

THE 2004 BUREAU OF LAND MANAGEMENT ANNUAL REPORT:
Medford District

CORVALLIS PLANT MATERIALS CENTER
NATURAL RESOURCES CONSERVATION SERVICE
CORVALLIS, OREGON
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I. Brief Background of Project

The Corvallis Plant Materials Center (PMC) entered into a new agreement with the Medford District of the Bureau of Land Management (BLM) in 2004 to provide native plant materials for ecological restoration. It was agreed that the PMC would establish and maintain three grass seed increase fields, four legume seed increase fields, and containerized production of four legumes and two forbs. A minimum of 1200 plants are to be delivered to the BLM at a time and place agreed upon by PMC and BLM staff.

Activities in 2004 included establishment and maintenance of three grass seed fields and four legume fields, germination research on seven species, and containerized production of two forbs and four legumes.

II. Accessions Involved

Accessions included for the Medford District BLM in 2004 are listed in Table 1. This table also displays activities performed by PMC staff.

Table 1. Accessions involved for Medford District BLM cooperative agreement with Corvallis Plant Materials Center in 2004.

Scientific name	Common Name	Symbol	Accession	2004 Activity ¹
<i>Lupinus sulphureus</i> ²	yellow lupine	LUSU5	9079321	sd incr, germ
<i>Lupinus albicaulis</i> ³	sickle-keeled lupine	LUAL3	9079320	sd incr, germ, prod, dlv
<i>Lupinus albifrons</i>	silverleaf lupine	LUAL4	9079322	sd incr, germ, prod, dlv
<i>Rupertia physoides</i>	forest scurf peas	RUPH3	9079323	sd incr, germ, prod, dlv
<i>Lomatium californicum</i>	wild parsley	LOCA3	9079324	germ, prod, dlv
<i>Lomatium macrocarpum</i>	big-seeded lomatium	LOMA3	9079325	germ, prod, dlv
<i>Festuca roemerii</i>	Roemers fescue	FERO	9079326	sd incr
<i>Festuca californica</i>	California fescue	FECA	9079327	sd incr, germ
<i>Melica harfordii</i>	Hartford's melic	MEHA2	9079328	sd incr, germ

¹- sd incr= seed increase, germ= germination research, prod=plant production, dlv=plant materials delivery

²-this species was later identified as *Lupinus luteolus*.

³-this species was later determined to be another collection of *Lupinus albifrons*.

III. Experimental Propagation

Informal germination trials were set up for production of both *Lomatium* species and grass species that had not been previously grown by PMC staff. Scarification trials were performed on the four legume species to increase germination.

Table 2. Results of cold-moist stratification trials at Corvallis Plant Materials Center in 2004.

Symbol	Accession	Stratification	Germination
LOCA3	9079324	none	0
		45 days	82%
		90 days	84%
LOMA3	9079325	none	0
		45 days	15%
		90 days	85%
MEHA2	9079328	none	5%
		30 days	18%
		60 days	71%
		90 days	73%

Cold-moist stratification trials were set up in the spring of 2004. These trials were set up as production trials rather than a formal laboratory germination evaluation since the intent is to produce vigorous seedlings under normal greenhouse propagation conditions. Seeds of each species were sown into Ray Leach stubby cone-tainers filled with moistened media (Sunshine #1 a special peat-based soil-less mix). Seeds were lightly covered with fine vermiculite, and the flats were placed in polyethylene bags and moved into the walk-in cooler (36-38° F).

Table 3. Results of scarification trials at Corvallis Plant Materials Center in 2004.

Symbol	Accession	Treatment	Germination
LUSU5	9079321	no scarification	30%
		scarification	5%
LUAL3	9079320	no scarification	47%
		scarification	70%
LUAL4	9079322	no scarification	50%
		scarification	68%
RUPH3	9079323	no scarification	46%
		scarification	7%

Legume seeds were scarified using a Fosburgh seed scarifier. Seeds were scarified for 5 seconds. Seeds of LUSU5 and RUPH3 have thin seeds coats and many seeds were “naked” after scarifying. Seedlings of LUSU5 (both scarified and non-scarified seed) had

fused cotyledons. Many RUPH3 seedlings had abnormal root development and were not able to survive. There was a noted increase in abnormal root development in seeds that had been scarified. Scarification is highly recommended for seeds with very hard seed coats, such as LUAL3 and LUAL4, but not recommended for LUSU5 and RUPH3.

IV. Field Seed Increase

Seed increase fields of California fescue and Roemers fescue were established on April 13, 2004, from seed that was provided by the BLM. A seven-row seed drill equipped with a carbon banding unit was used to establish the fields. Fields had been sprayed with Roundup one week prior to seeding, and sprayed with Diuron after seeding. Fields were irrigated throughout summer until fields were established.

