TAXONOMY	
Family Names	
Family Scientific Name:	Pinaceae
Family Common Name:	Pine family
Scientific Names	
Genus:	Abies
Species:	Abies procera
Species Authority:	Rehder
Variety:	
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	
Common Synonym(s)	
Genus:	
Species:	Abies nobilis
Species Authority:	Douglas ex D. Don
Variety:	A. nobilis var. robusta
Sub-species:	
Cultivar:	
Authority for Variety/Sub-species:	Beissn.
Common Name(s):	Noble Fir, Red Fir, White Fir
Species Code (as per USDA Plants database):	ABPR
GENERAL INFORMATION	
General Distribution (geographical range (states it occurs in), ecosystems, etc):	Found in Washington, Oregon and California usually on the western slopes of the Cascades in great abundance between latitudes 44N and 48N.
Climate and elevation range	Moist maritime climate, likes cooler temperatures and high precipitation. Annual precipitation ranges from 1900-2400mm, most of which falls as snow between October and March. Found between 1500 and 5,000 feet elevation.
Local habitat and abundance; may include commonly associated species	West slopes of the Cascades; commonly associated with other northwest conifers, huckleberry species, Cascade azalea, Pacific rhododendron, bear grass, fawn lily and inside-out flower.
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
Propagation Method (Options: Seed or Vegetative):	Seed
Product Type (options: Container (plug), Bareroot (field grown), Plug + (container-field grown hybrids, and/or Propagules (seeds, cuttings, poles, etc.))	Container
Stock Type:	
Time to Grow (from seeding until plants are ready to be outplanted):	One year minimum
Target Specifications (size or characteristics of target plants to be produced):	Christmas tree size
Propagule Collection (how, when, etc):	Seed dispersal occurs in September and October. Trees typically produce seeds after 50 years of age. Prolific cone crops occur every six years where seed quality is at its best. Cones should be collected prior to breaking so seeds can be extracted. [3]
Propagule Processing/Propagule Characteristics (including seed density (# per pound), seed longevity, etc):	If properly stored in a dry, cool environment, seeds can remain viable for up to 5 years. 24,000 seeds per kilogram. [3] Seeds have a thin coat oily food reserve and are easily damaged by drying and mechanical extraction. [3]
Pre-Planting Propagule Treatments (cleaning, dormancy treatments, etc):	Extreme caution should be exercised when extracting seeds. Attempts to de-wing the seeds will usually damage the seed. [3]
Growing Area Preparation / Annual Practices for Perennial Crops (growing media, type and size of containers, etc):	If enough seed is obtained, it is possible to sow outdoors; seedlings grow best in the shade at a density of 550 plants per square meter. [4]
Establishment Phase (from seeding to germination):	If planting in a greenhouse sow seeds in February, otherwise plant outdoors in March. [4] Stratification can help even out germination, when seeds are ripe in Autumn, they can be planted in a cold frame. [1]
Length of Establishment Phase:	Germination can take between 6 to 8 weeks. [4]
Active Growth Phase (from germination until plants are no longer actively growing):	
Length of Active Growth Phase:	Early June to August. [1]
Hardening Phase (from end of active growth phase to end of growing	When large enough handle, seedlings should be planted into individual containers for hardening. [1]

season; primarily related to the development of cold-hardiness and preparation for winter):	
Length of Hardening Phase:	August through late spring. [1]
Harvesting, Storage and Shipping (of seedlings):	
Length of Storage (of seedlings, between nursery and outplanting):	
Guidelines for Outplanting / Performance on Typical Sites (eg, percent survival, height or diameter growth, elapsed time before flowering):	Trees should be planted in their permanent position when they are between 30 and 90 cm in height. Larger trees will transplant poorly and have poor root development and wind resistance. [2]
Other Comments:	
INFORMATION SOURCES	
References:	1. Dirr. M.A. The Reference Manual of Woody Plant Propagation. Varsity Press. 1987. 2. Huxley. A. The New RHS Dictionary of Gardening. 1992. 3. McMillan-Browse. P. Hardy Woody Plants from Seed. Grower Books. 1985. 4. Sheat, W.G. Propagation of Trees, Shrubs and Conifers. MacMillan and Co. 1948.
Other Sources Consulted (but that contained no pertinent information):	
First Name of Author:	Chris
Last Name of Author:	Duprey
Date Entered or Updated (MM/DD/YY):	05/08/2007

Abies procera noble fir

Range
Mountains of Northwest Oregon and Southwest Washington between latitude 44N and 48N.

Climate, elevation
Moist maritime climate. Cool temperatures, high precipitation. Annual precipitation 1960-2410 mm. Three quarters of precipitation falls between October and March as snow. Mid to upper elevations.

Local occurrence (where, how common)
West slopes of the Cascade Mountains.

Habitat preferences
Prefers moist deep cool well-drained soil. However, can grow on a wide variety of soils including rocky if there is enough moisture. Takes sun to part shade. Does not tolerate high wind or soil with high pH.

Plant strategy type/successional stage (stress-tolerator, competitor, weedy/colonizer, seral, late successional)

Associated species
Associates with most Northwest confers throughout the range, Alaska huckleberry, red huckleberry, Cascades azalea, Pacific rhododendron, bear grass, fawn lily, inside-out-flower.

May be collected as: (seed, layered, divisions, etc.)
Seed

Collection restrictions or guidelines
Seeds are dispersed in September - October. Noble fir starts to produce seed around 50 years of age. Time between good cone crops could be up to 6 years. Seed quality is poor. Good seed quality usually correlates with good cone crops.

Seed germination (needs dormancy breaking?)

Seed life (can be stored, short shelf-life, long shelf-life)

Recommended seed storage conditions

Propagation recommendations (plant seeds, vegetative parts, cuttings, etc.)

Soil or medium requirements (inoculum necessary?)

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

Recommended planting density

Care requirements after installed (water weekly, water once etc.)

Normal rate of growth or spread; lifespan
In landscape settings grows to 50-100 feet tall. In native habitat grows 180-270 feet. A noble fir that is around 100 years old is usually 90-100 feet tall. Very young trees have a slow growth rate, growth rate increases to moderate.

Sources cited
Burns, R. and B. Honkala. 1990. *Silvics of North America, Volume 1, Conifers. Agricultural Handbook 654.* U.S. Department of Agriculture, Forest Service, Washington, D.C.

Dirr, M. 1998. *Manual of Woody Landscape Plants.*

Oregon State University Extension Service and Oregon Department of Forestry. 1995. *Trees to Know in Oregon.*

http://www.fs.fed.us/database/feis/plants/tree/abipro/all.html

http://www.fs.fed.us/pnw/pubs/gtr513/gtr513b.pdf

Data compiled by Katie McGowan April 29, 2003