

Aronia Medik

chokeberry

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Growth habit, occurrence, and uses. The chokeberries (genus *Aronia*) discussed here are 2 closely related species (red and black chokeberries) and 1 hybrid deciduous shrub (purple chokeberry) (table 1). Black chokeberry is small, only 0.5 to 1 m tall. Red chokeberry and purple chokeberry are medium sized, 3 to 4 m tall. Red and black chokeberries hybridize readily and may be difficult to distinguish. Red and purple chokeberry are practically identical ecologically (Van Dersal 1938), and the only satisfactory way to distinguish between them is by the color of their ripe fruit. Both have pubescence on younger branches, leaf stems, and lower leaf surfaces. In contrast, black chokeberry is smooth or has only a few scattered hairs on these parts (Gleason 1963). The combined ranges of these 3 include most of the eastern United States and southern parts of adjacent Canadian provinces (table 1). All are moderately tolerant of shading and prefer moist soils, which usually are acidic. The most likely habitats are bogs and swamps, low woods, clearings, and damp pine barrens. However, each species will tolerate drier conditions, and black chokeberry is better adapted than the others to growth in drier thickets or clearings on bluffs or cliffs (Fernald 1950; Gleason 1963). All are valuable as food sources for wildlife in fall and winter (Hosely 1938). Their handsome foliage, flowers, and fruits also make them attractive as ornamentals, but none has been cultivated extensively. Red and black chokeberries were first cultivated about 270 years ago (Rehder 1940).

Flowering and fruiting. The white, bisexual flowers bloom for 2 to 3 months during March to July, the local flowering period depending on latitude and elevation. Fruit ripening dates are similarly dependent and range from August to November (table 2). Fruits drop from the plants shortly after ripening and may continue through the winter and spring. The fruits are rather dry, berrylike pomes (figure 1) containing 1 to 5 seeds (figure 2), some of which may be empty (aborted). Natural seed dispersal is chiefly by animals. Black chokeberry fruits shrivel soon after ripening, and most of them drop. Purple chokeberry fruits shrivel at the beginning of winter, whereas fruits of red chokeberry remain plump and bright into the winter. Red chokeberry may yield fruit first at 2 years of age (Spinner and Ostrum 1945) and produces good seed crops almost every year. Black chokeberry yields a good crop about every second year (Gill and Pogge 1974).

Collection of fruits; extraction and storage of seeds. If loss to birds is a hazard, fruits should be handpicked as soon as they ripen. Otherwise, they should be picked within a month or so. The delay should be least with black chokeberries and can be longest with red chokeberry. Fruits of

the latter species collected in January and cleaned and sown right away will germinate in 2 weeks (Dirr and Heuser 1987). Commercial seeds usually consist of the dried pomes or dried berries as usually listed in seed catalogs. There are about 16,220 dried pomes/kg (7,355/lb) of red chokeberry (Swingle 1939). Although seed extraction and cleaning may be impractical on a large scale, small quantities of seeds can be extracted by rubbing fresh fruits over screens and floating off the debris. If the fruits have dried, they can be soaked in water until the pulp is soft enough to come off (Mahlstedt and Maber 1957). A kitchen blender can be useful for extracting seeds from small lots of several kinds of small berries and other soft fruits, including chokeberries (Morrow and others 1954; Munson 1986). Cleaned seeds per weight average about 564,480/kg (256,000/lb) for red chokeberry and 608,580/kg (276,000/lb) for black chokeberry (Gill and Pogge 1974; Swingle 1939). No data were found on longevity of seeds, but drying before storage is recommended (Chadwick 1935), so they are undoubtedly orthodox in storage behavior.

Pregermination treatments and germination tests. Chokeberry seeds have an internal dormancy that can be overcome by stratification in a moist medium at temperatures of 1 to 5 °C. A higher stratification temperature 10 °C also was effective on seeds of purple chokeberry (Crocker and Barton 1931). Optimum duration of stratification may be 60 to 120 days and varies with the species (table 3).

There are no official test prescriptions for chokeberries, but tests of stratified seeds can be done on paper or in soil, sand, or peat for 28 days, at diurnally alternating temperatures of 30 ° (day) and 20 ° (night) or at a constant 20 °C. Germination starts after about 8 days and may be virtually complete in 20 to 30 days (Crocker and Barton 1931). Germination of seeds stratified as recommended here was mostly in the 90 to 100% range (table 4). Germination of unstratified seed was quite low, 0 to 15%, in tests that extended into a second year (Adams 1927). Germination is epigeal.

