on overall apparent vigor. Data from percent stand and plant density was analyzed for Analysis of Variance (ANOVA) and means were separated using Duncan's Multiple Range Test.

2005 EVALUATIONS AND DISCUSSION (PRELIMINARY)

Slender Wheatgrass

CTNF accessions of slender wheatgrass were compared against five previously released varieties; 'AEC Hillcrest', 'Pryor', 'Revenue', 'San Luis', and 'Adanac', and one non-released selection from the U.S. Army (D.O.D.). Of these, three (AEC Hillcrest, Revenue and Adanac) come from collections originally made in Canada. Pryor comes from a collection made in Montana and San Luis was originally collected in Colorado. See Tilley et al (2005b) for a detailed comparison of the characteristics for each released cultivar. The Army accession is a currently unreleased breeding population made of several collections from Colorado. AEC Hillcrest differs from the other accessions by being of the subspecies *subsecundus* and should not be considered directly comparable to the collections made by CTNF.

Percent stand ranged from 51.8% (accessions 9076500 and 9076502) to 85.1 (San Luis and Adanac). The high rating from San Luis and Adanac did not, however, differ significantly from several collections with percent stands of 70% or greater. The best plant density rating came from Revenue with 17.9 plants/foot. The poorest density was recorded from accession 9076496 with a density of 2.3 plants/foot. This accession similarly had the lowest seedling vigor rating of 6.7, while the best vigor was observed in Revenue (1.2). Of the CTNF accessions 9076495, 9076498 and 9076499 performed the best in the three evaluated categories (see table 1).

Mountain Brome

The mountain brome trial included two industry releases, Garnet Germplasm from Montana and 'Bromar' from the Pacific Northwest. See Tilley et al (2005a) for detailed information on these mountain brome releases.

The best percent stand and plant density both came from Garnet (81.6 % and 22.3 plants/foot). Second best in both categories was Bromar (78.1 % and 14.1 plants/foot) which also had the best possible rating for seedling vigor (1.0). In general, the CTNF accessions showed little if any significant differences from one another (see table 2).

This is a preliminary report of the initial evaluation conducted in June 2005. The trial will be evaluated again in late September and a report summarizing the evaluations conducted during 2005 will be prepared.

Table 1. Slender wheatgrass

Accession No.	% Est. viability	% PLS ^{3/}	% stand	Density ^{1/}	Vigor ^{2/}
			6/15	6/15	6/15
9076493	95	90.25	54.4 c ^{4/}	6.8 def	4.0 bcd
9076494	95	90.25	70.2 ab	13.0 abc	4.0 bcd
9076495	90	85.5	77.2 ab	13.4 abc	3.0 def
9076496	90	85.5	25.4 d	2.3 f	6.7 a
9076497	95	90.25	64.0 bc	7.8 cdef	3.3 def
9076498	95	90.25	75.4 ab	15.3 ab	3.7 cde
9076499	85	80.75	71.1 ab	14.5 ab	3.0 def
9076500	95	90.25	51.8 c	4.8 ef	4.8 bc
9076501	95	90.25	73.7 ab	10.8 bcde	2.8 def
9076502	90	85.5	51.8 c	8.2 cdef	3.7 cde
9076503	85	80.75	52.7 c	8.0 cdef	5.0 b
AEC Hillcrest	95	91.2	71.9 ab	13.3 abc	2.7 ef
Pryor	99.9	91.9	71.9 ab	12.3 abcd	2.2 fg
Revenue	*	80.1	79.8 ab	17.9 a	1.2 g
San Luis	99	87.12	85.1 a	16.9 ab	5.2 b
D.O.D.	98	90.2	79.8 ab	16.6 ab	1.3 g
Adanac	98	84.3	85.1 a	18.1 a	1.5 g
LSD (0.05)			13.8	1.9	0.4

^{1/} Plants per foot of row^{2/} Rated 1-9 with 1 best, 9 worst^{3/} Percent PLS based on estimated 95% purity^{4/} Means followed by the same letter are not significantly different

* Information not available from source

Table 2. Mountain brome

Accession No.	% Est. viability	% PLS	% stand	Density	Vigor
			6/15	6/15	6/15
9076504	85	80.75	72.8 abc	10.9 b	3.8 a
9076505	85	80.75	66.7 abc	11.3 b	3.3 ab
9076506	90	85.5	66.7 abc	8.7 b	2.7 ab
9076507	90	85.5	70.2 abc	9.8 b	3.8 a
9076508	85	80.75	74.6 abc	12.8 b	2.8 ab
9076509	95	90.25	73.7 abc	12.6 b	3.2 ab
9076510	95	90.25	74.6 abc	12.8 b	2.8 ab
9076511	90	85.5	59.7 bc	10.8 b	3.2 ab
9076512	90	85.5	59.7 bc	11.9 b	2.3 abc
9076513	90	85.5	54.4 c	10.1 b	2.2 bc
Garnet	55	53.35	81.6 a	22.3 a	2.0 bc
Bromar	97	96.0	78.1 ab	14.1 b	1.0 c
LSD (0.05)			18.4	1.9	0.5

REFERENCES

Ogle, D., and B. Cornforth. 2000. Technical Note 35: A Quick Method to Estimate Germination Percentages for Seed Species. USDA-NRCS, Boise, ID. ID-TN35, Mar. 2000. 3p. (9 KB) (ID# 2250)

Tilley, D.J., D.G. Ogle and L. St. John. 2005a. Mountain Brome. NRCS Plant Guide. USDA, NRCS, Idaho State Office & the National Plant Data Center. 5p.

Tilley, D.J., D.G. Ogle and L. St. John. 2005b. Slender Wheatgrass. NRCS Plant Guide. USDA, NRCS, Idaho State Office & the National Plant Data Center. 5p.

Appendix 1. Collection data

Accession No.	Species	Date collected	Cleaned wt. (lbs)	National Forest	District	Location	Elevation (ft)
9076493	ELTR7	8/31/04	1.00	Bridger-Teton	Jackson	Shadow Mt	7,872
9076494	ELTR7	8/10/04	0.85	Targhee	Island Park	Taylor Creek	6,619
9076495	ELTR7	8/31/04	1.06	Bridger-Teton	Jackson	Curtis Canyon	7,662
9076496	ELTR7	8/23/04	0.92	Caribou	Montpelier	Green Canyon	8,309
9076497	ELTR7	9/1/04	0.49	Targhee	Dubois	Bear Trap Creek	7,402
9076498	ELTR7	7/29/04	0.20	Caribou	Westside	Big Springs	6,290
9076499	ELTR7	8/19/04	1.54	Caribou	Soda Springs	Diamond Creek	6,784
9076500	ELTR7	8/3/04	0.70	Caribou	Palisades	McCoy Creek	5,766
9076501	ELTR7	8/11/04	0.57	Targhee	Teton Basin	Dry Creek	6,743
9076502	ELTR7	9/9/04	1.62	Bridger-Teton	Buffalo	Togwotee Pass	8,514
9076503	ELTR7	7/30/04	0.10	Caribou	Palisades	Little Elk Creek	5,990
9076504	BRMA4	8/24/04	0.84	Caribou	Montpelier	Egan Basin	8,135
9076505	BRMA4	8/4/04	1.46	Caribou	Palisades	Moody Meadow	6,307
9076506	BRMA4	8/3/04	0.76	Caribou	Palisades	McCoy Creek	5,766
9076507	BRMA4	7/30/04	0.24	Caribou	Palisades	Little Elk Creek	5,990
9076508	BRMA4	8/11/04	0.36	Targhee	Teton Basin	Dry Creek	6,743
9076509	BRMA4	8/31/04	2.04	Bridger-Teton	Jackson	Shadow Mt.	7,872
9076510	BRMA4	8/10/04	0.94	Targhee	Island Park	Taylor Creek	6,619
9076511	BRMA4	7/29/04	0.20	Caribou	Westside	Big Springs	6,290
9076512	BRMA4	9/9/04	3.60	Bridger-Teton	Buffalo	Togwotee Pass	8,514
9076513	BRMA4	8/19/04	2.25	Caribou	Soda Springs	Diamond Creek	6,784

Appendix 2. Seed cleaning calibrations

Mountain Brome

I. Air Screen Cleaner

1. Screens
 - a. top: 5.550
 - b. middle: 4.750
 - c. bottom: blank
2. Valves
 - a. 3.25
 - b. 3.5
 - c. 5.0
 - d. closed
3. Settings
 - a. sieve: 10.0
 - b. blower 5.0

II. Indent Cleaner (used to remove seeds w/ smut)

1. Drum: 7.25

Slender wheatgrass

I. Hammermill

1. Screen: 0.5 inch
2. Air: low

II. Air Screen Cleaner*

1. Screens
 - a. top: 3.550
 - b. bottom: 6x24
2. Valves
 - a. 3.45
 - b. 3.50
 - c. 4.75
 - d. closed
3. Settings
 - a. sieve: 2.0
 - b. blower: 2.0

*Ran through three times to clean out inert matter.

Caribou-Targhee National Forest
Native Grass Initial Evaluation
2005 Progress Report
Derek J. Tilley, Range Conservationist (Plants)
Loren St. John, Team Leader Aberdeen Plant Materials Center

INTRODUCTION

The purpose of this study is to evaluate collections of two species of native short-lived perennial grasses for use in revegetation, stabilization and beautification projects in the USDA Forest Service, Caribou-Targhee National Forest (CTNF).

During the summer of 2004, CTNF collected 11 accessions of slender wheatgrass (*Elymus trachycaulus* [Link] ssp. *trachycaulus*) and 10 accessions of mountain brome (*Bromus marginatus* Nees ex Steudel). The collections were cleaned by the USDA-NRCS Aberdeen Plant Materials Center (PMC) for evaluation. Appendix 1 lists the accessions collected, the size of each collection and collection location. Evaluation plots were established May 19, the initial establishment evaluation was conducted on June 15 and the second evaluation was conducted on September 16, 2005.

MATERIALS AND METHODS

Harvested seed collections were cleaned at the PMC seed cleaning facilities during the winter of 2004-2005. Appendix 2 provides detailed information on seed cleaning equipment and calibrations used. Estimated viability was obtained using the kerosene heater "popping" method outlined in Ogle and Cornforth (2000) and was used to approximate pure live seed (PLS).

The trial is being conducted at the Aberdeen Plant Materials Center, Fish and Game farm located approximately 5 miles northeast of Aberdeen, Idaho. Experimental design was a randomized complete block with six replications of each accession. Each plot is 20 feet long and contains one row, and plots were planted on three foot centers. Experimental design also contains plots of known industry standards from each species for comparison. Soil at the site is a Declo silt loam with pH of 7.4 to 8.4. Average annual precipitation is 8.75 inches. Ground was plowed in the fall of 2004 and subsequently disked and roller packed in the spring of 2005 prior to planting.

Plots were seeded on May 19, 2005 using a hand-pushed belt seeder calibrated to drill 30 pure live seeds (PLS) per foot of row. Seeds were drilled to an approximate depth of one half inch. Border rows of 'Tegmar' intermediate wheatgrass (*Thinopyrum intermedium* [Host] Barkworth & D. Dewey) were planted on the outside of the blocks to eliminate edge effect. Plots were sprinkler irrigated for initial establishment and as needed throughout the growing season. Weeds were controlled with herbicide treatments and between row mechanical cultivation.

The initial establishment evaluation was conducted on June 15, 2005 (27 days after planting) when most of the plants from both species had reached a one to two leaf stage. Plots were evaluated for percent stand, plant density and seedling vigor. Percent stand was measured using a twenty foot rope marked with one foot increments stretched the

length of the plot and anchored at either end. Plants intercepting the one foot increments were summed and recorded as a percentage. Plant density was measured by counting seedlings found in the middle two feet of row and converted to average plants per foot of row. Seedling vigor was measured on an ordinal scale of one to nine (one being most healthy and nine being dead). Entire plots as well as individual plants within plots were viewed and given a rating based on overall apparent vigor.

The second evaluation was conducted on September 16, 2005. Plots were evaluated for percent stand by the same procedure used in June, and plant width was also evaluated. It was originally planned to record plant height measurements at this time; however, due to weeds reaching seed maturity it was decided to mow the entire field to a height of about four inches on August 5. It is our assumption that plant width measurements should provide a minimal amount of information regarding plant biomass production as well as vigor. More indicative biometric data, e.g. plant biomass, plant height and seed production, will be taken during the second growing season.

All data were subjected to an Analysis of Variance (ANOVA) and means were separated using Duncan's Multiple Range Test using the MSTAT-C Microcomputer Statistical Program (Freed et al, 1991).

This is a progress report of evaluations conducted during 2005, the first year of evaluations. The trials will be evaluated again in 2006, and a report summarizing the evaluations from both years will be prepared.

2005 EVALUATIONS AND DISCUSSION

Slender Wheatgrass

CTNF accessions of slender wheatgrass were compared against five previously released varieties; 'AEC Hillcrest', 'Pryor', 'Revenue', 'San Luis', and 'Adanac', and one non-released selection from the U.S. Army (D.O.D.). Of these, three (AEC Hillcrest, Revenue and Adanac) are from collections originally made in Canada. Pryor originates from a collection made in Montana and San Luis was originally collected in Colorado. See Tilley et al (2005b) for a detailed comparison of the characteristics for each released cultivar. The Army accession is a currently unreleased breeding population made of several collections from Colorado. AEC Hillcrest differs from the other accessions by being of the subspecies *subsecundus* and should not be considered directly comparable to the collections made by CTNF.

At the first evaluation, percent stand ranged from 25.4 % (accession no. 9076496) to 85.1 (San Luis and Adanac). The high rating from San Luis and Adanac did not, however, differ significantly from several collections with percent stands of 70% or greater. The best plant density rating came from Adanac with 18.1 plants/foot. The poorest density was recorded from accession 9076496 with a density of 2.3 plants/foot. This accession similarly had the lowest seedling vigor rating of 6.7, while the best vigor was observed in Revenue (1.2). Of the CTNF accessions 9076495, 9076498 and 9076499 performed the best in the three evaluated categories (Table 1).

At the time of the second evaluation the best stand was recorded from Revenue (96.3 %). The other industry releases made up the rest of the top six in this category. Of the CTNF

collections, 9076495 had the best stand at 86.8 %, followed by 9076494, 9076499 and 9076498 with 86.0, 86.0 and 84.8 % stand respectively. The poorest percent stand rating was recorded from accession 9076496 with 56.3 % stand. With regard to plant width, the three Canadian releases, Adanac, Revenue and AEC Hillcrest were significantly larger than all other collections (4.8, 4.6 and 4.3 inches wide). The largest plants of the CTNF collections were recorded by accession 9076502 (3.7 in.) which did not differ significantly from Pryor, D.O.D., 9076495, 9076494, San Luis or 9076497. The smallest plant widths were recorded from accession 9076496 (2.8 in.).

Table 1. Slender wheatgrass

Accession No.	% Est. viability	% PLS ^{3/}	% stand		Density ^{1/}		Vigor ^{2/}		% stand		Plant width (in.)	
			6/15	6/15	6/15	6/15	9/16	9/16	9/16	9/16		
9076493	95	90.25	54.4 c ^{4/}	6.8 d-f	4.0 b-d	71.0 f	3.1 e-g					
9076494	95	90.25	70.2 a-b	13.0 a-c	4.0 b-d	86.0 a-e	3.6 c-e					
9076495	90	85.5	77.2 a-b	13.4 a-c	3.0 d-f	86.8 a-d	3.6 c-e					
9076496	90	85.5	25.4 d	2.3 f	6.7 a	56.3 g	2.8 g					
9076497	95	90.25	64.0 b-c	7.8 c-f	3.3 d-f	77.0 d-f	3.2 d-g					
9076498	95	90.25	75.4 a-b	15.3 a-b	3.7 c-e	84.8a-e	3.1 e-g					
9076499	85	80.75	71.1 a-b	14.5 a-b	3.0 d-f	86 a-e	3.1 e-g					
9076500	95	90.25	51.8 c	4.8 e-f	4.8 b-c	72.8 f	2.9 f-g					
9076501	95	90.25	73.7 a-b	10.8 b-e	2.8 d-f	79.8 b-f	3.0 f-g					
9076502	90	85.5	51.8 c	8.2 c-f	3.7 c-e	78.8 c-f	3.7 c-d					
9076503	85	80.75	52.7 c	8.0 c-f	5.0 b	74.5 e-f	2.8 f-g					
AEC Hillcrest	95	91.2	71.9 a-b	13.3 a-c	2.7 e-f	91.0 a-c	4.3 b					
Pryor	99.9	91.9	71.9 a-b	12.3 a-d	2.2 f-g	90.3 a-c	3.8 c					
Revenue	*	80.1	79.8 a-b	17.9 a	1.2 g	96.3 a	4.6 a-b					
San Luis	99	87.12	85.1 a	16.9 a-b	5.2 b	92.0 a-b	3.3 c-f					
D.O.D.	98	90.2	79.8 a-b	16.6 a-b	1.3 g	90.2 a-c	3.8 c					
Adanac	98	84.3	85.1 a	18.1 a	1.5 g	95.5 a	4.8 a					
LSD (0.05)			13.8	1.9	0.4	10.4	0.5					

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst

^{3/} Percent PLS based on estimated 95% purity for CTMF collections

^{4/} Means followed by the same letter are not significantly different

* Information not available from source

Mountain Brome

The mountain brome trial included two industry releases, Garnet Germplasm from Montana and 'Bromar' from the Pacific Northwest. See Tilley et al (2005a) for detailed information on these mountain brome releases.

At the first evaluation, the best percent stand and plant density were recorded from Garnet (81.6 % and 22.3 plants/foot). Second best in both categories was Bromar (78.1 % and 14.1 plants/foot) which also had the best possible rating for seedling vigor (1.0). In

general, the CTNF accessions showed little if any significant differences from one another (Table 2).

At the time of the second evaluation there was no significant difference between accessions for percent stand. All plots showed nice, dense stands with vigorous plant growth. There was, however, significant difference detected with regard to plant width. Bromar was significantly larger than all other accessions tested with a width of 6.8 inches. The best performing CTNF collection was 9076507 with a width of 5.4 inches.

Table 2. Mountain brome

Accession No.	% Est. viability	% PLS	% stand		Vigor		Plant width
			6/15	Density 6/15	6/15	% stand 9/16	(in.) 9/16
9076504	85	80.75	72.8 a-c	10.9 b	3.8 a	93.0 ^{1/}	4.9 c-e
9076505	85	80.75	66.7 a-c	11.3 b	3.3 a-b	83.3	5.0 b-e
9076506	90	85.5	66.7 a-c	8.7 b	2.7 a-b	85.7	4.4 d-e
9076507	90	85.5	70.2 a-c	9.8 b	3.8 a	92.0	5.4 b-c
9076508	85	80.75	74.6 a-c	12.8 b	2.8 a-b	93.2	5.0 b-e
9076509	95	90.25	73.7 a-c	12.6 b	3.2 a-b	91.0	4.2 e
9076510	95	90.25	74.6 a-c	12.8 b	2.8 a-b	93.7	5.3 b-d
9076511	90	85.5	59.7 b-c	10.8 b	3.2 a-b	82.5	4.8 c-e
9076512	90	85.5	59.7 b-c	11.9 b	2.3 a-c	88.3	5.1 b-e
9076513	90	85.5	54.4 c	10.1 b	2.2 b-c	78.0	5.2 b-d
Garnet	55	53.35	81.6 a	22.3 a	2.0 b-c	96.7	5.9 b
Bromar	97	96.0	78.1 a-b	14.1 b	1.0 c	94.7	6.8 a
LSD (0.05)			18.4	1.9	0.5	15.7	0.8

^{1/} No significant difference detected between treatments.

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Appendix 1. Seed collection and origin data

Accession No.	Species	Date collected	Cleaned wt. (lbs)	National Forest	District	Location	Elevation (ft)
9076493	ELTR7	8/31/04	1.00	Bridger-Teton	Jackson	Shadow Mt	7,872
9076494	ELTR7	8/10/04	0.85	Targhee	Island Park	Taylor Creek	6,619
9076495	ELTR7	8/31/04	1.06	Bridger-Teton	Jackson	Curtis Canyon	7,662
9076496	ELTR7	8/23/04	0.92	Caribou	Montpelier	Green Canyon	8,309
9076497	ELTR7	9/1/04	0.49	Targhee	Dubois	Bear Trap Creek	7,402
9076498	ELTR7	7/29/04	0.20	Caribou	Westside	Big Springs	6,290
9076499	ELTR7	8/19/04	1.54	Caribou	Soda Springs	Diamond Creek	6,784
9076500	ELTR7	8/3/04	0.70	Caribou	Palisades	McCoy Creek	5,766
9076501	ELTR7	8/11/04	0.57	Targhee	Teton Basin	Dry Creek	6,743
9076502	ELTR7	9/9/04	1.62	Bridger-Teton	Buffalo	Togwotee Pass	8,514
9076503	ELTR7	7/30/04	0.10	Caribou	Palisades	Little Elk Creek	5,990
9076504	BRMA4	8/24/04	0.84	Caribou	Montpelier	Egan Basin	8,135
9076505	BRMA4	8/4/04	1.46	Caribou	Palisades	Moody Meadow	6,307
9076506	BRMA4	8/3/04	0.76	Caribou	Palisades	McCoy Creek	5,766
9076507	BRMA4	7/30/04	0.24	Caribou	Palisades	Little Elk Creek	5,990
9076508	BRMA4	8/11/04	0.36	Targhee	Teton Basin	Dry Creek	6,743
9076509	BRMA4	8/31/04	2.04	Bridger-Teton	Jackson	Shadow Mt.	7,872
9076510	BRMA4	8/10/04	0.94	Targhee	Island Park	Taylor Creek	6,619
9076511	BRMA4	7/29/04	0.20	Caribou	Westside	Big Springs	6,290
9076512	BRMA4	9/9/04	3.60	Bridger-Teton	Buffalo	Togwotee Pass	8,514
9076513	BRMA4	8/19/04	2.25	Caribou	Soda Springs	Diamond Creek	6,784

Appendix 2. Seed cleaning calibrations

Mountain Brome

I. Air Screen Cleaner

1. Screens
 - a. top: 5.550
 - b. middle: 4.750
 - c. bottom: blank
2. Valves
 - a. 3.25
 - b. 3.5
 - c. 5.0
 - d. closed
3. Settings
 - a. sieve: 10.0
 - b. blower 5.0

II. Indent Cleaner (used to remove seeds infected w/ smut)

1. Drum: 7.25

Slender wheatgrass

I. Hammermill

1. Screen: 0.5 inch
2. Air: low

II. Air Screen Cleaner*

1. Screens
 - a. top: 3.550
 - b. bottom: 6x24
2. Valves
 - a. 3.45
 - b. 3.50
 - c. 4.75
 - d. closed
3. Settings
 - a. sieve: 2.0
 - b. blower: 2.0

*Ran through three times to clean out inert matter.

**USDA Forest Service, Region 1
Native Grass and Forb Initial Evaluation
Progress Report (10 January 2006)**

**Derek J. Tilley, Range Conservationist (Plants)
Loren St. John, Team Leader Aberdeen Plant Materials Center**

INTRODUCTION

The purpose of this study is to evaluate native perennial grass and forb accessions for potential use in revegetation, stabilization and beautification projects in the Rocky Mountain and sagebrush steppe ecosystems of Montana and northern Idaho. Large areas of national forest are in unsatisfactory ecological condition. Many areas are infested with invasive weeds such as cheatgrass, knapweed species, yellow starthistle, and leafy spurge. These weeds cause many problems and detract from the health and beauty of the ecosystem. When dry, the weeds provide flash fuels for fires which create the potential for soil erosion and degradation of water quality and watershed values. Weeds also decrease plant community diversity, reduce habitat for wildlife and compete with threatened and endangered species. The goal of this study is to identify if accessions under evaluation have potential to be released as germplasm for commercial seed production and use in revegetation projects in the Rocky Mountain and sagebrush steppe ecosystems of Montana and northern Idaho.

In 2003, The USDA-Forest Service, Region 1, (FS R1) collected seed of five native perennial grass species from 41 locations and three native forb species from eleven locations which were sent to the USDA-Natural Resources Conservation Service-Plant Materials Center (PMC) at Aberdeen, Idaho for evaluation. From the total collections received at the PMC, 37 grass and ten forb collections were chosen for testing based on seed quality and/or quantity. Total usable collections included: twelve bluebunch wheatgrass (*Pseudoroegneria spicata*), seven blue wildrye (*Elymus glaucus*), thirteen Idaho fescue (*Festuca idahoensis*), one Sandberg bluegrass (*Poa secunda*), three tufted hairgrass (*Deschampsia caespitosa*), eight western yarrow (*Achillea millefolium*), one lupine (*Lupinus* sp.) and one pearly everlasting (*Anaphalis margaritacea*). Appendix 1 lists the accessions collected, collection locations and the size of each seed collection. This report summarizes the evaluations conducted during 2004 and 2005.

MATERIALS AND METHODS

Harvested seed collections were cleaned at the PMC seed cleaning facilities using a wide range of machines and settings. Each accession was treated separately due to differences in the quality of pre-cleaned materials and variation in seed size. Appendix 2 provides general information regarding machine calibration and settings used for each species. Minor adjustments were made to the seed cleaning equipment to achieve the best seed purity for each collection. Estimated viability was obtained using the kerosene heater

“popping” method outlined in Ogle and Cornforth (2000). Some collections were also evaluated for viability using standard germination tests.

A seedling emergence trial was conducted in the PMC greenhouse from February to March, 2004 to determine if any accessions emerged quicker or had better seedling vigor. No significant differences were detected (data not shown).

GRASSES

The native grass field evaluation trial is being conducted at the PMC, Fish and Game farm located approximately 5 miles northeast of Aberdeen, Idaho. Experimental design was a randomized complete block with four replications. Individual plots were 20 feet long and contained one row; rows were planted on three foot centers. The experimental design also included plots of known industry standards from each species for comparison. Soil at the site is a Declo silt loam with pH of 7.4 to 8.4. Average annual precipitation is 9.39 inches. The planting site was plowed in the fall of 2003 and then disked and roller packed in the spring of 2004 prior to planting.

Plots were seeded on May 10 and 11, 2004. Bluebunch wheatgrass and Idaho fescue accessions were planted using a Planet Jr. seeder. Blue wildrye, Sandberg bluegrass and tufted hairgrass accessions were planted using a belt seeder. Planting equipment was calibrated to plant approximately 25 Pure Live Seeds (PLS) per foot of row for large seeded species (bluebunch wheatgrass and blue wildrye) and 50 PLS per foot of row for small seeded species (Idaho fescue, Sandberg bluegrass and tufted hairgrass). Seeding depth ranged from $\frac{1}{4}$ inch for small seeded accessions to $\frac{1}{2}$ inch for the larger seeded accessions. Each species block contained at least two released cultivars to use as standards for comparison. Border rows of ‘Tegmar’ intermediate wheatgrass (*Thinopyrum intermedium*) were planted on the outside of the blocks to reduce edge effect. Plots were sprinkler irrigated as needed during the growing season. Weeds were controlled with herbicides and between row cultivation.

The first evaluation was conducted on June 14, 2004 when all grasses had reached the one to two leaf stage. Plots were evaluated for percent stand, plant density and seedling vigor. Percent stand was measured using a twenty foot rope marked with one foot increments stretched the length of the plot and anchored at either end. Plants intercepting the one foot increments were summed and recorded as a percentage. Plant density was measured by counting seedlings found in the middle two feet of row and converted to average number of plants per foot of row. Seedling vigor was measured on a subjective scale of one to nine (one being most healthy and nine being dead). Each plot was assessed and given a rating based on overall apparent vigor.

The second evaluation of 2004 was completed during the week of September 27. All accessions were rated for percent stand and plant volume. Plant volume was measured as plant height x width¹ x width² and recorded in cubic inch units. Blue wildrye and bluebunch wheatgrass were also rated for percent of plants in flower per plot. Idaho fescue, Sandberg bluegrass and tufted hairgrass had not begun flowering by the time of the evaluation. Seed yield data was not collected during the first year of establishment,

because seed harvest during the first year of establishment is not generally recommended. All species except blue wildrye were evaluated for plant density as described above for the first evaluation. Plant density for the blue wildrye accessions was not collected during the second evaluation due to very tight and uniform stands that rendered data collection of plant density impossible.

The evaluations conducted during 2005 occurred between June 30 and July 27. Plots were evaluated when the seeds within a plot were judged to be ready for harvest. All plots were evaluated for forage yield, average plant height and seed yield. Sandberg bluegrass and Idaho fescue samples were collected from six feet of row, while blue wildrye, bluebunch wheatgrass and tufted hairgrass samples were collected from three feet of row. Each plot was divided in half lengthwise, and the northern adjacent three (or six) feet were harvested for seed production, while the southern three (or six) feet were sampled for forage yield. Seed samples from each species were cleaned as outlined in appendix 2 which resulted in a visually estimated 90% purity. Forage samples were collected in paper sacks and allowed to air dry for two weeks prior to weighing.

All data except plant vigor evaluations were subjected to an Analysis of Variance (ANOVA) and means were separated using Duncan's Multiple Range Test using the MSTAT-C Microcomputer Statistical Program (Freed et al, 1991).

FORBS

The native forb evaluation trial was planted on May 19, 2004 at the PMC Home Farm approximately two miles north of Aberdeen. Site information, seedbed preparation and experimental design are identical to the grass trial. There are two industry standards included in the western yarrow plots, Eagle and Great Northern. There are no releases of lupine or pearly everlasting that would be comparable to the collections received for testing, so no standards of comparison were included for these two species. Yarrow plots were seeded with a target rate of 50 PLS per foot using a belt seeder. Lupine plots were seeded at 25 PLS per foot, and pearly everlasting plots were seeded at 50 PLS per foot using a Planet Jr. seeder. A border row of 'Appar' blue flax (*Linum perenne*) was planted on either side of the trial to reduce edge effect. The first evaluation was conducted on July 19, 2004. Plants ranged from the two to six leaf stage.

Forb plots were evaluated in the same manner as the grass plots. The first evaluation in 2004 included data collection for percent stand, plant density and seedling vigor. The second evaluation was conducted during the week of September 27, 2004 and data were collected on percent stand, plant density, plant volume and percent flower. Plots were evaluated in 2005 for seed yield in the same manner as described for grasses using three feet of row for the sample collection. No data was collected for forage yield, because attempts to clip samples resulted in completely uprooting plants.

This is a progress report of evaluations conducted during 2004 and 2005, the first two years of evaluation. The trials will be evaluated again in 2006 and 2007, and reports summarizing the evaluations will be prepared.

DISCUSSION

BLUE WILDRYE

2004 Evaluations

The blue wildrye trial contained three industry releases, Mariposa, Arlington and Elkton. Although all three releases were originally collected in western states, California, Washington and Oregon respectively, there are no releases from the Intermountain or Rocky Mountain regions (Dyer and O'Beck 2005). The first evaluation of blue wildrye showed no significant differences in percent stand between the accessions tested. Plant density showed low levels of significance. Accession 9076447 rated highest (39.0 plants/foot), and Elkton, a western Oregon accession, rated lowest at 16.4 plants/foot. Best vigor was recorded from accessions 9076446, 9076447 and Mariposa (1.8). Poorest vigor rated was 3.8 from Arlington, an accession from western Washington (see Table 1).

During the second evaluation of 2004 there was again no significant difference in percent stand for the blue wildrye accessions. All accessions had stands ranging from 90 to 100% except accession 9076448 which had a stand of 76.4%. Mariposa, Elkton and accession 9076472 showed high percentages of flowering (93.4, 92.5 and 80.0% respectively). The other industry release, Arlington, had 55% flowering. The remainder of the accessions had little to no flower production ranging from 0.0 to 18.8%. Accessions showed a wide range of plant volumes from 117.3 in³ (accession 9076439) to 768.0 in³ (Mariposa) with Mariposa significantly higher than the rest of the plants in the trial.



Blue wildrye. Picture taken June 2005.

2005 Evaluations

Plots were evaluated in 2005 for forage production, height and seed production.

Analysis showed no significant difference between accessions for forage production.

Extrapolated forage yields ranged from 4,441 lb/ac (accession 9076472) to as much as 5,663 lb/ac (accession 9076448). Plants ranged in height from 52 inches (accession 9076445) to 46 inches (Elkton).

Mariposa seed yields were significantly greater than all other tested accessions (505

lb/ac). The next best seed producers were accession 9076439 and 9076448 with 348 and 323 lb/acre respectively. Overall, accession 9076448 was among the top three in all categories evaluated in 2005. Accession 9076445 had good forage yield but low seed production. Accession 9076439 is a shorter statured plant but scored in the top three in forage and seed production.

Table 1. Blue wildrye												
			% Stand	Density ^{1/}	Vigor ^{2/}	% Stand	% Flower	Plant vol. (in ³)	Forage (lb/ac)	Plant height (in)	Seed (lb/ac)	
Accession No.	% Est. viability	% PLS ^{3/}	6/14/04	6/14/04	6/14/04	9/29/04	9/29/04	9/29/04	2005	2005	2005	
9076439	79	71.1	92.8 ^{4/}	38.1 a-b ^{5/}	2.3 ^{4/}	98.6 ^{4/}	1.5 c	117.3 c	5445 ^{4/}	49.25 a-c	348 b	
9076445	77	69.3	91.5	30.1 a-c	2.8	100.0	0.0 c	132.5 b-c	5566	52.00 a	254 b	
9076446	80	72.0	91.5	22.8 b-c	1.8	98.6	18.8 c	288.5 b-c	4683	48.75 a-c	282 b	
9076447	72	64.8	93.0	39.0 a	1.8	100.0	3.5 c	132.5 b-c	4889	49.50 a-b	256 b	
9076448	66	59.4	72.3	22.6 b-c	3.3	76.38	1.8 c	225.0 b-c	5663	51.25 a-b	323 b	
9076449	69	62.1	95.8	36.6 a-b	2.0	100.0	3.0 c	193.3 b-c	5167	50.75 a-b	236 b	
9076472	82	73.8	87.5	26.0 a-c	3.0	97.2	80.0 a	256.8 b-c	4441	48.50 b-c	218 b	
Mariposa	*	94.0	95.8	28.4 a-c	1.8	95.8	93.8 a	768.0 a	4489	49.75 a-b	505 a	
Arlington	*	93.0	91.5	31.5 a-c	3.8	100.0	55.0 b	353.5 b	5143	48.25 b-c	303 b	
Elkton	*	92.0	95.5	16.4 c	3.5	94.4	92.5 a	299.0 b-c	4646	46.00 c	266 b	
LSD (0.05)			22.1	13.7	1.8	20.4	20.1	195.3	NA	2.95	124	

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst; not analyzed for significance

^{3/} Percent PLS of USFS R1 collections based on estimated 90% purity

^{4/} No significant difference detected between accessions

^{5/} Means followed by the same letter are not significantly different

* Data not available from source

SANDBERG BLUEGRASS

2004 Evaluations

One collection of Sandberg bluegrass was compared against four industry releases. High Plains, Hanford Source and Mountain Home are all Sandberg bluegrass in the strict sense, while Sherman was originally released as big bluegrass (*Poa ampla*) [Ogle et al² 2003]. The first evaluation showed high levels of significance in all three categories solely due to the fact that accession 9076465 performed so poorly. Mountain Home Source had the best stand (95.5%) and greatest density (36.8 plants per foot), while ‘Sherman’ had the best vigor (2.5) at the first evaluation (Table 2).

At the second evaluation Sherman dwarfed all other Sandberg bluegrass accessions in the trial. Sherman plants had an average volume of 262.4 in³, while the next largest, accession 9076465, measured a mere 8.8 in³. Sherman also had the best stand (95.8%) and plant density (11.9) during the second evaluation. Accession 9076465 continued to perform poorly in percent stand and plant density (25.0 % and 0.75 plants per foot respectively).

