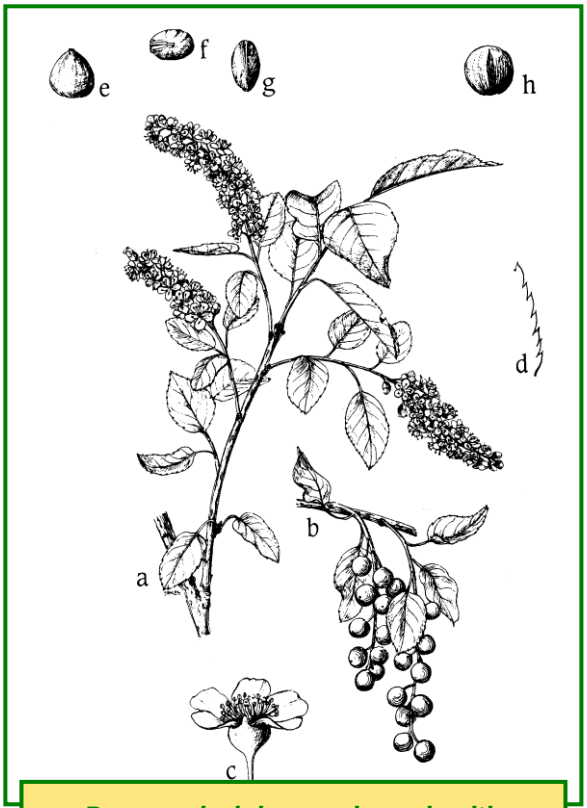
Scientific Name: *Prunus virginiana* L. **Family:** *Rosaceae*

Common Names: chokecherry, common chokecherry, Virginia chokecherry



***Prunus virginiana*. a. branch with inflorescences. b. fruit clumps. c. individual flower. d. leaf serrations. e-g. seeds. h. pollen.**

Plant Description

Perennial slender shrub or tree, 10 m high; reddish brown bark with inconspicuous lenticles; leaves alternate, simple, elliptical to egg-shaped, 5 to 10 cm, lighter beneath, smooth, toothed margins; racemes, 5 to 15 cm, terminal with white flowers, 4 to 10 mm across, 5 petals; widely branching roots (Moss 1983).

Fruit: Glossy, red-purple drupe, astringent, spherical, 1 to 2 cm diameter (Moss 1983).

Seed: 5 x 7 mm, oval, rough texture, brown, one margin ridged, and other scored. Large seeds tend to occur on upland sites while more numerous smaller seeds can be found in riparian areas (Parciak 2002a, b).

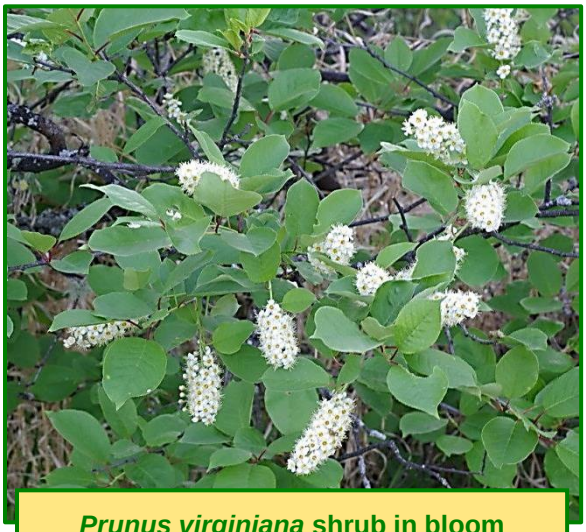
Habitat and Distribution

Found in a variety of forested areas as well as thickets, ravines, shores and sand dunes, and along fence lines and roadsides (Moss 1983).
Semi-tolerant to shade (Hardy BBT 1989).
Drought resistant (Inkpen and Van Eyk n.d., Kindscher 1987).

Seral Stage: Typical of a variety of stages ranging from post-disturbance (primary) to climax (Johnson 2000).

***Prunus virginiana* seedlings grown from berries grown on a revegetated site.**

Soils: Most productive on rich, moist loamy soils, but will grow on a wide variety of soils and moisture regimes (Hardy BBT 1989). Intolerant to poor drainage and prolonged flooding (Johnson 2000). Optimum soil pH 6.0 to 8.0 (Vilkitis 1974). It tolerates moderately acidic (pH 5.0), moderately basic, and weakly saline soils (Johnson 2000).
Distribution: Widespread across Alberta: Rocky Mountains, foothills prairie, and parkland. Southwestern District of Mackenzie, British Columbia to Newfoundland south to California, New Mexico, northern Texas, Oklahoma, Arkansas, Tennessee, North Carolina (Moss 1983).



