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Incorporating Chokeberry (*Aronia*) into a Home Landscape

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Aronia (*Aronia spp.*) is a deciduous shrub native to Eastern North America. It is commonly referred to as chokeberry because its berries have an astringent bitter taste. The berries can be processed to make jams, jellies, syrups, juices, wine, and energizing beverages. There has been renewed interest in this berry because it has higher levels of antioxidants and tannins (anthocyanins and flavonoids) than many other temperate fruits (Wu et al., 2004). The plant itself also has minimal issues with diseases and pests when grown in good soil conditions and climates conducive to chokeberry, including much of Nebraska (see discussion below). Growing and maintaining this berry is quite simple because it does not need trellising, spraying, or bird netting. This plant is also self-pollinated as well as cross-pollinated, ensuring that berries will follow flowers.

Either black or red chokeberry can be a great addition to a home landscape, because of their three-season (and even four-season) appeal. In the spring, showy white flower clusters appear (Figure 1). In summer, this shrub has dark green foliage. In the fall, there will be beautiful orange-to red-colored leaves, and the berries will ripen with vibrant tones of green, red, orange, and/or purple color depending on the cultivar (Kask, 1987). Berries often persist into winter, giving the plant winter appeal. These traits heighten its appeal for inclusion in an edible landscape design, both for humans and wildlife. Whether this shrub is used as a hedge, as a border, or in a corner, it takes center stage as it provides structure and texture.

Cultivar Selection

Black chokeberry—*Aronia melanocarpa* (Michx.) Elliott

Aronia melanocarpa, also known as black chokeberry, possesses large glossy black fruit that ripens in late July through

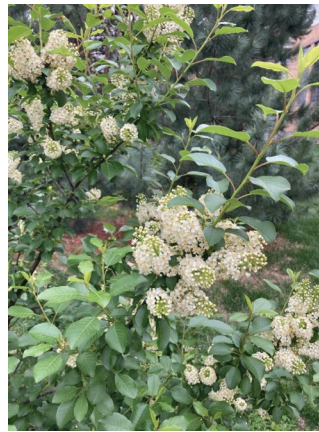


Figure 1. *Aronia* white flowers in the spring Photo by C.J. Jean



Figure 2. Mature black chokeberry at Native 32 Winery Photo by C.J. Jean

August. Its growth originates from the crown, and it does not sucker aggressively, which many homeowners may appreciate. There are both landscaping and fruit production cultivars available, but all *Aronia* have shiny dark green leaves, white umbels of flowers, and bright red fall foliage, plus it has good resistance to pests and diseases compared to many other fruit-bearing species (Wiederholt, 2007). Black chokeberries are smaller than red chokeberries, with an average height ranging from 4 to 8 feet (Figure 2). Black chokeberry flowers are late enough in the spring to avoid spring frost damage to its flowers. Some black chokeberries have larger fruit with a less bitter, more flavorful taste. Once ripe, berries can be harvested, or left on the shrub for wildlife and winter interest. If not first eaten by birds and other wildlife, the berries will eventually drop off. This species can be found throughout its native range in the Northeast and Midwest, as well as eastern Canada, in both damp/wet and dry soils. Among the cultivars of black

chokeberry available at nurseries and greenhouses are ‘McKenzie’, ‘Iroquois Beauty™’, ‘Galicjanka’, ‘Autumn Magic’, ‘Low Scape™ Mound’, ‘Low Scape™ Hedger’, ‘Black Ground Hug™’ (sometimes sold as ‘Groundhog’), and ‘Glossy Black’.

As an ornamental shrub, the black chokeberry is more compact and has fuller foliage (Figure 2). Across the northern states, black chokeberries are planted in naturalized and woodland gardens, for erosion control, in windbreaks, and in excessively wet soils. Overall, black chokeberries can be a great addition to a home garden for beauty and wildlife habitat and food, and also for use in the home kitchen to make a variety of high-antioxidant beverages, and also foods like jams, jellies, and syrups.

Red chokeberry—Aronia arbutifolia (L.) Pers.

