



Growing Saskatoons

*In the Inland Northwest
& Intermountain West*

by Danny L. Barney, Jo Ann Robbins, and Esmaeil Fallahi

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Saskatoons are shrubs that bear edible blue to purple fruits, somewhat resembling blueberries. Depending on whom you ask, the flavor has been likened to blueberries, apples, crabapples, and almonds. The fruits are not actually berries, but are pomes, like apples and pears. Saskatoons are known by many other names, including Juneberry, serviceberry, and shadbush. They belong to the genus *Amelanchier* in the rose family.

The plants are generally shrubby, growing about 6 to 30 feet tall, depending on species and cultivar. Leaves are alternate, oblong and deciduous. Cultivars have varying yellow to reddish fall color.

Taxonomists recognize about 20 species of *Amelanchier* and perhaps 8 types or taxonomic varieties within those species. Saskatoons were very important to Native Americans, who identified many types, based on fruit and plant characteristics. Most cultivated saskatoons come from *Amelanchier alnifolia*, which is widespread across North America, from Arizona and New Mexico to southern Alaska and the Yukon, and east to Manitoba and the Dakotas. Saskatoons are grown commercially, primarily in the Canadian Prairie Provinces of Alberta, Saskatchewan, and Manitoba.

Selecting a site

While saskatoon fruits generally resemble blueberries, saskatoon plants are far more adaptable in terms of soil and climate requirements. Depending on variety, saskatoons are cold hardy to near -60°F. Saskatoons also adapt well to a wide range of soil types and pH values.

While saskatoons are adaptable to a range of soil types, they grow best on well-drained soils. Sandy loams and loams are best, but well-drained silt loams support acceptable growth. Clay soils can create root problems. Sandy soils



Ripe saskatoons

do not hold moisture or nutrients well, but are acceptable with adequate irrigation. Drip irrigation is preferred to reduce foliar diseases.

Commercial saskatoon production is not recommended on poorly-drained sites, including those with permanent or seasonal high water tables. For landscapes on sites with water tables within about 3 feet of the soil surface, with clay soils, or that are otherwise poorly drained, plant on raised beds 2 to 3 feet high and 10 to 20 feet in diameter.

Saskatoons appear to grow best at slightly acid pH values between about 6.0 and 7.0, although they have grown well in University of Idaho trials at pH 5.5 and reportedly tolerate alkaline pH values near 8.0. High concentrations of soil organic matter are not required for saskatoon production.

The bushes bloom in early spring, typically from early to late May, depending on weather and location. Flowers may appear before or with



new leaves, depending on variety. The early flowers are susceptible to frost damage and it is best to avoid planting in a frost pocket. Full sun locations are best.

Recommended cultivars

Saskatoon culture is in its infancy and most or all commonly available cultivated varieties (cultivars) have been selected from wild plants or open-pollinated seedlings on farms. About 26 cultivars have been named and six make up most of the commercial plantings in Canada. Several other cultivars were selected as ornamentals, rather than for fruit quality.

The following recommendations are based on trials conducted at the University of Idaho in Sandpoint and commercial production in Canada. Part of the following information on cultivars was provided by Dr. Richard St-Pierre of Agriculture and Agri-Food Canada in his online guide, *Growing Saskatoons - A Manual for Orchardists* (<http://www.prairie-elements.ca/saskatoons.html>).

Most saskatoon cultivars are self-fruitful and do not need cross pollination. Plantings of a single cultivar usually perform well. "Altaglow" appears to be self-sterile and should be planted with another cultivar.

Saskatoons for fruit production

Honeywood—Stems grow to about 15 feet high, with a spread of 12 feet. Blooms up to a week later than most saskatoon cultivars and bears large clusters of medium to large fruits. Very productive. Possibly some resistance to powdery mildew. Produces few suckers. A good choice for locations prone to spring frosts.



Saskatoon flowers

Martin—A seedling of Thiessen and resembles its parent. Selected for large fruit and uniform ripening.

Northline—Stems grow to about 12 feet high with a spread of 18 feet. Very productive. The berries are medium to large, sweet, flavorful, and resist cracking. Possibly susceptible to wooly elm aphid. Produces many suckers.