2005 Evaluations

As in 2004, Sherman again received the best scores in all categories in the 2005 evaluations. Sherman however was first released as big bluegrass and should possibly for that reason be excluded from the analysis. If Sherman is excluded, accession 907645 scores well in plant height (21 inches), reasonably well in forage production (423 lb/ac) but poorly in seed production (2 lb/ac). It is recommended that FS R1 consider making additional Sandberg bluegrass collections for evaluation and potential release.



Sandberg bluegrass. Picture taken June 2005.

Table 2. Sandberg bluegrass												
			% stand	Density ^{1/}	Vigor ^{2/}	% Stand	Density	Plant vol. (in ³)	Forage (lb/ac)	Plant height (in)	Seed (lb/ac)	
Accession No.	% Est. viability	% PLS ^{3/}	6/14/04	6/14/04	6/14/04	9/29/04	9/29/04	9/29/04	2005	2005	2005	
9076465	40	36.0	26.5 b ^{4/}	2.4 b	8.3	25.0 d	0.75 c	8.8 b	423 b-c	21.00 b	2 b	
Sherman	*	75.8	84.8 a	29.1 a	2.5	95.8 a	11.88 a	262.4 a	4816 a	26.25 a	163 a	
High Plains	84	75.6	80.8 a	24.6 a	4.0	76.4 b	9.25 a-b	5.7 b	859 b	21.75 a-b	26 b	
Hanford	*	85.0	91.5 a	27.5 a	6.0	47.2 c	6.13 b	0.9 b	206 c	15.50 c	10 b	
Mtn. Home	*	74.3	95.5 a	36.8 a	5.0	65.3 b	8.75 a-b	4.5 b	605 b-c	17.50 b-c	36 b	
LSD (0.05)			16.8	12.3	1.2	17.4	4.41	42.2	563	4.64	45	

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst; not analyzed for significance

^{3/} Percent PLS of USFS R1 collections based on estimated 90% purity

^{4/} Means followed by the same letter are not significantly different

* Data not available from source

IDAHO FESCUE

2004 Evaluations

The Idaho fescue trial contained three industry releases. Joseph and Nezpurs are both synthetic cultivars comprised of collections made throughout the northwestern United States and Canada. Winchester Source Germplasm is a non-manipulated release from a collection made near Winchester, Idaho in the Idaho Panhandle (Ogle et al 2003a). The first evaluation of Idaho fescue indicated a wide range in stand establishment. Accession 9076469 had the best stand averaging 80.5%. Accession 9076469 also ranked first in plant density with 12.0 plants/foot of row. Seedling vigor ratings showed industry release Winchester as the most vigorous with a rating of 2.8. Accession 9076444 had the poorest ratings of stand, density and plant vigor (16.8 % stand, 1.8 plants/foot and 7.8 vigor).

The second evaluation showed industry release Winchester having the best percent stand at 75.0% followed closely by accession 9076469 with 72.2%. Accession 9076444 again had the poorest stand with 16.7%. Accession 9076469 had the greatest plant density rating of 6.8 plants/foot but did not differ significantly from accessions 9076427, 9076438, 9076437 and Winchester (5.1, 5.0, 4.8 and 4.8 plants/foot respectively). Winchester had the largest volume (28.1 in³) followed by accession number 9076427 with a volume of 22.3 in³. The smallest plants were those from accession 9076432 at 1.5 in³.

2005 Evaluations

Despite poor looking stands, accession 9076431 scored in the top two of all categories including best seed production in 2005. Winchester had the highest forage yield at 2287 lb/acre. In second, but not differing significantly, was accession 9076431 with 2154 lb/ac. Accessions 9076473 and 9076469 also had high forage yields (1622 and 1349 lb/ac respectively). High forage yields for accession 9076431 may be attributed (but not limited to) its high seed yield (231 lb/ac). Other high seed producers were Winchester (189 lb/ac) and accession 9076469 (186 lb/ac). On average, the tallest plants were those of Winchester (32.5 inches). Accession 9076431 came in second for plant height with 29.5 inches, followed by accession 9076469 (28.25 inches) and 9076473 (27.75 inches).



Idaho fescue. Picture taken June 2005.

Accessions 9076431, 9076469 and 9076473 all compare well against the industry releases. All scored in the top four in all 2005 evaluations with the exception of accession 9076473, which rated sixth in seed production with 83 lb/ac. Accessions 9076469 and accession 9076473 also scored high in the 2004 evaluations for stand establishment and seedling vigor.

Table 3. Idaho fescue											
			% stand	Density ^{1/}	Vigor ^{2/}	% Stand	Density	Plant vol. (in ³)	Forage (lb/ac)	Plant height (in)	Seed (lb/ac)
Accession No.	% Est. viability	% PLS ^{3/}	6/14/04	6/14/04	6/14/04	9/29/04	9/29/04	9/29/04	2005	2005	2005
9076427	58	52.2	48.5 c-d ^{4/}	6.8 a-e	6.0	41.7 b-c	4.1 b-d	4.6 b-c	841 d-e	24.50 b-e	33 b
9076431	61	54.9	39.0 d-e	3.0 d-e	6.3	55.6 a-b	2.4 c-e	11.8b	2154 a-b	29.50 a-b	231 a
9076432	76	68.4	48.8 c-d	4.8 b-e	7.0	36.1 b-d	3.0 b-e	1.5 c	672 d-e	23.25 c-e	61 a-b
9076437	61	54.9	71.0 a	8.8 a-c	4.5	57.0 a-b	4.8 a-b	5.1 b-c	986 c-e	24.25 b-e	60 a-b
9076438	80	72.0	75.0 a	9.0 a-c	5.3	58.4 a-b	5.0 a-b	1.5 c	756 d-e	22.75 d-e	38 b
9076443	45	40.5	68.3 a-b	7.9 a-d	6.0	54.2 a-c	4.1 b-d	7.0 b-c	811 d-e	24.75 b-e	64 a-b
9076444	13	11.7	16.8 f	1.8 e	7.8	16.7 d	1.3 e	2.6 b-c	351 e	21.00 e	24 b
9076453	50	45.0	66.8 a-c	7.9 a-d	5.0	51.4 a-c	4.4 b-c	10.0 b-c	799 d-e	25.75 b-e	69 a-b
9076462	30	27.0	34.8 d-f	2.3 e	6.8	30.6 c-d	1.9 d-e	5.7 b-c	557 e	25.50 b-e	73 a-b
9076467	71	63.9	48.5 c-d	5.1 b-e	6.3	44.4 b-c	3.3 b-e	3.4 b-c	1004 c-e	24.00 c-e	115 a-b
9076469	68	61.2	80.5 a	12.0 a	3.0	72.2 a	6.8 a	11.8 b	1349 c-d	28.25 a-c	186 a-b
9076471	67	60.3	27.8 e-f	3.9 c-e	6.5	41.7 b-c	2.4 c-e	5.1 b-c	551 e	24.00 c-e	69 a-b
9076473	45	40.5	69.5 a	11.3 a	3.0	59.7 a-b	5.1 a-b	22.3 a	1622 b-c	27.75 a-d	83 a-b
Joseph	*	*	50.0 b-d	4.5 b-e	5.0	54.2 a-c	3.0 b-e	9.5 b-c	1337 c-d	25.50 b-e	129 a-b
Winchester	*	*	73.8 a	9.9 a-b	2.8	75.0 a	4.8 a-b	28.1 a	2287 a	32.50 a	189 a-b
Nezpurs	*	*	37.3 d-e	1.9 e	7.0	44.5 b-c	1.5 e	5.7 b-c	908 d-e	26.00 b-e	48 a-b
LSD (0.05)			17.8	4.7	0.5	20.8	2.0	8.1	631	1.58	155

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst; not analyzed for significance

^{3/} Percent PLS of USFS R1 collections based on estimated 90% purity

^{4/} Means followed by the same letter are not significantly different

* Data not available from source

BLUEBUNCH WHEATGRASS

2004 Evaluations

Three industry releases were included in the bluebunch wheatgrass trial. Goldar and Anatone both come from collections from Asotin County, Washington while P-7 is a composite of 25 collections made in Idaho, Nevada, Oregon, Utah, Washington and British Columbia (Ogle et al 2003c). Bluebunch wheatgrass evaluations conducted in June 2004 showed numerous collections outperforming industry standards (Table 4). Accession 9076436 ranked highest for percent stand at 81.8%. Plant density and seedling vigor comparisons showed accession 9076433 as the best with 14.4 plants/foot of row and a 2.5 rating for vigor. Accession 9076463 ranked lowest in all three evaluations (27.8 % stand, 2.5 plants/foot and a vigor rating of 7.0).



Bluebunch wheatgrass. Picture taken June 2005.

Percent stand ranged from 83.3% (accession 9076466) to 33.3% (accession 9076463) at the second evaluation. Accession 9076433 had the best plant density at 5.8 plants/foot followed closely by accession 9076466 with 5.5 plants/foot. Lowest density was recorded by accession 9076463 (1.3 plants/foot). Density measurements may, however, be misleading, because a good stand of very small plants will

show a much higher density than a good stand of robust plants (compare accession 9076433 with P-7). Plant volume measurements were dominated by the industry standards. P-7, Anatone and Goldar had the greatest volumes with 147.8, 125.0 and 109.8 in³ respectively. The next largest plant volume came from accessions 9076426, 9076464 and 9076436 at 64.0 in³. Accession 9076426, P-7 and Anatone all showed high first-year flower production (65.0, 58.8 and 48.8 %). There was also a large group of accessions that showed very little flower production: Goldar, 9076450, 9076466, 9076436, 9076441, 9076463, 9076442, 9076433 and 9076434 ranged from 22.5% to 2.5% flower production.

2005 Evaluations

The three industry releases obtained the best three scores in all categories in the 2005 evaluation. None of the FS R1 accessions stood out in any categories for 2005. Accession 9076426 had the fourth best average for forage yield (2432 lb/ac) but came in eighth for plant height (32.25 inches) and seed production (51 lb/ac). The fourth best seed yield came from accession 9076450 with 83 lb/ac, but this accession had the ninth best forage yield at 1682 lb/ac.

Table 4. Bluebunch wheatgrass													
			% stand	Density ^{1/}	Vigor ^{2/}	% Stand	Density	Plant vol. (in ³)	% Flower	Forage (lb/ac)	Plant height (in)	Seed (lb/ac)	
Accession No.	% Est. viability	% PLS ^{3/}	6/14/04	6/14/04	6/14/04	9/29/04	9/29/04	9/29/04	9/29/04	2005	2005	2005	
9076426	76	68.4	70.8 a-c ^{4/}	9.9 a-b	3.0	75.0 a-c	4.5 a-c	64 c	65.0 a	2432 a-c	32.25 a	51 c-d	
9076428	56	50.4	49.8 c	5.8 b-c	5.0	54.2 b-d	3.3c	54.8 c-d	38.8 b-c	2045 c	31.50 a	44 c-d	
9076433	75	67.5	77.8 a-b	14.4 a	2.5	72.2 a-c	5.8 a	31.5 d-e	3.8 d	1658 c	30.00 a	69 c-d	
9076434	69	62.1	61.3 a-c	7.9 b-c	4.0	73.6 a-c	4.1 a-c	22.3 e	2.5 d	1670 c	28.00 a	50 c-d	
9076436	69	62.1	81.8 a	8.1 b-c	3.3	81.9 a	4.1 a-c	64.0 c	11.3 d	2348 b-c	30.25 a	48 c-d	
9076441	56	50.4	69.5 a-c	6.8 b-c	4.0	66.7 a-c	3.8 a-c	31.5 d-e	11.3 d	2081 c	32.75 a	49 c-d	
9076442	86	77.4	70.8 a-c	7.3 b-c	3.0	77.8 a-b	3.8 a-c	22.3 e	3.8 d	1428 c	32.00 a	46 c-d	
9076450	73	65.7	57.0 b-c	6.8 b-c	3.8	50.0 c-d	3.0 c-d	31.5 d-e	17.5 c-d	1682 c	33.50 a	83 c-d	
9076463	58	52.2	27.8 d	2.5 c	7.0	33.3 d	1.3 d	22.8 e	5.0 d	1525 c	18.00 b	13 d	
9076464	65	58.5	64.0 a-c	10.8 a-b	3.0	77.8 a-b	4.0 a-c	64.0 c	37.5 b-c	1670 c	32.50 a	69 c-d	
9076466	64	57.6	66.5 a-c	11.4 a-b	2.8	83.3 a	5.5 a-b	27.0 d-e	11.3 d	1972 c	32.50 a	66 c-d	
Goldar	*	81.5	66.8 a-c	8.0 b-c	2.5	72.2 a-c	3.9 a-c	109.8 b	22.5 c-d	2916 a-c	35.75 a	157 b	
Anatone	*	*	51.5 c	5.8 b-c	3.5	68.1 a-c	3.5 b-c	125.0 a-b	48.8 a-b	3630 a-b	33.75 a	102 b-c	
P-7	*	*	66.8 a-c	5.5 b-c	3.0	75.0 a-c	3.5 b-c	147.8 a	58.8 a-b	3812 a	36.25 a	227 a	
LSD (0.05)			20.6	5.3	1.9	21.7	1.8	27.3	21.5	1277	8.45	62	

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst; not analyzed for significance

^{3/} Percent PLS of USFS R1 collections based on estimated 90% purity

^{4/} Means followed by the same letter are not significantly different

* Data not available from source

TUFTED HAIRGRASS

2004 Evaluations

The two industry releases used in the tufted hairgrass trial, Willamette and Tillamook, were originally collected in Oregon (Ogle et al 2003b). Percent stand of Willamette tufted hairgrass were significantly higher than all other accessions at the first evaluation (86.0%). Lowest percent stand was observed in accession 9076435 (53.0%). Accession 9076429 had the best seedling vigor rating of 4.8, while accession 9076435 showed the lowest vigor (7.8). Analysis of plant density showed no significant differences (see Table 5).

At the second evaluation, Willamette, Tillamook and accession 9076429 had 93.1, 84.7 and 79.1 percent stand but did not differ significantly. Lowest percent stand came from accession 9076435 at 57.0%. Plant density measurements were tight among the tufted hairgrass plots. Densities ranged from 6.3 plants/foot (Willamette) to 4.1 plants/foot (accession 9076435). Plant volume showed a broad range of measurements (Willamette, 68.7 in³ to accession 9076435, 16.6 in³) and also did not differ significantly.

2005 Evaluations

Tillamook and Willamette scored significantly better than the FS R1 collections in all three categories. Tillamook and Willamette yielded 4187 and 3660 lb forage/ac respectively. The next best yield came from accession 9076429 which yielded 2323 lb/ac. Accession 9076429 also had the tallest average plants of the FS R1 collections (42.75 in). Tillamook and Willamette both had high seed yields (320 and 267 lb/ac respectively), while accession 9076430 had the best yield of the FS R1 collections (118 lb/ac). Despite being outperformed by the Oregon material, the FS R1 collections had dense, healthy stands and should still be considered for use in eastern-northern Idaho and western Montana.



Tufted hairgrass. Picture taken June 2005.

Table 5. Tufted hairgrass												
			% stand	Density ^{1/}	Vigor ^{2/}	% Stand	Density	Plant vol. (in ³)	Forage (lb/ac)	Plant height (in)	Seed (lb/ac)	
Accession No.	% Est. viability	% PLS ^{3/}	6/14/04	6/14/04	6/14/04	9/29/04	9/29/04	9/29/04	2005	2005	2005	
9076429	49	44.1	68.0 b ^{5/}	19.0 ^{1/}	4.8	79.2 a-b	5.6a-b	31.0 ^{4/}	2323 b	42.75 b	96 c	
9076430	52	46.8	62.8 b-c	17.8	6.5	72.2 b-c	5.5 a-b	48.7	1894 b	40.75 b	118 c	
9076435	55	49.5	53.0 c	6.1	7.8	57.0 c	4.1 b	16.6	1912 b	34.25 c	36 d	
Willamette	*	81.0	86.0 a	23.0	5.3	93.1 a	6.3 a	68.7	3660 a	46.75 a	267 b	
Tillamook	*	81.0	69.8 b	21.8	5.5	84.7 a-b	5.4 a-b	60.2	4187 a	46.00 a	320 a	
LSD (0.05)			11.6	11.6	1.5	16.4	1.8	49.1	1076	3.16	51	

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst; not analyzed for significance

^{3/} Percent PLS of USFS R1 collections based on estimated 90% purity

^{4/} No significant difference detected between accessions

^{5/} Means followed by the same letter are not significantly different

* Data not available from source

WESTERN YARROW

2004 Evaluations

The yarrow collections were evaluated against two industry releases, Eagle and Great Northern. Eagle originally comes from southwestern Idaho in Ada County, while Great Northern was collected in northwestern Montana in Flathead County, just west of Glacier National Park. Yarrow plots failed to show significant differences in percent stand, plant density or seedling vigor in the first evaluation. Trends, however, showed accession 9076460 first in all but one category in 2004, seedling vigor, where it placed second. Lupine and pearly everlasting which were also included in the forb trial had essentially no germination (data not shown).

Accession 9076460 recorded the best percent stand at the second evaluation (73.6%), while accession 9076456 had the lowest stand at 29.15%. No significant difference was detected for plant density. Means ranged from 3.0 plants/foot (accession 9076458) to 0.3 plants/foot (accession 9076457). Industry standards Great Northern and Eagle had the largest plant volumes (753.8 and 691.5 in³ respectively). Great Northern also had the greatest percentage of flowering plants (38.8%).

2005 Evaluation

Evaluations were conducted only on seed production because forage yield clipping was uprooting plants. No significant differences were found in seed yields. The top three yields came from accession 9076459 (397 lb/ac) followed by Great Northern (396 lb/ac) and finally accession 9076458 (391 lb/ac).



Yarrow. Picture taken June 2005. Borders are Appar blue flax.

Table 6. Western yarrow										
			% stand	Density ^{1/}	Vigor ^{2/}	% Stand	Density	Plant vol. (in ³)	% Flower	Seed (lb/ac)
Accession No.	% Est. viability	% PLS ^{3/}	7/16/04	7/16/04	7/16/04	9/29/04	9/29/04	9/29/04	9/29/04	2005
9076454	84	75.6	37.5 ^{4/}	2.4 ^{4/}	4.8	48.6 a-b ^{5/}	2.4 ^{4/}	441.0 a-b	22.5 a-c	160 ^{4/}
9076456	73	65.7	32.0	1.5	6.0	29.1 b	1.9	342.0 b	16.3 a-c	248
9076457	86	77.4	32.0	0.3	5.5	31.9 a-b	0.3	679.0 a	22.5 a-c	150
9076458	80	72.0	59.7	2.8	3.8	63.9 a-b	3.0	595.8a-b	32.5 a-b	391
9076459	91	81.9	47.2	1.3	4.0	45.9 a-b	1.3	513.3 a-b	37.5 a	397
9076460	67	60.3	75.0	3.1	3.5	73.6 a	2.9	481.3 a-b	37.5 a	369
9076474	37	33.3	45.9	2.9	5.8	50.0 a-b	1.8	323.0 b	6.3 c	280
9076475	71	63.9	45.9	3.0	4.5	48.6 a-b	2.6	507.0 a-b	12.5 b-c	148
Great Northern	93	71.6	45.9	2.3	2.8	45.9 a-b	1.8	753.8 a	38.8 a	396
Eagle	*	*	33.3	0.5	5.5	37.5 a-b	0.5	691.5 a	15.0 a-c	339
LSD (0.05)			33.6	3.3	3.2	36.8	2.7	283.6	21.4	249

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst; not analyzed for significance

^{3/} Percent PLS of USFS R1 collections based on estimated 90% purity

^{4/} No significant difference detected between accessions

^{5/} Means followed by the same letter are not significantly different

* Data not available from source

SUMMARY

After two years of evaluation we are seeing considerable variation for the evaluated traits comparing the collections against industry releases and against each other. Some accessions appear to be competing well and show promise as potential future selected class releases. These include noted accessions from blue wildrye, Idaho fescue, tufted hairgrass and common yarrow. Evaluations are scheduled to continue through 2006 and 2007.

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Appendix 1. Collection data

Accession No.	Species	Date collected	Fresh wt. (lbs)	Cleaned wt. (lbs)	Forest	Location	Elevation (ft)
9076426	Bluebunch wheatgrass	7/17/2003	6	2.34	Lolo	N 46 51 38.6 W 114 10 18.4	4300
9076427	Idaho fescue	8/1/2003	1.5	0.22	Helena	N 46 28 20 W 111 54 42	5700
9076428	Bluebunch wheatgrass	8/1/2003	1.7	0.40	Helena	N 46 28 20 W 111 54 42	5700
9076429	Tufted hairgrass	8/6/2003	0.2	0.04	Lolo	N 46 42 31.3 W 114 35 31.6	4480
9076430	Tufted hairgrass	8/6/2003	0.6	0.12	Lolo	N 46 42 23.9 W 114 35 37.3	4480
9076431	Idaho fescue	7/22/2003	1.4	0.88	Beaver-Deer	N 45 51 15 W 112 22 08	7200
9076432	Idaho fescue	7/22/2003	1.3	1.02	Beaver-Deer	N45 51 27.3 W 112 28 48.2	6300
9076433	Bluebunch wheatgrass	8/6/2003	28	1.64	Beaver-Deer	N 45 42 47.7 W 112 35 10.3	7600
9076434	Bluebunch wheatgrass	8/12/2003	5.5	0.20	Beaver-Deer	N 45 42 47.7 W 112 35 10.3	7600
9076435	Tufted hairgrass	8/18/2003	4	0.60	Beaver-Deer	N 46 09 0.08 W 112 28 0.499	6400
9076436	Bluebunch wheatgrass	7/29/2003	7	1.00	Beaver-Deer	N45 2.247 46 W 111 56.904 08	6300
9076437	Idaho fescue	7/31/2003	9	2.40	Beaver-Deer	N45 7.332 36 W 111 51.832 43	8200
9076438	Idaho fescue	7/31/2003	3	0.94	Beaver-Deer	N 44 58.982 92 W 111 55.523 57	7500
9076439	Blue wildrye	8/20/2003	3.3	2.42	St. Joe Dist.	T43NR5E section 21	4600
9076440	Bluebunch wheatgrass	8/2/2003	0.8	0.12	Beaver-Deer	T7NR14W section 4 SW	5550
9076441	Bluebunch wheatgrass	7/25/2003	1.4	0.40	Beaver-Deer	T8NR14W section32-33 S	5850
9076442	Bluebunch wheatgrass	8/4/2003	1.1	0.44	Beaver-Deer	T5NR14W section 22 NW	6760
9076443	Idaho fescue	8/1/2003	1.3	0.40	Beaver-Deer	T4NR15W section 10	6460
9076444	Idaho fescue	7/29/2003	0.4	0.12	Beaver-Deer	T 7NR14W section 4	5890
9076445	Blue wildrye	8/21/2003	0.5	0.28	Flathead	T26NR22W section 26	5130
9076446	Blue wildrye	8/18/2003	2.1	0.78	Flathead	T29NR17W section 28,33,34	4500
9076447	Blue wildrye	8/19/2003	0.7	0.36	Flathead	T32NR25W section 22	5250
9076448	Blue wildrye	8/13/2003	1.4	0.46	Flathead	T30NR18W section 23	?
9076449	Blue wildrye	8/13/2003	1.9	0.95	Flathead	T29NR17W section 34	4600
9076450	Bluebunch wheatgrass	8/21/2003	0.4	0.22	Flathead	T26NR21W section 33	5000
9076451	Bluebunch wheatgrass	8/25/2003	0.1	0.03	Flathead	T26NR22W section 29	5700
9076452	Bluebunch wheatgrass	8/21/2003	0.3	0.08	Flathead	T26NR21W section 33	4980
9076453	Idaho fescue	8/25/2003	0.3	0.08	Flathead	T26NR22W section 29	5700
9076454	Common yarrow	8/21/2003	0.2	0.02	Flathead	T26NR22W section 15	4300
9076455	Common yarrow	8/13/2003	trace	trace	Flathead	T30NR18W section 23	3800
9076456	Common yarrow	8/21/2003	0.5	0.04	Flathead	T26NR21W section 33	4980
9076457	Common yarrow	9/4/2003	0.7	0.08	Flathead	T33NR21W section 26	4000

Appendix 1. Collection data (continued)

Accession No.	Species	Date collected	Fresh wt. (lbs)	Cleaned wt. (lbs)	Forest	Location	Elevation (ft)
9076458	Common yarrow	8/20/2003	1.4	0.20	Flathead	T26NR21W section 29	?
9076459	Common yarrow	9/4/2003	2.5	0.86	Bitterroot	T2NR20W section 2,10,11	5600
9076460	Common yarrow	9/22/2003	0.5	0.38	Lolo	N46 42 14.7	4500
9076461	Pearly everlasting	9/23/2003	1.8	0.03	Lolo	N46 41 48.5	4600
9076462	Idaho fescue	7/24/2003	0.4	0.20	Bitterroot	W114 36 10.5 T2NR20W section 11	5600
9076463	Bluebunch wheatgrass	7/24/2003	1.8	0.54	Bitterroot	T2NR20W section 2	5700
9076464	Bluebunch wheatgrass	7/14/2003	17.5	1.86	Gallatin	N45 40 08.32279	5500
9076465	Sandberg bluegrass	7/15/2003	7	1.58	Gallatin	W1100026.177 N45 58 43.57899	6700
9076466	Bluebunch wheatgrass	7/30/2003	17	1.88	Gallatin	W1110012.792 N452733.66724	7200
9076467	Idaho fescue	7/30/2003	19	5.25	Gallatin	W1104630.334 N452743.68577	7400
9076468	Bluebunch wheatgrass	7/31/2003	9.5	0.00	Gallatin	W1104630.334 N444430. W1110954	6570
9076469	Idaho fescue	8/4/2003	12.5	3.92	Gallatin	N454842. W1104642.	7200
9076470	Lupine	8/4/2003	9.5	1.08	Gallatin	N454842. W1104642.	7600
9076471	Idaho fescue	7/16/2003	17.5	3.00	Gallatin	N45 58 06. W110 57 24.	6400
9076472	Blue wildrye	8/1/2003	4.5	3.08	ID Panhandle	T45NR2W sec. 26	2800
9076473	Idaho fescue	7/25/2003	1	0.46	ID Panhandle	T48NR3W section 12	2400
9076474	Common yarrow	7/15/2003	15	0.98	Custer	T25NR46E section 19	4000
9076475	Common yarrow	9/5/2003	2.1	0.12	ID Panhandle	T19N R4E section 15	5200

Appendix 2. Seed cleaning calibrations

Blue Wildrye (*Elymus glaucus*)

1. Thrashing
 - A. 3/8" screen followed by 1/4" screen
2. Air screen cleaner
 - A. screens
 1. top-4.350
 2. middle-3.550
 3. bottom-6 X 32
 - B. valves
 1. 2.25
 2. 4.75
 3. 1.60
 4. intake-closed
 - C. adjustments
 1. blower speed-4.4
 2. sieve boat-10
3. Debearder
 - A. adjustments
 1. brush speed-10
 2. vacuum-on
4. Gravity table
 - A. adjustments
 1. sieve boat-10
 2. blower speed-5
 - i. valve-2.5
 - B. table angle
 1. slope-1.0
 2. pitch-0.5

Bluebunch Wheatgrass (*Pseudoroegneria spicata*)

1. Thrashing
 - A. #14 screen
 - B. 3/8" screen top and 1/4" screen bottom
2. Clipper
 - A. screens
 1. 6-24
 2. #12
3. Air screen cleaner
 - A. screens
 1. top-3.95 round
 2. middle-3.150 round
 3. bottom-6 X 24 slit
 - B. valves
 1. 2.5
 2. 5.3
 3. 2.5
 4. intake-closed
 - C. adjustments
 1. blower speed-6
 2. sieve boat-10
4. Indent cleaner
 - A. spool-7.5
 - B. adjustments
 1. catchpan-4.0
 2. sieve speed-10
5. Debearder
 - A. adjustments
 1. brush speed-10
 2. gate-1.5
4. Gravity table
 - A. adjustments
 1. sieve boat-10
 2. blower speed-8
 - i. valve-3.0
 - B. table angle
 1. slope-1.0
 2. pitch-0.5

Idaho Fescue (*Festuca idahoensis*)

1. Thrashing
 - A. 3/8" screen
2. Clipper
 - A. screens
 1. #12 top
3. Air screen cleaner
 - A. screens
 1. top-3.750 round
 2. middle-2.350 round
 3. bottom-solid blank
 - B. valves
 1. 2.1
 2. 5.25
 3. 2.5
 4. intake-closed
 - C. adjustments
 1. blower speed-4.5
 2. sieve boat-10

Sandberg Bluegrass (*Poa secunda*) and Tufted Hairgrass (*Deschampsia caespitosa*)

1. Thrashing
 - A. 3/8" screen
2. Air screen cleaner
 - A. screens
 1. top-3.150 round
 2. middle-2.10
 3. bottom-6 X 32
 - B. valves
 1. .25
 2. 2.5
 3. 3.5
 4. intake-closed
 - C. adjustments
 1. blower speed-3.5
 2. sieve boat-10

CRATERS OF THE MOON NATIONAL MONUMENT
 2004 Annual Report
 Prepared by
 NATURAL RESOURCES CONSERVATION SERVICE
 ABERDEEN, IDAHO PLANT MATERIALS CENTER

INTRODUCTION

In 2004, the Aberdeen Plant Materials Center (PMC) entered into an agreement with Craters of the Moon National Monument and Preserve (CRMO) to produce transplants and/or cleaned seed of thirteen native plant species for use in revegetation of disturbed areas following road construction. The National Park Service requires that restoration of native plants be accomplished using germplasm from populations as closely related genetically and ecologically as possible to park populations. Many of the proposed species are poorly understood or require special attention for adequate germination and survival. The PMC was chosen for its personnel, expertise and equipment to assist in seed collection, cleaning collected seed, development of establishment protocols and production of greenhouse propagated materials for transplanting at CRMO.

Two sites will be revegetated at CRMO and Table 1 lists the seed mixtures that will be broadcast planted. The “Soil Base” site is approximately 28,380 sq. feet (0.65 acres) and is to be reseeded with a grass mix consisting of equal parts of Thurber’s needlegrass (*Achnatherum thurberianum*), Indian ricegrass (*Achnatherum hymenoides*) and Sandberg bluegrass (*Poa secunda*). The “Cinder Garden” site is approximately 18,780 sq. feet (0.43 acres) and will be seeded with a forb mix consisting of 30 % dwarf buckwheat (*Eriogonum ovalifolium* var. *depressum*), 30 % dusty maiden (*Chaenactis douglasii*), 30 % scorpion weed (*Phacelia hastata*) and 10 % dwarf monkey flower (*Mimulus nanus*). Greenhouse propagated materials will be transplanted into both sites as deemed suitable by the CRMO ecologist.

Table 1. Seed mixes

Site	Species	% mix	Full rate lb/ac (PLS)	Mix rate/0.66 ac. (PLS)	Broadcast rate (2x) PLS
Soil Base Site (28,380 ft ²)	Thurber’s needlegrass	33	6	1.3	2.6
	Indian ricegrass	33	6	1.3	2.6
	Sandberg bluegrass	33	2	0.4	0.8
Cinder Garden Site (18,780 ft ²)	Dusty maiden	30	3.18	0.42	0.84
	Dwarf buckwheat	30	0.38	0.05	0.10
	Scorpion weed	30	2.42	0.32	0.64
	Dwarf monkey flower	10	0.11	0.01	0.02

ACCOMPLISHMENTS

Based on the area to be revegetated and number of transplants desired of each species, the PMC estimated amounts of seed required (see Table 2). The PMC then advised CRMO personnel in seed collecting time periods, techniques and storage. During the summer of 2004, CRMO staff hand collected seed for each species at numerous sites throughout the monument with technical assistance from PMC personnel. Seed collections were dried and bagged at CRMO and delivered to the PMC in early fall.

CRMO technicians also made opportunistic collections of the following species: Nelson's needlegrass (*Achnatherum nelsonii*), cushion buckwheat (*Eriogonum ovalifolium* var. *ovalifolium*), western needlegrass (*Achnatherum occidentale*) and fern bush (*Chamaebatiaria millefolium*). Table 3 provides a summary of collections made during 2004 with cleanout information. Table 4 shows the duration of seed harvest for each species collected and Table 5 shows actual collecting dates and provides hourly totals for time spent making collections.

In December 2004 and January 2005, PMC technicians cleaned the seed using the small-lot-seed-cleaning equipment at Aberdeen. No viability, purity or germination tests have been completed to date. Table 2 shows the amounts of clean seed for each accession collected.

A portion of the seed was to be planted in 40 cubic inch containers at the PMC greenhouse during the winter of 2005; however, because of delays in road construction transplant propagation will be postponed until the winter of 2005-2006.

Additional seed collections of dwarf buckwheat, Thurber's needlegrass, Indian ricegrass, and scorpionweed will need to be made in 2005 along with sagebrush seed to meet the amounts required for the revegetation projects.

Table 2. CRMO Seed Requirements

Species	Accession #	Transplants	Broadcast Seed (lb PLS)	Total Required Cleaned Seed	Actual Cleaned Seed (lb)
Antelope bitterbrush	9076477	600	n/a	0.31	0.82
Rabbitbrush	9076478	300	n/a	0.03	0.22
Sagebrush	--	200	n/a	0.04	Not collected
Limber Pine	9076480	75	n/a	0.68	1.58
Sulphurflower buckwheat	9076479/ 9076514	200	n/a	0.02	0.54/ 0.46
Hotrock penstemon	9076481	25	n/a	0.003	0.34
Dwarf buckwheat	9076482	150	0.2	0.21	0.12
Thurber's needlegrass	9076483	200	3.7	3.8	0.5
Indian ricegrass	9076484	200	3.7	3.8	1.4
Sandberg bluegrass	9076485	200	1.1	1.2	4.68
Dusty maiden	9076486	n/a	1.68	1.68	1.84
Scorpion weed	9076487	n/a	1.28	1.28	0.7
Dwarf monkey flower	9076488	n/a	0.04	0.04	0.11

Table 3. Collection data

Common Name	Species	Min. req. seed (lb)	Est. % cleanout	Est. min dry material (lb)	Collected fresh material (lb)	Collected dry material (lb)	% dry matter	Actual clean seed (lb)	Actual % cleanout (seed/dry)
Antelope bitterbrush	<i>Purshia tridentata</i>	0.31	55	0.6	8.93	5.1	57	0.82	84
Rabbitbrush	<i>Ericameria nauseosa</i>	0.03	95	0.6	3.44	2.2	64	0.22	90
Sagebrush	<i>Artemisia tridentata</i> var. <i>vasseyana</i>	0.04	95	0.88	0	0	0	0	0
Limber Pine	<i>Pinus flexilis</i>	0.68	--	2.7	23.12	13.2	57	1.58	88
Sulphurflower buckwheat	<i>Eriogonum umbellatum</i>	0.02	95	0.5	5.4	3.4	63	1.00	71
Hotrock penstemon	<i>Penstemon deustus</i> var. <i>deustus</i>	0.003	95	0.06	3.1	2.1	68	0.34	84
Dwarf buckwheat	<i>Eriogonum ovalifolium</i> var. <i>depressum</i>	0.21	95	4.14	1.73	0.51	29	0.12	76
Thurber's needlegrass	<i>Achnatherum thurberianum</i>	3.8	85	25.04	1.95	1.68	86	0.50	70
Indian ricegrass	<i>Achnatherum hymenoides</i>	3.8	85	25.04	29.85	25.1	84	1.40	94
Sandberg bluegrass	<i>Poa secunda</i>	1.2	85	8.03	8.9	8.0	90	4.68	42
Dusty maiden	<i>Chaenactis douglasii</i>	1.68	95	33.6	20.9	9.1	44	1.84	80
Scorpion weed	<i>Phacelia hastata</i>	1.28	95	25.6	25.2	12.1	48	0.70	94
Dwarf monkey flower	<i>Mimulus nanus</i>	0.04	95	0.8	4.93	1.60	32	0.11	93
Nelson's needlegrass	<i>Achnatherum nelsonii</i>	n/a	n/a	n/a	16.86	11.63	69	0.96	92
Cushion buckwheat	<i>Eriogonum ovalifolium</i> var. <i>ovalifolium</i>	n/a	n/a	n/a	4.91	3.27	67	0.36	89
Western needlegrass	<i>Achnatherum occidentale</i>	n/a	n/a	n/a	4.21	2.92	69	0.26	91
Fern bush	<i>Chamaebatiaria millefolium</i>	n/a	n/a	n/a	2.85	2.23	78	0.88	61

Table 5. Seed collection dates

Species	First collection	Last collection	Hours collecting	Total seed collected (lb)	Lb seed/hr
Antelope bitterbrush	7/15/04	7/26/04	11.6	0.82	0.07
Rabbitbrush	8/10/04	8/30/04	1.92	0.22	0.11
Sagebrush				0	
Limber Pine	8/19/04	8/24/04	3.17	1.58	0.50
Sulphurflower buckwheat	7/21/04	8/2/04	12.92	1.00	0.08
Hotrock penstemon	7/21/04	7/21/04	6.00	0.34	0.06
Dwarf buckwheat	6/16/04	7/13/04	8.17	0.12	0.01
Thurber's needlegrass	7/1/04	7/28/04	17.0	0.50	0.03
Indian ricegrass	7/7/04	8/13/04	57.5	1.40	0.02
Sandberg bluegrass	6/15/04	7/1/04	29.6	4.68	0.16
Dusty maiden	6/30/04	7/20/04	27.7	1.84	0.07
Scorpion weed	6/22/04	8/11/04	16.8	0.70	0.04
Dwarf monkey flower	6/16/04	7/28/04	9.5	0.11	0.01
Nelson's needlegrass	7/16/04	7/23/04	19.7	0.96	0.05
Cushion buckwheat	7/23/04	8/4/04	7.4	0.36	0.05
Western needlegrass	7/19/04	7/28/04	6.0	0.26	0.04
Fern bush	8/11/04	8/18/04	2.0	0.88	0.4

CRATERS OF THE MOON NATIONAL MONUMENT
 2004 Annual Report
 Prepared by
 NATURAL RESOURCES CONSERVATION SERVICE
 ABERDEEN, IDAHO PLANT MATERIALS CENTER

INTRODUCTION

The Aberdeen Plant Materials Center (PMC) entered into an interagency agreement with Craters of the Moon National Monument (CMNM) in 2004 to produce seed and plants of thirteen native plant species for use in revegetation of disturbed areas following road construction.

