

GUIDELINES FOR PLANTING SEEDS OF ALASKA NATIVE PLANTS FROM THE NATIVE PLANT NURSERY 2004

The following information is based on the experiences at the Native Plant Nursery over the last five growing seasons. We have experienced successes and failures, and needless to say, we are still learning. These short germination protocols will provide you a starting point for growing native plants from seed. Your experiences will allow you to refine these protocols.

The seeds for these collections were all hand harvested. To determine when to harvest seed, the seed is pressed between the fingers to assess hardness and ripeness. If the seed is still very soft & slightly watery (soft dough stage), it is not ready to be harvested. Once the seed is hard, the seed or the fruit is ripe and can be harvested. Color, texture, and dissemination techniques of seeds vary between species. Through experimentation and careful observation, the proper time for harvest can be determined.

Seeds are collected into paper or cloth bags; **do not** use plastic. Once the seed has been harvested, it needs to be dried, then cleaned and stored. Again, each species has different needs. Some wetland species should not be dried before they are planted. These species should be cleaned immediately and then placed in water for overwintering or sown (see specific protocols).

Procedures for planting seed vary with each species or taxa. Variables include soil type, soil moisture, planting depth, and scarification and stratification treatments for the seed.

The species have been divided into categories established by the U.S. Fish and Wildlife Service based on soil moisture. The categories beginning with the driest soils are upland, facultative upland, facultative, facultative wetland and wetland (obligate). The planting medias have been mixed specifically for the plants' moisture requirements.

Soil Mixes – used at the Native Plant Nursery

Upland-Sandy/gravelly = 2 ProMix HP:1 Grit*: 1 Sand

Facultative Up – Coarse/loamy = 3 ProMix HP: 1 Perlite: 1 Grit

Facultative – Fine/loamy = 3 ProMix HP: 1 Perlite: 1 Sand

Facultative Wet – Loamy = 3 ProMix HP: 2 Perlite

Wet (obligate) – Organic = 1 Peat: 1 Vermiculite

*small gravel can be substituted for the grit

Scarification Methods

Light scarification – Rub seed lightly by hand only once with a back and forth motion using fine grit sandpaper (150)

Medium scarification – Rub seed with medium pressure by hand only once with a back and forth motion using a medium grit sandpaper (120)

Hard Scarification – Rub seed with medium pressure by hand with a back and forth motion, twice using a coarse grit sandpaper (100)

Consult references listed at the end of this document for other stratification methods besides cold moist stratification, such as gibberellic acid, hot water and sulfuric acid.

Fertilizer: Generally plants are fertilized only after the first true leaves appear with a light application of 8-32-16.

SHORT PROTOCOLS

Upland (dry soil) Plants

***Arnica frigida* (Snow Arnica)** – Requires cold stratification. Sow in Fall for germination the following Spring.

***Aruncus sylvestris* (*A. dioicus*) (Goat's Beard)** – Requires cold stratification. Wash seed in running water for 24 hrs. Sow in Fall.

***Astragalus alpinus* (Milk-Vetch)** – Lightly scarify seed. Wash for 24 hrs. Sow in Fall.

***Erigeron purpuratus* (Purple Fleabane)** – No pre-treatment – Fall seed – lightly cover with soil

***Draba incerta* (Rockcress)** – No pre-treatment needed. Spring seed

***Hedysarum alpinum* (Eskimo Potato)** – Lightly scarify. Soak for 12 hours. Sow in Fall.

***Lathyrus maritimus* (*L. japonicus* var. *maritimus*) (Beach Pea)** – Needs cold stratification. Lightly scarify seed or nick seed coat with file. Soak in water for 24 hrs. Sow in Fall.

***Lesquerella arctica* (Arctic Bladderpod)** – No pre-treatment needed. Sow in Fall

***Lloydia serotina* (Common Alplily)** – Requires cold stratification. Wash for 24 hours. Sow in Fall

***Oxytropis campestris* (Field Locoweed)** – Lightly scarify seed, soak in water overnight and sow in Fall.

***Oxytropis deflexa* (Nodding Locoweed)** – Lightly scarify seed, then wash in cold running water for 12 hrs. Sow in Fall .

