Plant Data Sheet

Species (common name, Latin name):
Western hemlock, *Tsuga heterophylla*, (Raf.) Sarg.

Range
Western hemlock occurs throughout the Pacific Coast Ranges from central California to Alaska's Kenai Peninsula. Inland, western hemlock grows on the western and upper eastern slopes of the Cascade Range in Oregon and Washington and on the west side of the Continental Divide of the northern Rocky Mountains in Montana and Idaho north into British Columbia. (Silvics of North America 1990)

Climate, elevation
Mild, humid climates with frequent fog and precipitation during the growing season are preferred. Also occurs in subhumid areas, but is limited to northern aspects and moist microsites such as seepages and stream bottoms (Silvics of North America 1990). Low to medium elevations (Pojar and MacKinnon 1994).

Local occurrence (where, how common)
Lower elevation moist forests of the western Cascades; wet benches, terraces, and lower slopes at low elevations (FEIS database).

Habitat preferences
Occurs on fairly dry to wet sites where it grows on humus and decaying wood; western hemlock can also grow on mineral soils (Pojar and MacKinnon 1994).

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)
A colonizing species on many sites (Silvics of North America 1990). Commonly a late successional species; very shade tolerant (Pojar and MacKinnon 1994).

Associated species

Associated tree species include grand fir (*Abies grandis*), subalpine fir (*A. lasiocarpa*), western larch (*Larix occidentalis*), Engleman spruce (*Picea englemannii*), lodgepole pine (*Pinus contorta*), western white pine (*P. monticola*), western redcedar (*Thuja plicata*), mountain hemlock (*Tsuga mertensiana*) and Dougla-fir (*Pseudotsuga menziesii*) in the coastal zone and interior mountains. Additional Pacific coast tree associates include Pacific silver fir (*Abies amabilis*), noble fir (*Abies procera*), bigleaf maple (*Acer macrophyllum*), red alder (*Alnus rubra*), Alaska-cedar (*Chamaecyparis lawsoniana*), Sitka spruce (*Picea sitchensis*), and redwood (*Sequoia sempervirens*) in California. Understory associates include vine maple *(Acer circinatum,)* Oregongrape *(Berberis nervosa),* snowbrush ceanothus *(Ceanothus velutinus),* salal *(Gaultheria shallon),* oceanspray *(Holodiscus discolor),* Oregon boxwood *(Pachistima myrsinites),* Pacific ninebark *(Physocarpus capitatus),* Pacific rhododendron *(Rhododendron macrophyllum),* devil's club (Oplopanax horridus) and several *Vaccinium* spp. (Silvics of North America 1990)

May be collected as: (seed, layered, divisions, etc.)
Western hemlock may be grown from seed or by layering or cuttings (Silvics of North America 1990).

Collection restrictions or guidelines
Seeds are usually fully ripe by mid to late September, although cone scales do not open until late October (Silvics of North

America 1990).

Seed germination (needs dormancy breaking?)
Seeds are not deeply dormant, 3-4 weeks of stratification at 1° to 4° C (33° to 39° F) improves germination rates. Germination occurs at 20° C (68° F). Percent germination is commonly around 50%. (Silvics of North America 1990)

Seed life (can be stored, short shelf-life, long shelf-life)
Seed can be stored for up to 5 years. Remove wings before storage. In natural conditions, seed are only viable through one growing season. (Luna et al 2001)

Recommended seed storage conditions
Seed can be stored for up to 5 years at 0° C (32° F) in sealed containers (Luna et al 2001)

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)
Seed propagation is recommended. After cool, moist stratification, surface sow seeds and maintain greenhouse temperatures at around 20° C (68° F) (Luna et al 2001). To propagate by cuttings, use rooting hormone, water by misting and apply bottom heat (Luna et al 2001).

Soil or medium requirements (inoculum necessary?)
Will grow in non-soil medium. A controlled release fertilizer may be added to the growing medium (Luna et al 2001). In natural conditions, germination can occur on a wide range of soils as long as adequate moisture is available. Decaying logs and rotting wood provide excellent seedbeds for western hemlock. (Silvics of North America 1990)

Installation form (form, potential for successful outcomes, cost)
Seeds, container grown plants from seeds or cuttings. Bare root material is less successful than container grown material (Silvics of North America 1990).

Recommended planting density
6’ to10’centers

Care requirements after installed (water weekly, water once etc.)
Water regularly through the first two growing seasons following installation.

Normal rate of growth or spread; lifespan

Initial growth is slow; 2-year-old seedlings are commonly less than 20 cm (8 in) tall. Once established, seedlings in full light may have an average growth rate of 60 cm (24 in) or more annually (Silvics of North America 1990).

Sources cited
FEIS database: Accessed on 4/8/03, www.fs.fed.us/database/feis/plants/tree/tsuhet

Luna, Tara; Evans, Jeff; Wick, Dale. 2001. Propagation protocol for production of container *Tsuga heterophylla* (Raf.) Sarg. plants (172 ml conetainers); Glacier National Park, West Glacier, Montana. In: Native Plant Network. URL: http://www.nativeplantnetwork.org (accessed 13 April 2003). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Pojar, Jim and Andy MacKinnon. 1994. Plants of the Pacific Northwest Coast: Washington, Oregon, British Columbia and Alaska. Lone Pine Publishing. Redmond, WA.

Packee, E. C. 1990. *Tsuga heterophylla*. In: Silvics of North America, Volume1, Conifers. Agricultural Handbook 654. U.S. Department of Agriculture, Forest Service, Washington, D. C. URL: http://www.na.fs.fed.us/spfo/pubs/silvics_manual/Volume_1/tsuga/heterophylla.htm (accessed on 13 April 2003).

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