ACCOMPLISHMENTS

CMNM personnel hand collected seed during the summer of 2004. PMC personnel provided technical assistance in seed collection techniques. The seed was dried, bagged and transported to the PMC. In December, 2004 PMC staff cleaned the collections listed:

Species	Scientific Name	Estimated minimum required (lbs)	Actual collected (lbs)
Antelope bitterbrush	<i>Purshia tridentata</i>	0.31	0.82
Rubber rabbitbrush	<i>Chrysothamnus nauseosus</i>	0.03	0.22
Mountain big sagebrush	<i>Artemisia tridentata ssp. vasseyana</i>	0.04	Not collected
Limber pine	<i>Pinus flexilis</i>	0.68	1.58
Sulphurflower buckwheat	<i>Eriogonum umbellatum</i>	0.02	1.00
Hotrock penstemon	<i>Penstemon deustus var. deustus</i>	0.003	0.34
Dwarf buckwheat	<i>Eriogonum ovalifolium var. depressa</i>	0.21	0.12
Thurber's needlegrass	<i>Achnatherum thurberianum</i>	3.8	0.50
Indian ricegrass	<i>Achnatherum hymenoides</i>	3.8	1.40
Sandberg bluegrass	<i>Poa secunda</i>	1.2	4.68
Dusty maiden	<i>Chaenactis douglassii</i>	1.68	1.84
Scorpion weed	<i>Phacelia hastata</i>	1.28	0.70
Dwarf monkey flower	<i>Mimulus nanus</i>	0.04	0.11

CMNM personnel also made additional collections of the following species that were not originally planned for collection: *Achnatherum nelsonii*, *Eriogonum ovalifolium* var. *ovalifolium*, *Achnatherum occidentale* and *Chamaebatiaria millefolium*.

Seed from the collections made during 2004 were to be propagated in the PMC greenhouse beginning in early 2005. However, due to delays in road construction propagation will be postponed until the winter of 2005-2006. Additional seed collections may be made during the upcoming growing season to enhance amounts for propagation.

HandS on Research

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Journey® Established Grass Tolerance Trial

Objective: To determine the tolerance of numerous, typical, established western rangeland grasses to a dormant fall application of JOURNEY herbicide.

Progress Report 1: Spring ratings and early summer pictures

Materials and Methods

Journey (16 oz/A) was applied with methylated seed oil (1% v/v) and AMS Plus¹ (1.5 gal/a) to established stands of 59 grass varieties representing 29 grass species at Aberdeen, ID on November 17, 2004. The grasses were established in June, 2002 as a display nursery by the USDA/NRCS Aberdeen Plant Materials Center in cooperation with the South Bingham County Soil Conservation District. The herbicide application was made with a CO₂ pressurized backpack sprayer in 15 GPA water. Time of application was between 6:00 and 7:30 pm MST. The grass variety trial area was 100 ft long by 427 ft wide and each grass variety plot was 7 ft by 100 ft. A 9 ft wide swath was sprayed at the rear of the plots the total length of the trail area.

Dormancy ratings were not taken before application, however, most grasses were assumed to be dormant at that time. Temperatures had approached 20° F on several days in early November before and after application (Figure 1). Many grasses still could have been growing or only somewhat dormant at that time (personal communication, Loren St. John, NRCS).

On April 15, 2005, the effect of fall-applied Journey on the 59 grass varieties was assessed by a visual rating of % green/live grass on a scale of 0 to 100, with 0 representing no green/live grass present and 100 representing all grass present in the treated area was green and living. On May 31, 2005, the treated and non-treated grass areas of each variety were rated for % groundcover using 0 to 100% scale, with 0 representing no green vegetative ground cover and 100 representing complete green vegetative ground cover. Pictures were taken on May 2 and again on May 31, 2005 (PowerPoint file). Tolerance ratings will be performed again late summer 2005. If injury is present at this late summer rating, then another rating will be taken spring 2006 as per protocol.

¹ AMS Plus, ammonium sulfate (2.6 lb/gal) and NIS. Agrilience LLC. 1.5 gal/acre provides 4 lbs/acre AMS.

Results and Discussion

Early spring assessment on April 15, 2005 indicated that almost all grasses were adversely affected by the fall-applied Journey (Table 1). All varieties with the exception of Sherman big bluegrass (50%), Trailhead basin wildrye (80%), and Prairieland alai wildrye (70%) were 30% or less green and thought to be dead. The three sheep fescue varieties were not rated due to overall poor stand. Although some chlorosis, stunting, and seedhead emergence delay was evident, almost all of the grass varieties appeared to have recovered by May 31, 2005 with % ground cover ranging from 75 to 100 for 45 of the 56 rated varieties (Table 1). However, both tall fescue varieties and the BG-23 perennial rye seemed to have been effectively killed as of the May observation. While all the crested wheatgrass varieties were 10% or less green on April 15, these varieties had ground cover ratings of 80% or greater by May 31. All these crested wheatgrass varieties also were slightly chlorotic and slight to moderately stunted on May 31, except for Fairway crested wheatgrass which was severely stunted. The two slender wheatgrass varieties were more affected than the crested wheatgrasses as observed by the relatively low the ground cover ratings of only 50-60% and by the severe chlorosis observed and stunting. The bluegunch wheatgrasses were at 50 to 85% green ground cover by May 31 and chlorosis and stunting was observed on these wheatgrasses with P-7, P-238, and Goldar being most affected. The intermediate, tall, and pubescent wheatgrasses, as well as the Magnar basin wildrye were at 95 to 100% ground cover on May 31 recovered from the 5 to 20% green live grass seen on April 15. The mountain bromes, Regar, and Paddock meadow brome and the two tall fescue varieties were severely affected by the fall applied Journey application. The Garnet mountain brome had severe chlorosis despite 90% ground cover rating on May 31. Other varieties most affected were the Shoshone beardless wildrye and the Secar Snake River wheatgrass.

As stated previously, the fine fescue stands were highly contaminated with other grasses making observations difficult. Several surviving clumps of fine fescues have been observed in each of the sprayed areas, however, identification of specific variety and species is unclear. Poor stands in the Sand Hollow squirreltail and High Plains sandberg bluegrass also made observations difficult.

Overall, all but 3 out of 56 treated varieties appeared brown and dead/still dormant on April 15, 149 DAT, while only 6 appeared 95 to 100% dead, seven were 20 to 65% green, and 44 varieties were 70 to 100% green by May 31, 195 DAT. Seedhead emergence was delayed on the two orchardgrasses, and the only big bluegrass and creeping foxtail varieties tested. Almost

all wheatgrass varieties were slightly to moderately stunted and had somewhat reduced green ground cover. Unexpectedly, since many bromes are not tolerant of imazapic, 1 of 1 smooth brome and 1 of 3 meadow brome varieties tested were fairly tolerant (85% ground cover on May 31).

Figure 1. Maximum, minimum and mean daily temperatures at Aberdeen, ID from September 1, through November 30, 2004. Source: Agrimet.

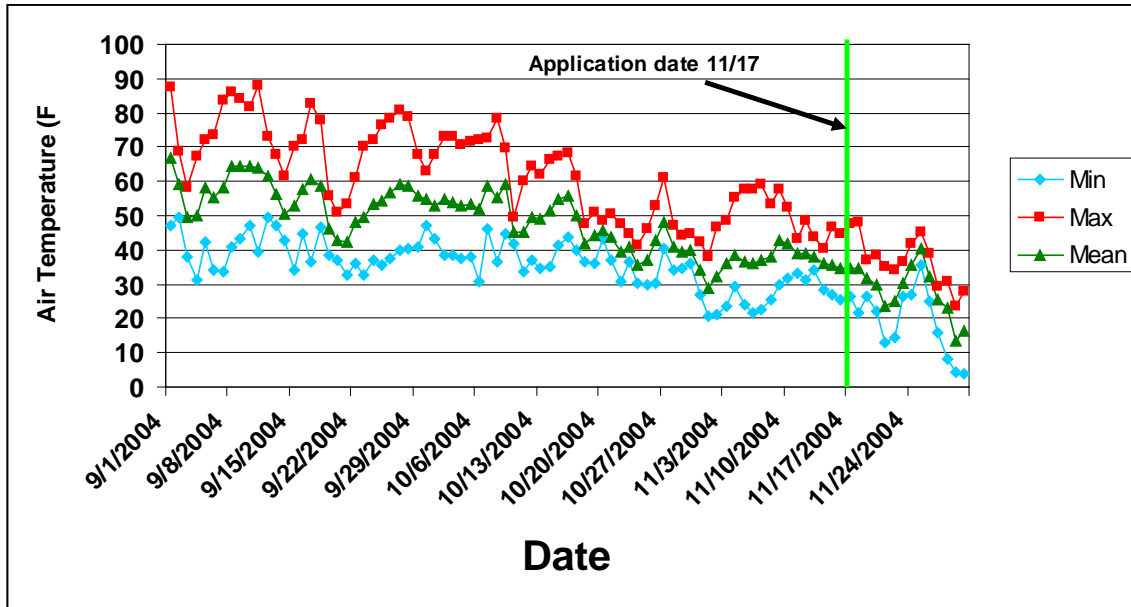


Table 1. Early and late spring 2005 tolerance ratings on established grass varieties treated Fall 2004 with Journey (16 oz/A) at the USDA, NRCS Plant Materials Center in Aberdeen, Idaho.

Grass Species	% Green/Living	5/31/2005 (195 DAT)			
	4/15/2005 (149 DAT)	% Green/Living		Chlorosis ⁱ	Stunting ⁱ
	Treated	Treated	Non-treated		
Sand Hollow squirreltail	Unclear delineation	0	60	-	-
High Plains sandberg bluegrass	Unclear delineation	0	80	-	-
Canbar canby bluegrass	Unclear delineation	0	100	-	-
Sodar streambank wheatgrass	3	90	100	S	N
Schwendimar thickspike wheatgrass	3	85	100	S	M
Bannock thickspike wheatgrass	5	85	100	S-M	S
Critana thichspike wheatgrass	10	90	100	S	S
Vavilov Siberian wheatgrass	25	85	100	S	M
P-27 Siberian wheatgrass	15	75	100	S	S
Nordan crested wheatgrass	8	80	100	S	M
Hycrest crested wheatgrass	5	80	100	S	M
CD-II crested wheatgrass	7	85	100	S	M
Roadcrest crested wheatgrass	6	80	95	S	S
Douglas crested wheatgrass	10	90	100	S	S
Fairway crested wheatgrass	3	85	100	S	SV
Ephraim crested wheatgrass	3	80	100	S	M
Whitmar beardless wheatgrass	5	85	100	M-SV	SV
Anatone bluebunch wheatgrass	8	75	100	M-SV	M
P-238 bluebunch wheatgrass	3	85	100	SV	SV
P-7 bluebunch wheatgrass	4	85	100	SV	SV
Goldar bluebunch wheatgrass	5	50	100	SV	SV
Secar Snake River wheatgrass	10	65	100	S-M	M

Tetracan Russian wildrye	4	85	100	N	SV
Mankota Russian wildrye	5	90	100	N	SV
Bozoisky-Select Russian wildrye	6	90	100	N	SV
Rosana western wheatgrass	0	100	100	N	N
Arriba western wheatgrass	3	100	100	S	N
Sherman big bluegrass	50	90	100	N	N
San Luis slender wheatgrass	0	50	95	SV	M
Pryor slender wheatgrass	3	60	100	SV	M
Covar sheep fescue	Poor stand, clumps showing 50% damage	?	?	-	-
Bighorn sheep fescue	Poot stand, unable to see fescue clumps	?	?	-	-
Durar hard fescue	Poor stand, several live bunches	?	?	-	-
Newhy hybrid wheatgrass	30	95	100	M-SV	S
Paiute orchardgrass	0	90	100	S	M
Rush intermediate wheatgrass	10	95	100	S	N
Oahe intermediate wheatgrass	10	95	100	S	N
Luna pubescent wheatgrass	15	100	100	N	N
Reliant intermediate wheatgrass	5	95	100	S	N
Manska pubescent wheatgrass	10	100	100	M	S
Magnar basin wildrye	20	95	100	N	N
Trailhead basin wildrye	80	95	100	M	N
Shoshone beardless wildrye	0	25	100	M-SV	SV
Prairieland altai wildrye	70	95	100	S	N
Alkar tall wheatgrass	7	95	100	S	N
Jose tall wheatgrass	8	95	100	N	N
Largo tall wheatgrass	5	85	95	S	N
Garnet mountain brome	0	90	100	SV	SV
Bromar mountain brome	0	20	100	M-SV	SV
BG-23 Perennial rye	0	5	100	-	-

Garrison creeping foxtail	3	75	100	M	SV
Hi-Mag tall fescue	3	0	100	-	-
Johnstone tall fescue	5	0	100	-	-
Potomac orchardgrass	0	95	100	N	S
Latar orchardgrass	2	100	100	S	N
Manchar smooth brome	5	85	100	M	M
Regar meadow brome	10	45	100	S	SV
Fleet meadow brome	10	85	100	M	M
Paddock meadow brome	20	70	100	S	SV

ⁱ N = None, S = Slight, M = Moderate, SV = Severe

Basin Wildrye, Advanced Evaluation 2005
Preliminary Report (June 20, 2005)
Derek J. Tilley, Range Conservationist (Plants)

INTRODUCTION

The purpose of this study is to evaluate the “Gund” collection of basin wildrye (*Leymus cinereus*) from Nevada for pre-varietal release potential. Basin wildrye is a perennial cool-season bunchgrass native to many of the cold-desert ecosystems of the Intermountain West and western Great Plains. Basin wildrye is commonly used in seed mixtures for rangeland erosion control, forage and cover seedings, as well as in mine spoil and critical area stabilization projects. Currently there are three industry releases available, ‘Magnar’, ‘Trailhead’, and Washoe Germplasm. Magnar and Trailhead were both selected for drought tolerance, while Washoe Germplasm was selected for high tolerance to acidic conditions encountered in mine reclamation situations (Ogle et al, 2002).

MATERIALS AND METHODS

The trial is being conducted at the Aberdeen Plant Materials Center, Fish and Game farm located approximately 5 miles northeast of Aberdeen, Idaho. Experimental design was a randomized complete block with six replications. Individual plots were 20 feet long and contained one row with rows planted on three foot centers. Experimental design also contained plots of all three industry standards for comparison. Soil at the site is a Declo silt loam with pH of 7.4 to 8.4. Average annual precipitation is 8.75 inches. The test site was plowed in the fall of 2004 and subsequently disked and cultipacked in the spring prior to planting.

Plots were seeded on May 19, 2005 using a hand-pushed belt seeder calibrated to drill 30 pure live seeds (PLS) per foot of row. Seed was drilled to an approximate depth of one half inch. Border rows of ‘Tegmar’ intermediate wheatgrass (*Thinopyrum intermedium* [Host] Barkworth & D. Dewey) were planted on the outside of the blocks to eliminate edge effect. Plots were sprinkler irrigated as needed throughout the growing season. Weeds were controlled with herbicide treatments and between row cultivation.

The first evaluation was conducted on June 15, 2005 (27 days after planting) when most of the plants from both species had reached a one to two leaf stage. Plots were evaluated for percent stand, plant density and seedling vigor. Percent stand was measured using a twenty foot rope marked with one foot increments stretched the length of the plot and anchored at either end. Plants intercepting the one foot increments are summed and recorded as a percentage. Plant density was measured by counting seedlings found in the middle two feet of row and converted to average plants per foot of row. Seedling vigor is measured on an ordinal scale of one to nine (one being most healthy and nine being dead). Entire plots as well as individual plants within plots were viewed and given a rating based on overall apparent vigor.

The second evaluation occurred on September 15, 2005, prior to winter dormancy. Accessions were again evaluated for percent stand using the same method as discussed above. Additionally, it was planned at this point in the trial to evaluate treatments for plant height; however, due to weed pressure and weeds nearing the mature seed stage, the entire field was mowed to a height of approximately four inches. For this reason, individual plants in each plot were selected and measured for average width (in inches) to provide additional plant measurement data.

All data from evaluations were subjected to an Analysis of Variance (ANOVA) and means were separated using Duncan's Multiple Range Test.

RESULTS

At the spring evaluation the highest percent stand was observed in the Trailhead plots (57.9 %) which did not differ significantly from the next highest rating of 52.6 % from Magnar. The lowest stand came from Gund with 13.1 % which was significantly lower than the other three tested accessions. All three industry releases had significantly higher plant density than Gund (7.9, 7.6 and 5.8 plants/foot from Magnar, Trailhead and Washoe respectively versus 0.3 plants/foot from Gund). Gund also showed the poorest seedling vigor with a rating of 7.0 out of 9.0. The three other accessions differed significantly from Gund with vigor ratings from 2.7 to 1.3.

The fall evaluation similarly showed Gund performing significantly more poorly than the other three accessions being tested. Evaluation of percent stand showed the three industry releases rated highest to lowest as Washoe (65.0 %), Magnar (62.2 %) and Trailhead (57.8 %). Gund was rated at 16.7 %. Plant size, as measured in width, was greatest in the three releases. Average widths were 4.3, 4.2, and 4.0 inches for Washoe, Magnar and Trailhead respectively. Gund measured 2.3 inches.

Accession No.	% PLS ^{3/}	% stand	Density ^{1/}	Vigor ^{2/}	% stand	Width (in)
		6/15	6/15	6/15	9/16	9/16
Gund	89.2	13.1 c ^{4/}	0.3 b	7.0 a	16.7b	2.3b
Magnar	87.5	52.6 ab	7.9 a	1.7 b	62.2a	4.2a
Trailhead	89.6	57.9 a	7.6 a	1.3 b	57.8a	4.0a
Washoe	72.0	40.4 b	5.8 a	2.7 b	65.0a	4.3a
LSD (0.05)		5.4	3.3	1.3	11.9	0.7

^{1/} Plants per foot of row

^{2/} Rated 1-9 with 1 best, 9 worst

^{3/} Percent PLS based on estimated 95% purity

^{4/} Means followed by the same letter are not significantly different

DISCUSSION

Although it is still early in the evaluation process it appears at this point that the three known industry releases of basin wildrye are significantly better in the four rated categories than the "Gund" collection from Nevada. Future evaluations scheduled for 2006 will compare other characteristics such as plant biomass production and seed production.

REFERENCES

Ogle, D. G., L. St. John, L. Holzworth, S. R. Winslow and T. A. Jones. 2002. Basin Wildrye. NRCS Plant Guide. USDA, NRCS, Idaho State Office & the National Plant Data Center. 6p.

OFF-CENTER ACTIVITIES

Coffee Point Off-Center Advanced Test Site
2005 Summary of Progress
Loren St. John, Team Leader
Aberdeen Plant Materials Center

INTRODUCTION

The purpose of the Coffee Point Off-Center Advanced Test Site is to evaluate the potential of grasses for revegetation and forage for livestock and wildlife in areas of 8-12 inch annual precipitation in southeast Idaho. The site is in MLRA 11B, Snake River Plains of the Northwestern Wheat and Range region of the Intermountain United States. This report summarizes the evaluation data collected during the 2005 growing season - the tenth year after the site was planted. Refer to the 1994 - 1999 Summary of Progress Report for details of the evaluations conducted prior to 2005.

The site is located in the Coffee Point Exclosure, approximately 25 miles northwest of Aberdeen on land administered by the USDI - Bureau of Land Management. The exclosure has been used by the Aberdeen Plant Materials Center for testing purposes since 1982.

The soils on the site are a Splittop-Atomic complex with 2 - 8 percent slopes. The Splittop soil is moderately deep and well drained brown loam with moderate permeability, low available water capacity and effective rooting depth of 20 - 40 inches. The Atomic soil is deep and well drained, pale brown silt loam. The effective rooting depth is 60 inches or greater. Permeability and available water capacity is moderate. There are scattered pockets of exposed bedrock. The pH of this soil complex is 7.4 - 8.4. The dominant vegetation in the natural plant community is bluebunch wheatgrass and Wyoming big sagebrush. The site is a Loamy 8 - 12 inch ecological site. The elevation is 4850 feet, the average annual air temperature is 43°F and the frost free period is approximately 90 days.

MATERIALS AND METHODS

The off-center advanced test site is composed of two components, the inter-center strain trial and a display nursery. The inter-center strain trial includes 26 grass accessions which are arranged in a complete randomized block design with 4 replications. The display nursery includes 47 accessions of grasses, forbs, and shrubs to allow landusers and agency personnel to view examples of released cultivars and promising accessions that are adapted to the general area.

The area had been used previously for testing purposes. However, the vegetation was dominated by cheatgrass *Bromus tectorum*, and annual weeds. The site was plowed in late October, 1993. It was planned to cultivate the site during 1994 to control cheatgrass but due to extreme drought conditions, no cheatgrass emerged and cultivation was unnecessary. Russian thistle *Salsola iberica*, halogeton *Halogeton glomeratus*, and kochia *Kochia scoparia* were scattered on the site and were removed with a hay rake prior to firming the seedbed. On October 31, 1994 the site was culti-packed three times. On November 3, 1994 the site was planted except for the winterfat shrub plots in the display nursery which were seeded with a hand pushed belt seeder on April 12, 1995. The reason for delaying planting of the winterfat display plots was to obtain as fresh seed as possible. Table 1 lists the accessions planted and summarizes the evaluation data collected during 2005.

All seed except for the winterfat display plots were mixed with rice hulls prior to seeding to plant approximately 25 seeds per square foot. A double disk drill with press wheels was used. Plots are 6.67 feet wide X 20 feet long. Row spacing was 10 inches with the exception of basin wildrye and Russian wildrye accessions which were planted to 20 inch row spacing. Depth of seeding ranged from 0.25 - 0.75 inches dependent upon species. The winterfat display plots were seeded at a rate of 15 pure live seeds per row foot.

Areas plowed but not seeded with test or display plots were seeded to a cover crop seed mixture composed of the following species and rates:

'P-27' Siberian wheatgrass	1.8 #PLS/ac
'Hycrest' crested wheatgrass	1.3
'Bannock' thickspike wheatgrass	1.1

The middle 2 rows of each plot are sampled for evaluation purposes. Percent stand (or basal cover) data is collected utilizing a 20 foot rope with 1 foot increments stretched and anchored from one end of the plot to the other between the middle 2 rows. Basal cover is measured by the interception of plant parts along the rope at each 1 foot increment which are then summed to give a cover estimate recorded as a percent. Percent stand data was statistically analyzed for Analysis of Variance (ANOVA) and Duncan's Multiple Range Test was completed to show means separation.

Plant density is measured using a row count technique at the mid-point of the plot. Plants are counted from the middle 2 rows for a distance of 18.3 cm for 10 inch row spaced plots and 9.2 cm for 20 inch row spaced plots. The number of plants counted converts directly to the number of plants per square foot. Vigor is a qualitative rating based upon plant health and growth rate. A plant rated 1 would be best and a 9 rating is dead. Data from the replicated plots is averaged while data from the non-replicated display plots is the actual data from that plot.

Production data was collected from plots with 10 inch row spacing and was accomplished by centering a 60 cm X 200 cm frame on the middle 2 rows of each plot, clipping the test material above the plant crown and placing it into individual paper bags. 120 cm X 200 cm frames were used on plots with 20 inch row spacing. The samples were brought back to the PMC and air-dried, weighed and the data was converted to pounds per acre dry weight. Production data was also statistically analyzed for Analysis of Variance (ANOVA). Due to extreme variability in the data, further statistical analysis was not warranted.

Precipitation data for crop years 2000 – 2005 from the University of Idaho Research and Extension Center at Aberdeen is presented below.

Month	Crop year	2000	2001	2002	2003	2004	2005
				(inches)			
October		0.26	1.33	0.28	0.21	0.02	2.93
November		0.04	0.34	0.97	0.71	0.39	0.31
December		0.18	0.26	1.29	0.42	1.36	0.63
January		1.18	0.89	0.56	0.22	0.35	0.96
February		1.02	0.37	0.00	0.63	1.61	0.53
March		0.60	0.26	1.33	0.39	0.68	0.69

April	0.42	0.59	0.34	1.42	0.87	2.10
May	0.96	0.26	0.60	0.54	1.41	2.75
June	0.20	0.04	0.27	0.20	0.26	0.47
July	0.12	0.54	0.50	0.01	0.59	0.14
August	0.06	0.24	0.06	0.59	0.86	0.18
September	0.79	0.67	0.63	0.33	0.63	0.56
Total	5.83	5.79	6.83	5.67	9.03	12.25

2005 EVALUATIONS AND DISCUSSION

The site was first evaluated on June 2, 2005 and data was collected on plant height, percent stand, plant density and vigor. On July 8, plant height, production and vigor data were collected. A summary of this data is presented in Table 1. The extremely wet moisture conditions in the spring had considerable influence on plant performance.

Plant height data collected on June 2 ranged from 12.8 cm for 9019218 bottlebrush squirreltail to 77.3 cm for 'Tetracan' Russian wildrye. On July 14, plant height ranged from 12.8 cm for 9019218 to 96.0 cm for Tetracan. Most growth in height took place prior to the first evaluation.

Percent stand data ranged from 2.0 percent for 'Schwendimar' thickspike wheatgrass to 79.8 percent for Syn A Russian wildrye. Plant density ranged from 0.3 plants per square foot for Schwendimar to 3.3 plants per square foot for 'Sodar' streambank wheatgrass. 'Bozoisky' Russian wildrye had the best vigor rating (1.3) and Schwendimar had the worst vigor rating (7.0) during the June evaluation. In July, 'Hycrest' crested wheatgrass had the best vigor rating (2.0) and 9019218 bottlebrush squirreltail had the worst vigor rating (8.0).

Hycrest crested wheatgrass produced the most (1858 pounds per acre) followed by 'P-27' Siberian wheatgrass (1235 pounds per acre).

Data was also collected from the non-replicated display plots and is also shown on Table 1. 'Parkway' crested wheatgrass had the highest forage production and 'Fairway' crested wheatgrass had the lowest forage production. The only accession remaining in the forb and shrub display plots is Pamirian winterfat.

CONCLUSION

The purpose of the Coffee Point Off-Center Advanced Test Site is to evaluate the potential of grasses for livestock and wildlife in areas of 8-12 inch annual precipitation in southeast Idaho.

After 10 years of establishment, the Russian wildrye accessions (Syn A, Tetracan, Mankota, and Bozoisky) have the best stands. Sodar streambank wheatgrass has the best plant density and the *Agropyron* species (with the exception of 'Douglas') all produced forage greater than 1000 pounds per acre.

The Coffee Point Off-Center Advanced Test Site will be maintained for training purposes and to conduct periodic evaluations to evaluate long-term performance of the accessions planted in November, 1994. A new trial is scheduled to be planted in 2006.

Table 1.
Coffee Point Inter-Center Strain Trial
Summary of 2005 Evaluation data

Accession No.	Common Name	Scientific Name	Replicated Grass Plots						
			Plant Height (cm)		1/ Percent Stand	2/ Plant Density	3/ Vigor		4/ Forage Production
			6/2	7/14	6/2	6/2	6/2	7/14	pounds/acre
Syn A	Russian Wildrye	<i>Psathyrostachys juncea</i>	60.0	79.5	79.8 a	2.0	2.0	2.8	920
Tetracan	Russian Wildrye	<i>Psathyrostachys juncea</i>	77.3	96.0	79.0 a	1.8	1.8	3.8	586
Mankota	Russian Wildrye	<i>Psathyrostachys juncea</i>	62.3	82.5	76.0 a	2.3	1.8	3.0	688
Bozoisky	Russian Wildrye	<i>Psathyrostachys juncea</i>	72.3	83.5	73.5 ab	2.5	1.3	2.3	678
Ephraim	Crested Wheatgrass	<i>Agropyron cristatum</i>	35.5	51.5	61.0 bc	3.0	3.3	3.0	920
P-27	Siberian Wheatgrass	<i>Agropyron fragile sibiricum</i>	47.5	56.3	54.8 c	1.8	3.0	2.5	1235
Sodar	Streambank wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	41.0	50.3	54.0 c	3.3	2.8	3.8	585
Nordan	Crested Wheatgrass	<i>Agropyron desertorum</i>	44.3	53.8	53.5 c	1.8	2.8	2.5	1059
Hycrest	Crested Wheatgrass	<i>A. cristatum x desertorum</i>	45.8	58.5	52.8 c	2.5	2.8	2.0	1858
Vavilov	Siberian Wheatgrass	<i>Agropyron fragile sibiricum</i>	48.8	57.3	52.0 c	1.3	2.3	2.8	1077
PI-275459	Siberian Wheatgrass	<i>Agropyron sibiricum</i>	48.3	48.3	50.8 c	2.0	3.0	5.5	1133
Douglas	Crested Wheatgrass	<i>Agropyron cristatum</i>	41.3	58.5	45.0 c	2.5	2.3	4.0	743
Bannock	Thickspike Wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	43.8	69.3	26.5 d	1.8	2.8	2.8	418
Magnar	Basin Wildrye	<i>Leymus cinereus</i>	44.3	66.8	22.8 d	0.8	4.8	4.5	985
Trailhead	Basin Wildrye	<i>Leymus cinereus</i>	43.3	46.5	22.0 d	0.8	5.5	6.5	121
Critana	Thickspike Wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	45.0	59.8	21.3 de	1.3	4.0	3.8	613
Secar	Snake River Wheatgrass	<i>Pseudoroegneria spicata ssp. spicata</i>	40.8	47.3	18.8 def	0.8	5.5	5.8	307
9019219	Bottlebrush Squirreltail	<i>Elymus elymoides</i>	16.5	17.8	6.5 efg	0.8	6.5	6.8	84
9019218	Bottlebrush Squirreltail	<i>Elymus elymoides</i>	12.8	12.8	6.3 efg	0.3	6.8	8.0	47
SL-hybrid		<i>Elymus x Pseudoroegneria</i>	26.0	26.0	5.8 efg	0.5	6.5	7.8	149
Volga	Mammoth Wildrye	<i>Leymus racemosus</i>	40.8	52.5	5.0 fg	0.5	6.0	6.5	688
Schwendimar	Thickspike Wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	25.0	25.0	2.0 g	0.3	7.0	7.8	28
9040187	Bottlebrush Squirreltail	<i>Elymus elymoides</i>	0.0	0.0	0.0 g	0.0	9.0	9.0	0
9040189	Bottlebrush Squirreltail	<i>Elymus elymoides</i>	0.0	0.0	0.0 g	0.0	9.0	9.0	0
9040137	Columbia Needlegrass	<i>Stipa nelsonii v. dorei</i>	0.0	0.0	0.0 g	0.0	9.0	9.0	0
9024804	Columbia Needlegrass	<i>Stipa nelsonii v. dorei</i>	0.0	0.0	0.0 g	0.0	9.0	9.0	0

^{1/} Percent stand is equal to basal cover. Percent stand data was analyzed utilizing Duncan's Multiple Range Test; P= 0.05, CV= 29.83; means followed by the same letters are not significantly different.

^{2/} Plant Density is the number of plants per foot²

^{3/} Rated 1-9 with 1 best, 9 worst.

^{4/} 7/13/05 harvest samples were air-dried and weighed.

Table 1 continued.
Coffee Point Inter-Center Strain Trial
Summary of 2005 Evaluation data

Non-replicated Grass Display Plots

Accession No.	Common Name	Scientific Name	Plant Height (cm)		Percent Stand	Plant Density (per ft ²)	Vigor		Forage Production pounds/acre
			6/2	7/14			6/2	7/14	
Kirk	Crested wheatgrass	Agropyron cristatum	45	50	55	3	3	3	1935
Parkway	Crested wheatgrass	Agropyron cristatum	49	35	50	3	4	5	2230
Fairway	Crested wheatgrass	Agropyron cristatum	30	40	75	2	4	4	892
Pryor	Slender wheatgrass	Elymus trachycaulis	0	0	0	0	9	9	0
San Luis	Slender wheatgrass	Elymus trachycaulis	61	61	15	0	5	9	0
Newhy	RS Hybrid	Elytrigia x Pseudoroegneria	0	0	0	0	9	9	0
Canbar	Canby bluegrass	Poa secunda	0	0	0	0	9	9	0
Whitmar	Beardless wheatgrass	Pseudoroegneria spicata inermis	71	74	20	1	3	4	855

Non-replicated Forb and Shrub Display Plots

Accession No.	Common Name	Scientific Name	Plant Height (cm)	Number of Plants/Sample Rows	Vigor
			6/2	6/2	6/2
9021471	Fringed sage	Artemisia frigida	0	0	9
Lutana	Cicer milkvetch	Astragalus cicer	0	0	9
Rincon	Fourwing Saltbush	Atriplex canescens	0	0	9
Wytana	Fourwing Saltbush	Atriplex canescens	0	0	9
9067480	Fourwing Saltbush	Atriplex canescens	0	0	9
Timp	Utah Sweetvetch	Hedysarum boreale	0	0	9
Immigrant	Forage Kochia	Kochia prostrata	0	0	9
Pamirian	Winterfat	Krascheninnikovia ceratoides	36	1	3
9067481	Winterfat	Krascheninnikovia lanata	0	0	9
9063535	Winterfat	Krascheninnikovia lanata	0	0	9
Hatch	Winterfat	Krascheninnikovia lanata	0	0	9
Richfield sel.	Firecracker penstemon	Penstemon eatonii	0	0	9
Clearwater sel.	Alpine penstemon	Penstemon venustus	0	0	9

^{1/} Percent stand is also equal to basal cover.

^{2/} Rated 1-9 with 1 best, 9 worst.

