

Cooperative Extension: Agriculture

Black chokeberry is a multi-stemmed, deciduous, eastern North American shrub. It reaches 4–8 feet in height, but in cultivation, and with selection of hybrids, many plants available in commerce reach only the lower end of this height range. The plant's habit is multi-stemmed, and plants can form large, dense colonies over time.

Leaves are alternate on the stems, simple, 1–3 inches in length and 3/4–2 inches in width. They are obovate in shape (oval, but narrower at the base than near the tip), with fine and regular teeth along the edges. Their upper surfaces are dark green and lustrous, with dark glands on the upper surface of the midrib. Lower leaf surfaces are lighter green. Both surfaces are glabrous (smooth). The petioles are 1/4 inch or less in length. Leaves often grow only on the top 2/3 of plants. The leaves are bright green as they develop in spring, and they darken as the season progresses. Many plants, including some cultivars introduced for ornamental purposes, develop excellent fall color, displaying a mixture of red, yellow and orange.

Black chokeberry flowers have five white petals, and numerous pink stamens. As many as 30 flowers occur in each 2 inch diameter cluster. They open in mid-May, late enough that they are not often affected by late spring frosts. Primary pollinators are small bees.

Black chokeberry fruits are 1/3 – 1/2 inch diameter, glossy and black when ripe. They hang down in clusters from red pedicels, with few-to-30 fruits per cluster. The fruits are pomes (like apples), and each contains 1-5 seeds. They mature primarily in August. Shortly after maturation, the fruits shrivel, and most drop.

[Knudson](#) states that black chokeberry is hardy to USDA Hardiness Zone 3 (-40F to -30F). [Strik et al.](#) notes that black chokeberry flowers late enough in spring to avoid spring frost damage to flowers. It is moderately tolerant of shade and prefers moist acid soils, although it is adaptable to a wide range of soil moisture, being found both in low wet areas and on dry sandy slopes. Common moist natural habitats include bogs, swamps, low wooded areas and clearings. Dry natural habitats include rocky slopes, bluffs and cliffs. It is also found in dry thickets and clearings such as roadsides and power line rights of way. [Minnesota Department of Transportation](#) lists its natural plant communities as bog, dune, open cliff, old field, shaded cliff and grassland; describes it as a pioneer species; notes that it is tolerant of salt spray, drought and soil compaction; states that it grows in poor, excessive and moderate drainage; and describes an acceptable pH range of 5.0 – 6.5.

Plant Taxonomy

Black chokeberry is a member of Rosaceae (Rose Family), and is commonly referred to as black chokeberry, aronia or aroniaberry. The fact that it has been classified in four genera reflects its history of taxonomic difficulty. [Bailey \(1914\)](#) lists it as *Aronia*, and notes that the genus *Aronia* derives from *aria*, a subgenus of *Sorbus*. Bailey (1951) differentiates *Aronia* from *Sorbus* by the features of different leaf serrations, differing arrangement of styles within the flowers, and by the fact that *Aronia* bears glands on the upper sides of its leaf midribs. While it is most widely known as a member of the genus *Aronia*, some taxonomists now classify it as a member of *Photinia*, which is comprised of mostly evergreen plants but which otherwise shares many characteristics with *Aronia* species.

Black chokeberry (*Aronia melanocarpa* (Michx.) Elliot) is also known by these synonyms ([USDA](#), [NRCS](#)):

Aronia arbutifolia (L.) Pers. var. *nigra* (Willd.) Seymour

Aronia nigra (Willd.) Koehne

Photinia melanocarpa (Michx.) K.R. Robertson & Phipps.

Pyrus arbutifolia (L.) L. f. var. *nigra* Willd.

Pyrus melanocarpa (Michx.) Willd.

Sorbus melanocarpa (Michx.) Heynh.

Even within the genus *Aronia*, taxonomists differ in their classification of the chokeberries. Black chokeberry (*Aronia melanocarpa*) and red chokeberry (*Aronia arbutifolia*) are very similar. Both are native to North America, and their natural ranges overlap. [Hardin](#) reports that black chokeberry is native from Newfoundland south to northern Georgia and Alabama, and north to Minnesota and southern Ontario, and that red chokeberry is native from Newfoundland south to central Florida, west to east Texas, but is not found in the Midwest. The two species are very similar, with these differences:

- Black chokeberry produces larger fruits that mature to purplish-black, while red chokeberry produces smaller fruits that mature to red;
- Black chokeberry's fruits mature in late summer and then shrivel and drop, while red chokeberry's fruits mature in fall and persist into winter;
- Black chokeberry is glabrous while red chokeberry is pubescent;
- Black chokeberry tends to have a more rounded habit and remain more fully leaved to the base, while red chokeberry is more upright and tends to be bare at the base; and
- Black chokeberry is naturally found in both wet and dry soils, while red chokeberry is found mostly in wet soils.