Pembina—Grows to about 15 feet high with a spread of 15 feet. Fruits are rather small but have excellent flavor. They are susceptible to cracking if the plants receive too much moisture. Productive. Possibly susceptible to Entomosporium leaf spot and wooly elm aphid. Produces few suckers.

Smokey—Stems grow about 14 feet high with a spread of 18 feet. The rather small fruits have good flavor and are very sweet, but are seedy and can ripen unevenly. Very productive and was once the main cultivar for Canadian farmers. Possibly susceptible to Entomosporium leaf spot and Cytospora canker. Produces many suckers.





Saskatoon fruit in various stages of ripeness

Thiessen—Stems grow to about 15 feet high with a spread of 18 feet. Blooms earlier than most commercial cultivars, perhaps making it somewhat more susceptible to spring frosts. The berries are large and have excellent flavor, but can ripen unevenly. Partially resistant to powdery mildew but susceptible to *Cytospora* canker. Very popular for U-pick farms. Moderately suckering.

Ornamental Saskatoons

Altaglow—A tall, columnar shrub that grows about 20 feet high with a spread of 10 feet. The berries are large, white, and sweet but bland. Self sterile, so plant another cultivar nearby to set fruit. Produces brilliant fall foliage and was selected for use in large landscapes.

Paleface—A small plant that grows to about 6 feet high and produces large, white, mild-flavored fruits. Few suckers.



Regent—Grows to about 6 feet high, with a spread of 6 feet. The small fruits are dark blue, sweet, mild-flavored, and have few, small seeds. Possibly resistant to *Entomosporium* leaf spot and saskatoon-juniper rust. Moderate to light suckering. Attractive fall foliage.

Preparing your site and planting

Saskatoons do not compete well with aggressive weeds. In University of Idaho trials, quackgrass and Canada thistle were particularly damaging. As with any fruit crop, take the time to eradicate weeds or turf before planting your crop. Weed control is discussed later in this guide.

On the Canadian prairies where saskatoons are grown commercially, farmers use windbreaks to protect their crops from drying winds. If your site experiences frequent and prolonged winds, especially during winter, plant saskatoons in locations where they will be sheltered from the wind.

Saskatoons can grow to be large plants. For gardens or hand-picked field crops, space your rows 10 to 12 feet apart. If you plan to use a mechanical harvester for a commercial farm, the row spacing will be wider. Consult with the harvesting equipment supplier before planting. Within rows, saskatoons are planted from 1 to 5 feet apart. The closer spacings are used for high-density commercial fields, which provide early and high yields, but also require more labor and intensive management. If you are new to saskatoon culture and will be hand harvesting, you will probably find spacings 4 to 5 feet apart easier to manage. Spacing the plants farther apart also improves air movement and helps reduce disease problems.

For landscapes, the spacing will depend on the cultivar that you choose. With the exception of "Paleface" and "Regent," the saskatoon cultivars

recommended above grow 15 to 20 feet tall with a spread near 20 feet. Use these as specimen plants in large landscapes.

Purchasing high-quality plant materials is important for a healthy, productive orchard or landscape. Saskatoons are available in containers, as bare-root plants, and as tissue-cultured plants. Container-grown plants are convenient as they do not require special storage before planting and can be planted at any time, provided they are acclimated to the site and weather conditions (hardened off). For that reason, container-grown plants are well suited for home gardens. When purchasing container-grown plants, carefully remove the pots and examine the root balls. Reject any plants that have heavy circling roots or other root problems. Plants 1 to 2 feet tall generally establish well.

Bare-root saskatoon plants are typically used by commercial growers. As with container-grown plants, reject any with circling or girdling roots and try to obtain plants 1 to 2 feet tall. Plants that are fully dormant can be stored in a cooler at about 30°F to 32°F until planting. Plants that have broken dormancy must be protected from freezing. In either case, keep the roots moist, but not wet, during storage and planting. For plants that have broken dormancy, wait to plant until the risk of frost has passed.

Tissue-cultured saskatoon plants are usually quite small and tender, and must be grown in a transplant bed or container until they are large enough for the field or garden. Tissue-cultured plants are generally best left to professional nurseries.