Orchard Display Nursery
Establishment Year (2005) Evaluations
Derek J. Tilley, Range Conservationist (Plants)
Loren St. John, Team Leader Aberdeen Plant Materials Center

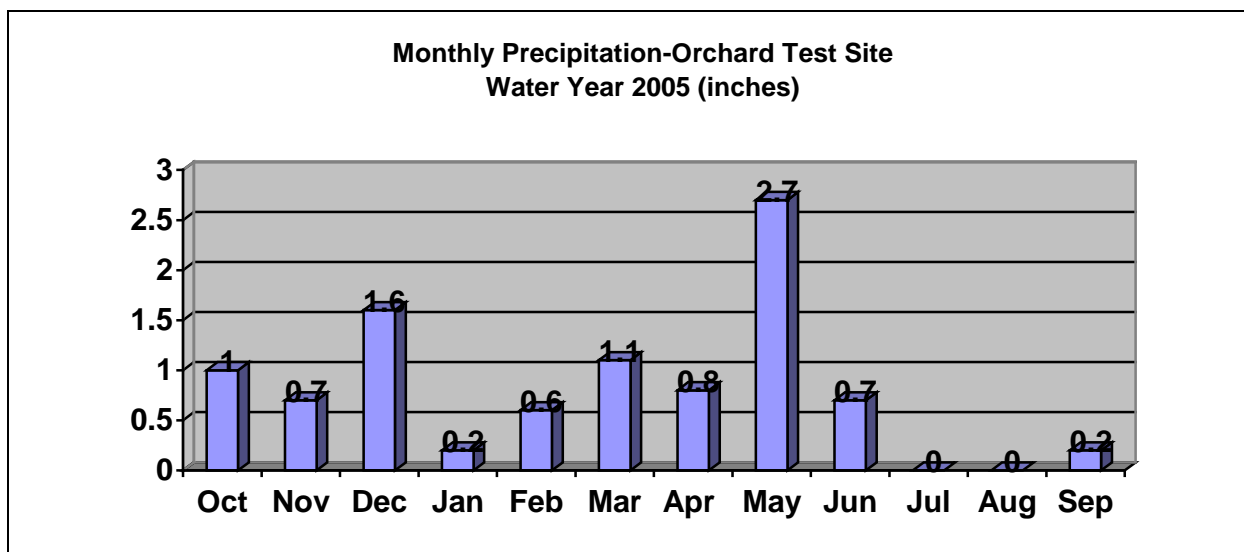
Introduction

The Orchard Display Nursery was planted on November 16, 2004 in cooperation with the Great Basin Native Plant Selection and Increase Project. The nursery contains 82 accessions of 27 native and introduced grass, forb and shrub species planted in 7 X 60 foot plots. See Tilley et al (2005) for descriptions of the species and accessions used. The remaining area was planted to a cover crop mix of 50% Anatone bluebunch wheatgrass, 20% Bannock thickspike wheatgrass, 20% Magnar basin wildrye and 10% Snake River Plains fourwing saltbush. The test site is located on a loamy 10-12 inch precipitation ecological site that historically supported a Wyoming big sagebrush - bluebunch wheatgrass – Thurber’s needlegrass plant community. Total precipitation at the Orchard Test Site for water year 2005 was 9.6 inches (USDA 2005).

The Bureau of Land Management (BLM) burned the site in the fall of 2002. The site was later sprayed by the PMC in May 2003 and May 2004 with a Roundup/2, 4-D mix to create a weed free seedbed. Due to limited breakdown of dead grass clumps that would inhibit proper seed placement with a drill and to ensure a clean seedbed, the decision was made to cultivate the site with a culti-packer just prior to seeding. Plots were evaluated on April 27 and May 5, 2005. During the first evaluation most plots contained high numbers of Russian thistle (*Salsola* sp.) and moderate amounts of bur buttercup (*Ranunculus testiculatus* Crantz) plants. Russian thistle plants were approximately two to three inches tall and the buttercup plants had already flowered. At the time of the second evaluation, there was a heavy infestation of tumble mustard (*Sisymbrium altissimum* L.). Plots were consequently sprayed again on June 9, 2005 with 16 oz. 2, 4-D and 8 oz. Clarity per acre to control the mustard.



**Orchard display site in September 2004 prior to seedbed preparation (above).
Display site at time of second evaluation (right).**



Materials and Methods

The first evaluation of the plots was conducted on April 27, 2005 using a frequency grid based on that described by Vogel and Masters (2001). The grid measured approximately 40X41 inches, having four ten inch columns (to incorporate 1 drill row per column) and five rows, totaling 20 cells. The first grid was laid on the rows approximately two grid lengths (80 inches) into the plot. Counts were made of the cells that contained at least one plant. Grids were subsequently flipped and evaluated three more times giving a total of 80 evaluated cells. Total area for one grid is approximately 1m². Total area evaluated is therefore approximately 4m². A conservative estimate of plant density (plants/m²) is thus the total number of cells containing at least one plant divided by four. The second evaluation occurred on May 25, 2005. The methods followed were the same as above, but the frame was evaluated five times for a total of 100 cells in 5m². Total counts were then divided by five for approximate plants/m². Numbers for approximate plants/m² were then divided by 10.8 to calculate approximate plants/ft². It is important to note that because cells with plants were counted and not number of plants per cell, the best possible score is 100 hits per five frames which converts to 20 plants/m² or 1.85 plants/ft². Some actual densities, therefore, may be (and almost certainly are) higher than the numbers indicated below. All tables have been arranged with accessions ranked from highest plant density to the lowest at the time of the second evaluation.

Native Grasses

There were forty-seven accessions of native grasses planted. Overall the native grasses established well considering the limited amount of precipitation received over the winter and early spring. Especially good stands were seen in the bluebunch and Snake River wheatgrass plots. There was a marked decrease in plant density between the first and second evaluations with some notable exceptions. Seven of nine bluebunch wheatgrass accessions and three of four Snake River wheatgrass accessions increased in density from the first evaluation to the second. This is possibly due to receiving 2.5" precipitation during that period and/or from a lack of pressure by black grass bugs (*Labops* sp.).

The best performing Indian ricegrass accession was White River, having a plant density of 0.56 plants/ft² at the first evaluation and 0.17 plants/ft² at the second evaluation. Rimrock had the best density at the second evaluation with 0.20 plants/ft². Fish Creek was the highest rated squirreltail

accession with 0.97 plants/ft² in April and 0.54 plants/ft² in May. Bannock thickspike wheatgrass had a density of 1.04 plants/ft² and increased slightly to 1.07 plants/ft² at the second evaluation. Of the slender wheatgrass accessions, Revenue performed best with 1.00 plants/ft² recorded at the first evaluation and 0.93 plants/ft² at the second evaluation. Western wheatgrass accessions were all doing poorly during the first evaluation with the best performing accession being Rodan at 0.28 plants/ft². By the second evaluation plant density for Rodan had risen to 0.35 plants/ft². In April, bluebunch wheatgrass accession P-12 rated highest at 1.34 plants/ft² followed by Columbia (1.30) and Wahluke (0.97). At the second evaluation both P-12 and Wahluke had increased in density (1.59 and 1.26 plants/ft² respectively) while Columbia had decreased to 1.23 plants/ft². The best Snake River wheatgrass was Expedition with 1.27 plants/ft² which increased to 1.44 plants/ft² at the second evaluation. Trailhead was the highest rated basin wildrye accession at the first evaluation with 0.60 plants/ft²; however, by the second evaluation it had decreased to 0.52 plants/ft² and was surpassed by U108-02 at 0.57 plants/ft². Accessions of sheep fescue did poorly with Initial Point and Covar being respectively rated at 0.04 and 0.00 plants/ft² at the second evaluation. The single accession of Thurber's needlegrass had zero germinants recorded at both evaluations. Sandberg bluegrass accessions had zero emergence with the exception of High Plains which had 0.25 plants/ft² in April. At the second evaluation no bluegrass accession germinants were recorded.

		4/27/05	5/25/05
Species	Name or accession	Plants/ft²	Plants/ft²
Indian ricegrass	Rimrock	0.37	0.20
	White river	0.56	0.17
	Nezpar	0.42	0.17
	Ribstone	0.14	0.09
	Paloma	0.05	0.00
Squirreltail	Fish creek	0.97	0.54
	Shaniko Plateau	0.81	0.52
	Sand hollow	0.37	0.20
	Toe jam creek	0.58	0.17
	9019219	0.02	0.02
Thickspike wheatgrass	Bannock	1.04	1.07
	Critana	0.90	0.56
	Schwendimar	0.69	0.52
	Sodar	0.37	0.30
Slender wheatgrass	Revenue	1.00	0.93
	San Luis	0.60	0.69
	Pryor	0.30	0.30
Western wheatgrass	Rodan	0.28	0.35
	Rosana	0.05	0.20
	Arriba	0.16	0.15
Bluebunch wheatgrass	P-12	1.34	1.59
	Wahluke	0.97	1.26
	Columbia	1.30	1.23
	P-7	0.93	1.15
	Anatone	0.81	1.15
	Jim Creek	0.83	1.02

	P-15	0.60	0.93
	P-5	0.42	0.61
	Goldar	0.51	0.37
Snake River wheatgrass	Expedition	1.27	1.44
	Secar	1.00	1.11
	SERDP	1.02	0.94
	E-26	0.21	0.23
Basin wildrye	U108-02	0.56	0.57
	Trailhead	0.60	0.52
	U100-01	0.53	0.41
	U70-01	0.30	0.22
	Magnar	0.28	0.22
	Washoe	0.21	0.09
Sheep fescue	Initial Point	0.21	0.04
	Covar	0.16	0.00
Thurber's needlegrass	Thurber's	0.00	0.00
Sandberg bluegrass	High Plains	0.25	0.00
	Sherman	0.00	0.00
	Mountain Home	0.00	0.00
	Toole County, MT	0.00	0.00
	Hanford Source	0.00	0.00

Introduced Grasses

Although many of the introduced grass accessions had a fair percentage of germination, we noted an outbreak of black grass bugs at the time of the first evaluation. The infestation appeared limited to the introduced grass section of the nursery. Plants were covered with yellow spots making the plants appear yellow-green overall.

The crested wheatgrass accessions Nordan and Roadcrest both had densities of 1.30 plants/ft² at the first evaluation; however, at the time of the second evaluation Nordan had maintained a high plant density of 1.19 plants/ft² while Roadcrest had reduced dramatically to 0.07 plants/ft². Vavilov was the best Siberian wheatgrass with 0.65 and 0.20 plants/ft² for the two evaluations. The pubescent wheatgrass accessions all performed similarly with all three having densities from 0.54 to 0.65 plants/ft² at the second evaluation. Prairieland Altai wildrye was the best performer in its category with 0.56 plants/ft² in April and 0.39 plants/ft² in May. The Russian wildrye accession, Bozoisky-Select, had the best rating at 0.72 plants/ft² and 0.54 plants/ft² for the two evaluations.

		4/27/05	5/25/05
Species	Name or accession	Plants/ft²	Plants/ft²
Crested wheatgrass	Nordan	1.30	1.19
	Ephraim	0.65	0.28
	Hycrest	0.39	0.24
	CD-II	0.56	0.24
	Roadcrest	1.30	0.07
	Douglas	0.28	0.04
Siberian wheatgrass	Vavilov	0.65	0.20

	P-27	0.09	0.02
Pubescent wheatgrass	Manska	0.69	0.65
	Greenleaf	0.60	0.59
	Luna	0.79	0.54
Intermediate wheatgrass	Rush	0.60	0.56
Altai wildrye	Prairieland	0.56	0.39
	Eejay	0.16	0.28
	Pearl	0.35	0.15
Russian wildrye	Bozoisky Select	0.72	0.54
	Mankota	0.46	0.28
	Tetracan	0.42	0.20
	Syn-A	0.21	0.13

Forbs

Most of the forbs did poorly in comparison to the grasses. One notable exception was Eagle western yarrow which maintained a density of 0.50 plants/ft². Appar blue flax also began well with a density of 0.90 plants/ft², but fell to 0.26 plants/ft² by the second evaluation.

		4/27/05	5/25/05
Species	Name or accession	Plants/ft²	Plants/ft²
Western yarrow	Eagle	0.51	0.50
	Great Northern	0.19	0.09
Utah sweetvetch	Timp	0.14	0.02
Firecracker penstemon	Richfield Selection	0.02	0.02
Scarlet globemallow		0.00	0.00
Lewis flax	Maple Grove	0.42	0.15
Blue flax	Appar	0.90	0.26

Shrubs

Only two accessions of shrubs showed any germinants within the frames. Wyoming big sagebrush held a density of 0.02 plants/ft² while Hatch winterfat performed moderately better with ratings of 0.28 and 0.17 plants/ft².

		4/27/05	5/25/05
Species	Name or accession	Plants/ft²	Plants/ft²
Wyoming big sagebrush		0.02	0.02
Fourwing saltbush	Snake River Plains	0.00	0.00
	Wytana	0.00	0.00
	Rincon	0.00	0.00
Gardner's saltbush	9016134	0.00	0.00
Winterfat	Hatch	0.28	0.17
	Northern Cold Desert	0.00	0.00
	Open Range	0.00	0.00
Forage kochia	Immigrant	0.00	0.00

Cover Crop

The cover crop consisted of a four species mix which contained: 50% Anatone bluebunch wheatgrass, 20% Bannock thickspike wheatgrass, 20% Magnar basin wildrye and 10% Snake River Plains fourwing saltbush. Four grids were examined during the first evaluation, one on each side of the nursery, and five grids were used at the time of the second evaluation. Total plant density was estimated at 0.37 plants/ft² at the first evaluation and 0.57plants/ft² at the second evaluation. The increase in density was presumably due to an increase in the two wheatgrasses.

Discussion

Despite large amounts of Russian thistle, native and introduced grasses had fair to good germination and plant density. Germination and emergence might have been increased with more precipitation during March and April, but germination was good with the rain that was received. Plants that made it through April received well over average May rainfall. Of major concern is the black grass bug outbreak. Plants subjected to black grass bug are normally affected by decreased seed yield and a reduction in palatability to cattle. Infestations rarely result in the death of established plants, but in low water years establishing plants may be under enough stress to kill the establishing seedlings (Hammon and Peairs 2001). The decrease in plant density recorded for Roadcrest crested wheatgrass may be an indication of this. Future evaluations will provide more information on plant establishment, persistence and longevity. The PMC will continue to evaluate plant performance at the site.

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Arbon Valley Willow Trial, 2005
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On May 18, 2005 a trial was initiated on Stewart and Judy Adams' property located in Arbon Valley, ID. The purpose of this study was to evaluate the effectiveness of pre-soaking hardwood cuttings in water prior to planting. A total of 350 willow and cottonwood hardwood cuttings were planted along both banks of Bannock Creek. These included: 120 Peachleaf willow, 110 Coyote willow, and 120 Black cottonwoods. For the trial, we subjected cuttings to one of five pre-soaking treatments: 1) completely submerged for 7 days, 2) completely submerged for 14 days, 3) half submerged for 7 days, 4) half submerged for 14 days, and 5) no pre-treatment. Cuttings were planted using a waterjet stinger device which uses a probe shooting water at high pressures to create a hole in which to place the cutting.

The cuttings were evaluated for survival on June 15, 2005 and again on September 22, 2005. By the time of the second evaluation there were no significant differences between the treatments for each species, indicating that pre-soaking may not be as critical to the pre-treatment of the willow and cottonwood cuttings. Soaking has other benefits to the overall success of a riparian rehabilitation project. Soaking can rehydrate the cuttings after they have been stored dry for up to 4 months. Soaking willows ensures that the vascular tissue and buds are super saturated. It also results in the dissolution and leaching of an anti-root hormone located in the stems. Overall survival varied widely between species. Peachleaf willows did exceptionally well (77% survival) as compared to 8% survival of Black cottonwood and 5% survival of Coyote willow.

Cutting survival as of 9/22/05.

	Total survival	% survival
Peachleaf willow	92/120	77
Coyote willow	6/110	5
Black cottonwood	9/120	8

Several factors may have affected the survival of the cuttings. Coarse gravelly soil forced planters to keep the waterjet stinger in the ground for longer amounts of time than normal, which washed soil out of the holes. At the evaluations, many plants were found sitting loose in holes with no good soil contact. None of the cuttings found in this condition had survived to the second evaluation. Also, several cuttings were placed too shallow in the soil because of rocks, leaving the cutting not deep enough in the water table. Heavy competition from perennial grasses (creeping foxtail, reed canarygrass, and quackgrass) may have shaded out cuttings and/or outcompeted the cuttings for root space. However, the high survival rate of Peachleaf willow in every treatment suggests this species can survive despite these problems.

The Aberdeen PMC would like to thank the staff of the American Falls NRCS field office for their help in planting. We also express our sincere thanks to the Adams family for their hospitality and for allowing us to conduct this study on their land.

**FIELD PLANTING,
DEMONSTRATION AND DISTRICT
SEED INCREASE EVALUATION
SUMMARIES**

PLANT MATERIALS

2005

IDAHO EVALUATION SUMMARIES

FIELD, DSI and DEMONSTRATION PLANTINGS

IDAHO DIVISION I PLANT MATERIALS PLANTINGS

FIELD OFFICE: BONNERS FERRY

ID99005 Paul Headings Regar meadow brome - Field Plantings (2). Materials ordered February 22, 1999.

Field 1—pure stand of Regar. Field 2—mixed stand of Regar and alfalfa. Purpose – demonstration planting to document growth patterns, production, and forage quality. Site characteristics – MLRA E43b, silt loam soils, 5-10 percent slopes, north aspect, 2300 feet elevation, 24 inch precipitation zone, non-irrigated, T62N R1E NW ¼ Section 2. FY99 planted spring 1999. FY00 due to dry years 1999 and 2000 stand establishment was slow, but excellent stands in each field are establishing. Plantings average 3 tons per acre. FY01 Planting 1 - The “pure” stand of Regar Brome planting averaged 2 ton/acre. A forage analysis indicted the crude protein to be 8.75%. The forage grass for hay is fine leaves and stems. The hay feeds well to animals. In hot dry weather, the “windrows” have to be carefully harvested and cured to avoid damaging brittle leaves and stems. The crop can be “pulverized” easily. The average bale weight was 103 pounds. The owner applied 110 lbs. 40-0-0 to enhance production and will increase application rates up to 200 lbs/acre 40-0-0. There were no second cuttings since the field was planted three years ago due to poor to fair moisture conditions. Planting 2 - The Regar/Agate alfalfa mixture established well. The first cutting has grass present and makes great cattle feed. The second cutting has very little grass within the alfalfa due to slow recovery. This may be due to dry weather conditions. Also, this may be a good attribute for the producer who can sell hay with grass and no grass. FY01 Planting 1 - The "pure" stand of Regar has an excellent stand with 5 plants per square foot, good vigor, and 4000 pounds per acre production. Landowner applied 220 lbs. 40-0-0 in early spring. Planting 2 - Regar/alfalfa mixture has a good stand with 2 Regar/5 alfalfa plants per square foot, fair to good vigor, and 7000 pounds per acre production. **Next evaluation 2006.**

ID00016 Boundary Creek WRP – cropland area planted to permanent perennial species field planting. A mix of Alkar tall wheatgrass, Greenar intermediate wheatgrass, Ranger alfalfa, birdsfoot trefoil, red clover, Sherman big bluegrass, tufted hairgrass, orchardgrass, and timothy at critical area planting rates was dormant planted on 1000 acres in late fall 1999. A 42 feet air-seeder with fertilizer attachment planted mix with 2000 units per acre of nitrogen, phosphorus, potassium, and sulfur applied 1 inch below and to side of seed. FY00 excellent stand is establishing with some species as tall as 3-4 feet by early July. In October wild oats were present throughout stand. FY01 The permanent wildlife planting mixture established well utilizing the 42-foot air seeder. The drill was calibrated with the producer based upon 14.2 lbs. PLS/acre. A “flush” of wild oats occurred the first year. The stand was seeded the 1st week of November 1999. The “so called dormant planting” resulted in some sprouting of clovers due to a warmer than normal late fall. As a result, some mortality occurred in the clovers. An excellent stand of Alkar tall wheatgrass, Greenar intermediate wheatgrass, birdsfoot trefoil, Ranger alfalfa, Latar orchardgrass, timothy and clover exists. The Sherman big bluegrass is “spotty” due to becoming overpowered by the other species in the mix. There are some ridges in the field with quackgrass, which is good cover. The IDF&G is actively spot spraying the Canadian thistle. They plan to obtain a boom sprayer in order to treat the acreage more uniformly. FY02 The overall stand is good to excellent with the primary species including Alkar tall wheatgrass, Greenar intermediate wheatgrass, Latar orchardgrass and redtop. Some birdsfoot trefoil, clover, timothy, and alfalfa are present in scattered locations. Tufted hairgrass and Sherman big bluegrass were not found. FY04 prescribed burned fall 2004 (15 acres) to rejuvenate existing stand – resulted in excellent response in plant vigor. Stand is primarily Latar, Alkar, Greenar, and alfalfa – general overall stand is predominately wheatgrasses and orchardgrass. Providing excellent wildlife nesting and escape cover. **Next evaluation 2006.**

ID04002 Dave Wattenburger Field Planting. Delar small burnet ordered August 19, 2003. Planting seeded fall 2004. No report FY05.

FIELD OFFICE: COUER D’ALENE

None

FIELD OFFICE: PLUMMER

None

FIELD OFFICE: SANDPOINT

ID96029 Lee Johnson wood fiber mulch, Niner sideoats grama, Alma blue grama, annual rye, Durar hard fescue, Durar hard fescue/clover, prairie junegrass, and alpine bluegrass field plantings - tree nursery ground cover trial. Site loam soil (low to mod. permeability/high erosion potential), 5-10% slopes on SE exposure. FY96 planted 5/31/96. 1. Wood mulch is doing excellent job of weed control and no rodent activity to date - mulch was about 10 inches deep when applied 2. Excellent stand of annual rye established, Durar hard fescue plants are very small and establishing beneath cover crop 3. Many young Durar hard fescue plants were establishing, but very few clover plants - soil may have been too loose when seeded and clover seed may be too deep 4. Excellent initial stand of sideoats and blue grama establishing - could not tell which species was doing the best 5. Very few prairie junegrass plants establishing - appears some germination is occurring this fall 6. A lot of alpine bluegrass seedlings - appears germination did not occur until fall. FY97 and FY98 no evaluations. FY99 Treatment 1: Control no cover and normal weed control - 0 percent desirable cover with 50-80 weeds. Treatment 2: Cedar bark mulch 6-8 inches thick - 100 percent desirable cover in rows with 5 percent weeds invading mulch and some evidence of rodents in mulch. Trees near cedar mulch are more chlorotic than other treatments. Treatment 3: Durar hard fescue and annual ryegrass - 50-70 percent desirable cover with up to 20 percent weeds. Fescue blends provide more biomass than other seedings and good cover - almost 100 percent cover if mowed. Treatment 4: Durar hard fescue and Berseem annual clover - 60-80 percent desirable cover and up to 15 percent weeds. Treatment 5: blue grama and sideoats grama - 20-50 percent desirable cover with 30-80 percent weeds. Clearly the worst treatment in trial. Treatment 6: Prairie junegrass - 60-80 percent desirable cover and 10-15 percent weeds. A good alternative since this is a low growing cover. Treatment 7: Alpine bluegrass - 50-80 percent cover with 5-10 percent weeds. Less biomass produced than fescue or prairie junegrass. The alpine bluegrass produced more of a thick sod with seedheads 6-8 inches tall. This would be a better choice for nurseries that are concerned with the shading effect of taller grasses on lower branches. It also covers the ground better once established, especially in shady areas. One potential problem is its ability to spread, including into the tree rows. FY00 - FY05 no evaluations.

ID00004 Paul Jayo Regar meadow brome field planting - irrigated/non-irrigated and hay/grazing trial. Seed ordered January 21, 2000 for delivery in early April. Site is 30-acre field with Hoodoo silt loam soil, 0-1 percent slopes, 32-inch rainfall zone, and 2485 feet elevation. FY00 planting was delayed due to dry spring weather. Cooperator plans to plant fall 2000. FY01 - FY05 no evaluations.

IDAHO DIVISION II PLANT MATERIALS PLANTINGS

FIELD OFFICE: GRANGEVILLE

ID04004 Tony Carlson Field Planting. Sherman big bluegrass, Rosana western wheatgrass, Nezpar Indian ricegrass, Snake River Plains fourwing saltbush and Northern Cold Desert winterfat. Site characteristics: Lickskillat – Tannahill soil complex, 20 percent slopes, 1960 feet elevation, SW exposure, 14-16 inch precipitation, and non-irrigated. Seed ordered January 12, 2004. FY04 species were planted into a site that was sprayed with Roundup, raked, broadcast planted and raked again. Soil moisture was above average at planting time. During evaluation (7/9/04) Sherman big bluegrass and Nezpar Indian ricegrass were present. Site was quite weedy and it is too early to complete establishment evaluation. FY05 no evaluation.

ID04008 Gary Crea field planting (winter feed area trial). P27 Siberian wheatgrass, Sodar streambank wheatgrass, Topar pubescent wheatgrass, Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, Rosana western wheatgrass, Durar hard fescue and Alkar tall wheatgrass. Seed ordered March 8, 2004. Site characteristics: Ferdinand – Riggins – Flybow soil complex, west aspect, 3300 feet elevation, 22-24 inch precipitation, non-irrigated, T31N R1E SW1/4 Section 27. FY04 overall the stand establishment is excellent due to good rainfall this year. Stand establishment exceeds 2 plants per square foot for all species except Alkar. The grasses are suppressing weeds in the feedlot. Gary plans to exclude livestock until late fall and will spray for weeds next spring. FY05 no evaluation.

ID04009 Carl Skyrman demonstration planting. Anatone bluebunch wheatgrass and Secar Snake River wheatgrass. Seed ordered March 8, 2004. Site characteristics: Chard sandy loam soil, northwest aspect, 1820 feet elevation, 16-22 inch precipitation, non-irrigated, T26N R1E NW1/4 Section 13. FY04 FY04 – Secar and Anatone were planted side by side in the spring of 2004. Good stands for each with > 5 plants per square foot establishing and it is hard to differentiate between plantings. Anatone plants were a bit more robust than Secar plants during evaluation 7/22/04. FY05 no evaluation.

ID04010 Marcia Heaton riparian planting. 9023733 redosier dogwood, 9023739 redosier dogwood, 9023740 redosier dogwood, Laurel willow, White willow, Coyote willow, and Golden willow. Cuttings ordered March 5, 2004. Site characteristics: Wilkems silt loam soil, 2980 feet elevation, 24 inch precipitation, non-irrigated, T31N R3E NE1/4 Section 34. FY04 – approximately 60% survival for all willow species and about 20% survival for dogwood species. FY05 no evaluation.

ID05003 Steve Hunter – starthistle control project. Rush intermediate wheatgrass, Tegmar intermediate wheatgrass and Newhy hybrid wheatgrass were ordered February 4, 2005. Site characteristics: 3 acres, MLRA B9, Bluesprin skeletal loam soil, 20 percent slopes, southwest aspect, elevation 2700 feet, 18 inch precipitation zone, non-irrigated, T30, R3, NW ¼ section 36. FY05 no evaluation.

ID05004 Tony Carson – field planting. Anatone bluebunch wheatgrass, Magnar basin wildrye, Nezpar Indian ricegrass, SRP fourwing saltbush, NCD winterfat, High Plains Sandberg bluegrass and Rosana western wheatgrass were ordered February 4, 2005. Site characteristics: 1 acre, Lickskillat – Tannahill silt loam soil complex, 45 percent slopes, south aspect, elevation 1960 feet, 16 inch precipitation, T28N, R1E, NE ¼ section 12. FY05 no evaluation.

ID05005 Tim Boddine – medusahead control project. Newhy hybrid wheatgrass, Bannock thickspike wheatgrass, Bozoisky Russian wildrye and Rosana western wheatgrass were ordered February 4, 2005. Site characteristics: 3 acres, MLRA B9, Ferdinand loamy soil, 5 percent slopes, south aspect, elevation 3080 feet, 20 inch precipitation zone, non-irrigated, T31N, R2E, SE ¼ section 10. FY05 site was sprayed with Plateau herbicide on 4/6/05, two weeks after planting. Plant establishment is very poor for all species and it is thought that the herbicide application may have interfered with seed germination, or herbicide may have killed seedlings as they emerged. Recommend additional evaluation next year to verify these preliminary conclusions.

ID05006 Gary Crea – Feedlot species adaptation trial. Newhy hybrid wheatgrass, Critana thickspike wheatgrass, and Rosana western wheatgrass seed was ordered on February 4, 2005. Site characteristics: 0.5 acres, MLRA B9, Ferdinand-Flybow-Riggins soil complex, 2-8 percent slopes, west to southwest aspect, 20-24 inch precipitation, non-irrigated, T31N, R1E, SW of SW ¼ of section 27. FY06 no evaluation.

ID05007 Les Killgore – field planting. Covar sheep fescue, Durar hard fescue, Bannock thickspike wheatgrass and Rosana western wheatgrass seed was ordered on February 4, 2005. Site characteristics: 1.5 acres, MLRA E43a, loamy skeletal soil, 10 percent slopes, east aspect, elevation 2200 feet, 18 inch precipitation, non-irrigated, T28N, R1E NE ¼ section 33. FY05 no evaluation.

ID05008 Ray Stowers – Deer Creek project. Newhy hybrid wheatgrass, Bannock thickspike wheatgrass and Rosana western wheatgrass were ordered on February 4, 2005. Site characteristics: 0.25 acres, MLRA E43a, Tanahill loam soil, 2-7 percent slopes, south aspect, elevation 2700 feet, 18 inch precipitation, non-irrigated, T27N R1E SW ¼ section 8. FY05 no evaluation.

ID05013 Barney Chambers – Hanley Creek riparian planting. Coyote willow, golden willow and Laurel willow were ordered February 4, 2005 for shipment in early April. FY05 - golden willow 80% survival with good vigor and 4 feet plant height. Coyote willow 50% survival with good vigor and 4 feet plant height (note coyote willow was accidentally sprayed with herbicide causing the partial plant death). Laurel willow 80% survival with good vigor and 3 feet plant height.

FIELD OFFICE: LEWISTON

ID82001 Richardson Starthistle control field planting. Covar sheep fescue planted in early 1980's. FY01 good to excellent stand with 2 plants per foot squared average, excellent vigor, fair spread for bunch grass. Plants are 10 inches tall with seedheads averaging 14 inches tall and 6-inch diameter plants. Overall Covar is providing good starthistle control. Starthistle is present in plot, but not reproducing seed. Where Covar has 4 plants per foot squared, starthistle is not present. Covar is moving slowly downslope into starthistle dominated area. FY04 excellent stand of Covar with excellent vigor, 7 inch height and light infestation of yellow starthistle. FY05 no evaluation.

ID95028 Dau Bannock thickspike wheatgrass and Rush intermediate wheatgrass field planting. Seed ordered 4/3/95. FY95 - FY99 no evaluations. FY00 40 plants per foot squared of Rush intermediate wheatgrass. Bannock thickspike wheatgrass failed. FY01 40 seedheads per foot squared, 4.5 feet tall, 3000 pounds per acre, estimate 500 pounds per acre seed production and stand is weed free. FY04 good stand with good vigor. This stand is suppressing yellow starthistle fairly well and also providing excellent erosion control. FY05 no evaluation.

ID98016 Fred Kaufman Hycrest crested wheatgrass, Vavilov Siberian wheatgrass and Sherman big bluegrass field planting. FY98 and FY99 no evaluations. FY00 excellent stands of Hycrest and Vavilov established. FY02 excellent stand with excellent vigor for each cultivar. Hycrest crested wheatgrass suppressing cheatgrass better than Vavilov Siberian wheatgrass. FY04 excellent stand and vigor of Vavilov, Hycrest and Sherman. Stands are doing good job of suppressing weeds, providing erosion control and very good habitat for upland game birds (pheasants and quail). FY05 no evaluation.

ID04014 City of Lewiston – Mike Bowman Delar small burnet field planting. Seed ordered April 6, 2004. Site characteristics: MLRA B9, 4 acres, Tainey silt loam soil, 5-10 percent slope, west to north aspect, 3000 feet elevation, 26-28 inch precipitation zone, non-irrigated. FY04 – FY05 no evaluation.

FIELD OFFICE: MOSCOW

ID06001 Lee and Roxanne Carrick riparian field planting. Cuttings and plants ordered August 9, 2005. Cuttings to be shipped mid-late October 2005. Plants to be shipped early-mid April 2006. Site characteristics: MLRA B9, Hampson silt loam soil, 0-3% slopes, NW aspect, 2600 feet elevation, 24 inch precipitation, non-irrigated, T41N R3W NW ¼ Section 3. 85 each of Rivar Mackenzie willow, Curlew Drummond willow, and Silvar coyote willow will be dormant fall planted 2005. 60 each of Blanchard blue elderberry, Okanogan snowberry, Newport serviceberry, St Maries mockorange and 125 Cheney redosier dogwood will be spring planted in 2006.

FIELD OFFICE: NEZPERCE

ID05009 William Stillman – Weed control project. Rush intermediate wheatgrass, Topar pubescent wheatgrass, Bannock thickspike wheatgrass, Paiute orchardgrass, Delar small burnet and Sherman big bluegrass seed was ordered on February 4, 2005. Site characteristics: 12 acres, MLRA B9, Jacket-Larkin silt loam soil, 20 percent slopes, south aspect, elevation 2900 feet, 23 inch precipitation, non-irrigated, T36N R1E SW ¼ section 19. FY05 no evaluation.

FIELD OFFICE: OROFINO

ID99010 Ray Geidl field planting. Species include Coyote willow, Geyer 435 willow, Geyer 448 willow, Geyer 483 willow, Geyer 491 willow, Snowberry, Elderberry, Dogwood 733, Dogwood 740, and Chokecherry. FY99 and FY00 and FY01 no evaluations. FY02 Plantings are located in area with heavy reed canarygrass competition. Good survival for all willow and dogwood accessions with 4 of 5 cuttings for each still surviving, fair vigor for each, 40 inch height for all willows and 20 inches height for all dogwoods. Snowberry, Elderberry and chokecherry failed. FY03 – FY05 no evaluations.

ID04011 Clearwater County Riparian Project. 9067541 peachleaf willow, 9067546 peachleaf willow, 9067 549 peachleaf willow, 9067568 black cottonwood, 9067569 black cottonwood, 9023 733 redosier dogwood, 9023739 redosier dogwood, 9023740 redosier dogwood and Okanogan snowberry. Cuttings ordered March 5, 2004. Site characteristics: Cobbly soil, flat aspect, 1100 feet elevation, 26 inch precipitation, non-irrigated. FY04 – FY05 no evaluation.

ID04012 Ray Geidl Project. 9067541 peachleaf willow, 9067546 peachleaf willow, 9067549 peachleaf willow, 9023733 redosier dogwood, 9023739 redosier dogwood, 9023740 redosier dogwood and Okanogan snowberry. Cuttings ordered March 5, 2004. Site characteristics: fine loamy soil, flat aspect, 3000 feet elevation, 35 inch precipitation, non-irrigated (naturally sub-irrigated). FY04 – FY05 no evaluation.

ID04013 Paul Schroder Project. 9067541 peachleaf willow, 9067546 peachleaf willow, 9067 549 peachleaf willow, 9023733 redosier dogwood, 9023739 redosier dogwood, 9023740 redosier dogwood and Okanogan snowberry. Cuttings ordered March 5, 2004. Site characteristics: Fine loamy soil, flat aspect, 3000 feet elevation, 35 inch precipitation, non-irrigated (naturally sub-irrigated). FY04 – FY05 no evaluation.