***Papaver alaskanum* (Alaska Poppy)** No pre-treatment required. Cold stored seed grew well when planted in the Spring

***Papaver lapponicum* (Lapland Poppy)** No pre-treatment required. Cold stored seed grew well when planted in the Spring

***Plantago canescens* (Plantain)** No pre-treatment required. Cold stored seed grew well when planted in the Spring

***Polemonium pulcherrimum* (Dwarf Jacob's Ladder)** – Sow in Spring or Fall. No pre-treatment necessary.

***Salix setchelliana* (Setchell Willow)** Frozen seed can be planted without pre-treatment in the Spring.

***Shepherdia canadensis* (Soapberry)** – Wash for 24 hrs. Place seed in moist peat and cold stratify for the Winter. Sow in Spring.

***Silene acaulis* (Moss Champion)** - Requires cold stratification. Soak for 24 hours. Sow in fall. Cover seed lightly as it requires light for germination.

***Solidago decumbens* (Goldenrod)** – No pre-treatment necessary. Sow in Spring or Fall. Cover seed lightly.

Facultative Upland (med – dry soil) Plants

***Armeria maritima ssp. arctica* (Pink Sea Thrift)** – No pre-treatment necessary – Seed in Fall – cover lightly

***Luzula arcuata* (Curved Woodrush)** Wash for 24 hours. Seed in Fall.

***Papaver macounii* (Macoun's Poppy)** – Sow in Fall. Seed cold-stored for a season may be sowed in Spring. No pre-treatment necessary.

***Viburnum edule* (Highbush Cranberry)** – Needs 3 months warm and 3 months cold stratification. Collect fresh seed in early winter. Separate seed from berries and sow. Keep moist @ 70° F for 3 months. Move to refrigerator (38-40°) for 3 months. Move to greenhouse in Spring.

Facultative (medium soil) Plants

***Aconitum delphiniifolium* (Monkshood)** – Difficult to germinate. Seed supposedly short-lived. Sow in Fall or as soon as seed is ripe. May take 2 years to germinate. Germination may be enhanced if seed is washed for 24 hours before sowing.

***Anemone narcissiflora* (Narcissus Anemone)** – Requires cold stratification. Washing seed for 24 hours may aid germination. May take 2-3 years to germinate. Sow seed in Fall.

***Aquilegia formosa* (Western Columbine)** – Sow in Fall for germination the following Spring. Slow to germinate. May require 2 years for all of the seed to germinate, but will not take as long as *Aconitum*.

***Astragalus americanus* (American Milkvetch)** – Scarify seed lightly and soak in water for 24 hrs. before sowing in Fall for germination the following Spring.

***Betula nana/glandulosa* (Dwarf Birch)** – No pre-treatment needed. Sow in fall.

***Boykinia richardsonii* (Alaska Boykinia)** – Sow in Spring or Fall. No pre-treatment necessary.

***Epilobium (Chamerion) latifolium* (Dwarf Fireweed)** – Sow seed in Fall for germination the following Spring. No pre-treatment necessary.

***Delphinium glaucum* (Larkspur)** - Sow in Fall for germination the following Spring. May take 2 years for all seed to germinate. Washing seeds for 24 hours may help.

***Geranium erianthum* (Northern Geranium)** – Soak in warm water for 24 hrs. Sow in early Spring.

***Leptarrhena pyrolifolia* (Leatherleaf)** - Sow in Fall for germination the following Spring. No pre-treatment necessary.

***Luetkea pectinata* (Ptarmiganfoot)** – No pre-treatment needed. Sow in Fall.

***Minuartia sp.* (Stichwort)** – No pre-treatment needed. Sow in Fall.

***Polemonium acutiflorum* (Tall Jacob's Ladder)** – Cold-stored seed may be sown in Spring. Fresh seed should be soaked for 24 hrs. and sown in Fall for Spring germination.

***Sanguisorba officinalis* (Great Burnet)** – Sow cold-stored seed in Spring or Fall. No pre-treatment necessary.

***Senecio triangularis* (Groundsel)** – Requires cold moist stratification. Sow in Fall on soil surface. Requires light for germination.

Facultative Wetland (med-wet soil) Plants

***Arnica amplexicaulis* (Clasping Arnica)** – wash seed in running water for 24 hours – sow in Fall.

***Carex mertensii* (Mertens' Sedge)** – wash cold-stored seed in running water for 12 hours, sow in Spring or Fall and cover seed very lightly. Keep wet.

