



Aberdeen Plant Materials Center

United States
Department of
Agriculture

2002 Annual Technical Report

**Natural Resources
Conservation Service**

Aberdeen, Idaho

March 2003



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INTRODUCTION

The Plant Materials Center at Aberdeen is part of a national plant materials program operated by the United States Department of Agriculture, Natural Resources Conservation Service. The purpose of the Plant Materials Center is to develop and communicate new technology for the use and management of plants. We also assemble, evaluate and release plant materials for conservation use and develop new techniques for establishment of conservation plants. The Aberdeen Plant Materials Center was established in 1939 and has been the primary breeder and releasing organization for 15 cultivars and a cooperator in the release of 12 additional cultivars. The Aberdeen Plant Materials Center serves portions of Nevada, Utah, California, Oregon and Idaho. This document is a compilation of progress reports for activities by the Aberdeen Plant Materials Center during FY 2002.

The following documents and presentations were developed during FY 2002 and may be obtained by contacting the Aberdeen Plant Materials Center:

DOCUMENTS

Stange, C., D. Ogle, and L. St. John 2002. Tree Planting Care and Management. Idaho NRCS State Office, Boise, ID. April, 16, 2002. 30p.

St. John, L., J.C. Hoag, and D. Ogle 2002. Aberdeen Plant Materials Center 2001 Progress Summary Report. Aberdeen Plant Materials Center, Aberdeen, ID. 19p.

St. John, L., J.C. Hoag, and D. Ogle 2002. Year 2001 Aberdeen Plant Materials Center Progress Report of Activities. Aberdeen Plant Materials Center, Aberdeen, ID. March 4, 2002. 4p.

St. John, L., J.C. Hoag and D. Ogle 2002. Aberdeen Plant Materials Center - 2001 Annual Technical Report. Aberdeen Plant Materials Center, Aberdeen, ID. March, 2002. 459p.

St. John, L. 2001. 1998 Hybrid Poplar Initial Evaluation - 2001 Progress Report. Aberdeen PMC, Aberdeen, ID. 2p.

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St. John, L. 2002. Fact Sheet - Northern Cold Desert Winterfat. Aberdeen Plant Materials Center, Aberdeen, ID. March 1, 2002. 2p.

St. John, L. 2002. Fact Sheet - Richfield Selection Firecracker Penstemon. Aberdeen Plant Materials Center, Aberdeen, ID. 2p.

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St. John, L. 2002. Fact Sheet - Snake River Plains Fourwing Saltbush. Aberdeen Plant Materials Center, Aberdeen, ID. 2/02 /02. 2p.

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St. John, L. 2001. Mountain Home Air Force Base Windbreak Installation and Demonstration - 2001 Progress. Aberdeen Plant Materials Center, Aberdeen, ID. 1p.

St. John, L. 2002. Native Shrubs Released by Aberdeen Plant Materials Center. Aberdeen Plant Materials Center (Submitted to Aberdeen Times, Idaho Post Register, Idaho State Journal and Capital Press), Aberdeen, ID. May 16, 2002. 1p.

St. John, L. 2002. Northern Cold Desert Winterfat. "Current Developments" Idaho, Oregon, Nevada, Utah, Aberdeen, ID. 1p.

St. John, L. 2001. Sandberg Bluegrass Release in Cooperation with Shrub Sciences Laboratory - 2001 Progress Report. Aberdeen Plant Materials Center, Aberdeen, ID. 2p.

St. John, L. 2002. Snake River Plains Fourwing Saltbush. "Current Developments" Idaho, Oregon, Nevada, Utah, Aberdeen, ID. 1p.

Scianna, J.D., L. Holzworth, D. Ogle, J. Cornwell, and L. St. John 2002. Restoration and Diversification of Plant Communities with Woody Plants. Idaho NRCS State Office, Boise, ID. April 16, 2002. 7p.

Ogle, D. and L. St. John 2002. Aberdeen Plant Materials Center - Economic Impact. Aberdeen Plant Materials Center, Aberdeen, ID. July 1, 2002. 1p.

Offenbacher, L. and L. St. John 2002. Aberdeen Plant Materials Center Grass Display Nursery- Established Grasses treated with Plateau Herbicide-2001 observations. Aberdeen Plant Materials Center, Aberdeen, ID. May, 2002. 13p.

Hoag, JC and J Fripp 2002. Streambank Bioengineering Field Guide for Low Precipitation Areas. Aberdeen PMC and the National Design, Construction and Soil Mechanics Center, Aberdeen, ID.

Hoag, JC and DG Ogle 2002. City of Coeur d Alene Plant Materials Guidelines for Stormwater Best Management Practices. Aberdeen PMC, Aberdeen, ID. September 30, 2002. 75p.

Hoag 2002. Clear Lakes Banking Wetland evaluation for 2001. Riparian/Wetland Project, Aberdeen PMC, Aberdeen, ID. Growing year 2001. 16p.

Hoag 2002. Dredging the Columbia River. Vancouver Business Journal, Vancouver, WA. 1/8/02. 1p.

Hoag 2002. View From a Wetland, Number 7 (2001). Interagency Riparian/Wetland Project, Aberdeen PMC, Aberdeen, ID. 7 (2001). 4p.

Hoag 2002. Wetland Functions and Constructed Wetland Systems. Idaho State Journal, Pocatello, ID. 4/18/02. 1p.

Cornforth, B., St. John, L. and Ogle, D. 2002. Technical Note 14: Seed Production Standards for Conservation Plants in the Intermountain West. Aberdeen Plant Materials Center, Boise, ID. December,

PRESENTATIONS

Date 1/24/01

Title: Idaho Plant Materials Committee Meeting

Presenter: Hoag

Location Boise SO conference room

Date 10/2/01

Title: Cub River Assessment Treatment Unit development

Presenter: Hoag

Location Preston, ID

Date 10/3/01

Title: Constructed Wetland Systems

Presenter: Hoag

Location Twin Falls Canal Co. office, Twin Falls, ID

Date 10/4/01

Title: Channel reconstruction and wetland creation

Presenter: Hoag

Location Driggs, ID

Date 10/30/01

Title: Aberdeen PMC Past, Present, and Future Releases

Title: Rodent and wildlife problems in windbreaks
Presenter: St. John **Location** Twin Falls, ID

Date 2/6/02
Title: Aberdeen Plant Materials Center - Functions and Responsibilities
Presenter: Cornforth **Location** Nampa, ID

Date 2/7/02
Title: Wetland restoration and woody planting treatments
Presenter: Hoag **Location** Seattle, WA

Date 2/7/02
Title: Windbreak Installation
Presenter: St. John **Location** Twin Falls, ID

Date 3/22/02
Title: Wetland planting procedures for Leopard Frog habitat
Presenter: Hoag **Location** Wadsworth, NV

Date 4/2/02
Title: Vegetative Development and Water Treatment in a Constructed Wetland Receiving Irrigation Return Flows
Presenter: Ray and Hoag **Location** Idaho State University Pocatello, ID

Date 4/2/02
Title: Constructed Wetland Systems for Water Quality
Presenter: Hoag **Location** Idaho State University, Pocatello, ID

Date 4/3/02
Title: Fairview Wetland Project Water Quality Study
Presenter: Poulson and Hoag **Location** Idaho State University, Pocatello, ID

Date 4/11/02
Title: Streambank bioengineering for stream restoration
Presenter: Hoag **Location** USU, Logan, UT and Cub River, Preston, ID

Date 4/29/02
Title: Constructed Wetland System design to treat Stormwater from the Shoshone- Bannock High School grounds
Presenter: Hoag **Location** Ft. Hall Indian Reservation

Date 5/1/02
Title: Streambank bioengineering treatments for the Snake River
Presenter: Hoag **Location** Grand Teton National Park

Date 5/14/02
Title: Welcome to the Aberdeen Plant Materials Center
Presenter: St. John **Location** Aberdeen Plant Materials Center

Date 5/20/02

Title: Floodplain Wetland Restoration and Enhancement
Presenter: Hoag, Cocke, Johnson, **Location** Des Moines, IA

Date 5/23/02
Title: Streambank Bioengineering Treatments
Presenter: Hoag **Location** Des Moines, IA

Date 5/29/02
Title: Wetland and riparian research and accomplishments
Presenter: Hoag **Location** Aberdeen PMC

Date 5/29/02
Title: Aberdeen PMC Briefing and Tour
Presenter: St. John, Hoag, Cornforth **Location** Aberdeen Plant Materials Center

Date 5/29/02
Title: Fairview Constructed Wetland System
Presenter: Hoag and Poulson **Location** Fairview Wetland, Power County, ID

Date 5/30/02
Title: Wetland restoration principles
Presenter: Hoag **Location** Pocatello, ID

Date 6/5/02
Title: Trout Creek Inter-Center Strain Trial Tour
Presenter: St. John **Location** Trout Creek, NV

Date 6/5/02
Title: Trout Creek, NV Riparian Off-Center Test Site tour for NRCS NV and ID and for the NV SRM
Presenter: Hoag **Location** Jackpot, NV Off center test site

Date 6/11/02
Title: Idaho, Nevada, Utah Interagency Meeting - U of I Foundation Seed Program
Presenter: St. John **Location** Logan, UT

Date 6/11/02
Title: Idaho, Nevada, Utah Interagency Meeting
Presenter: St. John **Location** Logan, UT

Date 6/19/02
Title: Idaho Cattlemen's Association - Tour of Trout Creek Test Site
Presenter: St. John **Location** Trout Creek , NV Test Site

Date 6/20/02
Title: Streambank Bioengineering treatments for Yellowstone National Park
Presenter: Hoag **Location** Mammoth, Yellowstone National Park

Date 6/27/02
Title: Riparian assessment on Crane Creek WMA, Upper Blackfoot WMA, Bear River WMA, and Portneuf River

Presenter: Hoag **Location** SE Idaho
Date 7/10/02
Title: Irving Creek revegetation and stabilization plan

Presenter: Hoag **Location** Medicine Lodge Creek, ID
Date 7/11/02
Title: Congressional Briefing July 11, 2002

Presenter: St. John, Hoag, Cornforth **Location** Aberdeen Plant Materials Center
Date 7/14/02
Title: Propagating Wetland Species by seed

Presenter: Hoag **Location** Salish-Kootenai College, Pablo, MT
Date 7/17/02
Title: National Plant Materials Technical Advisory Committee - Tour of PMC

Presenter: St. John, Cornforth, **Location** Aberdeen Plant Materials Center
Date 7/23/02
Title: New Employee Orientation to Plant Materials Program

Presenter: St. John, Hoag, Cornforth, **Location** Aberdeen PMC
Date 8/13/02
Title: National Plant Materials Program Display

Presenter: St. John, L **Location** Wildland Shrub Symposium, Laramie, WY
Date 8/13/02
Title: New Native Plant Releases from the Aberdeen Plant Materials Center

Presenter: St. John, L. **Location** Wildland Shrub Symposium, Laramie, WY
Date 8/20/02
Title: Bioengineering treatments for silt and sand bed streams in low precipitation areas of the West

Presenter: Hoag, Fripp, and **Location** Logan, UT
Date 8/26/02
Title: Teton Creek bioengineering treatments

Presenter: Hoag and Lehman **Location** Driggs, ID
Date 9/11/02
Title: Planning for wetland projects

Presenter: Hoag **Location** Moscow, ID
Date 9/12/02
Title: Wetland and riparian work by the riparian/wetland project

Presenter: Hoag **Location** Lewiston, ID
Date 9/24/02
Title: Riparian Assessment and its impact on landowner management

Presenter: Hoag **Location** Idaho Falls, ID

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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 1994 through 2002:

Release Name	1994	1995	1996	1997	1998	1999	2000	2001	2002	TOTAL POUNDS
POUNDS PLS										
Appar blue flax	160	65	455	150	950	115	320	300	470	2985
Bannock thickspike wheatgrass	-	581	215	175	425	610	275	250	550	3081
Delar small burnet	200	350	0	0	550	0	451	150	75	1776
Ephraim crested wheatgrass	1148	790	713	1000	100	50	260	455	696	5212
Snake River Plains fourwing saltbush	-	-	-	-	-	-	-	-	25 ^{2/}	25
Goldar bluebunch wheatgrass	558	638	175	200	200	370	175	100	375	2791
Hycrest crested wheatgrass	250	100	1000	1550	0 ^{1/}	0	0	0	0	2900
Magnar basin wildrye	400	202	0	250	180	901	517	1035	490	3975
Nezpar Indian ricegrass	150	0	0	325	350	100	900	150	75	2050
P-27 Siberian wheatgrass	225	110	250	1000	200	25	150	200	500	2660
Clearwater Selection Venus penstemon	-	1	0	0	1	0	1	10	1	14
Richfield Selection firecracker penstemon	-	5	0	0	6	5	5	1	7	29
Paiute orchardgrass	810	550	400	250	0	250	101	450	200	3011
Regar meadowbrome	604	144	10	0	305	800	670	1061	207	3801
Rush intermediate wheatgrass	718	195	75	400	1820	1000	215	525	0	4948
Sodar streambank wheatgrass	857	311	0	100	250	100	860	500	500	3478
Tegmar dwarf intermed. wheatgrass	0	250	0	0	200	0	100	0	0	550
Northern Cold Desert Winterfat	-	-	-	-	-	-	-	-	8 ^{2/}	8
TOTAL POUNDS	6080	4292	3293	5400	5537	4326	5000	5187	4179	43294

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

^{2/} New releases in September, 2001.

Aberdeen Plant Materials Center2002 FIELD ANNUAL PLAN OF OPERATIONHOME FARM

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
1	1.5	Bannock (2000)	Manage for Foundation Seed production.
2	2.3	Bannock (1999)	Manage for Foundation seed production.
3	1.8	Maple Grove Flax (2002)	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 Foundation seed production.
6	2.4	Rush (2000)	Manage for Foundation seed production.
7	3.2	Potatoes (2002)	U of I will plant potatoes.
8	3.2	Wildlife Food Plot (2002)	Plant wheat for wildlife use.
9	3.2	Delar (2001)	Manage for Foundation seed production.
10	3.2	Magnar (1995)	Manage for Foundation seed production.
11	1.1	Anatone Bluebuch (2002)	Establish and manage for Certified seed production.
11	0.2	9067402 Mutton grass (2002)	Establish and manage for increase and potential release.
11N	-	Russian Hawthorn (2001)	Evaluate establishment.
12	1.4	Fallow	Fallow as needed to control weeds.
13	1.4	Grass Display Nursery (1995)	Maintain display of commonly used conservation grasses. Remove at end of growing season.
14	1.2	Woody Display Nursery (1995)	Maintain display of woody conservation plants. Manage Durar/Covar cover crop.
	-	Penstemon (1996)	Manage for Certified seed production.
14S	-	Stackyard (2002)	Establish stackyard for hay.
15	1.4	Field windbreak (2000) USFS Flax test (2000)	Maintain Simon poplar field windbreak. Maintain and evaluate according to project Plan.
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.

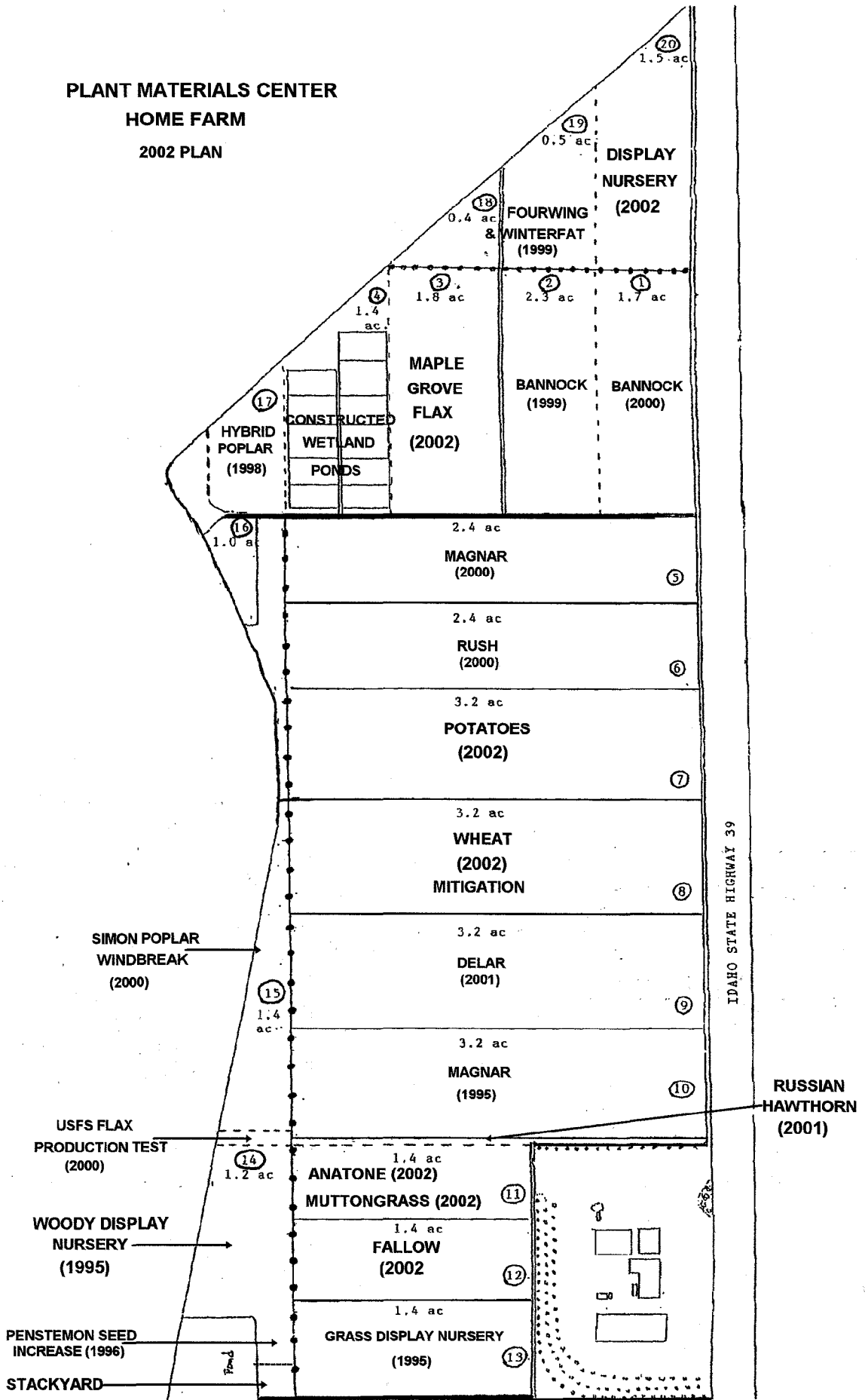
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2002 FIELD ANNUAL PLAN OF OPERATION (continued)

HOME FARM

20	1.5	Grass Display Nursery (2002)	Establish and manage for display.
Headquarters			Maintain buildings and grounds.

**PLANT MATERIALS CENTER
HOME FARM
2002 PLAN**



Aberdeen Plant Materials Center2002 FIELD ANNUAL PLAN OF OPERATIONFISH AND GAME FARM

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
21	4.4	Alfalfa (2001)	Establish and manage for hay production and wildlife benefits.
21N	1.0	Bozoisky Cover crop	Maintain as needed for permanent cover.
22W	2.7	Alfalfa (2002)	Establish and manage for hay production and wildlife benefits.
22E	2.7	Goldar (2002)	Establish and manage for Foundation seed production.
22E	-	Willow IEP (1984)	Maintain as needed.
23W	2.7	Goldar (1999)	Manage for Foundation seed production.
23M	-	Windbreak	Maintain and irrigate as needed.
23E	2.7	Wildlife Food Plot (2001)	Maintain winter wheat for wildlife use.
24W	2.7	Paiute (2001)	Establish and manage for Foundation seed production.
24E	1.6	Durar Cover Crop	Maintain as needed.
25W	2.7	Bozoiksy Cover Crop (2002)	Plant and manage for permanent cover.
25E	2.7	Wildlife Food Plot (2002)	Plant corn for wildlife use.
26W	1.7	Durar/Covar Cover Crop (1996)	Maintain as needed.
26E	1.7	Willow Increase Block (1994)	Irrigate according to irrigation plan and control weeds. Maintain Durar/Covar mix between rows for permanent cover. Establish Riparian native willow accessions.
27	5.4	Corn and Potatoes (2002)	U of I will plant 3.2 acres to potatoes. Establish 2.2 acres corn alternating with potatoes for wildlife use.
28	5.4	Wildlife food plot (2002)	Plant wheat for wildlife use.
29W	2.7	Willows (1994)	Irrigate and control weeds according to Wetland Project plan.
29E	2.7	Goldar (2000)	Manage for Foundation seed production.

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2002 FIELD ANNUAL PLAN OF OPERATION (continued)

FISH AND GAME FARM

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
30W	-	Windbreak/Guard Row	Maintain and irrigate as needed.
30	5.4	Alfalfa (1995)	Manage for hay production and wildlife benefits.
31	5.4	Alfalfa (1995)	Manage for hay production and wildlife benefits.
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.

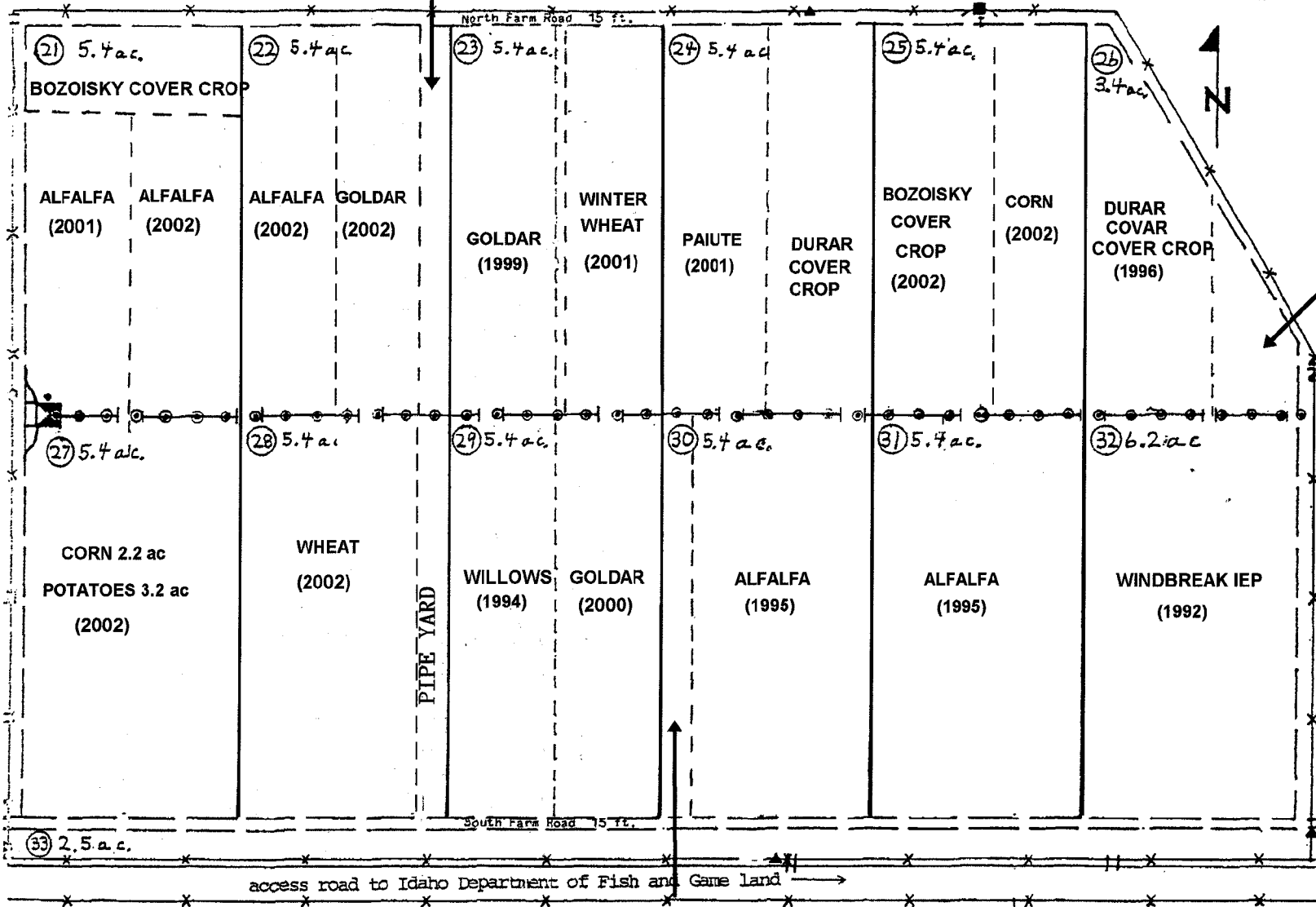
Irrigated, permanent grass cover seedings will not be mowed prior to July 1 and not after August 1 and will be irrigated a minimum of 3 times. Non-irrigated grass cover seedings will not be mowed. Early mowing or mowing of non-irrigated grass cover requires notification to and inspection by Fish and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

BREWINGTON FARM (U of I)

<u>Field</u>	<u>Acres</u>	<u>Crop</u>	<u>Operation</u>
409	4.25	Nezpar (2000)	Manage for Foundation seed production.

