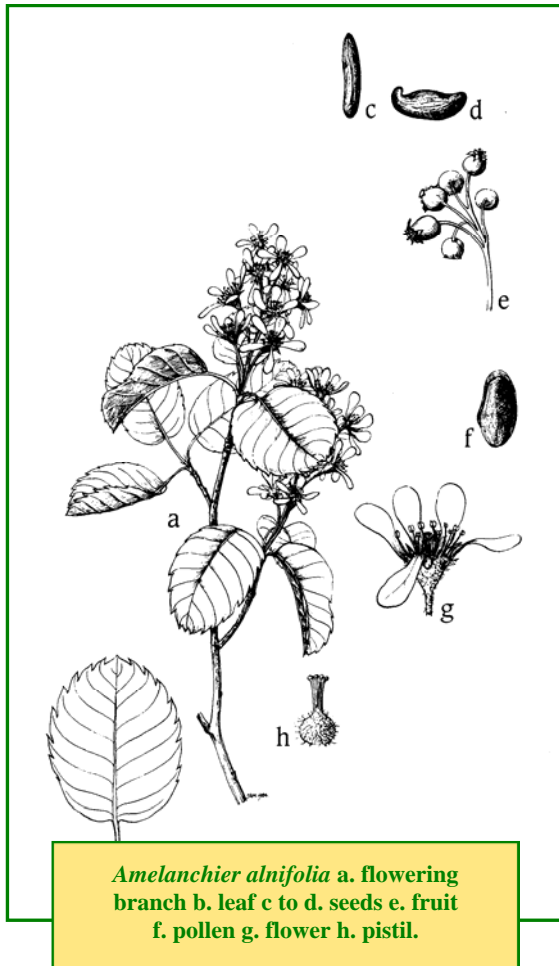


Scientific Name: *Amelanchier alnifolia* (Nutt.)

Family: *Rosaceae*

Common Names: saskatoon, service berry, June berry, shadbush, shadblow, Indian pear, may cherry



Amelanchier alnifolia a. flowering branch b. leaf c to d. seeds e. fruit f. pollen g. flower h. pistil.

Plant Description

Shrub, 1 to 6 m tall, smooth, grey or brown branches; alternate leaves, simple, hairy to smooth beneath, elliptical, coarsely toothed, turning red to red-purple before falling; erect dense fragrant raceme of 2 to 10 white flowers with five petals, terminal, 3 to 4 cm; 8 to 12 mm inflorescence; rhizomes underground (Moss 1983).

Fruit: Spherical pome, 6 to 15 mm, red-purple when ripe, edible, usually nine seeds per pome (Moss 1983).

Seed: 3 x 2 mm ovoid to kidney-shaped, little bumps on leathery surface, red-brown.

Habitat and Distribution

Open woodlands at lower elevations, mountain shrub lands, riparian areas, thickets, coulees or well drained areas (BC Ministry of Forests, Lands and Natural Resource Operations 2001). Prefers dry sites and good exposure to sun (Inkpen and Van Eyk n.d.)

Seral Stage: Typical of young seral forests. It is somewhat shade tolerant but will not tolerate a closed cover (Hardy BBT 1989).

Soils: Prefers coarse, light textured, well drained soils with high organic matter.

Grows best at pH 6 to 7 but will tolerate pH from 5.5 to 7.5 (Hardy BBT 1989); from 4.8 to 8.4 (USDA NRCS n.d.).

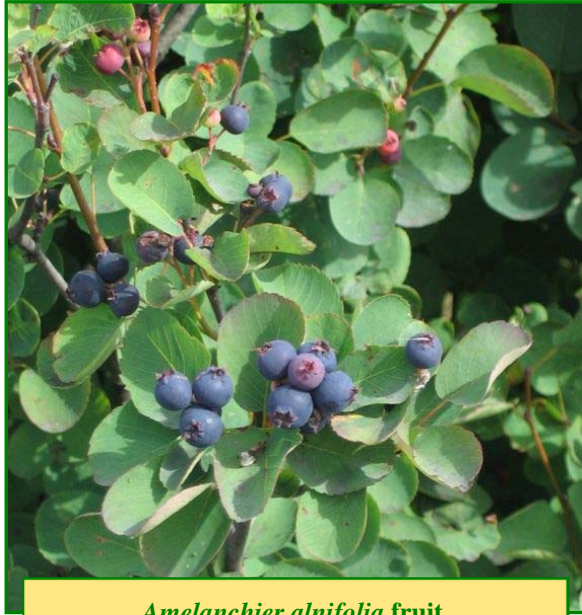
Has a low salinity and drought tolerance (USDA



Flowering of *Amelanchier alnifolia*.

