Plant Propagation Protocol for *Crataegus orbicularis*

ESRM 412 – Native Plant Production

URL: https://courses.washington.edu/esrm412/protocols/*2026*/CROR4.*pdf*

TAXONOMY	
Plant Family	
Scientific Name	Rosaceae[1]
Common Name	Rose[1]
Species Scientific Name	
Scientific Name	*Crataegus obicularis* (J.B. Phipps and R. O'Kennon)[1,2]
Varieties	N/A
Sub-species	N/A
Cultivar	N/A
Common Synonym(s)	N/A
Common Name(s)	Orbicular-leaved hawthorn; Aubepine orbiculaire[6]
Species Code (as per USDA Plants database)	CROR4
GENERAL INFORMATION	
Geographical range	Known only within a few miles of the Enderby in the northern Okanagan-southwestern Shuswap region inside British Columbia, Canada.[2,5,6,7]
Ecological distribution	Brush and natural hedgerows; this is a rare species of conservation concern with a predicted extinction risk categorized as "threatened".[2,5,6,7]
Climate and elevation range	Temperate climate with cold winters; 300-400m.[2,5,6,7]
Local habitat and abundance	Occurs in brush and natural hedgerows; very restricted range, conservation concern.[2,5,6,7]
Plant strategy type / successional stage	Mid-seral shrub; adapted to brush environments
Plant characteristics	 Wide spread shrub, 2-4m tall. Thorns are straight and often recurved, slender 3-5cm long. Leaves are broadly elliptic to suborbiculate, 5-8cm long, thin, with 3-4 short, triangular lobes per side; young foliage is a pale yellowish green color. Flowers are 18mm across, 10-20 per inflorescence; anthers are pink, styles 3-4.

	Fruits are brick red turning deep burgundy, oblong, 7-10mm across. [2,*image-3*]
PROPAGATION DETAILS: FROM SEED	
Ecotype	Northern Okanagan-southwestern shuswap, BC, Can.[2]
Propagation Goal	Plants
Propagation Method	Seed
Product Type	Container (plug)[9,10]
Stock Type	Cone-tainers or similar deep containers to accommodate taproot[9,10]
Time to Grow	9 months from seed to outplanting[9,10]
Target Specifications	Height: 22cm; Root system: firm plug in containers[9,10]
Propagule Collection Instructions	Collect fruits in September-October when fully colored deep burgundy.[2,5]
Propagule Processing/Propagule Characteristics	Seeds are cleaned by maceration of fruit using a seed cleaner followed by screening. To extract, macerate fruit in water and let pulp float. Cleaned seeds are 22,6000 per pound.[2,5]
Pre-Planting Propagule Treatments	Scarification in acid for 0.5-3hrs, followed by 84-112 days of cold treatment at 5° C. Acid scarification should not be done until seeds have dried for a few weeks. This method yields 50-80% germination rates. Hydrogen peroxide or mechanical scarification have also been reported but with lower germination rates.[9,10]
Growing Area Preparation / Annual Practices for Perennial Crops	Growing medium used is 6:1:1 sphagnum peat, perlite, and vermiculite with Osmocote controlled release fertilizer and Micromax fertilizer at the rate of 1g of Osmocote and 0.2g of micromax per Cone-tainer. Sow in trays containing ordinary soil; sow seeds thickly, some may not germinate until the second spring. Place trays in an unheated area. If seeds have been stored and pretreated, sow in the spring.[9,10]
Establishment Phase Details	Germination is uniform and usually complete in 2 weeks. Seed germination occurs at 21°C. Seedlings are thinned at this stage.[9,10]
Length of Establishment Phase	2 weeks.[9,10]
Active Growth Phase	Seedling growth is rapid following germination. Plants respond to thinning quickly and produce 4-6 true leaves in 2 weeks. Fertilize with 20-20-20 liquid NPK at 100ppm and increase in height to 16cm in 13 weeks. Plants are grown in greenhouse and outdoor nursery facilities; sowing method is direct seeding.[9,10]
Length of Active Growth Phase	13 weeks[9,10]

