

December 20, 2006

**THE 2006 BUREAU OF LAND MANAGEMENT ANNUAL REPORT:**  
*Roseburg District*

**I. Brief Background of Project**

The Corvallis Plant Materials Center (PMC) entered into a new agreement with the Roseburg District of the Bureau of Land Management (BLM) in 2005 to provide native



Figure1. *Lupinus rivularis* seed increase field, flowering in its first growing season, Corvallis Plant Materials Center, May 30, 2006.

plant materials for ecological restoration. It was agreed that the PMC would establish and maintain seed increase fields of three grasses (four accessions) and one legume. A small amount of hand collected seed was used to establish fields in 2005. These fields were harvested in 2006 and the resulting seed is being used to expand the seed increase fields. The fields (and seed that will be harvested from these fields in 2007) will now be labeled as “G2”, since the G1 and G2 sections can interbreed. The lupine field was not expanded this year due to it being (typically) a biennial. The seed produced this year from the field was not enough to create a large field. The existing field will be destroyed during harvest next year and the seed produced in 2006 and 2007 can be combined to create a new G2 field.

**II. Accessions Involved**

Accessions included for the Roseburg District BLM in 2006 are listed in Table 1. This table also displays activities performed by PMC staff.

Table 1. Accessions involved for Roseburg District BLM cooperative agreement with Corvallis Plant Materials Center in 2006.

Species	Common name	Symbol	Accession	Activity in 2006 <sup>1</sup>
<i>Danthonia californica</i>	California oatgrass	DACA	9079415 Culvert Yard	sfp, pxn
<i>Danthonia californica</i>	California oatgrass	DACA	9079428 Yampah Flat	sfp, pxn
<i>Elymus elymoides</i>	bottle-brush squirreltail	ELEL5	9079416	sfp
<i>Lupinus rivularis</i>	river lupine	LURI	9079430	sfp
<i>Achnatherum lemmonii</i>	Lemmon's needlegrass	ACLE8	9079429	pxn, sfp

<sup>1</sup>- sfp= seed increase, pxn=plant production, dlv=plant materials delivery

### III. Field Seed Increase Activities

The winter of 2005/06 was very wet and cold. Fields often had standing water and seedlings were completely submerged for weeks at a time. The *Elymus elymoides* field survived the winter with no damage. The *Lupinus rivularis* seedlings were very stressed throughout the winter and many seedlings died. The field had been seeded at a very high rate; consequently the low seedling survival did not affect the quality of the stand. The *Achnatherum lemmonii* seedlings were emerging when the fields were covered with water. Some mortality occurred, but by spring the rows were mostly filled in and plants grew vigorously through summer. *Danthonia californica* fields and two rows of *Achnatherum lemmonii* were established using container-grown transplants. The plants were transplanted into fields in early March.

Weed control was performed mainly by hand. The ELEL5 field was also sprayed with Bronate® in late spring to removed broadleaf weeds. Roundup® was used around the field borders.

Most fields were hand harvested multiple times throughout the growing season. The *Elymus elymoides* field was harvested by a hand-crafted machine nick-named the “moon rover.” It is a self-propelled swather. The machine uses a conveyer belt to move all material after it is cut and loads it into bags. Two people operate it. One person drives and the other helps feed the material into bags. The moon rover has all the benefits of hand harvesting without the labor. Once material was bagged, it was placed onto tarps to dry and cure. It was then fed through a plot thresher and cleaned as usual.



Figure 2. PMC staff harvesting a seed increase field using the “moon rover.”

Table 2. Seed yields for the Roseburg District BLM cooperative agreement with Corvallis Plant Materials Center in 2005.

<b>Symbol</b>	<b>Accession</b>	<b>Field size</b>	<b>Harvest method</b>	<b>Yield</b>
<i>Danthonia californica</i>	9079415 Culvert Yard	0.02 ac	hand	12 g
<i>Danthonia californica</i>	9079428 Yampah Flat	200 ft <sup>2</sup>	hand	7 g
<i>Elymus elymoides</i>	9079416	0.04 ac	moon rover	11 lbs
<i>Lupinus rivularis</i>	9079430	0.17 ac	hand	460 g
<i>Achnatherum lemmonii</i>	9079429	0.02 ac	hand	10 g

Following harvest, *Elymus elymoides* field was burned and *Achnatherum lemmonii* field was mowed to remove residue. All established grass fields were sprayed in late October with Outlook®, a non-selective pre-emergent herbicide. Initial results are very promising. Little to no weeds or volunteer seedlings have germinated and established plants do not appear damaged.

Informal germination tests were performed on some of the seed lots prior to sowing. The germination tests helped determine seeding rates for species that were being sown directly into fields. On October 12, 2006, *Elymus elymoides* was sown using a six-row Planet-Jr® planter equipped with a carbon banding unit. The field was sprayed with Karmex® (a non selective pre-emergent herbicide) following carbon application. *Elymus*



*elymoides* seedlings emerged within two weeks and stands looked great. It is very difficult to harvest *Elymus elymoides* efficiently. A larger field was established so that a combine can be used to harvest the field in 2007.



Figure 3. *Elymus elymoides* beginning to flower at the Corvallis Plant Materials Center, June 10, 2005.

Table 3. Seed increase field establishment on October 16, 2006 for the Roseburg District BLM cooperative agreement with Corvallis Plant Materials Center in 2006.

Species/Ac	amt seeded	germ	approximate seeding rate	seeds/lb
<i>Elymus elymoides</i>	2400 g	64%	9 lbs/acre (bulk) 7 lbs/acre (PLS <sup>1</sup> )	135,571
<b>0.37 acres or</b>				
90 181' rows				
12" btwn rows				

1. Pure live seed

## V. Container Plant Production.

On September 25, 2006, seeds of both *Danthonia californica* accessions and *Achnatherum lemmonii*, were sown into Ray Leach stubby cone-tainers filled with moistened media (Sunshine #1: a special peat-based soil-less mix) and lightly covered

with fine vermiculite. Seeded flats of *Danthonia californica* require cold-moist stratification to break seed dormancy so they were placed in polyethylene bags and moved into the walk-in cooler (36-38° F). Flats will be removed from the cooler on December 21, 2006 and placed in a greenhouse set at moderate temperatures (65° day/ 50° night). Plants will be transplanted out into fields in early spring.

Table 4. Plant Production for the Roseburg District BLM cooperative agreement with Corvallis Plant Materials Center in 2006.

<b>Symbol</b>	<b>Accession</b>	<b>Amt seed used</b>	<b>Number produced</b>	<b>Total field size after transplanting</b>
<i>Danthonia californica</i>	9079415 Culvert yard	12 g	588	0.037 ac
<i>Danthonia californica</i>	9079428 Yampah Flat	7 g	396	0.001 ac
<i>Achnatherum lemmonii</i>	9079429	10 g	676	0.04 ac

#### **VI. Delivery of Plant Materials.**

No materials were delivered in 2006. Remaining seed of *Elymus elymoides* (6 lbs) and *Lupinus rivularis* (460 g) will be kept in a cooled/dehumidified seed storage facility at the PMC until requested by BLM staff.