WILLOW IEP
(1984)

FISH & GAME FARM
2002 PLAN



WILLOW
INCREASE BLOCK
(1994)

access road to Idaho Department of Fish and Game land

WINDBREAK/GUARD ROW

21 5.4 ac.
BOZOISKY COVER CROP

22 5.4 ac.
ALFALFA (2002)
GOLDAR (2002)

23 5.4 ac.
GOLDAR (1999)
WINTER WHEAT (2001)

24 5.4 ac.
PAIUTE (2001)
DURAR COVER CROP

25 5.4 ac.
BOZOISKY COVER CROP (2002)
CORN (2002)

26 3.4 ac.
DURAR COVER CROP (1996)

27 5.4 ac.
CORN 2.2 ac
POTATOES 3.2 ac (2002)

28 5.4 ac.
WHEAT (2002)

29 5.4 ac.
WILLOWS (1994)
GOLDAR (2000)

30 5.4 ac.
ALFALFA (1995)

31 5.4 ac.
ALFALFA (1995)

32 6.2 ac.
WINDBREAK IEP (1992)

33 2.5 ac.

2002 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 as 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 9 inches long and approximately 3/4 inch in diameter. The cuttings were obtained from Mount Jefferson Farms and were dormant. The standards of comparison were collected at the PMC after spring growth had initiated.

Weed barrier material was installed prior to planting. The cuttings were then hand planted through the weed barrier on May 28, 1998 so that only one bud was above ground. Allowing only one bud to be above ground increases the chance that the cutting will develop a single trunk which is desirable for wood production. The planting was kept moist during the growing season with solid-set handlines. Weed control needs were minimal because of the installation of weed barrier material. On June 1, 1999 forty-three plots were re-planted. Most of the replacements were for those plots that did not establish during the first growing season.

Between-row weed control was accomplished with 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 established and controlling weeds.

In March, 2002 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 the growing season sprouts and side branches below the prune line were removed periodically.

The plots were evaluated on September 20, 2002 and the data is summarized in Table 1. Accession no. 9076418 (OP-367) and 9076421 (52-225) continued to have the best survival. Accession no. 9076418 (OP-367) was the tallest (mean plant height 858 cm) and also had the largest D.B.H. (mean 16.6 cm). This accession appears 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 continued to have the best survival and the tallest average height. Robust also had the largest mean D.B.H. (8.4 cm).

The planting will be evaluated next year and then will be harvested in 7 to 8 years to evaluate wood production.

Table 1.
2002 Evaluation Data
1998 Hybrid Poplar Initial Evaluation Planting

Accession Number	Number Survived	Percent Survival	Plant Height (cm)			D.B.H. ^{1/}	Vigor ^{2/}
			Minimum	Mean	Maximum	Mean (cm)	
9076418 (OP-367)	8	88.9	691	858	1000	16.6	1.8
9076419 (184-411)	1	11.1	--	--	429	2.0	3.0
9076420 (50-197)	1	11.1	--	--	642	12.0	3.0
9076421 (52-225)	8	88.9	60	536	800	8.3	4.3
9076422 (15-29)	5	55.5	362	466	545	3.4	3.6
Canam	2	22.2	312	522	732	5.5	4.5
Robust	3	33.3	640	688	760	10.0	2.0
Siouxland	5	55.5	504	670	800	10.2	2.2
Imperial	5	55.5	558	640	748	10.8	2.2

Re-planted Hybrid Poplar 1999

Accession Number	Number Re-planted	Percent Survival	Plant Height (cm)			D.B.H. ^{1/}	Vigor ^{2/}
			Minimum	Avg.	Maximum	Mean (cm)	
9076418 (OP-367)	1	0	--	--	--	--	9.0
9076419 (184-411)	8	0	--	--	--	--	9.0
9076420 (50-197)	8	12	0	--	420	3.0	6.0
9076421 (52-225)	1	0	--	--	--	--	9.0
9076422 (15-29)	4	0	--	--	--	--	9.0
Canam	7	57	304	454	612	4.8	7.0
Robust	6	83	574	611	686	8.4	4.0
Siouxland	4	50	345	424	503	4.0	6.0
Imperial	4	25	0	--	635	8.0	3.0

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

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

2002 Progress Report
'Appar' and Native Blue Flax Comparison
Cooperative Study with Shrub Sciences Laboratory
Loren St. John, PMC Team Leader

In 1980, the United States Department of Agriculture, Forest Service Shrub Sciences Laboratory, Provo, Utah and the USDA Natural Resources Conservation Service, Plant Materials Center, Aberdeen, Idaho cooperatively released 'Appar' blue flax. Appar is recommended as a component of a seed mix to provide diversity and beauty. It was originally identified as *Linum lewisii* but was later determined to be a naturalized introduced species from Europe. Appar is now recognized as *Linum perenne*. The Shrub Sciences Laboratory has been evaluating native blue flax collections and requested the PMC assist in a study to compare Appar to one of the more promising native collections.

On May 24, 2000 two rows each of Appar blue flax and Maple Grove Lewis flax G1 (generation 1) were seeded in field 15 at the PMC Home Farm. The rows are 84 feet long. Seed was planted with a Planet Junior seeder pulled by a tractor. The seeding rate was 25-30 pure live seeds (PLS) per foot and the rows are spaced 36 inches apart. During the establishment year, the Maple Grove accession had the best stand. On September 8, 2000 the plots were evaluated for percent stand, plant height, and vigor. Percent cover for Appar ranged from 40 – 45 percent and plants were 6 – 10 cm tall. The Maple Grove accession had a 65 – 75 percent stand and plants were 8 – 12 cm tall. Vigor for both accessions was good but the Maple Grove accession clearly had the best vigor.

Observations during the 2001 growing season indicated that the Maple Grove accession appeared to have a slightly better stand than Appar but overall plant health and vigor were equal. On June 1, both accessions were flowering. Appar had dark blue flowers and Maple Grove had light blue flowers. On July 2, the plots were observed for seed ripeness and both accessions were in the late milk to early dough stage. On July 24, sample plots were harvested from both accessions to compare seed yield and all Maple Grove plants were harvested for seed increase.

On May 8, 2002 the trial was evaluated for basal cover and plant height. Maple Grove had 67 percent basal cover and averaged 28 cm tall. Appar had 44 percent basal cover and averaged 31 cm tall. Appar has a dark green foliage color as compared to Maple Grove, which is pale green. On July 19, 2002 sample plots were harvested from both accessions to compare seed yield and all Maple Grove plants were harvested for seed increase.

Three, randomly located 10 foot row samples were harvested from each accession for yield comparison in 2001 and 2002. Seed was bagged, allowed to dry and then cleaned. The following table illustrates the yield comparison (pounds per acre) between Appar and Maple Grove from 2 growing seasons:

	Maple Grove		Appar		
	Harvest year	2001	2002	2001	2002
Sample 1		568	377	421	145
Sample 2		565	450	664	697
Sample 3		571	857	761	711
Mean		568	561	615	518

This data shows that during 2001, Maple Grove yielded 92 percent of what Appar produced in this comparison. In 2002, Maple Grove yielded 108 percent of what Appar produced. It is likely that Maple Grove produced more seed in 2002 because of the decreased basal cover (i.e. fewer plants) of Appar. Long-term yield data for Appar is 720 pounds per acre. Comparing this yield data of Maple Grove to the long-term data of Appar, Maple Grove may be able to yield 70 - 90 percent of Appar.

In 2001, the total harvest of Maple Grove (including the sample data) yielded 4.173 pounds of seed. This is equivalent to 361 pounds of seed per acre, which is 50 percent of the long-term yield of Appar. In 2002, the total harvest of Maple Grove (including the sample data) yielded 415 pounds of seed per acre, which is 57 percent of the long-term yield of Appar.

Bushel weight of the Maple Grove seed harvested in 2001 and 2002 was 41 and 40 pounds per bushel respectively. The long-term bushel weight of Appar is 47.5 pounds.

Maple Grove seed that was harvested in 2001 was seeded in field 3 at the PMC Home Farm on May 31, 2002 and has been entered into certification with the Idaho Crop Improvement Association. The stand established well and should produce a seed crop in 2003. It is anticipated that the PMC and the Forest Service Shrub Sciences Laboratory will release Maple Grove as selected class germplasm to be available to seed growers in early 2004.

**ABERDEEN PLANT MATERIALS CENTER GRASS DISPLAY NURSERY
ESTABLISHED GRASSES TREATED WITH PLATEAU® HERBICIDE
YEAR 2001 OBSERVATIONS**

Lindle Offenbacker, Soil Conservationist
Loren St. John, Plant Materials Center Team Leader

The purpose of this evaluation was to observe the effects of Plateau® herbicide on established perennial grasses that had been burned. The evaluation was conducted during the 2001-growing season at the display nursery on the Aberdeen Plant Materials Center Home Farm located two miles north of Aberdeen, Idaho. The display nursery was seeded on August 8, 1995. Fifty-four accessions of perennial grasses adapted for the Intermountain Region were drilled with a double disk drill with 10-inch row spacing. Plots were 7 feet wide by 40 feet long. Soils are a Declo silt loam, well drained and nearly level. Soil pH is 7.4 to 8.4.

The plots were arranged so that species were established according to three precipitation zones. Ten accessions adapted to the 16-inch or greater precipitation zone for irrigated pasture and hay land; 22 accessions adapted to the 12 to 16-inch precipitation zone; and 22 accessions adapted to precipitation zones of 12-inches or less. During the first several years after the plots were established, irrigation (applied by handline sprinklers) was scheduled to simulate each precipitation zone; however, for the last several years the grasses were irrigated two or three times for all three zones at the same rate and time interval.

Plateau herbicide is an aqueous solution mixed with water and adjuvant and applied as a spray solution to provide weed control on non-cropland areas (including Conservation Reserve Program Land) and for weed control during the establishment of native grasses.

The plots were burned in August, 2000 to remove standing cover and to simulate a wildfire. Dr. Pamela J.S. Hutchinson, Weed Scientist at the University of Idaho Agricultural Experiment Station, Aberdeen, sprayed the north half of each plot with 10 ounces Plateau per acre plus one quart per acre methylated seed oil (MSO) on October 27, 2000.

Plots were evaluated on May 14 and June 28 and clipped the 27th through 29th of June 2001. Height was estimated by holding a steel tape at arm length and sighting along the top of the grass reading the tape to the nearest centimeter. Vigor is a subjective judgement of plant health based on experience with the particular species of grass. A rating of 1 is best and 9 worst. The clipping plot frame was 24 inches by 79 inches, and was placed in the center of both the control plot and treated plot for each accession evaluated for forage yield and quality. Each accession was clipped as low to the ground as possible, and the material weighed and recorded. A "grab sample" was taken from the entire plot, net weight recorded, and air-dried in a paper bag. Final air-dried net weights were used to calculate the dry weight forage yield in pounds per acre and kilograms per hectare. An additional "grab sample" was taken from each plot, dried, and sent to the Jamie L. Whitten Plant Materials Center, Plant and Water Analysis Laboratory at Coffeeville, Mississippi for forage quality analysis. Forage quality analysis included total digestible nutrients (TDN), nitrogen, protein, acid detergent fiber (ADF), and neutral detergent fiber (NDF). Percent nitrogen was determined from Kjeldahl N digest using flow injection analysis on a Lachat Quick Chem Automated Ion Analyzer (Lachat Instruments, Milwaukee, Wisconsin). Acid detergent fiber and NDF were analyzed with an ANKOM^{200/220} Fiber analyzer using the Van Soest Analysis (Joel Douglas, Jamie L. Whitten PMC, personal communication).

16- inch or greater precipitation group

Height of the accessions in the 16-inch or greater precipitation group was shorter for each of the Plateau treated plots (Table 1). Vigor ratings were lower in late June than in mid May for the control plots, whereas, the grasses in the treated plots had a better vigor rating at the June evaluation as compared to the

May evaluation. Average growth during the 45-day interval between evaluations in height was almost three times greater for the control plots as compared to the treated plots. On May 14 the growth of the treated plots was more uniform than the control plots. On June 28 growth of the grasses in the control plots had slowed as they approached maturity, and were more uniform than the grasses in the treated plots (Table 1). The treated plot of 'Johnstone' tall fescue was most affected with virtually no growth and a vigor rating of 9. This was not surprising to Joel Douglas (personal communication) who said that Plateau affects all tall fescue varieties substantially in the southeastern U.S. The height of 'Jose' and 'Alkar' tall wheatgrass and 'Latar' orchardgrass were least affected within the group, but were still only about half as tall as their control plots.

Table 2 documents the forage yield data collected from the Display nursery during 2001. Forage yields from the control plots ranged from 3,097 pounds per acre for 'Garrison' creeping foxtail to 8,415 pounds per acre for 'Paddock' meadow brome. In the treated plots, forage yields ranged from 1,433 pounds per acre for Garrison to 3,586 pounds per acre for 'Fleet' meadow brome. Percent change between the control and treated plot of each accession was calculated to show the decrease in forage yield that was caused by the herbicide application¹. Latar orchardgrass and Alkar tall wheatgrass were least affected with -24 and -36 percent change respectively. The higher yielding accessions of the 16-inch or greater precipitation group were most affected as 'Paddock,' 'Fleet,' and 'Regar' meadow brome, Jose, and 'Largo' tall wheatgrass all had more than 50 percent decrease in yield between treatments (Table 2). The treated plot of Johnstone tall fescue was not clipped because the plants were killed by the treatment.

Forage analysis results are shown in Table 3 and 4. Digestibility, expressed here as total digestible nutrients (TDN), is the most commonly used term of energy availability. TDN is the sum of digestible protein, carbohydrates, and lipids (Buxton and Mertens, 1995). Percent TDN ranged from 54 percent to 65 percent in the control plots and averaged 58.9 percent (Table 3). Johnstone tall fescue and Garrison creeping foxtail both had 65 percent TDN, the highest in the 16-inch precipitation or greater group. Fleet meadow brome had the least TDN of the control plots at 54 percent. The Plateau treated plots ranged from 65 to 77 percent TDN and averaged 70.8 percent. Regar meadow brome, 'Manchar' smooth brome, and Garrison creeping foxtail contained the most TDN at 77, 76 and 76 percent respectively from the treated plots. Fleet meadow brome and Alkar tall wheatgrass had the least TDN at 65 percent in the treated plots. The greatest increase in TDN was 19 percent between the control and treated plots of Regar meadow brome and Manchar smooth brome. The smallest increase was six percent TDN for both Latar orchardgrass and Alkar tall wheatgrass.

Crude protein (CP) is the sum of non-protein nitrogen and true protein and found by multiplying the percent nitrogen by 6.25 (Buxton and Mertens 1995). Latar orchardgrass and Largo tall wheatgrass had the most CP at seven percent, Fleet meadow brome the least at four percent and the rest of the accessions in this group each had six percent crude protein in the control plots. In the Plateau treated plots, Manchar smooth brome had the greatest CP (13 percent). Latar orchardgrass showed the greatest increase in CP between the control and treated (7 percent).

Table 5 is the quality standards for legume, grass, or legume hay developed by the American Forage and Grassland Council. All accessions in the control plots had CP of less than eight percent putting them in forage quality standard 5, and in the treated plots, Regar meadow brome, Manchar smooth brome and Alkar tall wheatgrass rated in quality standard 3. All other treated plots in this group rated in quality standard 4.

Acid detergent fiber (ADF) is an insoluble residue that does not include all cell wall constituents because hemicellulose is soluble in the acid detergent solution. The ADF percentage includes alkali-soluble lignin, alkali-insoluble lignin, fiber-bound nitrogen, cellulose, and detergent insoluble minerals (Fisher and

¹ Percent change is a relative measure. In this case it is $\% \text{ change} = \frac{\text{control} - \text{treatment}}{\text{control}} \times (100)$.

A negative percent change means the treated plots produced less than the control plots.

others 1995). ADF is an estimate of digestibility. As the ADF increases the digestibility decreases (Joel Douglas, personal communication). Neutral detergent fiber (NDF) is an excellent estimation of the total cell wall, or structural components (cellulose, hemicellulose, and lignin). NDF is more important because it estimates that fraction of forage that must be degraded by gastrointestinal microorganisms before the animal metabolizes it. The NDF percentage includes all of ADF plus hemicellulose (Fisher and others 1995). Data for ADF and NDF is summarized in Table 4.

In the control plots, Johnstone tall fescue and Garrison creeping foxtail had the least ADF and NDF, and Garrison creeping foxtail the least (30 percent) of the Plateau treated plots; thus, greatest digestibility. Fleet meadow brome had the highest ADF and NDF in the control plot at 41 and 68 percent respectively. Fleet tied with Alkar tall wheatgrass for ADF in the treated plots with 35 percent, and both were among the highest of the group in percent NDF with 59 and 63 percent respectively. The nine control plots averaged 38.0 percent ADF and 64.1 percent NDF. The nine Plateau treated plots averaged 32.4 percent ADF and 56.0 percent NDF (Table 4). All ten accessions of the control plots had ADF percentages that place them in quality standards of 1, 2, and 3, and the treated plots rate prime and 1 (Table 5). The control plots ranked 4 - 5 in quality standards based upon NDF and the treated plots ranked 2 - 4. Thus, the Plateau treatment increased the quality standard approximately one to two standards for ADF and NDF. Forage analysis showed the Plateau treated plots had a greater percentage of protoplasm (cell contents) and less cell wall than the grasses not treated (Tables 3 and 4). Protoplasm contains the more easily digestible components of the grasses, and the cell walls require microbial action for digestion.

12 to 16-inch precipitation group

As with the 16-inch or greater precipitation group, each accession that was treated with Plateau was shorter in height than the control plot (Table 1). Average vigor of the Plateau treated plots was less in mid May than the control plots, and the control plots were slightly less uniform in growth. Average height of the control plots on May 14 was 1.5 times taller than the average height of the treated plots. On June 28 average height of the control plots were 1.6 times taller than the treated plots. In the intervening 45 days, growth averaged 1.7 times more for the control than for the treated plots. On June 28, the control plots averaged 36.4 inches tall compared to 22.3 inches tall for the Plateau treated plots.

Plateau affected 'Bromar' mountain brome more than the other accessions, as it was too short to clip. Plateau affected the group as a whole by reducing height an average 41.5 percent at the June 28 evaluation (Table 1). 'Prairieland' altai wildrye, 'Shoshone' beardless wildrye, 'Rosana' western wheatgrass, 'Manska' intermediate wheatgrass, and the three slender wheatgrass accessions ('Pryor,' 'San Luis,' and 'Primar') all were affected greatly having decrease in height of 50 to 57 percent from the herbicide treatment. 'Luna' pubescent wheatgrass, 'Trailhead' and 'Magnar' basin wildrye were affected least with 17, 21, and 7 percent change in height respectively. There was little difference in vigor between the control and treated plots on June 28 (Table 1).

Forage production in the control plots was slightly less variable than in the 16-inch or greater precipitation group, but was more variable in the Plateau treated plots (Table 2). Four accessions, (Trailhead basin wildrye, 'Newhy' hybrid wheatgrass, 'Reliant' and 'Tegmar' intermediate wheatgrass) each produced more in the treated plots than the corresponding control plots. 'Prairieland' altai wildrye and 'Oahe' intermediate wheatgrass both produced slightly more than 6,800 pounds per acre in the control plots, but produced 3,680 and 4,363 pounds per acre respectively in the Plateau treated plots. 'Shoshone' beardless wildrye also had a large difference between the control (3,597 pounds per acre) and the treated (1,101 pounds per acre) plots. Primar slender wheatgrass and 'Arriba' western wheatgrass were not affected much by Plateau as Arriba retained 97 percent of its production and Primar slender wheatgrass retained 99 percent of its production.

TDN for this group of grasses averaged 1.6 percent less than the 16-inch or greater precipitation group in the control plots, and 6.1 percent less in the Plateau treated plots. Percent TDN was slightly more uniform in this group (Table 3). Rosana western wheatgrass contained the most TDN in the control plot (63 percent), but ranked third (68 percent) in the treated plots behind Shoshone beardless wildrye at 80 percent and 'Paiute' orchardgrass at 73 percent. Pryor slender wheatgrass contained 50 percent TDN in the control

plot then gained 13 percent in the treated plot (63 percent). Arriba western wheatgrass gained only four percent from the control (57 percent) to treated plots (61 percent) and had the least TDN in the treated plots.

Percent nitrogen and percent crude protein for this group averaged less than the 16-inch or greater precipitation group (Table 3). Accessions in the control plots ranged from four to eight percent CP and averaged 5.3 percent. In the treated plots CP ranged from 6 percent to 17 percent and averaged 8.6 percent. Prairieland altai wildrye control sample had 8 percent CP and 10 percent CP in the treated sample to rank in quality standard 4 (Table 5). CP for Shoshone beardless wildrye was 6 and 17 percent in the control and treated plots respectively which puts this grass in the quality standard 5 and 1 respectively (Table 5). Paiute orchardgrass and Pryor slender wheatgrass also had substantial differences between the control and treated plots.

Average ADF for this group was 0.5 percent more for the control plots and 3.2 percent more for the treated plots than the 16-inch or greater precipitation group (Table 4). All accessions contained an average 2.9 percent less ADF in the Plateau treated plots than the control plots. Topar pubescent wheatgrass contained two percent more in the treated plot (39 percent) than the control plot (37 percent). Rosana western wheatgrass was the most digestible at 33 percent ADF in the control plot, and Shoshone beardless wheatgrass was most digestible of the treated plots at 28 percent ADF. Pryor slender wheatgrass was least digestible at 43 percent ADF of the control plots, and 'Topar' pubescent wheatgrass and Pryor slender wheatgrass were least digestible of the treated plots with 39 percent ADF. The control plot of Rosana western wheatgrass rated 1 in quality standard and Shoshone beardless wildrye rated prime quality standard from the treated plot (Table 5).

The three slender wheatgrass accessions contained the most cell wall components as their control NDF ranged from 68 to and 72 percent, and their treated NDF were 63, 64, and 66 percent (Table 4) which places slender wheatgrass in the 4 and 5 quality standards (Table 5). Paiute orchardgrass and Shoshone beardless wildrye had the least NDF at 55 and 54 percent respectively for the treated plots, which places them in the quality standard 3. Overall the average NDF was 65.1 percent for the control plots and 60.5 percent for the Plateau treated plots.