IDAHO DIVISION III PLANT MATERIALS PLANTINGS

FIELD OFFICE: CALDWELL

ID98022 Bill Baird Rush intermediate wheatgrass and orchardgrass field planting - irrigated pasture. Seed ordered May 14, 1998. Planting scheduled for mid May through mid June. FY98 irrigated pasture planted in mid May with poor stand establishing. Bill plans to replant in spring of 1999. FY99 good stand density establishing with 5 plants per foot squared and fair vigor. Plants reached 6-8 inch height this establishment year. Nitrogen, phosphorus, potassium, and sulfur were applied. This is a very course-gravelly soil requiring irrigation every 4-5 days. FY00 and FY01 no evaluations. FY02 very course-gravelly soils that require frequent 3-4 day irrigation. Stand has good density with about 6 plants per square foot, good vigor in spite of droughty infertile soils. Individual plants are increasing in size and are competitive with weedy species. Cooperator is please with performance. FY04 – fair stand and vigor for both Rush intermediate wheatgrass and Orchardgrass on gravelly soils where frequent irrigation is required. **FY05 planting cancelled.**

ID99006 Jacy Gibbs-cooperator will complete evaluations for demo plots. Site characteristics: very warm dry summers, Cencove fine sandy loam soil, 0-2 percent slopes, about 2200 feet elevation, 8-10 inch precipitation, T3N R5W NE1/4 Section 10. Seed ordered February 24, 1999. Aberdeen accessions: Bannock thickspike wheatgrass, Sodar streambank wheatgrass, Goldar bluebunch wheatgrass, Appar blue flax, Magnar basin wildrye, Nezpar Indian ricegrass, Richfield Selection firecracker penstemon, Clearwater Selection alpine penstemon, Snake River Plain fourwing saltbush. Bridger accessions: Trailhead basin wildrye, Rimrock Indian ricegrass, M1 Nevada bluegrass, PI434231 plains bluegrass, 9005460 alpine bluegrass, 9078408 High Plains Sandberg bluegrass, Shoshone beardless wildrye, 9019219 bottlebrush squirreltail, Critana thickspike wheatgrass, Wytana fourwing saltbush. Meeker accessions: Summit Louisiana sagewort, Timp Utah sweetvetch, Bandera Rocky Mountain penstemon, 9040187-bottlebrush squirreltail, 9040189 bottlebrush squirreltail, 9043501 Salina wildrye, Maybell antelope bitterbrush. Pullman accessions Secar Snake River wheatgrass, Covar sheep fescue, Canbar Canby bluegrass, Sherman big bluegrass, Whitmar beardless wheatgrass, and Schwendimar thickspike wheatgrass. FY99 no evaluation. FY00 Nezpar has excellent seedling vigor, easy to transplant, remains green, and is an attractive landscape plant. Schwendimar is best thickspike wheatgrass, remains green longer, best regrowth, responds well after mowing, good dryland and limit irrigation. Goldar and Whitman stands are very poor due to cheatgrass competition. Basin wildrye, Sherman, Secar mix good weed competition. Basin wildrye, Sherman, Covar, Secar are all good landscape plants. Using Covar along one side of property for firebreak – it will be excellent. Penstemon species are very slow growing, remain green and will be good landscape plants. Appar can be a nuisance and is not very shade tolerant. Maybell is slow growing. Timp is a preferred species by rabbits resulting in difficulty establishing stand. Summary of best plants – Grasses: Secar Snake River wheatgrass, Magnar basin wildrye, Sherman big bluegrass, Nezpar Indian ricegrass, Covar sheep fescue, sand dropseed, Bannock thickspike wheatgrass, and Schwendimar thickspike wheatgrass. Forbs: western yarrow, Drummond phlox, white evening primrose, scarlet globemallow, silky lupine, Louisiana sagewort, Rocky Mountain iris, and Appar blue flax. Shrubs: native fourwing saltbush, native basin big sagebrush, Maybell bitterbrush, curleaf mountain mahogany, Saskatoon serviceberry, Woods rose, almond, and Drummond willow. Trees: Idaho hybrid poplar, and Rocky Mountain juniper. FY01 - FY04 no evaluations. **FY05** all plants are under some type of supplemental irrigation. Both the basin wildrye accessions are doing fine and are good landscape plants. The Secar bluebunch wheatgrass is doing well and is a good landscape plant. Covar sheep fescue has done well near the edges of walks and driveways where a little additional moisture is available and the soils are deep. It did poorly in an area that had topsoil removed and the soil may be somewhat compacted and is a good xeriscape plant. The accessions of Indian ricegrass that germinated and survived are doing well. There was poor germination and survival in general. They are good xeriscape plants. Appar Lewis flax is doing well with partial irrigation and is a good xeriscape plant. Scarlet globemallow seed was collected by cooperator and seeded. It did well for a couple of years, but died after 3-4 years. A good looking xeriscape plant. All accessions of penstemon, mostly Eaton or firecracker have done well under partial irrigation and are good xeriscape plants. The curleaf mountain mahogany has done well and is a good landscaping plant. It receives some extra water. Serviceberry is doing well and is near full irrigation. Utah sweetvetch came up well, but received heavy use from rabbits and only one plant has survived. It is doing well. Golden current came into our yard through birds. Where it has voluteered, it is doing well and is a good xeriscape shrub. It needs to be pruned to make it more dense since it is pretty leggy without pruning. It receives some additional water. I planted 3 or 4 silver buffaloberry shrubs and they have been slow in developing and are still quite small. They may do ok. The

Maybell bitterbrush is doing fine. It receives some additional water and is a good xeriscape plant. Western yarrow was planted. It receives some additional runoff water where it was planted. It has spread readily to other areas with partial irrigation and some areas of full irrigation. In many ways this is a weed at my house. Rocky mountain iris has done fair in a place that I can fully irrigate and with no competition. Woods rose has done well and is a good landscaping plant. It is under full irrigation and should be pruned, similar to other roses to keep it under control. Western clematis started very slowly. This was from seed and not from Pullman PMC. Once it got going, after about 3 years, it has grown quite well and in fact needs to be controlled for spread. The almond we harvested near Brownlee reservoir has done very well under full irrigation. It has very good vigor, has good shape and in favorable springs has produced good seed crops. It is a medium sized tree, about 20 ft. high now. Herbaceous sage or Louisiana sage was planted from seed and receives partial irrigation. It does very well where it was planted and if the water was spread to a larger area, it would expand from rhizomes into that area. Mulberry trees volunteered through the help of birds to our yard. They do very well here and are good looking medium sized trees. They get partial to full irrigation and are not producing seed yet at 3 years old and 18 ft. tall. The ones down near the river do produce seed.

ID05010 Jacy Gibbs – shrub test plots. Prospector common snowberry, Trapper western snowberry, St Maries mockorange (plants) and Colfax mockorange (plants) were ordered February 4, 2005. Site characteristics: MLRA 11, silt loam to loam soil, 1 percent slope, elevation 2250 feet, 8 inch precipitation, irrigated. **Cooperator will complete evaluations.** FY05 Mockorange received in April in good condition. The accessions were not marked. NOTE: this was indicated on receipt that was sent back to Pullman PMC. Wayne Crowder called shortly after this and no resolution on how to identify was made. No way to evaluate them separately. They were planted shortly after they arrived. Four mockorange received partial irrigation and had moderate competition from grass. Six mockorange received full irrigation and had little or no grass competition. Most of the partially irrigated plants died. The others have low vigor and have grown little for full irrigation. There should be better first year growth with full irrigation to be a good landscape plant. They are planted in partial shade and may come on in 2006. Seed of the snowberry accessions were received in April. Warm-cold stratification occurred per instructions. The seed was planted 1/03/06.

ID06002 CB River Ranch WRP upland planting. Seeding mixture includes Bozoiisky Russian wildrye, Pryor slender wheatgrass, Vavilov Siberian wheatgrass, Magnar basin wildrye, Nezpar Indian ricegrass and Snake River Plain fourwing saltbush. Seed was ordered September 26, 2005 and planting date is scheduled for May 2006. Site Characteristics: Feltham loamy fine sand soil, 3-12 percent slope, NE aspect, 11 inch precipitation and site will be irrigated for establishment.

FIELD OFFICE: EMMETT

ID04016 Richard Zamzow WRP upland field planting. Vavilov Siberian wheatgrass, Sodar streambank wheatgrass, Bannock thickspike wheatgrass and Magnar basin wildrye. Seed ordered July 2003. Site characteristics: fine sandy loam soil, 2100 feet elevation, 10-12 inch precipitation, aspect-flat. Planting planned for fall 2003. FY04 – FY05 no evaluation.

FIELD OFFICE: MARSING/GRANDVIEW

ID04001 Matt and Jean Barney demonstration plots. Bannock thickspike wheatgrass, Sodar streambank wheatgrass, Magnar basin wildrye, Nezpar Indian ricegrass, Snake River Plains fourwing saltbush, Northern Cold Desert winterfat, Vavilov Siberian wheatgrass, Critana thickspike wheatgrass, Rimrock Indian ricegrass, 9019219 bottlebrush squirreltail, PI434231 plains bluegrass, 9005460 alkali bluegrass, High Plains Sandberg bluegrass, 9063520 Ruby Valley pointvetch, 9005617 strawberry clover, 9016134 Gardner saltbush, Trailhead basin wildrye, Bozoiisky Russian wildrye, Secar Snake River wheatgrass, Schwendimar thickspike wheatgrass and Sherman big bluegrass ordered April 17, 2003. Seeding planned of October - November 2003. **Site Characteristics:** Owyhee County, MLRA B11, Soil Map Unit 100 fine sandy loam, weak salinity, 1-7% slope, south aspect, 3300 feet elevation, 8-10 inch precipitation zone, non-irrigated, NE 1/4 Section 29 T4S R1W. Plots were planted late fall of 2003. FY04 and FY05 plots failed – no evidence of sustained growth. **Cancel**

FIELD OFFICE: MERIDIAN

None

FIELD OFFICE: MOUNTAIN HOME

None

FIELD OFFICE: PAYETTE

None

FIELD OFFICE: WEISER

ID91029 Grafe Bannock and Critana thickspike wheatgrass field planting. Site is a sandy loam soil, non-irrigated, 12-14 inch ppt, 2500 feet elevation, and 4-8% slopes on west exposure. FY92 estimate 20% stand. FY93 survival is 90% for both species. The existing plants are healthy and holding their own with competition. Neither species is as vigorous as Oahe on same sites. FY94 survival is 95% for each species, good stands, and excellent vigor. This trial continues to improve, the stands are spreading and filling in open ground. Both species appear well adapted to site even considering the extended drought conditions. Total forage production is less than adjacent intermediate wheatgrass, but is more palatable. Plants are producing seed this year. The stands are starting to provide competition for annual weeds, grasses and cereal rye. I am now starting to see the value of these plants on some of our most droughty and limiting sites. FY95 Good stands for both Bannock and Critana (95% survival). Both species continue to improve over time. Cereal rye is not affecting growth. Neither thickspike wheatgrass is producing as well as Oahe intermediate wheatgrass. Both species would fit well with similar palatability grasses in mixture (suggest Goldar or Secar bluebunch wheatgrass). FY96 good stands of both with 6 plants/ft² of each and excellent vigor. Growth of both species is still very good and weed competition is light. Total production continues to be less than adjacent intermediate wheatgrass. FY97 good stands (5 plants per foot), survival, and vigor for both Bannock and Critana. Growth and vigor for both does not reflect the excellent moisture year we had and stands are maintaining or declining slightly. FY98 no evaluation. FY99 good stands of both species with 90 percent survival and good vigor. Producing between 500 and 1000 pounds per acre in an extremely dry April through November year. Bannock is slightly taller at 18 inches than Critana at 16 inches. Heavy grasshopper damage this year. Cheatgrass invasion is slight. FY00 no evaluation. FY01 stands of both Bannock and Critana were rated poor, with 1 plant per square foot, fair vigor and 200 pounds of production per acre. Two years of drought has heavily impacted this planting and cheatgrass is invading. FY04 – plots continue to be plagued by drought conditions and severe cheatgrass infestations. They are adapted to site, but suppressed due to these factors. FY05 no evaluation.

ID94025 Eckhardt Ephraim crested wheatgrass, Magnar basin wildrye, Mankota Russian wildrye, Trailhead basin wildrye, P27 Siberian wheatgrass, Maska pubescent wheatgrass, Reliant intermediate wheatgrass, Bannock thickspike wheatgrass, Schwendimar thickspike wheatgrass, Greenar intermediate wheatgrass, Sherman big bluegrass, Secar Snake River wheatgrass, Goldar bluebunch wheatgrass, Bozoisky Russian wildrye, Hycrest crested wheatgrass, Rush intermediate wheatgrass demo plots. Site is clay loam soil, non-irrigated, 10-12 inch ppt, 3000 feet elevation, and 5% slopes on NE exposure. Seed ordered July 1994. FY94 and FY95 due to drought conditions, seeding planned for spring 96. FY96 planted April 9, 1996 by hand planting and raking plots to control bulbous bluegrass competition. June 19, 1996 evaluation for establishment: Mankota poor, Maska good, Sherman very poor, Greenar good, Trailhead fair, Reliant good, Bozoisky good, Bannock good. July 8, 1996 establishment: Mankota fair, Maska good, Sherman poor, Greenar good, Trailhead fair, Reliant good, Bozoisky good, Bannock good, Goldar good, Rush excellent, Secar fair. Rush has the best stand establishment to date with Goldar next. FY97 no evaluation. FY98 first set of plots; Reliant is out producing all other plots, Greenar is second in production, Sherman hand planted plot is third in production, Sherman broadcast plot failed, T6633-P is fourth in production. Second set of plots; Bozoisky performed the best with Mankota second, and trailhead the poorest. The wildryes, thickspike wheatgrasses and intermediate wheatgrasses have shown adaptation to this area and could play a roll in revegetating local rangelands. FY99 plots were grazed this spring and grazing preference was evaluated. Plots: Greenar and Reliant were grazed the heaviest, followed by Mankota and Bozoisky Russian wildrye. This was uniform for all replications. Thickspike wheatgrasses and all other varieties had slight utilization. Basin wildryes were not utilized. Grazing preference for the larger plantings: Bozoisky Russian wildrye was used the heaviest, followed by Goldar bluebunch wheatgrass, and Rush intermediate wheatgrass used the least. Cattle are grazing Fourwing saltbush. The producer is very happy with results from these plots and uses the information to make his planting decisions. Cattle in mid May grazed FY00 the small plot species. Grazing preference was for Goldar, Bozoisky, and the intermediate wheatgrasses. The intermediate wheatgrasses are spreading into adjacent plots. Moderate use was made on Magnar and Trailhead. Sherman was used only slightly. Fourwing saltbush was utilized and continues to get taller (20 inches tall). In the large acre sized plots adjacent to a Hycrest planting, grazing preference (mid May) in order are: 1) Goldar, 2) Bozoisky, 3) Rush, and 4) Secar. Use of Goldar was similar too slightly heavier than the Hycrest. FY01 all plots are grazed this year. Utilization was heaviest on Greenar intermediate wheatgrass and Reliant intermediate wheatgrass plots. The larger plantings showed grazing preference was highest for Bozoisky Russian wildrye, then Goldar bluebunch wheatgrass, followed by Rush intermediate wheatgrass. FY03 plots were grazed this fall at time of evaluation. FY04 – Cattle preference (cows were moved into

filed 4 days prior to evaluation on 10/5/04). Most preferred species during this period was Bozoisky-Select Russian wildrye which was grazed very close. Second most preferred species was Goldar bluebunch wheatgrass which was grazed to a uniform 2 inch stubble height. Secar Snake River wheatgrass and Rush intermediate wheatgrass were not utilized. FY05 no evaluation.

ID94026 Weber Goldar bluebunch wheatgrass, Rush intermediate wheatgrass, Luna pubescent wheatgrass, Secar Snake River wheatgrass, Greenar intermediate wheatgrass, Schwendimar thickspike wheatgrass, Bozoisky Russian wildrye, Bannock thickspike wheatgrass, Delar small burnet, Firecracker and Alpine penstemon, Sherman big bluegrass, Wytana fourwing saltbush, and Rincon fourwing saltbush demo plots. Site is stony clay loam soil, non-irrigated, 16 inch ppt, 3200 feet elevation, 0-2% slopes. Seed ordered July 1994. FY94, FY95, and FY96 due to drought conditions, seeding not planted. FY97 seeded May 16, 1997 with good rains following planting. Weed competition is high. In general initial establishment was good for wheatgrasses, fair for wildryes and poor for forbs. FY98 rainfall was 150 percent of average this year resulting in a flush of weeds. All plots except forbs were sprayed for broadleaf weed control and were shredded to reduce overstory competition. The most successful plants include: GRASSES Rush is by far the superior plot from standpoint of vigor, total growth, and total production. Luna is rated second and Reliant is rated third. Other grasses are only marginally successful to non-existent due to possibly saturated soils and weed competition during the establishment year. FORBS Delar is doing very well and appears very hardy and adapted to wet soil conditions. Penstemons and Lupine did not establish. SHRUBS Rincon is taller (10-15 inches) than Wytana (4-6 inches). FY98 no evaluations. FY99 Weeds and saturated soils are a problem on this site. Most successful plants – grasses: Rush intermediate wheatgrass followed by Luna pubescent wheatgrass, and Reliant intermediate wheatgrass, with others only marginally successful; Forbs: Delar small burnet is performing very well and no other forbs established; Shrubs: Rincon fourwing saltbush is superior to Wytana fourwing saltbush on this site. FY00 no evaluation. FY01 following two years of extreme drought Greenar intermediate wheatgrass was the most productive and vigorous followed by Reliant intermediate wheatgrass and Luna pubescent wheatgrass. Rush intermediate wheatgrass, Mankota Russian wildrye, and Manska pubescent wheatgrass did not grow much this year. Magnar basin wildrye was superior to Trailhead basin wildrye in production and survivability. Thickspike wheatgrass and Russian wildrye accessions grew very slowly. Delar small burnet plants are not handling drought well and are dying. Rincon fourwing saltbush is better than Wytana fourwing saltbush with some plants to 18 inches in height. Weeds are infesting site. FY02 was a very dry growing season. Intermediate wheatgrasses - Greenar is producing more forage than any other species, Greenar is not spreading as fast as Rush or Reliant which is probably an advantage on this droughty site, Luna is the best pubescent wheatgrass, but not producing as much as Greenar. Basin wildryes - Magnar and Trailhead are nearly identical in production with Magnar slightly higher with more vigor than trailhead. Russian wildrye - Bozoisky is by far the best performer of the R. wildryes. Small burnet - Delar is no longer present. Fourwing Saltbush - Rincon is a little better than Wytana, but they lack vigor. Thickspike wheatgrass - all accessions are barely surviving. **Next evaluation scheduled for FY06.**

ID96024 Howard Sutton Rush intermediate wheatgrass, Luna pubescent wheatgrass, and Oahe intermediate wheatgrass field planting. Site is loam soil, non-irrigated, 15-17-inch ppt, 3320 feet elevation, 1-4% slope on south exposure. Seed ordered March 14, 1996. FY96 planted in May into good seedbed with good weed control. Good stand establishing with about 3 plants per foot squared, each species was planted with alfalfa in alternate rows and alternating sections. FY97 good stands with excellent vigor of each cultivar. The Oahe/alfalfa stand was cut for hay and produced 1.5 tons/acre. Because of topography the Rush/alfalfa and Luna/alfalfa were not cut for hay. The entire field was grazed; grazing was uniform across all trials so preferences could not be determined. Producer is very happy with all three from standpoint of production potential when seeded with alfalfa. FY98 good stands and vigor for each species with about 7 plants per square foot. Yield for all species was about 5000 pounds per acre or about 3 AUMs per acre. Cattle are selecting Luna as first choice, then go to Rush before Oahe. The Rush was more mature than Luna when steers were put in pasture which may account for selection choices. FY99 good stands and vigor of all three species. Entire 84 acre seeding provided 135 AUMs or 1.6 AUMs/ac. Due to later season of use; cattle prefer Luna and Oahe to Rush. Rush initiates growth earlier and is more mature when cattle are turned into pasture, which probably accounts for this preference. FY00 similar report to last year. FY01 good stands and vigor for all species. Grazing preference continues to be for Oahe, followed by Luna, and the Rush. Production is about the same for all species although reduced this year due to two years of extreme drought. FY02 good stand, and vigor with greatly reduced production this drought year for all accessions. Produced 0.5-0.7 AUM/Acre for each accession, less than 50% of the normal precipitation year. Grazing is slowing spread of these species. FY04 – good stands with good vigor for all species. Production was approximately 0.7 AUMs per acre. FY05 no evaluation.

ID97023 Schwenkfelder Rush intermediate wheatgrass District Seed Increase. Site is silty clay loam soil, 14-16 inch ppt, irrigated, 2700 feet elevation, 0-2% slopes, and north exposure, T15N R2W SW1/4 NE1/4 Section 16. Seed ordered March 24, 1997. FY97 spring planted May 29, 1997 into excellent firm seedbed. By July 3, 1997 adequate rain had occurred for good germination so no irrigation was required. There were still a few seedlings emerging on this date. Cooperator plans to spray for broadleaf weeds and will fertilize this fall to prepare for seed production. FY98 excellent stand and vigor with plants averaging 60 to 72 inches in height on June 23 with seedheads up to 15 inches long. Harvested in mid August with 550 to 600 pounds per acre estimated yield. Baled forage yield was 7000 to 8000 pounds per acre. The hay is fed to range cattle early in the feeding season and utilize it readily. FY99 produced 300 lbs/ac seed this year. Producer is very happy with production and utilizes residue to feed beef cows. Hay yield was about 3 tons per acre. Producer fertilized with 43-lbs/ac nitrogen and 104-lbs/ac phosphorus in late October 1999. FY00 no evaluation. FY01 producer decided to graze this field this year due to drought and reduced seedhead production. Vigor was reduced because of drought. FY02 producer choose to irrigate (twice) this field and harvest (July 10th) for hay. Production was 7500 pounds per acre (3.76 tons/acre). Field was irrigated again and used for fall grazing. **Planting plowed out - cancel.**

ID98019 Royce Schwenkfelder Bannock thickspike wheatgrass Field Planting. Seed ordered March 16, 1998 for April delivery. FY98 because of spring rains, this seeding did not go in until mid June. Seedbed preparation was excellent, but only 20 percent of plants emerged due to soil crusting. Additional seed was obtained and this seeding will be replanted. FY99 - FY04 producer has not planted due to severe drought conditions the past three years. **Cancel**

ID02010 Hugh Pangman - New Meadows Riparian Planting. 9067541 Peachleaf willow - Baker source and Golden willow. 50 cuttings ordered February 11, 2002 for shipment in early May 2002. To be planted with waterjet stinger. FY02 willows were planted through cobbly site using a backhoe to watertable located at 5-6 feet depth. 95 survival of each species. Peachleaf willows are 18-20 inches tall and Golden willows are 24 inches tall. Golden willows are more vigorous with more stem growth. FY03 Peachleaf willow 95 percent survival with 36-48 inch height. Golden willow local cuttings also have 95 percent survival with 48 inch plus height. Producer is please with this planting. FY04 no evaluation. FY05 end of 4th growing season - peachleaf willow 90% survival with excellent vigor, 15 feet plant height, 10 feet crown width, 3 inch DBH. Golden willow 90% survival with very good vigor, 10 feet plant height, 6 feet crown width and 2 inch DBH. Peachleaf plants are more vigorous than golden willow, but in a slightly better site based on soil and moisture availability. Plants are protected from grazing by domestic livestock.

ID02011 Tom Vogel - Paddock Riparian Planting. 9067546 Peachleaf willow - Burns source and local coyote willow. 50 cuttings ordered February 11, 2002 for shipment in late March 2002. To be planted with waterjet stinger. FY02 willows were planted on April 3, 2002 using the waterjet stinger. Stream was dry for most of July and August. Peachleaf willows have about 75 percent survival with some leader growth up to 36 inches. Coyote willow has about 60% survival. FY03 - FY05 no evaluation.

ID02014 Mink Land and Livestock Riparian Planting. 9067549 Peachleaf willow - Prairie City source and local source coyote willow, 2002 for shipment in late March 2002. To be planted with waterjet stinger. FY02 Peachleaf willow survival 50% and Coyote willow survival 10%. Planting depth (soils were very dry for most of season) was probably too shallow and plant perhaps should have been completed sooner. FY03 Peachleaf willow 80 percent survival with 48 to 96 inch height. Coyote willow local cuttings have 65 percent survival with 24 to 36 inch heights. FY04 – FY05 no evaluation.

ID02017 Jim Eckhardt Field Planting - Plateau Herbicide Trial (4 oz, 8 oz, 12 oz, Control 4 oz, 8 oz, 12 oz). Seed ordered March 20, 2002 for shipment in early October. Species include: Magnar basin wildrye, Trailhead basin wildrye, Bozoisky Russian wildrye, Mankota Russian, Bannock thickspike wheatgrass, Critana thickspike wheatgrass, Goldar bluebunch wheatgrass, High Plains Sandberg bluegrass, Vavilov Siberian wheatgrass, CD-II crested wheatgrass and Hycrest crested wheatgrass. Site Characteristics: MLRA B10, Deshler-Devon silty clay loam soil, 2-5 percent slope, south aspect, 2600 feet elevation, 12 inch rainfall zone, T11N R6W NE 1/4 NW1/4 Section 1. FY02 Plateau was applied (4, 8 and 12 ounce rates) March 27, 2002 by Joe Vollmer. Did not control salsify, fiddleneck or sunflower. Planted November 4, 2002 under dry/cold conditions with a rangeland drill at 12-inch spacing. FY03 three planted species established this year: 1) Vavilov Siberian wheatgrass had the best stand and was the most vigorous. It did not grow in the untreated control plot – established well in the 4 and 8 ounce treatments – did not establish in the 12 ounce treatment; 2) CD-II crested wheatgrass was not as vigorous as Vavilov and had fewer plants established. It had no establishment in the no treatment - some establishment in the 4 ounce treatment – good establishment in the 8 ounce

treatment – no establishment in the 12 ounce treatment; 3) Hycrest crested wheatgrass was the least vigorous of the establishing species with 30-35 percent fewer plants than Vavilov and CD-II. It had no establishment in the untreated plot - spotty establishment in the 4 and 8 ounce plots – no establishment in the 12 ounce plots. At this evaluation the 8 ounce treatment appears to be the best rate for Plateau herbicide. FY04 – The best stands include: Vavilov Siberian wheatgrass with good stand with good vigor; CD-II crested wheatgrass with fair stand with fair vigor; Hycrest crested wheatgrass with fair stand with fair vigor. All other planted species appear to have failed. The best cheatgrass control rate was 8 ounces/acre of Plateau herbicide. 4 ounces is not enough and 12 ounces effects perennial plant growth. The Plateau application has helped existing bottlebrush squirreltail. Conservationist would not recommend this method seedbed preparation because he does not feel the additional expense warrants the limited vegetation produced. FY05 no evaluation.

OTHER PLANTINGS MANAGED BY PMS

ID06003 Rebecca Laramie Field Planting. Roadcrest crested wheatgrass and Ephraim crested wheatgrass low moisture lawn trial. Seed shipped March 2005. Seedbed preparation included roto-tilling and hand raking. Lawn was seeded on September 1, 2005. Seed was broadcast at about 600 seeds per square foot, lightly raked and the entire area was mulched with dry grass clippings and then watered. Irrigation the first month was 3 times per week. On September 7, 2005 seedlings could be seen coming through the mulch. On September 25, 2005, no noticeable difference could be seen between Roadcrest and Ephraim establishment.

IDAHO DIVISION IV PLANT MATERIALS PLANTINGS

FIELD OFFICE: BURLEY

ID94003 Bronson Bozoisky Russian wildrye, Mankota Russian wildrye, Trailhead basin wildrye, Magnar basin wildrye, Goldar bluebunch wheatgrass (firebreaks and winter grazing). Site is sandy loam soil (weakly saline), 9-10" ppt, partially irrigated, 4800 feet elevation, 0-2% slopes. Species seeded in fall of 1994 with good seedbed. FY95 good stands of Mankota, Magnar and Trailhead; fair stands of Bozoisky and Goldar. All seedings are establishing well except in weedy areas. No seed production during establishment year. FY96 good stand of Goldar, fair stand of Mankota and Magnar, and very poor stand of Trailhead and Bozoisky. All plants that are present look good and are producing seed. There are weeds present including cheatgrass, tumble mustard, Russian thistle, broom snakeweed and sagebrush. FY97 Goldar full stand, Trailhead has improved and is spreading, Magnar is very thin, and both Russian wildryes are adapted with thin stands. FY98 good stands of Bozoisky and Goldar and fair stands of Mankota, Trailhead and Magnar. Stands are grazed in winter. FY99 Good stand and vigor of all species. All species are in same pasture and the Bozoisky is grazed closer than the other species. FY00 fair to good stand of all species. Cooperator is very pleased with all species and prefers them over crested wheatgrass varieties. Site was grazed in spring. Cooperator states that livestock make good use of Bozoisky and Mankota in spring, Trailhead in winter, and Magnar in fall and winter. Magnar stays greener than Trailhead. FY01 this site is suffering from two years of drought. Mankota Russian wildrye has 36-inch height, fair to good stand and good vigor. Bozoisky has 20-inch height, fair stand with fair vigor. Magnar has 30-inch height and Trailhead has 20-inch height and both have fair to poor stands with fair to good vigor. Goldar has 24-inch height, fair to poor stand with good vigor. FY02 Survival/Plant Height - Mankota 75%/26 inch, Magnar 80%/40 inch, Trailhead 80%/36 inch, Bozoisky 75%/30 inch, Goldar 30%/26 inch. Magnar and Trailhead are only lightly grazed and are showing very little effect from grazing. Bozoisky and Mankota stands are heavily grazed and stand are beginning to decline. Goldar stand is also heavily grazed and stand has declined significantly. Producer comments indicate that Goldar is always the first species to be grazed in this pasture followed by the Russian wildrye. FY03 - FY04 no evaluation. FY05 Mankota good stand and vigor with 24 inch plant height; Bozoisky good stand and vigor with 36 inch plant height; Goldar good stand and vigor with 26 inch plant height; Magnar poor stand with good vigor and 60 inch plant heights; Trailhead poor stand with good vigor and 60 inch plant heights. Cooperator states that Goldar is the first plant grazed each season and then Bozoisky and Mankota are utilized. Magnar and Trailhead are the last grasses utilized each season, but calves do utilized the basin wildrye stands for thermal cover. Both basin wildrye accessions are spreading into other plots.

ID96012 Poulton Garrison field planting for plug nursery. Seed ordered 12/8/96. FY96 no evaluations. FY97 field has full stand with 2 plus plants/ft². Plants have height of 36 inches and no weeds. Stand is gravity irrigated and was fertilized with 80 pounds of N in early June. FY98 excellent stand that has improved significantly in the last year. The stand was hayed this year. FY99 good to excellent stand. The stand was 36 inches tall when swathed for hay and had 6 inches of regrowth in early September. Cooperator is very pleased with this grass. Elk are utilizing planting. FY00 planting was cut for hay and elk are utilizing it heavily due to drought conditions. FY01 due to drought conditions, this planting was hayed earlier than normal and has been heavily grazed. Production was below normal. Stand is solid with no bare spots or invading species. FY02 same comments as last year. FY03 - FY04 no evaluation. FY05 cooperator indicated that yields are up over previous years due to better rainfall this spring with 24-30 inch vegetative heights and seedheads up to 48 inches in height. The wetter areas of the field are primarily Garrison even in areas where it was not originally planted. The original planting was irrigated, but is no longer irrigated today and Garrison is going out of this area. Cooperator like Garrison as a forage species and would like to have in more of his pastures. Note: Garrison creeping foxtail requires full moisture either through irrigation and/or sub moisture conditions. It is very productive and a very high quality forage species if fully irrigated and if fertilized. You might consider recommending a fertility program to Mike if he wants to increase production. This planting is providing good information and should be maintained.

ID96028 East Cassia SCD Hycrest crested wheatgrass, Sodar streambank wheatgrass, Bannock thickspike wheatgrass, and Appar blue flax field planting and Hycrest II (CD-II) crested wheatgrass, Sodar, Bannock, and Appar field planting. FY96 planting planned for fall of 1996. FY97 no evaluation. FY98 fair stand of all species except Appar, which failed. FY99 poor stands of Hycrest, CDII, and Flax. Bannock and Sodar failed. Crested wheatgrass can be rowed in very heavy stands of cheatgrass. FY00 fair stand of Hycrest and CD-II, poor stand of Bannock, and Sodar and

Appar failed. Both Hycrest and CD-II are thickening up and starting to crowd out cheatgrass. Some Bannock is present, but Sodar and Appar were not observed. FY01 no evaluation. FY02 planting has been mowed resulting in poor opportunity to evaluate planting. FY03 and FY04 no evaluations. FY05 Hycrest is the most prominent grass present, some Sodar, Bannock and Appar plants were observed. Site is not being well maintained and irrigation system for living snow fence was not turned on this year. **Cancel**

ID97005 Hawker Field planting for medusahead wildrye control. Sherman big bluegrass, Covar sheep fescue and Garnet (905308) mountain brome. Site is very stony loam soil, non-irrigated, 14 inch ppt, 5800 feet elevation, 4% slope on south exposure. Seed ordered 10/17/96. FY97 new seeding and difficult to determine establishment. FY98 good stand of Sherman and Covar establishing and fair stand of mountain brome establishing. FY99 due to severe grasshopper population, it is impossible to determine stand composition. FY00 due to drought planted species were not found – evaluate in spring 2001. FY01 site was heavily grazed early this year and no regrowth occurred. FY02 cattle have been in field most of the summer and field is overgrazed. Planting evaluation could not be performed. FY03 and FY04 no evaluations. FY05 Crested wheatgrass has taken over the area with small patches of medusahead **Cancel**

ID97006 Gary Jones Field planting of Garrison creeping foxtail. Site is silt loam soil, irrigated, 5000 feet elevation, and 0-3% slope on south exposure. Seed ordered 10/17/96. FY97 new seeding and very difficult to determine establishment. FY98 poor stand establishing with .5 plants per foot². FY99 good stand with about 4 plants per square foot and 4000 pounds per acre production. Fertilizer would benefit stand and reduce weeds. FY00 good stand with excellent vigor. Planting was hayed this year. FY01 this is a good planting. It was cut earlier than usual for hay due to shortage of irrigation water. Yield was down this year, but cooperater was satisfied with yield given the droughty conditions. FY02 landowner is enthused about Garrison production/performance and plans to plant additional field to this species. FY03 - FY04 no evaluation. FY05 Garrison is probably about 50% of the stand throughout field. Cooperater likes Garrison and said it is an excellent hay and grazable forage. Note: Garrison creeping foxtail requires full moisture either through irrigation and/or sub moisture conditions. It is very productive and a very high quality forage species if fully irrigated and if fertilized. You might consider recommending a fertility program to Gary if he wants to increase production. This planting is providing good information and should be maintained.