Aronia arbutifolia, also known as red chokeberry, has a distinct deep scarlet appearance on the flesh. Fruit ripens from September through November, and persists through winter, provided the berries aren’t consumed first by humans and/or wildlife. During winter, berries retain their firm plump shape and glossy red color. This shrub has dense, fine hair-like structures on the underside of its leaf blades, has multiple stems, and grows upright in partly shaded areas (Brand, 2010). Regardless of the amount of sun exposure, it grows in a spreading habit, because of its suckering stems. This does not make it ideal for planting in tight places within a garden. Fruiting is expected to begin when the shrub has reached 2 years of age with bearing continuing annually. In the fall, the foliage turns a vibrant red-crimson or purple-red and can be spectacular, particularly in sunny locations. Even in partly shaded locations, the leaves have a very nice blend of orange and red colors.

The spreading characteristics of red chokeberry limits its use as a general landscape shrub. However, if this shrub is thoughtfully placed within the landscape, it will thrive in naturalistic settings, especially near water. ‘Brilliant Red Chokeberry’, or ‘Brilliantissima,’ is recognized as a cultivar of red chokeberry, and it can be more suitable for smaller areas, because of its compact growth habitat. In addition, it is known for its brilliant red fall foliage, and larger, more plentiful glossy red fruit.

Purple chokeberry—Aronia × prunifolia (Marshall) Rehder (pro sp.)

Aronia × prunifolia (Marshall), also known as purple chokeberry, is a hybrid between black chokeberry and red chokeberry. Like the black chokeberry, it can easily be established in rangeland. This shrub has purple-black fruits and pubescent (hairy) young leaves that later become glabrous

(without hairs) when it has matured (Hardin, 1973). Like red chokeberries, they have a range of red fall foliage colors. When fully matured, in the fourth to fifth year, these shrubs can measure up to 12 feet tall and 10 feet wide. The fruits shrivel at the start of winter, but the plant retains its red fall foliage.

Commercial chokeberry—Aronia mitschurinii

Aronia mitschurinii, whose parent species are native to the U.S., is primarily used for commercial purposes to make juices or wines, because the fruit is 1.5 to 2 times larger than black chokeberries (Brand, 2014). This species is considered a ‘potential next-generation superfruit’ due to its sixteen times higher antioxidant content than acai berries (Volkis, 2021). Even though this species has similarities with black chokeberries, such as black fruit, smooth leaves, stems, and flowers, there are distinctive morphological features. Distinctive differences between commercial cultivars include flower size, leaf shape, and growth rate. Available cultivars in the U.S. include ‘Viking’ and ‘Nero’.

A summary comparing all chokeberry cultivars can be found in Table 1.

Use in the Landscape

Shrubs can greatly enhance a home landscape by filling empty spaces, establishing boundaries, providing privacy, and/or covering up unattractive areas. Before planting chokeberry, consider where the best place is to plant them and what purpose they will serve as this is a common problem with a lot of plantings down the road, and also take into account the mature size, both height and width. Then consider developing a base plan and taking a site inventory. A base plan shows everything drawn to scale, including property lines, driveways, easements, and any other limitations. A site inventory consists of an up-to-date list of existing plants and physical features (such as power lines, septic tanks, underground utilities, exterior lighting, and roof overhangs). Identify environmental factors such as sun vs. shade, wind, and soil conditions to ensure plant success.

Aronia shrubs provide structure for the landscape as well as seasonal color, and they can be planted alongside other woody ornamentals and herbaceous perennials. Depending on the size of the chokeberry shrub, low-growing plants in front will accentuate the shape of the bed, soften harsh edges, and help draw attention to the taller plants behind. As a design feature, black chokeberry has been used in borders, hedges, mass plantings, and small groups. Red chokeberries can also be used in borders, hedges, mass plantings, and as a screen or for privacy. Themed landscapes are also good places to plant *Aronia*. Examples include edible, butterfly, children’s,