Where the two species overlap geographically, they hybridize to form what some taxonomists consider a third distinct species, *Aronia prunifolia* (synonym: *Aronia x floribunda*). [Hardin](#) notes that this group is very similar to black chokeberry, except that unlike black chokeberry, the hybrids produce the excellent red fall foliage color that is characteristic of red chokeberry. [Hardin](#) recommends treating this group of plants as part of the black chokeberry species, while [Krussman](#) treats this group as a separate species. There is likely agamospermy (formation of viable seeds without cross-pollination) in the chokeberries, which helps explain why this hybrid group is found beyond the zone where the two parent species overlap geographically. All of this leads to confusion in commerce as well as in taxonomy, because many plants sold as black chokeberry are valued for their red fall foliage color; in actuality, these may be interspecific hybrids.

Cultivars and Breeding Efforts

Selections and breeding efforts have focused on both ornamental and food attributes of black chokeberry. The following cultivars are known to be available in the U.S.:

- 'Autumn Magic': more compact than the species; brilliant red/purple fall color. Introduced by University of British Columbia, 1996.
- 'McKenzie': 6-12' height. Collected in Former Soviet Union; introduced by NRCS Plant Materials Center, Bismarck ND, 2008.
- 'Morton' (Iroquois Beauty™): 2-3' height. Introduced by the Chicagoland Grows® Program.
- 'Nero': 3-4' height. Developed in Poland.
- 'Viking': 3-6' height, vigorous, widely available. Developed in Finland, 1980.

The following cultivars are documented in literature ([Strik](#); [Kulling and Rawel](#)), but not readily available in the U.S.:

- 'Albigowa': Developed in Poland.
- 'Aron': Developed in Denmark, 1987.
- 'Dabrowice': Developed in Poland.
- 'Egerta': Developed in Poland.

- ‘Fertödi’: Developed in Hungary.
- ‘Hugin’: Developed in Sweden.
- ‘Kurkumäcki’: Developed in Finland.
- ‘Kutno’: Developed in Poland.
- ‘Nowa Wies’: Originated in Poland.
- ‘Rubina’: Cross between Russian and Finnish plants.

The USDA’s Germplasm Resources Information Network (USDA, ARS) holds 18 additional collected black chokeberry accessions.

Genetic and visual characterization of black chokeberry is in progress. [Jeppsson \(1999\)](#) reports little genetic diversity among cultivars in Europe and Russia, compared to the variation found in native populations. [Brand’s](#) testing of black chokeberry ploidy level reveals that those collected in New England are diploid while those collected from outside New England are tetraploid. [Brand](#) also reports that in natural stands, New England plants tend to have less persistent fruit than Midwest plants.

The use of black chokeberry fruits as a source of food colorants has spurred recent research. While the fruits can be harvested over a prolonged period, quality varies during this time; [Jeppsson and Johansson](#) note that berry weight reaches its peak early in the harvest period, anthocyanin levels reach their maximum a few weeks later, and brown compounds (which cause discoloration of the fruit) are at their lowest a week before anthocyanin levels peak. Based on a review of the impact of production and breeding practices on quality of fruits for use as food colorants, [Jeppsson 1999](#) developed these guidelines for Swedish breeding efforts: (1) increase production of anthocyanins; (2) decrease content of brown compounds in relation to anthocyanins; (3) increase stability of the pigment in the fruits; and (4) decrease the content of tannins in the fruit.

Plant Uses

Food / nutraceutical: Black chokeberry fruits are unpleasant when raw (hence the common name), but when processed they have culinary and nutraceutical value. [Smith](#) notes that, historically, the Potawatomi people used the fruits as food and made an infusion of fruits as a treatment for colds. The Abnaki also used the fruits as a food ([Rousseau](#)).

In recent history, black chokeberry has been extensively produced in Russia as a small fruit, used in juice products (mixed with apple juice), wine, compote and pickles ([Kask](#)). It has been commercially grown in Europe where its fruits are used in juice, alcoholic beverages, energizing beverages, and as a food colorant ([Bussieres et al.](#)). Sweden initiated studies to develop this crop in 1986 ([Jeppsson and Johansson](#)). [Knudson](#) notes that fruits can be canned whole, the juice can be used in fruit drinks and jelly, and extracts can be used as natural colorants in the food industry.

The fruit of black chokeberry has higher levels of antioxidants (anthocyanins and flavonoids) than any other temperate fruit. This is generating an increasing level of interest among small fruit producers in the U.S.

Landscape: [Hillier’s](#) notes that black chokeberry was introduced to western gardens as a landscape plant around 1700, and that its value is reflected by its receipt of the Royal Horticultural Society’s Award of Merit in 1972. Its ornamental attributes include three seasons of interest: white flowers in spring, lustrous green foliage in summer and black fruits in late summer, and bright yellow-orange-red foliage in autumn. There is growing interest in this plant as a multi-season native shrub for landscapes in the eastern U.S. It is easy to propagate and produce in nurseries. Its adaptability to a wide range of soil conditions and freedom from major problems makes it a good candidate for wetland reclamation projects, roadside and highway plantings and parking lots.

Wildlife: In wildlife habitat and in wildlife gardens, black chokeberry provides browse for white-tailed deer and

rabbits, and fruits for ruffed grouse, sharp-tailed grouse and prairie chickens ([USDA](#), [NRCS](#)).