***Rumex arcticus* (Arctic Dock)** – Sow in Fall. Cover seed lightly. No pre-treatment needed.

***Vaccinium caespitosum* – (Dwarf Blueberry)** Seed requires cold treatment. Sow seed in Fall. Keep moist. Cover lightly.

Wetland (wet soil) Obligate Plants

***Arctophila fulva* (Pendantgrass)** - Requires cold moist stratification. In Fall, place seeds in cloth bag and wash in cold running water for 24 hours. Then sow on very moist medium and keep cold and moist through the winter. Bring into greenhouse or indoors in Spring for germination. Keep moist.

***Carex aquatilis* (Water Sedge)** – Requires cold moist stratification. In Fall, place seeds in cloth bag and wash in cold running water for 24 hours. Bags may then be placed between moist peat (peat sandwich) and kept cold and moist for the winter. Sow in Spring and keep wet. Alternate: After washing, sow in wetland soil mix and keep cold & moist thru the winter. If seed freezes solid and remains frozen,

germination will not be as good as when the seed is exposed primarily to cold (slightly above freezing temperatures) during the winter.

***Carex utriculata* (Beaked Sedge)** – Treatment is the same as for *Carex aquatilis*.

***Drosera rotundifolia* (Roundleaf Sundew)** – Sow in Fall onto wet peat. Keep moist. Prefers acidic soil.

***Menyanthes trifoliata* (Buckbean)** – Place newly collected seed in water. Keep in water and expose to cold overwinter. Sow in Spring.

***Myrica gale* (Sweetgale)** – Wash seed for 24 hours. Sow seed Fall. Keep moist. Cover lightly. Gibberellic acid (GA-3) @ 1,000 ppm may enhance germination. See Deno reference below.

***Pinguicula vulgaris* (Common Butterwort)** – No pre-treatment needed. Sow in Fall in a 3 parts peat : 1 part sand soil media. Prefers slightly neutral to alkaline soil. Keep wet.

***Schoenoplectus tabernaemontani* (*Scirpus validus*) (Bulrush / Tule)** – Sow seed in Fall on moist soil medium. Cold moist stratification and light are required for best germination. Keep soil saturated.

***Typha latifolia* (Cattail)** – Sow seed in Fall onto a saturated soil medium. Cover very lightly with soil. Light is required for germination. Keep soil saturated with water during germination.

Remember these General Guidelines

- Many native Alaskan plant seeds require 4-6 months of cold stratification. This is most easily accomplished by sowing the seed into a moist growth medium such as Pro-Mix in the Fall, and leaving it outside or in a refrigerator. Do not let the seed dry out.
- If the guidelines say to sow the seed on top of the soil, or to cover the seed lightly, light is a requirement for successful germination. If the seed is covered too much or kept in the dark, the seed may not germinate.
- Seeds of wetland plants generally require a soil medium completely saturated with water. In most cases, as soon as the seed starts to germinate, it will anchor itself with its root to the medium. At this point, the seed may be submerged slightly. If submerged before germination occurs, the seed may float to the surface and disperse or aggregate.
- To wash seed in running water, place seed in a small cloth bag with a weave tight enough to retain the seed. Tie off the open bag end to a faucet and run a slow flow through the bag. Cookware stores often have small cloth bags with ties for tea or herbs.
- Despite any and all treatments, some seed may not germinate because it had low viability

to begin with. Other seed may exhibit extreme dormancy and take 2-3 years to germinate. Be patient. Relax. Use the time to investigate other ways (cuttings, root division, etc.) to propagate that plant. Also, the Alaska Plant Materials Center will conduct a germination or viability test for a nominal fee.

References for Germination Protocols

<http://nativeplants.for.uidaho.edu/network> - Good site to search for germination protocols by common or scientific name. Have found that protocols from northern states are most applicable to our species. The Nursery is entering Alaskan protocols on this database.

Seed Germination Theory and Practice. 2nd edition. Norman Deno. 1993.

Seeds of Wildland Plants: Collecting, Processing and Germinating.
James A. Young & Cheryl G. Young. 1986.

Seeds of Woody Plants in the United States. Agriculture Handbook No. 450. USDA Forest Service. 1974. A revised edition of this reference can be found on the web at: <http://ntsl.fs.fed.us/wpsm>

Propagation of Pacific Northwest Native Plants. Robin Rose, Caryn E.C. Chachulski, and Diane L. Haase. 1998.