NRCS n.d.). Not found in places subject to annual flooding (Hale et al. 2005).

Distribution: Across Alberta; central Alaska, Yukon, District of Mackenzie to James Bay south to California, Arizona, New Mexico, Nebraska, Minnesota (Moss 1983).



Phenology

Persistent flower buds develop in May, blooming from May to early June of the following year. Fruit ripens in July and seeds are mature at that time.

Pollination

Assisted by bees and other insects. Although self-pollinating, greater production seems to result from insect pollination (Fryer 1997).

Seed Dispersal

Birds and mammals (Fryer 1997).

Genetics

$2n=34$ (Moss 1983).

Seed Processing

Collection: Easy to strip clusters of berries from branches. Collect as soon as berries are ripe otherwise berries will be lost to wildlife (Bonner and Karrfalt 2008).

Seed Weight: 2.65 g/1,000 seeds.

Fruit/Seed Volume: 1,590 fruit/L average (14,300 seeds/L fruit).

Fruit/Seed Weight: 3,350 fruit/kg average (30,100 seeds/kg fruit).

Average Seeds/Fruit: 9 seeds/fruit.

Cleaning: Macerate in water, decant and screen then dry.

Harvest Dates: Late July and early August; July 1 to August 15 (Formaniuk 2013).

Storage Behaviour: Orthodox; store seed dried to low moisture content in hermetically-sealed containers at a low temperature, preferably -18°C or cooler (Fassil and Engels 1997, Royal Botanic Gardens Kew 2008).

Storage: Store dry in containers at 5°C (Young and Young 1992). Hermetic air-dry storage at 5°C recommended; 76% germination following; viability maintained for 8 months in hermetic air-dry storage at 5°C (Royal Botanic Gardens Kew 2008).



Longevity: Seed remains viable for 5 to 7 years if kept at cool temperatures (Luna et al. 2008). 15 years open storage in a warehouse (Royal Botanic Gardens Kew 2008). 84% viability was maintained after 10 years of storage (Fryer 1997).

Propagation

Natural Regeneration: Reproduces by layering, sprout from the root crown, rhizomes and/or seed (Fryer 1997). It reproduces more often by vegetative processes than by seed with good seed crops only occurring every 3 to 5 years (Fryer 1997).

Germination: 80% germination within a month after 120 day cold stratification of fresh seed from north-eastern Alberta (Acharya et al. 1989). Seeds were germinated at a temperature of 21°C (McLean 1967).

Pre-treatment: Cold stratification 90 to 120 days at 3°C (Hudson and Carlson 1999, McLean 1967). 100 days in cold stratification (Wood pers. comm.). Luna et al. (2008) recommended 120 days stratification after seeds are soaked in 3:1 water to 3% hydrogen peroxide and rinsed for 48 hr in water. They also suggest that seeds are washed in water weekly to eliminate all mucilaginous material. There is some evidence that ingestion by bears lengthens the stratification period required to induce germination (Auger et al. 2002).

Success is influenced more by genetics as opposed to environmental conditions (Acharya et al. 1989).

Vegetative Propagation: Reproduces by rhizomes within 1.5 m of parent plant forming dense thickets (Inkpen and van Eyk n.d., Klinkenberg 2010). Root cuttings and suckering as well as softwood cuttings may be used to propagate *A. alnifolia* (Hermesh and Cole 1983). Several inches of new growth when treated with 3,000 ppm IBA (Dirr and Heuser 1987).

Responds well to fire and mechanical disturbances (Fryer 1997).

Micro-propagation: Shoot tip explants (Dirr and Heuser 1987).

