Plant Propagation Protocol for *Abies amabilis*

ESRM 412 – Native Plant Production

TAXONOMY	
Plant Family	
Scientific Name	Pinaceae
Common Name	Pine
Species Scientific Name	
Scientific Name	Genus: Abies Mill. Species: A. amabilis Species Authority: Douglas ex J. Forbes
Varieties:	
Sub-species:	
Cultivar:	Compacta, Spreading Star (USDA.)
Common Synonym(s):	
Common Name(s)	Pacific silver fir, white fir, red fir, lovely fir, Amabilis fir, Cascades fir, silver fir
Species Code (as per USDA Plants database)	ABAM (USDA).
GENERAL INFORMATION	
Geographical range:	 (Conifers)
Ecological distribution:	Given the environments where Abies amabilis is naturally found, this plant does best environments which are cool, moist, forest environments. Due to this, the Pacific Nor addition to the Western coast of Canada serve as the home range for Abies amabilis. I

	does notably poorly in terms of fire tolerance, therefore not seen in drier regions of Washington and Oregon. (Conifers).
Climate and elevation range:	Preferred climate is maritime and long winter prone (Conifers). Elevation range is 1,0 2,300 meters, however an exception to these higher altitudes is seen on the coastline, trees have been reported as low as 230 m on the Olympic Peninsula.(DNR).
Local habitat and abundance:	Abies amabilis is commonly found as far North as southwestern Alaska and as far sou very few locations in Klamath mountains of Northwestern California. Majority of pop seen from Coastal British Columbia to western and upper eastern slopes of the Cascad of Washington into Oregon (USDA). Associated species include Western hemlock as Mountain hemlock (University of Washington).
Plant strategy type / successional stage:	Abies amabilis is an obligate climax species, and considering its natural environments should come as no surprise that this plant is highly shade-tolerant. Small trees are con seen in the forest understory (University of Washington).
Plant characteristics:	Plants will often be 600-800 years old and develop a flakey bark similar to that of a sp However, most of the trees do not live for more than a couple hundred years due to th that these trees are not decay resistant. Younger trees tend to have a smoother bark. A amabilis is usually the most numerous tree in old growth forests (DNR).
PROPAGATION DETAILS	
Ecotype:	Seed from Abies amabilis collected via cones upon cone maturity 6-7 months after pollination. Seeds are winged and can be found at sites where mature plants are abund example being Coastal British Columbia and Western Washington state (Calscape).
Propagation Goal:	Plants
Propagation Method:	Seed (USDA)
Product Type:	Bareroot, container, or seed (USDA).
Stock Type	Container Plants, easier to protect young plants from insects and birds in order to ensu growth, especially considering that Abies amabilis is sensitive to decay as well as dro (DNR).
Time to Grow	One year in container before plant has grown enough to have high chance of survival out-planting.
Target Specifications	Number one priority of produced plants is a sufficient root system, usually take years develop. Desired trees will reach between 100 and 200 feet (Portland). Ideally, these t would also present the phenotypes of being more decay resistant then the usual Pacifi fir.
Propagule Collection Instructions:	Cones can be collected during early fall, however the best time to collect mature cone mid to late August. Cones should be stored at mild temperatures of 70-80 degrees and require ventilation (USDA) as cones are vulnerable to mold and heat buildup (Univers Washington).
Propagule Processing/Propagule Characteristics:	Cones are capable of producing 400 seeds each, however less than half are expected t viable (USDA). Expected 9,080 seeds per pound (Sheffields).
Pre-Planting Propagule Treatments:	Most efficient pre-planting propagule treatment is seen in form of cold stratification (natural northern maritime conditions for Abies amabilis, exception is seen in moisture as seeds are prone to mold development). Seeds are stratified in dry conditions at 10-3 degrees Celsius (Leadem, C.L.).

Growing Area Preparation / Annual Practices for Perennial Crops:	Seeds should be planted in large containers or boxes in order to promote establishmen strong root systems. Density of planted seeds should be 125 seedlings per acre, shoul planted about 1/4 " deep (USDA). Ideal media type is clay, loam, and sand (Gardenia)
Establishment Phase Details:	Seeds should be planted in early Spring/late winter and germination should begin by M Additionally, it has been noted that germination was higher in dark as opposed to ligh conditions (Baskin), germination also occurs at an alternating temperature cycle.
Length of Establishment Phase:	~1 month
Active Growth Phase:	At start of plant's life, growth ranges from 4-16" per year depending on available as w stable resources (USDA).
Length of Active Growth Phase:	Active Growth phase length depends on varying resource levels of environment and h quickly plan can achieve hardening phase. Can take as long as two years (Riley, Lee)
Hardening Phase:	Hardening Phase is usually achieved in March, plants begin developing soft bark (Por
Length of Hardening Phase:	Seedlings are moved to an outdoor area in early September (Riley, Lee).
Harvesting, Storage and Shipping:	Harvesting usually occurs around Mid-October depending on location of plants, usual planted in fall. Plants must be stored in well irrigated conditions for shipping, are ship containers (Riley, Lee).
Length of Storage:	3 to 4 months (Riley, Lee).
Guidelines for Out planting / Performance on Typical Sites	Seedlings can be planted as early as the final frost has been completed, as long as eno exists for the young plants to adapt to new environment. Seeds on average present a germination rate of 77 percent (Sheffields), however seedlings will most likely exper lower rate of survival given sensitivity to decay and drought (DNR). Should be noted of these statistics are dependent on seed origin and environment.
Other Comments:	

INFORMATION SOURCES

References (full citations)

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Other Sources Consulted:	
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