Nursery practice. In some nurseries, the dried fruits are soaked in water for a few days and mashed and then the whole mass is stratified until spring. Limiting the stratification period to 60 days for purple, 90 days for red, and 120 days for black chokeberry may increase germination in the nursery. Fall planting is done by some growers (Dirr and Heuser 1987). The recommended sowing depth is about 10 mm (3/8 in) (Sheat 1948). Germination mostly takes place within a few days after sowing. As a rule of thumb, 0.45 kg (1 lb) of cleaned seed may yield about 10,000 usable plants (Van Dersal 1938). Outplanting may be done with 2-year-old seedlings (Sheat 1948).

Vegetative propagation is possible with red chokeberry (and perhaps the others). Softwood cuttings taken in July and treated with 4,000 ppm of indole-butyric acid solution root very well. Cuttings taken in December or January will root also (Dirr and Heuser 1987). Irrigation of the mother plant a few days before the cuttings are taken will help rooting (Dehgan and others 1989).

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Table 1 *Aronia*, chokeberry: nomenclature, occurrence, and height at maturity

Scientific name & synonym(s)	Common name	Occurrence	Height (m)
<i>A. arbutifolia</i> (L.) Pers. <i>A. arbutifolia</i> var. <i>glabra</i> Ell. <i>Pyrus arbutifolia</i> (L.) L. f. <i>Sorbus arbutifolia</i> (L.) Heynh.	red chokeberry	Nova Scotia to S Ontario & S to Florida & E Texas	1B4
<i>A. melanocarpa</i> (Michx.) Ell. <i>A. nigra</i> (Willd.) Koehne <i>Pyrus melanocarpa</i> (Michx.) Willd. <i>Pyrus melanocarpa</i> (Michx.) Heynh. <i>Sorbus melanocarpa</i> (Michx.) Heynh.	black chokeberry gueles noires	Newfoundland to Minnesota & S to Tennessee & South Carolina	0.5B1
<i>A. × prunifolia</i> (Marsh.) Rehd. (pro sp.) <i>A. arbutifolia</i> var. <i>atropurpurea</i> (Britt.) Seymour <i>A. atropurpurea</i> Britt. <i>A. floribunda</i> (Lindl.) Spach <i>Pyrus arbutifolia</i> var. <i>atropurpurea</i> (Britt.) B.L. Robins. <i>Pyrus floribunda</i> Lindl. <i>Sorbus arbutifolia</i> var. <i>atropurpurea</i> (Britt.) Schneid.	purple chokeberry hybrid chokeberry	Newfoundland to Ontario & S to Indiana & Virginia	1B4

Source: Gill and Pogge (1974).

Table 2 *Aronia*, chokeberry: phenology of flowering and fruiting

Species	Location	Flowering dates	Fruit ripening dates
<i>A. arbutifolia</i>	Texas	MarBApr	OctBNov
	West Virginia	MarBMay	SeptBOct
	North	AprBJuly	SeptBNov
<i>A. melanocarpa</i>	South	MarBJune	Aug
	North	AprBJuly	AugBOct
	West Virginia	June	SeptBOct
<i>A. X prunifolia</i>	C	AprBJuly	AugBOct

Sources: Ammons (1975), Fernald (1950), McDonald (1960), Mahlstede and Maber (1957), Van Dersal (1938).

Table 3C *Aronia*, chokeberry: cold stratification periods, germination test conditions and results

Species	Cold strati- fication period (days)	<u>Germination test conditions</u>			<u>Germinative capacity</u>	
		<u>Temp (°C)</u>		Duration (days)	Amount (%)	Samples
		Day	Night			
<i>A. arbutifolia</i>	90	20	20	30	94	4
<i>A. melanocarpa</i>	90B120	30	20	30	22	4
<i>A. × prunifolia</i>	60	20	20	30	96	2

Sources: Crocker and Barton (1931), Gill and Pogge (1974).

Figure 1 *Aronia arbutifolia*, red chokeberry: leaf and cluster of fruits (pomes), $\times 1$.

Figure 2 *Aronia melanocarpa*, black chokeberry: exterior views of seed, as well as longitudinal and transverse sections, all at $\times 16$.