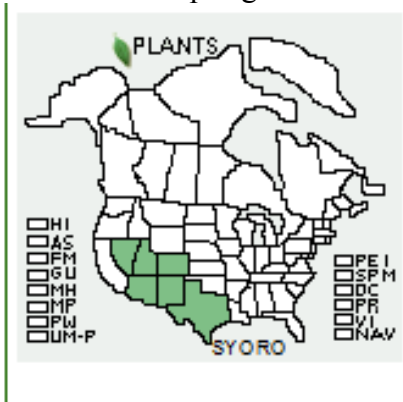
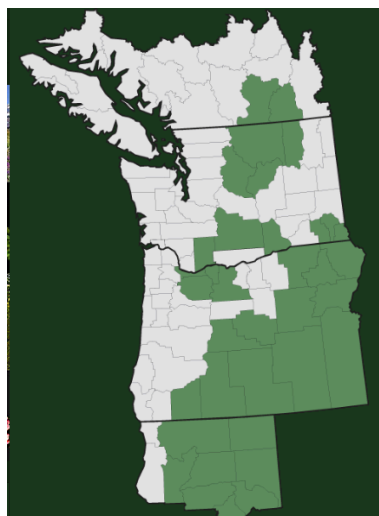


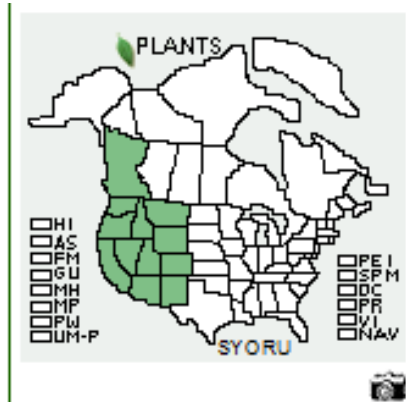
Plant Propagation Protocol for *Symphoricarpos oreophilus*

ESRM 412 – Native Plant Production

Spring 2015



Symphoricarpos oreophilus
var. *oreophilus*
mountain snowberry



Symphoricarpos oreophilus
var. *utahensis*
Utah snowberry

TAXONOMY	
Plant Family	
Scientific Name	Caprifoliaceae
Common Name	Honeysuckle family
Species Scientific Name	
Scientific Name	<i>Symphoricarpos oreophilus</i> A. Gray <i>Symphoricarpos utahsensis</i> Rybd.
Varieties	<i>Symphoricarpos oreophilus</i> var. <i>oreophilus</i> (Mountain snowberry) <i>Symphoricarpos oreophilus</i> var. <i>utahsensis</i> (Utah snowberry)
Sub-species	
Cultivar	
Common Synonym(s)	Mountain Snowberry, Utah Snowberry
Common Name(s)	Mountain Snowberry, Utah Snowberry
Species Code (as per USDA Plants database)	SYOR2
GENERAL INFORMATION	
Geographical range	Wide range from British Columbia east to Montana, south to Texas and Northern Mexico. <i>S. oreophilus</i> var. <i>utahsensis</i> is most common in Washington, and most of western United States (6,7). See figures above for more details.
Ecological distribution	Snowberry occurs on the edges of riparian zones, in woodlands, and in moist areas of the mountain brush zone. Often associated with Ponderosa pine, Douglas fir, aspen, and chokecherry.
Climate and elevation range	4,800 to 10,500 feet, subalpine to desert climate (4).