12-inch or less precipitation

Plateau affected this group of grasses in the same way as the other two groups causing the treated plots to be about half as tall as the control plots (Table 1). Grasses in the control plots averaged better vigor on May 14 than did the treated plots. Average vigor rating on June 28 was the same for both control and Plateau treated plots. Vigor was uniform throughout this group with a vigor rating of 3 given to both sets of plots for all accessions except for 'Parkway' and 'Douglas' crested wheatgrass which each received a 4 for both control and treated plots (Table 1).

Height on May 14 was 1.9 times taller for the control plots as compared to the treated plots. On June 28 the grasses in the control plots were twice as tall as the grasses of the treated plots. Average height growth in the 45 days between evaluations was 2.2 times more for the control over the treated plots (Table 1). 'Tetracan' Russian wildrye was tallest of the control plots at 37.4 inches, but grew to only 13.4 inches in the treated plot by the end of June for a -64 percent change. 'Secar' Snake River wheatgrass was the tallest grass of the treated plots and fourth tallest of the control plots. Plateau affected 'Mankota', 'Bozoisky', 'Tetracan', 'Whitmar', 'Goldar' and SL-Hybrid most as these accessions had declines in height greater than 60 percent. Plateau affected the height of 'P-27' Siberian wheatgrass (-17 percent) the least as shown on Table 1.

Forage production within this group averaged 3,035 pounds per acre for the control plots and 2,126 pounds per acre for the treated plots (Table 2) resulting in an overall decline of 30 percent. Goldar bluebunch wheatgrass produced the most forage of the control plots at 4,958 pounds per acre followed by 'Bannock' thickspike wheatgrass at 4,146 pounds per acre. Both of these accessions were affected greatly by Plateau with -41 and -55 percent change respectively; whereas, 'Kirk' crested wheatgrass production

was reduced only 177 pounds per acre for a –5 percent change. ‘Ephraim’ crested wheatgrass produced the least forage of the control plots (1,927 pounds per acre) and least of the treated plots (790 pounds per acre) for a –59 percent change.

Average TDN of the control plots (59.8 percent) was greater than the other two groups, but the Plateau treated plots (average 67.0 percent) was between the 16+ and 12 to 16-inch precipitation groups (Table 3). Bozoisky Russian wildrye showed the greatest difference (22 percent) between the control and treated plots. ‘Parkway’ crested wheatgrass, ‘Vavilov’ Siberian wheatgrass and P-27 Siberian wheatgrass had the least differences of 1, 2, and 3 percent respectively between the control and treated plots. Douglas crested wheatgrass contained the most TDN in both control (67 percent) and treated (74 percent) plots.

Of the three groups of grasses this group had the least average percent nitrogen at 0.73 percent and crude protein at 4.4 percent (Table 3). Tetraican Russian wildrye and Secar Snake River wheatgrass both had six percent CP in their control plots to lead this group. In the treated plots Goldar bluebunch wheatgrass led the group with 13 percent CP in the Plateau treated plots, but CP dropped to four percent in the control plot. Five accessions contained nine percent CP in their treated plots, but CP dropped to 4, 5, or 6 percent in their control plots. Bannock thickspike wheatgrass had the least CP (3 percent) in its control plot, but CP of 8 percent on its treated plot was above the 7.8 percent average of the group (Table 3). All control plots within in this group ranked in quality standard 5. The CP for the treated plots of seven accessions ranked in the quality standards 3 and 4 (Table 5).

Average ADF in both the control plots (36.6 percent) and Plateau treated plots (32.1 percent) were less than the two other groups (Table 4). Douglas crested wheatgrass was the most digestible of the control plots at 32 percent ADF compared to the least digestible accession, Bozoisky Russian wildrye at 46 percent ADF. The control plots rate in quality standards 1, 2, and 3 except for Bozoiksy, which rated 5 (Table 5). ADF for the treated plots ranged from 28 percent for Douglas crested wheatgrass to 37 percent for Secar Snake River wheatgrass (Table 4) for a range in quality standards from prime to 2 (Table 5).

Bozoisky Russian wildrye contained the most cell wall components at 74 percent NDF in the control plot, and had the greatest change (17 percent) in NDF between the control and treated plots of the group. In fact, 17 percent was the most difference of any accession in these demonstration plots. Douglas crested wheatgrass had the least NDF in both control and treated plots (54 and 53 percent respectively). Both Siberian wheatgrass accessions and SL-Hybrid wheatgrass had the same percent NDF in both control and treated plots. Average NDF was 61.7 percent for the control plots, and 57.8 percent for the treated plots (Table 4). Of the control plots only Bozoisky and Mankota Russian wildrye rated in quality standard 5 based on NDF. Nine accessions rated in quality standard 4, and eight accessions rated in quality standard 3. Of the treated plots one accession had a quality standard of 2, sixteen accessions rated in quality standard 3, and three accessions had a quality standard of 4 (Tables 4 and 5).

The herbicide Plateau affected these grasses by delaying initial spring growth. Growth was delayed differently for each accession. Starting growth later resulted in the treated plots being at an earlier phenological stage than the control plots when clipped. The forage in the treated plots was finer stemmed, softer, and less coarse which corresponded to the higher total digestible nutrients and crude protein and less acid and neutral detergent fiber values.

Four of the accessions in the 12 to 16-inch precipitation group, (Trailhead basin wildrye, Newwhy hybrid wheatgrass, Reliant and Tegmar intermediate wheatgrass) had greater forage production in the treated plots than the control plots. This was a definite reversal in the forage production differences between control and treated plots for all other accessions and may be due to sampling error. Even though the difference between the treated and control plots for these four accessions were all substantial, the real difference may be smaller and more in line with the trend of the data.

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Table 1. Height and vigor of the Aberdeen PMC Grass Display Nursery Plots evaluated 14 May and 28 June 2001.

Accession	Species	Control Plots					Plateau treated Plots					% Change Height 28 June between control & treated
		14 May		28 June		Growth in 45 days	14 May		28 June		Growth in 45 days	
		Height inch / cm	Vigor ^a	Height inch / cm	Vigor ^a		Height inch / cm	Vigor ^a	Height inch / cm	Vigor ^a		
16-inch or greater precipitation												
Paddock	meadow brome	9.8 / 25	2	31.5 / 80	3	21.7 / 55	6.3 / 16	6	11.8 / 30	3	5.5 / 14	-63
Fleet	meadow brome	12.2 / 31	2	33.5 / 85	3	21.3 / 54	4.3 / 11	7	10.6 / 27	3	6.3 / 16	-68
Regar	meadow brome	8.7 / 22	2	30.7 / 78	3	22.0 / 56	2.4 / 6	7	9.8 / 25	3	7.4 / 19	-68
Manchar	smooth brome	7.9 / 20	3	31.5 / 80	3	23.6 / 60	2.4 / 6	7	11.0 / 28	3	8.6 / 22	-65
Latar	orchardgrass	6.7 / 17	3	32.3 / 82	4	25.6 / 65	4.7 / 12	5	15.7 / 40	3	11.0 / 28	-51
Johnstone	tall fescue	6.3 / 16	3	34.3 / 87	3	28.0 / 71	Not measured	9	Not measured	9		
Garrison	creeping foxtail	7.9 / 20	3	31.1 / 79	3	23.2 / 59	5.1 / 13	7	1 / 23	2	4.0 / 10	-71
Largo	tall wheatgrass	11.8 / 30	2	35.0 / 89	3	23.2 / 59	3.9 / 10	8	13.8 / 35	3	9.9 / 25	-61
Jose	tall wheatgrass	11.0 / 28	2	34.3 / 87	3	23.3 / 59	4.7 / 12	8	6.9 / 43	3	12.2 / 31	-51
Alkar	tall wheatgrass	11.0 / 28	2	35.0 / 89	3	24.0 / 61	6.3 / 16	8	15.7 / 40	3	9.4 / 24	-55
Average		9.3 / 23.7	2.4	32.9 / 83.6	3.1	23.6 / 59.9	4.3 / 11.3	7.2	12.7 / 32.3	3.5	8.3 / 21.0	-61.4 ^b
Standard deviation		2.1 / 5.4	0.5	1.7 / 4.3	0.3	2.0 / 5.0	1.4 / 3.6	1.1	2.9 / 7.3	2.0	2.7 / 6.8	--
12 to 16-inch precipitation												
Bromar	mountain brome	11.8 / 30	3	37.4 / 95	2	25.6 / 65	Not measured	9	Not measured	9		
Prairieland	altai wildrye	15.7 / 40	2	43.3 / 110	3	27.6 / 70	7.9 / 20	6	19.7 / 50	3	11.8 / 30	-55
Shoshone	beardless wildrye	9.8 / 25	3	27.2 / 69	4	17.4 / 44	2.0 / 5	8	11.8 / 30	4	9.8 / 25	-57
Trailhead	basin wildrye	15.7 / 40	2	55.1 / 140	3	39.4 / 100	13.8 / 35	3	51.2 / 130	3	37.4 / 95	-7
Magnar	basin wildrye	15.7 / 40	2	53.1 / 135	3	37.4 / 95	13.8 / 35	2	42.1 / 107	3	28.3 / 72	-21
Rosana	western wheatgrass	6.7 / 17	3	26.0 / 66	3	19.3 / 49	4.7 / 12	3	13.0 / 33	3	8.3 / 21	-50
Arriba	western wheatgrass	6.3 / 16	3	31.5 / 80	3	25.2 / 64	4.7 / 12	3	17.7 / 45	3	13.0 / 33	-44
Newhy	hybrid wheatgrass	9.8 / 25	4	38.2 / 97	3	28.4 / 72	7.1 / 18	4	29.5 / 75	3	22.4 / 57	-23
Manska	pubescent wheatgrass	9.1 / 23	3	31.5 / 80	3	22.4 / 57	5.9 / 15	4	15.0 / 38	3	9.1 / 23	-53
Reliant	intermediate wheatgrass	7.9 / 20	3	23.6 / 60	3	15.7 / 40	5.9 / 15	4	15.7 / 40	3	9.8 / 25	-33
Topar	pubescent wheatgrass	8.7 / 22	3	31.5 / 80	3	22.8 / 58	7.1 / 18	4	19.7 / 50	3	12.6 / 32	-38
Luna	pubescent wheatgrass1	1.0 / 28	3	37.8 / 96	3	26.8 / 68	7.5 / 19	4	31.5 / 80	3	24.0 / 61	-17
Tegmar	intermediate wheatgrass	5.9 / 15	3	27.6 / 70	3	21.7 / 55	5.1 / 13	3	14.2 / 36	3	9.1 / 23	-49
Oahe	intermediate wheatgrass	11.8 / 30	3	35.4 / 90	3	23.6 / 60	7.5 / 19	3	23.6 / 60	3	16.1 / 41	-33
Greenar	intermediate wheatgrass	11.8 / 30	3	37.4 / 95	3	25.6 / 65	7.5 / 19	3	21.7 / 55	3	14.2 / 36	-42
Rush	intermediate wheatgrass	11.8 / 30	3	42.1 / 107	3	30.3 / 77	7.5 / 19	3	23.6 / 60	3	16.1 / 41	-44
Paiute	orchardgrass	11.0 / 28	3	26.6 / 60	4	15.6 / 32	5.9 / 15	7	15.0 / 38	2	9.1 / 15	-37
Durar	hard fescue	Not evaluated										
Covar	sheep fescue	Not evaluated										

Footnotes at end of table.

Table 1. Height and vigor of the Aberdeen PMC Grass Display Nursery Plots evaluated 14 May and 28 June 2001 continued.

Accession	Species	Control Plots					Plateau treated Plots					% Change Height 28 June between control & treated
		14 May		28 June		Growth in 45 days	14 May		28 June		Growth in 45 days	
		Height inch / cm	Vigor ^a	Height inch / cm	Vigor ^a			Height inch / cm	Vigor ^a	Height inch / cm		Vigor ^a
12 to 16-inch precipitation continued												
Pryor	slender wheatgrass	7.5 / 19	3	40.2 / 102	3	32.7 / 83	3.5 / 9	7	19.7 / 50	3	5.6 / 41	-51
San Luis	slender wheatgrass	7.5 / 19	3	47.2 / 120	3	39.7 / 101	3.5 / 9	7	21.7 / 55	3	18.2 / 46	-54
Primar	slender wheatgrass	6.7 / 17	2	35.4 / 90	3	28.7 / 73	3.5 / 9	6	17.7 / 45	3	14.2 / 36	-50
Average		10.1 / 25.7	2.9	36.4 / 91.6	3.1	26.3 / 66.4	6.5 / 16.6	4.7	22.3 / 56.7	3.3	15.2 / 39.6	-41.5 ^b
Standard deviation		3.1 / 8.0	0.5	8.7 / 23.4	0.4	7.1 / 18.7	3.1 / 7.8	2.0	10.1 / 25.7	1.4	8.0 / 19.8	
12-inch or less precipitation												
Bozoisky	Russian wildrye	9.8 / 25	3	37.0 / 94	3	27.2 / 69	5.9 / 15	4	11.8 / 30	3	5.9 / 15	-68
Mankota	Russian wildrye	9.8 / 25	3	37.0 / 94	3	27.2 / 69	4.7 / 12	4	10.6 / 27	3	5.9 / 15	-71
Tetracan	Russian wildrye	11.4 / 29	3	37.4 / 95	3	26.0 / 56	4.7 / 12	4	13.4 / 34	3	8.7 / 22	-64
Secar	Snake River wheatgrass	11.8 / 30	3	33.5 / 85	3	21.7 / 55	7.9 / 20	4	20.2 / 52	3	12.3 / 32	-40
Goldar	bluebunch wheatgrass	10.6 / 27	2	27.6 / 70	3	17.0 / 43	4.7 / 12	4	9.8 / 25	3	5.1 / 13	-64
Whitmar	beardless wheatgrass	11.0 / 28	2	27.6 / 70	3	4.7 / 12	4.7 / 12	4	9.4 / 24	3	4.7 / 12	-66
Kirk	crested wheatgrass	11.4 / 29	3	25.6 / 65	3	14.2 / 36	5.9 / 15	3	17.7 / 45	3	11.8 / 30	-31
Parkway	crested wheatgrass	7.9 / 20	3	18.1 / 46	4	10.2 / 26	4.3 / 11	4	7.9 / 20	4	3.6 / 9	-56
Ephraim	crested wheatgrass	5.5 / 14	3	18.9 / 48	3	13.4 / 34	3.9 / 10	3	5.5 / 14	3	1.6 / 4	-71
Fairway	crested wheatgrass	7.9 / 20	3	17.3 / 44	3	9.4 / 24	3.5 / 9	4	7.9 / 20	3	4.4 / 11	-54
Douglas	crested wheatgrass	9.8 / 25	3	21.7 / 55	4	11.9 / 30	3.9 / 10	5	6.3 / 16	4	2.4 / 6	-71
Hycrest	crested wheatgrass	10.2 / 26	3	23.6 / 60	3	13.4 / 34	5.9 / 15	3	15.7 / 40	3	9.8 / 25	-33
Nordan	crested wheatgrass	9.1 / 23	3	24.0 / 61	3	14.9 / 38	5.9 / 15	3	17.7 / 45	3	11.8 / 30	-26
P-27	Siberian wheatgrass	9.8 / 25	3	23.6 / 60	3	13.8 / 35	5.5 / 14	3	19.7 / 50	3	14.2 / 36	-17
Vavilov	Siberian wheatgrass	7.9 / 20	3	23.6 / 60	3	15.7 / 40	5.1 / 13	3	15.7 / 40	3	10.6 / 27	-33
Critana	thickspike wheatgrass	6.7 / 17	3	20.9 / 53	3	14.2 / 36	3.5 / 9	5	11.8 / 30	3	8.3 / 21	-44
Bannock	thickspike wheatgrass	7.9 / 20	3	29.5 / 75	3	21.6 / 55	3.5 / 9	6	19.7 / 50	3	16.2 / 41	-33
Sodar	streambank wheatgrass	4.7 / 12	3	9.8 / 25	3	5.1 / 13	3.1 / 8	5	5.9 / 15	3	2.8 / 7	-40
SL-Hybrid	wheatgrass	6.7 / 17	3	26.0 / 66	3	19.3 / 49	3.9 / 49	5	9.1 / 23	3	5.2 / 13	-65
Canbar	canby bluegrass	Not evaluated										
9040187	bottlebrush squirreltail	Not evaluated										
9024804	Columbia needlegrass	Not evaluated										
Average		8.9 / 22.7	2.9	25.4 / 64.5	3.1	16.5 / 41.8	4.8 / 12.2	4.0	12.4 / 31.6	3.1	7.6 / 19.4	-51.0 ^b
Standard deviation		2.1 / 5.2	0.3	7.3 / 18.5	0.3	6.1 / 15.4	1.2 / 3.0	0.9	5.0 / 12.7	0.3	4.3 / 10.9	

^a Vigor is a subjective rating of plant health. Rated 1 to 9, 1 is best, 9 is worst.

^b Percent change of the average heights.

Table 2. Dry matter forage yield of the Aberdeen PMC Grass Display Nursery Plots, 2001 growing season.

<u>Accession</u>	<u>Species</u>	<u>Control Plots</u>		<u>Plateau treated Plots</u>		<u>Percent Change</u>
		<u>Pounds per acre</u>	<u>kg/ ha</u>	<u>Pounds per acre</u>	<u>kg/ ha</u>	
16-inch or greater precipitation						
Paddock	meadow brome	8,415	9,434	2,838	3,182	-66
Fleet	meadow brome	7,800	8,744	3,586	4,020	-54
Regar	meadow brome	6,147	6,891	1,615	1,811	-74
Manchar	smooth brome	4,314	4,836	2,453	2,750	-43
Latar	orchardgrass	4,019	4,506	3,069	3,441	-24
Johnstone	tall fescue	4,952 ^a	5,552 ^a	Not clipped		
Garrison	creeping foxtail	3,097	3,472	1,433	1,606	-54
Largo	tall wheatgrass	7,310	8,195	1,540	1,726	-79
Jose	tall wheatgrass	5,684	6,372	2,093	2,347	-63
Alkar	tall wheatgrass	4,222	4,733	2,708	3,035	-36
Average		5,668	6,354	2,371	2,658	-58 ^b
Standard deviation		1,880	2,107	752	843	
12 to 16-inch precipitation						
Bromar	mountain brome	2,424 ^c	2,717 ^c	Not clipped		
Prairieland	altai wildrye	6,812	7,636	3,680	4,126	-46
Shoshone	beardless wildrye	3,597	4,032	1,101	1,234	-69
Trailhead	basin wildrye	3,977	4,458	4,854	5,442	+22
Magnar	basin wildrye	3,756	4,211	3,188	3,574	-15
Rosana	western wheatgrass	4,885	5,476	3,313	3,714	-32
Arriba	western wheatgrass	3,735	4,187	3,615	4,052	- 3
Newhy	hybrid wheatgrass	3,387	3,797	3,902	4,375	+15
Manska	pubescent wheatgrass	5,236	5,869	4,505	5,050	-14
Reliant	intermediate wheatgrass	3,582	4,016	4,161	4,665	+16
Topar	pubescent wheatgrass	3,528	3,955	2,917	3,270	-17
Luna	pubescent wheatgrass	5,556	6,229	4,815	5,398	-13
Tegmar	intermediate wheatgrass	2,915	3,268	3,466	3,886	+19
Oahe	intermediate wheatgrass	6,814	7,639	4,363	4,891	-36
Greenar	intermediate wheatgrass	5,884	6,597	3,387	3,797	-42
Rush	intermediate wheatgrass	4,944	5,542	3,048	3,417	-38
Paiute	orchardgrass	2,360	2,646	1,356	1,520	-43
Durar	hard fescue			Not clipped		
Covar	sheep fescue			Not clipped		
Pryor	slender wheatgrass	2,515	2,819	1,032	1,157	-59
San Luis	slender wheatgrass	3,097	3,471	1,003	1,125	-68
Primar	slender wheatgrass	3,679	4,125	3,642	4,083	- 1
Average		4,134	4,634	3,141	3,521	-30 ^b
Standard deviation		1,360	1,525	1,220	1,368	

Footnotes at end of table.

Table 2. Dry matter forage yield of the Aberdeen PMC Grass Display Nursery Plots, 2001 growing season continued.

<u>Accession</u>	<u>Species</u>	<u>Control Plots</u>		<u>Plateau treated Plots</u>		<u>Percent Change</u>
		<u>Pounds per acre</u>	<u>kg/ ha</u>	<u>Pounds per acre</u>	<u>kg/ ha</u>	
12-inch or less precipitation						
Bozoisky	Russian wildrye	3,173	3,557	2,607	2,923	-18
Mankota	Russian wildrye	3,512	3,937	2,230	2,500	-37
Tetracan	Russian wildrye	2,595	2,909	2,170	2,433	-16
Secar	Snake River wheatgrass	3,985	4,467	1,907	2,138	-52
Goldar	bluebunch wheatgrass	4,958	5,558	2,927	3,282	-41
Whitmar	beardless wheatgrass	3,465	3,885	2,740	3,071	-21
Kirk	crested wheatgrass	3,299	3,698	3,122	3,500	- 5
Parkway	crested wheatgrass	2,230	2,500	1,756	1,969	-21
Ephraim	crested wheatgrass	1,927	2,161	790	886	-59
Fairway	crested wheatgrass	2,211	2,479	1,612	1,807	-27
Douglas	crested wheatgrass	2,268	2,543	1,834	2,057	-19
Hycrest	crested wheatgrass	2,527	2,833	2,072	2,323	-18
Nordan	crested wheatgrass	2,961	3,320	2,022	2,267	-32
P-27	Siberian wheatgrass	3,122	3,500	2,562	2,872	-18
Vavilov	Siberian wheatgrass	3,362	3,769	2,136	2,395	-36
Critana	thickspike wheatgrass	2,853	3,199	2,153	2,413	-25
Bannock	thickspike wheatgrass	4,146	4,648	1,868	2,094	-55
Sodar	streambank wheatgrass	2,372	2,659	2,077	2,329	-12
SL-Hybrid	wheatgrass	2,705	3,032	1,805	2,024	-33
Canbar	canby bluegrass	Not clipped		Not clipped		
9040187	bottlebrush squirreltail	Not clipped		Not clipped		
9024804	Columbia needlegrass	Not clipped		Not clipped		
Average		3,035	3,403	2,126	2,383	-30 ^b
Standard deviation		769	861	524	588	

^a Not included in averages. When included in averages for the control plots percentages for pounds per acre and kilograms per hectare are 5,596 and 6,274 respectively.

^b Percent change of the average of control and treated yields rather than average of percents change.

^c Not included in averages. When included in averages for the control plots percentages for pounds per acre and kilograms per hectare are 4,395 and 4,927 respectively.

Table 3. Percent total digestible nutrients, nitrogen, crude protein, and the difference between the control and Plateau treated plots.