Spring planting is generally best for saskatoons, although container-grown plants that have hardened off can be planted at any time.

Spring planting allows the roots to establish before high summer temperatures and provides a longer growing season for root and shoot growth. The primary growth period for saskatoons is spring through early summer. Mid-summer planting, particularly with bare-root plants, can decrease survival and growth. Fall planting can result in problems with frost heaving and poor survival. Irrigation is essential if planting during late spring or after.

Apply any desired soil amendments to the crop row or planting bed and till into the soil before planting. Do not add soil amendments or fertilizers to the planting holes. Saskatoons generally do not require fertilization at the time of planting, assuming that you have corrected any serious nutrient problems before planting.

Dig planting holes or create planting furrows large enough to set the plants into the ground with as little disturbance to the roots as possible. If you have to prune the roots to fit the hole, the hole is too small. Be sure to rough up the sides of the planting holes to break any glaze formed by an auger or shovel.

Set the plants at the same depth they grew in the nursery. For container-grown plants, make the holes deep enough to just cover the root ball with soil. Irrigate heavily immediately after planting to settle the soil around the roots and eliminate air pockets. After planting, irrigate often enough to keep the soil in the root zone moist, but not wet.

Mulches can be used to help control weeds and keep the soil moist around the new transplants. Because mulches can slow soil warming and drying in spring, they should not be used on naturally wet or cold soils. Organic mulches include bark, sawdust, or compost. These materials help



control annual weeds while conserving soil moisture and reducing soil temperatures. They can, however, increase girdling damage to the saskatoons by providing habitat for mice and voles.

Black plastic film and landscape weed barrier fabrics are also used in saskatoon production. With plastic film mulch, you will probably have to install irrigation lines under the plastic to apply water and fertilizers. Although more expensive than plastic film, weed barrier or landscape fabrics effectively control many weeds, but allow water and fertilizer to penetrate through the fabrics to the root systems. The fabrics also last longer than plastic film. As with organic mulches, these materials should not be used on naturally cold, wet soils.

Your saskatoons should not be pruned at the time of planting, other than to remove damaged stems or roots.

Caring for your plants

Irrigation

One goal in irrigating saskatoons is to keep the soil in the root zone moist, but not wet. Another goal is to keep the foliage dry. Many saskatoon cultivars are susceptible to fungal leaf spot (caused by *Entomosporium mespili*). Using drip irrigation or otherwise applying water to the bases of the plants helps prevent this disease from infecting your plants. If you must use overhead irrigation, irrigate early in the morning to allow the foliage to dry before nightfall. Avoid overhead irrigation on cool, cloudy, or rainy days.

Fertilization

Saskatoons are a relatively new crop and we still know little about their nutrient needs. Since wild saskatoons flourish throughout the Inland North-



Wild saskatoon bush in Montana

west and Intermountain West, we can surmise that the plants will grow and produce fruit on reasonably fertile soils without high fertilizer inputs.

Particularly for commercial production, a pre-plant soil test is highly recommended to determine soil pH, organic matter concentration, and concentrations of nitrogen, phosphorus, potassium, calcium, sulfur, and magnesium. If your soil pH is below 5.5, also have the laboratory determine the liming requirement to move the soil pH into the 6.0 to 7.0 range. Before planting is the best time to correct pH problems or deficiencies with phosphorus, potassium, calcium, and magnesium.

If your soil pH is between 5.5 and 7.0, nitrogen, phosphorus, and potassium are likely the nutrients most needed in fertilizers. At soil pH values above 7.0, micronutrient deficiencies such as iron, manganese, and zinc can occur. Boron deficiencies are sometimes encountered in this region on fruit crops. Boron and other micronutrient deficiencies are typically treated with fertilizers applied directly to the foliage, rather than the soil. While exact fertilizer recommendations for



Table 1. Amount of fertilizer to apply to each saskatoon bush

Year	Dried manure		Commercial fertilizers		
	Cow or horse (pounds)	Poultry or rabbit (pounds)	10-10-10 (ounces)	16-16-16 (ounces)	21-0-0 (ounces)
Planting	5	1.5	4	3	2
2	7.5	2.0	6	4	3
3	10	3.0	8	5	4
4+	12.5	3.5	10	6	5