Local habitat and abundance	Common shrub in many plant communities east of the Cascades. Both varieties prefer sandy loam to clay loam soils and alluvial bottomlands that are moist well-drained soils. Generally shade intolerant so prefers open canopies or edges of meadows (4,6,7)
Plant strategy type / successional stage	SYOR establishes in the early seral stages, but usually lasts into the climax community, thus it is stress tolerant. It prefers disturbed sites so will be first to colonize after a fire or other type of disturbance event (1).
Plant characteristics	Low growing trailing, perennial shrub with spreading, arching branches. It averages 2-4 feet high. It reproduces primarily by seed and sometimes layering and grows rhizomatous SYOR flowers are white or pink bell shaped while fruits are small light green or white berries. Leaves are opposite and short stalked, shaped round, elliptical or thin oval. Stems are hairy and buds are a light brown (4).
PROPAGATION DETAILS: SEED	
Ecotype	
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)
Stock Type	One gallon tree pot 4"x4"x14" (2)
Time to Grow	Moderate growth rate. Transplant into one gallon tree pot can occur around 5-6 months after seed germination. (2)
Target Specifications	Transplant consolidated root mass to prevent root ball from deteriorating during out planting (2)
Propagule Collection Instructions	Natural seed maturation occurs from July to September, depending on range and elevation. Collect the seeds by stripping or knocking into a hopper or container (7). Seeds collected from September to October will not be mature and will require additional treatment to prepare them for planting (8).
Propagule Processing/Propagule Characteristics	1700-2700 individuals/acre or sow 2-5 seeds per cell Seeds per kilogram: 119,190 (2, 3)
Pre-Planting Propagule Treatments	Cleaning: First, the fruits need to be soaked over night, then fermented for 48 hours, next mash into a pulp, obtain dried seeds dislodged from pulp in a rubbing box (8) Storage: Store at 5 C (41 F) in paper envelopes (8). If seeds are dry they should be viable for 3 years, however there have been recorded cases of seeds being viable up to 10 years (1). Dormancy Treatments: SYOR seeds have a pronounced dormancy, acid treatments can be used to breakdown the seed coat. Stratification should be employed for spring planting. When seeds are to be planted in the spring, the seed must undergo all treatments discussed above, while those planted in fall and winter only require acid scarification. (7, 11). Seeds collected from sites that have a more severe winter can expect to

	<p>have a deeper dormancy than those collected from sites with milder winters. The level of acid scarification will need to be adjusted to the type of environment the seed is from because the seed coat will be thicker in seeds that experience a longer or more intense winter (9).</p> <p>Stratification: For warm stratification, place seeds in moistened peat moss in bags stored in boxes ranging from 21 to 24 C (69-75 F). For cold stratification, put seeds in bags with moist peat moss and stored in a room that ranges from -1 C (29F) to daily high of 6 C or 41 F (8). Warm moist stratification should take place for 21-42 days and cold moist stratification for 168 days (9)</p> <p>Scarification: Acid scarifications are necessary for successful germination, i.e. soaks in Gibberellic acid (GA) at 250-1000 ppm. The combination of a 30 min acid soak, 21 day warm stratification and 84-168 day cold stratification has been noted to be highly effective in promoting germination. The acid scarification breaks physiological dormancy allowing maturation during cold stratification to begin sooner. The process for GA acid treatment is as follows: soak seeds in acid treatment and then rinse under tap water for 1 min. (8).</p> <p>Alternative Scarification treatment: Perform stratification as described above, but instead of acid treatment for scarifying seed, soak and leach seeds by putting seeds in a rubber lined rock tumbler jar filled with tap water to allow oxygen and water to enter the seed. For seeds that have hard seed coats, add carborundum grit and pea gravel to the water tumbler. (2)</p>
<p>Growing Area Preparation / Annual Practices for Perennial Crops</p>	<p>Direct seeds and transplanting in container stock. Sow seeds in moist, well-drained soil for young plants are sensitive to drought during their first year (1,7). For growing in a greenhouse, 70 F during the day and 55 F at night during winter and 85 F during the summer, watering schedule dependent on the season. (2)</p>
<p>Establishment Phase Details</p>	<p>Place dry and pretreated seeds in plug flats with square deep cells (288 or 512 per flat). Fill plug trays with dry to slightly moist soil and then compress with empty plug tray, sow 2-5 seeds per cell. When plants have reached 2-4 cm, thin any excess seedlings. Transplant root ball into super cells. Seedlings are then watered with soluble fertilizer every other watering event (2).</p>
<p>Length of Establishment Phase</p>	<p>Fast seedling growth, requires clipping during this phase to promote branching (2).</p>
<p>Active Growth Phase</p>	<p>Plants are eligible for transplant 5-6 months after their germination however plants do not reach maturity until 5 years after germination. Fertilization continues as in the establishment phase (2,3).</p>
<p>Length of Active Growth Phase</p>	<p>5-6 months (2)</p>