Accession	Species	Percent TDN			Percent nitrogen			Percent crude protein ^a		
		Control	Plateau	Difference	Control	Plateau	Difference	Control	Plateau	Difference
16-inch or greater precipitation										
Paddock	meadow brome	58	73	15	0.9	1.6	0.7	6	10	4
Fleet	meadow brome	54	65	11	0.7	1.1	0.4	4	7	3
Regar	meadow brome	58	77	19	1.0	1.9	0.9	6	12	6
Manchar	smooth brome	57	76	19	1.0	2.0	1.0	6	13	7
Latar	orchardgrass	63	69	6	1.1	1.4	0.3	7	9	2
Johnstone	tall fescue	65 ^b	--	--	0.9 ^b	--	--	6 ^b	--	--
Garrison	creeping foxtail	65	76	11	1.0	1.6	0.6	6	10	4
Largo	tall wheatgrass	58	70	12	1.1	1.9	0.8	7	12	5
Jose	tall wheatgrass	58	66	8	1.0	1.5	0.5	6	9	3
Alkar	tall wheatgrass	59	65	6	1.0	1.7	0.7	6	11	5
Average		58.9	70.8	11.9	0.98	1.63	0.66	6.0	10.3	4.3
Standard deviation		3.3	4.9	5.0	0.12	0.28	0.23	0.9	1.9	1.6
12 to 16-inch precipitation										
Bromar	mountain brome	60 ^c	--	--	0.9 ^c	--	--	6 ^c	--	--
Prairieland	altai wildrye	58	66	8	1.2	1.6	0.4	8	10	2
Shoshone	beardless wildrye	60	80	20	0.9	2.7	1.8	6	17	11
Trailhead	basin wildrye	56	62	6	0.7	0.9	0.2	4	6	2
Magnar	basin wildrye	55	62	7	0.9	1.1	0.2	6	6	0
Rosana	western wheatgrass	63	68	5	0.8	1.3	0.5	5	8	3
Arriba	western wheatgrass	57	61	4	0.9	1.2	0.3	6	8	2
Newhy	hybrid wheatgrass	60	66	6	0.7	1.1	0.4	4	7	3
Manska	pubescent wheatgrass	60	64	4	0.9	1.2	0.3	6	8	2
Reliant	intermediate wheatgrass	61	65	4	0.9	1.2	0.3	6	8	2
Topar	pubescent wheatgrass	60	62	2	0.8	0.9	0.1	5	6	1
Luna	pubescent wheatgrass	55	62	7	0.7	0.9	0.2	4	6	2
Tegmar	intermediate wheatgrass	59	62	3	1.0	1.1	0.1	6	7	1
Oahe	intermediate wheatgrass	58	63	5	0.7	1.2	0.5	4	8	4
Greenar	intermediate wheatgrass	58	62	4	0.9	1.2	0.3	6	8	2
Rush	intermediate wheatgrass	55	63	8	0.8	1.3	0.5	5	8	3
Paiute	orchardgrass	57	73	16	0.9	2.0	1.1	6	13	7
Durar	hard fescue	Not sampled								
Covar	sheep fescue	Not sampled								
Pryor	slender wheatgrass	50	63	13	0.6	1.8	1.2	4	11	7
San Luis	slender wheatgrass	54	62	8	0.8	1.4	0.6	5	9	4
Primar	slender wheatgrass	52	64	12	0.8	1.5	0.7	5	9	4
Average		57.3	64.7	7.5	0.84	1.35	0.51	5.3	8.6	3.3
Standard deviation		3.2	4.7	4.7	0.13	0.44	0.43	1.1	2.7	2.6

Footnotes at end of table.

Table 3. Percent total digestible nutrients, nitrogen, crude protein, and the difference between the control and Plateau treated plots, continued.

Accession	Species	Percent TDN			Percent nitrogen			Percent crude protein ^a		
		Control	Plateau	Difference	Control	Plateau	Difference	Control	Plateau	Difference
12-inch or less precipitation										
Bozoisky	Russian wildrye	47	69	22	0.6	1.5	0.9	4	9	5
Mankota	Russian wildrye	56	68	12	0.7	1.5	0.8	4	9	5
Tetracan	Russian wildrye	63	69	6	1.0	1.5	0.5	6	9	3
Secar	Snake River wheatgrass	57	64	7	0.9	1.3	0.4	6	8	2
Goldar	bluebunch wheatgrass	58	72	14	0.7	2.1	1.4	4	13	9
Whitmar	beardless wheatgrass	56	65	9	0.7	1.4	0.7	4	9	5
Kirk	crested wheatgrass	61	67	6	0.7	0.9	0.2	4	6	2
Parkway	crested wheatgrass	62	63	1	0.7	0.7	0.0	4	4	0
Ephraim	crested wheatgrass	61	67	6	0.8	1.1	0.3	5	7	3
Fairway	crested wheatgrass	62	67	5	0.7	0.9	0.2	4	6	2
Douglas	crested wheatgrass	67	74	7	0.8	1.5	0.7	5	9	4
Hycrest	crested wheatgrass	63	68	5	0.6	0.9	0.3	4	6	2
Nordan	crested wheatgrass	63	67	5	0.7	1.0	0.3	4	6	2
P-27	Siberian wheatgrass	61	64	3	0.7	1.1	0.4	4	7	3
Vavilov	Siberian wheatgrass	63	65	2	0.7	0.9	0.2	4	6	2
Critana	thickspike wheatgrass	58	66	8	0.7	1.3	0.6	4	8	4
Bannock	thickspike wheatgrass	56	64	8	0.5	1.3	0.8	3	8	5
Sodar	streambank wheatgrass	61	66	5	0.8	1.3	0.5	5	8	3
SL-Hybrid	wheatgrass	62	68	6	0.8	1.6	0.8	5	10	5
Canbar	canby bluegrass	Not sampled								
9040187	bottlebrush squirreltail	Not sampled								
9024804	Columbia needlegrass	Not sampled								
Average		59.8	67.0	7.2	0.73	1.25	0.53	4.4	7.8	3.5
Standard deviation		4.3	2.8	4.7	0.11	0.34	0.33	0.8	2.0	2.0

^a Percent crude protein is the percent nitrogen times 6.25 and rounded to the nearest integer, personal communication Joel Douglas of the Jamie L. Whitten PMC at Coffeeville, Mississippi.

^b Not included in averages. When included in averages for the control plots percentages for TDN, N, and crude protein are 59.5, 0.97, and 6 respectively.

^c Not included in averages. When included in averages for the control plots percentages for TDN, N, and crude protein are 57.4, 0.84, and 5.4 respectively.

Table 4. Percent acid detergent fiber and percent neutral detergent fiber and the difference between the control and Plateau treated plots, 28 June 2001.

Accession	Species	Percent ADF			Percent NDF		
		Control	Plateau	Difference	Control	Plateau	Difference
16-inch or greater precipitation							
Paddock	meadow brome	37	31	6	65	53	12
Fleet	meadow brome	41	35	6	68	59	9
Regar	meadow brome	40	30	10	65	51	14
Manchar	smooth brome	39	31	8	66	52	14
Latar	orchardgrass	37	33	4	60	56	4
Johnstone	tall fescue	33 ^a	--	--	57 ^a	--	--
Garrison	creeping foxtail	33	30	3	58	50	8
Largo	tall wheatgrass	39	33	6	66	59	7
Jose	tall wheatgrass	39	34	5	65	61	4
Alkar	tall wheatgrass	37	35	2	64	63	1
Average		38.0	32.4	5.6	64.1	56.0	8.1
Standard deviation		2.3	2.0	2.5	3.1	4.7	4.6
12 to 16-inch precipitation							
Bromar	mountain brome	37 ^b	--	--	62 ^b	--	--
Prairieland	altai wildrye	40	36	4	66	61	5
Shoshone	beardless wildrye	35	28	7	64	54	10
Trailhead	basin wildrye	39	37	2	66	60	6
Magnar	basin wildrye	42	36	6	67	62	5
Rosana	western wheatgrass	33	32	1	60	57	3
Arriba	western wheatgrass	37	35	2	67	64	3
Newhy	hybrid wheatgrass	37	34	3	61	57	4
Manska	pubescent wheatgrass	36	35	1	62	61	1
Reliant	intermediate wheatgrass	36	34	2	61	60	1
Topar	pubescent wheatgrass	37	39	-2	62	59	3
Luna	pubescent wheatgrass	41	38	3	66	60	6
Tegmar	intermediate wheatgrass	39	38	1	64	61	3
Oahe	intermediate wheatgrass	37	36	1	63	61	2
Greenar	intermediate wheatgrass	39	36	3	64	62	2
Rush	intermediate wheatgrass	39	36	3	67	62	5
Paiute	orchardgrass	38	33	5	65	55	10
Durar	hard fescue	Not sampled					
Covar	sheep fescue	Not sampled					
Pryor	slender wheatgrass	43	39	4	72	66	6
San Luis	slender wheatgrass	42	38	4	68	64	4
Primar	slender wheatgrass	41	36	5	71	63	8
Average		38.5	35.6	2.9	65.1	60.5	4.6
Standard deviation		2.6	2.7	2.1	3.3	3.1	2.7
12-inch or less precipitation							
Bozoisky	Russian wildrye	46	34	12	74	57	17
Mankota	Russian wildrye	42	34	8	68	57	11
Tetracan	Russian wildrye	36	34	2	60	56	6
Secar	Snake River wheatgrass	41	37	4	65	61	4
Goldar	bluebunch wheatgrass	38	32	6	64	58	6
Whitmar	beardless wheatgrass	40	36	4	65	61	4
Kirk	crested wheatgrass	35	30	5	61	56	5
Parkway	crested wheatgrass	33	32	1	61	59	2

Ephraim	crested wheatgrass	35	32	3	61	57	4
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Footnotes at end of table.

Table 4. Percent acid detergent fiber and percent neutral detergent fiber and the difference between the control and Plateau treated plots, 28 June 2001 continued.

Accession	Species	Percent ADF			Percent NDF		
		Control	Plateau	Difference	Control	Plateau	Difference
Fairway	crested wheatgrass	33	29	4	60	56	4
Douglas	crested wheatgrass	32	28	4	54	53	1
Hycrest	crested wheatgrass	33	30	3	58	55	3
Nordan	crested wheatgrass	33	20	3	58	57	1
P-27	Siberian wheatgrass	35	33	2	60	60	0
Vavilov	Siberian wheatgrass	34	32	2	58	58	0
Critana	thickspike wheatgrass	38	34	4	63	59	4
Bannock	thickspike wheatgrass	39	35	4	64	61	3
Sodar	streambank wheatgrass	36	34	2	60	59	1
SL-Hybrid	wheatgrass	36	34	2	59	59	0
Canbar	bottlebrush squirreltail	Not sampled					
9024804	Columbia needlegrass	Not sampled					
Average		36.6	32.1	3.9	61.7	57.8	4.0
Standard deviation		3.7	3.7	2.5	4.4	2.2	4.1

^a Not included in averages. When included in averages for the control plots percentages for ADF and NDF are 37.5 and 63.4 respectively.

^b Not included in averages. When included in averages for the control plots percentages for ADF and NDF are 38.4 and 64.9 respectively.

Table 5. Quality standards for legume, grass, or grass-legume hay.^a

Quality Standard	CP	ADF	NDF	DDM	DMI	RFV
	Percent					
Prime	>19	<31	<40	>65	>3.0	>151
1	17-19	31-35	40-46	62-65	3.0-2.6	151-125
2	14-16	36-40	47-53	58-61	2.5-2.3	124-103
3	11-13	41-42	54-60	56-57	2.2-2.0	102-87
4	8-10	43-45	61-65	53-55	1.9-1.8	86-75
5	<8	>45	>65	<53	<1.8	<75

CP = crude protein, ADF = acid detergent fiber, NDF = neutral detergent fiber.

Digestible dry matter (DDM%) = 88.9-0.779 ADF (% of dry matter).

Dry matter intake (DMI) = 120/forage NDF (% of DM).

Relative feed value (RFV) calculated from (DDM x DMI)/1.29.

Reference hay of 100 RFV contains 41% ADF and 53% NDF.

^a Hay Market Task Force, American Forage and Grassland Council, from D.M. Ball and others 1991.

OFF-CENTER ACTIVITIES

Trout Creek, Nevada Off-Center Upland Advanced Test Site
Summary of Progress 1987 - 2002
Loren St. John, Team Leader Aberdeen Plant Materials Center
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INTRODUCTION

The purpose of the Trout Creek Off-Center Advanced Test Site is to evaluate the potential of grasses and shrubs for revegetation and forage for livestock and wildlife in areas of 8 - 12 inch mean annual precipitation in northeastern Nevada and south central Idaho. The test site is located in MLRA D25, Owyhee High Plateau of the Western Range and Irrigation region of the intermountain western United States.

The test site is located approximately 20 miles southeast of the town of Jackpot, Nevada on land administered by the United States Department of Interior - Bureau of Land Management and in cooperation with the San Jacinto Ranch, Salmon River Grazing Association and the Northeast Elko Conservation District.

The test site was identified and an enclosure fence was built in 1987 to exclude livestock and rabbits. The enclosure is approximately 10 acres in size. Three soil series exist in the enclosure. The Devilsgait series consists of very deep, very poorly drained soils that formed in silty alluvium from mixed rock sources with a component of loess and volcanic ash. Texture is a stratified silt loam and silty clay loam and these soils are found on flood plains. The Kelk series consists of very deep, well drained soils that formed in alluvium and loess derived from volcanic rocks and these soils are found on inset fans, fan remnants, stream terraces, and fan skirts. Texture is silt loam. The Chiara soil series consists of shallow, well-drained soils that formed in alluvium from mixed rock sources with a loess mantle high in volcanic ash. The Chiara soils are found on summit shoulders and side slopes of fan piedmont remnants and plateaus and have fine sandy loam, loam and silt loam textures. The pH for the soil series on the test site range from 7 to 8 (National Cooperative Soil Survey).

The ecological sites are Loamy Bottom, Loamy, and Loamy Fan and with 8 to 10 inches mean annual precipitation. The natural vegetation includes bluebunch wheatgrass, Thurber needlegrass, basin wildrye, Nevada bluegrass, Sandberg bluegrass, bottlebrush squirreltail, Wyoming big sagebrush, and green and rubber rabbitbrush. Indian ricegrass, needle and thread grass, and sand dropseed are also common on sandy soils. Inland saltgrass and creeping wildrye are also found in bottomland areas if soil salinity is elevated. The elevation is 5480 feet above sea level, the mean annual temperature is about 46 ° F and the frost-free period is 100 to 120 days.

MATERIALS AND METHODS

The off-center advanced test site is composed of six components: an inter-center strain trial of grasses; an inter-center strain trial of rangeland shrubs; a bottomland grass performance trial; a grass, forb and shrub display nursery; and riparian shrub testing

trials. This report summarizes the plant testing activities for all but the riparian shrub testing trials.

The inter-center grass strain trial includes 51 accessions arranged in species groups. Each species group is arranged in a complete randomized block design with 4 replications. The rangeland shrub inter-center strain trial includes 7 accessions of fourwing saltbush, *Atriplex canescens* and 6 accessions of winterfat *Krascheninnikovia* and *Ceratoides* spp. with each species group arranged in a complete randomized block design with 4 replications. The bottomland grass performance trial includes 5 accessions of wildrye *Leymus* spp. that are also arranged in a complete randomized block design with 4 replications. The grass, forb and shrub display nursery includes 64 accessions to allow visitors to view examples of released plant materials and promising accessions that are adapted to the general area. Tables 1, 2, and 3 list the accessions planted.

The existing vegetation prior to planting was dominated by Wyoming big sagebrush with an understory of Sandberg bluegrass, bottlebrush squirreltail and cheatgrass. The seedbed was prepared with an offset disk to break down the sagebrush plants, which were raked off the planting site following disking, and then the seedbed was smoothed and firmed with a culti-packer.

Seed for each accession was mixed with rice hulls prior to seeding to plant approximately 25 Pure Live Seeds (PLS) per square foot. A double disk drill with press wheels was used to plant the plots. Plots are 6.67 feet wide by 33 feet long. Row spacing is 10 inches with each plot consisting of 8 rows. Depth of seeding ranged from 0.25 to 0.75 inches dependent upon species. Plots were seeded November 16-19, 1987.

Three different seed mixtures were seeded on the area disturbed by seedbed preparation but not planted into plots. The perimeter of the test site that was disturbed was planted to a firebreak mixture. A guard row mixture was planted between the blocks of plots. The area between the guard rows and the firebreak mixture were planted to a cover crop mixture. The following lists the components of each seed mixture:

<u>Fire break mix</u> (Pounds PLS per acre)		<u>Guard row mix</u> (Pounds PLS per acre)	
Sodar streambank wheatgrass	(3)	Canbar canby bluegrass	(1)
P-27 Siberian wheatgrass	(2)	Ephraim crested wheatgrass	(2)
Ephraim crested wheatgrass	(2)	P-27 Siberian wheatgrass	(2)
9003136 fourwing saltbush	(2)	Sodar streambank wheatgrass	(3)
Appar blue flax	(0.5)	Delar small burnet	(1)
<u>Cover Crop mix</u> (Pounds PLS per acre)			
P-27 Siberian wheatgrass	(5)		
Covar sheep fescue	(2)		

The site was evaluated in 1992 and forage production data was collected by clipping forage from each replicated grass plot, air drying the collected samples and weighing the dry sample. A 9.6 ft.² diameter circular frame was used to harvest the sample from near the middle of each plot. Samples were harvested August 11-13, 1992. Data is shown in the accompanying tables.

In 1995, the Display Nursery was evaluated and forage production data was obtained in the same manner as in 1992. Samples were harvested on July 27, 1995 with assistance of Idaho NRCS field office and Idaho State Department of Lands personnel.

On September 3, 2002 the replicated grass and shrub plots and the Display Nursery were evaluated. Percent stand and plant vigor was evaluated for all plots. Forage production was estimated for all grass plots based upon weight unit estimates, and plant height and canopy width data were collected from the replicated shrub plots. The replicated grass plots were also evaluated for their ability to spread.

The Twin Falls NRCS field office collected precipitation data from the installed rain gauge at the test site and the data is shown in Table 4. Precipitation ranged from 7.10 inches during the 1997 crop year to 16.50 inches during the 1995 crop year. The mean annual precipitation for the 14 years of data collected is 10.29 inches.

SUMMARY OF EVALUATIONS AND DISCUSSION

Tables 1, 2, and 3 summarize evaluation data from the Trout Creek Off-Center Upland Advanced Test Site.

Group 1 (crested wheatgrass accessions) had the best overall stands 15 years after the site was planted. 'Hycrest' had the best stand during the September, 2002 evaluation and 'Nordan' had the best vigor. Hycrest also produced the most forage. In 1992, 'CD II' produced the most forage. The only accession that did not establish within this group was 'Paiute' orchardgrass, which probably should not have been seeded at the site because it is not usually adapted to areas with less than 16 inches of annual precipitation. None of the accessions in group 1 had spread appreciably beyond the plot they were seeded into.

The accession with the best stand in group 2 (Russian wildrye accessions) was 'Bozoisky-Select'. 'Sawki' had the poorest stand. Bozoisky-Select also had the best vigor rating after 15 years of establishment at the test site. Bozoisky-Select produced the most forage, both in 1992 and 2002. As with group 1, none of the accessions had spread beyond the plot they were seeded into.

Group 3 accessions (mammoth wildrye) had very poor or nonexistent stands, both in 1992 and 2002. Accession ND-691 was the only accession that was present during both evaluation dates and it had poor vigor in September, 2002.

AI Hybrid intermediate wheatgrass had the best stand and vigor rating in group 4 (intermediate and pubescent wheatgrass accessions) with a 21.0 percent stand at the

September, 2002 evaluation. AI Hybrid produced the most forage in 2002. In 1992, 'Topar' pubescent wheatgrass produced the most forage. AI Hybrid was also rated as having the best ability to spread within this group.

The accessions planted in group 5 (bluebunch wheatgrass and related wheatgrass accessions), did not fare too well at the Trout Creek Off-Center Upland Advanced Test Site. In 1992, all of the accessions, with the exception of accession number 9027395 were represented at the site based upon yield data. By 2002, most accessions had deteriorated to less than 1 percent stands. 'Secar' Snake River wheatgrass had a 1.3 percent stand at the 2002 evaluation with only fair vigor. None of the accessions within group 5 exhibited any ability to spread.

'Trailhead' basin wildrye had the best stand in group 6 with 45 percent stand at the September, 2002 evaluation and 'Prairieland' altai wildrye had the best vigor rating within this group of accessions. Accession number 9022151 beardless wildrye showed the strongest ability to spread within the group. Trailhead produced the most forage in 2002, while Prairieland produced the most forage in 1992. None of the accessions within group 6 exhibited any ability to spread.

'Sodar' streambank wheatgrass had the best stand within Group 7 which represents accessions of thickspike wheatgrass at the September, 2002 evaluation. 'Bannock' had the best plant vigor. 'Schwendimar' produced the most forage in both 1992 and 2002. Bannock exhibited the strongest ability to spread of the accessions within this group.

The Indian ricegrass accessions (Group 8) were not present at the September, 2002 evaluation. In 1992, 'Rimrock' produced the most forage.

'Magnar' basin wildrye had the best stand in the bottomland test block in 2002 and Trailhead had the best vigor rating. Trailhead produced the most forage in 2002 but only slightly more than Magnar. In 1992, Prairieland altai wildrye produced the most forage in the bottomland test block. Accession number 9022151 beardless wildrye had the best spreading ability of this group.

The average plant height and canopy width of the fourwing saltbush accessions after 15 years of establishment averaged 2.3 feet (Table 2). The best stands were produced by accessions that were 3 of the original accessions of Snake River Plains Selected Class Germplasm that was released by the Aberdeen Plant Materials Center in 2001. Those three accessions also had the best plant vigor ratings at the September, 2002 evaluation.

Accession number 9028608 Pamirian winterfat (an introduced species) had by far the best stand, best plant vigor, and was the largest of all the accessions of winterfat planted at the Trout Creek Off-Center Upland Advanced Test Site. Three of the original accessions of Northern Cold Desert Selected Class Germplasm (a native species) that was released by the Aberdeen Plant Materials Center in 2001 were planted at the site in 1987.

Table 3 summarizes the data collected from the Display Nursery in 1995 and 2002 and is ranked from greatest percent stand to least percent stand from the evaluation in September, 2002. 'Rosana' western wheatgrass had the best stand of the grasses. In 1995, 'P-27' Siberian wheatgrass produced the most forage. In 2002, Trailhead basin wildrye produced the most forage. 'Immigrant' forage kochia had the best stand of the forb accessions planted in the Display Nursery at the September, 2002 evaluation. 'Rincon' fourwing saltbush had the best stand of the shrub plots and was 4.5 feet tall by 4 feet in canopy width in September, 2002.

CONCLUSIONS

The purpose of the Trout Creek Off-Center Advanced Test Site is to evaluate the potential of grasses and shrubs for revegetation and forage for livestock and wildlife in areas of 8 - 12 inch mean annual precipitation in northeastern Nevada and south central Idaho.

As a group, the crested wheatgrass accessions have the best stands fifteen years after the site was planted. The native wildrye group had the next best stands followed by the Russian wildrye accessions. The Indian ricegrass accessions had no stands remaining fifteen years after planting and the mammoth wildrye accessions appeared to not have established.

Forage production significantly declined for all accessions planted at the test site from data collected in 1992 to the data collected in 2002. The decline in stands and forage yields may be partially attributed to a series of 2 to 3 years of inadequate amounts of winter and spring precipitation before the evaluation conducted in 2002. The buildup of excess plant residues because the plants are not harvested periodically also tends to lower plant vigor and productivity.