Greenhouse Production: Seed directly in 6:1:1 milled sphagnum/perlite/vermiculite/Osmocote controlled

release fertilizer. Maintain greenhouse temperature at 21 to 25°C during the day and 16 to 18°C at night. Irrigate daily. Emergence is usually complete in three weeks (Luna et al. 2008).

Greenhouse Timeline: 16 weeks in the greenhouse till out planting. Can be stored overwinter for spring or September plant (Wood pers. comm.). Grow for 120 days before harvest (Formaniuk 2013).

Aboriginal/Food Uses

Food: Used as a sweetener and in making pemmican (Kindscher 1987, Marles et al. 2000). Can be dried and used as a substitute for raisins (Droppo 1987, Turner 1997). Dried berries can be added to soups (Northern Bushcraft n.d.).

Blackfoot would crush leaves, mix with blood and then dry and use to make a rich broth in winter (Kindscher 1987) or mix berries, fat and blood as a dessert (Royer and Dickinson 1996). Serviceberries contain more than three times the iron and copper as raisins (Kindscher 1987, Royer and Dickinson 1996, Wilkinson 1990).

Medicinal: Branches were used as an oil additive to treat lung problems, coughs, chest pain, muscle spasms, pinched nerves, diarrhoea (roots/stems), fever, flu and colds (Marles et al. 2000). Before ripening the berries can be used to help with diarrhoea but once ripened they can cause it if taken in excessive amounts (Gray 2011). Cheyenne would use leaves to make a medicinal tea (Kindscher 1987).

Other: Fruit is used to make a blue/purple dye (Royer and Dickinson 1996, Wilkinson 1990); wood is used for arrows, bows, lodge frames, canes, basket rims and drying racks (Marles et al. 2000). Roots were ground to make a tobacco substitute (Royer and Dickinson 1996).

Wildlife/Forage Usage

Wildlife: Important browse for ungulates (Hale et al. 2005). Bears, beaver, and hares also feed on various parts of the plant (Hardy BBT 1989, Fryer 1997). Fruit is eaten by bears, chipmunks, squirrels and birds (CYSIP: Botany n.d.).



Dense foliage provides excellent structure for breeding birds (Hale et al. 2005).

Livestock: Palatable to livestock. Most beneficial in spring for cattle, goats and sheep. Nutrient levels remain high throughout the year. Utilized more after mid-summer (Fryer 1997, Hardy BBT 1989).

Grazing Response: Decreaser (Hale et al. 2005), resistant to moderate browsing, leading to dense growth when inner foliage is not browsed. Continuous use will cause stands to decline (Fryer 1997, Hardy BBT 1989, Tannas 2003).

Reclamation Potential

In a review of Syncrude and Suncor plot data, Geographic Dynamics Corp. (2006) found that *A. alnifolia* invaded plots infrequently, but where they did become established they increased in abundance over time.

Saskatoon can be used in soil and slope stabilization as it spreads readily, and has a massive root crown, horizontal and vertical rhizomes and an extensive root system (Hale et al. 2005). Drought tolerance increases success without irrigation. Also effective at attracting wildlife, and with time may provide habitat for small mammals and birds (Fryer 1997, Hardy BBT 1989).

Amelanchier alnifolia also exhibits a conservative growth strategy that enables it to tolerate acidic conditions (Voeller et al. 1998) as well as found to naturally colonize soils contaminated with hydrocarbons (Robson 2003).

Commercial Resources

Availability: Widely available commercially as seed, seedlings, and small shrubs (ANPC 2010). Seeds have been collected by the Oil Sands Vegetation Cooperative for use in the Athabasca oil sands region.

Cultivars: Numerous horticultural cultivars are known but none are suitable for reclamation purposes.

Harvest Methods: Shaking berries into hoppers or onto tarps below, especially in extensive stands and nurseries.

Uses: Commercially grown for jellies, jams, fruit and syrups.

Notes

A. alnifolia is listed as 82% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).

A. alnifolia has a high fire tolerance, sprouting from the rhizomes and crown after fire (Fryer 1997).

So important were Saskatoons to the Interior (BC) Salish peoples that they developed a classification system for different varieties that is more detailed and complex than that of professional taxonomists (Turner 1997).

Pits contain cyanide-like toxins which are destroyed by cooking or drying (Northern Bushcraft n.d.).

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