Note: 10-10-10 represents a fertilizer containing 10% each nitrogen (N), phosphorus (P), and potassium (K). 21-0-0 is ammonium sulfate and contains no P or K. Use as a supplement with complete fertilizers or where soil and foliar tests indicate adequate P and K. Cow and horse manures contain approximately 0.5% N. Poultry and rabbit manures contain approximately 1.8% N. Manures contain varying amounts of P, K, and other nutrients.

saskatoons have yet to be developed, table 1 should provide a starting point. Adjust your fertilization program based on plant growth, fruit yields, and leaf color.

Stunted or slow-growing plants, poor flower and fruit set, and yellowish leaves can indicate nitrogen deficiency and the need for more fertilizer. Very vigorous, upright growth with dark green leaves and possibly poor fruit set can be caused by too much nitrogen. Reduce your nitrogen fertilization. Fertilization for many fruit crops is determined by analyzing the leaves to measure the nutrient concentrations in the plant. Unfortunately, foliar nutrient standards have not yet been determined for saskatoons.

Pruning

Pruning saskatoons is important, particularly when the plants are grown for fruit production. Pruning rejuvenates the bushes and helps ensure high and consistent yields and healthy plants. The goals in pruning saskatoons are to replace all of the fruiting wood every 3 to 4 years, keep the plants short enough to comfortably harvest, and maintain open shapes that allow good light penetration and air movement. In practice, pruning

saskatoons is quite similar to pruning blueberries or currants. Pruning is usually done in early spring before new growth starts.

For the first three years after planting, prune only to remove dead, damaged, or diseased stems. Remove stems that droop close to the ground at the same time. Cut these off at ground level using sharp pruning shears or long-handled loppers.

Depending on the plants' growth, regular pruning begins about 3 to 6 years after planting. Remove $\frac{1}{2}$ to $\frac{1}{4}$ of the stems, targeting those more than about 6 feet tall and those that show declining fruit production. Also, remove weak new stems and any stems that lie close to the ground. Saskatoon stems are normally not shortened. Instead, clip stems off at ground level. The next year, remove $\frac{1}{2}$ to $\frac{1}{4}$ of the oldest stems and repeat this practice yearly. Eventually, you develop a system in which the oldest stems are 3 to 4 years old. The best fruit production for saskatoons usually occurs on vigorous 2- to 4-year-old stems.

In the landscape, modify these steps to meet your needs. In general, you will prune to remove dead and damaged stems and to thin out the stems to create an attractive specimen shrub. The



mature heights of selected cultivars are given earlier in this guide. Strive for an open, spreading, vase-shaped shrub with a spread about equal to its height. Occasionally remove old stems to maintain a healthy and vigorous shrub.

Weed control

Weed control is very important for saskatoon production. Invasive, rhizomatous weeds like Canada thistle and quackgrass proved especially troublesome for saskatoons in University of Idaho research. The best weed control strategy is to eradicate weeds before planting. Systemic herbicides that kill both weed tops and roots are useful in preparing a planting site. For organic growers, a combination of green manure crops and fallowing for one to several years can help reduce weed problems.

Removing all weeds around the saskatoon bushes and in the alleys between crop rows (clean cultivation) is a common practice in saskatoon orchards. Keep hand or mechanical cultivation no more than about 2 inches deep to avoid damaging the saskatoons' roots.

Very few herbicides are registered in the United States for use in established saskatoons. Before using any herbicide, read the label to ensure it is registered for your area and crop. Follow label directions closely.

Maintaining a grass cover crop between saskatoon crop rows helps control many weeds and provides a clean, comfortable working surface that is especially appealing to U-pick customers and home gardeners. For an alley cover crop, use a non-invasive, perennial grass or grass mix and mow frequently enough to prevent it from going to seed. Use hand weeding, plastic or fabric mulches, or herbicides to keep the grass out of the crop rows. Remember to provide for the cover

crop's irrigation and fertilization needs. Dwarf clover can be mixed in with the cover crop grass seed to help provide for the cover crop's nitrogen needs.