Table 1.
Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
Summary of September 3, 2002 Evaluation Data

Replicated Grass Plots

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Ability ^{3/} to Spread	Forage Production ^{4/} (pounds per acre)	
Group 1							2002	1992
Hycrest	crested wheatgrass	<i>Agropyron cristatum x desertorum</i>	ARS	42.5	3.3	9.0	188	610
Fairway	crested wheatgrass	<i>Agropyron cristatum</i>	Canada	38.8	3.8	8.8	119	845
Ephraim	crested wheatgrass	<i>Agropyron cristatum</i>	Aberdeen	35.0	3.8	8.3	125	590
Nordan	crested wheatgrass	<i>Agropyron desertorum</i>	ARS	33.8	3.0	8.0	169	705
CD II	crested wheatgrass	<i>Agropyron cristatum x desertorum</i>	ARS	31.3	3.0	8.8	150	870
Kirk	crested wheatgrass	<i>Agropyron cristatum</i>	Canada	28.8	3.5	8.0	144	675
6x	crested wheatgrass	<i>Agropyron desertorum</i>	ARS	23.8	5.3	8.8	74	600
P-27	Siberian wheatgrass	<i>Agropyron fragile</i>	Aberdeen	23.8	3.3	8.3	126	720
Parkway	crested wheatgrass	<i>Agropyron cristatum</i>	Canada	15.5	3.5	8.3	90	845
U-33	crested wheatgrass	<i>Agropyron cristatum</i>	USFS	14.3	4.3	8.8	106	490
Paiute	orchardgrass	<i>Dactylis glomerata</i>	Aberdeen	0.0	9.0	9.0	0	0
Mean				26.1	4.1	8.5	117	632
Group 2								
Bozoisksy-Select	Russian wildrye	<i>Psathyrostachys juncea</i>	Bridger	31.3	2.8	9.0	194	1195
Syn A	Russian wildrye	<i>Psathyrostachys juncea</i>	ARS	22.5	3.8	8.3	131	850
Vinall	Russian wildrye	<i>Psathyrostachys juncea</i>	ARS	22.5	4.0	9.0	112	625
Swift	Russian wildrye	<i>Psathyrostachys juncea</i>	Canada	21.3	5.3	9.0	82	605
Cabree	Russian wildrye	<i>Psathyrostachys juncea</i>	Bridger	15.0	4.5	9.0	115	1180
Sawki	Russian wildrye	<i>Psathyrostachys juncea</i>	Bridger	4.5	5.0	9.0	39	745
Mean				19.5	4.2	8.9	112	866
Group 3								
ND-691	mammoth wildrye	<i>Leymus racemosus</i>	Bismarck	0.5	7.3	9.0	8	90
Volga	mammoth wildrye	<i>Leymus racemosus</i>	Meecker	0.0	9.0	9.0	0	0
PI-478832	mammoth wildrye	<i>Leymus racemosus</i>	Bridger	0.0	9.0	9.0	0	0
Mean				0.2	8.4	9.0	3	30

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^{3/} Observation of spreading ability by seed or vegetative means. Rated 1 readily spreads, to 9 no spread.

^{4/} Dry matter forage yield was estimated by weight units in 2002 and by clipping plots in 1992. See text for further explanation.

Table 1 continued.
Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
Summary of September 3, 2002 Evaluation Data

Replicated Grass Plots

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Ability ^{3/} to Spread	Forage Production ^{4/} (pounds per acre)		
							2002	1992	
Group 4									
AI Hybrid	intermediate wheatgrass	<i>Thinopyrum intermedium</i> x	ARS	21.0	2.8	3.0	71	700	
Topar	pubescent wheatgrass	<i>Thinopyrum intermedium</i>	Aberdeen	17.5	4.5	5.0	41	885	
Greenar	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Pullman	11.8	4.8	4.8	36	660	
Luna	pubescent wheatgrass	<i>Thinopyrum intermedium</i>	Los Lunas	6.8	3.5	4.5	29	775	
Oahe	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	South Dakota	4.0	6.3	6.3	12	615	
Rush	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Aberdeen	3.8	5.5	5.8	19	235	
Tegmar	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Aberdeen	2.5	7.3	7.0	17	420	
Amur	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Los Lunas	2.5	5.8	5.3	11	230	
				Mean	8.7	5.0	5.2	30	565
Group 5									
Secar	Snake River wheatgrass	<i>Elymus wawawaiensis</i>	Pullman	1.3	5.5	9.0	10	960	
PI-232127	bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	Bridger	0.3	8.3	9.0	1	350	
Whitmar	beardless wheatgrass	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	Pullman	0.3	8.5	9.0	1	485	
9027396	RS wheatgrass	<i>Elymus hoffmannii</i>	ARS	0.0	9.0	9.0	0	155	
Goldar	bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	Aberdeen	0.0	9.0	9.0	0	905	
9027395	RS wheatgrass	<i>Elymus hoffmannii</i>	ARS	0.0	9.0	9.0	0	0	
				Mean	0.3	8.2	9.0	2	476
Group 6									
Trailhead	basin wildrye	<i>Leymus cinereus</i>	Bridger	45.0	3.3	8.8	331	495	
Prairieland	altai wildrye	<i>Leymus angustus</i>	Bridger	28.0	2.8	4.8	173	835	
9022152	beardless wildrye	<i>Leymus triticoides</i>	Aberdeen	23.8	4.3	3.8	30	755	
Magnar	basin wildrye	<i>Leymus cinereus</i>	Aberdeen	23.8	3.5	5.3	181	450	
9022151	beardless wildrye	<i>Leymus triticoides</i>	Aberdeen	13.8	3.0	2.3	23	815	
Shoshone	beardless wildrye	<i>Leymus triticoides</i>	Bridger	1.0	6.8	6.5	4	30	
				Mean	22.5	3.9	5.2	124	563

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^{3/} Observation of spreading ability by seed or vegetative means. Rated 1 readily spreads, to 9 no spread.

^{4/} Dry matter forage yield was estimated by weight units in 2002 and by clipping plots in 1992. See text for further explanation.

Table 1 continued.
 Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
 Summary of September 3, 2002 Evaluation Data

Replicated Grass Plots

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Ability ^{3/} to Spread	Forage Production ^{4/} (pounds per acre)	
Group 7							2002	1992
Sodar	streambank wheatgrass	<i>Elymus lanceolatus</i>	Aberdeen	9.0	5.5	5.0	14	745
Bannock	thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Aberdeen	3.0	4.0	4.5	8	850
Schwendimar	thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Pullman	2.0	5.0	4.8	19	1085
PI-236663	thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Pullman	1.0	5.3	5.8	5	0
PI-236664	thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Pullman	0.8	6.5	6.8	3	415
SL hybrid	thickspike wheatgrass	<i>Elymus lanceolatus</i> x	ARS	0.8	6.8	7.3	2	475
Critana	thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Bridger	0.5	7.8	5.5	3	850
			Mean	2.4	5.8	5.6	7	631
Group 8								
Nezpar	Indian ricegrass	<i>Achnatherum hymenoides</i>	Aberdeen	0.0	9.0	9.0	0	0
Rimrock	Indian ricegrass	<i>Achnatherum hymenoides</i>	Bridger	0.0	9.0	9.0	0	455
9035287	Indian ricegrass	<i>Achnatherum hymenoides</i>	Los Lunas	0.0	9.0	9.0	0	440
Paloma	Indian ricegrass	<i>Achnatherum hymenoides</i>	Los Lunas	0.0	9.0	9.0	0	110
			Mean	0.0	9.0	9.0	0	251
Bottomland Site								
Magnar	basin wildrye	<i>Leymus cinereus</i>	Aberdeen	41.3	3.0	6.8	77	660
Trailhead	basin wildrye	<i>Leymus cinereus</i>	Bridger	35.0	2.3	8.0	78	590
Prairieland	altai wildrye	<i>Leymus angustus</i>	Bridger	6.5	3.5	7.3	10	690
9022151	beardless wildrye	<i>Leymus triticoides</i>	Aberdeen	3.8	6.8	6.0	6	545
Shoshone	beardless wildrye	<i>Leymus triticoides</i>	Bridger	0.0	6.8	9.0	0	440
			Mean	17.3	4.5	7.4	34	585

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^{3/} Observation of spreading ability by seed or vegetative means. Rated 1 readily spreads, to 9 no spread.

^{4/} Dry matter forage yield was estimated by weight units in 2002 and by clipping plots in 1992. See text for further explanation.

Table 2.
Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
Summary of September 3, 2002 Evaluation Data

Replicated Shrub Plots

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Plant Height (feet)	Canopy Width (feet)
9003126 ^a	fourwing saltbush	<i>Atriplex canescens</i>	Aberdeen	43.8	3.5	2.6	2.8
9003134 ^a	fourwing saltbush	<i>Atriplex canescens</i>	Aberdeen	41.3	3.5	2.5	2.7
9003136 ^a	fourwing saltbush	<i>Atriplex canescens</i>	Aberdeen	38.8	3.3	2.9	2.8
PI-478838	fourwing saltbush	<i>Atriplex canescens</i>	Los Lunas	20.5	4.0	2.6	2.9
Rincon	fourwing saltbush	<i>Atriplex canescens</i>	Meeker	16.3	4.8	2.9	2.1
Wytana	fourwing saltbush	<i>Atriplex canescens</i> x <i>nutallii</i>	Bridger	15.0	5.3	1.0	1.8
PI-478837	fourwing saltbush	<i>Atriplex canescens</i>	Los Lunas	1.8	7.3	1.3	1.0
			Mean	25.3	4.5	2.3	2.3
9028608	Pamirian winterfat	<i>Ceratoides latens</i>	Aberdeen	22.5	3.3	2.5	2.6
9007816 ^b	winterfat	<i>Krascheninnikovia lanata</i>	Aberdeen	10.5	4.8	1.8	1.4
9007813 ^b	winterfat	<i>Krascheninnikovia lanata</i>	Aberdeen	6.8	5.3	1.6	1.4
Hatch	winterfat	<i>Krascheninnikovia lanata</i>	Los Lunas	5.3	5.3	1.6	1.3
9007855 ^b	winterfat	<i>Krascheninnikovia lanata</i>	Aberdeen	5.3	5.5	1.3	1.3
PI-478840	winterfat	<i>Krascheninnikovia lanata</i>	Los Lunas	3.0	6.3	1.4	0.9
			Mean	8.9	5.0	1.7	1.5

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^a These accessions are 3 of the 4 original parent collections that make up Snake River Plains Fourwing Saltbush Selected Class Germplasm released by the Aberdeen Plant Materials Center in 2001.

^b These accessions are 3 of the 5 original parent collections that make up Northern Cold Desert Winterfat Selected Class Germplasm released by the Aberdeen Plant Materials Center in 2001.

Table 3.
Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
Summary of September 3, 2002 Evaluation Data

Display Nursery

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Forage Production ^{3/} (pounds per acre)	
						2002	1995
Grasses						2002	1995
Rosana	western wheatgrass	<i>Pascopyrum smithii</i>	Bridger	70	3	50	1000
Trailhead	basin wildrye	<i>Leymus cinereus</i>	Bridger	60	5	250	1000
Bozoisky-Sel.	Russian wildrye	<i>Psathyrostachys juncea</i>	Bridger	60	3	130	950
Hycrest	crested wheatgrass	<i>Agropyron cristatum x desertorum</i>	ARS	55	4	130	200
Nordan	crested wheatgrass	<i>Agropyron desertorum</i>	ARS	55	3	120	200
Magnar	basin wildrye	<i>Leymus cinereus</i>	Aberdeen	50	5	200	850
Syn A	Russian wildrye	<i>Psathyrostachys juncea</i>	ARS	50	3	125	550
CD II	crested wheatgrass	<i>Agropyron cristatum x desertorum</i>	ARS	50	7	35	500
Ephraim	crested wheatgrass	<i>Agropyron cristatum</i>	Aberdeen	50	4	80	250
P-27	Siberian wheatgrass	<i>Agropyron fragile</i>	Aberdeen	45	3	100	1750
Vinall	Russian wildrye	<i>Psathyrostachys juncea</i>	ARS	40	5	75	100
Kirk	crested wheatgrass	<i>Agropyron cristatum</i>	Canada	40	5	70	50
Parkway	crested wheatgrass	<i>Agropyron cristatum</i>	Canada	40	5	70	800
Fairway	crested wheatgrass	<i>Agropyron cristatum</i>	Canada	40	5	60	600
Swift	Russian wildrye	<i>Psathyrostachys juncea</i>	Canada	30	3	80	950
Prairieland	altai wildrye	<i>Leymus angustus</i>	Bridger	25	2	75	400
Sawki	Russian wildrye	<i>Psathyrostachys juncea</i>	Bridger	20	4	50	1450
Covar	sheep fescue	<i>Festuca ovina</i>	Pullman	15	5	30	50
Cabree	Russian wildrye	<i>Psathyrostachys juncea</i>	Bridger	15	4	45	650
Arriba	western wheatgrass	<i>Pascopyrum smithii</i>	Los Lunas	10	7	5	350
9053823	Smooth brome	<i>Bromus inermis</i>	Meeker	5	4	5	100
Sodar	streambank wheatgrass	<i>Elymus lanceolatus</i>	Aberdeen	5	5	10	150
PI-478832	mammoth wildrye	<i>Leymus racemosus</i>	Bridger	trace	6	0	450
Volga	mammoth wildrye	<i>Leymus racemosus</i>	Meeker	trace	6	0	0
Secar	Snake River wheatgrass	<i>Elymus wawawaiensis</i>	Pullman	trace	4	0	50
Bannock	thickspike wheatgrass	<i>Elymus lanceolatus ssp. lanceolatus</i>	Aberdeen	trace	6	0	20
SL-hybrid	thickspike wheatgrass	<i>Elymus lanceolatus x</i>	ARS	trace	5	0	0

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^{3/} Dry matter forage yield estimated by weight units in 2002 and by clipping plots in 1995. See text for further explanation.

Table 3 continued.
Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
Summary of September 3, 2002 Evaluation Data

Display Nursery

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Forage Production ^{3/} (pounds per acre)	
						2002	1995
Grasses							
Topar	pubescent wheatgrass	<i>Thinopyrum intermedium</i>	Aberdeen	trace	6	0	50
Rush	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Aberdeen	trace	8	0	550
Jose	tall wheatgrass	<i>Thinopyrum ponticum</i>	Los Lunas	trace	8	0	750
Rodan	western wheatgrass	<i>Pascopyrum smithii</i>	Bismarck	trace	7	0	500
Rimrock	Indian ricegrass	<i>Achnatherum hymenoides</i>	Bridger	0	9	0	500
Paloma	Indian ricegrass	<i>Achnatherum hymenoides</i>	Los Lunas	0	9	0	0
Nezpar	Indian ricegrass	<i>Achnatherum hymenoides</i>	Aberdeen	0	9	0	0
Canbar	canby bluegrass	<i>Poa secunda</i>	Pullman	0	9	0	100
Sherman	big bluegrass	<i>Poa secunda</i>	Pullman	0	9	0	500
ND-691	mammoth wildrye	<i>Leymus racemosus</i>	Bismarck	0	9	0	0
Paiute	orchardgrass	<i>Dactylis glomerata</i>	Aberdeen	0	9	0	0
Whitmar	beardless wheatgrass	<i>Pseudoroegneria spicata</i> ssp. <i>inermis</i>	Pullman	0	9	0	50
Goldar	bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	Aberdeen	0	9	0	50
Critana	thickspike wheatgrass	<i>Elymus lanceolatus</i> ssp. <i>lanceolatus</i>	Bridger	0	9	0	50
Mandan	pubescent wheatgrass	<i>Thinopyrum intermedium</i>	Bismarck	0	9	0	0
Greenleaf	pubescent wheatgrass	<i>Thinopyrum intermedium</i>	Canada	0	9	0	50
Luna	pubescent wheatgrass	<i>Thinopyrum intermedium</i>	Los Lunas	0	9	0	200
Greenar	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Pullman	0	9	0	0
Oahe	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	South Dakota	0	9	0	150
Amur	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Los Lunas	0	9	0	0
Tegmar	intermediate wheatgrass	<i>Thinopyrum intermedium</i>	Aberdeen	0	9	0	0
Alkar	tall wheatgrass	<i>Thinopyrum ponticum</i>	Pullman	0	9	0	0
Largo	tall wheatgrass	<i>Thinopyrum ponticum</i>	Los Lunas	0	9	0	0
Barton	western wheatgrass	<i>Pascopyrum smithii</i>	Manhattan KS	0	9	0	1100
Primar	slender wheatgrass	<i>Elymus trachycaulus</i>	Pullman	0	9	0	0
San Luis	slender wheatgrass	<i>Elymus trachycaulus</i>	Meeker	0	9	0	0
Pryor	slender wheatgrass	<i>Elymus trachycaulus</i>	Bridger	0	9	0	0

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^{3/} Dry matter forage yield estimated by weight units in 2002 and by clipping plots in 1995. See text for further explanation.

Table 3 continued.
 Trout Creek Off-Center Advanced Test Site Inter-Center Strain Trial
 Summary of September 3, 2002 Evaluation Data

Display Nursery

Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Forage Production ^{3/} (pounds per acre)	
						2002	1995
Forbs							
Immigrant	forage kochia	<i>Kochia prostrata</i>	Los Lunas	1	2	5	1500
Delar	small burnet	<i>Sanguisorba minor</i>	Aberdeen	0	9	0	0
Appar	perennial flax	<i>Linum perenne</i>	Aberdeen	trace	8	0	0
Cedar	palmer penstemon	<i>Penstemon palmerii</i>	Los Lunas	0	9	0	0
Accession No.	Common Name	Scientific Name	Source	Percent ^{1/} Stand	Plant ^{2/} Vigor	Plant Height (feet)	Canopy
							Width (feet)
Shrubs							
Rincon	fourwing saltbush	<i>Atriplex canescens</i>	Meeker	70	2	4.5	4
9028608	Pamirian winterfat	<i>Ceratoides latens</i>	Aberdeen	50	3	2	2
Hatch	winterfat	<i>Krascheninnikovia lanata</i>	Los Lunas	10	4	1	1
Hobble creek	big sagebrush	<i>Artemisia tridentata</i> ssp <i>vaseyana</i>	USFS	0	9		
Pine Valley	black Sagebrush	<i>Artemisia nova</i>	USFS	0	9		
Wytana	fourwing saltbush	<i>Atriplex canescens</i>	Bridger	0	9		

^{1/} Accessions ranked from greatest percent stand to least percent stand.

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

^{3/} Dry matter forage yield estimated by weight units in 2002 and by clipping plots in 1995. See text for further explanation.

Table 4.
 Trout Creek Off-Center Advanced Test Site
 Summary of Precipitation Gauge Readings ^{1/}
 Courtesy of NRCS Twin Falls, Idaho Field Office

Month	Crop year	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
October		0.00	0.20	0.10			0.90	1.70	0.00	0.10	0.90	0.10	0.15	1.75	
November			0.75	0.50	0.85						0.35	0.55	0.25	0.50	
December		1.00	0.15		1.60		0.40			2.20	0.35	0.75		0.30	2.00
January					0.20						1.40	0.75		0.20	
February				1.20	0.70			3.20			1.10	1.50		0.25	1.80
March				1.55	0.65	6.00	1.50	1.80			1.10	0.75	4.70	1.00	
April		4.50	4.20		0.75	1.40	2.20		6.70		0.80	2.50	0.90		2.20
May		0.60		1.35	0.70	1.00	2.10	5.00	2.70	1.30	0.50	2.50	2.15		3.35
June		1.00	2.00	2.50		2.05	0.10	3.70	0.30	3.50	1.80	1.70	0.30		1.15
July			0.90	1.80	3.40	0.80	0.00	0.30	1.40		1.45	0.05	0.00	3.85	-0.25
August		1.10			0.30	0.50	0.60	0.70	0.00		0.00	1.25	0.00		
September		0.40	1.40	0.35	0.30	0.20	0.10	0.10	0.00		1.85	0.00	0.00	0.50	1.00
Total		9.00	9.60	9.35	9.45	11.95	7.90	16.50	11.10	7.10	11.60	12.40	8.45	8.35	11.25

Mean annual precipitation from Crop year 1989 to 2002 is 10.29 inches.

^{1/} Rain gauge readings not made at same time or each month. Monthly totals may be cumulative from prior reading.

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

PLANT MATERIALS

2002

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.

ID99015 Merle Olsen Field Planting – Regar meadow brome/alfalfa. Materials ordered April 9, 1999. Site characteristics – Rubson silt loam soil, 5 percent slopes, south aspect, 1840 feet elevation, 24 inch precipitation zone, non-irrigated, T61N R1E Section 7. FY99 no evaluation. FY00 excellent mixed stand established. FY01 the Regar and alfalfa mixture performed well with good hay quality. This year’s crop had reduced yields due to drought conditions. FY02 no evaluation.

ID00008 Boundary SCD. Forage Study - Sherman big bluegrass

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 An 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.

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 it's ability to spread, including into the tree rows. FY00, FY01 and FY02 no evaluations. Planting **Canceled**.

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 and FY02 no evaluations.

IDAHO DIVISION II PLANT MATERIALS PLANTINGS

FIELD OFFICE: GRANGEVILLE

ID01009 Cooperator Unknown Riparian Forest Buffer Field Planting. Serviceberry – Kendrick accession, Serviceberry – Okanogan accession, and Blanchard blue elderberry. Plants ordered May 3, 2001. FY01 and FY02 no evaluation.

ID02002 Teresa Seloske Forest Field Planting. Lind Douglas fir (30 plants) and Yakima Douglas fir (13 plants) ordered July 16, 2001. Plants delivered to FO April 3, 2002 by WAPMC. FY02 Planting completed April 6, 2002.

ID02003 Dennis Albers Forest Field Planting. Lind Douglas fir (25 plants) and Yakima Douglas fir (5 plants) ordered July 16, 2001. Plants delivered to FO April 3, 2002 by WAPMC. FY02 Planting completed April 7, 2002.

ID02021 Sydney Yunevich Forest Field Planting. Lind Douglas fir (25 plants) and Yakima Douglas fir (3 plants) ordered July 16, 2001. Plants delivered to FO April 3, 2002 by WAPMC. FY02 Planting completed April 7, 2002.

ID02022 Chris Arnzen Forest Field Planting. Lind Douglas fir (20 plants) and Yakima Douglas fir (4 plants) ordered July 16, 2001. Plants delivered to FO April 3, 2002 by WAPMC. FY02 Planting completed April 10, 2002.

