Plant Propagation Protocol for Larix occidentalis

Picture taken by Dylan Holm (Western Larch in the fall)

Picture acquired from www.dkimages.com

ESRM 412 – Native Plant Production

Spring 2008

TAXONOMY	
Family Names	
Family Scientific Name:	Pinaceae
Family Common Name:	Pine family
Scientific Names	
Genus:	Larix Mill.
Species:	Larix occidentalis
Species Authority:	Nuttall
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s) (may repeat this section multiple times as needed)	NONE
Genus:	
Species:	
Species Authority:	
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Name(s):	Western larch, western tamarack
Species Code (as per USDA Plants database):	LAOC
GENERAL INFORMATION	
General Distribution (geographical range (states it occurs in), ecosystems, etc):	Western larch grows in the Upper Columbia River Basin of northwestern Montana, northern and west central Idaho, northeastern Washington, and southeastern British Columbia; along the east slopes of the Cascade Mountains in Washington and north-central Oregon; and in the Blue and Wallowa Mountains of southeastern Washington and northeastern Oregon. (1)
Climate and elevation range	Western larch grows in a relatively moist-cool climatic zone. (1) Western larch is usually found at elevations of 1,500 to 5,500 feet (460-1,700 m) in the northern portions of its range and may be found at elevations over 7,000 feet (2,100 m) in the southern parts of its distribution. (2)
Local habitat and abundance; may	Douglas-fir *(Pseudotsuga menziesii* var. *glauca) is* its

include commonly associated species	most common tree associate. Other common tree associates include: ponderosa pine *(Pinus ponderosa)* on the lower, drier sites; grand fir *(Abies grandis),* western hemlock *(Tsuga heterophylla),* western redcedar *(Thuja plicata),* and western white pine *(Pinus monticola)* on moist sites; and Engelmann spruce *(Picea engelmannii),* subalpine fir *(Abies lasiocarpa),* lodgepole pine *(Pinus contorta),* and mountain hemlock *(Tsuga mertensiana)* in the cool-moist subalpine forests (1).
Plant strategy type / successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)	
PROPAGATION DETAILS	
Ecotype (this is meant primarily for experimentally derived protocols, and is a description of where the seed that was tested came from):	
Propagation Goal (Options: Plants, Cuttings, Seeds, Bulbs, Somatic Embryos, and/or Other Propagules):	Plants (4)
Propagation Method (Options: Seed or Vegetative):	Seeds (3)
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container (plug) (4)
Stock Type:	172 ml containers (4)
Time to Grow (from seeding until plants are ready to be outplanted):	7-10 months (4)
Target Specifications (size or characteristics of target plants to be produced):	Minimum 4” in height and a minimum of 3mm using a caliper. (5)
Propagule Collection (how, when, etc):	Cones are collected in September and October when cones turn purplish brown and scales begin to reflex. You collect the seeds by cutting down braches and collecting the cones. (4)
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	The seeds should be dried in the sun and tumbled to collect the seeds. (4)
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Seed is placed in mesh bags and soaked in cold running water for 48 hour. The seed is then laid out 3cm (1 in) thick on trays with fine screen meshed bottoms and

	placed in cold stratification rooms for 30 to 45 days. (5)
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	Greenhouse and outdoor nursery growing facility. (4)
Establishment Phase (from seeding to germination):	7 to 10 days (4)
Length of Establishment Phase:	2 weeks (4)
Active Growth Phase (from germination until plants are no longer actively growing):	About 23 weeks (4)
Length of Active Growth Phase:	4 months (5)
Hardening Phase (from end of active growth phase to end of growing season; primarily related to the development of cold-hardiness and preparation for winter):	
Length of Hardening Phase:	2 months (5)
Harvesting, Storage and Shipping (of seedlings):	
Length of Storage (of seedlings, between nursery and outplanting):	Up to 6 months (5)
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	Out planting done in the spring. (4)
Other Comments (including collection restrictions or guidelines, if available):	Only allowed to take up to 10% of the seeds.
INFORMATION SOURCES	
References (full citations):	
Other Sources Consulted (but that contained no pertinent information) (full citations):	(1) Burns, Russell M and Honkala, Barbara H. Silvics of North America Vol. 1 Conifers. Washington: U.S. Dept. of Agriculture, Forest Service, 1990. (2) Scher, Janette S. 2002. Larix occidentalis. In: Fire Effects Information System, [Online]. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (Producer). Available: http://www.fs.fed.us/database/feis/ [2008, April 14]. (3) Rose, Robbin,Dr. Propagation of Pacific Northwest native plants. Corvallis: Oregon

