

CORVALLIS PLANT MATERIALS CENTER
NATURAL RESOURCES CONSERVATION SERVICE
CORVALLIS, OREGON
Amy Bartow

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THE 2008 US FISH AND WILDLIFE ANNUAL REPORT:
Willamette Valley Seed Increase Project



Figure 1. *Ranunculus occidentalis* seed increase field at the Corvallis PMC, May 14, 2008.

I. Brief Background of Project

The Corvallis Plant Materials Center (PMC) entered into a new agreement with US Fish and Wildlife (USFW) in 2007 to increase seed of Willamette Valley forbs to be used in Wetland Reserve Program (WRP) restoration sites. The Native Seed Network (NSN) collected seed from remnant wet prairies across the Willamette Valley in 2005, 2006, and 2007 to create composite collections to be released to growers for seed increase. Traditional agronomic seed increase techniques were not successful for some species; these species were brought to the PMC for research and development. Wild collected seed was very limited for a few species; these species were also brought to the PMC. Small common gardens were established at the PMC for many species that were selected for the Willamette Valley Seed Increase Project. Information from

these studies will be used to establish seed transfer guidelines. Activities in 2008 included establishing a seed increase field of one forb, and harvest and maintenance of seed increase fields of six forbs and one rush.

II. Accessions Involved

The following table lists the accessions involved in the Willamette Valley Seed Increase Project at the Corvallis Plant Materials Center in 2008.

Table 1. Accessions in the Willamette Valley Seed Increase Project at the Corvallis Plant Materials Center in 2008.

Species	Common name	Code	Accession #	Activity in 2008 ¹
<i>Sidalcea virgata</i>	rose checkermallow	SIVI	9079536	Sfp, dlv
<i>Eriophyllum lanatum</i>	Oregon sunshine	ERLA	9079538	Sfp, dlv
<i>Ranunculus occidentalis</i>	western buttercup	RAOC	9079564	Sfp, dlv
<i>Juncus tenuis</i>	poverty rush	JUTE	9079535	Sfp, dlv
<i>Saxifraga oregana</i>	Oregon saxifrage	SAOR	9079537	Sfp, dlv
<i>Achillea millefolium</i>	western yarrow	ACMI	9079539	Sfp, dlv
<i>Symphyotricum hallii</i>	Hall's aster	SYHA	9079540	Pxn, sfp, dlv

¹- sfp= seed increase,, pxn=plant production, dlv= delivered plant materials

III. Container Plant Production

In January, *Symphyotricum hallii* seeds were sown into Ray Leach “stubby” cone-tainers (7-cubic inch cones) filled with moistened media (a soil-less media amended with a slow release fertilizer and micronutrients) and placed in a heated greenhouse. Plants grew fast and were ready for transplanting in April. Plants were moved to a lathouse the last week in March to acclimate to outdoor temperatures and then were transplanted into the seed increase field on April 11, 2008.



Figure 2. *Symphyotricum hallii* plants growing in the PMC greenhouse, March 20, 2008.

Table 2. Plug production of Hall's aster in 2008.

Bulked Population	Number of cone-tainers planted	Amount of seed used
SYHA- South Large-07	686	1 g
SYHA- South Small-07	784	2 g
SYHA- North Large-07	784	1 g
SYHA- North Small-07	686	1 g

IV. Seed Increase

In mid October, 2007 *Eriophyllum lanatum* and *Ranunculus occidentalis* fields were directly sown into seed increase fields. The buttercup emerged within five weeks of sowing and rows were filled in nicely and plants grew slowly throughout the winter. The field was weeded by hand twice during the spring. Plants began to flower in early May and were harvested in late June. Blocks were harvested on different days due to a slight difference in maturation.

The seedlings in the *E. lanatum* field did not emerge until late February. The field had become quite weedy by this time and seedlings were difficult to locate. Attempts were made at hand weeding the field, but PMC staff worried about destroying the small seedlings that were amongst the weeds. The areas in between the rows of seedlings were weeded once in March, but new weeds quickly became established in the field. The majority of the weeds were spring germinating annuals. Very few plants flowered in 2008 and the seed from these plants were harvested by hand in late August.

Table 3. Seed harvest in 2008 at the Corvallis Plant Materials Center.

Species	Accession	Field size (ac)	Date harvested	Method	Yield
<i>Sidalcea virgata</i>	9079536	0.25	August 12	moon rover, sweep fabric	8 lbs
<i>Eriophyllum lanatum</i>	9079538	0.3	August 26	hand	162 g
<i>Ranunculus occidentalis</i>	9079564	0.15	June 13- June 26	seed stripper	11 lbs
<i>Juncus tenuis</i>	9079535	0.15	July 14	moon rover	2.2 lbs
<i>Saxifraga oregana</i>	9079537	0.15	July 3-July 20	hand	0.3 lbs
<i>Symphotricum hallii</i>	9079540	0.2	Sept 5- Oct 25	vacuum	2 lbs

Achillea millefolium seed increase field was established on May 17, 2008. It was seeded using the PMC's precision cone seeder. The field was irrigated two weeks after sowing and seedlings began to emerge. Plants did not get very large in 2008 and did not flower.