FIELD OFFICE: LEWISTON

ID82001 Galin Buchanon 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. **Next field evaluation will be FY04.**

ID86007 Hellsgate field planting - adaptation. FY92 Rush 50%, Oahe 70%, Luna 60%, Ephraim 20%, Magnar 30%, Secar 10%, Alkar 70% and P27 50% survival. FY93 in very heavy cheatgrass infested area Nordan 10% Rush 40%, Oahe 20%, Luna 24%, Rosana 30%, Magnar 15%, Secar 20% and P27 10% survival. Rush and Luna appear to be the best species. FY94 Rush int. wheatgrass is the most vigorous followed closely by Luna pubescent wheatgrass. Magnar plants are the largest. Rodents have utilized all Secar plants and a few plants of Ephraim, Nordan, P-27, Sherman, and Rosana. The accessions that have failed include Goldar, Paiute, Delar, Appar, Bandera, Nezpar and Tualatin. Cheatgrass continues to dominate site. FY95 50% survival of Rush and Rosana; 30% survival Oahe, Luna, Magnar; 20% survival Secar; 10% survival Ephraim, P27 and Sherman. Failed species include Tualatin, Nezpar, Bandera, Appar, Durar, Delar, Paiute, and T2950-Goldar. Intermediate types are doing the best. Rush and Rosana have spread the most. Alkar has extensive die-out. Cheatgrass continues to dominate site. FY96, and FY97 no evaluations. FY98 survival/comments: Oahe 50% erratic 10-12 feet spread in some areas to dead in others; Magnar 70% some seedlings and plants are very vigorous with few weeds between plants; Rush 75% spreading vegetatively 12-14 feet wide and uniform; Rosana 60% spreading vegetatively 20-30 feet wide and spotty with many weeds; Luna 70% spreading vegetatively up to 12 feet wide and a few bare areas; and Secar 10% widely scattered plants with good vigor. 1 to 3 plants of Nordan, Ephraim, and P-27 found. All other plots are dead. FY99 and FY00 pubescent and intermediate wheatgrasses performing the best with Rush intermediate a particular standout. Rosana western wheatgrass is the most aggressive spreader. FY01 and FY02 no evaluation. **Next field evaluation will be FY03.**

ID95028 Dau Bannock thickspike wheatgrass and Rush intermediate wheatgrass field planting. Seed ordered 4/3/95. FY95, FY96, FY97, FY98 and 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. **Next field evaluation will be FY04.**

ID96009 Dau Rush intermediate wheatgrass, Luna pubescent wheatgrass, and Bozoisky Russian wildrye field planting (3 individual plantings) for star thistle control. Seed ordered 12/8/95. FY96, FY97, FY98 and FY99 no evaluations. FY00 excellent stand with 40 reproductive stems per square foot. Excellent vigor, ability to spread, erosion control, and forage production producing 3000 pounds per acre. Producer is very pleased with performance and plans to establish additional plantings. FY01 and FY02 no evaluation. **Next field evaluation will be FY04.**

ID98007A Mike Miller willow planting. Aberdeen willows (Laurel, White, Streamco, Coyote, Geyer) and Meeker willows (Coyote, Yellow 3 accessions, Scouler, Whiplash 2 accessions, Booth 3 accessions, Drummond 3 accessions, Geyer 2 accessions) and Pullman shrubs (Dogwood 3 accessions). Materials ordered 2/9/98. FY98 survival Meeker willows 832 10/10, 823 10/10, 820 9/10, 826 9/10, 826 9/10, 847 7/10, 834 7/10, 827 10/10, 835 6/10, 825 10/10, 828 7/10, 822 0/10, 829 5/10, 819 ?/10. Survival of Pullman dogwoods 740 3/5, 733 5/5, 739 5/5. FY99 no evaluation. FY00 80 percent survival of 820 Pacific willow (local standard). 20 percent survival of 827 Booth willow, 828 Drummond willow, 822 Geyer willow, 829 Drummond willow and 834 Yellow willow. 10 percent survival of 832 Geyer willow. 823 Coyote willow, 826 Booth willow, 847 Drummond willow, 825 Yellow willow, 819 Yellow willow, 739 dogwood, 733 dogwood, 740 dogwood, and 835 Yellow willow failed. Competition, insects and browse damage are factors affecting survival. FY01 survival 822 Geyer 10%, 828 Drummond failed, 825 Yellow 10%, 829 Drummond 10%, 820 Pacific 80% (all died back to base – sprouting about 3 feet high this years growth), 823 Sandbar failed, 832 Geyer 20%, 826 Booth 10%, 847 Drummond failed, and 827 Booth 50%. **Next field evaluation will be FY03.**

ID98007B Ed and Maxine Larson willow and dogwood planting. FY99 and FY00 no evaluations. FY01 Superior accessions are Laurel willow, which is now 15-18 feet tall with good density and being utilized for cuttings to plant on other areas of the property; Sandbar willow 9024823, which is 4-5 feet tall, spreading and competing well with other vegetation. Accessions that failed include 9024825 Booth willow, 9024826 Booth willow, 9024827 Booth willow, Streambank willow, Aberdeen Geyer willow, Aberdeen Coyote willow, and 9023740 redosier dogwood. **Next field evaluation will be FY03.**

ID98007C Modie Park willow planting. FY99 100% survival – Booths826, Booths827, and Pacific820; 70% survival sandbar823 and Dummond829; 60% survival dogwood; 33% survival Booth825; 30% survival Geyer822 and Drummond828; 20% survival Geyer832; 14% survival Dummond847; 10% survival yellow835; 0% survival-failed yellow819 and yellow834. Site is heavily overgrown with blackberries, cattails, rush and quackgrass. West side of creek was mowed resulting in severe willow damage. Most promising willows were yellow 9024835, sandbar 9024823, Drummond 9024829 and Booth 9024826/9024827. Geyer 9024832 has glaucous stems and undersides of leaves and may be Drummond. **Next field evaluation will be FY04.**

ID98007E Victor Thulon willow planting. Aberdeen willows (Laurel, White, Streamco, Coyote, Geyer) and Meeker willows (Coyote, Yellow 3 accessions, Scouler, Whiplash 2 accessions, Booth 3 accessions, Drummond 3 accessions, Geyer 2 accessions) and Pullman shrubs (Dogwood 3 accessions). Materials ordered 2/9/98. FY99 no evaluation. FY00 site is heavily infested with reed canarygrass. Meeker willows: 40% survival 827 Booth willow; 30 percent survival 835 Yellow willow and 834 Yellow willow; 20% survival 825 Booth willow; and 10 percent survival 832 Geyer willow and 822 Geyer willow. Aberdeen willows: 80 percent survival Laurel willow and White willow; 40 percent survival Streamco willow; and 30 percent survival Coyote willow. All other materials failed. FY01 Aberdeen willow survival Laurel 70% (best overall), White 70%, Streamco 30%, Coyote 30%. Meeker willow survival 835 Yellow 30%, 832 Geyer 10%, 825 Booth 10%, 827 Booth 40%, 822 Geyer 10%, and 834 Yellow 30%. **Next field evaluation will be FY03.**

ID98016 Fred Kaufman Hycrest crested wheatgrass, and Vavilov Siberian wheatgrass 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. **Next field evaluation will be FY04.**

ID99008 Craig Mountain (IDFG) field planting. Species include white willow, Streamco willow, Coyote willow, Geyer willow 435, Geyer willow 448, Geyer willow 483, Geyer willow 491, Snowberry, Elderberry, Dogwood 733, and Dogwood 740. FY99 Area planted is heavily dominated by native sedges. Cuttings were planted 1.25 to 2 feet deep into good perennial moisture. Failure is probably due to severe competition. Streamco, Coyote, and White willows failed. 9067483 Geyer willow 80 percent survival with fair vigor. 9067448 Geyer willow 50 percent survival with poor vigor. 9067435 Geyer willow 100 percent survival with fair vigor. 9067491 Geyer willow 85 percent survival with poor vigor. 9023733 dogwood 5 percent survival with very poor vigor. 9023740 dogwood 5 percent survival with fair to poor vigor. FY00 no evaluation. FY01 willow survival – 483 Geyer 50%, Streamco failed, 448 Geyer 55%, Coyote failed, 435 Geyer 85%, and 491 Geyer 60%. FY02 poor site for all willows planted. Planting **Canceled.**

ID01005 Greg Zenner field planting. Three acres each of Topar pubescent wheatgrass, Tegmar intermediate wheatgrass, Rush intermediate wheatgrass, Regar meadow brome, and Manchar smooth brome. Purpose – starthistle competition trial. Site characteristics: MLRA B9, Kettenback-Gwin silt loam soil with stony modifier, south aspect, 1200 feet elevation, 16-18 inch rainfall, T36N R4W NE1/4 Section 12. Seed shipped March 2001. FY01 not seeded. FY02 no evaluation - Field Office requested planting **Canceled**

FIELD OFFICE: MOSCOW

None

FIELD OFFICE: NEZPERCE

None

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.

IDAHO DIVISION III PLANT MATERIALS PLANTINGS

FIELD OFFICE: CALDWELL

ID98021 Bill Baird Vavilov Siberian wheatgrass, Bozoisky Russian wildrye, tall wheatgrass field planting - saline bottom. Seed ordered May 14, 1998. Planting scheduled for Nov. 1998. FY99-FY02 cooperators have not planted site due to droughty conditions and he wants to give seeding best opportunity possible when he plants.

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 coarse-gravelly soil requiring irrigation every 4-5 days. FY00 and FY01 no evaluations. FY02 very coarse-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 pleased with performance.

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, curlleaf mountain mahogany, Saskatoon serviceberry, Woods rose, almond, and Drummond willow. Trees: Idaho hybrid poplar, and Rocky Mountain juniper. FY01 and FY02 no evaluation.

ID02001 CB River Springs Ranch WRP field planting. Vavilov Siberian wheatgrass, Bannock thickspike wheatgrass, Magnar basin wildrye, Northern Cold Desert winterfat, and Snake River Plain fourwing saltbush. Seed ordered 3/26/01 for shipment in early March 2002. Site characteristics: Felthom fine sandy loam soil, 3-12 percent slopes, NE aspect, 2100 feet elevation, 11 inch rainfall, cheatgrass community to be sprayed 2-3 times (spring and fall 2001) prior to early spring (2002) interseeder planting. FY02 this year's precipitation is below average. Field was sprayed for cheatgrass control in May 2001 and March 2002. Field was planted on April 9, 2002 using a grass seeding drill and a rain of 0.3 inches occurred immediately following planting. No appreciable rain fell during the rest of the year. A field check on May 16 showed excellent seed germination. Field was sprayed for broadleaf control in June 2002. Field check on November 19, 2002 - was unable to determine success of planting.

FIELD OFFICE: EMMETT

ID02023 Little Farms Rush intermediate wheatgrass, Vavilov Siberian wheatgrass, Covar sheep fescue, and Sodar streambank wheatgrass critical area planting. Seed ordered December 14, 1998 for delivery about August 1, 1999. FY02 seed transferred to Little Farms.

FIELD OFFICE: MARSING/GRANDVIEW

None

FIELD OFFICE: MERIDIAN

ID00010 Rick Roe willow field planting. 25 cuttings each of 9067476 Coyote willow (50), 9067482 Booth willow, 9067544 Drummond willow, 9067477 Yellow willow, 9067475 Yellow willow, and 9067546 Peachleaf willow were ordered on March 1, 2000 for shipment April 10, 2000. FY00 cuttings were planted to good season-long moisture and growth is excellent. 80 percent survival and good vigor of all accessions. Coyote willow is 24 inches tall, Booth willow is 48 inches tall, Drummond willow is 60 inches tall, Yellow willow is 36 inches tall, and Peachleaf willow is 60 inches tall. FY01 all willows have 70% stand, are healthy, vigorous and competing well with weedy species. Height - 476 Coyote willow 3-8 feet tall, 546 Peachleaf willow 5-8 feet tall, 477 Yellow willow 5-8 feet tall, 482 Booth willow 4 feet tall, and 544 Drummond willow 10 feet tall. FY02 all species are healthy, vigorous and increasing in size. Willow overstory is now offering shade and competition for weeds. This planting is considered a good success and landowner plans to harvest willow cuttings and plant them on similar sites upstream from this demonstration site. This is the final evaluation of this planting - **Cancel**.

ID02004 Brad Little Field Planting – BASF Plateau Herbicide Study – Seeding Trial.

Herbicide Treatment 1 – Burn + Herbicide (control – 2 ounce – 4 ounce rates). Herbicide Treatment 2 – Non-burn + Herbicide (control - 2 ounce – 4 ounce – 6 ounce – 8 ounce – 10 ounce – 12 ounce rates). Seeding Treatments – Alfalfa and Snake River Plains Germplasm fourwing saltbush will be mixed with each of the following rangeland forage grass species: Rush intermediate wheatgrass, Luna pubescent wheatgrass, Hycrest crested wheatgrass, CD-II crested wheatgrass, Vavilov Siberian wheatgrass, P27 Siberian wheatgrass, Bozoisky Select Russian wildrye, Mankota Russian wildrye, and Covar sheep fescue. Each treatment (herbicide rate – seed mix) will cover 0.12 acres in 48x110 feet plots. Seed ordered September 18, 2001 for shipment by October 12, 2001. Herbicide treatments and seeding planned for November 2001 during dormant growth period. Site characteristics – MLRA B10, silt loam to sandy loam soil, 2-6 percent slopes, east southeast aspect, 2900-3000 feet elevation, 11-12 inch precipitation zone, non-irrigated, T5N R1N SW1/4 of SW1/4 of Section 5. Site sprayed November 2, 2001. Planting conducted in December 2001. FY02 there was no plants established on August 16, 2002 due to lack of spring and summer moisture for germination. As of evaluation date only 5 inches of moisture for entire year.

FIELD OFFICE: MOUNTAIN HOME

ID00017 Ted Hoffman-Idaho Department of Lands Species and Planting Method Demonstration for cheatgrass-medusahead wildrye control – rangeland rehabilitation. Three planting methods including conventional tillage with grain drill with sweeps, Idaho Fish and Game interseeder, and Idaho Department of Lands or BLM rangeland seeder will be demonstrated. Ten species – species mixes including Luna pubescent wheatgrass, Rush intermediate wheatgrass, Hycrest crested wheatgrass, Nordan crested wheatgrass, Vavilov Siberian wheatgrass, Bozoisky Russian wildrye, Bozoisky/Vavilov mix, Cereal Rye, Secar Snake River wheatgrass/Bannock thickspike wheatgrass/fourwing saltbush mix, and Secar Snake River wheatgrass/Bannock thickspike wheatgrass/Immigrant forage kochia mix will be cross planted over planting methods. Site characteristics include MLRA B11, Chilcott-Elijah silt loam soil, 0-12 percent slopes, south exposure, 3480 feet elevation, 10-12 inch rainfall zone, non-irrigated, T2S R6E SE1/4 of SE1/4 of Section 16. FY01 planting completed November 2001. The conventional tillage section was not completed and was replaced with a no-till operation. Little to no emergence occurred in 2001 due to extreme drought conditions, the evaluation next year will determine if planting was a success or failure. FY02 more grass observed this year, however, drought has removed any hope of obtaining an adequate seeding. We will evaluate for one additional year.

ID03004 Pat Bennett field planting. Topar pubescent wheatgrass, Regar meadow brome, and Garrison creeping foxtail seeding mixture. Seed ordered October 24, 2002. Seeding planned for November 2002.

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. **Next evaluation scheduled for FY03.**

ID94025 Eckhardt Ephraim crested wheatgrass, Magnar basin wildrye, Mankota Russian wildrye, Trailhead basin wildrye, P27 Siberian wheatgrass, Manska 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, Manska good, Sherman very poor, Greenar good, Trailhead fair, Reliant good, Bozoisky good, Bannock good. July 8, 1996 establishment: Mankota fair, Manska 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. **Next evaluation will be spring 2003.**

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.

ID95038 Skow Rush intermediate wheatgrass field planting. Site is sandy loam soil, irrigated, 2320 feet elevation, and 2-4% slopes on north to northwest exposure. Seed ordered May 1995. FY95 seeding planned for spring of 1996. FY96 this seeding was not installed because site was inundated past recommended seeding dates. Planting location will be changed and seeded next year. FY97 planted early spring 1997. Excellent stand is establishing with 7-8 plants per foot squared and excellent vigor. Landowner sprayed in early summer for broadleaf weeds. This should turn out to be an excellent grazing trial. FY98 excellent stand and vigor. Estimate yield to be 5000 to 5500 pounds per acre or 3 to 3.5 AUMs per acre. FY99 good stand with 95 percent survival and excellent vigor. Production was 3500 to 4000 pounds per acre. Cattle preferred this seeding to tall fescue in adjacent field. Next evaluation will be FY2002. FY01 fair stand of Rush intermediate wheatgrass with fair vigor and about 500 pounds of production per acre following two years of extremely dry conditions. This field was grazed in conjunction with a tall fescue field and grazing preference was for Rush. . FY02 Rush performed the best on this site. Producer has destroyed planting. **Cancel**

ID96024 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.

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.

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 - FY02 producer has not planted due to severe drought conditions the past three years.

ID00001 Henry Green Field Planting – Native mix Secar Snake River wheatgrass, Bannock thickspike wheatgrass, Magnar basin wildrye, winterfat, fourwing saltbush, Wyoming big sagebrush. Site is Baldock silt loam soil, 10-12 inch precipitation, 2180 feet elevation, 1-percent slope, SW exposure, T10 and 11N R4W Sections 3 and 34. Seed ordered (Bannock and Magnar) on 10-6-99. FY00 seeded October 27, 1999 into very dry soft seedbed. It rained .2 inches the night of seeding and weather was been mild until early December. Winterfat still had fluff on seed so it was broadcast ahead of drill. Half of sagebrush and all of fourwing saltbush seed were mixed with grass and drilled – the other half of sagebrush will be broadcast later this winter onto snow. FY00 unable to get good evaluation this year due to droughty conditions. FY01 this is the second year of extreme drought conditions that are severely impacting plant development. Competition from annual weeds is heavy. Not enough plants to give a good evaluation. FY02 all species are adapted to site, but are severely impacted by third year of drought. There is heavy competition from weeds (cheatgrass, foxtail barley, and thistle) and producer is conducting a weed control program. Shrubs are present in limited amounts, but not very obvious. Grasses are suppressed and it will take a long time for them to dominate site.

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.

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% survival with some leader growth up to 36 inches. Coyote willow has about 60% survival.

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.

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, Bozoiisky 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.

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. Producers comments indicate that Goldar is always the first species to be grazed in this pasture followed by the Russian wildryes.

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.

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.

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.

ID97006 Gary Jones Field planting of Garrison creeping foxtail. Site is silt loam soil, irrigated, 5000 feet elevation, 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 cooperators were satisfied with yield given the droughty conditions. FY02 landowner is enthused about Garrison production/performance and plans to plant additional field to this species.

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.

ID00009C Paul Frelier willow field planting. 9067561 Lemmon willow (13), 9067548 Drummond willow (12), and 9067375 Peachleaf willow (13), 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 native vegetation. Cuttings are alive, but very difficult to evaluate this late in the year. Recommend evaluating earlier next year. **Cancel**

FIELD OFFICE: GOODING/FAIRFIELD

ID94022 Erdman Farms Rush intermediate wheatgrass DSI. Seed ordered 4/4/94. FY94 seeded on May 25, 1994, excellent initial establishment with plants going dormant in early summer due to no rain (record low rainfall) and greening up after being dormant for over 90 days with fall rains. Drilled two rows together (6" spacing) with 24 inches between double rows. Some mortality of seedlings due to drought. Most plants made 5-7 leaf stage before dormancy in fall. Appears to be a good stand and cooperators rated drought tolerance the establishment year as excellent. FY95 cut for seed 9/15/95 with 140 lbs/ac clean seed production. Rush stayed green longer into summer than Luna and cooperators had to wait two weeks longer than Luna to harvest seed. Rush had green basal leaves despite very dry summer and fall in November. FY96 no seed harvested, drought tolerance of established Rush is exceptional. FY97 no evaluations. FY98 83 lbs/ac clean seed. FY99 strong winds just prior to harvest shattered seed and stand was not combined. FY00 Judy Erdman burned stand in April 2000 to reduce litter. Stand recovered well and produced seed despite dry conditions, but not enough seed for Judy to justify harvesting costs so seed was not harvested in year 2000. Rush plants remain vigorous, and light rhizomatous spreading out of original twin-rows is occurring. Very dry summer on the prairie. Stand looks very good considering it was burned in spring with no moisture thereafter to speak of until Labor Day weekend. FY01 no evaluation. FY02 planted destroyed - **Cancel**.

ID97011 Malad Gorge State Park Dormant field plantings a) Secar, Bannock, Nezpar, Magnar; b) Secar, Bannock, Rimrock, Trailhead; and c) bottlebrush squirreltail (9040187 and 9040189 accessions for plots). Seed ordered 1/31/97. Site is very fine sandy loam, 0-1% slopes, 3225 feet elevation, 10-inch rainfall, non-irrigated, T6S R13E NE1/4 Section 35. Sites to be planted in March 1997. FY97 no evaluations. FY98 two five-acre fields were planted in the spring of 1997 into good firm weed free seedbeds. Good spring rains in 1997 gave seedlings a good establishment year. In July 1998 both stands are fully established with large seed producing plants. Both stands are dominated by Bannock thickspike wheatgrass, with Secar Snake River wheatgrass, both basin wildryes, and both Indian ricegrass accessions present in lesser amounts. Stands were so successful; cooperators harvested seed for future planting with 1000 pounds of cleaned seed combined. This is approximately 100 lbs/ac of seed in a 10-inch rainfall zone. Bottlebrush squirreltail plots were not planted in 1998. FY99 excellent stands for both plantings. Secar and thickspike wheatgrass dominate stands, with basin wildrye and Indian ricegrass present as minor components. FY00 The two 5-acre dryland plots of grass remain strong with good plant density and seed production despite a very dry year. Secar and Bannock dominate both the north and south fields, with only occasional ricegrass plants. The main difference between the two fields may be the amounts of basin wildrye persisting and/or increasing. Trailhead in the south field is readily apparent throughout the stand, but plants are not robust at this time presumably due to competition from Secar and Bannock. Comparatively, Magnar in the north field is present but much less apparent. Fields were not harvested for seed. Weeds, including cheatgrass, are controlled and not a factor in these fields. The State Park plans to graze these fields this November for a short period to reduce litter and plant residues. FY01 no evaluation. FY02 North field - excellent stand of Secar, good stand of Bannock, poor stand of Magnar and Nezpar failed. Stand produced about 700 pounds per acre in a very poor

moisture year. South field - excellent stand of Secar, good stand of Critana, good stand of Trailhead and Rimrock failed. Stand is producing about 700 pounds per acre in a very poor moisture year. **Cancel**

ID98018A Bill Simon Farms Rush intermediate wheatgrass District Seed Increase. Seed ordered March 16, 1998 for mid April delivery. FY98 Rush seeded in April 1998 into twin rows on 30-inch centers. The 55 acre field was formerly in alfalfa (1996 and prior) and fallowed in 1997. Excellent stand established by the fall of 1998 with plants fully bunched and vigorous. Stand was sprayed with formula 40 2,4-D in late June or early July. Producer did not fertilize stands in the fall. FY99 approximately 25 percent of production was lost to shatter due to strong winds prior to harvest. The 55-acre field produced approximately 180 lbs/acre. On droughtier hilltops and ridges producer noted that seed production was lacking and suggested that wider row spacing would be desirable. FY00 Rush stand remain strong and Bill Simon feels it is the best grass on the Prairie. The dry year took its toll on seed production, however. Harvested the third week of August 2000 and the 55-acre field produced 91 pounds/acre clean seed. The 55-acre field was in alfalfa prior to seeding to Rush, and this field has more weeds. FY01 spring frost damaged reproductive stems - no seed production. FY02 unfavorable moisture year - 50 pounds per acre seed production.

ID98018B Bill Simon Farms Rush intermediate wheatgrass District Seed Increase. Seed ordered March 16, 1998 for mid April delivery. FY98 rush seeded in April 1998 into twin rows on 30-inch centers. The 85-acre field was formerly in small grain. Excellent stand was established by the fall of 1998 with plants fully bunched and vigorous. Stands were sprayed with formula 40 2,4-D in late June or early July. Producer did not fertilize stands in the fall. FY99 approximately 25 percent of production was lost to shatter due to strong winds prior to harvest. The 85-acre field produced approximately 110 lbs/acre. On droughtier hilltops and ridges producer noted that seed production was lacking and suggested that wider row spacing would be desirable. FY00 Rush stands remain strong and Bill Simon feels it is the best grass on the Prairie. The dry year took its toll on seed production, however. Harvested the third week of August 2000, the 85-acre field produced 81 pounds/acre clean seed. Weeds in the 85-acre field are not a problem, since prior to seeding to Rush the field was in 2 years of wheat, and prior to that 5 years of Regar meadow brome, providing a clean field. FY01 unfavorable moisture year - 40 pounds per acre seed production. FY02 unfavorable moisture year - 23 pounds per acre seed production

ID98020 Bill Simon Bannock thickspike wheatgrass District Seed Increase. Seed ordered April 10, 1998 for mid April delivery. FY98 Bannock seeded on 12-inch centers. Evaluation in November 1998 indicated a slow start with weak plants at the end of the first full growing season. Weeds do not appear to be a problem, but soils are somewhat gravelly and it appears to be a difficult site to establish a stand. Field was fertilized with about 20 units of nitrogen in the fall. FY99 plants remain narrow and spindly, but fertilizer did contribute to improved plant health. Harvest of approximately 80 lbs/acre was completed early while plants were still green, but seed was mature and beginning to shatter. FY00 this is the first-to-ripen grass in Bill's portfolio, interfering with his alfalfa hay harvest on the Prairie. This year the Bannock was harvested the first week of August, and produced 110 pounds/acre clean seed, which is higher than last year's yield despite the dry year. The field was fertilized with 40 units of ammonium sulfate about May 1, 2000, and later sprayed with Formula 40 2,4-D. Cheatgrass is increasing in the field and will need to be controlled in 2001. FY01 unfavorable moisture year - 100 pounds per acre seed production. FY02 unfavorable moisture year - 65 pounds per acre seed production.

