

**Plant Propagation Protocol for *Achillea alpina***

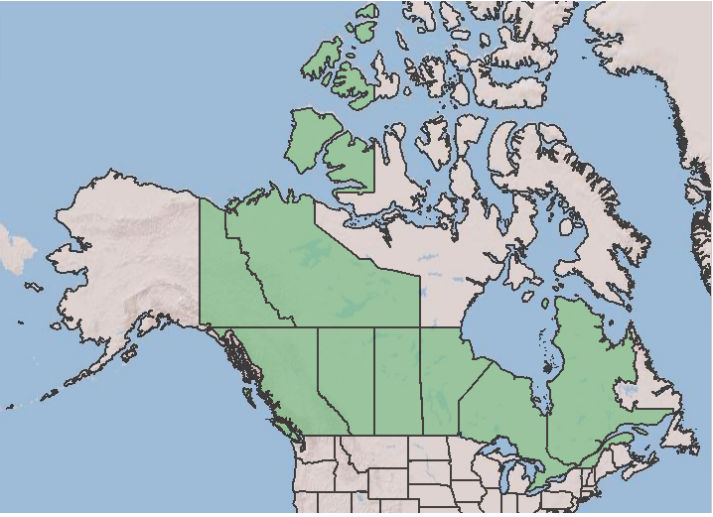

ESRM 412 – Native Plant Production

URL: <https://courses.washington.edu/esrm412/protocols/2021/ACAL17.pdf>



Photo from [Minnesota Wildflowers](#)

TAXONOMY	
Plant Family	
Scientific Name	Asteraceae
Common Name	Aster family
Species Scientific Name	
Scientific Name	<i>Achillea alpina</i> L.
Varieties	None
Sub-species	None
Cultivar	None
Common Synonym(s)	<i>Achillea sibirica</i>
Common Name(s)	Chinese yarrow, Siberian yarrow, alpine yarrow
Species Code (as per USDA Plants database)	ACAL17
GENERAL INFORMATION	

Geographical range	 <p>(US Department of Agriculture, n.d.)</p>
Ecological distribution	<p>Thrives in open woodland or woodland edges, such as meadows, stream banks, or roadsides (Minnesota Wildflowers, n.d.). Also occurs in shallow swamps or other wet areas (Minnesota Department of Natural Resources, n.d.), or in sandy and dry areas (Plants For A Future, n.d.).</p>
Climate and elevation range	<p>Hardy at USDA zone 5 and higher, meaning it can withstand winter temperatures above -20 degrees C (Hardiness.zone, n.d.). Found at elevations of 100-600 m (Trock, 2020).</p>
Local habitat and abundance	 <p>Found throughout Canada, including British Columbia (US Department of Agriculture, n.d.).</p>
Plant strategy type / successional stage	<p>Insect-pollinated, but little else is known about the species' strategy (Minnesota Department of Natural Resources, n.d.).</p>

Plant characteristics	Monoecious, perennial herb. Distinguished from <i>Achillea millefolium</i> (common yarrow) by its simple, pinnatifid, incised leaves (Minnesota Department of Natural Resources, n.d.).
<b>PROPAGATION DETAILS: Seed propagation</b>	
Ecotype	No information available
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Not specified
Stock Type	Seed
Time to Grow	Approximately 9-10 months
Target Specifications	Not specified
Propagule Collection Instructions	No information found
Propagule Processing/Propagule Characteristics	No information found
Pre-Planting Propagule Treatments	No information found
Growing Area Preparation / Annual Practices for Perennial Crops	No information found
Establishment Phase Details	Sow in spring or early autumn (Plants For a Future, n.d.)
Length of Establishment Phase	1-3 months (Plants For A Future, n.d.)
Active Growth Phase	No information found
Length of Active Growth Phase	Approximately six months (based on recommended time of individual potting up) (Plants For A Future, n.d.).
Hardening Phase	No information found
Length of Hardening Phase	No information found
Harvesting, Storage and Shipping	No information found
Length of Storage	No information found
Guidelines for Outplanting / Performance on Typical Sites	No information found
Other Comments	Seedlings can be divided after approximately 12 months. Divisions can then be outplanted and will root in approximately 3 weeks (Plants For A Future, n.d.). No other detail about vegetative propagation was available.
Very little information is available for the propagation of <i>Achillea alpina</i> / <i>Achillea sibirica</i> . The following information applies to the <i>Achillea</i> genus, but is not specific to this species.	
<b>PROPAGATION DETAILS: seed propagation for <i>Achillea millefolium</i></b>	
These species are in the same genus and have habitat overlaps and therefore similar ecological requirements; the following information may apply to <i>Achillea alpina</i> .	
Ecotype	No information available
Propagation Goal	Plants
Propagation Method	Seed