ID00009A Warren Yadon willow field planting. 9067561 Lemmon willow (12), 9067548 Drummond willow (12), 9067436 Yellow willow (12), 9067375 Peachleaf willow (15), and 9067376 Peachleaf willow (14) were ordered on March 1, 2000 for shipment April 10, 2000. FY00 willow evaluations will be performed next year. FY01 this planting is overgrown with woods rose, stinging nettle and weeds. Cuttings are alive, but very difficult to evaluate this late in the year. Recommend evaluating earlier next year. FY02 12 Drummond and 6 Yellow willows were alternately planted with 2 Yellow willows 6-8 feet tall still surviving. 6 Yellow willows planted into the face of a 4-5 feet cutbank on the west side of stream, all have survived and are 2-4 feet tall with limited branching. 14 Peachleaf 376 were planted with 4 6-8 feet tall plants surviving. 15 Peachleaf 375 were planted with 12 2-10 feet tall plants surviving. 12 Lemmon willows were planted, but could not be located. FY03 - FY04 no evaluations. FY05 most plants have failed due to rip-rapping, changes in irrigation distribution system and changes in farming practices. **Cancel**

FIELD OFFICE: GOODING/FAIRFIELD

ID00005 Camas SCD (Koonce) formerly ID86010 Koonce multiple species demo plots. FY99 field evaluation determined these plots to be contaminated and planting was destroyed, site cleaned-up and fallowed during 1999, and was replanted in the spring of 2000. Plots replanted May 1, 2000. Plots will be irrigated the first growing season. **FY00** plots were irrigated until mid June, and then discontinued. Most of the wheatgrasses sprouted in the central and northern portions of the plot, but remained small at evaluation time due to dry season. Plot remains relatively weed-free except the southernmost 15 feet of the plot (sheep fescue area) which is a solid stand of globe mallow. The fescue is sprouted underneath the large mallow leaves. This is a particularly difficult weed to control once established. Special attention needs to be directed here in spring 2001. **FY01** the plots have been subjected to two seasons of unfavorable plant growth (dry springs) and one of the lowest winter snowpacks recorded on the Camas Prairie. Still, all varieties exhibit some level of success except for the following varieties which could not be found for observation: Durar hard fescue, Nezpar Indian ricegrass, 9043501 Salina wildrye, and Thurber's needlegrass. These varieties did not establish at all or remain yet as dormant seed due to drought. Some of the absent species may have germinated but died unnoticed due to drought. Weed competition most likely is not a factor of establishment difficulties in the plot. Possible exceptions may be in the Covar sheep fescue area that had significant amounts of common mallow in 2000 but is now under control due to spot spraying. Scouringrush is invading in the Bighorn sheep fescue and Magnar basin wildrye areas and may be a factor there. The entire demo plot was spot-sprayed in 2001 twice (last of June and first of August)

with 2, 4-D/Banvel. At the time of this evaluation the plot did not contain weed problems significant to grass establishment. The wheatgrasses are performing the best. The highest performing wheatgrasses include Rush and Reliant intermediate wheatgrasses, Maska and Luna pubescent wheatgrasses, CDII and Nordan crested wheatgrasses, Bannock thickspike wheatgrass, and Pryor slender wheatgrass. Weak wheatgrass performance was observed with Arriba western, Whitmar beardless wildrye, San Luis slender wheatgrass, Critana thickspike wheatgrass, Ephraim crested wheatgrass, Douglas crested wheatgrass, and P27 Siberian wheatgrass. Bozoisky and Mankota Russian wildrye performed moderately, but the other wildryes either did poorly (Volga Mammoth and Magnar) or did not establish (Salina and Trailhead). Manchar and Liso smooth bromes have done well considering the drought with moderate performances, but Garnet and Bromar mountain bromes and Regar meadow brome did not fare so well and have overall weak ratings. The fescues, needlegrasses, orchardgrasses, ricegrasses, timothy, and foxtail are currently performing weakly or did not establish. Sherman big bluegrass had low establishment density but the existing plants have good vigor with many seedheads produced. **FY02** drought continues. Excellent plots include: Rush, Greenar, Reliant, Topar, Maska, Luna, Bozoisky, CD-II, Hycrest, and Nordan. Good plots include: Rosana, Manchar, Regar, Alkar, Jose, Liso, Oahe, Tegmar, 238, Goldar, P-7, Mankota, Secar, Pryor, Bannock, Schwendimar, Sodar, Sherman, Vavilov, and Magnar. Fair plots include: Latar, Garrison, Arriba, Climax, Covar, Volga, Whitmar, San Luis, Critana, Ephraim, Douglas, P-27, Rimrock, High Plains, and Trailhead. Poor plots include: Paiute, Garnet, Bromar, Durar, 902484, and 9040137. Failed plots include: Salina and Nezpar. **FY03** plants with best density, vigor and seed production include: Rush, Reliant, Maska, Bozoisky, CD-II, Nordan, Arriba, Greenar, Topar, P7, Mankota, Hycrest, Vavilov, Alkar, Jose, Oahe, Tegmar, Luna, Ephraim, and P27. Generally, the wheatgrasses are out performing the fescues, wildryes, needlegrasses, bromes, bluegrasses, timothy and orchardgrass. Plants that have failed include: Paiute, Rimrock, 9040137 needlegrass, Nezpar, Volga, 9043501 Salina wildrye, Bighorn sheep fescue. **FY04** wheatgrasses as a group dominate as the best adapted species for this site. Intermediate (Rush and Reliant) wheatgrass, pubescent (Maska and Luna) wheatgrass, Sherman big bluegrass and Trailhead basin wildrye improved over last year despite unfavorable conditions. All other plots remained static or declined in performance. Garnet and Bromar mountain brome and San Luis slender wheatgrasses (all short-lived perennials) died out this past year. **FY05** no evaluation.

ID00006 Bill Simon Bannock thickspike wheatgrass District Seed Increase. Seed ordered February 10, 2000 for mid April delivery. **FY00** this new Bannock seeding in spring 2000 was installed adjacent and south of existing Bannock field under file ID98020. Bannock was drilled at 3 pounds per acre PLS on 24-inch centers. The field was helicopter sprayed with 2, 4-D the third week of June. Where helicopter missed, Russian thistle prevailed this year but should diminish next year. At evaluation time on November 1, 2000, the stand was well on its way to establishment considering the dry year. **FY01** unfavorable moisture year - 200 pounds per acre seed production. **FY02** unfavorable moisture year - 110 pounds per acre seed production. **FY03** good stand and vigor – field produced 43 pounds per acre probably due to spring frost (May 19 - 16^o, May 20 – 21^o, June 23 – 26^o), low precipitation, and very hot summer. **FY04** - good stand and vigor with field producing 90 pounds of clean seed per acre. Producer feels too much vegetative growth was produced this year due to spring rains hurt seed production. Producer plans to maintain stand for seed production one more year. **FY05** no evaluation.

ID01007 Spring Cove Ranch – Butler demonstration plantings of Magnar basin wildrye, Snake River Plain fourwing saltbush, and Northern Cold Desert winterfat. Seed ordered March 16, 2001. Site characteristics: Planting 1. Vertisol soil, 11-inch rainfall, irrigated, 3300 feet elevation, south of Pioneer Reservoir. Planting 2. Sodic soil, 12-inch rainfall, irrigated, 3500 feet elevation, near Clover Creek – Hill City Road – southern base of Bennett Mountain foothills. **FY01** - **FY04** seed not planted due to extreme drought. Cooperator plans to plant fall 2004. **FY05** no evaluation.

ID01011 Bill Simon District Seed Increase High Plains Sandberg bluegrass test plots. Seed ordered in September 2001. **FY02** and **FY03** seed not planted due to drought. **FY05** no evaluation.

ID02015 Bob Josaitis Field Planting. 905439 switchgrass (Bridger PMC) and Blackwell switchgrass (Manhattan PMC) were ordered March 15, 2002 for shipment about April 1, 2002. Purpose: portion of seed mix for wildlife nesting cover. Site Characteristics: MLRA 11a, Harsand fine sandy loam soil, 0-2 percent slope, 3700 feet elevation, 11 inches precipitation, full irrigation, T6S R15E Section 4. **FY02** - **FY04** seed not planted due to drought and field change. Seeding planned for spring 2005. **FY05** no evaluation.

FIELD OFFICE: JEROME

None

FIELD OFFICE: RUPERT

None

FIELD OFFICE: SHOSHONE/HAILEY

None

FIELD OFFICE: TWIN FALLS

ID00007 Twin Falls SWCD/Twin Falls Highway District Drought tolerant landscape-weed control demonstration plantings. Seed ordered March 1, 2000 for late March delivery. Planting 1: Vavilov Siberian wheatgrass, Bozoisky Russian wildrye, and Ladak alfalfa. Planting 2: Hycrest crested wheatgrass, Bozoisky Russian wildrye, and Ladak alfalfa. Planting 3: Secar Snake River wheatgrass, Critana thickspike wheatgrass, Trailhead basin wildrye, Rimrock Indian ricegrass, and Wytana fourwing saltbush. Planting 4: Secar Snake River wheatgrass, Bannock thickspike wheatgrass, Magnar basin wildrye, Nezpar Indian ricegrass, and Snake River Plain fourwing saltbush. Site characteristics: MLRA B11A, Portneuf silt loam soil, 0-2 percent slopes, north exposure, 3800 feet elevation, 10-12 inch precipitation, irrigated for establishment only, T11S R18E SW1/4 of SW1/4 of Section 13. FY00 due to very dry spring the planting was delayed until better planting conditions occur. FY01 site was planted in mid to late April and sprinkler irrigated in May to assist with plant establishment. Site was also mowed several times during growing season for weed control. Because of mowing, species identification was not possible – estimated initial stand establishment for all plantings are fair with good plant vigor. FY02 introduced plantings are well established - native plantings failed. Introduced seed of Vavilov Siberian wheatgrass (15 lb) and Bozoisky Russian wildrye (5 lb) was ordered on September 15, 2002 to replant failed portion. Planting completed for October 25, 2002 (dormant planting). FY03 field observation determined that little establishment has occurred this year due to drought conditions. FY04 stands were mowed in June and inadequate moisture was available for regrowth. Wytana fourwing saltbush and Snake River Plains fourwing saltbush are becoming more evident with scattered plants throughout plantings 3 and 4. Mowing is keeping the fourwing saltbush short, but does not appear to be killing the shrubs. FY05 this is the first year of above normal spring moist since plantings were installed. Planting 1: good stand of Vavilov (2-3 plants/ft²), Bozoisky (2 plants/ft²) and alfalfa (< 1 plant/ft²) and good vigor for grasses and poor vigor for alfalfa. Planting 2: good stand of Hycrest (3 plants/ft²) and thickspike (2 plants/ft²). Wytana fourwing saltbush and Snake River Plains fourwing saltbush are becoming more evident and plants are larger than last year throughout the older plantings 3 and 4.

ID02009 Shoshone Creek Riparian Planting – Rob Rogerson. 9067541 Peachleaf willow - Baker source, 9067549 Peachleaf willow - Prairie City source, and 9067560 Peachleaf willow - Deer Creek source. Cuttings ordered February 11, 2002 for shipment April 1, 2002. FY02 - 9067549 60 percent survival with good vigor - 9067541 76 percent survival with good to excellent vigor - 9067560 50 percent survival with fair vigor, native Planeleaf willow 100 percent survival with excellent vigor. Death loss can primarily be related to livestock damage when cattle were place in field for 5 days. FY03 no evaluation. FY04 9067549 peachleaf willow failed, 9067541 peachleaf willow 24 percent survival with fair vigor, 9067560 peachleaf willow not evaluated, native willows 100 percent survival with good vigor. FY05 9067541 28% survival with good vigor and 18 inch height; 9067549 10% survival with good vigor and 24 inch height; 9067560 failed; native Planeleaf willow 100% survival with good vigor and 24 inch height.

ID04003 Steve Schuyler field planting – windbreak. Siouland poplar, Carolina poplar, Golden willow and Laurel willow cuttings. Cuttings ordered January 12, 2004. Site characteristics: 0-1 percent slope, north aspect, 8-10 inch precipitation zone, irrigated-gravity, Portneuf silt loam soil. Planted April 10, 2004 – weed barrier fabric was installed – planting protected with snow fence along west edge. FY04 survival and height - 91 percent – 35 inches Laurel willow, 42 percent – 6 inches Carolina poplar, 82 percent – 42 inches Golden willow, 0 percent Siouland poplar. FY05 replacements ordered February 22nd 10 golden willow, 25 Carolina poplar, and 5 Laurel willow. Evaluation August 11, 2005- Laurel willow 94% survival with excellent vigor, 8 feet height and 5 feet crown width; Carolina poplar 58% survival with excellent vigor, 9.3 feet height and 7.5 feet crown width; Golden willow 82% survival with excellent vigor, 9.5 feet height and 11 feet crown width.; Siouland poplar failed.

ID03001 Walt Coiner Field Planting. Purpose: Field Planting - windbreak interspace perennial cover/weed control study - irrigated-semi irrigated-dryland trials. Seed was ordered on September 17, 2002. Approximately 1 acre per species - broadcast seeding rates - Aberdeen PMC broadcast planters were used for seeding - dormant fall planting completed November 4 and 5, 2002. **Irrigated species:** Durar hard fescue; Sherman big bluegrass; Foothills Canada bluegrass, and Talon Canada bluegrass. **Semi Irrigated species:** Covar sheep fescue; Sodar streambank wheatgrass; Paiute orchardgrass; Ephraim crested wheatgrass; Sherman big bluegrass; Roadcrest crested wheatgrass; and Quatro sheep fescue. **Dryland species:** Vavilov Siberian wheatgrass; Rosana western wheatgrass and Bozoisky Russian wildrye. FY03 initial evaluation August 20, 2003. FY04 evaluation September 13, 2004. FY05 evaluation August 11, 2005 following well above average spring moisture.

Species	2003	<u>Stand</u>		2003	<u>Vigor</u>		Adapted -Comments
		2004	2005		2004	2005	
<u>Irrigated Perennial Cover</u>							
Sherman big bluegrass	good	fair	fair	exc.	fair	exc.	no- others better choices
Talon Canada bluegrass	good	exc.	exc.	exc.	exc.	exc.	yes- short/best weed control
Foothills C. bluegrass	exc.	exc.	exc.	exc.	exc.	exc.	yes- taller/moderate weeds
Durar hard fescue	fair	exc.	fair	exc.	exc.	fair	no- others better choice
<u>Semi-Irrigated Perennial Cover</u>							
Covar sheep fescue	poor	fair	good	fair	good	exc.	yes- needs full irrigation to establish
Quatro sheep fescue	poor	good	exc.	fair	good	exc.	yes- needs full irrigation to establish
Newhy hybrid wheatgrass	poor	failed	fair	fair	v. poor	good	no- needs full irrigation to establish
Roadcrest c. wheatgrass	good	fair	poor	good	good	good	no- needs full irrigation to establish
Ephraim c. wheatgrass	exc.	fair	exc.	good	fair.	exc.	yes- stand is improving
Sodar s. wheatgrass	good	poor	poor	fair	poor	poor	no- poor stand/severe weeds
Paiute orchardgrass	fair	fair	fair	fair	fair	fair	yes- needs full irrigation to establish
<u>Dryland Perennial Cover</u>							
Vavilov S. wheatgrass	good	exc.	exc.	good	exc.	exc.	yes- best stand
Bozoisky R. wildrye	poor	v. poor	good	fair	poor	good	yes- stand improving
Sherman big bluegrass	v. poor	v. poor	good	poor	v. poor	good	no- needs irrigation to establish
Rosana w. wheatgrass	fair	good	exc.	good	good	exc.	yes- short/filling in nicely

Recommendations based on three evaluation years

Irrigated – Talon Canada bluegrass and Foothills Canada bluegrass are best fully irrigated choices.

Semi-irrigated – Ephraim crested wheatgrass and the good Dryland species Vavilov, Rosana and Bozoisky or Quatro sheep fescue, Covar sheep fescue, or Paiute if fully irrigated for establishment.

Dryland – Vavilov Siberian wheatgrass mixed with Rosana western wheatgrass or Bozoisky.

ID04006 Dickenson 319 riparian woody planting. Laurel willow, golden current, Wood’s Rose, redosier dogwood, Siberian peashrub, coyote willow, golden willow, chokecherry, blue spruce, and Austrian pine. Plantings are protected from grazing and grass is mowed around pines, spruce, juniper and sumac.

FY04 planted in May 2004. Plantings are protected from grazing with a fence and arranged in clumps (copses) for natural appearance. Laurel willow 92 percent survival, excellent vigor, 24-36 inch height. Golden current 100 percent survival, excellent vigor, and 18-24 inch height. Wood’s rose 100 percent survival, excellent vigor, and 18-24 inch height. Redosier dogwood 60 percent survival, fair vigor, and 18-24 inch height. Siberian peashrub 100 percent survival, excellent vigor, and 18-24 inch height. Coyote willow 80 percent survival, good vigor and 12-48 inch height. Golden willow 100 percent survival, excellent vigor and 72 inch height. Chokecherry 23 percent survival, poor vigor and 36 inch height. Blue spruce 73 percent survival, good vigor and 36 inch height. Austrian pine 100 percent survival, excellent vigor and 36 inch height.

FY05 evaluation August 11, 2005- Laurel willow 100% survival, excellent vigor, 4-8 feet height and 2 feet crown width; Golden current 92% survival, excellent vigor, 4 feet height and 2.5 feet crown with; Wood’s rose 100%

survival, excellent vigor, 2.5 feet height and 3 feet crown width; Redosier dogwood 83% survival, excellent vigor, 4 feet height and 2 feet crown width; Siberian peashrub 12% survival, very poor vigor; Coyote willow 33% survival, good vigor, 5 feet height and 0.5 feet crown width; Golden willow 90% survival, excellent vigor, and 6 feet height; chokecherry 27% survival, fair vigor and 4.4 feet height; blue spruce 73% survival, fair vigor and 4.5 feet height; Austrian pine 100% survival, excellent vigor and 4.6 feet height; Rocky Mountain juniper 100% survival, excellent vigor and 14 inch height; Skunkbush sumac 80% survival, good vigor and 2 feet height.

ID05002 Perinne Coulee 319 Project riparian planting. Redosier dogwood (accessions 9023733, 9023739 and 9023740), Laurel willow and Peachleaf willow (accessions 9067375, 9067376, 9067541, 9067546, 9067549 and 9067560) cuttings were ordered February 4, 2005. Planted spring 2005. Survival and identification difficult in 2005.

ID05011 Twin Falls County – Rock Creek Park critical area field planting. Regar meadow brome, Topar pubescent wheatgrass, Bannock thickspike wheatgrass, Snake River Plains fourwing saltbush, Rosana western wheatgrass, pryor slender wheatgrass and Garrison creeping foxtail were ordered March 14, 2005. Site characteristics: silt loam soil, 2 percent slopes, NW aspect, 3600 feet elevation, 12 in rainfall zone, non-irrigated (riparian – sub irrigated), T10S R17E SW ¼ Section 8. Twin Falls county coordinator said only a small amount of seed was planted in 2005.

IDAHO DIVISION V PLANT MATERIALS PLANTINGS

FIELD OFFICE: AMERICAN FALLS/ABERDEEN

None

FIELD OFFICE: BLACKFOOT

ID02006 Paul Ricks Demonstration Planting. Seed ordered February 11, 2002 for shipment to Aberdeen PMC by March 4, 2002. FY02 Planting completed in May 2002. August 27, 2002 initial evaluation indicated at least some establishment of all seed plots. FY03 evaluated 12/9/03. FY04 evaluated and clipped 6/23/04. FY05 no evaluation. See attached tables at end of this section.

FIELD OFFICE: FORT HALL

ID03002 Shoshone-Bannock Tribe Demonstration Planting. Nezpar Indian ricegrass, Goldar bluebunch wheatgrass, Magnar basin wildrye, Sodar streambank wheatgrass, Bannock thickspike wheatgrass, Rimrock Indian ricegrass, Trailhead basin wildrye, Critana thickspike wheatgrass, Shoshone creeping wildrye, High Plains Sandberg bluegrass, Secar Snake River wheatgrass, Sherman big bluegrass, Schwendimar thickspike wheatgrass, Joseph Idaho fescue, Nezpurs Idaho fescue Winchester germplasm Idaho fescue, Needle and Thread grass. Seed ordered September 30, 2002. Planting completed early November 2002. FY03 no evaluation. FY04 Nezpar Indian ricegrass excellent stand and vigor with 24 inch height. Goldar bluebunch wheatgrass excellent stand and vigor with 24 inch height. Magnar basin wildrye excellent stand with good vigor and 36 inch height. Sodar streambank wheatgrass excellent stand and vigor with 30 inch height. Sherman big bluegrass good stand with good vigor and 30 inch height. Very poor stand and vigor with 8 inch height (only 3 plants came up – seed may have been buried too deep). All other species were planted in the spring of 2004 and not evaluated this year. FY05 evaluation June 15, 2005. Magnar excellent stand, 98% survival, excellent vigor and 48 inch height; Nezpar good stand, 90% survival, good vigor and 36 inch height; Goldar good stand, 95% survival, good vigor and 42 inch height; Sodar excellent stand, 98% survival, excellent vigor and 42 inch height; Sherman excellent stand, 98% survival, excellent vigor and 38 inch height; High Plains failed and will be replanted next year and irrigated for establishment.

ID03005 Shoshone-Bannock High School field planting. Common Camas bulbs. Bulbs ordered from Corvallis PMC January 14, 2003. Site - MLRA B11b, 10-12 inch precipitation, sub-irrigated wet to semiwet bottomlands, non-irrigated. FY03 no evaluation. FY04 Camas bulbs were planted in the fall of 2003 and no evaluation has been completed. FY05 could not find any camas plants – recommend evaluation one additional year to ensure this planting is a failure – might recommend collecting camas bulbs from more local location for future studies and evaluations.

FIELD OFFICE: MALAD

ID04005 Hybrid poplar study – Don Buhler field planting. Robust poplar, Carolina poplar, Siouxland poplar, Simon poplar, OP367 poplar and 52-225 poplar cuttings were ordered March 5, 2004. Site Characteristics: Zukom silt loam soil, 7.4-8.4 soil pH, very wet site in early spring, 0-1% slopes, south aspect, 18-20 inch precipitation, non-irrigated, 5180 feet elevation. FY04 - Robust poplar 20 percent survival with fair vigor. Carolina poplar 13 percent survival with fair vigor. Siouxland poplar failed. Simon poplar 53 percent survival with good vigor. OP367 poplar 20 percent survival with poor vigor. 52-225 poplar 13 percent survival with poor vigor. FY05 no evaluation.

FIELD OFFICE: MONTPELIER

None

FIELD OFFICE: POCATELLO

None

FIELD OFFICE: PRESTON

ID95036 Franklin County Bannock thickspike wheatgrass and Sodar streambank wheatgrass critical area planting. Site is landfill, Wheelon/Collonston soil, non-irrigated, 14-15 inch ppt, 5000 feet elevation, 12-20% slopes on north exposure. Seed ordered 5/5/95. FY95 seed planted 5/17/95 in good clean seedbed. Fall evaluation indicated good stand establishing for both species. FY96 good stands of both species with 3 plants/ft² and spreading. Species are providing

good erosion control. FY97 and FY98 no evaluations. FY99 good stand of each specie with 3-4 plants per square foot, good vigor, good ability to spread, and good erosion control under these conditions. Weed infestation of planting is very low. FY00 Bannock and Sodar stands are good with good vigor and 4 plants per square foot. FY01-FY05 no evaluations.

FIELD OFFICE: SODA SPRINGS

ID05001 Michael Tingey – Irrigated forages Demonstration Plots. Latar orchardgrass, Regar meadow brome, Cache meadow brome, Paiute orchardgrass, Garrison creeping foxtail, Rush intermediate wheatgrass, Bozoisky Russian wildrye, 905439 switchgrass, Blackwell switchgrass and Lutana cicer milkvetch seed was ordered February 4, 2005. SCD/Cooperator Supplies the following: Paddock meadow brome, Forager alfalfa, Kemal festolium, Potomic orchardgrass, Rebound meadow brome, Fuego tall fescue, Tekapo orchardgrass, Mara perennial ryegrass, Barliza timothy, Pradel meadow fescue, Barloex tall fescue, Bariane tall, fescue, Barcell tall fescue, Baridana orchardgrass, Hakari Alaska brome, Birdsfoot trefoil, Sainfoin, Sorgam, Grazing corn, Lakota prairie brome and Alice white clover. Site characteristics: 0.8 acres, MLRA B13, Rexburg-Ririe silit loam soil complex, 1-4 percent slopes, north aspect, elevation 5140 feet, 12-14 inch precipitation, irrigated, T11S R41E SW ¼ section 19. Planted late spring 2005 due to persistent rainfall that did not allow earlier final land preparation and planting.

Species	Percent Stand			Vigor			Height			Yield		
	2005	2006	2007	2005	2006	2007	2005	2006	2007	2005	2006	2007
Kura Clover	0			0			0					
Forager alfalfa	80			good			24"					
Lutana cicer milkvetch	30			good			6"					
Alice white clover	10			fair			4-6"					
Birdsfoot trefoil	40			good			3"					
Eski sainfoin	70			good			12"					
Baridana orchardgrass	40			good			16"					
Tekapo orchardgrass	60			good			12"					
Paiute orchardgrass	15			fair			12"					
Latar orchardgrass	15			fair			12"					
Potomic orchardgrass	20			good			12"					
Satin orchardgrass	10			good			8"					
Renegade orchardgrass	50			good			18"					
Rebound meadow brome	70			good			24"					
Cache meadow brome	50			good			30"					
Regar meadow brome	60			good			12"					
Lakota prairie brome	80			exc.			36"					
Hakari Alaska brome	85			exc.			12"					
Seine tall fescue	30			good			24"					
Johnstone tall fescue	20			good			18"					
Bronson tall fescue	50			good			24"					
Bariane tall fescue	35			good			12"					
Dovy tall fescue	50			good			18"					
Pradel tall fescue	50			good			12"					
Garrison creeping foxtail	10			fair			12"					
Rush intermediate whtgrs	40			fair			6"					
Bozoisky Russian wildrye	35			poor			4"					
Kemal festolium	90			exc.			24"					
Mara perennial ryegrass	85			good			8"					
Barliza timothy	5			poor			4"					
Outlaw timothy	5			poor			8"					
Blackwell switchgrass	15			fair			18"					
9005439(MT) switchgrass	5			fair			8"					
Garrison sorgum-sudan	90			good			54"					

ID05012 Don Ayers – herbaceous windbreak field planting. Magnar basin wildrye seed ordered March 15, 2005. Site Characteristics: Lantonia-Chinahat silt loam soil, 1-4 percent slopes, 5983 feet elevation, 14-16 inch precipitation, non-irrigated, T8S R41E NW ¼ Section 24. FY05 Two of the four rows had good emergence and two rows had very poor emergence. Ground preparation was much better in rows that the best emergence. Plants that emerged have grown well and look very healthy - fair stand with 4 plants/ft², good vigor and 4 inch height. Several more plants emerged in the fall.

IDAHO DIVISION VI PLANT MATERIALS PLANTINGS

FIELD OFFICE: ARCO

ID03003 Hill-Freeman Snake River Plain fourwing saltbush field planting. Seed ordered October 18, 2002. FY03 one half pound of Snake River Plains fourwing saltbush was included in a five acre marginal pastureland seeding adjacent to Warm Springs Creek on Barton Flat (South Custer County). The entire seeding area of 13.3 acres included a three and a half acre stand of decadent crested wheatgrass. A seed mix of Vavilov Siberian wheatgrass (1.2 lbs/ac), Bannock thickspike wheatgrass (2.0 lbs/ac), Bozoisky Russian wildrye (1.2 lbs/ac), Rincon fourwing saltbush (0.25 lbs/ac), and Bighorn skunkbush sumac (0.25 lbs/ac) was broadcast over the seeding area. The area was then rolled to obtain seed to soil contact on a firm weed free seedbed. FY04- FY05 no evaluation.

FIELD OFFICE: DRIGGS

ID91006 Fair Grounds Multiple Species Demo Plots. FY92 planted spring 1992 excellent survival on all species except trefoil, mountain brome and cicer milkvetch which will have to be replanted. FY93 Remont, Bromar, Lutana planted spring of 1993. Remont is not tolerant of frequent irrigation. Bozoisky exhibits poor seedling vigor, Goldar has poor plant vigor, Canbar not recommended for pure stands, Magnar not adapted to shallow soils, Newhy lacks seedling vigor, Manchar exhibits poor summer regrowth, Whitmar is not tolerant of excessive moisture, and Garrison adapted to wet soils. Magnar, Bromar, Rush, and Lutana are all doing poorly. Ordered Rush, P27, Magnar, Canbar, and Bozoisky on 3/17/94 to be included in plots. FY94 all plots good to excellent stand except Lutana, Remont and Delar. These plots are all irrigated so evaluations for drought, flood, salt and acid tolerance not possible. This planting does provide excellent trials for irrigated varieties in high mountain valleys. FY95 best performers are Hycrest, Critana, Alkar, Tegmar, Luna, Greenar, Topar, Rush, Regar, Manchar, Latar, Paiute, Sodar, Newhy, Durar, Sherman, Canby and Delar. Complete evaluations are available on request. FY96 not evaluated. FY97 Durar and Delar good to excellent stands with high vigor; Regar, Amur, Manchar, Latar, Paiute good stands with excellent vigor; Rush fair stand with fair vigor; Sodar, Goldar, Cascade, Appar poor stands with fair vigor; Hycrest, Critana, Alkar, Tegmar, Luna, Greenar, Topar, Lutana, Garrison, Whitmar, Secar, P27, Bromar, Magnar, Bozoisky, Canbar, Sherman, Kalo, very poor to failed stands. All plots are subject to turfgrass encroachment. February 9, 1998 ordered Hycrest, CD-II (Hycrest II), Sherman, Newhy, Critana, Bannock, Garrison, and Bozoisky for plots. FY98 species with good to excellent stands include Amur, Rush, Manchar, Latar, Durar, Cascade, and Delar. Species with poor to fair stands include Alkar, Luna, Topar, P27, Bromar, Paiute, Magnar, Appar, and Bozoisky. Failed stands include Hycrest, Critana, Tegmar, Greenar, Secar, Whitmar, Garrison, Lutana, Regar, Sodar, Newhy, Kalo, Sherman, Canbar, and Goldar. FY99- FY05 no evaluation.

ID99018 SCD field planting – leafy spurge competition study. Species include Rush intermediate wheatgrass, Luna pubescent wheatgrass, Regar meadow brome, Bromar mountain brome, Durar hard fescue, Bozoisky Russian wildrye, and Climax timothy. Seed ordered April 28, 1999 for shipment about May 17, 1999. FY99 Roundup was applied on June 10th to leafy spurge plots with up to 200 stems per 9.6 square foot hoop. Grass was drilled into plots on July 1, 1999 using a Brillion drill. Evaluation of germination and establishment will be performed in the spring of 2000. Replicated plots will be installed in May of 2000. FY00- FY05 no evaluation.

ID02019 Lowel Curtis field planting. Species include Garrison creeping foxtail, Regar meadow brome and Johnstone tall fescue. Seed ordered April 8, 2002. FY02- FY05 no evaluation.

FIELD OFFICE: IDAHO FALLS

ID94020 Winterfeld Magnar basin wildrye and Trailhead basin wildrye vegetative terraces field planting. Seed ordered 3/94. FY94 planted 5/94. Good initial stand establishment with good vigor. FY95 excellent stand establishment with over 3 plants/ft². Plants average 24" height. Grouse are using basin wildrye for nesting cover. Working well for erosion control. FY96 excellent stands with excellent vigor Trailhead and good vigor Magnar. Excellent wildlife use by game birds, deer, owls, and coyotes. Both species are very good for snow catchment and field windbreaks. FY97 100% survival, Trailhead spreading a little faster than Magnar. Plant height about 96 inches for each. Cooperator notes that Trailhead is more drought tolerant and Magnar is more robust. FY98 100 percent survival for both species. Cut for seed this year with 140 pounds of clean seed per acre. FY99 excellent stands: Magnar 96 inches tall with little to no spread; Trailhead 84 inches tall with good spread via seed shatter. FY00 excellent stands with excellent vigor for both Magnar and Trailhead. Magnar is more robust with 96 inches height. Trailhead is spreading rapidly, is more drought tolerant,

and approximately 84 inches tall. FY01 excellent stand and vigor with 96 inch height. Seed production was approximately 100 pounds per acre. Straw yield was 1.6 tons per acre. FY02 Trailhead plowed out. Magnar excellent stand with excellent vigor, 72 inch height, and 4000 pounds per acre production. FY03 no seed crop due to insect damage. FY04 – excellent stands with excellent vigor and each accession was approximately 96 inches tall this year. Trailhead is spreading beyond original planting.

ID95046 Winterfeld Venus penstemon and Firecracker penstemon District Seed Increase. Seed sent 8/95. FY95 planted fall 1995. FY96 poor stand establishing for Alpine and no emergence for Firecracker, no seed production. FY97 Alpine slow establisher and susceptible to frost, no seed production. FY98 fair stand of both Firecracker and Alpine penstemon (1 plant per foot 2). Stands for both species are getting better each year. FY99 fair stands in unfavorable moisture year and no seed production. FY00 Firecracker penstemon died due to drought and short-lived character. Alpine penstemon has good stand with good vigor and stands 24 inches tall. Seed production was unknown at evaluation date. FY01 firecracker penstemon came back, excellent stands and vigor for both species. Seed production estimated at 600 pound per acre bulk. FY02 - Venus - fair stand with excellent vigor, 24 inch height, and 100 pounds per acre bulk production. Firecracker - fair stand with excellent vigor, but slower establishment, 24 inch height, and 100 pounds per acre bulk production. FY03 Firecracker penstemon stand is going out – no production. Venus penstemon produced 80 pounds of seed. FY04 – excellent stand and vigor for each accession. No seed production reported. FY05 Venus penstemon – good stand good vigor – no seed production reported. Firecracker penstemon stand was plowed out.

ID99016 Winterfeld Goldar bluebunch wheatgrass District Seed Increase. Seed ordered April 15, 1999. Site characteristics – Tetonia silt loam soil, 1- percent slopes, north aspect, 5400 feet elevation, 18 inch precipitation zone, non-irrigated, T2N R43E NW1/4 Section 26. FY99 planted spring 1999 with good stand establishing. FY00 excellent stand and vigor. Seed production unknown at evaluation date. Good regrowth in spite of very droughty conditions. FY01 excellent stand and vigor. 150 pounds per acre cleaned seed production (some problem with silver top). 900 pounds of straw per acre. FY02 - excellent stand with excellent vigor, 36 inch plant height and 100 pounds per acre cleaned production. Regrowth is excellent and field experiences a lot of wildlife use (elk). FY03 excellent stand produced 100 pounds per acre in unfavorable moisture year. FY04 excellent stand and vigor with approximately 250 pounds of bulk seed produced this year. FY05 planting plowed out. **Cancel**

ID03007 Winterfeld San Juan penstemon - Demonstration planting. Seed ordered February 10, 2003. Seed shipped February 18, 2003. FY03-FY04 not planted. FY05 planted October 26, 2005.

ID04015 Winterfeld Maple Grove Lewis flax for seed increase. Seed shipped April 19, 2004. FY04 excellent stand with excellent vigor establishing. Plants are about 5 inches tall. FY05 good stand, good vigor and plants are about 24 inches tall. Lighter in color than Appar and not as good a competitor with severe weed competition in stand. No seed production reported.

ID05015 Winterfeld Pryor slender wheatgrass for seed increase. Seed shipped May 2, 2005. FY05 no evaluation.