Table 1. Aronia Cultivars¹

Cultivars	HEIGHT (feet)	Width (Feet)	Exposure	Foliage	Bloom Time	Notes
‘Viking’	6–8	3–6	Full Sun & Partial Shade	Dark green	April—July	Vigorous and productive; often used in commercial production. Black berries
‘Nero’	3–4	3–4	Full Sun & Partial Shade	Dark green	April—July	Short in stature with dark blue berries; often used in commercial production.
‘McKenzie’	5–10	4–6	Full Sun & Partial Shade	Dark green	April—July	Mostly used for conservation plantings or windbreak plantings; sometimes used in commercial production. Purplish-black berries.
‘Iroquois Beauty’ [™]	2–4	4–5	Full Sun & Partial Shade	Dark green	April—July	Best for mass planting in wet or drylands. Black berries.
‘Galicjanka’	6–8	4–6	Full Sun & Partial Shade	Dark glossy green	April—July	Most evenly ripening dark purple berries; is often used in commercial production.
‘Autumn Magic’	3–6	4–7	Full Sun	Glossy, dark green	May	Brilliant red/purple fall color. Large abundant fruit clusters. Black berries.
‘Low Scape’ [™] Mound’	1–2	1–2	Full Sun	Dark glossy green	May	Black berries in summer and intense red fall foliage.
‘Low scape’ [™] Hedger’	3–5	2–3	Full Sun & Partial Shade	Dark green	April—May	Useful for hedging or screening, non-suckering, and columnar native shrub. Dark purple berries.
‘Black Ground Hug’ [™] or Groundhog’	3–6	3–6	Full Sun & Partial Shade	Dark green	May	Typically used as a groundcover, because of its dwarf size and dense glossy foliage. Dark purple berries.
‘Glossy Black’	4–6	4–6	Full sun & Partial Shade	Glossy green	May	Crimson fall color, black berries that last into the winter months.
‘Brilliant Red’	6–8	3–4	Full Sun & Partial Shade	Glossy dark green	May	Suited for wet conditions, red berries last throughout winter.

native, pollinator, rain, and winter gardens. *Aronia* will also work well around naturalized areas such as ponds, riparian buffers, and woodlands.

Growing Conditions

Site Selection and Preparation

Regardless of whether one decides to plant *Aronia* for landscape beauty or fruit harvesting, site selection and preparation are the same. The U.S. Department of Agriculture (USDA) Plant Hardiness Zone Map (<https://planthardiness.ars.usda.gov/pages/view-maps>) is a very good source to determine the average minimum winter temperatures for a region, and in which trees and shrubs are adapted to these temperatures. The USDA zones in Nebraska are 4 and 5. All cultivars of *Aronia* can be grown in zones 3 to 8 (the lower the number, the colder the temperatures in winter).

Aronia shrubs grow best in soils that are well-drained, but still have a good water-holding capacity. However, chokeberry has been known to grow in drier sites as well. Soil testing is the best way to determine soil characteristics, and if they meet *Aronia* species growing requirements. The best

time for soil testing is in late summer (August or September) before planting the following spring. Collect an aggregate sample, by taking several, 5- to 6-inch-deep soil samples in the proposed area for planting. Remove any grass or weed growth from the surface and place the soil in a clean brown paper bag(s). About 2 cups of soil are needed for a basic soil test. Bring or mail the sample to a soil testing facility such as the following.

- The AgSource[™] laboratory in Lincoln, <https://agsource.com> (402) 476-0300
- Ward Laboratories Inc. in Kearney, <https://www.wardlab.com/> (800-887-7645)
- Midwest Laboratories[®] in Omaha, <http://www.midwestlabs.com/> (402) 334-7770

Visit their websites or call to determine prices and obtain soil sample test kits. Follow any additional directions provided by the laboratory. If there are inadequate soil nutrients, the soil test will indicate this. In most cases, fertilization recommendations will come with the results. If not, call your local University of Nebraska—Lincoln Extension office for assistance at <https://epd.unl.edu>.

Aronia shrubs grow best in pH 5.0–7.0 soils. Unless the pH is above 7, soils should not be amended. If the pH is too high, then consider planting another type of shrub. Researchers have observed that a low rate of fertilizer is best for plant growth, vigor, and long-term survival. A fertilizer such as a 10-10-10 NPK (nitrogen, phosphorus, potassium) should be adequate.