Product Type	Container (plug)
Stock Type	Seed
Time to Grow	4 months
Target Specifications	10 cm in height, firm root system in the plug
Propagule Collection Instructions	Collect seeds in the late summer or early fall. Remove the entire inflorescence (Luna & Evans, n.d.).
Propagule Processing/Propagule Characteristics	Clean with screens, hammermill, and fanning mill (Luna & Evans, n.d.).
Pre-Planting Propagule Treatments	No pre-planting treatments are necessary, as seeds do not enter dormancy (Luna & Evans, n.d.).
Growing Area Preparation / Annual Practices for Perennial Crops	Use a media mix of milled sphagnum peat, perlite, and vermiculite with Osmocote controlled release fertilizer and Micromax fertilizer (Luna & Evans, n.d.).
Establishment Phase Details	Direct sow seeds in an outdoor greenhouse or nursery facility (Luna & Evans, n.d.)
Length of Establishment Phase	3 weeks (Luna & Evans, n.d.).
Active Growth Phase	Additional fertilizer was not necessary (Luna & Evans, n.d.).
Length of Active Growth Phase	6 weeks (Luna & Evans, n.d.).
Hardening Phase	Reduce irrigation in September and October. Irrigate once with 10-20-20 liquid NPK fertilizer once before plants enter dormancy.
Length of Hardening Phase	8 weeks (Luna & Evans, n.d.).
Harvesting, Storage and Shipping	Harvest in June or July. Can be stored over the winter in an outdoor nursery facility if covered by insulating foam cover (Luna & Evans, n.d.).
Length of Storage	5 months (Luna & Evans, n.d.).
Guidelines for Outplanting / Performance on Typical Sites	No information found. .
Other Comments	None
<b>PROPAGATION DETAILS: Vegetative propagation by division</b>	
General for <i>Achillea</i> genus	
Ecotype	No information found
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Bareroot
Stock Type	Mature plant
Time to Grow	No information found
Target Specifications	No information found
Propagule Collection Instructions	No information found
Propagule Processing/Propagule Characteristics	Loosen the soil around the plant with a shovel. Divide the plant as many times as necessary, while ensuring that each division has three shoots (Miksen, n.d.).
Pre-Planting Propagule Treatments	Do not divide yarrow while flowering (Miksen, n.d.).

Growing Area Preparation / Annual Practices for Perennial Crops	No information found
Establishment Phase Details	No information found
Length of Establishment Phase	No information found
Active Growth Phase	No information found
Length of Active Growth Phase	No information found
Hardening Phase	No information found
Length of Hardening Phase	No information found
Harvesting, Storage and Shipping	No information found
Length of Storage	No information found
Guidelines for Outplanting / Performance on Typical Sites	Replant divided plants at the same level as they were at previously (Miksen, n.d.).
Other Comments	No information found
<b>PROPAGATION DETAILS: Vegetative propagation by root and stem cuttings</b> General for <i>Achillea</i> genus	
Ecotype	No information found
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Plug (container)
Stock Type	Mature plant
Time to Grow	No information found
Target Specifications	No information found
Propagule Collection Instructions	No information found
Propagule Processing/Propagule Characteristics	Cut 1.5-inch sections of root. (Reed, n.d.) Separate foliage rosette from the base of the plant with no attached root. (Reed, n.d.) Take cuttings early in the spring when the plant is showing new growth. (Reed, n.d.)
Pre-Planting Propagule Treatments	Add rooting hormone. (Reed, n.d.)
Growing Area Preparation / Annual Practices for Perennial Crops	Use generic potting mix and a small container. (Reed, n.d.)
Establishment Phase Details	Pot up 1.5-inch sections of root 1.5 inches deep in a small container. (Reed, n.d.) Insert foliage cutting into media. (Reed, n.d.)
Length of Establishment Phase	No information found
Active Growth Phase	No information found
Length of Active Growth Phase	No information found
Hardening Phase	No information found
Length of Hardening Phase	No information found
Harvesting, Storage and Shipping	No information found
Length of Storage	No information found
Guidelines for Outplanting / Performance on Typical Sites	No information found