FIELD OFFICE: REXBURG

ID89015 Wagoner Luna pubescent wheatgrass, P-27 Siberian wheatgrass, Sodar streambank wheatgrass, Greenar intermediate wheatgrass, Delar small burnet, Trevois alfalfa field planting on rangeland. Site is gravelly loam soil with a pan at 5-6 inches, non-irrigated, 12-inch ppt, 6300 feet elevation, and 3% slopes on NE exposure. FY89 ripped rangeland in spring and seeded mix in fall of 1990. FY91 excellent stand establishing with production about 1400 lbs/ac. FY92 clipping data: No Treatment - 318 lbs/ac., chisel only treatment (native species) - 495 lbs/ac., chisel/disc/seed treatment - 1110 lbs/ac. Clipped 7/9/92. FY93 Clipped plots resulted in production of 1200-2000 lbs/ac. FY94 production of about 800 lbs/ac in extremely droughty year. Non treated rangeland producing about 100 lbs/ac this year. FY95 excellent stand Luna and Greenar, Good stand P-27, Sodar and Travois and Poor stand of Delar. Stand produced 1400+ lbs/acre this year. High antelope use of stand was noted. Stand was grazed 3 weeks in spring and 4 weeks in fall with good management. FY96 excellent stand of Trevois and good stands of Luna, P27, Sodar, and Greenar. Very poor stand of Delar. Considered 90% stand overall. Produced 1000 lbs/ac in very poor moisture year. Stand is doing great under good management. FY03 Disc-Seed treatment – near fence good stand of natives – primarily crested wheatgrass in seeding with 5-6 percent sagebrush and 600 pounds per acre production in very dry year. Ripped-Disc-No Seed treatment – sagebrush very heavy with forage producing about 200 pounds per acre and brush producing about 200 pounds per acre in very dry year. Ripped-Disc-Seed treatment – excellent stand of primarily

Bozoisky wildrye, Nordan crested wheatgrass, P27 Siberian wheatgrass and some Trevois alfalfa. Very little intermediate wheatgrass left in stand. Production is about 1000 pounds per acre in very dry year. FY05 There is a good stand of native bluebunch wheatgrass, Sandberg bluegrass and Indian ricegrass near west fence-line producing about 750 pounds per acre. The disced and seeded stand near west fence has a good stand of crested wheatgrass with about 5 percent sagebrush invasion and producing about 1000 pounds per acre. The ripped, disced and seeded area has an excellent stand of primarily Nordan crested wheatgrass and Bozoisky Russian wildrye with 3-4 plants per square foot, excellent vigor and producing about 1300 pounds per acre this year. P27 Siberian wheatgrass, greenar intermediate wheatgrass and Trevois alfalfa are present, but in much lower amounts. **Next evaluation 2008.**

ID90025 Wagoner Rush intermediate wheatgrass field planting on rangeland. Site is gravelly loam soil with a pan at 5-6 inches, non-irrigated, 12-inch ppt, 6300 feet elevation, and 3% slopes on NE exposure. FY89 ripped rangeland. FY90 planted April 1990. FY91 excellent stand establishing with no weeds. Production is 1400 lbs/ac. FY92 stand excellent with 1200 lbs/ac production. FY93 excellent stand producing 2000+ lbs/ac. Grazing value - appears to be a highly preferred/selected species according to cooperators. FY94 excellent stand producing 800 lbs/ac in very droughty year. FY95 excellent stand producing 1800+ lbs/acre. Rush is the most productive species in all range trials. FY96 excellent stand with 5-10 plants/ft² producing 1000-lbs/ac and good vigor in very low rainfall year. FY03 good to excellent stand with 3 plants per square foot and good to excellent vigor. Producing 700 pounds per acre in very dry year – produces about 1400 pounds per acre in average to favorable years. Sagebrush invasion is about 1-5 percent of plant community. No weeds in stand. **Next evaluation 2008.**

ID90035 Wagoner Bozoisky Russian wildrye field planting on rangeland. Site is gravelly loam soil, non-irrigated, 12-inch ppt, 6200 feet elevation, and 2% slopes on NE exposure. FY90 planted April. FY91 good stand establishing. FY92 excellent stand producing 1100 lbs/ac. FY93 90% + stand and up to 4' tall, estimated production 1200-1400 lbs/ac. FY94 good stand producing about 600 lbs/ac in very droughty year and only 50% of plants produced seedheads this year. FY95 good stand producing 1200+ lbs/acre. This species is doing very well and is well adapted to site. FY96 good stand with 4-5 plants/ft² and 1200-lbs/ac production in very low summer rainfall year. FY03 good stand of P27 Siberian wheatgrass and Bozoisky Russian wildrye with 3 plants per square foot and good to excellent vigor. Stand is producing about 800 pounds per acre in a very dry year. Estimate 1400-1600 pounds per acre in an average to favorable moisture year. FY05 the Bozoisky Russian wildrye stand is maintaining very well with approximately 3 plants per square foot, excellent vigor and production about 1200 pounds per acre. Cattle seek out this species year around according to cooperators. **Next evaluation 2008.**

ID92013 Webster Regar meadow brome, Bozoisky Russian wildrye, Luna pubescent wheatgrass, Critana thickspike wheatgrass field planting on rangeland. Site is gravelly silt loam soil, non-irrigated, 14-inch ppt, 6000 feet elevation, and 4% slopes on SE exposure. FY92 site sprayed for weed control, but too dry to seed. FY93 seeding not completed. FY94 very poor moisture conditions, planting not installed. FY95 good stand of all species establishing with good spring moisture. FY96 good stand of all species with 2-4 plants/ft² and good vigor on all except Regar has fair vigor. Stand had low production and is still establishing. FY97 good stands for all species with 60% stands and good vigor - they have been slow to establish on this tough site. FY99 Bozoisky and Luna good stands, Regar and Critana fair stands. FY03 good to excellent stand of Bozoisky Russian wildrye and Regar meadow brome with 3 plants per square foot (70% Bozoisky – 30% Regar), good vigor and about 1500 pounds per acre production in a very dry year. Good to excellent stand of Bozoisky Russian wildrye and Trevois alfalfa with 3 plants per square foot (70% Bozoisky – 30% Trevois), good vigor and about 1500 pounds per acre production in a very dry year. Fair to good stand of Critana thickspike wheatgrass with 9 plants per square foot, poor vigor and about 400 pounds per acre production in a very dry year. Good to excellent stand of Luna pubescent wheatgrass with 5 plants per square foot, good vigor and about 1500 pounds per acre production in a very dry year. Bozoisky is heavily grazed (80-90 percent utilization) by cattle and elk and stands are maintaining very well. FY05 Plot 1: good stand with 2 plants per square foot - Bozoisky Russian wildrye 100% survival, Regar meadow brome failed, Trevois alfalfa 50% survival; stand producing about 1300 pounds per acre. Cattle and elk are utilizing the stand at about 60 percent utilization on Bozoisky and 30 percent utilization on alfalfa. Plot 2: excellent stand with 3 plants per square foot – Bozoisky 100 percent survival and Trevois 50 percent survival; stand is producing about 1700 pounds per acre; Cattle and elk are utilizing stand with about 85 percent utilization on Bozoisky and 30 percent utilization on alfalfa. Plot 3; fair stand of Critana thickspike wheatgrass with 9 plants per square foot and fair vigor; stand is producing about 700 pounds per acre. Cattle and elk are not utilizing this plot. Plot 4: good stand of Luna pubescent wheatgrass with good vigor and 5 plant per square foot; stand is producing about 1700 pounds per acre; Cattle and elk are not utilizing this stand. **Next evaluation 2008.**

FIELD OFFICE: RIGBY/TERRETON

ID96019a Mud Lake Willows and cottonwood demo planting Laurel, Coyote, White, Robusta poplar, Siouxland poplar, and Carolina poplar. Cuttings ordered 2/20/96. Planted May 8, 1996 using fabric mulch material and drip irrigation. FY96 Water application, started July 5th with willows receiving 7 gallons/week and poplars receiving 12 gallons/week. Flood irrigation by Park officials resulted in over-irrigation and drip system was cut back. 100% survival of all species except coyote which had 70% survival. Good vigor for all species except Carolina poplar which had fair vigor. Growth: Carolina 3.2 feet; Siouxland 5.7 feet; Robust 5.5 feet; Laurel 2.7 feet; White 3.7 feet; Coyote 4.0 feet. FY97 Irrigation: 3 gallons/tree from May through September. Survival/Vigor/Height: Carolina poplar 75%/good/10.5 feet; Siouxland poplar 100%/excellent/14 feet; Robust poplar 100%/fair/7 feet; Laurel willow 100%/excellent/7.5 feet; White willow 100%/excellent/9 feet; Coyote willow 67%/fair/ 4.5 feet. FY98 Survival/ Vigor/Height: Carolina poplar 75%/good/15 feet; Siouxland poplar 100%/excellent/ 20 feet; Robust poplar 100%/fair/12 feet; Laurel willow 100%/excellent/10.5 feet; White willow 100%/good/14 feet; Coyote willow 70%/good/6.5 feet. FY99 Carolina poplar 75% survival with good vigor and 21.2 feet height. Siouxland poplar 100% survival with excellent vigor and 26.4 feet height. Robust poplar 100% survival with poor vigor (yellow leaves) and 16.6 feet height – seedlings are vigorous with good color and suspect Aberdeen stock may have disease. Laurel willow 100% survival with good vigor and 12.4 feet height. White willow 100% survival with good vigor and 18.5 feet height. Coyote willow 70% survival with fair vigor and 6.9 feet height. FY00 Flood irrigated every two weeks with drip irrigation 6-10 gal/week. Carolina poplar 75 percent survival with excellent vigor and 320 inch height. Siouxland poplar 100 percent survival with excellent vigor and 354 inch height. Robust poplar 100 percent survival with poor vigor (disease) and 216 inch height. Laurel willow 100 percent survival with excellent vigor and 180 inch height. White willow 100 percent survival with fair vigor and 240 inch height. Coyote willow 66 percent survival with fair vigor and 90 inch height. FY01 6-year-old planting was flood irrigated every two week this year. Carolina poplar (10-15 feet spacing recommended) - 75% survival, excellent vigor, 36 feet height, 16 feet crown width, and 5.5 inch DBH. Siouxland poplar (10-15 feet spacing recommended) – 100% survival, excellent vigor, 38 feet height, 15 feet crown width, and 5 inch DBH. Robust poplar (10-15 feet spacing recommended) – 100% survival, poor vigor, 25 feet height, 9 feet crown width, and 3.5 inch DBH. Laurel willow (8-10 feet spacing recommended) – 100% survival, good vigor, 17 feet height, 12.5 feet crown width, and 2 inch DBH. White willow (10-12 feet spacing recommended) – 100% survival, fair vigor, 20 feet height, 12 feet crown width, and 2 inch DBH. Coyote willow (3-5 feet spacing recommended) – 70% survival, fair vigor, 8 feet height, and 3 feet crown width. FY02 Carolina poplar 75% survival, excellent vigor, 439 inch height, and 5.75 dbh. Siouxland poplar 100% survival, excellent vigor, 455 inch height, and 17.5 inch dbh. Robusta poplar 100% survival, fair vigor, 319 inch height, and 4 inch dbh. Laurel willow 100% survival, good vigor, 211 inch height, and 2.25 dbh. White willow 100% survival, good vigor, 235 inch height, and 2.25 inch dbh. Coyote willow 66% survival fair vigor, and 139 inch height. FY03 100 percent survival of Carolina poplar (good vigor – 40 feet height), Souixland poplar (good vigor – 44 feet height), Robust poplar (fair-good vigor – 25-25 feet height), Laurel willow (good vigor – 22 feet height – lower limbs dieing), and White willow (excellent vigor – 16 feet height – good density). 50 percent survival of Coyote willow (fair-good vigor – 21 feet height). Souixland best choice of poplars – White willow best choice of willows. **Next evaluation 2007.**

ID96019b Rigby Cottonwood demo planting - Carolina, Siouxland, Robusta. Planted April 29th using fabric mulch and drip irrigation. FY96 Water application 10-14 gallons per week. Growth Carolina 2.0 feet; Siouxland 3.2 feet; Robust 4.0 feet. FY97 100% survival for all poplars. Good vigor for Carolina and Siouxland / poor vigor for Robust. Height 8-9 feet Carolina and Siouxland / 3 feet Robust. FY98 Survival/Vigor/Height: Carolina poplar 100%/good/15 feet; Siouxland poplar 100%/ excellent/18 feet; and Robust poplar 100%/poor/5.5 feet. FY99 Carolina poplar 100% survival with fair vigor and 21 feet height. Siouxland poplar 100% survival with fair vigor and 21 feet height. Robust poplar 100% survival with very poor vigor and 7 feet height. Note – Robust poplars from Lawyers Nursery are thriving, so suspect Aberdeen cuttings may be carrying a disease. FY00 Drip irrigated (14 gal/week) – Carolina poplar 100 percent survival with fair vigor and 240 inch height; Siouxland poplar 100 percent survival with fair vigor and 252 inch height; Robust poplar 100 percent survival with poor vigor and 84 inch height. FY01 6-year-old planting is irrigated with drip irrigation system at 7 gallons per week. Carolina poplar – 100% survival, poor vigor 22 feet height, 7 feet crown width, and 2.5 inch DBH. Siouxland poplar – 100% survival, poor vigor, 24 feet height, 6 feet crown width, and 3 inch DBH. Robust poplar – 100% survival, very poor vigor, 7 feet height, 4 feet crown width, and 1 inch DBH. Drought stress is evident and drip irrigation system is probably not fully functioning with plugged emitters, need for additional emitters, and need for longer watering sets. FY02 Carolina poplar 100% survival, very poor vigor, 300 inch height, and 2.5 inch dbh. Siouxland polar 100% survival, fair vigor, 330 inch height, and 2.75 dbh. Robusta poplar 100% survival, very poor vigor, 92 inch height, and 1 inch dbh. Irrigation system problems were repaired and irrigation sets have been extended - expect improvement next year. FY03 100 percent survival of Carolina poplar (fair to good

vigor – 10 feet height – some winter die back), Souixland poplar (good vigor – 28 feet height) and Robusta poplar (very poor vigor – 8 feet height). Best choice Souixland poplar. **Next evaluation 2007.**

ID98013 Jefferson County Landfill Field planting 1) Ephraim crested wheatgrass, Sodar streambank wheatgrass, and Bannock thickspike wheatgrass; 2) Covar sheep fescue, Schwendimar thickspike wheatgrass, and Secar Snake River wheatgrass. Seed ordered Feb 9, 1998. Site is silty clay loam soil, 0-1 % slope, east aspect, 4785 feet elevation, 10-12 inch ppt, non-irrigated, T6N R33E SE1/4 Section 14. FY98 initial evaluation showed very poor to no establishment of Covar, Schwendimar, Secar, Sodar, and poor to very poor establishment of Ephraim and Bannock. The clay soil portions of the seeding crusted and the sandy soil portion of the seeding may have been too dry. Site should be evaluated one more season before a decision to reseed is made. FY99 Covar – fair stand with poor vigor and .2 plants per square foot. Schwendimar – very poor stand with poor vigor and .1 plants per square foot. Secar – very poor stand with poor vigor and .1 plant per square foot. Bannock fair stand with poor vigor and 1 plant per square foot. Sodar – poor stand with poor vigor and .1 plants per square foot. Ephraim – fair stand with fair vigor and 1 plant per square foot. FY00 Planting Mix 1 – fair stand of Ephraim/Sodar/Bannock is establishing with fair vigor and stand is limiting weed growth. Planting Mix 2 – poor stand of Covar/Swendimar/Secar is establishing with fair vigor. Secar and Schwendimar failed in planting for the most part, but Covar is establishing slowly. Stand is dominated by kochia weed. Planting 3 – Bannock has good stand with fair vigor. Windbreak planting (drip irrigated) is irrigated once per week for 12-16 hours, is doing very well, and trees are uniform – Russian Olive 5-8 feet height with 5 feet crown width; Rocky Mountain Juniper 3-5 feet height with 3 feet crown width; Siberian Peashrub 4-7 feet height with 4 feet crown width. FY01 the Ephraim-Bannock-Sodar mix and Bannock only plantings are increasing and spreading. Covar in the Covar-Swendimar-Secar mix is also increasing. Grass densities of 2+ plants per foot squared occur on more favorable sandy soils. The hard packed clayey areas have few grass seedlings established. The windbreak planting is doing very well with 100% survival and very good maintenance for water (drip irrigation system) and weed control. Russian olive is averaging 9 feet tall and 7 feet crowns on sandier soils and 5-6 feet tall with 5 feet crowns on clayey hard packed soils. Junipers and Siberian peashrub are not affected as much by varied soil conditions with Junipers averaging 5 feet tall with 4 feet crowns on sandy soils and 4.5 feet tall with 4 feet crowns on clayey soils. The Siberian peashrub is averaging 6 feet tall with 5 feet crowns on sandy soils and 5.5 feet tall with 5 feet crowns on clayey soils. FY02 grass planting are doing very well and spreading with over 3 plants per square foot. FY03 planting is doing well. **Next evaluation 2006.**

ID98014 Calvin Moser Rush intermediate wheatgrass pasture trial. Seed ordered 2/9/98. Site is sandy loam soil, 0-2 % slope, west aspect, 4795 feet elevation, 10-12 inch ppt, irrigated, T4N R38E SE1/4 Section 29. FY98 two acres of Rush were seeded at the end of March with oats as a cover crop (15 lbs/acre oats). The oats were harvested in mid-September and the Rush is responding with average of one foot tall and 2 plants/ft² at the end of October. FY99 Rush - excellent stand with excellent vigor, 9000 pounds per acre production, 4 to 6 feet height, and 3+ plants per square foot. Regar – not planted. FY00 good stand with fair vigor and 5400 pounds production. Production lower due to heat and severe drought conditions. FY01 good stand with 3 plants per square feet and good vigor. Stand produced about 4000 pounds per acre this year with two flood irrigation applications. Stand probably would have produced more if cooperater had fertilized planting. FY02 good stand with good vigor - planting produced about 2 tons per acre. **Next evaluation 2006.**

FIELD OFFICE: SALMON/CHALLIS

ID80100 IDL Bradbury Flat Multiple Adaptation Evaluation. Planted March 25, 1980. Evaluations 8/7/84, 8/6/86, 7/12/89, 7/7/92, 11/14/95, and 9/99. FY03 evaluated May 21, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft ²	Vigor	Comments
B1574 crested wheatgrass	70%	1.0	good-exc.	
P27 Siberian wheatgrass	65%	0.5	good	
Sodar streambank wheatgrass	65%	1.5	good	
AB447 crested wheatgrass	60%	0.5	good	
Secar Snake River wheatgrass	60%	0.25	fair-good	high residue problems
Hatch winterfat	50%	0.5	good-exc.	
AB764 winterfat	50%	0.5	good-exc.	
AB922 fourwing saltbush	1%	< 0.1	fair-good	
AB942 fourwing saltbush	1%	< 0.1	fair-good	

Nezpar Indian ricegrass, Luna pubescent wheatgrass, Goldar bluebunch wheatgrass, Magnar basin wildrye, Topar pubescent wheatgrass, Appar blue flax, NM1143 Firecracker penstemon, Bandera R.M. penstemon, Cedar Palmer penstemon, NM1123 Venus penstemon, AB555 aster, R885a black-eyed susan, Delar small burnet, Immigrant forage kochia, Ladac alfalfa, buckwheat species, and arrowleaf balsamroot failed.

ID80101 IDL Bradbury Flat Multiple Adaptation Evaluation. Planted November 7, 1981. Evaluations 8/7/84, 8/6/86, 7/12/89, 7/7/92, 11/14/95, and 9/99. FY03 evaluated May 21, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft2	Vigor	Comments
B1574 crested wheatgrass	50%	0.5	good	
P27 Siberian wheatgrass	60%	0.75	excellent	
Sodar streambank wheatgrass	80%	1.25	excellent	
AB447 crested wheatgrass	65%	0.5	good-exc.	
Secar Snake River wheatgrass	50%	0.25	good-exc.	High residue problems
AB764 winterfat	20%	0.15	poor	
AB585 winterfat	1%	<0.1	very poor	
AB922 fourwing saltbush	3%	0.1	very poor	
AB942 fourwing saltbush	2%	<0.1	very poor	
Immigrant forage kochia	3%	0.1	fair-good	
Bozoisky Russian wildrye	70%	0.5	excellent	
Vinall Russian wildrye	70%	0.7	excellent	

Nezpar Indian ricegrass, Luna pubescent wheatgrass, Goldar bluebunch wheatgrass, Magnar basin wildrye, Topar pubescent wheatgrass, Appar blue flax, NM1143 firecracker penstemon, Bandera R.M. penstemon, Cedar Palmer penstemon, NM1123 Venus penstemon, Delar small burnet, Lodorm green needlegrass, Blair smooth brome, and Paiute orchardgrass failed

ID82101 BLM Hole In Rock Multiple Adaptation Evaluation. Planted late October 1982. Evaluations 8/7/84, 7/28/86, 7/13/89, 7/7/92, 9/95 and 9/99. **Access to site is very difficult and future evaluations will be cancelled - maintain file for reference.**

ID83100 FS Nip & Tuck Multiple Adaptation Evaluation. Evaluations 7/6/92. 9/95 and 7/02. Site has deteriorated to point future evaluations would provide little future value. **Cancel future evaluations, but maintain file for reference.**

ID82102 BLM Centennial Multiple Adaptation Evaluation. Planted late October 1982. Evaluations 8/7/84, 7/28/86, 7/13/89, 6/26/92, 6/20/95. FY99 not evaluated. FY03 evaluated May 21, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft2	Vigor	Comments
GP52 alfalfa	10%	0.1	fair-good	
BC79 alfalfa	3%	0.05	fair	
RS1 wheatgrass cross	25%	0.5	good	
RS2 wheatgrass cross	15%	0.25	fair	
Newhy hybrid wheatgrass	75%	1.0	good	
Scarlet globemallow	1%	<0.1	fair-good	
Ephraim crested wheatgrass	85%	1.25	fair-good	
Barton western wheatgrass	5%	0.25	poor-fair	
Topar pubescent wheatgrass	1%	<0.1	very poor	
Whitmar beardless wheatgrass	25%	0.25	fair-good	
Goldar bluebunch wheatgrass	25%	0.5	fair-good	
Secar Snake River wheatgrass	50%	0.75	fair-good	
Vinall Russian wildrye	60%	0.75	good-exc.	
Bozoisky Russian wildrye	45%	0.25	excellent	
U7881 alfalfa	1%	<0.1	very poor	
Nordan crested wheatgrass	70%	0.75	good	

Lutana cicer milkvetch, Canbar Canby bluegrass, Immigrant forage kochia, Bandera R.M. penstemon, Cedar Palmer penstemon, Appar blue flax, Paiute orchardgrass, P27 Siberian wheatgrass, Nezpar Indian ricegrass, Magnar basin wildrye, and yellow sweetclover failed

ID82103 BLM Spud Alluvial Multiple Adaptation Evaluation. Planted late October 1982. Evaluations 8/7/84, 7/28/86, 7/13/89, 6/25/92, 11/14/95 and 9/99. FY03 evaluated May 20, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft2	Vigor	Comments
RS1 wheatgrass cross	85%	1.5	fair	
RS2 wheatgrass cross	85%	1.5	fair	
Fairway crested wheatgrass	85%	1.5	fair	
Immigrant forage kochia	50%	2.0	excellent	many young plants
Ephraim crested wheatgrass	75%	1.0	good	
Barton western wheatgrass	<5%	0.1	poor	
Whitmar beardless wheatgrass	70%	1.0	fair	
P27 Siberian wheatgrass	90%	1.5	good	
Goldar bluebunch wheatgrass	30%	0.3	poor	
Secar Snake River wheatgrass	80%	0.75	fair-good	
Vinall Russian wildrye	70%	1.0	good-exc.	
Bozoisky Russian wildrye	85%	0.75	excellent	

BC79 Synthetic alfalfa, GP52 Synthetic alfalfa, scarlet globemallow, Cedar Palmer penstemon, Appar blue flax, Paiute orchardgrass, Topar pubescent wheatgrass, Nezpar Indian ricegrass, Magnar basin wildrye, and yellow sweetclover failed.

ID82104 BLM Jeff's Flat Multiple Adaptation Evaluation. Planted late October 1982. Evaluations 8/7/84, 7/28/86, 7/13/89, 6/26/92. 1995 no evaluation, and 9/99. FY03 evaluated May 19, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft2	Vigor	Comments
GP52 Synthetic alfalfa	1-5%	<0.25	fair	
BC79 Synthetic alfalfa	1-5%	<0.25	fair	
Manchar smooth brome	50%	4	good	
Baylor smooth brome	50%	4	good	
Durar hard fescue	75%	3	good-exc.	
Covar sheep fescue	45%	2	good	
Nordan crested wheatgrass	25%	0.5	fair-good	
P27 Siberian wheatgrass	40%	0.75	good	
Greenar intermediate wheatgrass	65%	4	excellent	
Magnar basin wildrye	5%	0.1	fair	
Vinall Russian wildrye	3%	0.1	poor	
Bozoisky Russian wildrye	5%	0.1	fair	

RS1 wheatgrass cross, RS2 wheatgrass cross, Hycrest crested wheatgrass, Delar small burnet, Lutana cicer milkvetch, Cedar Palmer penstemon, Appar blue flax, Paiute orchardgrass, Sherman big bluegrass, yellow sweetclover failed.

ID82105 BLM Round Valley Multiple Adaptation Evaluation. Planted late October 1982. Evaluations 8/7/84, 8/6/86, 7/12/89, 6/25/92, 11/13/95 and 9/99. FY03 evaluated May 19, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft2	Vigor	Comments
RS1 wheatgrass cross	1%	<0.1	fair	
RS2 wheatgrass cross	1%	<0.1	fair	
Immigrant forage kochia	2%	<0.1	fair-good	
Scarlet globemallow	1%	<0.1	fair	
Nordan crested wheatgrass	70%	1.0	good	
P27 Siberian wheatgrass	70%	1.0	good-exc.	
Vinall Russian wildrye	30%	0.5	good	
Bozoisky Russian wildrye	75%	1.5	excellent	
Nordan crested wheatgrass	60%	1.0	fair-good	

GP52 synthetic alfalfa, BC79 synthetic alfalfa, Critana thickspike wheatgrass, Bandera R.M. penstemon, Cedar Palmer penstemon, Appar blue flax, Paiute orchardgrass, Goldar bluebunch wheatgrass, Secar Snake River wheatgrass, Barton

western wheatgrass, Topar pubescent wheatgrass, Whitmar beardless wildrye, Nezpar Indian ricegrass, Magnar basin wildrye, yellow sweetclover failed.

ID82106 BLM Gooseberry/Sheep Creek Multiple Adaptation Evaluation. Evaluations 7/7/92.

FY03 evaluated May 19, 2003 by Dan Ogle and Mark Olson - **Next evaluation FY06.**

Accession	Stand	Plants/ft2	Vigor	Comments
Nordan crested wheatgrass	5%	0.1	fair-good	
Bozoisky Russian wildrye	10%	0.2	poor-fair	
Vinall Russian wildrye	10%	0.3	fair	
Sherman big bluegrass	95%	1.5	fair-good	
Greenar intermediate wheatgrass	2%	<0.1	very poor	
P27 Siberian wheatgrass	1%	<0.1	very poor	
Ephraim crested wheatgrass	3%	<0.1	poor	
Durar hard fescue	85%	2	good	
Covar sheep fescue	80%	2	fair-good	
Manchar smooth brome	50%	0.5	fair	
Baylor smooth brome	20%	0.25	fair	
Fairway crested wheatgrass	5%	0.1	fair	

Magnar basin wildrye, Appar blue flax, Paiute orchardgrass, Cedar Palmer penstemon, Bandera R.M. penstemon, Lutana cicer milkvetch, Delar small burnet, RS2 wheatgrass cross, RS1 wheatgrass cross, BC79 synthetic alfalfa, and GP52 synthetic alfalfa failed.

FIELD OFFICE: ST. ANTHONY

None

BLACKFOOT FIELD OFFICE
PAUL RICKS PLOTS - FIELD PLANTING – ID02006 (Evaluated June 22-23, 2004)

Irrigated Plots

(Approximately 28 to 32 inches of combined precipitation and irrigation)

Common Name	Cultivar	FY02 12/9/03 Initial Est. 2 nd Year	FY04 Stand	FY04 Vigor	FY04 Spread	FY04 Weeds	FY04 6/23/04 Growth Stage	FY04 6/23/04 Lbs/Ac
Alfalfa	Forager	good	fair	good	N/A	low	harvested	---
Ladino clover	Jumbo	fair	good	good	N/A	moderate	harvested	---
Alfalfa	Rampage	good	good	excellent	N/A	low	harvested	---
Alice clover	---	good	good	good	N/A	moderate	harvested	---
Alfalfa	Rowdy	excellent	good	good	N/A	low	harvested	---
Cicer milkvetch	Lutana	poor	fair	fair	N/A	high	harvested	---
Alfalfa	Ranger	fair	good	fair	N/A	low	harvested	---
Kura clover	Endura	poor	poor	good	N/A	high	harvested	---
Birdsfoot trefoil	Bull	fair	excellent	good	N/A	moderate	harvested	---
Perennial ryegrass	Mara	good	excellent	poor	N/A	none	pre bloom	1550
Tall fescue	Fawn	good	good	fair	N/A	low	bloom	1920
Orchardgrass	Latar	good	good	fair	N/A	none	bloom	3180
Tall fescue	Johnstone	good	good	fair	N/A	none	bloom	3480
Orchardgrass	Potomic	good	good	good	N/A	none	bloom	3420
Tall fescue	Teton	good	good	good	N/A	none	bloom	4620
Orchardgrass	Baridana	excellent	excellent	good	N/A	none	bloom	2580
Tall fescue	Dovey	excellent	good	fair	N/A	none	bloom	2100
Orchardgrass	Paiute	good	good	good	N/A	none	bloom	2760
Tall fescue	Barcel	good	good	fair	N/A	none	bloom	2460
Meadow brome	Regar	good	excellent	good	low	none	bloom	2880
Tall fescue	Barcarella	good	good	good	N/A	none	bloom	3660
Meadow brome	Rebound	excellent	excellent	good	none	none	bloom	3480
Tall fescue	TF33	good	good	good	N/A	low	bloom	2940
Meadow brome	Paddock	good	excellent	good	none	none	bloom	3360
Meadow fescue	Bartura	good	good	good	N/A	low	bloom	3060
Timothy	Climax	fair	fair	good	N/A	moderate	bloom	2760
Mountain brome	Hakari	excellent	excellent	good	N/A	none	bloom	3240
Timothy	Barliza	poor	fair	good	N/A	high	bloom	2400
Switchgrass	9005438	good	good	good	N/A	moderate	vegetative	1500
Switchgrass	Blackwell	good	good	good	N/A	moderate	vegetative	2650
Switchgrass	9005439	good	fair	good	N/A	high	vegetative	3500
Sunflower	Multimedia	fair	fair	good	N/A	high	vegetative	900
Russian wildrye	Bozoisky	good	excellent	excellent	N/A	none	bloom	6200

Semi-Irrigated Plots
(Approximately 18 inches of combined precipitation and irrigation)

Common Name	Cultivar	FY02 12/9/03 Initial Est. 2 nd Year	FY04 Stand	FY04 Vigor	FY04 Spread	FY04 Weeds	FY04 6/23/04 Growth Stage	FY04 6/23/04 Lbs/Ac
Alfalfa	Forager	good	good	good	N/A	low	harvested	---
Sainfoin	Eski	fair	good	good	N/A	moderate	harvested	---
Alfalfa	Rampage	good	fair	good	N/A	low	harvested	---
Sainfoin	Remont	fair	good	good	N/A	moderate	harvested	---
Alfalfa	Rowdy	good	excellent	excellent	N/A	low	harvested	---
Small burnet	Delar	fair	poor	fair	N/A	very high	harvested	---
Alfalfa	Trevois	good	good	good	N/A	moderate	harvested	---
Blue Flax	Appar	poor	fair	good	N/A	very high	harvested	---
Alfalfa	Ladak	good	good	good	N/A	low	harvested	---
Utah sweetvetch	Timp	poor	very poor	fair	N/A	very high	harvested	---
Western Yarrow	9057902	poor	poor	fair	N/A	very high	harvested	---
Ruby V. pointvetch	9063520	poor	failed	---	---	---	---	---
Western wheatgrass	Arriba	fair	good	good	excellent	low	bloom	4020
Western wheatgrass	Rosana	fair	excellent	fair	excellent	none	bloom	2880
Orchardgrass	Paiute	fair	good	good	N/A	low	bloom	4140
Mountain brome	Bromar	excellent	excellent	good	N/A	none	bloom	4900
Pubescent wheatgrass	Luna	good	good	good	fair	none	bloom	4410
Mountain brome	Garnet	good	good	fair	N/A	low	bloom	3080
Thickspike wheatgrass	Bannock	poor	poor	fair	none	high	bloom	1680
Crested wheatgrass	Douglas	very poor	poor	good	N/A	very high	bloom	3600
Thickspike wheatgrass	Critana	poor	fair	good	fair	moderate	bloom	3540
Smooth brome	Manchar	fair	good	excellent	fair	none	bloom	3780
Thickspike wheatgrass	Schwendimar	fair	fair	fair	poor	high	bloom	3420
Green needlegrass	Lodorm	fair	fair	good	N/A	high	bloom	2220
Intermediate wheatgrass	Reliant	excellent	good	good	poor	none	bloom	5160
Hybrid wheatgrass	Newhy	good	excellent	excellent	fair	none	bloom	4740
Intermediate wheatgrass	Rush	good	excellent	good	fair	none	bloom	5040
Big bluegrass	Sherman	poor	poor	good	N/A	moderate	bloom	4900
Intermediate wheatgrass	Greenar	good	good	good	fair	none	bloom	5340
Russian wildrye	Bozoisky	good	good	good	N/A	none	bloom	5250
Intermediate wheatgrass	Tegmar	good	good	fair	fair	none	bloom	3720
Canada bluegrass	Foothills	poor	poor	good	good	very high	bloom	2880
Hybrid wheatgrass	SL	fair	poor	poor	N/A	high	bloom	2280
Tall wheatgrass	Largo	good	excellent	poor	N/A	none	s. dough	3760

**Semi-Irrigated Plots
Continued**

RS Hoffman wheatgrass	---	poor	fair	good	very poor	moderate	bloom	1740
Slender wheatgrass	San Luis	fair	good	fair	N/A	low	bloom	1800
Slender wheatgrass	Pryor	fair	good	good	N/A	low	bloom	1560
Tall wheatgrass	Alkar	fair	good	good	N/A	low	bloom	3120
Canada wildrye	Mandan	fair	fair	good	N/A	moderate	pre-bloom	950
Basin wildrye	Magnar	poor	poor	fair	N/A	very heavy	bloom	840
Idaho fescue	Joseph	poor	very poor	poor	N/A	very heavy	bloom	600
Basin wildrye	Trailhead	poor	fair	fair	N/A	very heavy	bloom	900
Russian wildrye	Mankota	fair	good	fair	N/A	low	bloom	4140
Bluebunch wheatgrass	Goldar	poor	very poor	fair	N/A	very high	bloom	---
Russian wildrye	Syn A	fair	good	good	N/A	low	bloom	3060

Dryland Plots (Irrigated Establishment Year – 10 to 12 inch rainfall zone)

Common Name	Cultivar	FY02 12/9/03 Initial Est. 2 nd Year	FY04 Stand	FY04 Vigor	FY04 Spread	FY04 Weeds	FY04 6/23/04 Growth Stage	FY04 6/23/04 Lbs/Ac
Alfalfa	Forager	fair	fair	good	N/A	high	harvested	---
Beardless wheatgrass	Whitmar	very poor	very poor	poor	N/A	very high	harvested	---
Alfalfa	Rampage	good	good	good	N/A	moderate	harvested	---
Forage Kochia	Immigrant	poor	fair	good	N/A	high	harvested	---
Alfalfa	Rowdy	good	good	good	N/A	moderate	harvested	---
Indian ricegrass	Rimrock	poor	fair	fair	N/A	high	harvested	---
Alfalfa	Trevois	fair	excellent	good	N/A	moderate	harvested	---
Indian ricegrass	Nezpar	poor	fair	fair	N/A	high	harvested	---
Alfalfa	Ladak	fair	good	fair	N/A	moderate	harvested	---
Siberian wheatgrass	P-27	fair	fair	good	N/A	moderate	bloom	2580
Snake R. wheatgrass	Secar	poor	poor	fair	N/A	high	s. dough	900
Siberian wheatgrass	Vavilov	fair	excellent	excellent	N/A	very low	bloom	4500
Western wheatgrass	Arriba	fair	good	good	excellent	moderate	bloom	2640
Western wheatgrass	Rosana	fair	good +	good	excellent	low	bloom	3750
Crested wheatgrass	Nordan	poor	fair	good	N/A	high	bloom	3500
Streambank wheatgrass	Sodar	fair	good	good	good	moderate	bloom	2240
Pubescent wheatgrass	Luna	good	excellent	good	fair	very low	s. dough	3120
Crested wheatgrass	Ephraim	poor	fair	good	none	low	bloom	2380
Thickspike wheatgrass	Bannock	fair	good	good	good	moderate	bloom	3080
Crested wheatgrass	Hycrest	good	excellent	good	N/A	none	bloom	3640
Thickspike wheatgrass	Critana	good	good	good	fair	very low	bloom	2170
Crested wheatgrass	CD-II	good	excellent	excellent	N/A	none	bloom	3290
Thickspike wheatgrass	Schwendimar	fair	fair	good	fair	moderate	bloom	1575
Basin wildrye	Magnar	poor	poor	good	N/A	high	bloom	910
Sandberg bluegrass	High Plains	very poor	very poor	fair	N/A	very high	curing	975
Basin wildrye	Trailhead	poor	poor	good	N/A	high	bloom	1330
Bottlebrush Squirreltail	9019219	poor	poor	good	N/A	very high	s. dough	1170
Russian wildrye	Mankota	good	good	good	N/A	low	bloom	2240
Bluebunch wheatgrass	Goldar	poor	very poor	good	N/A	very high	bloom	350
Russian wildrye	Bozoisky	good	good	good	N/A	moderate	bloom	2380
Winterfat	Open Range	very poor	very poor	good	N/A	very high	bloom	---
Fourwing saltbush	S.R. Plains.	fair	fair	good	N/A	very high	vegetative	---
Winterfat	N. C. D.	very poor	fair	good	N/A	very high	bloom	---

PLANT MATERIALS

2005

UTAH EVALUATION SUMMARIES

FIELD, DSI and DEMONSTRATION PLANTINGS

UTAH AREA 1 PLANT MATERIALS PLANTINGS

UT89011 Johnson - Tooele FO Secar Snake River wheatgrass and Hycrest crested wheatgrass field planting for jointed goatgrass control. FY90 seeded in March and stand is establishing. FY91 - FY93 no evaluations. FY94 fair stand of both species. Secar has better vigor and forage production. Secar does not establish as easily as Hycrest. Cattle prefer Secar. FY95 cooperators were disappointed in slow establishment and vigor of Secar in prior years. Secar plants are now well established and very vigorous. Secar is spreading outside of planted rows. During this favorable moisture year Secar remained green and continued to grow throughout the summer. Native bluebunch wheatgrass also remained green the entire growing season. FY96 good stand and vigor for both species. Secar is spreading outside of planted rows, but does not compete well with weeds (goatgrass and morning glory). Cooperators prefer Hycrest for early spring use. Secar is better species for use in later periods. FY97- FY99 no evaluations. FY00 Secar fair stand with good vigor. Hycrest good stand with good vigor. Grazing use is higher on Hycrest (45%) than Secar (10%) in spring grazing period. FY01 and FY02 no evaluation. FY03 Secar fair to good stand – Hycrest good stand. Weed infestation (bindweed) is still a problem with more bindweed in Secar stand than the Hycrest stand. Both species have good vigor. Hycrest is moving into Secar stand. Secar is spreading some from drill rows. Hycrest is spreading into interspaces between rows. Cooperators prefer Hycrest for spring grazing and uniform grazing was observed in both stands in fall. FY04 good stands of both: Secar has 1 plant per square foot, 25 inch height, good vigor, approximately 0.6 AUMs/acre (2003 – 785 lb/ac and 2004 - 875 lb/ac.). Hycrest has 1 plant per square foot, 18 inch height, good vigor, approximately 0.6 AUMs/acre (2003 – 600 lb/ac. and 2004 – 980 lb/ac.). Hycrest is spreading into Secar stand at a slow rate. Rubber rabbitbrush is invading both seedings. **FY05 planting cancelled.**

UT01005 Scott Hansen – Tremonton FO field planting. Tarweed control. P27 Siberian wheatgrass, Vavilov Siberian wheatgrass, Ephraim crested wheatgrass, Goldar bluebunch wheatgrass, Nezpar Indian ricegrass, Rimrock Indian ricegrass, Arriba western wheatgrass, Bozoisky Russian wildrye, Mankota Russian wildrye, and Richfield Selection firecracker penstemon. Seed ordered April 16, 2001. FY01 not planted in 2001 or 2002 due to drought. FY03 planted in 4 plots in late March 2003.