Planting Process and Considerations

Begin planting in early spring after the last projected spring freeze has passed and the soil is workable. Chokeberry plants are available in a variety of sizes at many local nurseries and garden centers (Figure 3). They can also be purchased online, typically as bare-root stock to facilitate shipping. Shrubs and trees, including chokeberry, are also available for purchase from Natural Resources Districts across Nebraska. The NRD Tree Program is designed to help landowners establish conservation and wildlife plantings, develop wind breaks, and reduce soil erosion. Each species is sold in bundles of 25 seedlings (details are at <https://www.nrdnet.org/tree-program>). When planting, ensure that the hole is about twice as wide, but not deeper than the pot or root structure. Before placing the plant into the hole, take a moment to carefully untangle the roots without damaging them, and then gently backfill the soil among the untangled roots.

If you are planning a hedge, windbreak, or other type of planting involving numerous shrubs, the area to be planted should be properly prepared in advance. This could involve rototilling sod, and also taking steps to ensure the bed is weed-free. The traditional spacing of *Aronia* as a hedge is 6 ft on center. For a quicker, denser hedge, plant on 3 ft centers. With such larger plantings, consider installing a weed barrier and/or mulch. Both help to prevent weeds, conserve soil moisture, and reduce soil erosion. Mulch offers a variety of other benefits, too, such as visual appeal, reducing soil compaction, and moderating temperatures, which can help plants year-round, especially during bitter cold temperatures in winter. About 2 to 3 inches of mulch is ideal. Too much mulch can encourage pests and diseases, and it's also a good idea to leave a bare space of about 3 or so inches around the base of the shrub (or tree) to avoid similar problems.

Unless indicated by the soil test, additional fertilizer is not needed. If chokeberries need to be fertilized, either organic or mineral fertilizers can be used at planting or applied in the autumn or very early spring. In general, for any shrub, high fertilizer rates promote overall plant growth. For chokeberries, moderate fertilizer rates favor high levels of organic acids (better flavor) in the berries.

Pruning of Established Plantings

If *Aronia* is being grown to produce fruit, routine and timely pruning is necessary. Pruning ensures optimal light exposure to leaves and fruit, reduces limb breakage, increases airflow, and reduces disease potential. Pruning equipment includes hand shears, lopping shears, and possibly a pruning saw. Hand shears are used to cut branches up to $\frac{3}{4}$ inch in diameter. Lopping shears cut branches that are $\frac{3}{4}$ to 1 $\frac{1}{2}$ inches in diameter. Due to having narrower blades with coarse teeth, pruning saws are used for branches larger than 1 $\frac{1}{2}$ inch in diameter, and are designed to cut on the pull stroke.

Two primary techniques for pruning shrubs are 'heading back' and thinning. Heading back refers to when branches are cut back to healthy buds. This allows new growth to occur. Thinning is when a shoot or branch is completely removed, either back to ground level or back to a main branch or trunk. There should not be any prominent stubs left. Ideally, using a combination of these techniques is recommended for a good pruning.

Since *Aronia* is a spring-flowering shrub that blooms on the growth of the previous season's wood, the proper time to prune would be based on their condition. If the shrub needs light pruning, then pruning can be done immediately after bloom. This allows enough time for the shrub to initiate new flower buds for the next season.

A well cared for *Aronia* plant is pruned annually to remove the oldest wood each year. Once stems are producing only a few flower clusters, that stem should be cut back to the base of the plant. No more than one-third of the plant should be removed each season, making sure to first remove weak, diseased, broken, or crossed branches.

Pest and Disease Control

Aronia is a durable plant in most locations; however, its placement and use may encourage unwanted disease and pest pressures. Other fruits in the *Rosaceae* family, such as apples and pears, have the same insects and diseases that attack *Aronia*. Sometimes birds, deer, and other wildlife will eat the berries, but the astringency typically discourages continued predation (Wilson & Beekman, 2018). The following sections are on insects and diseases that are potential problems for *Aronia*, with recommendations on how to prevent and treat if necessary.



Figure 3. 'Ground Hog' Plant Photo by C.J. Jean

INSECT PESTS

Insects that occasionally attack *Aronia* in Nebraska include aphids, larvae produced by the pear sawfly, spotted-wing drosophila, Japanese beetle, cherry fruitworm, and brown marmorated stink bug (Kerzicnik, 2019). In general, aphids are often found on shoot tips, and leaf-eating beetles chew holes in plant leaves.