ID99007 Spring Cove Ranch – Butler Field Planting Laurel willow. Island-constructed wetland, silt loam soil, 0-2 percent slopes, 3100 feet elevation, T5S R12E SW1/4 Section 21. FY99 20 Laurel willows were at water edge on islands. Tree tubes (1.5 feet tall) were utilized to protect cutting from muskrats. All cutting are flourishing with about 5 to 6 feet of growth the first growing season. FY00 Laurel willows are thriving on the islands, protected by their tree tubes. Plants are vigorous and are now beginning to obtain fuller, multi-branched shape. FY01 planting doing very well - tree tubes removed. FY02 planting doing very well - beaver/muskrat are not damaging trees to date. Providing excellent bank erosion protection.

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, 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, Manska 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, Manska, 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.

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.

ID01002 Bill Novinger willow field planting. 25 cuttings each of 9067436 Yellow willow, 9067452 Yellow willow, 9067475 Yellow willow, 9067477 Yellow willow, 9067493 Yellow willow, 9067375 Peachleaf willow, 9067376 Peachleaf willow, 9067541 Peachleaf willow, 9067546 Peachleaf willow, 9067549 Peachleaf willow, and 9067560 Peachleaf willow. FY01 about 50 cuttings planted along Dry Creek. FY02 no evaluation. **Cancel**

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 and FY02 seed not planted due to extreme drought.

ID01011 Bill Simon District Seed Increase High Plains Sandberg bluegrass test plots. Seed ordered in September 2001. FY02 seed not planted due to drought.

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 seed not planted due to drought.

FIELD OFFICE: JEROME

ID99012 Tom Davis Critical Area Planting on pond embankment/dike. Hycrest crested wheatgrass and Vavilov Siberian wheatgrass seed ordered March 30, 1999. Planting planned for early April 1999. FY99 spring planting failed due to lack of rainfall. Cooperator planted (broadcast and harrowed) in November 1999 under dry conditions. FY00 good stand in areas where sprinkler semi-irrigates - poor to fair stand establishing in dry areas due to extremely droughty conditions. 2 plants per square foot, good vigor, 12-inch height. Expect stand to improve with better rainfall this fall-winter. FY01 good stand with 3 plants per foot square, and good vigor. FY02 good stand with 4 plants per square foot

ID99014 Tom Davis irrigation pivot corner field planting. Vavilov Siberian wheatgrass ordered March 30, 1999 with delivery about September 1, 1999. Planting planned for late October 1999. FY00 planted (broadcast and harrowed) in November under dry conditions. Good stand in areas where sprinkler semi-irrigates - poor to fair stand establishing in dry areas due to extremely droughty conditions. 2 plants per square foot, good vigor, 12-inch height. Expect stand to improve with better rainfall this fall-winter. FY01 good stand with 3 plants per foot squared and good vigor. FY02 fair stand with 2 plants per square foot

FIELD OFFICE: RUPERT

ID02016 Cooperator Unknown critical area planting - roadside. Seed ordered March 6, 2002 (100 pounds Topar). FY02 no evaluation.

FIELD OFFICE: SHOSHONE/HAILEY

ID01003 Cooperator unknown willow field planting. 10 cuttings each of 9067548 Drummond willow, 9067435 Geyer willow, 9067491 Geyer willow, 9067437 Booth willow, 9067469 Booth willow, and 9067478 Booth willow. FY01 no evaluation. FY02 no evaluation.

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 is 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).

ID02008 Hot Creek Riparian Planting. 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 - 9067541 12 percent survival with poor vigor - 9067549 24percent survival with poor vigor - 9067560 56 percent survival with poor vigor. Survival impacted by continuously saturated soils. Success primarily related to different site conditions.

ID02009 Shoshone Creek Riparian Planting. 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.

ID03001 Walt Coiner Field Planting. Seed was ordered on September 17, 2002. Purpose: Field Planting - windbreak interspace perennial cover/weed control study - irrigated-semi irrigated-dryland trials. 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; Rosana western wheatgrass; and Quatro sheep fescue. **Dryland species:** Vavilov Siberian wheatgrass and Bozoisky Russian wildrye.

**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.

Fully Irrigated Plots Latar orchardgrass, Paiute orchardgrass, Regar meadow brome, Lutana cicer milkvetch, Blackwell switchgrass, 905438 switchgrass, 905439 switchgrass.

Partially Irrigated Plots Alkar tall wheatgrass, Largo tall wheatgrass, 9063520 Ruby Valley pointvetch, Bozoisky Russian wildrye, Timp Utah sweetvetch, Mankota Russian wildrye, Trailhead basin wildrye, Magnar basin wildrye, Mandan Canada wildrye, Syn-A Russian wildrye, San Luis slender wheatgrass, Pryor slender wheatgrass, 9057902 western yarrow, RS Hoffman wheatgrass, Foothills Canada bluegrass, SL hybrid wheatgrass, Sherman Big bluegrass, Newhy hybrid wheatgrass, Lodorm green needlegrass, Reliant intermediate wheatgrass, Delar small burnet, Appar blue flax, Rush intermediate wheatgrass, Tegmar intermediate wheatgrass, Luna pubescent wheatgrass, Garnet mountain brome, Douglas crested wheatgrass, Goldar bluebunch wheatgrass, Schwendimar thickspike wheatgrass, Bromar mountain brome, Bannock thickspike wheatgrass, Critana thickspike wheatgrass, Manchar smooth brome, Arriba western wheatgrass, Rosana western wheatgrass, Rodan western wheatgrass

Dryland Plots Bozoisky Russian wildrye, 9019219 bottlebrush squirreltail, Mankota Russian wildrye, Trailhead basin wildrye, High Plains Sandberg bluegrass, Magnar basin wildrye, Manska pubescent wheatgrass, Rimrock Indian ricegrass, Luna pubescent wheatgrass, Nezpar Indian ricegrass, Secar Snake River wheatgrass, Vavilov Siberian wheatgrass, Goldar bluebunch wheatgrass, P27 Siberian wheatgrass, Schwendimar thickspike wheatgrass, Bannock thickspike wheatgrass, Critana thickspike wheatgrass, Nordan crested wheatgrass, Hycrest crested wheatgrass, CD-II crested wheatgrass, Ephraim crested wheatgrass, Sodar streambank wheatgrass, Arriba western wheatgrass, Rosana western wheatgrass, Rodan western wheatgrass, Snake River Plains fourwing saltbush, Wytana fourwing saltbush, Northern Cold Desert winterfat, Open Range winterfat.

FY02 Planting completed in May 2002. August 27, 2002 initial evaluation indicated some establishment of all seed plots.

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.

FIELD OFFICE: MALAD

ID02007 Don Buehler Riparian Planting. 9076375 Peachleaf willow - Caribou source, 9076376 Peachleaf willow - Pocatello source, and coyote willow. Cuttings to be shipped April 1, 2002. FY02 - 9076375 92 percent survival with poor to good vigor and 4-6 inch height - 9076376 90 percent survival with poor to good survival and 4-5 inch height. Landowner watered cuttings weekly to assist with establishment and carry them through the drought.

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 and FY02 no evaluation.

FIELD OFFICE: SODA SPRINGS

None

IDAHO DIVISION VI PLANT MATERIALS PLANTINGS

FIELD OFFICE: ARCO/CHALLIS

ID03003 Cooperator unknown Snake River Plains fourwing saltbush field planting. Seed ordered October 18, 2002.

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, 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 - FY02 no evaluations.

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 - FY02 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 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.

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.

ID96003 Winterfeld Douglas crested wheatgrass District Seed Increase. Seed will be purchased through the Utah Crop Improvement Association. FY96 fair stand establishing during extremely dry conditions (no rain following planting). FY97 fair stand with good vigor and no seed production. Stand is improving. FY98 good stand established with 300 pounds per acre seed production. Elk and grouse are using stand. FY99 excellent stand in unfavorable moisture year with 400 pounds of cleaned seed production per acre. FY00 excellent stand and vigor. Seed production was excellent this year, but amount was unknown at evaluation date. Douglas is well suited for the Swan Valley area and is an excellent grazing species for cattle. FY01 excellent stand and vigor with 260 pounds per acre production. Douglas is tolerating drought very well. FY02 field plowed out - **Cancel**.

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).

ID01006 Winterfeld Ephraim crested wheatgrass District Seed Increase. Seed ordered March 13, 2001. Site characteristics - Tetonia silt loam soil, 2 percent slopes, south aspect, 5600 feet elevation, 18 inch precipitation, non-irrigated, T2N R43E SE1/4 Section 8. FY01 plan to plant spring 2002 due to drought this year. FY02 - planted the spring of 2002. Establishing stand is excellent with excellent vigor and 10 inch plant height.

ID01012 Winterfeld Regar meadow brome – Foundation. FY01 good stand establishing with fair vigor due to drought conditions. FY02 - excellent stand with excellent vigor and 36 inch height. Drought year production 55 pounds per acre cleaned.

ID01013 Winterfeld Sodar streambank wheatgrass – Foundation. FY01 excellent stand establishing with excellent vigor under severe drought conditions. FY02 - excellent stand with excellent vigor and 24 inch height. Drought year production 38 pounds per acre cleaned.

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 stand 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. **Next evaluation will be FY03.**

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 cooperator. 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. **Next evaluation will be FY03.**

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. **Next evaluation will be FY03.**

ID91033 Madison SCD Multiple species demo plots. Located behind Rexburg FO. FY91 planted in spring. FY92 planting establishing well. Shrubs under fiber mulch are out performing those that are not. FY93 plants were doing well but had to be moved because of enlargement of parking lot. Will know survival in 94. FY94 Grass plots were removed because of parking lot enlargement. Austrees are 4 years old and about 20 feet tall and 2 year old poplars are 10-12 feet tall. FY95 Arctic willows failed transplant, all others are doing very well. Austrees are 25 to 30 feet tall (five years Old). Grass will be planted in spring of 1996. FY96 Austrees 30+ feet tall, Poplars 20+ feet tall and Larch is eight feet tall (4 years old). FY97 lost one poplar to disease all others doing well. **Next evaluation will be FY03.**

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. **Next evaluation will be FY03.**

ID93001 Clark SCD Multiple species demo plots. Site is located near Clark County Senior Center. FY93 trees were planted and ground prepared by chiseling to plant grass in the spring of 94. FY94 trees and shrubs planted with fabric material have a 98-100% survival. Grass plots were not installed due to drought conditions. FY95 all trees have survived and doing great. Poplars are 6-8 feet tall second year. Grass plots were planted in spring of 1995 and are establishing well. FY96 poplars 10-15 feet tall, juniper 4-5 feet tall, grass plots are establishing well. FY97 excellent growth for both trees and shrubs. FY99 grass plots are well established. A 1600 feet windbreak with drip system has been added to area (species include row 1: poplars, row 2 mixed shrubs of Siberian peashrub, chokecherry, and Nanking cherry, and row 3 Rocky Mountain juniper. Survival the first year was 98 percent. **Next evaluation will be FY03.**

ID94017 Lerwill Multiple willows adaptation demo. Colorado accessions. Cuttings ordered 3/94. Cuttings shipped 4/94. FY94 no evaluation. Some cuttings of each species have survived. The PMC accessions have much better growth than native species. Some loss due to spraying herbicide to control thistles. FY96 willows that survived are doing well. FY97 40 percent survival with surviving willows growing well. They survived spring flooding. FY98 vigor is good with plants now 8 to 10 feet tall and 10 feet crown width. **Next evaluation will be FY03.**

ID98009 Lerwill Aberdeen PMC - Laurel willow field planting. Materials ordered 2/9/98. FY98 - FY02 no evaluations.

ID00011 Richard Beesley Poplar field planting of accessions (15-29; 50-197; OP-367; 184-411; 52-225). Materials shipped from Oregon to Aberdeen PMC April 1998 and transferred to Rexburg same date. FY98 Poplar accessions planted in April were subjected to several hard frosts, and very hot dry summer. Survival was poor at 30 percent. 100 cuttings each of OP367 Hybrid poplar and 52-225 Hybrid poplar were ordered March 1, 2000 from Aberdeen for shipment on about March 7, 2000. FY00 - FY02 no evaluation.

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.

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.

ID97019a Hager Willow field planting. 5 cuttings of Aberdeen willows - Laurel, Streamco, and White; 5 cuttings of Meeker willow - Scoulers. Cuttings ordered 2-11-97. FY97 windbreak planted mid April 1997 with fabric mulch and drip irrigation (averaged 8-10 gallons/plant/week. Survival/Vigor/Height: Laurel 100%/excellent/2.5 feet; Streamco 100%/excellent/4 feet; White 100%/excellent/ 6 feet; Scouler 75%/good/4.5 feet - Scoulers affected by fungus on

leaves. FY98 Survival/Vigor/Height: Laurel 100%/good/5.5 feet; Streamco 100%/fair/5 feet; White 100%/good/8 feet; and scoulers 75%/fair/5 feet. FY99 Laurel willow 100% survival with fair vigor and 6.3 feet height. Streamco willow 100% survival with good vigor and 6.7 feet height – note looks like spider plant and would not recommend for windbreaks, but would probably make an excellent streambank erosion control species. White willow 100% survival with good vigor and 5 feet height. Scouler willow 75% survival with good vigor and 13.5 feet height. FY00 Laurel willow 100 percent survival with good vigor and 96 inch height; Streamco willow 100 percent survival with good vigor and 60 inch height; White willow 100 percent survival with fair vigor and 192 inch height; Scouler willow 75 percent survival with fair vigor and 84 inch height. FY01 five-year-old planting is drip irrigated. Laurel willow – 100% survival good vigor, 9.5 feet height, 8 feet crown width, and out performing others in this test with healthy vigorous growth and increased density. Streamco willow – 100% survival, good vigor, 5.5 feet height, and 10 feet crown width. White willow – 100% survival, fair vigor, 16 feet height, and 9 feet crown width. Scouler willow - 75% survival, poor vigor, 7 feet height, 6 feet crown width, and damage by borers. FY02 due to change in ownership **Cancel**.

ID97019b Camas Creek site 1 Willow field planting. Cuttings of Aberdeen PMC willows - White, Laurel, Streamco, Geyer, Coyote and Meeker PMC willows Scoulers, Pacific, Booth (827), Drummond (828), Greyleaf, Wolf and Geyer (832). Planted April 10, 1997 for streambank protection (no irrigation). On May 21, 1997 Laurel and White were submerged and all others were partially submerged. FY97 Survival/Vigor/Height: White 100%/excellent/3 feet; Laurel 100%/excellent/ 1.5 feet; Streamco 100%/excellent/2.5 feet; Geyer 100%/ excellent/2 feet; Coyote 60%/excellent/2 feet; Scouler 100% excellent/2 feet; Pacific 100%/excellent/3 feet; Booth (827) 100%/good/1.5 feet; Drummond (828) 100%/good/1.5 feet; Greyleaf 80%/fair/2 feet; Wolf 80%/fair/0.5 feet; Geyer (832) 100%/exc./2 feet. FY98 Survival/Vigor/Height: White 100%/good/4 feet; Laurel 100%/fair/2 feet; Streamco 100%/good/3 feet; Geyer 100%/fair/2.5 feet; Coyote 67%/excellent/5-5 feet; Scouler 80%/fair/2 feet; Pacific 100%/good/3 feet; Booth (827) 100%/poor/ 2 feet; Drummond (828) 80%/fair/2.5 feet; Greyleaf 80%/poor/2 feet; Wolf 80%/ poor/1 foot; and Geyer (832) 80%/fair/2.5 feet. FY99 White willow 100% survival with good vigor and 6 feet height. Laurel willow 100% survival with fair vigor and 3 feet height. Streamco willow 100% survival with good vigor and 4 feet height. Geyer willow 100% survival with good vigor and 5 feet height. Coyote willow 100% survival with good vigor and 5 feet height. Scouler willow 60% survival with fair vigor and 4 feet height. Pacific willow 100% survival with good vigor and 7 feet height. Booth (827) willow 100% survival with fair vigor and 3 feet height. Drummond (828) willow 20% survival with poor vigor and 2 feet height. Greyleaf willow 80% survival with poor vigor and 1 foot height. Wolf willow 20% survival with poor vigor and 1.5 feet height. Geyer (832) willow 80% survival with fair vigor and 3.5 feet height. FY00 Elk heavily utilize site in winter. Overall the Streamco, White, Pacific, Coyote willows are performing the best under browsed conditions. Streamco is probably the best streambank stabilization willow being tested and is spreading with noticeable root growth. Aberdeen willows - White willow 100 percent survival with excellent vigor and 80 inch height; Laurel willow 75 percent survival with good vigor and 48 inch height; Streamco willow 100 percent survival with good vigor and 48 inch height; Geyer willow 80 percent survival with poor vigor and 60 inch height; Coyote willow 100 percent survival with good vigor and 48 inch height. Meeker willows – Scouler willow 60 percent survival with fair vigor and 40 inch height; Pacific willow 100 percent survival with good vigor and 90 inch height; Booth (827) willow 100 percent survival with fair vigor and 48 inch height; Drummond (828) willow 80 percent survival with fair vigor and 48 inch height; Greyleaf willow 40 percent survival with poor vigor and 28 inch height; Wolf willow 40 percent survival with poor vigor and 28 inch height; Geyer (832) willow 60 percent survival with good vigor and 60 inch height. FY01 riparian planting with moisture provided by stream/subirrigation through 1st week of July (2 years of drought have affected this planting – however, tree type willows Pacific, White, and Streamco are best performers perhaps because they were able to root more deeply than shrub type willows). Scouler willow – 40% survival, very poor vigor, 4 feet height, and 3 feet crown width. Pacific willow – 100% survival, good vigor, 7 feet height and 7 feet crown width. Booth willow (827) – 100% survival, poor vigor, 2.5 feet height, and 3 feet crown width. Drummond willow (828) – 100% survival, poor vigor, 2.5 feet height, and 2 feet crown width. Greyleaf and Wolf willow failed. Geyer willow (832) – 40% survival, fair vigor, 4 feet height, and 4 feet crown width. White willow – 100% survival, fair vigor, 7 feet height, and 6 feet crown width. Laurel willow – 75% survival, poor vigor, 3 feet height, and 3 feet crown width. Streamco willow – 100% survival, good vigor, 6 feet height, and 8 feet crown width. Geyer (Aberdeen) willow – 100% survival, poor vigor, 3 feet height, and 3 feet crown width. Coyote willow – 40% survival, poor vigor, 4 feet height, and 2 feet crown width. FY02 continuing drought with stream flows drying up in late June. All willows are surviving with reduced growth - Streamco is the most drought tolerant.

ID97022 Hager Field Planting. Non-Irrigated or Partially Irrigated-Bannock thickspike wheatgrass, Newhy hybrid wheatgrass, P27 Siberian wheatgrass and Irrigated-Rush intermediate wheatgrass, Paiute orchardgrass, and Regar meadow brome. Site is on a Bannock silt loam soil with gravel modifier, 0-2% slope, west aspect, 4795 feet elevation,

10-12 inch ppt, irrigated to partially irrigated, T4N R38E SW1/4 Section 28. Seed ordered 3/3/97. Planting planned for spring 1997. FY97 planted mid May by broadcast and harrowing. All species irrigated with sprinkler the first season June through September at 1 inch per week. Stand/Plants per Ft²/Vigor/Tons per Acre: Regar good/6/good/0.9; Rush excellent/20/excellent/1.9; Paiute excellent/6/good /1.05; Bannock poor/2/ poor/0.65; Newhy good/7/good/0.8; P27 good/5/fair/0.65. Excellent stand of Rush with earlier start and double the production of other fully irrigated species. FY98 Stand/Plants per Ft²/Vigor/Tons per Acre: Regar fair/3/good/3.5; Rush excellent/5/excellent/3.5 to 4.5; Paiute fair/5/poor/1.5; Bannock poor/2/ fair/1.4; Newhy excellent/3/excellent/2.0; and P27 good/9/good/1.7. FY99 Irrigated – Regar fair stand with fair vigor and 3 plants per square foot. Rush excellent stand with excellent vigor and 4 plants per square foot. Paiute fair stand with very poor vigor and 4 plants per square foot. Non-irrigated – Bannock poor stand with fair vigor and 1 plant per square foot. Newhy good stand with good vigor and 5 plants per square foot. P27 good stand with good vigor and 4 plants per square foot. Rush (irrigated) and Newhy (non-irrigated) have best stands in these gravelly soils. FY00 Due to drought production and vigor considerably less than prior years. Wildfire in late June burned all if Bannock, Paiute, and most Newhy and Rush. Regar and Rush are semi-irrigated with total rainfall and irrigation totaling 10-12 inches this year. All other species received 5-6 inches this year. Irrigated - Regar poor stand with poor vigor and 1500 pounds of production; Rush excellent stand with poor vigor and 3400 pounds of production. Non-Irrigated – Paiute and Bannock no regrowth following fire; Newhy good stand with very poor vigor and 1200 pounds of production; P-27 good stand with very poor vigor and 1000 pounds of production. FY01 5th year of planting with past two being severe drought. Rush and Regar were partially irrigated through June. All plants are very drought stresses. Production has decrease significantly the last two years. Regar and Paiute are about gone – mostly replaced by quackgrass. Rush and P-27 are still full stands, although vigor is poor due to drought. Bannock and Newhy are maintaining stands although Newhy vigor is very poor. FY02 due to change in ownership **Cancel**.

ID98010 Hager Willow and shrub field planting (Aberdeen - Laurel willow and Pullman shrub - Blanchard Blue Elderberry). Materials ordered 2/9/98. Site is loam soil, 0-2 % slope, west aspect, 4795 feet elevation, 10-12 inch ppt, irrigated, T4N R38E SW1/4 Section 28. FY98 Survival/Vigor/Height: Laurel willow (deep soil with fabric) 100%/excellent/3.5 feet; Laurel willow (gravelly soil with fabric) 100%/good/2.5 feet; Elderberry (with fabric) 80%/excellent/1.33 feet; and Elderberry (without fabric) 50%/very poor/0.5 feet. FY99 Laurel willow loam soil – 100% stand with good vigor and 6 feet height. Laurel willow gravelly soil – 100% stand with fair vigor and 4.8 feet height. Blanchard weed barrier material – 80% stand with excellent vigor, berry production, and 5.2 feet height. Blanchard no weed barrier material – failed. FY00 Laurel willows are vigorous, healthy and thriving under drip irrigation. Blanchard elderberry are vigorous and produced abundant elderberries beginning around first of August. Laurel willow on loamy soil had 100 percent survival with good vigor and 84 inch height. Laurel willow on gravelly soil had 100 percent survival with fair vigor and 80 inch height. Blanchard elderberry under weed barrier material has 80 percent survival with good vigor and 80 inch height. FY01 plants are 3 years old and are drip irrigated. Laurel willow (loamy site) – 100% survival good vigor, 8 feet height, and 9 feet crown width. Laurel willow (gravelly site) – 100% survival, good vigor, 8.5 feet height, and 7 feet crown width. Blanchard blue elderberry – 80% survival, good vigor, 8 feet height, 8.5 feet crown width and abundant elderberries use heavily by Brewer sparrows. FY02 due to change in ownership **Cancel**.

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.