***Prunus virginiana* shrub in bloom**

Phenology

Leaves open in May with flowers a few weeks later. Fruit matures in late July through September with seeds ripening at the same time.

Pollination

Pollinated by bees, butterflies and other insects (Young and Young 1992).

Seed Dispersal

Two phased dispersal, first by birds, and other fructivores and then deposited in soil by seed hoarding rodents (Beck 2009).

Genetics

2n=16, 32 (Moss 1983).

Symbiosis

None (Pashke et al. 2002).

Seed Processing

Collection: Easy to strip berries from branches in clusters.
Seed Weight: 52.6 to 75.0 g/1,000 seeds (64.7 average).
81.1 g/1,000 seeds (Royal Botanic Gardens Kew 2008).
Fruit/Seed Volume: 1,000 to 1,520 fruit/L (1,200 average), 1,200 seeds/L fruit.
Fruit/Seed Weight: 1,490 to 2,510 fruit/kg (2,090 average), 2,090 seeds/L fruit.
Average Seeds/fruit: 1 seed/fruit.
Harvest Dates: August 1 to August 30 (Formaniuk 2013). Collect when fully mature to facilitate cleaning and enhance germination success. Ripe fruit are red-purple in colour (Banerjee et al. 2001).
Cleaning: Mash fruits by hand or use a potato masher, apple-saucer, or ricer, or run through a hand meat grinder. Alternatively, use a food processor on low speed with blunt mashing blade (not a sharp blade) or use a blender with blades covered by plastic tubing or duct tape. Suspend residue in water and mix; allow seeds to settle and decant water with floating and suspended larger chaff. Repeat this step until seeds are clean; sieve and place seeds on paper toweling or cloths to dry. Dry at room temperature or up to 25°C preferably over a moving air stream.
Storage Behaviour: Orthodox; dry seed to low relative humidity prior to storage at freezing temperatures (Royal Botanic Gardens Kew 2008).
Storage: Store in hermetically sealed containers at freezing temperatures (Royal Botanic Gardens Kew 2008).
Longevity: Clean seeds, stored just below surface dry conditions and sealed in containers at 1°C can remain viable for up to 5 years (Rose et al. 1998).

***Prunus virginiana* seed**

Propagation

Natural Regeneration: From seed and by rhizomes or basal sprouts (Johnson 2000, Pashke et al. 2003).

Germination: No significant germination (<10%) in vitro regardless of treatment.

27ºC day / 21ºC temperature regime provide the best seed germination results (Lockley 1980).

25ºC day / 10ºC germination temperatures was used to germination seed from deciduous forests (Baskin and Baskin 2001).

Pre-treatment: 60 day cold stratification prior to sowing (Wood pers. comm.). 120 days stratification (Formaniuk 2013).

Hudson and Carlson (1998) suggest scarifying for 15 to 90 minutes, followed by 2 months warm stratification, and 4 months cold stratification.

There is evidence that ingestion by wild black bears significantly improves germination percentages because of the acid and mechanical scarification of seeds in the digestive tract (Auger et al. 2002).

Lockley (1980) had successful germination after 16 to 24 weeks cold stratification (3ºC) followed by a 21 to 27ºC temperature regime.

Dirr and Heuser (1987) obtained 52% germination after 6 months cold stratification. 120 to 160 days cold stratification provided the best germination results (Baskin and Baskin 2001).

Direct Seeding: Less than 1% emergence, however seedlings are vigorous on oil sands reclamation sites in north-eastern Alberta.

Fruit Sowing: In northeastern Alberta, 3% of fruit sown in fall emerged by year 4, resulting in vigorous seedlings.

Sowing Spacing: 0.2 to 0.3 m (Paschke et al. 2003).

Seeding Rate: 100 seeds/m², 50 fruits/m² to obtain 1 to 2 plants/m².

Vegetative Propagation: Rooted cuttings can be successful. Terminal and basal cuttings harvested in June have been rooted using 8,000 ppm IBA-talc, sand and mist (Dirr and Heuser 1987).

Babb (1959) reports successful propagation by suckers and budding.

Micro-propagation: Propagation is also possible with 15 cm long semi-hardwood cuttings, crown division, grafting and through micro-propagation (tissue culture) (St-Pierre 1993).