Most of the fields that are in production for this agreement were established by plugs. Plugs were grown in the fall of 2007 and transplanted out into seed increase fields in the winter of 2007 and spring of 2008. *Symphoricarum hallii* field was not established until April of 2008. The field became covered with a weedy annual *Epilobium* sp. Instead of attempting to weed or spot spray the field, a Hiniker Flail Mower/Shredder was used to mow down the field. This piece of equipment cuts and “vacuums” all residue laying on the ground surface. Residue is shot out into a wagon that is pulled behind the mower and can be dumped offsite. This form of “weed control” was chosen because the annual weeds would be killed or completely reduced to 2” tall, and all the seeds that were about to be produced by the weeds were removed from the field. The aster plants were mowed also, but were not harmed by the cutting. The field was mowed twice in late summer and early fall to remove the weeds. Aster plants looked very healthy heading into winter and almost all the weeds had been killed by the mowing. Before the mowing it appeared that the asters were not going to flower, but in case they were going to flower (and flowers would have been mowed off), PMC staff harvested seeds from the *S. hallii* common garden in lieu of the harvesting the seed increase field. Seeds were vacuumed from plants three times a week throughout the end of September and all of October.



Figure 3. *Juncus tenuis* seed increase field at the Corvallis Plant Materials Center, May 24, 2008.

Other fields that were established by plugs flowered in 2008. Some of the species were not expected to flower in their first growing season (*Saxifraga oregana* and *Juncus tenuis*). Plants quickly established after transplanting and flowered in June. *S. oregana* plants were harvested by hand as they matured. After being harvested, material was laid on tarps inside in open greenhouse to dry. *J. tenuis* plants were harvested by a self-propelled swather, nick-named the “moon rover”. This machine cuts and sends all

material up a conveyor belt where it can be collected into large bags. After being harvested, material was laid on tarps inside in open greenhouse to dry. The *Sidalcea virgata* field flowered in June and seeds shattered on the weed fabric. A lot of seed remained in the inflorescences, so the moon rover was used to cut down all the flowering stems, and the weed fabric was also swept to remove all the seeds that had shattered.

Seed cleaning:

Harvest methods greatly determine the process for cleaning each seed lot. The *R. occidentalis* seeds were harvested with a seed stripper, which removes seeds and very little plant material. These seeds were cleaned using an air-screen machine. Since entire heads of *S. oregana*, *J. tenuis*, *S. virgata* and *E. lanatum* were harvested, seeds needed to be removed from the heads. A small lab-sized brush machine was used to “thresh” the seeds, except *S. virgata* seeds were placed in a large brush machine, and then they were cleaned using an air-screen machine. The aster seeds were very fluffy and needed to have the pappas removed before they could be cleaned with an air-screen machine. A lab-sized brush machine fitted with a sandpaper drum was used to break up the pappas. A fan was set up at the front of the machine where the seeds and pappas were coming out. The fan helped blow some of the pappas away from the seeds. An air-screen machine was used for final cleaning.



Figure 4. *Sidalcea virgata* seed increase field at the Corvallis Plant Materials Center, June 10, 2008.

Post harvest field management:

Fields that hadn't been previously cut down during harvest were mowed with the Hiniker Flail Mower (*E. lanatum* and *R. occidentalis*). This mowing helped clean up weeds and weed seeds in the *E. lanatum* field. By late October, both of these fields as well as the *S. virgata* and *S. oregana* fields had come out of fall dormancy and were growing vigorously. The weed fabric in the checkermallow and saxifrage fields was cut back from the crown of each plant to allow room for growth.

V. Delivery of Materials

All seed that was produced in 2008 was delivered to the Native Seed Network. Two deliveries were made, one on September 15, 2008 and another on October 30, 2008. Seed lots that were over two pounds were sampled and sent to the Oregon State University Seed Lab for purity and germination testing.

Table . Seed delivery amounts and purity and germination tests results.

Species	Seed lot	Bulk Amount	Purity	Germination
<i>Sidalcea virgata</i>	SG1-08-NS536	8 lbs	94.95%	73%
<i>Eriophyllum lanatum</i>	SG1-08-NS538	162 g	n/a	n/a
<i>Ranunculus occidentalis</i>	SG1-08-NS564	11 lbs	98.81%	16%
<i>Juncus tenuis</i>	SG1-08-NS535	2.2 lbs	99.72%	91%
<i>Saxifraga oregana</i>	SG1-08-NS537	0.32 lbs	n/a	n/a
<i>Symphyotricum hallii</i>	SG1-08-NS540	2 lbs	n/a	n/a