The pear sawfly, which is a wasp-like insect, produces larvae called the pear slug, so named for its slug-like appearance. Pear slugs feed on the upper surface of leaves, and generally avoid feeding in the lower leaf surface. Due to this feeding pattern, leaves appear skeleton-like with a lacy appearance, as only the veins remain.

Another pest that targets the foliage is the aphid. Leaves may curl and become discolored with sticky honeydew. There may be the presence of ants due to the honeydew aphids produce. Among the natural predators of aphids is the ladybird beetle, commonly known as the ladybug. It is recommended to monitor plants and not over-fertilize and not over fertilize causing soft growth that is attractive to aphids.

Cherry fruitworm is a common pest across most fruits. The larvae bore into the fruit shortly after hatching and form small, brown tunnels as they feed. More extensive feeding produces sunken, rough, brownish areas on the surface.

Japanese beetles are not only a problem with flowers, trees, and vegetables, they can be an issue with shrubs as well. Visible damage consists of peeling and gouging in irregular shallow patches or devoured fruit. The leaves can be skeletonized. It is recommended to monitor and treat with insecticides if necessary.

Spotted wing drosophila (SWD) can cause damage to the fruit. Female flies cut a slit and lay eggs in healthy fruit. The adult female SWD can lay hundreds of eggs, which show up as a small pinprick. Larvae feed on the flesh, which causes discoloration and collapse of tissues. With a timely harvest of fruits, sanitation, and removal of wild host plants in the surrounding landscape, large populations of SWD can be avoided.

Brown marmorated stink bugs release foul-smelling chemicals to avoid predators, but other chemicals to attract other stink bugs. It is recommended to monitor plants, and treat if necessary. Removal of alternate host broadleaf weeds can prevent damage by this pest.

Control options for *Aronia* are limited because there are only a few insecticides labeled for use on the plant. Among the insecticides approved for use on *Aronia* are insecticidal soaps, horticultural oils containing neem, and organic insecticides (Everhart, 2009). Be sure to follow the label instructions if insecticides are used. If insects are a problem,

visit <https://lancaster.unl.edu/insects> for management and treatment tips.

DISEASES

Aronia may be susceptible to fungal diseases such as leaf spot, twig blight, and fire blight. Powdery mildew, a fungus caused by *Podosphaera clandestina*, can be problematic under conditions of inadequate light, high moisture, and poor air circulation. There have been no reports of rust affecting chokeberry in Nebraska, but this fungus has infected chokeberry in other states, but generally crop quality is not greatly impacted.

There has been no reported bacterial leaf spot on *Aronia*. Fungal leaf spot, however, could be a problem. These include *Ascochyta pirina*, *Cercospora mali* and *C. pyri*, *Cercospora pirina*, *Mycosphaerella arbutifolia*, and *Phyllosticta arbutifolia*. Fungal spots are usually seen first on the lower and inner branches where humidity is high and leaves are shaded. Leaf spots may be angular or rounded, raised or sunken, and have smooth or fringed edges. Colors can range from yellow to yellow-green, orange-red to light tan, brown, or black. Prune shrubs to increase light penetration and improve air circulation throughout the canopy to reduce infection potential.

Powdery mildew appears as a whitish felt-like patch (mycelium) on the top of the leaf from the main fungal causal agent *P. clandestina*. The bottom of the leaf has a wrinkle, and there is a halo-like appearance where the mycelium is growing on the topside of the leaf. Properly scheduled pruning can help prevent powdery mildew, because of the increased airflow. There are no reports of downy mildew on *Aronia*.

Cedar-quince (or Hawthorn) rust is a common fungus, *Gymnosporangium clavipes*, that infects leaves, petioles, young stems, branches, and fruit of *Aronia*. However, *G. clavariiforme*, *G. davisii*, and *G. fraternum* can also cause rust. These infections cause circular or oval leaf spots called pustules. This disease may increase plant defoliation, which leads to plant decline but not necessarily plant death. By keeping shrubs healthy through proper nutrition and water supply, especially during months of dry weather, this fungus can be avoided. In the early spring, avoid overhead irrigation in the afternoons, as high moisture favors rust spore germination. Eliminate infected plant material of alternate hosts (for example cedar trees) in the fall. Pruning out branches and twigs with cedar-quince rust swellings and cankers in early spring also helps reduce the amount of spores. Also, fungicides can be applied as a preventive measure to help protect developing twigs and branches from infection.