Hartford's melic seed has a physiological dormancy, therefore it was selected to be sown in the fall of 2004. It was sown on September 7, 2004 using a seven-row seed drill



equipped with a carbon banding unit. Fields had been sprayed with Roundup one week prior to seeding, and sprayed with Diuron after seeding. Seedlings did not begin to emerge until late November and continued to emerge throughout the winter.

Figure1. LUAL3 seed increase plot at Corvallis Plant Materials Center, February, 20, 2005.

Legumes were seeded using a Plantet-jr single row seeder. Two plots were carbon banded using a backpack sprayer. The two plots that were not carbon banded were choked with weeds and plots were hand weeded monthly in the spring and summer. All plots were irrigated throughout the spring and summer.

Table 4. Seed Increase Field Establishment for the BLM Medford District at the Corvallis Plant Materials Center in 2004.

Species/ Ac	Seeding Rate	Method	Weed Control
FECA .56 acre 63 388' rows	9.8 (bulk)lbs/acre	Carbon banded	Diuron application following carbon banding none
FERO .14 acre 49 121' rows	14 (bulk)lbs/acre	Carbon banded	Diuron application following carbon banding
MEHA2 .34 acres 120 125'rows	7 (bulk)lbs/acre	Carbon banded	Diuron application following carbon banding
LUSU5 472 sq ft 4 118' rows	6 seeds/ft	Seeded with single-row Plantet Jr. seeder, carbon-banded using a backpack sprayer	Diuron application following carbon banding
LUAL3 476 sq ft 4 199' rows	9 seeds/ft	Seeded with single-row Plantet Jr. seeder carbon-banded using a backpack sprayer	Diuron application following carbon banding
LUAL4 468 sq ft 4 117' rows	8 seeds/ft	Seeded with single-row Plantet Jr. seeder	
RUPH3 468 sq ft 4 117' rows	7 seeds/ft	Seeded with single-row Plantet Jr. seeder	

2004 Field Seed Production Notes:

Broadleaf weeds were controlled within the grass plots with 2-4,D, after seedlings had reached the three-leaf stage. Glyphosate was used on all field borders. The FECA field had many bentgrass plants in the plot; these were spotsprayed with Glyphosate using a back-pack sprayer. All legume plots required many hours of hand weeding.

In July, stunting, yellowing, and wilting of plants was noticed in the LUSU5 plot. Plant samples were taken to the Oregon State University Plant Disease Clinic. It was determined that the plants were plagued by a fusarium and there was no known treatment for the plot. Irrigation was removed from the field. Plants continued to flower and produced minimal seed.

LUSU5 was the only seed increase field to flower and produce seed. Seeds were harvested by hand from July 10 through August 20, 2004. Pods were collected when they turned from green to a pale yellow. They were placed in paper bags and left in an open greenhouse to dry. Seeds were cleaned using an air-screen machine. The plot produced 15g of seed.

V. Container Plant Production.

On May 13, 2004, seeds of each species 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 that required cold-moist stratification to break seed dormancy were placed in polyethylene bags and moved into the walk-in cooler (36-38° F). Flats that did not require cold-moist stratification were placed in a shadehouse. Plants were watered overhead daily and monitored for diseases and pests.

Table 5. Container Plant Production at the Corvallis PMC in 2004 for the BLM Medford District.

Scientific name	Symbol	Amt of seed used	Plants produced
<i>Lupinus sulphureus</i>	LUSU5	16g	24
<i>Lupinus albicaulis</i>	LUAL3	17g	260
<i>Lupinus albifrons</i>	LUAL4	14g	282
<i>Rupertia physoides</i>	RUPH3	15g	62
<i>Lomatium californicum</i>	LOCA3	8g	294
<i>Lomatium macrocarpum</i>	LOMA3	7g	294
		total	1216

VI. Delivery of Plant Materials.

BLM staff came to the PMC on February 3, 2005 to pick up plants that were produced in 2004. RUPH3 plants and 96 of the LUAL3 plants were kept by the PMC to fill in gaps in the plots. LUSU5 is an annual so plants produced in 2004 were not available for delivery.

Table 6. Plants Delivered to BLM staff on February 3, 2005.

Scientific name	Symbol	Plants delivered
<i>Lupinus albicaulis</i>	LUAL3	164
<i>Lupinus albifrons</i>	LUAL4	282
<i>Lomatium californicum</i>	LOCA3	294
<i>Lomatium macrocarpum</i>	LOMA3	294
	total	1034