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 cooperator had fertilized planting. FY02 good stand with good vigor - planting produced about 2 tons per acre

ID00013 Hager Field Planting - 9033732 mockorange, 9033800 mockorange, 9033580 serviceberry, and 9033672 serviceberry. Materials ordered March 13, 2000 for shipping about April 10, 2000. FY00 Plantings are drip irrigated. Mockorange (732) 45 percent survival fair vigor and 7 inch height. Mockorange (800) 67 percent survival with good vigor and 10 inch height. Serviceberry (580) 95 percent survival with poor vigor and 4 inch height. Serviceberry (672) 100 percent survival with poor vigor and 6 inch height. FY01 plants drip irrigated. 9033732 Mockorange 20% survival very poor vigor, and 1-31 inch height. 9033800 Mockorange 67% survival, fair vigor and 13-25 inch height. 9033580 Serviceberry 80% survival, poor vigor and 8-15 inch height. 9033672 Serviceberry 85% survival, fair vigor and 16-22 inch height. Overall growth is slow for both species, but much improved over last year. Growth rates are doubled when using fabric mulch materials verses not using materials. FY02 due to change in ownership **Cancel**.

ID01004 Cooperator unknown cottonwood field planting. Ten cuttings each of 9067408 Narrowleaf cottonwood, 9067443 Narrowleaf cottonwood, 9067484 Narrowleaf cottonwood, 9067502 Narrowleaf cottonwood, Robust poplar, Carolina poplar, and Siouxland poplar. FY01 and FY02 no evaluation.

ID02005 SCD Leafy Spurge Demonstration Plots. Ephraim crested wheatgrass, Covar sheep fescue, Bozoisky Russian wildrye, Luna pubescent wheatgrass, Bannock thickspike wheatgrass, P27 Siberian wheatgrass, Vavilov Siberian wheatgrass, Durar hard fescue, Hycrest crested wheatgrass, Tegmar intermediate wheatgrass, Sodar streambank wheatgrass, CD-II crested wheatgrass, Newhy hybrid wheatgrass, Syn A Russian wildrye, Rush intermediate wheatgrass and Manchar smooth brome. Seed ordered September 2001. Dormant fall planting 2001. FY02 establishment year: Good stands of P27 Siberian wheatgrass, Hycrest crested wheatgrass, and Rush intermediate wheatgrass; Fair stands of Bozoisky Russian wildrye, Tegmar intermediate wheatgrass, Sodar streambank wheatgrass, Newhy hybrid wheatgrass and Syn A Russian wildrye; Poor stands of Ephraim crested wheatgrass, Covar sheep fescue, Luna pubescent wheatgrass, Bannock thickspike wheatgrass, Vavilov Siberian wheatgrass, Durar hard fescue, CD-II crested wheatgrass and Manchar smooth brome. Weeds are thick in these plots - plots were sprayed this fall to control leafy spurge.

FIELD OFFICE: SALMON

ID80100 IDL Bradbury Flat Multiple Adaptation Evaluation every 3 years. Planted March 25, 1980. FY92 evaluation 7/7/92. FY95 evaluation 11/14/95. All evaluations available on request. FY99 Evaluations September 1999. Good to excellent stands include 7654 crested wheatgrass, P27 Siberian wheatgrass, Sodar streambank wheatgrass, AB447 crested wheatgrass, and Secar Snake River wheatgrass. Fairs to poor stands include Goldar bluebunch wheatgrass and Ladak alfalfa. Failures include: Nezpar Indian ricegrass, Luna pubescent wheatgrass, Magnar basin wildrye, Topar pubescent wheatgrass, Appar blue flax, Firecracker penstemon, Bandera Rocky Mountain penstemon, Cedar Palmer penstemon, Alpine penstemon, AB555 blueleaf aster, black-eyed susan, AB9223 fourwing saltbush, AB9421 fourwing saltbush, Delar small burnet, PI314929 forage kochia and sulpherflower buckwheat. AB585 and AB764 winterfat could not determine stand due to presence of native winterfat. **Next evaluation FY03**.

ID80101 IDL Bradbury Flat Multiple Adaptation Evaluation every 3 years. Planted November 7, 1981. FY92 evaluation 7/7/92. FY95 evaluation 11/14/95. All evaluations available on request. FY99 Evaluations September 1999. Good to excellent stands include B1574 crested wheatgrass, P27 Siberian wheatgrass, AB447 crested wheatgrass, Secar Snake River wheatgrass, AB585 winterfat, AB764 winterfat, Bozoisky Russian wildrye and Vinall Russian wildrye. Fair to poor stands include Sodar streambank wheatgrass and Immigrant forage kochia. Failures include Nezpar Indian ricegrass, Luna pubescent wheatgrass, Goldar bluebunch wheatgrass, Magnar basin wildrye, Topar pubescent wheatgrass, Bandera Rocky Mountain penstemon, Cedar Palmer penstemon, Alpine penstemon, black-eyed susan, Delar small burnet, green needlegrass, Blair smooth brome, and PI109072 orchardgrass. Appar blue flax and firecracker penstemon were found outside of seeded plots. AB922 fourwing saltbush and AB942 fourwing saltbush plants were present with low vigor. **Next evaluation FY03.**

ID82101 BLM Hole In Rock Multiple Adaptation Evaluation every 3 years. Planted late October 1982. FY92 evaluation 7/7/92. FY95 evaluation 9/95. All evaluations available on request. FY99 plots were not accessible in September 1999. **Next evaluation FY03.**

ID82102 BLM Centennial Multiple Adaptation Evaluation every 3 years. Planted late October 1982. FY92 evaluation 6/26/92. FY95 evaluation 6/20/95. All evaluations available on request. FY99 not evaluated. **Next evaluation FY03.**

ID82103 BLM Spud Alluvial Multiple Adaptation Evaluation every 3 years. Planted late October 1982. FY92 evaluation 6/25/92. FY95 evaluation 11/14/95. All evaluations available on request. FY99 evaluations September 1999. Good to excellent stands include Whitmar beardless wheatgrass, P27 Siberian wheatgrass, Secar Snake River wheatgrass, Sodar streambank wheatgrass, Immigrant forage kochia, Vinall Russian wildrye, and Bozoisky Russian wildrye. Fair to poor stands include Synthetic alfalfa, PI109012 crested wheatgrass, Topar pubescent wheatgrass and Goldar bluebunch wheatgrass. Failures include Newhy hybrid wheatgrass, scarlet globemallow, Cedar Palmer penstemon, Appar blue flax, PI109072 orchardgrass, Barton western wheatgrass, Nezpar Indian ricegrass, Magnar basin wildrye, and yellow sweetclover. Kochia is spreading outside of seeded plots and is only plant that is actively growing at evaluation date. Whitmar and Bozoisky affected by excessive litter. **Next evaluation FY03.**

ID82104 BLM Jeff's Flat Multiple Adaptation Evaluation every 3 years. Planted late October 1982. FY92 evaluation 6/26/92. FY95 no evaluation. FY99 evaluations September 1999. Good to excellent stands include Manchar smooth brome and Covar sheep fescue. Fair to poor stands include Synthetic alfalfa, Lutana cicer milkvetch, Durar hard fescue, PI1099012 crested wheatgrass, P27 Siberian wheatgrass, Greenar intermediate wheatgrass, Magnar basin wildrye, and Bozoisky Russian wildrye. Failures include Newhy hybrid wheatgrass, Hycrest crested wheatgrass, Delar small burnet, Baylor smooth brome, Bandera Rocky mountain penstemon, Cedar Palmer penstemon, Appar blue flax, PI109072 orchardgrass, Sherman big bluegrass, Vinall Russian wildrye, and yellow sweetclover. Rodent damage evident in plots. **Next evaluation FY03.**

ID82105 BLM Round Valley Multiple Adaptation Evaluation every 3 years. Planted late October 1982. FY92 evaluation 6/25/92. FY95 evaluation 11/13/95. All evaluations available on request. FY99 evaluations September 1999. Good to excellent stands include P27 Siberian wheatgrass, Nordan crested wheatgrass, Vinall Russian wildrye and Bozoisky Russian wildrye. Fair to poor stands include Newhy hybrid wheatgrass, thickspike wheatgrass x crested, Nezpar Indian ricegrass, Secar Snake River wheatgrass, Immigrant forage kochia, and PI109012 crested wheatgrass. Failures include Synthetic alfalfa, scarlet globemallow, Bandera Rocky Mountain penstemon, Cedar palmer penstemon, Appar blue flax, PI109072 orchardgrass, Goldar bluebunch wheatgrass, Barton western wheatgrass, Topar pubescent wheatgrass, Whitmar beardless wheatgrass, Magnar basin wildrye, and yellow sweetclover. **Next evaluation FY03.**

ID82106 BLM Gooseberry Multiple Adaptation Evaluation every 3 years. FY92 evaluation 7/7/92. FY95 site has deteriorated to point evaluations would provide little future value. Some scattered plant materials still remain. **Cancel future evaluations, but maintain file for reference purposes.**

ID83100 FS Nip & Tuck Multiple Adaptation Evaluation every 3 years. FY92 evaluation 7/6/92. FY95 site has deteriorated to point future evaluations would provide little future value. Plants of Luna, Topar, Nezpar, Regar, Covar, Durar and Garrison still evident. Covar/Durar and then Regar doing best. Mountain big sagebrush and Idaho fescue are dominating site. **Cancel future evaluations, but maintain file for reference purposes.**

ID00012 SCD Field Planting – Blanchard blue elderberry, 9023733 dogwood, 9023739 dogwood, and 9023740 dogwood. Materials ordered March 13, 2000 for shipping on April 10, 2000. FY00 - FY02 no evaluations.

ID01001 Cooperator unknown cottonwood field planting. 9067408 Narrowleaf cottonwood, 9067443 Narrowleaf cottonwood, 9067484 Narrowleaf cottonwood, 9067502 Narrowleaf cottonwood, 9067537 Black cottonwood, 9067538 Black cottonwood, 9067562 Black cottonwood, 9067563 Black cottonwood, 9067568 Black cottonwood, 9067569 Black cottonwood, Robust poplar, Carolina poplar, and Siouland poplar. FY01 and FY02 no evaluation.

FIELD OFFICE: ST. ANTHONY

ID99009 Henrys Lake area field planting. Species include Coyote willow, Geyer 435 willow, Geyer 448 willow, Geyer 483 willow, Geyer 491 willow, Geyer Meeker willow, Snowberry, Elderberry, Dogwood 733, Dogwood 740, Booth willow, Drummond willow, Serviceberry 548, Serviceberry 580, Serviceberry 672, and Mockorange. FY99, FY00 and FY01 no evaluations. FY02 lost site map - **Cancel**

ID02020 Mae Lake Trust field planting. Species include Rush intermediate wheatgrass, Bannock thickspike wheatgrass, Nezpar Indian ricegrass, and Maybell antelope bitterbrush. Seed ordered April 8, 2002.

PLANT MATERIALS

2002

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.

UT97001 Frank Bohman – Ogden FO Rush intermediate wheatgrass field planting. Site is loamy soil, non-irrigated, 19-inch ppt, 6000 feet elevation, and 30-40% slope on north exposure. Seed ordered July 15, 1996 for dormant fall planting. Seed shipped 9/9/96. FY97 no evaluation. FY98 excellent stand and vigor with .8 AUM/acre. Planting was over-seeded by air the same year as planting resulting in small burnet, orchardgrass, and flax also present in stand. FY99 no evaluation. FY00 excellent stand and vigor with 2 AUM/acre production. This was the first year the planting was grazed in early to mid May. Cooperator is very pleased with planting and production. FY01 and FY02 no evaluation.

UT98001 Cooperator Unknown – Bonneville FO Pullman PMC shrub field planting - dogwood (3 accessions), chokecherry, mockorange, and Hawthorn. Materials ordered 2/9/98. FY98-FY99 no evaluations. FY00 40 percent survival with fair vigor and 30 inch height. There is a lot of competition from other riparian species, but these plants are surviving and growing slowly. FY01 and FY02 no evaluation.

UT99002 Scott Hansen - Tremonton FO P27 Siberian wheatgrass, Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, and Goldar bluebunch wheatgrass field planting. Rimrock Indian ricegrass and Maybell antelope bitterbrush demo packets were also ordered. Site is a silt loam soil, 3 percent slope, east aspect, 5075 feet elevation, 20 inch rainfall, and non-irrigated. T12N R2W Section 22 SE Quarter. Seed ordered December 8, 1998 for delivery mid September 1999. FY99 area is heavily infested with weeds. Cooperator plans to control weeds during spring-summer 2000-2001 and plant spring 2002. FY02 no evaluation.

UT99003 Hathaway Family - Tremonton FO P27 Siberian wheatgrass, Vavilov Siberian wheatgrass, Rush intermediate wheatgrass, Goldar bluebunch wheatgrass, Ephraim crested wheatgrass, Nordan crested wheatgrass, and Lincoln smooth brome field planting. Site is a former beet dump with high organic soil, 1 percent slope, east aspect, 4800 feet elevation, 18 inch rainfall, and non-irrigated. T2N R Section ? Seed ordered December 8, 1998 for delivery as soon as possible. FY99 cooperators plan an additional season of weed control in spring – summer 2000 with planting planned for fall 2000. FY00 weeds continue to be a problem following 3 applications of Roundup this season. FY01 and FY02 no evaluation.

UT99005 Gordon Zito - Tremonton FO Robusta poplar, Carolina poplar, Laurel willow, Golden willow, and White willow field planting. Site is a silt loam soil, 0-25 percent slope, west aspect, 4300 feet elevation, 18 inch rainfall, and non-irrigated. T11N R3W Section 2 NE Quarter. Cuttings ordered December 8, 1998 for delivery about April 1, 1999. FY99 Carolina poplar and white willow failed. Robust poplar .6 percent survival (1 of 15), Laurel willow 13 percent survival (2 of 15), and Golden willow 13 percent survival (2 of 15). Best survival in areas near fresh water seep – failure in more saline areas. FY00 site was severely damaged by livestock this season – a few willows remain and will be evaluated next year. FY01 all of the plants are still alive, but showing salt-burn on leaves. FY02 no evaluation.

UT99006 Ross McKinnon - Randolph FO Luna pubescent wheatgrass, Rush intermediate wheatgrass, Largo tall wheatgrass, Jose tall wheatgrass, Alkar tall wheatgrass, Bozoisky Russian wildrye, Shoshone beardless wildrye (both seed and plugs), and Prairieland Altai wildrye field planting for saline soil demonstration. Site is silty clay loam soil

(saline), 0-1 percent slope, west aspect, 6230 feet elevation, 11 inch rainfall, and non-irrigated. T11N R7E Section 23 NW of NW Quarter. Seed ordered December 8, 1998 for delivery October 1, 1999. FY99 seeding completed in late November 1999. FY00, FY01 and FY02 no evaluations.

UT99008 Bryner - Logan FO Laurel willow field planting – nursery. Site is Airport loam soil, 7.7 pH, heavy clay sub-soils, 0 slope, 16-inch rainfall zone, high watertable, and 4430 feet elevation. FY99 cuttings planted April 17, 1999 into 12 inch scalped circles, T12N R1E SW quarter of Section 31. Trees are drip-irrigated. June 4, 1999 cuttings have sprouted and appear to be establishing well. FY00, FY01 and FY02 no evaluations.

UT00001 Don Peterson - Logan FO spring field planting of Rush intermediate wheatgrass (medusahead wildrye control). Leatham silt loam soil, 30 percent slopes, southwest aspect, 5400 feet elevation, 14-17 inch precipitation, non-irrigated, T9N R1E North ½ Section 5. FY00 site burned in fall 1999 and sprayed with Roundup-Escort mix in spring 2000 for medusahead control. Chemical kill of medusahead was excellent. 14 pounds per acre were drilled in 8 inch spacing on May 20, 2000 with good initial germination and establishment. FY01 and FY02 no evaluations.

UT00005A Gordon Zito – Tremonton FO willow field planting. 40 cuttings of 9067556 Coyote willow, 15 cuttings of 9067436 Yellow willow, and 40 cuttings of 9067560 Peachleaf willow were ordered on March 1, 2000 for shipment on April 10, 2000. Planted along Malad River April 20, 2000 on Kr soil, salt limitations, 0-20 percent slopes, west aspect, 4300 feet elevation, 18 inch rainfall, non-irrigated, T11N, R3W, NE ¼ Section 2. FY01 All plants are still alive, but showing salt-burn on leaves. FY02 no evaluation.

UT00005C Bret Selman – Tremonton FO willow field planting. 5 cuttings each of 9067556 Coyote willow, 9067436 Yellow willow, and 9067560 Peachleaf willow were ordered on March 1, 2000 for shipment on April 10, 2000. Planted along Spring Branch of the Little Bear River April 20, 2000 on Kr soil, salt limitations, 0-10 percent slopes, west aspect, 5300 feet elevation, 18 inch rainfall, non-irrigated, T9N, R1E NW ¼ Section 21. FY01 this planting is doing well - more extensive evaluation will occur in FY02.

UT01003 – Randolph FO willow field planting. 9067548 Drummond willow 15 cuttings, 9067435 Geyer willow 15 cuttings, 9067491 Geyer willow 15 cuttings, 9067437 Booth willow 15 cuttings, 9067469 Booth willow 15 cuttings, 9067478 Booth willow 15 cuttings, 9067553 Lemmon willow 15 cuttings, and 9067567 Lemmon willow 15 cuttings. FY01 and FY02 no evaluation.

UT01005 Scott Hansen – Tremonton FO field planting. Tarweed control. P27 Siberian wheatgrass, Vavilov Siberian 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 due to drought and being snowed out - hope to plant in 2002. FY02 no evaluation.

UTAH AREA 2 PLANT MATERIALS PLANTINGS

UT98002A LaDon Anderson Fillmore FO Aberdeen PMC - Laurel willow and Pullman PMC. Materials ordered 2/9/98. FY98 41 of 46 Laurel willows are surviving at the end of the first growing season. FY00 38 of 46 surviving with good to poor vigor, 3-10 feet height, 2-5 feet crown widths. All plants are brown and chlorotic due to lack of irrigation, saline water source, and saline soils. Plant loss is probably due to livestock damage and weed control is not being performed. FY01 80 percent survival with fair vigor – plants did not grow much in height, but did get much denser. Site conditions with high pH saline soil with saline water source are limiting plant performance. FY02 shrubs are surviving, but growth rate is significantly reduced due to low levels of irrigation water provided. Plants in field to south and east - best performing plant is golden currant, which tolerates fairly high levels of salinity. **Planting Cancel**

UT98006 Iron County - Cedar City. Yields of pasture grasses irrigated with effluent water. See chart at end of publication.

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.

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 no evaluation.

UT00004 Peterson – Fillmore FO Laurel willow field planting. 100 cuttings ordered March 1, 2000 with shipment April 10, 2000. FY00 no evaluation. FY01 50 percent survival with fair vigor due to inadequate water management. Plant height is 60 inches and crown width is 1-3 feet. FY02 no evaluation.

UT01002 Cottonwood Planting - Fillmore FO Cuttings ordered February 2001 for shipment on April 19, 2001. No evaluation FY01 and FY02.

UT02002 Fillmore FO demonstration planting of Snake River Plains fourwing saltbush. Seed shipped April 12, 2002. FY02 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. FY01 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. FY97 and FY98 no evaluations. **FY99 Ten 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. FY00, FY01 and FY02 no evaluations.

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) FY97 and FY98 no evaluations. 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. FY00, FY01 and FY02 no evaluations.

UT91007 Ruble – Roosevelt FO Pryor slender wheatgrass, San Luis slender wheatgrass, Newhy hybrid wheatgrass field planting for erosion control. FY93 Newhy 10% survival, Pryor 70% survival, San Luis 90% survival and rated the best of evaluated species. FY94 San Luis continues as best performer, with Pryor a close second. Newhy is doing poorly. We should continue to evaluate stands to determine how long slender wheatgrass, a short-lived species will maintain on site. Note slender wheatgrass should normally be used as a cover crop species with the understanding it will not stay in the stand for too many years. FY95 good stands of both Pryor and San Luis are present and a fair to poor stand of Newhy is present. FY96 stands are the same as 95 with the slender wheatgrasses showing more drought tolerance than Newhy. FY97 good stand of San Luis, fair stands (50%) of Pryor and very poor stand to no stand of Newhy. FY98 plant vigor is excellent for all species due to very good moisture year. San Luis is beginning to decline in percent stand. FY99 plant growth below previous years due very spring/ summer drought and no irrigation. FY00 very dry spring and summer. Rains began in early September resulting in green-up and fair vigor for Pryor and San Luis and very poor vigor for Newhy. FY01 Newhy is dead and Pryor and San Luis are having a hard time hanging on due to drought and old age. **FY02 Cancel.**

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. FY02 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. FY02 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 didn't plant due to extreme drought. FY01 and FY02 no evaluation.

UT00002 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 and FY02 no evaluation.

UT00007 George Carter – Monticello FO 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 and FY02 no evaluation.

UT01004 Monument Valley High School. Critical Area Planting – Volga mammoth wildrye. Seed ordered April 2001. FY01 and FY02 no evaluation.

UT02001 Ken Pickup field planting. Rush intermediate wheatgrass (3 acres) - Topar pubescent wheatgrass (5 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. FY02 no evaluation.

Cedar City FO - Yields of Pasture Grasses Irrigated with Effluent Water in Iron County, Utah

Variety/Species	Yield – Production						Crude Protein %					Grazing Preference*			Soil Test Nitrate N.	
	Spr. 99 lbs/acre	Fall 99 lbs/acre	Spr. 00 lbs/acre	Fall 00 ³ lbs/acre	Spr. 01 lbs/acre	Total lbs/acre	S99	F99	S00	F00	S01	F99 ¹	S00 ²	S01 ³	F00 ⁴	F01 ⁴
Johnstone Tall Fescue	1748	9945	2325	4925	1873	20816	25.0	15.7	17.2	18.9	15.4	8	6	8	3.2	2.5
Newhy Hybrid Wheatgrass	1846	6465	5896	3404	2529	20140	18.8	14.4	16.3	15.4	18.0	4	4	7	1.3	2.3
Stargrazer Tall Fescue	2094	5353	2255	6708	2279	18689	19.7	15.1	15.5	11.8	14.1	4	6	7	1.2	4.2
Regar Meadow Brome	3361	3701	5383	3787	2011	18243	21.7	11.9	13.9	14.6	17.6	5	4	8	2.0	4.0
Paddock Meadow Brome	2054	4621	5632	2489	2820	17616	20.9	14.2	15.9	14.4	15.6	7	5	8	1.0	1.8
Oahe Intermediate Wheatgrass	3388	4592	4258	2053	2024	16315	16.2	16.1	15.1	11.3	14.3	9	9	9	1.5	2.5
Potomac-Rush-Paddock Mix	2482	3368	4128	3490	1542	15010	17.3	11.8	12.5	13.7	15.9	6	6	8	0.8	3.3
Potomac Orchard Grass	3041	4278	3212	2200	1259	13990	16.3	11.1	17.2	18.6	18.3	5	7	9	1.0	5.0
Rush Intermediate Wheatgrass	2671	2423	4657	2672	2288	14711	24.8	14.2	15.0	14.4	15.8	9	8	9	1.7	3.6
Oahe-Paddock Mix	2727	2358	3122	2053	1705	11965	15.0	11.7	17.1	25.7	14.7	8	7	9	1.9	1.8

Notes: All Yields are reported on a 100% Dry Matter basis

S99=Spring1999; F99= Fall 1999; S00= Spring 2000; F00= Fall 2000; S01= Spring 2001; F01= Fall 2001

Quality Data was determined by NIR analysis and reported on 100% Dry Matter Basis

* Grazing Preference = average of two independent observers rating on scale of 1-10 with 10 being extensively grazed and 1 being not grazed at all.

¹ Seventy, 950lbs heifers for 40 days. Rating was done on 12/13/99

² Eighty-one, 1050lbs heifers with calves for 30 days. Rating was done on 6/21/00

³ Seventy cows, 60 calves and 3 bulls for 10 days. Rating completed 5/24/01

⁴ Nitrate-Nitrogen-N in parts per million (ppm)