Brown rot is a fungal disease caused by *Monilinia fructi-*

cola, which infects the fruit and causes cankers during much of the summer. These cankers produce secondary spores that appear on fruit as fluffy, tan-to-gray. This leads to a major reduction in fruit quality. Unless the fruit has been damaged by insects, hail, or stem rub, infection is unlikely. However, if present, the disease can spread slowly in the early summer, and neighboring fruit can also become infected. If brown rot is confirmed on shrubs, cut and remove all canker-infected branches and twigs immediately or wait until February and March when the plants are dormant. Additional control methods include keeping the area around shrubs clean of all fallen fruit and other plant debris, harvesting all fruit as it ripens, and lastly, consider the use of fungicides if the disease persists, being sure to closely follow label instructions (concerning the latter, follow label instructions carefully when using any insecticides or fungicides).

Fire blight is caused by the bacterium *Erwinia amylovora*, which is one of the most devastating diseases for plants in the *Rosaceae* family because it can cause death in blossom and shoots, dieback of branches from cankers which ultimately leads to death of shrubs and trees. This disease presents a scorched appearance to leaves, blossoms, and young terminal shoots. Scorched-infected twigs later become dark or black and have abnormal growth that resembles a shepherd's crook or an upside-down 'J'. Infected fruit tissue turns brown to black on fruit that is also covered with whitish-tan to amber-colored bacterial ooze. The fruit remains firm until it eventually shrivels into 'mummies.' Management strategies may include pruning out fire blight cankers and blighted twigs, minimizing summer pruning of blighted shoots, and control of sucking insects.

If diseases are suspected, submit samples to the UNL Department of Plant Pathology's Plant and Pest Diagnostic Clinic. For information concerning how to submit samples and associated fees, visit go.unl.edu/plantclinic.

Harvest

Chokeberry harvest is a simple process that can be done by hand as fruits mature from August through November. Characteristics of ripe berries differ by species. Black and purple chokeberry fruits shrivel once ripe. Red chokeberries will stay plump and retain their color throughout the winter. Fruit can be eaten raw, dried, juiced, or cooked, or it can also be used to make wine. Additionally, frozen fruit can be used later in similar ways. Typically, red chokeberries are sweeter than black chokeberries. However, in commercial plantings, *Aronia mitshurinii* chokeberries are often used due to their high productivity.

Summary

Chokeberry is an ornamental plant that has found use in the home landscape, providing colorful displays and annually producing berries for the enjoyment of the homeowner and wildlife alike. With careful placement, this durable plant needs minimal care and has few pest problems. It is gaining attention for its timeless beauty.

Educational and Plant Sources

- UNL Institute of Agriculture and Natural Resources' Food Processing Center, (<https://fpc.unl.edu>)
- Meristem Farm & Nursery (Papillion, Nebraska; www.meristemfarmandnursery.com)
- Campbell's Nursery (Lincoln, Nebraska; <https://www.campbellsnursery.com>)
- Landmark Nursery and Landscaping (Eagle, Nebraska; <https://www.landmarklandscapes.us>)
- Great Plains Nursery (Weston, Nebraska; <https://greatplainsnursery.com>)
- Nebraska Natural Resources Districts (in counties state-wide; <https://www.nrdnet.org/tree/black-chokeberry>)
- Aronia is also available at other nurseries and garden centers in Nebraska. Nurseries that belong to the Nebraska Nursery and Landscape Association can be found at <https://nebraskanurseryandlandscapeassociation.com/find-a-member>
- Aronia Berry Services of Northeast Iowa (Fairbank, Iowa; aroniaberryservicesofneiowa.com)
- Bellbrook Berry Farm (Brooklyn, Wisconsin; <http://organicaronia.com/buy-now/plants/>)
- Gurney's Seed & Nursery Co. (Tipp City, Ohio; <https://www.gurneys.com/product/aronia>)
- Double A Vineyards (Fredonia, New York; <https://doubleaveineyards.com/aronia-berry-plants-for-sale>)

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NOTES

1. Cultivar can be defined as a crop developed and selected by humans and frequently written as cv standing for “cultivated variety”.



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