	State University Press, c1998 (4) USDI NPS - Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 14 April 2008). (5) Steinfeld, David E. 2001. Propagation protocol for production of field-grown *Larix occidentalis* plants (1+0); J. Herbert Stone Nursery, Central Point, Oregon. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 14 April 2008). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery
Protocol Author (First and last name):	Dylan Holm
Date Protocol Created or Updated (MM/DD/YY):	04/15/08

Plant Data Sheet

Western larch, ***Larix occidentalis***	

Range

Western larch can be found from western Montana to eastern Oregon and Washington and southern British Columbia. (1)

Climate, Elevation

Western larch grows in a relatively moist-cool climatic zone, with low temperature limiting its upper elevational range and deficient moistures its lower extremes. (2) Elevation ranges from 650 to 2450 m. (1)

Local occurrence (where, how common)
Valley bottoms, benches, and north- and east-facing mountain slopes.(2)

Habitat preferences
deep, well-drained and fairly nutrient-rich soils, and appears to need calcium and magnesium.(1)

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)
Shade intolerant. (1) And it is a seral species well adapted to seedbeds exposed by burning or mechanical scarification. (2)

Associated species
Douglas-fir *(Pseudotsuga menziesii* var. *glauca),* ponderosa pine *(Pinus ponderosa)*, grand fir *(Abies grandis),* western hemlock *(Tsuga heterophylla),* western redcedar *(Thuja plicata),* and western white pine *(Pinus monticola),* Engelmann spruce *(Picea engelmannii),* subalpine fir *(Abies lasiocarpa),* lodgepole pine *(Pinus contorta),* and mountain hemlock *(Tsuga mertensiana)(2*).

May be collected as: (seed, layered, divisions, etc.)
Seed. Cuttings have been successfully rooted by researchers at the Intermountain Forest and Range Experiment Station, but methods have not been fully tested at this time. (1)

Collection restrictions or guidelines
Flowering occurs from April to June and seed dispersal is from September to October. Pick larch cones from the tree in the fall as soon as they ripen. 1

Seed germination (needs dormancy breaking?)
Larch germinates well without pretreatment. However, cool, moist stratification for 18 days may enhance germination of spring-sown seed. (1)

Seed life (can be stored, short shelf-life, long shelf-life)
Three or more years. (1)

Recommended seed storage conditions
Stored in cold and dry sealed containers. (1)

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)
Collect cones, separate seeds, plant seeds. Out plant seedlings after one year. (1).

Soil or medium requirements (inoculum necessary?)
Sow in the fall or spring and cover with not more than 0.5 cm of soil. Cover fall-sown seed with mulch. (1)

Installation form (form, potential for successful outcomes, cost)
Seeds.

Recommended planting density
216,045-434,305 seeds per kilogram. (1)

Care requirements after installed (water weekly, water once, never water, etc.)
Keep soil from drought and high temperature. (2)

Normal rate of growth or spread; lifespan
Larch grows faster in height than any other conifer. Height: 6m at 20 years old, 19m at 40, 29m at 60, 35m at 80, 40 at 100. Western larch, which is 900 years old, has been found. (2)

Sources cited

(1). Rose, R., C. Chachulski and D. Haase. 1996. Propagation of Pacific Northwest Native Plants: A Manual, Volume Two, First Edition. Nursery Technology Cooperative, Oregon State University, Corvallis, Oregon, 201 p

(2). Burns, R. and B. Honkala 1990. Silvics of North America, Volume 2, Hardwoods. Agricultural Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, D. C..

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Data compiled by: Yongjiang Zhang, May 29th 2003