Other Comments	No information found
<b>INFORMATION SOURCES</b>	
References	<p>Hardiness.zone. (n.d.). <i>Achillea alpina</i>. Hardiness.zone. <a href="https://hardiness.zone/plant/?sle=Achillea&amp;art=alpin_a">https://hardiness.zone/plant/?sle=Achillea&amp;art=alpin_a</a></p> <p>Lady Bird Johnson Wildflower Center. (n.d.). <i>Achillea alpina</i>. Plant database. <a href="https://www.wildflower.org/plants/result.php?id_plant=ACAL17">https://www.wildflower.org/plants/result.php?id_plant=ACAL17</a></p> <p>Luna, T., &amp; Evans, J. (n.d.). <i>Propagation protocol for production of Container (plug) Achillea millefolium L. plants 172 ml conetainers; USDI NPS - Glacier National Park West Glacier, Montana</i>. Native Plant Network. <a href="https://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=asteraceae-achillea-11&amp;referer=wildflower">https://npn.rngr.net/renderNPNProtocolDetails?selectedProtocolIds=asteraceae-achillea-11&amp;referer=wildflower</a></p> <p>Miksen, C. (n.d.). Propagating Yarrow. SFGate Home Guides Gardening. <a href="https://homeguides.sfgate.com/propagating-yarrow-28607.html">https://homeguides.sfgate.com/propagating-yarrow-28607.html</a></p> <p>Minnesota Department of Natural Resources. (n.d.). <i>Achillea alpina</i>. Minnesota Department of Natural Resources. <a href="https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&amp;selectedElement=PDAST03060">https://www.dnr.state.mn.us/rsg/profile.html?action=elementDetail&amp;selectedElement=PDAST03060</a></p> <p>Minnesota Wildflowers. (n.d.). <i>Achillea alpina</i>. Minnesota Wildflowers. <a href="https://www.minnesotawildflowers.info/flower/siberian-yarrow">https://www.minnesotawildflowers.info/flower/siberian-yarrow</a></p> <p>Plants For A Future. (n.d.). <i>Achillea sibirica</i>. Plants For A Future - Ledeb. <a href="https://pfaf.org/user/Plant.aspx?LatinName=Achillea+sibirica">https://pfaf.org/user/Plant.aspx?LatinName=Achillea+sibirica</a></p> <p>Reed, P. H. (n.d.). <i>Propagation of the Achillea Yarrow</i>. SFGate Home Guides gardening. <a href="https://homeguides.sfgate.com/propagation-achillea-yarrow-76842.html">https://homeguides.sfgate.com/propagation-achillea-yarrow-76842.html</a></p> <p>Trock, D. K. (2020, November 5). <i>Achillea alpina</i>. Flora of North America. <a href="http://beta.floranorthamerica.org/Achillea_alpina">http://beta.floranorthamerica.org/Achillea_alpina</a></p> <p>US Department of Agriculture. (n.d.). <i>Achillea alpina</i>. USDA Plants Database. <a href="https://plants.usda.gov/home/plantProfile?symbol=ACAL17">https://plants.usda.gov/home/plantProfile?symbol=ACAL17</a></p>

Other Sources Consulted	<p>Evenor, D., &amp; Reuveni, M. (2004). Micropropagation of <i>Achillea filipendulina</i> cv. "Parker." <i>Plant Cell, Tissue and Organ Culture</i>, 79(1), 91–93.  <a href="https://doi.org/10.1023/B:TICU.00000049441.48404.70">https://doi.org/10.1023/B:TICU.00000049441.48404.70</a></p> <p>Henskens, F. L. F., Field, R. J., &amp; Bourdot, G. W. (1990). The carbon economy and ecological strategy of Yarrow (<i>Achillea millefolium</i> L.). 219–222.</p>
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