Nursery Production: Optimal conditions for nursery production are moist sand: peat, moist vermiculite, or 1:1 peat: perlite, and bright light favours growth and development (St-Pierre 1993).

Greenhouse Timeline: 20 weeks in the greenhouse prior to outplanting. Dormant seedlings can be stored frozen over winter for spring or early fall planting (Wood pers. comm.). Grow for 180 days before harvest (Formaniuk 2013).

Aboriginal/Food Uses

Food: Can be eaten fresh, frozen, or cooked, added to pemmican once dried, fermented to make wine, used for jellies, syrups, and sauces with meat and stews. The Blackfoot ground the entire fruit (even the pit which is somewhat toxic) and formed dry cakes which they ate as trail food (Royer and Dickinson 1996). A principal ingredient in pemmican (Kindscher 1987). Still collected in the wild in large quantities (Marles et al. 2000).

All parts of the plant except the fruit may contain hydrocyanic acid and may be poisonous if consumed (Royer and Dickinson 1996); children have died from eating large quantities without removing seeds (Turner 1997).

Medicinal: Boiling the leaves, stems, bark, and roots makes a tea useful for treating colds (Royer and Dickinson 1996, Turner 1997), fever (Wilkinson 1990), pneumonia, to clear the throat, and to treat high blood pressure and heart problems. Boiled bark can be used as an emetic drink or chewed and placed on wounds to stop bleeding (Wilkinson 1990). Boiled roots can make a tea to treat flu or be part of a medicine to treat diarrhoea in children (Marles et al. 2000).

Other: Wood used for digging sticks, roasting skewers, arrows and tipi construction (Wilkinson 1990).

Wildlife/Forage Usage

Wildlife: Browsed by elk, bear, coyotes, pronghorn, deer, moose, and bighorn sheep (Johnson 2000). Flowers are an important source of nectar for butterflies, honeybees, and ants (USDA NRCS n.d.). A variety of bird species (ruffed, blue, and sharp-tailed grouse, quail, prairie chicken, ring-necked pheasant, magpie), cottontail rabbits, chipmunk, black bear and mule deer feed on the berries.

Provides important cover and habitat for many bird species, small mammals, large mammals and livestock (Johnson 2000).

Livestock: Occasionally poisonous to sheep and cattle (prussic acid – Kindscher 1987; hydrocyanic acid in leaves – Droppo 1987), especially leaves injured by frost or extreme drought (Droppo 1987). Moderately palatable to livestock.

Grazing Response: Tolerates moderate grazing. Will resprout from root crown.

Reclamation Potential

Chokecherry has a high suitability for erosion control and soil stability because it can form thickets and spread by rhizomes (Inkpen and Van Eyk n.d.).

Chokecherry is well adapted to disturbed sites and is a fast-growing very competitive shrub (St-Pierre 1993) that has proven to be somewhat salt tolerance (Johnson 2000).

Smreciu and Barron (1997) found that plant salvage was extremely successful if plants were potted and maintained in a nursery for one growing season and placed when dormant.

Commercial Resources

Harvest Methods: Handpicking, using a berry rake, or a small power vibrator, mechanical harvesters (a pull type harvester or a self-propelled harvester) (St-Pierre 1993).

Seeds have been collected by the Oil Sands Vegetation Cooperative for use in the Athabasca oil sands region.

Availability: Available from a wide variety of sources. Both seed and seedlings available.

Cultivars: Numerous cultivars are available for fruit production in Manitoba and Alberta (St-Pierre 1993) and as ornamentals (Wilkinson 1990) but these are not suitable for use in reclamation.

Uses: Established market for jellies, wines, syrup, cough syrups, and ornamental shrub. Also used as windbreakers in the prairies, plains, and western mountains (Johnson 2000).

Notes

P. virginiana is listed as 91% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).

Chokecherry is well adapted to fire disturbance. Because of vigorous sprouting from surviving root crowns and rhizomes, chokecherries have a moderately rapid recovery and density increases following a fire.

Due to the production of hydrocyanic acid formed only after disruption of the plant cell (mechanical injury or a sudden change in temperature), the leaves, bark, stem, and stone of chokecherry become toxic. Only the meaty flesh of the fruit is not toxic (Kindscher 1987, USDA NRCS n.d.).

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Photos 1, 2,4: Wild Rose Consulting, Inc.
Photo 3: Collin Stone.
Line Diagram: John Maywood, used by permission of Bruce Peel Special Collections, University of Alberta.

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