

## Plant Propagation Protocol for *Picea mariana*

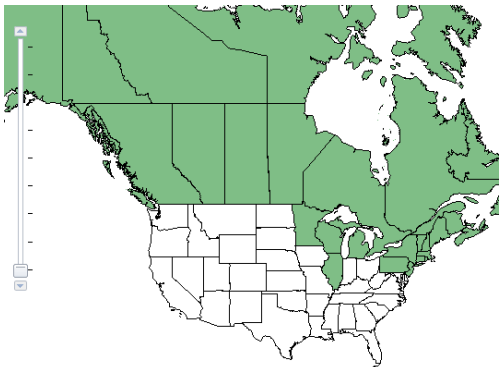
ESRM 412 – Native Plant Production

Protocol URL: <https://courses.washington.edu/esrm412/protocols/PIMA.pdf>



TAXONOMY	
Plant Family	
Scientific Name	Pinaceae
Common Name	Pine
Species Scientific Name	
Scientific Name	<i>Picea mariana</i> Britton, Stern & Poggenb.
Varieties	<i>Picea mariana</i> var. <i>brevifolia</i> Rehder, <i>Picea mariana</i> var. <i>mariana</i> B.S.P., <i>Picea mariana</i> var. <i>semiprostrata</i> Teeri
Sub-species	
Cultivar	
Common Synonym(s)	<i>Abies mariana</i> Miller, <i>Picea brevifolia</i> Peck, <i>P. mariana</i> var. <i>brevifolia</i> Rehder, <i>P. nigra</i> Link
Common Name(s)	Black spruce, bog spruce, swamp spruce
Species Code (as per USDA Plants database)	PIMA

## GENERAL INFORMATION

Geographical range	 <p><a href="http://plants.usda.gov/core/profile?symbol=PIMA">http://plants.usda.gov/core/profile?symbol=PIMA</a></p>
Ecological distribution	Black spruce is found in muskegs, bogs, bottomlands, and relatively dry peatlands. It usually grows on wet organic soils, but is found on a range of soil types including deep humus, clays, loams, sands, coarse till and more (NA).
Climate and elevation range	Grows within the elevation range of 0-1500 meters. Black spruce thrives in cold climate with a moisture regime varying from humid to dry subhumid. Cold hardiness limit between -46.6 degrees F and -40 degrees F.
Local habitat and abundance	Black spruce is one of the most widely distributed conifers in North America. It is commonly found in mixed stands with several species, especially northern white-cedar, white spruce, and balsam fir.
Plant strategy type / successional stage	Black spruce is categorized as shade tolerant, but is less tolerant than white spruce and balsam fir which are two competitors in its range. Seedlings can develop in 10% of full light intensity, but survival is best in open areas. It is often a postfire pioneer on both uplands and peatlands as long as a seed source is available (USDA). Another plant strategy is an interesting one, the tree's lowest branches can take root by layering when deep snows bend them to the ground, forming a ring of small trees around a large one (NPIN).
Plant characteristics	A coniferous, slow-growing, small upright tree or dwarf shrub with a narrow, pointed crown 30'-50' tall. Actively grows in the summer with a moderate lifespan (NPIN).

## PROPAGATION DETAILS

Ecotype	Tundras, bogs, and wet soils (Petrides, 45)
Propagation Goal	Plant
Propagation Method	Seed

Product Type	Container (plug)
Stock Type	
Time to Grow	Pick out the seedlings into individual pots when they are large enough to handle and grow them in the greenhouse or cold frame for their first winter. They can be planted out into their permanent positions in early summer of the following year.
Target Specifications	
Propagule Collection Instructions	
Propagule Processing/Propagule Characteristics	Seeds should not be allows to dry out and should be stored in a cool place (PFAF).
Pre-Planting Propagule Treatments	Seeds exhibit physiological dormancy. Stratification will probably improve germination so sow fresh seed in the autumn in a cold frame if possible (NA).
Growing Area Preparation / Annual Practices for Perennial Crops	Protect from frost; seedlings require open conditions for optimal growth (PFAF).
Establishment Phase Details	Pick out the seedlings into individual pots when they are large enough to handle and grown them in a greenhouse or cold frame for their first winter
Length of Establishment Phase	1 year – seedlings can be outplanted into permanent positions or outdoor nursery the following year (NA).
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	
Length of Hardening Phase	
Harvesting, Storage and Shipping	Sow stored seed as early in the year as possible in a cold frame. A position in light shade is probably best. Seed should not be allowed to dry out and should be stored in a cool place (PFAF).
Length of Storage	One winter season.
Guidelines for Outplanting / Performance on Typical Sites	Growth rate is relatively rapid after a slow-growing establishment period. Grows up to 15'-30'W x 40'-50'H.
Other Comments	Moderate lifespan (250-300 years) on favorable lowland sites (FIES).
<b>INFORMATION SOURCES</b>	
References	<p>[NPIN] "NPIN: Native Plant Database." Lady Bird Johnson Wildflower. The University of Texas at Austin, 2013. Web.</p> <p>[Petrides] Petrides, George A., and Olivia Petrides. Western Trees: Western United States and Canada. Boston: Houghton Mifflin, 1992. Print.</p> <p>[FIES] "Picea Mariana." USDA Forest Services. Fire Effects Information System. Web. 2015.</p>

	<p>[PFAF] "Picea Mariana Black Spruce, Swamp Spruce PFAF Plant Database." Picea Mariana Black Spruce, Swamp Spruce PFAF Plant Database. Web. 5</p> <p>"Picea mariana (black Spruce) Description." The Gymnosperm Database. Ed. Christopher Earle. 2011. Web.</p> <p>"Plants Profile for Picea Mariana (black Spruce)." United States Department of Agriculture: Natural Resources Conservation Service. Plants Database. Web.</p> <p>[NA] Viereck, Leslie, and Johnston, William. "Picea Mariana (Mill.) B.S.P." USDA: Northeastern Area. Silviculture Manual. Volume 1. Web.</p>
Other Sources Consulted	
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Date Protocol Created or Updated	June 8, 2015