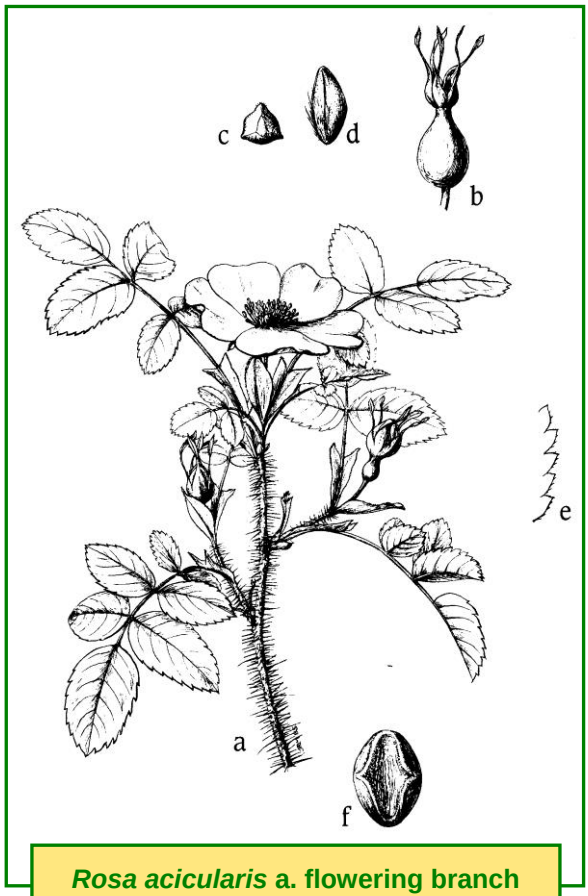
Scientific Name: *Rosa acicularis* Lindl. **Family:** *Rosaceae*

Common Names: prickly rose, bristly rose



***Rosa acicularis* a. flowering branch b. fruit c&d. seeds e. leaf serrations f. pollen**

Plant Description

Low bushy shrub, 0.5 to 1.5 m high, perennial, rhizomatous, roots 20 to 30 cm deep (Viereck and Schandelmeier 1980); stems stout, densely covered with straight slender thorns; compound leaves of 3 to 7 pubescent leaflets, each 3 to 4 cm long sharply double-toothed; single pink flowers 5 to 7 cm across (Moss 1983).

Fruit: Fleshy, red hypanthium, ovoid to pear-shaped or spherical; numerous achenes.

Seed: 3 to 5 mm, straw to golden yellow seeds, angular/planar pear-shaped, smooth to rough textured (Moss 1983).

Habitat and Distribution

Common in open woods and fields throughout the prairies, banks, roadsides and thickets.

Common in the shaded undergrowth of mixed woods and deciduous forests (Hardy BBT 1989).

Soil: Adapted to a wide range of soil moisture and texture conditions. High acid tolerance, flood tolerance and low nutrient soil tolerance (Hardy BBT 1989).

Distribution: Widespread and common across North America, throughout the boreal forest region. Alaska, Yukon, District of Mackenzie to Hudson Bay, Quebec south to British Columbia, Idaho, Montana, Colorado, Nebraska, Iowa, Minnesota, Vermont (Moss 1983).

Phenology

Flowers late May to late June. Fruits ripen from July to August (Crane 1990).

***Rosa acicularis* flower; the floral emblem of Alberta.**

Pollination

Pollinated by bees, butterflies and other insects (Plants for a Future n.d.).

***Rosa acicularis* plant growing on the edge of a forest opening.**

Seed Dispersal

Animal dispersed by numerous predators (Crane 1990).

Genetics

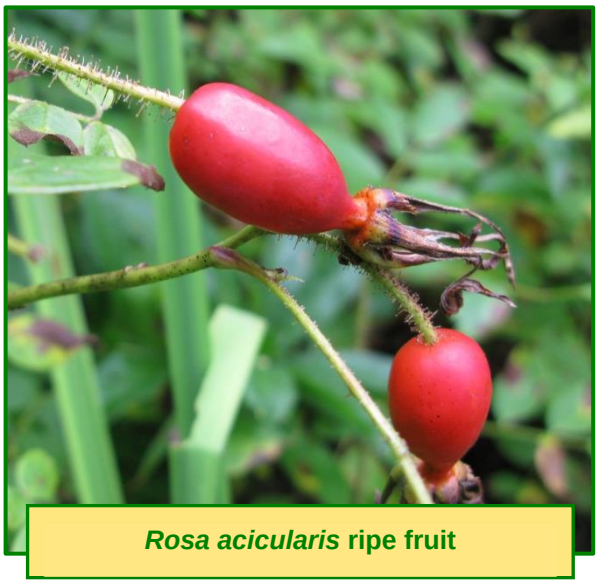
2n=42, 56 (Moss 1983).

Symbiosis

Wasps lay their eggs in the leaves causing gall-like red pincushions (CYSIP: Botany n.d.).

Seed Processing

Collection: Fruit can be easily pulled from branches.
Seed Weight: 10 to 13 g/1,000 seeds (11.8 average).
Fruit/Seed Volume: 380 to 528 fruit/L (458 average); 10,500 seeds/L fruit.
Fruit/Seed Weight: 1,120 to 1,340 fruit/kg (1,190 average); 27,300 seeds/kg fruit.
Average Seeds/Fruit: 23 seeds/fruit.
Harvest Dates: For greater germination, collect fruits when not fully ripe (King 1983). Collect when the hips are bright red or orange-red (Banerjee et al. 2001); approximately late August in northeastern Alberta.
Collect September 1 to February 28 (Formaniuk 2013).
Cleaning: Mash fruit in a sieve (1.40 mm works well). A blender with taped blades may also be used to macerate the fruit. Suspend residue in water allowing seeds to settle. Decant water and chaff. Repeat suspension and decanting until only seeds remain. Alternatively, a tomato de-seeder may be used, as achenes are approximately the same size. Allow seed to dry at room temperature over a moving air stream.
Storage Behaviour: Unknown, likely orthodox allowing seed to be dried prior to cold storage.
Storage: Store dry in sealed containers (Young and Young 1992).



