

CORVALLIS PLANT MATERIALS CENTER  
NATURAL RESOURCES CONSERVATION SERVICE  
CORVALLIS, OREGON  
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December 20, 2007

**THE 2007 UNITED STATES FOREST SERVICE ANNUAL REPORT:**  
*Umatilla District*

**I. Brief Background of Project**

The Corvallis Plant Materials Center (PMC) entered into a new agreement with the Umatilla District of the United States Forest Service (USFS) in 2007 to provide native plant materials for ecological restoration. It was agreed that the PMC would establish and maintain seed increase fields of two forbs and research and establish test plots of another three forbs and one legume. Activities in 2007 included germination trials, establishment of seed increase fields and containerized plant production.



Figure 1. *Helliathella uniflora* seedlings growing in the PMC greenhouse, December 11, 2007.

**II. Accessions Involved**

Accessions included for the Umatilla District USFS in 2007 are listed in Table 1. This table also displays activities performed by PMC staff.

Table 1. Accessions involved for the Umatilla District USFS cooperative agreement with Corvallis Plant Materials Center in 2007.

Scientific Name	Common name	Code	Accession #	Activity in 2007
	parsnipflower			
<i>Eriogonum heracleoides</i>	buckwheat	ERHE2	9079523	trl, sfp
<i>Penstemon fruticosus</i>	bush penstemon	PEFR3	9079524	trl
<i>Monardella odoratissima</i>	mountain monardella	MOOD	9079525	trl
<i>Penstemon procerus</i>	littleflower penstemon	PEPR2	9079526	trl
<i>Hellianthella uniflora</i>	oneflower hellianthella	HEUN	9079527	trl, sfp
<i>Trifolium eriocephalum</i>	woollyhead clover	TRER	9079522	trl

l- sfp= seed increase, trl=germination trials

### III. Field Seed Increase Activities

In September, October, and early November new fields were sown using a new precision cone seeder. This fall, early rains were heavy lasted for a month. This made fall seeding very difficult. Each field dried out at different rates and each one was sown whenever it was possible. The new seeder is calibrated to drill a programmed amount of seed over a programmed area. The PMC staff set the seeder at for intervals of 24ft. Pre-weighed packets were fed into the seed drill at 24ft intervals. It is very precise and is a good choice for drilling limited wild-collected seed. This new seeder is a huge improvement over the old Plantet Jr seeder.

Table 3. Seed increase field establishment on October 29, 2007 for the Umatilla District USFS cooperative agreement with Corvallis Plant Materials Center in 2007.

Species/Ac	Amount seeded	Germination	Approximate seeding rate	Seeds/lb
<b>HEUN</b> 0.04 acres or 20 96' rows 12" btwn rows	0.5 lbs	98%	12.5 lbs/acre (bulk) 12 lbs/acre (PLS) 19 PSL/ft-row	40,700
<b>ERHE</b> 0.13 acres or 25 240' rows 12" btwn rows	1 lbs	74%	7.7 lbs/ac (bulk) 5.7 lbs/acre (PLS) 30 PLS/ft-row	168,620

### IV. Experimental Propagation.

All the species involved in this agreement have not been previously propagated at the PMC. Informal germination tests were set up for each species. Nine sets of 100 seeds were counted, weighed and placed in plastic germination boxes on moistened

germination paper and stored in a dark walk-in cooler (38°F). Three boxes of each species were placed in the cooler for 45 days, 90 days, or remained at room temperature in the PMC lab (control). Boxes were checked weekly for germination. Germinants were removed and transplanted into Ray Leach stubby cone-tainers filled with moistened media (Sunshine #1: a special peat-based soil-less mix) amended with a balanced slow-release fertilizer and micro-nutrients.

Table 4. Results of germination trials for the Umatilla District USFS cooperative agreement with Corvallis Plant Materials Center in 2007.

Species	Percent germination per treatment		
	Warm	45-day cold-moist stratification	90-day cold-moist stratification
<i>Eriogonum heracleoides</i>	29%	62%	74%
<i>Hellianthella uniflora</i>	8%	84%	98%
<i>Monardella odoratissima</i>	13%	54%	91%
<i>Penstemon fruticosus</i>	0%	0%	26%
<i>Penstemon procerus</i>	26%	25%	42%
<i>Trifolium eriocephalum</i>	10%	63%	65%

*Hellianthella uniflora* seeds germinated in the cooler after 47 days. They continued to germinate in the cooler for another month. This species will only germinate after at least 45 days of cold, 90 days of cold-moist stratification is optimum. Germination will cease once the seeds have been in warm temperatures for more than three weeks.

*Eriogonum heracleoides* had a small percent of non-dormant seeds, but most of the seeds needed some cold-moist stratification to break dormancy. Seeds germinated in the cooler as well as at room temperature.

*Monardella odoratissima* seeds responded best to the 90-day cold-moist stratification treatment. Seeds germinated in the cooler as well as at room temperature. Germination spiked in the first weeks after being removed from the cooler and placed at room temperature.

*Penstemon fruticosus* seeds only showed germination after 90 days of cold and only germinated once the seeds were moved to room temperature. A longer cold-moist stratification may be needed to raise germination percentages. Additional trials will be conducted.

*Penstemon procerus* seeds only germinated at room temperature. The 90-day cold-moist stratification produced highest germination, but the percentage was still low. Additional trials will be conducted.

*Trifolium eriocephalum* seeds only germinated at room temperature. The 45 and 90-day cold-moist stratification treatments produced almost the same results, 63% and 65% respectively. The remaining 25% of the seeds that did not germinate appeared to be good seeds. It is possible that these seeds are “hard seeds” and are super dormant. This is common in legume seeds.



Figure 2. *Monardella odoratissima* seedlings in the PMC greenhouse, December 11, 2007.

It is concluded that all of these seeds need to be sown in the fall or in late winter in order to receive adequate natural stratification.

### V. Container Plant Production.

Seedlings that were produced from the germination trials were placed in an unheated greenhouse. These plants will be used to establish small seed increase plots. They will be transplanted into prepared fields in early spring.

Table 5. Plant Production for the Umatilla District USFS cooperative agreement with Corvallis Plant Materials Center in 2007.

<b>Scientific Name</b>	<b>Number germinated</b>	<b>Plants produced</b>
<i>Eriogonum heracleoides</i>	507	327
<i>Penstemon fruticosus</i>	80	58
<i>Monardella odoratissima</i>	472	377
<i>Penstemon procerus</i>	279	150
<i>Hellianthella uniflora</i>	570	463
<i>Trifolium eriocephalum</i>	427	391

### V. Delivery of Plant Materials.

No materials were delivered in 2007.