Hardening Phase	Reduce watering and cease fertilization in late summer to induce dormancy.[9,10]
Length of Hardening Phase	1-2 months (Autumn).[9,10]
Harvesting, Storage and Shipping	Air dry and store at 5°C. Seedlings should be dormant before shipping; keep roots moist.[9,10]
Length of Storage	Up to 10 years at 3-5°C in sealed containers for seeds; 2-4 months for dormant seedlings.[9,10]
Guidelines for Outplanting / Performance on Typical Sites	Outplant in early spring or late autumn during dormancy. Choose well-drained soil in brush or hedgerow habitats. Because this is a rare endemic species, outplanting should only occur in restoration projects within its native range. Seedlings should be protected from herbivory during the first two years.[2,5,6,8,9,10,11]
Other Comments	The Crataegus genius is a very complex group of trees and shrubs; there are currently nearly ~250 recognized species, this is down from the 1,500 that were described in the 1910s. In the early 1990s, some researchers reduced the number to 20-100. Recently, taxonomists have taken a compromise approach. C. orbicularis is very rare and considered threatened for extinction. For this reason, there is very little data on propagation for the C. orbicularis; therefore, most of the information is derived from an adjacent species, the C. douglasii. While the C. douglasii has a wider range than the C. orbicularis, it has been found in the same collection sites which makes this a co-occuring species.[1,8]
PROPAGATION DETAILS: VEGETATIVE	
Ecotype	Northern Okanagan-southwestern shuswap, BC, Can.[2]
Propagation Goal	Plants
Propagation Method	Vegetative
Product Type	Container (plug)[9,10]
Stock Type	Cone-tainers or similar deep containers to accommodate taproot[9,10]
Time to Grow	6-12 months for rooted cuttings.[9,10]
Target Specifications	Height: 22cm; Root system: firm plug in containers[9,10]
Propagule Collection Instructions	Take semihardwood cuttings in mid to late summer. Cuttings should be 15-20cm long, taken from healthy, disease free parent plants. Remove leaves from the lower half of the cutting, leaving 2-3 leaves at the top. Due to the rarity of this species, permits should be inquired upon and no collection from wild populations

	without authorization.[1,2,9,10,12,13,]
Propagule Processing/Propagule Characteristics	Semihardwood cuttings generally produce higher root formation than softwood cuttings/ Cuttings should have at least 2-3 notes and kept moist and placed in a shaded area immediately after collection to prevent desiccation.[9,10,12,13]
Pre-Planting Propagule Treatments	Treat cuttings with rooting hormone (IBA) to improve success rates and remove any leaves that would be buried in the medium to prevent rot.[9,10,12,13]
Growing Area Preparation / Annual Practices for Perennial Crops	Growing medium used is 6:1:1 sphagnum peat, perlite, and vermiculite with Osmocote controlled release fertilizer and Micromax fertilizer at the rate of 1g of Osmocote and 0.2g of micromax per Cone-tainer.[9,10,12,13]
Establishment Phase Details	Insert treated cuttings into the medium so that 1-2 notes are buried. Firm the medium around the cutting to eliminate air pockets. Maintain high humidity using a mist system or by covering with a clear plastic bag or dome. Place in bright indirect light, not direct sun. Monitor for signs of rot or desiccation daily.[9,10,12,13]
Length of Establishment Phase	1-2 months.[9,10,12,13]
Active Growth Phase	All roots are well developed, pot cuttings into larger containers with standard growing medium. Grow in full sun to partial shade with regular watering. Fertilize every 2-3 weeks with a balanced, soluble fertilizer. Gradually acclimate plants to lower humidity by opening plastic covers over several days (if used during establishment).[9,10,12,13]
Length of Active Growth Phase	4-6 months. Cuttings that root in late summer will overwinter in containers and resume active growth the following spring.[9,10,12,13]
Hardening Phase	Reduce watering and cease fertilization in late summer to induce hardening phase. For cuttings rooted in late summer, hold plants in a cold frame or unheated greenhouse over winter, providing minimal water to keep roots from drying out completely.[9,10,12,13]
Length of Hardening Phase	1-2 months; plus overwintering period for late-summer cuttings (4-5 months).[9,10,12,13]
Harvesting, Storage and Shipping	Dormant, rooted cuttings in containers can be stored at 1-4°C, moist, for 2-4 months. Keep roots moist to prevent desiccation, ensure plants are fully dormant before shipping to minimize transplant shock.[9,10,12,13]
Length of Storage	2-4 months

Guidelines for Outplanting / Performance on Typical Sites	Outplant in early spring or late autumn during dormancy. Choose well-drained soil in brush or hedgerow habitats. Because this is a rare endemic species, outplanting should only occur in restoration projects within its native range. Seedlings should be protected from herbivory during the first two years with fencing or tree shelters. [2,5,6,8,9,10,11,12,13]
Other Comments	The Crataegus genius is a very complex group of trees and shrubs; there are currently nearly ~250 recognized species, this is down from the 1,500 that were described in the 1910s. In the early 1990s, some researchers reduced the number to 20-100. Recently, taxonomists have taken a compromise approach. C. orbicularis is very rare and considered threatened for extinction. For this reason, there is very little data on propagation for the C. orbicularis; therefore, most of the information is derived from an adjacent species, the C. douglasii. While the C. douglasii has a wider range than the C. orbicularis, it has been found in the same collection sites which makes this a co-occuring species.[1,8]
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