***Rosa acicularis* ripe fruit**

Propagation

Natural Reproduction: By seed and from rhizomes (Hardy BBT 1989).
Germination: Field emergence is more successful than *in vitro* germination. Most seeds take 2 years to

germinate – during the 1st growing season the seeds develop and mature, the next growing season provides the warm stratification period and the subsequent winter provides the cold stratification period. Seeds germinate during the next spring shortly after snowmelt (Densmore and Zasada 1977).
A temperature of 25° C was found to provide the best germination (Baskin and Baskin 2001).
Pre-treatment: Densmore and Zasada (1977) had success with 3 months warm stratification followed by 2 months cold stratification.
Needs 120 day cold stratification before sowing (Wood pers. comm.).
King (1983) recommended 2 months warm stratification followed by 4 months cold stratification.
Formaniuk (2013) recommends 120 days stratification.
Direct Seeding: More than 1% emergence by sowing seeds on oil sands reclamation sites.
Fruit Sowing: Up to 5.3% emergence by year four.
Seeding Rate: 100 seeds/m² and 1.3 fruits/m² to obtain approximately 1 plant/m².
Vegetative Propagation: Spreads naturally by rhizomes (Fedkenheuer et al. 1980). If there is an easily accessible source, using root cuttings for large-scale propagation is feasible. Stem cuttings from dormant hardwood can also be successful if used with a hormone treatment, with coarse material for the rooting media, and heavy watering to maintain high humidity levels (Hermesh and Cole 1983).
Budding, suckers, layering, and grafting (Babb 1959).
Softwood cuttings have been successful (Fung 1984, Smreciu and Barron 1997) especially when treated with 3,000 to 5,000 ppm IBA-talc or K-IBA in water, placed in a peat/perlite medium and kept under mist (Dirr and Heuser 1987).
Greenhouse Timeline: 16 weeks in the greenhouse prior to out-planting. Dormant seedlings can be stored frozen over winter for spring or early fall planting (Wood pers. comm.). Grow for 100 days before harvest (Formaniuk 2013).

Aboriginal/Food Uses

Food: Once seeds are removed, rose hips are eaten fresh (high in vitamin C – Royer and Dickinson 1996, Turner 1997; three rose hips contain as much vitamin C as one orange – Gray 2011). They can be made into a jelly, beverage or syrup. Pink flower petals can be eaten as a treat or made into jelly (Gray 2011, Marles et al. 2000). Seeds are rich in Vitamin E which can be extracted by grinding, boiling and straining and then using in jams (Droppo 1987).
Medicinal: Eaten raw, the fruit can prevent colds; rose petals can be used as a heart tonic and anti-sting; boiled branches can be used for menstrual relief; root decoction can treat diarrhoea, cough, regulate menstruation, and used as eye drops to treat soreness; and the roots as part of a compound medicine can treat chest colds (Marles et al. 2000). A tea brewed from the roots was used to treat diarrhoea (Gray 2011, Wilkinson 1990). Petals used to treat dry skin (Gray 211).
Other: British Columbia tribes used branches for arrows and hollowed stems out to make pipe stems (Wilkinson 1990); others smoked leaves and bark, alone or with other tobacco (Turner 1997).

Wildlife/Forage Uses

Wildlife: Important food source for grouse, snowshoe hares, microtine rodents, and mule deer. In the fall the black bear, grizzly bear, rabbits and beavers eat the fruits, stems and foliage. Coyotes, bears, grouse and other small animals are said to be fond of rose hips (Turner 1997). Small mammals use the thickets for shelter and birds use them for nesting sites and protective cover (Crane 1990).
Livestock: Excellent summer browse for big game and livestock (Crane 1990).
Grazing Response: Resistant to heavy browsing. As a natural self-defence to over-utilization, with time woody growth become less palatable and spines become stiffer, at this point, plants are often avoided (Tannas 1997).
Extensive deer browsing increases shoot production (Smreciu and Barron 1997).

Reclamation Potential

Rosa acicularis is a prolific seed producer in some years especially on open sites. Natural pioneer on disturbed sites where they increase soil stability and control erosion (Tannas 1997). Recommended for revegetation on moist to wet lands in Alaska and Alberta.

Highly adapted to disturbance (King 1983) and a wide range of soil textures and moisture levels.

Proven tolerance to drought on amended oil sand tailings and acidic situations in Alberta (Fedkenheuer et al. 1980).

Spreads rapidly and have shown to recover rapidly following logging (Crane 1990).

***Rosa acicularis* seed**

Commercial Resources

Availability: Widely available from nurseries in Alberta and Saskatchewan.

Uses: Vitamin C, essential oil, floral arrangements and jams.

Notes

Rosa acicularis is listed as 89% intact (less occurrences than expected) in the Alberta oil sands region (Alberta Biodiversity Monitoring Institute 2014).

Prickly rose is fire resistant. The deep rhizomes growing in mineral soil make it well adapted for sprouting after a fire (Crane 1990).

Photo Credits

Photo1,2,4: Wild Rose Consulting, Inc.

Photo 3: Qwert1234 @ Wikimedia Commons 2013.

Line Diagram: John Maywood, used by permission of Bruce Peel Special Collections, University of Alberta.

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