Controlling pests and diseases

Saskatoons are susceptible to many pests and diseases. Wild saskatoons, which are common throughout the Inland Northwest and Intermountain West, serve as reservoirs of pests and diseases. Among the most common diseases are saskatoon-juniper rust, Entomosporium leaf and berry spot, and powdery mildew. Fire blight can become serious in some locations and years, as can brown fruit rot. Stems can be damaged or killed by Cytospora canker. Many insect and mite pests attack saskatoons, including woolly elm aphid, saskatoon bud moth, apple curculio, sawfly, mites, leaf rollers, pear slug, shoot borers, and others.

Integrated pest management programs are highly recommended for saskatoons. Start with pest- and disease-free planting stock from a certified nursery. If junipers or eastern red cedar on or around your property develop rust galls, eliminating those plants may help reduce rust problems on your saskatoons. Eliminating wild saskatoons on and around your property may help reduce other disease and pest problems.

Keep your bushes pruned to open shapes to maintain light penetration and air movement. Remove diseased and damaged wood as quickly as possible, disinfecting your tools between cuts with 70% alcohol or 10% household bleach solution in water if you suspect fire blight or canker.

Scout frequently for pests and diseases. The online guide, *Growing Saskatoons – A Manual for Orchardists* will help you identify saskatoon pests and diseases. Unfortunately, few pesticides are registered for saskatoons in the United States.



Before using any pesticide, ensure that it is registered for saskatoons in your area. Follow label directions closely.

Enhance beneficial mite and insect populations by planting insectary crops among or near your saskatoons. Insectary crops provide food and shelter for beneficial organisms and their young that also feed on plant insect and mite pests. Commonly used insectary crops include dill, chamomile, hairy vetch, Queen Anne's lace, yarrow, white clover, cowpea, and cosmos. For more information on insectary crops, refer to *Farmscaping to Enhance Biological Control* at <http://attra.ncat.org/attra-pub/PDF/farmscaping.pdf>. Protect beneficials by using pesticides carefully and at the proper times, according to the product labels.

Harvesting and using your fruit

Saskatoons typically ripen during July in the Inland Northwest and Intermountain West, although elevation, weather, and variety all affect ripening. Since saskatoons, like their apple cousins, continue to ripen after picking, you can pick fruit that is not fully ripe, if necessary. Fruit that is somewhat less than fully ripe has a high acid to sugar balance and serves well for processing. Fully mature fruits are sweeter and have a fuller fruit flavor, but are also softer and more easily damaged during picking.

A general rule is to wait until about two-thirds of the fruits are fully ripe to begin harvesting. Harvest only ripe fruits and discard damaged, overripe, or green fruits that end up in the picking container. Plan on harvesting each bush about three times over several weeks. Overripe fruit spoils quickly and is best not harvested for sale. Harvest early in the morning when the fruits are dry and cool. Pick into shallow containers, no more than about 6 inches deep, to avoid damag-

ing the fruits. Half-pint to quart containers work well for fruit that will be sold. Refrigerate the fruit quickly to keep it from spoiling.

Saskatoons for home use and market gardens are generally hand-harvested, although hand-held mechanical shakers are available for larger market garden operations. For large-scale saskatoon production, over-the-row harvesters are often used to reduce labor costs and speed the harvest. If you plan to purchase a harvesting machine, consult with the manufacturer before planting to ensure your plant spacing and field layout are compatible with their machines. Machine-harvested fruit will require additional cleaning and sorting before it is suitable for fresh or processing markets.

Remove damaged or diseased fruits and debris and wash the fruits to clean them, but ensure the berries are fully dry before refrigerating or freezing them. Saskatoons for home production can be frozen with reasonable success in a home freezer. Fruits intended for commercial markets are best rapidly frozen using specially designed equipment, and stored in low-temperature freezers.

Saskatoons can be made into a wide array of treats, including jams and jellies, salad dressings, sauces, compotes, bread and muffins, and pastries. Many recipes for this versatile fruit can be found on the internet.

For Further Reading

Growing Saskatoons - A Manual for Orchardists, by Dr. Richard St-Pierre.

<http://www.prairie-elements.ca/saskatoons.html>



Many other guides on berry, grape, and tree fruit production are available from:

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