

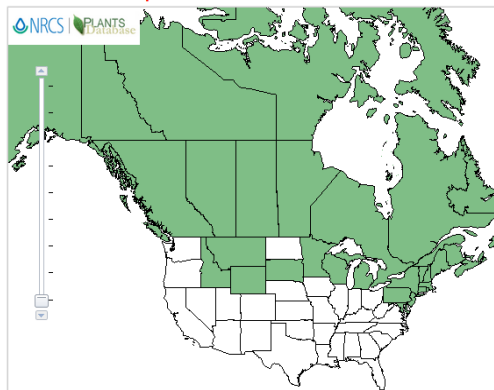
Plant Propagation Protocol for *Picea glauca*

ESRM 412 – Native Plant Production

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



TAXONOMY	
Plant Family	
Scientific Name	Pinaceae
Common Name	Pine
Species Scientific Name	
Scientific Name	<i>Picea glauca</i> Moench
Varieties	<i>P. glauca</i> var. <i>albertiana</i> S. Brown, <i>P. glauca</i> var. <i>densata</i> Bailey, <i>Picea canadensis</i> B.S.P.
Sub-species	Completely hybridizes with <i>P. engelmannii</i> , var. <i>albertiana</i> , var. <i>porsildii</i>
Cultivar	Alberta spruce, Black Hills spruce
Common Synonym(s)	<i>Pinus glauca</i> Moench, <i>Picea albertiana</i> , <i>Picea Canadensis</i> B.S.P
Common Name(s)	Canadian Spruce, Single Spruce, Western White

	Spruce
Species Code (as per USDA Plants database)	PIGL
GENERAL INFORMATION	
Geographical range	 <p>http://plants.usda.gov/core/profile?symbol=PIGL</p>
Ecological distribution	White spruce prefers soils of fluvial or glacial origin, and neutral or slightly acidic. It can be found growing near or in river deltas, and then in boreal forests, coniferous and mixed coniferous-hardwood forests (NA).
Climate and elevation range	White spruce thrives in cold continental climate, but cold maritime in its east range. It grows within the elevation range of 5-1,900 meters (IUCN).
Local habitat and abundance	Prominent in the vast boreal forest of North America. Often found in pure stands, or sometimes in mixed stands with <i>Betula papyrifera</i> and other conifers in its range (IUCN).
Plant strategy type / successional stage	White spruce invaded successional stages along with other northern broad leaved trees. Additionally, it has been found useful for long-term revegetation of coal mine overburden. White spruce has been observed naturally invading coal mine spoils at high elevations in west-central Alberta (USDA).
Plant characteristics	A coniferous, evergreen tree typically growing medium-sized and upright with a long, straight trunk, and narrow, spirelike crown.
PROPAGATION DETAILS	
Ecotype	Upland tundras and forests (Petrides, 44)
Propagation Goal	Plant
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	172 ml conetainers
Time to Grow	9 months
Target Specifications	Height: 15 cm, caliper: 8 mm, root system: firm plug in conetainer

Propagule Collection Instructions	Cones are collected in late September and early October when cones turn tan and scales begin to reflex. Mature seeds are firm and dark brown to black in color. Cones are collected in burlap sacks and spread over canvas tarp in the drying shed prior to cleaning (USDA).
Propagule Processing/Propagule Characteristics	Spruce seeds are sensitive to adverse storage conditions. Cones must be air dried and tumbled to extract the seeds.
Pre-Planting Propagule Treatments	White spruce seed shows conditional dormancy that vary in response to temperature and light conditions. It can be modified by stratification or prechilling (NA).
Growing Area Preparation / Annual Practices for Perennial Crops	White spruce should be grown in greenhouses and outdoor nursery growing facilities. Sowing technique: direct seedlings.
Establishment Phase Details	Germination is usually complete 3-4 weeks after sowing. And the seedlings should shed the seed coats 7 to 10 days after emergence (NA).
Length of Establishment Phase	About 3 weeks
Active Growth Phase	After germination – the plants will average 10cm in growth phase
Length of Active Growth Phase	23 weeks
Hardening Phase	
Length of Hardening Phase	4 weeks
Harvesting, Storage and Shipping	
Length of Storage	
Guidelines for Outplanting / Performance on Typical Sites	Should be outplanted in the spring or Fall.
Other Comments	

INFORMATION SOURCES

References	<p>[ACS] “Conifer Species: Picea Glauca American Conifer Society.” American Conifer Society. Web.</p> <p>[IUCN] Farjon, A. 2013. Picea Glauca. The IUCN Red List of Threatened Species. Version 2014.3.</p> <p>[Petrides] Petrides, George A., and Olivia Petrides. Western Trees: Western United States and Canada. Boston: Houghton Mifflin, 1992. Print.</p> <p>[NEWFS] “Picea Glauca (Moench) Voss.” Go Botany: Discover Thousands of New England Plants. New England Wild Flower Society. Web.</p> <p>[NA] "Picea Glauca (Moench) Voss." USDA: Northeastern Area. Silviculture Manual. Volume 1.</p>
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	<p>[USDA] “Picea Glauca.” USDA Forest Service. Fire Effects Information System. Web.</p> <p>[TGD] “Picea Glauca (white Spruce) Description” The Gymnosperm Database. Ed. Christopher Earle. 2011. Web.</p> <p>[NRCS] “Plants Profile for Picea Glauca (white Spruce).” United States Department of Agriculture: Natural Resource Conservation Service. Plants Database. Web.</p>
Other Sources Consulted	<p>[Arno] Arno, Stephen F., and Ramona P. Hammerly. Northwest Trees. Seattle: Mountaineers, 1977. Print.</p> <p>Evans, Jeff; Luna, Tara.; Hosokawa, Joy.; Wick, Dale. 2008. Propagation protocol for production of container Picea engelmannii; USDI NPS – Glacier National Park, Montana. In: Native Plant Network. (not from white spruce species, just used for reference)</p>
Protocol Author	Shaylin Salas
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