* **Plot 1:** Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, and Goldar bluebunch wheatgrass – broadcast planted.

* **Plot 2:** Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, and Goldar bluebunch wheatgrass – broadcast planted.

* **Plot 3:** Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, and Goldar bluebunch wheatgrass – broadcast planted.

* **Plot 4:** Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, Goldar bluebunch wheatgrass, Nezpar Indian ricegrass, Arriba western wheatgrass, P27 Siberian wheatgrass, Ephraim crested wheatgrass, Bozoisky Russian wildrye, Rincon fourwing saltbush, Mankota Russian wildrye, and Rimrock Indian ricegrass – broadcast planted.

FY03 initial evaluation during severe drought - Vavilov, P27 and Ephraim fair stands FY04 plantings generally look poor and will be evaluated earlier in year in 2005. FY05 no evaluation.

UT03005 Jon White – Logan FO field planting. Rush intermediate wheatgrass, Topar pubescent wheatgrass, and Tegmar dwarf intermediate wheatgrass were ordered April 18, 2003. Luna pubescent wheatgrass, Oahe intermediate wheatgrass and Regar meadow brome will be provided by cooperators. Purpose: Critical Area Planting - medusahead rye competition. Site Characteristics: Cache County, MLRA E47, 16 acres, Barfuss-Leatham silt loam soil complex, 35 percent slopes, northwest aspect, 5300 feet elevation, 14-17 inch precipitation, non-irrigated, SE1/4 Section 31 T10N R1E. Spring 2003 planting. Planting of 15 pounds per acre was completed on April 29, 2003 using a drill with 6 inch spacing into very good weed free seedbed. FY04 fair stands establishing for all species (Rush, Topar, Tegmar and Luna) with 40 percent survival, poor to fair vigor, approximately 20 inch heights for all except Rush with 24 inch height. FY05 no evaluation.

UT04002 Bryce Clayton – Provo FO woody riparian buffer planting. Coyote willow, 9023733 redosier dogwood, 9023739 redosier dogwood, and 9023740 redosier dogwood cuttings were ordered March 5, 2004. Site characteristics – Birdow very fine sandy loam soil, 6-15 percent slopes, 5770 feet elevation, 18 inch precipitation zone, non-irrigated, T11S R3E NE1/4 Section 13. FY04 estimated survival 20 percent coyote willow and 60 percent dogwood.

FY05 coyote willow 21 of 175 cuttings were found alive with 12-24 inches of new growth; redosier dogwood planting map did not document where accessions were planted – 22 of 60 dogwood cuttings were found alive with 2-6 inches of new growth. Weed competition is severe in planting resulting in low plant vigor.

UT04003 Charles and Karen Sigler– Provo FO riparian woody planting. Sodar streambank wheatgrass, 9067560 peachleaf willow, coyote willow, golden willow and Laurel willow cuttings were ordered March 5, 2004. Site characteristics – mixed alluvial sandy to clayey soil, 0-2 percent slopes, 4520 feet elevation, 14-16 inch precipitation zone, non-irrigated, T8S R2E NW1/4 Section 33. FY04 survival golden willow 40%, Laurel willow 10%, Coyote willow 10% and Peachleaf willow failed. Cuttings were planted too high on streambank and did not have adequate access to perennial soil moisture. Golden willow survival was better do to nearby lawn irrigation. Sodar streambank wheatgrass was dormant fall seeded and will be evaluated next year. FY05 planting failed due to improper installation (cuttings were not planted to perennial moisture zone) **Cancel**.

UT04004 Brian Shaffer – Tremonton FO riparian woody planting. 9023733, 9023739, and 9023740 redosier dogwood accessions cuttings and silver buffaloberry plants were ordered March 5, 2004. Site characteristics: Kirkham silt loam soil, 8.5 pH, soil salinity, 1-2 percent slopes, and 4300 feet elevation. Planted on April 30, 2004 into good seedbed conditions - pushed cuttings into long-term water table. FY04 high salinity levels are causing significant stress to all plants and evaluator could not tell establishment at time of evaluation – suggest earlier evaluation period for next year. FY05 no evaluation.

UT04012 Charles and Karen Sigler – Provo FO dryland pasture field planting. Hycrest crested wheatgrass, Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, and Bozoisky Russian wildrye. Seed ordered March 8th for delivery in late March to early April. Site characteristics – Vineyard fine sandy loam soil, moderately saline conditions, 0-2 percent slopes, 4520 feet elevation, 14-16 inch precipitation zone, non-irrigated, T8S R2E NW1/4 Section 33. FY04 and FY05 not planted.

UT04013 Charles and Karen Sigler – Provo FO irrigated pasture field planting. Paiute orchardgrass, Regar meadow brome and Rush intermediate wheatgrass. Seed ordered March 8th for delivery in late March to early April. Site characteristics – Vineyard fine sandy loam soil, moderately saline conditions, 0-2 percent slopes, 4520 feet elevation, 14-16 inch precipitation zone, irrigated, T8S R2E NW1/4 Section 33. FY04 and FY05 not planted.

UT05001 Brian Shaffer – Tremonton FO saline demonstration planting. Volga mammoth wildrye, Arriba western wheatgrass, Trailhead basin wildrye, Washoe basin wildrye, Bozoisky Russian wildrye, Rosana western wheatgrass, Magnar basin wildrye, P27 Siberian wheatgrass, Vavilov Siberian wheatgrass, Sodar streambank wheatgrass, Syn A Russian wildrye and 9008027 silver buffaloberry (20 plants) were ordered on February 4, 2005. FY05 no evaluation.

UT05002 John and Kyle Potter field plantings – 2 mixes. Mix 1: Anatone bluebunch wheatgrass, Nezpar Indian ricegrass, Maple Grove Lewis flax, Bandera Rocky Mountain penstemon, Magnar basin wildrye, Timp Utah sweetvetch, western yarrow and Maybell antelope bitterbrush; Mix 2: Goldar bluebunch wheatgrass, Rimrock Indian ricegrass, Appar blue flax, Bandera Rocky Mountain penstemon, Trailhead basin wildrye, Timp Utah sweetvetch, western yarrow, and Maybell antelope bitterbrush. Seed ordered February 4, 2005. FY05 not planted

UT05003 Swaner Nature Preserve riparian planting. Peachleaf willow (accessions 9067375, 9067376, 9067541, 9067546, 9067549 and 9067560), Redosier dogwood (accessions 9023733, 9023739 and 9023740) and Blanchard blue elderberry cuttings were ordered February 4, 2005. Site characteristics: East Canyon Creek, Summit County, MLRA E47, Echocreek-Kovich loam soil, 1-2 percent slope, NW aspect, 6350 feet elevation, 16 inch precipitation, non-irrigated, T1S R4E SE ¼ Section 18. FY05 peachleaf willow 9067375 85% survival, fair vigor, 12-24” height; peachleaf willow 9067376 100% survival, good vigor, 24-36” height; peachleaf willow 9067541 73% survival, fair vigor, 12-18” height; peachleaf willow 9067546 100% survival, good vigor, 24” height; peachleaf willow 9067549 88% survival, fair vigor, 24” height; peachleaf willow 9067560 85% survival, good vigor, 24-36” height. All peachleaf willows are performing well under severe reed canarygrass competition. Redosier dogwood 9023733 10% survival, very poor vigor, 3” of new growth; redosier dogwood 9023739 failed; redosier dogwood 9023740 100% survival, poor vigor, 6” of new growth; Blanchard blue elderberry failed. Elderberry stock was not in containers and plants were very difficult to handle. Recommend not sending elderberry plants without containers in the future.

UTAH AREA 2 PLANT MATERIALS PLANTINGS

UT99001 Graymont Western (Lime plant) – Fillmore FO Vavilov Siberian wheatgrass critical area planting. 20 pounds of Vavilov seed was ordered November 19, 1998. The Vavilov will be planted in a mix, which will include Nordan crested wheatgrass, Sodar streambank wheatgrass, Critana thickspike wheatgrass, Nezpar Indian ricegrass, and forbs and shrubs. Site characteristics are a crushed gravelly – silty material lain over rock – cobble material; this material hardens to a near cemented pavement when packed and as moisture occurs; rainfall is about 8-10 inches; site is very windy. Site modifications recommended included 10 ton per acre composted straw, fertilizer based on soil tests, ripping prior to seeding resulting in a rough - rocky soil surface with about 50% of surface being exposed rock to provide micro-sites where seedlings would be protected from constant winds were recommended. FY99 no evaluation. FY00 Three site preparation treatments were installed in the fall/spring of 1998/1999 including 1. Planting directly into shallowly scarified site where soil surface was shattered and smooth; 2. Planting into moderately ripped site where soil surface was rough with approximately 25 percent of surface exposed angular rock; and 3. Planting into severely ripped site where soil surface was very rough with approximately 50 percent of surface exposed large angular rock. Company Manager indicated the past two years were dry winters with below normal rainfall season long. The mid growing season evaluation, on June 6, 2000, indicated Sodar streambank wheatgrass, Bannock or Critana thickspike wheatgrass, Vavilov Siberian wheatgrass, Nezpar Indian ricegrass, penstemon species, scarlet globemallow, winterfat, fourwing saltbush, and Wyoming big sagebrush were all planted and present to some degree on each treatment. Treatment 1 had a 5-10 percent stand present, plants were very small (stunted), and not reproducing (no seedheads present). Treatment 2 had a 30-40 percent stand present, plants were average sized, and a few were reproducing. Treatment 3 had a 70-90 percent stand, plants were tall for site (high vigor), and a high percentage of plants were reproducing. FY01 Graymont has produced a publication "Assessment of Revegetated Test Benches and Reference Transects at Cricket Mountain Plant" that describes the success of this trial. **Next evaluation planned for 2005.**

UT00003 Cooperator Unknown - Beaver FO willow field planting. 50 cuttings each of 9067435 Geyer willow, 9067437 Booth willow, 5730101 Drummond willow, 9067466 Yellow willow, 9067452 Yellow willow, 9067549 Peachleaf willow. Cuttings ordered March 1, 2000 with shipment April 10, 2000. FY00 very poor establishment year due to extreme drought. FY01 grazing has been removed, but deer use is heavy in some locations. Survival-Height-Vigor: 435 Geyer 40% survival, 15 inch height and fair vigor; 437 Booth 46% survival 12 inch height and fair vigor; 101 Drummond 40% survival, 15 inch height and fair vigor; 466 Yellow 20% survival due to poor planting location, 24 inch height and fair vigor; 452 Yellow 80% survival, 26 inch height and excellent vigor; 549 Peachleaf 62% survival, 24 inch height and good vigor. FY02 - FY05 no evaluations.

UT02002 Rasmussen - Fillmore FO demonstration planting of Snake River Plains fourwing saltbush. Seed purchased through Utah Crop Improvement Association. Seed shipped from Aberdeen PMC April 12, 2002. FY03-FY04 due to poor climatic conditions, seed has not been planted. FY05 no evaluation.

UT03001 Merlin Webb – Cedar City FO. Seed shipped February 2003. Rimrock Indian ricegrass, Critana thickspike wheatgrass, Trailhead basin wildrye, Volga mammoth wildrye, Nezpar Indian ricegrass, Bannock thickspike wheatgrass, Magnar basin wildrye, Vavilov Siberian wheatgrass, P-27 Siberian wheatgrass, Snake River Plains fourwing saltbush broadcast seeded into good seedbed on February 22, 2003. Rained soon after planting. FY03 no evaluation. FY04 stand/survival – Planting # 1 P27 fair/100%, Bannock fair/100%, Nezpar fair/100%, Mesa alfalfa fair/100% and Volga failed. Planting # 2 Vavilov fair/100%, Nezpar fair/100%, Bannock fair/100%, Magnar poor/25%, Volga failed, and Snake River Plains failed. FY05 Planting # 1 P27 fair stand with ½ plant/ft² – Bannock fair stand with ¼ plant/ft² – Nezpar poor stand with 1/10 plant/ft² – alfalfa poor stand with 1/10 plant/ft² – Volga failed. Mix has about 1 plant/ft². Planting # 2 Vavilov good stand with 4 plants/ft² - Nezpar poor stand with 1/10 plant/ft² – Bannock fair stand with ½ plant/ft² – Magnar and Volga failed – Snake River Plains fourwing saltbush fair stand with ¼ plant/ft². Mix has 4.9 plants/ft². Vavilov had the best survival of all plants in this trial and thus was able to respond to better moisture conditions that occurred this year.

UT03004 Bob Bliss - Fillmore FO field planting - Durar hard fescue and western wheatgrass. Seed ordered March 20, 2003. FY03 no evaluation. FY04 interseeding not planted. Poplar trees are struggling due to irrigation using dairy effluent. FY05 no evaluation.

UT04001 Blake Walbeck project – Richfield FO demonstration plots. P27 Siberian wheatgrass, Vavilov Siberian wheatgrass, Douglas crested wheatgrass and Ephraim crested wheatgrass. Seed packets ordered November 2003. Site characteristics: _____ . FY04 - FY05 no evaluations.

UT04005 Arlan Mayer – Beaver FO field planting. P27 Siberian wheatgrass, Hycrest crested wheatgrass, Douglas crested wheatgrass, and Bozoiisky Russian wildrye. Seed ordered March 8, 2004. Site characteristics: BEK silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T28S R10W NE ¼ Section 31 (NE corner of NE pivot). FY04 – FY05 no evaluation.

UT04006 Joey Leko – Beaver FO field planting. P27 Siberian wheatgrass, Hycrest crested wheatgrass, Roadcrest crested wheatgrass, Syn A Russian wildrye. Seed ordered March 8, 2004. Site characteristics: REK silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T28S R11W NE ¼ Section 25 (field 5). FY04 – FY05 no evaluation.

UT04007 Mark Whitney – Beaver FO field planting. Vavilov Siberian wheatgrass, Ephraim crested wheatgrass, Douglas crested wheatgrass, and Bozoiisky Russian wildrye. Seed ordered March 8, 2004. Site characteristics: REA silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T28S R10W Section 8. FY04 – FY05 no evaluation.

UT04008 Kent Marshall – Beaver FO field planting. Vavilov Siberian wheatgrass, Ephraim crested wheatgrass, Roadcrest crested wheatgrass, Syn A Russian wildrye. Seed ordered March 8, 2004. Site characteristics: REA silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T29S R10W SW ¼ Section 17. FY04 – FY05 no evaluation.

UT04009 Scott Wiseman – Beaver FO field planting. Nezpar Indian ricegrass and Northern Cold Desert winterfat. Seed ordered March 8, 2004. Site characteristics: REA silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T28S R10W SE ¼ Section 29. FY04 – FY05 no evaluation.

UT04010 Arlan Mayer – Beaver FO field planting. Richfield Selection firecracker penstemon and Bandera Rocky Mountain penstemon. Seed ordered March 8, 2004. Site characteristics: REA silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T28S R10W NW ¼ Section 32. FY04 – FY05 no evaluation.

UT04011 Kent Marshall – Beaver FO field planting. Richfield Selection firecracker penstemon and Bandera Rocky Mountain penstemon. Seed ordered March 8, 2004. Site characteristics: REA silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T30S R10W Section 12. FY04 – FY05 no evaluation.

UT04014 Kent Marshall – Beaver FO field planting. Magnar basin wildrye, Trailhead basin wildrye, Nezpar Indian ricegrass, Open Range winterfat, Northern Cold Desert winterfat, and Snake River Plain fourwing saltbush. Site characteristics: REA silty clay loam soil, 0-2 percent slope, 5000 feet elevation, 10 inch precipitation, non-irrigated, T28S R10W SE ¼ Section 29. FY04 – FY05 no evaluation.

UT04015 Soren Nielsen project – Manti FO. Riparian woody field planting – 9067538 black cottonwood. Cuttings ordered March 5, 2004. FY04 – FY05 no evaluation.

UT05006 Lars Rasmussen – Fillmore FO seed increase. Maple Grove Lewis flax seed was purchased and shipped March 9, 2005. FY05 no evaluation.

UTAH AREA 3 PLANT MATERIALS PLANTINGS

UT86018 Smith – Roosevelt FO Hycrest crested wheatgrass, Ephraim crested wheatgrass, Appar blue flax, Arriba western wheatgrass, T28606 needle and thread, Magnar basin wildrye, and Nordan crested wheatgrass field planting. FY90 Hycrest, Ephraim, Appar, Magnar, Nordan all 80-100 % survival. Arriba and T28606 are less than 40% survival. FY91 and FY92 no evaluations. FY93 Hycrest, Ephraim, Appar, Nordan, and T28606 doing best. Magnar and Arriba poorer stands. Sagebrush invading site, heavy use by elk, and Appar has many new seedlings. FY94 Hycrest, Appar, Arriba, and Nordan all have good stands. Ephraim, T28606 and Magnar have fair stands. All species are adapted to site and wildlife use is heavy. FY95 no change except vigor has improved due to excellent moisture year. FY96 Hycrest, Ephraim, Appar, T28606 and Nordan have good vigor. Fair vigor for Arriba and Magnar. FY97 Hycrest, Ephraim, Appar, Arriba and Nordan good stands. T28606 and Magnar fair stands. Many sagebrush seedlings within plots, particularly heavy in Arriba western wheatgrass and T28606 needle and thread. FY98 Hycrest, Ephraim, Appar, Arriba, Magnar, and Nordan all have excellent vigor. T28606 has good vigor. FY99 very heavy wildlife use in winter and spring. Poor regrowth due to dry spring/ summer and fair regrowth following late summer rains. Planting is being invaded by sagebrush. FY00 Heavy spring use by wildlife and a very dry spring and summer. Rains began in early September and plants began to green-up. Evaluation indicated good vigor for Ephraim, Appar, Arriba, T28606, Nordan and fair vigor for Hycrest and Magnar. FY01 fair to poor vigor for all species following two years of drought and heavy wildlife use. Sagebrush invasion is effective plant growth and vigor. FY03 good stands of Hycrest, Ephraim, Arriba and Nordan. Fair stands of T28606 needle and thread and Magnar. Appar failed. Area is experiencing heavy wildlife use. FY04 Stands are experiencing heavy wildlife use – no livestock use for the last two years. Good vigor and stands of Hycrest, Ephraim and Nordan. Fair vigor and stands of Arriba, T28606 and Magnar. Poor stand and vigor of Appar – most plants are along the edge of planting. FY05 no evaluation.

UT88009 Skyline Mine - Price FO Multiple Grass on critical area planting – slopes. FY90 and FY92 planting summaries available. FY93 portion of seeding destroyed for new beltline. Rest of seeding doing very well. FY95 Appar flax is spreading, both intermediate and pubescent wheatgrass have spread, thickspike wheatgrass is doing very well, Sherman big bluegrass is doing great, mountain rye is not producing well, Paiute is doing well in plots but has not spread, Aster is improving, Covar sheep fescue is not performing well. **FY96** seeding about the same as last year, erosion from slope covered some of the seeding and it will be interesting to see how the plants can withstand this sedimentation. Rush, Sherman and Mountain ryegrass are doing the best overall.

FY99 10 Year Evaluation. Mixture 1: Luna pubescent wheatgrass is very good on steep slopes and fair on gentle slopes. Hycrest crested wheatgrass failed. Manchar smooth brome is not present on steep slopes, but doing very well on gentle slopes. Appar blue flax is fair on steep slopes and excellent on gentle slopes. Kalo birdsfoot trefoil failed on steep slopes and fair on gentle slopes. Delar small burnet and roses are present on both steep and gentle slopes.

Mixture 2: Topar pubescent wheatgrass is very good on steep slopes and good on gentle slopes. Ephraim crested wheatgrass and Sodar streambank wheatgrass failed. Delar small burnet is fair on steep slopes and very good on gentle slopes. Roses are present on both slopes. **Mixture 3:** Rush intermediate wheatgrass is good on both steep and gentle slopes. P27 Siberian wheatgrass failed. Critana thickspike wheatgrass is fair on both slopes. Cedar Palmer penstemon is poor on steep slopes and fair on gentle slopes. Summit Louisiana sagewort and roses are present on both slopes.

Mixture 4: Arriba western wheatgrass is fair to good on both slopes. Mountain rye is very good on gentle slopes.

Sherman big bluegrass is good steep slopes and excellent on gentle slopes. Summit Louisiana sagewort is fair on both slopes. Roses are present on both slopes. **Mixture 5:** Rosana western wheatgrass is fair on both slopes. Paiute

orchardgrass is very good on both slopes. Covar sheep fescue is good on steep slopes and fair on gentle slopes. Bandera Rocky Mountain penstemon is fair on both slopes. Roses are present on both slopes. **Mixture 6:** Tegmar intermediate wheatgrass is fair on both slopes. Durar hard fescue is fair on steep slopes and high fair on gentle slopes. Bannock thickspike wheatgrass is high fair to good on both slopes. Lutana cicer milkvetch is good on both slopes. Roses are present on both slopes. **Mixture 7:** San Luis slender wheatgrass is good on both slopes. Newhy hybrid wheatgrass failed. Cascade birdsfoot trefoil is poor on steep slopes and good on gentle slope. Blueleaf aster is good to very good on both slopes. Western yarrow is good on both slopes. Roses are present on both slopes.

FY02 very difficult to evaluate following 2 years of severe drought. All grasses have very little production.

FY03 15 Year Evaluation: The last several years of drought has damaged these stands. Rain in August 2003 has helped plant survival and vigor. **Mixture 1 – steep slopes:** Luna fair, Manchar failed, Appar failed, Delar failed, Roses

are present; **gentle slopes:** Paiute has moved in, Manchar fair, Appar fair, Lutana good. **Mixture 2 – steep slopes:** Topar good, Delar fair, Appar and Roses are present; **gentle slopes:** Delar good, Topar good, Appar good. **Mixture 3 – steep slopes:** Rush good, Critana failed, Cedar failed, Summit good, Roses are present; **gentle slopes:** Rush good, Critana fair, Cedar failed, Lutana good. **Mixture 4 – steep slopes:** Arriba good, Mountain rye fair, Sherman failed, Summit fair, Roses and Goldenrod present; **gentle slopes:** Arriba good, Mountain rye good, Sherman fair, Lutana good, Summit fair, Roses and Goldenrod present. **Mixture 5 – steep slopes:** Rosana good, Paiute fair, Covar fair, Bandera failed, Current and Roses present; **gentle slopes:** Rosana fair, Paiute good, Covar good, Bandera fair, Appar fair, Lutana good. **Mixture 6 – steep slopes:** Tegmar good, Durar failed, Bannock failed, Lutana good, Roses and Current present; **gentle slopes:** Tegmar good, Durar poor, Bannock fair, Lutana good, Paiute fair. **Mixture 7 – steep slopes:** San Luis fair, Cascade failed, Blueleaf aster good, Western yarrow fair, Roses present; **gentle slopes:** San Luis good, Blueleaf aster good, Western Yarrow fair, Lutana fair. **Next evaluation 2005.**

UT90017 Snowball - Price FO Multiple species irrigated demo plots for saline soils. FY92 and FY94 detailed reports available. Irrigation has pushed salinity down below root zone to a large degree. FY95 and FY96 Cicer milkvetch best producer (5279 lbs/ac) followed by San Luis (2587), Revenue (2326), Alsike (1986), Newhy (1673), Hoffman (1646), Festorina/Forager/Tall wheatgrass (1460), Shoshone/Fawn/Altai (1350), Magnar (1125), Garrison (1050), and Kura/Matua/ Trefoil 850) FY99 No yield data gathered. Excellent stands include Shoshone beardless wildrye, Fawn tall fescue, Newhy hybrid wheatgrass, Festorina tall fescue, Forager tall fescue, RS Hoffman, Kura clover, and SP90 Kura clover. Good stands include: Prairieland altai wildrye, Revenue slender wheatgrass, San Luis slender wheatgrass, Jose tall wheatgrass, Garrison creeping foxtail, Johnstone tall fescue X perennial rye, Lutana/Monarch cicer milkvetch, Regar meadow brome, and orchardgrass. Poor stands include Magnar basin wildrye, some plots of cicer milkvetch, Cascade birdsfoot trefoil, and Dakota/Forestburg switchgrass. Mowing significantly reduces vigor of basin wildrye and switchgrass. Festorina and Forager are preferred over Fawn by sheep. Alsike clover and Matua brome failed/died. The fescue x perennial ryegrass appears to show some signs of winterkill. FY03 No water was applied to plots in 2003. Prairieland Altai wildrye good stand with fair vigor and poor production. Magnar basin wildrye very poor stand with fair vigor and very poor production. Shoshone beardless wildrye fair stand with fair vigor and poor production. Revenue slender wheatgrass failed (short-lived species). San Luis slender wheatgrass failed (short-lived species). Jose tall wheatgrass fair stand with poor vigor and poor production. Monarch cicer milkvetch fair to very poor stand with fair vigor and very poor production. Garrison creeping foxtail fair stand with poor vigor and poor production. Fawn tall fescue good stand with poor vigor and poor production. Newhy hybrid wheatgrass good stand with fair vigor and fair production. Cascade Birdsfoot trefoil failed. Festorina tall fescue good stand with poor vigor and poor production. Forager tall fescue good stand with poor vigor and poor production. Tall fescue – perennial rye cross fair stand with poor vigor and poor production. Orchardgrass poor stand with very poor vigor and very poor production. RS Hoffman grass good stand with fair to good vigor and fair production. Kura clover poor stand with very poor vigor and very poor production. 18SP90 Kura clover poor stand with very poor vigor and very poor production. The few remaining Magnar basin wildrye plant and Altai wildrye plants produced seedheads. RS Hoffman appears to be doing better under drought conditions than Newhy. FY04 and FY05 no evaluation.

UT93005 Smith – Roosevelt FO Trailhead basin wildrye, Magnar basin wildrye field planting for erosion control. FY94 planted October 1993 and initial evaluation indicated Magnar with best seedling establishment and Trailhead doing best in run in areas. FY95 both Trailhead and Magnar rated good stands. Magnar is best adapted. FY96 good stands for both, good vigor for both, good drought tolerance for both, all seedheads of both species eaten by wildlife. FY97 excellent stands and plant vigor for both cultivars. Plant height about 50 inches for Magnar and 38 inches for Trailhead. Magnar has excellent seed production and Trailhead has fair seed production. FY98 excellent vigor and long seedheads for both cultivars. Magnar is a more robust and taller plant than Trailhead. FY99 no evaluation. Excellent stands of each with good vigor and approximately 50 inch height. Basal areas are getting larger, but no seed production this year due to spring/summer drought. FY00 due to very dry spring and summer with rains coming in early September resulting in green-up, both Trailhead and Magnar had fair vigor and only 36-40 inches of growth. FY01 both Magnar and Trailhead have poor vigor after very dry spring and summer (7.7 inches of precipitation this year). Each plant only has 2-3 reproductive stems, which probably did not produce seed this year. FY03 – Fair vigor for both Magnar (45 inch height – 0.5 AUM/ac) and Trailhead (38 inch height – 0.3 AUM/ac). Elk are using the fall green-up. FY04 due to lack of summer thunder storms there is only a fair stand with fair vigor for both Magnar and Trailhead. FY05 no evaluation.

UT98005 Prevedel – Roosevelt FO Rush intermediate wheatgrass sprinkler irrigated field planting. Materials ordered 3/30/98. FY98 planted August 16, 1998 into excellent seedbed. FY99 excellent stand with excellent vigor and 20 plants

per square foot. In early August plants went from very palatable to coarse. Fall rains softened it up making it more palatable to elk now utilizing field. FY00 stand produced approximately 3000 pound/acre under sprinkler irrigation. Elk graze stand until it gets rank, but will graze regrowth. Cooperator states Rush is an excellent grass for intensive grazing systems. FY01 excellent stand and vigor with 7 AUMs per acre. Cooperator is very satisfied with Rush intermediate wheatgrass performance. FY03 Rush is doing very well in the excessive heat of this summer and is becoming more dominant in the pasture mix of Rush, Regar meadow brome and Paiute orchardgrass. Still producing about 7 AUM/ac. FY04 good stand and vigor – Rush is out performing Regar meadow brome pastures. Both Rush and Regar stands are being invaded by quackgrass. FY05 no evaluation.

UT99007 Curtis Rozmon - Price FO field planting on irrigated pasture. Trial includes 905438 switchgrass, 905439 switchgrass, Cave-In-Rock switchgrass, Blackwell switchgrass, Kanlow switchgrass, Latar orchardgrass, perennial ryegrass, and white clover. Site is MLRA D35, loamy fine sand soil, 0-1 percent slope, southwest exposure, 4000 feet elevation, 6-8 inch precipitation, irrigated, T23S R16E SE1/4 Section 25. Seed ordered March 22, 1999. FY99 not planted this year. FY00-FY04 didn't plant due to extreme drought. FY05 no evaluation.

UT00007 George Carter – Monticello FO. Tegmar intermediate wheatgrass - Topar pubescent wheatgrass – Paiute orchardgrass critical area planting. Seed ordered July 5, 2000. Site characteristics: Herm-Lles clay loam to stony loam, 8 percent slopes, west aspect, 8500 feet elevation, 14-16 inch rainfall zone, irrigated for establishment, T26S R23E Section 24. Planting planned for October 2000. FY01 no evaluation. FY02 planting was irrigated for establishment. Good stand of all three species establishing with good vigor. FY03-FY04 excellent stand of all three species with excellent vigor and production. Stand continues to be irrigated. FY05 no evaluation.

UT02001 Pete Pickup – Roosevelt FO. Field planting. Rush intermediate wheatgrass (3 acres) - Topar pubescent wheatgrass (5 acres) – Paiute orchardgrass (2 acres). Site information: MLRA D34, Turzo silt loam soil, 8 inch precipitation zone, irrigated, 4800 feet elevation, 2% slope, south exposure, T7S R2E Section 16. Seed ordered April 19, 2002. FY03 fair stand of Rush producing about 1 AUM/ac with fair vigor. Fair stand of Topar producing about .75 AUM/ac with fair vigor. Weeds are a problem in both stands of grass. FY04 good stands and vigor for both species. The plantings were hayed this year – Rush = 1.25 tons/acre and Topar = 1.0 ton/acre. Regrowth was grazed – estimate 0.25 AUMs/acre. FY05 no evaluation.

UT03002 David James – Monticello FO demonstration planting. Northern Cold Desert winterfat seed ordered February 18, 2003. Site information: MLRA D35; Limeridge shallow sandy loam soil series; 4 percent slope; south aspect; 4800 feet elevation; 6-8 inch precipitation zone; non-irrigated; T40S R20E Sections 6 and 36. FY05 no evaluation.

UT03003 Mike Wilcox - Monticello FO field planting. UT98004 planted fall (seeding germinated) 1998, but failed due to drought with little to no winter-spring precipitation. This is a dormant fall replanting of Rush intermediate wheatgrass. Luna pubescent wheatgrass is the standard of comparison. Barnam loam soil, 3 percent slopes, south aspect, 6000 feet elevation, 14 inch precipitation, non-irrigated, T31N R26E Section 8. FY00 very little germination this spring (<10%) due to very dry spring. FY01 no evaluation. UT00002 FY02 planting failed due to drought. Seed (Topar pubescent wheatgrass) for UT03003 ordered 2-21-03. FY03-FY04 not planted due to drought. FY05 no evaluation.

UT05004 Mike Wilcox – Monticello FO field planting. This is a dormant spring or fall planting of Topar pubescent wheatgrass and Rush intermediate wheatgrass. Barnam loam soil, 3 percent slopes, south aspect, 6000 feet elevation, 14 inch precipitation, non-irrigated, T31N R26E Section 8. Seed ordered March 3, 2005. FY05 no evaluation.

UT05005 Bruce Adams – Monticello FO field planting. This is a dormant spring or fall planting of Topar pubescent wheatgrass, Appar blue flax, Maple Grove Lewis flax, Timp Utah sweetvetch, Richfield firecracker penstemon and western yarrow for habitat improvement for Gunnison sage grouse. Site characteristics: silty clay loam soil, 3-6 percent slopes, south aspect, 6300 feet elevation, 12-14 inch rainfall zone, non-irrigated, T32S R25E SW ¼ Section 33. Seed ordered March 3, 2005. FY05 no evaluation.