Hardening Phase	Move super cell seedlings outside in early May, or after the last freeze but before it gets too hot. Larger seedlings may require watering everyday during this stage. (2)
Length of Hardening Phase	Until time to outplant.
Harvesting, Storage and Shipping	About 5-6 months after germination transplant into a one gallon tree pot. (2)
Length of Storage	Unknown.
Guidelines for Outplanting / Performance on Typical Sites	Unknown.
Other Comments	

PROPAGATION DETAILS: CUTTINGS

Ecotype	
Propagation Goal	Plants
Propagation Method	Vegetative cuttings (semi-hardwood and soft-wood cuttings)
Product Type	Cuttings in container
Time to Grow	5 weeks for softwood and 20 weeks for semi hardwood (13).
Target Specifications	Rooted cuttings

Propagule Collection Instructions
 Dig up branches early in the spring before leaves have emerged for softwood cuttings, for hard wood cuttings collect shoots at any season (1). Based on a study conducted by Rosner et al., the greatest percentage of cuttings that rooted successfully were collected in March April Feb and January (5).

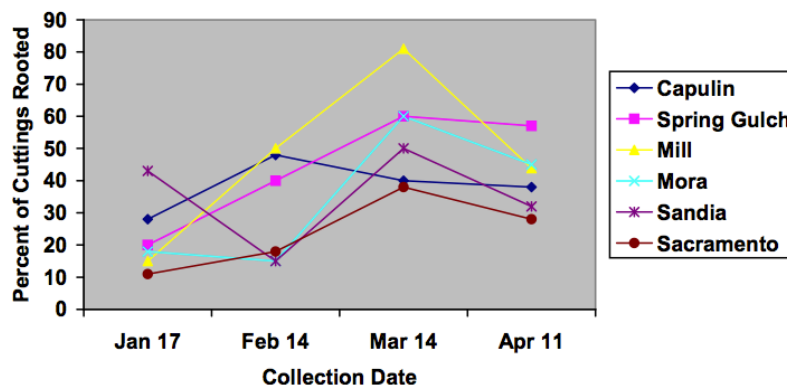


Figure 3: Mountain Snowberry Cutting Study—Effect of the interaction between cutting source and collection date on percentage of cuttings rooted 150 days after sticking

Propagule Processing/Propagule Characteristics	One individual cutting per container.
Pre-Planting Propagule Treatments	Preparation for cuttings: Trimmed branches to 15 cm and cut diagonal at basal end; remove terminal buds. Hormone treatment is recommended. Place basal end in hormone treatment (ie IBA/NAA w/

	250-1000 ppm) for 5 seconds and then allow the branch to air dry. For softwood cuttings, wrap in moist newspaper and store in plastic bags until preparing cuttings. Cut shoot in segments of 5 nodes (about 22mm) and strip leaves from the bottom two nodes. Dip in rooting hormone for 3 seconds, then stick in rooting substrate (13).
Growing Area Preparation / Annual Practices for Perennial Crops	Rosner et al. used copper coated 77 cell styroblocks and planted into a depth of at least 7.5 cm into cells containing 2 parts peat and 1 part each of perlite and vermiculite (5). For semi hardwood cuttings, apply a fungicide to mist bench when planting. Place on mist bench and keep plants moist. Place softwood cuttings on bottom heat and cover with a shade cloth, mist for 7 seconds every 12 minutes (13).
Establishment Phase Details	Young plants are particularly sensitive to drought within their first year so need to water regularly (7).
Length of Establishment Phase	Cuttings typically take 5 weeks to fully root.
Active Growth Phase	
Length of Active Growth Phase	
Hardening Phase	Since plants are propagated from cuttings, they are already in their hardening phase. See seed propagation hardening for more details on general over-wintering.
Length of Hardening Phase	
Harvesting, Storage and Shipping	Out plant in designated site when plant has fully rooted.
Length of Storage	Unknown.
Guidelines for Outplanting / Performance on Typical Sites	

INFORMATION SOURCES

References	See below
Other Sources	N/A
Protocol Author	Murray, Desneiges
Date Protocol Created or Updated	April 27 th , 2015

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