



PLANT MATERIALS TECH NOTE

DESCRIPTION, PROPAGATION, AND USE OF SILVERBERRY *Elaeagnus commutata*.

Introduction: Silverberry *Elaeagnus commutata* Bernh. ex. Rydb is a native shrub with potential use in streambank stabilization, wildlife habitat, windbreaks, and naturalistic landscaping projects. The purpose of this bulletin is to transfer information on the identification, culture, and proper use of this species.

FIGURE 1



FRUIT



STEM



FOLIAGE

I. DESCRIPTION

Silverberry is a multi-stemmed, deciduous shrub ranging from 1.5 to 3.6 m (5 to 12 ft.) tall. In Montana, heights of 1.5 to 2.4 m (5 to 8 ft.) are most common. It has an erect, upright habit with slender and sometimes twisted branches. The new stems are initially a light to medium brown color, the bark becoming dark gray, but remaining smooth, with age. The leaves are deciduous, alternate, 38 to 89 mm (1.5 to 3.5 in.) long and 19 to 38 mm (0.75 to 1.5 in.) wide (see Figure 1). The leaf shape is described as oval to narrowly ovate with an entire leaf margin. Both the upper and lower leaf surfaces are covered with silvery white scales, the bottom sometimes with brown spots. The highly fragrant, yellow flowers are trumpet-shaped (tubular), approximately 13 mm (0.5 in.) in length, and borne in the leaf axils in large numbers in May or June. The fruit is a silvery-colored, 7.6 mm (0.3 in.) long, egg-shaped drupe that ripens in September to October. Some fruit may persist on the plant until well into December. It can spread vegetatively by underground stems, forming thicket-like colonies. This species has several characteristics that distinguish it from its exotic relative, Russian olive. Silverberry is a multi-stemmed shrub averaging about 1.8 m (6 ft.) in height, whereas Russian olive is a multi-stemmed tree reaching heights of 6 m (20 ft.) or more on favorable sites. Russian olive has pronounced thorns, silverberry does not. The leaves of Russian olive are about the same length as silverberry but are much narrower, usually only about 12.7 mm (0.5 in.) wide and, therefore, linear in shape. Silverberry is also confused with silver buffaloberry *Shepherdia argentea* because of similarities in common name and silvery-green foliage. Silverberry is distinguishable from this species because silver buffaloberry has thorns, opposite leaves and buds, and a red or yellow-orange, berry-like fruit. Silverberry is native from eastern Canada to the Northwest Territories, south to Minnesota, South Dakota, and Utah. It is the only *Elaeagnus* native to North America.

II. PROPAGATION

A. Seed

The seed of silverberry can be hand-collected in October through December, depending on location. The seed is readily cleaned by processing in a macerator, using water to float off the pulp, and then air drying the cleaned seed. Cleaned seed can be stored in sealed containers at 6 to 14 percent moisture content for up to 2 years with good viability. Greenhouse propagation by seed is easy, the fresh seed germinates readily with little or no cold chilling. Although the literature recommends 30 to 90 days of cold chilling prior to sowing, tests at the Bridger Plant Materials Center (PMC) indicate that, at least for certain seed sources, fresh seed germinates well without cold chilling (see Table 1). It should be noted that old or improperly processed/stored seed may benefit from a cold chilling period. Sow fresh seed onto a commercial peat-lite mix with moderate nutrition. The growth of this species is rapid, so fairly large (20 cubic inch or greater) containers are needed for a 5 to 6 month growing season. If the plants are seeded in the greenhouse in the fall, and kept actively growing until the following fall, they need to be planted or potted up in 2 gallon pots. Few problems are reported, but include aphids, scale, and branch canker. Late-fall sown seed germinates the next spring. Seed sown too early in the fall, however, may germinate prematurely if warm temperatures and adequate moisture prevail. Fresh seed sown in the field in the spring often germinates within 2 to 4 weeks. Use a 60-day artificial chilling pretreatment prior to sowing to ensure good germination. Put the seed in a lightly moistened, sand:peat mix in a ziploc bag and place in cold storage at 0.55° to 2.8°C (33° to 37°F). Bareroot production in a nursery bed is similar to that of other easy-to-grow species. Cultivate a fairly well-drained soil to eradicate weeds and allow good seed:soil contact. Rototilling followed by light packing works well. Sow the seed by hand, with a push-type, one-row belt seeder, or other mechanical planter. Because germination is normally high, sow 15 to 20 seeds per linear foot of row. If hand planting, cover the seed with approximately 6.3 mm (0.25 in.) of soil. The use of an agronomy cloth covering over the seeded rows may increase germination by reducing erosion and animal predation, and by maintaining optimum soil moisture. Root prune production beds early in year two if a 2-0 or older plant is to be produced. Harvest 1- or 2-year-old stock in the early spring or late fall as dormant material. Follow established guidelines for the handling, storage, transport, and planting of bareroot material.

TABLE 1. Germination results of three ecotypes of silverberry, Bridger PMC 1998.

SEED-SOURCE	ACCESSION NUMBER	ORIGIN	SEED AGE	NUMBER SEEDED	NUMBER GERMINATED	PERCENT GERMINATION
PMC Source	9005352	Wheatland County, MT	1998	98	56	57
Streambank	9081339	Pondera County, MT	1998	98	71	72
Floodplain	9081340	Pondera County, MT	1998	98	81	83
Grand Mean:						(70)

B. Cuttings

Greenhouse asexual propagation of this species is by dormant, hardwood cuttings taken in January through February. Tests conducted at the PMC indicate a rooting percentage of 80 percent or better when the cuttings are taken from wildlings (see Table 2). Percentages should increase when the cuttings are taken from cultivated plants. Take 20 to 30 cm (8 to 12 in.) long stem cuttings that are 6.3 to 12.7 mm (0.25 to 0.50 in.) in diameter, making sure that at least two internodes (and hence, buds) are included. Place the cuttings in a ziploc bag, lightly moisten with a spray bottle, then place in cold storage at 1° to 2.8° C (34° to 37°F). Although the cuttings should store well for several days, prepare and place them in the greenhouse propagation bench as soon as possible. Prepare cuttings by trimming them to a uniform size. Recut the base of each cutting at a 45° or greater angle with a sharp grafting knife to increase water uptake. Wound the bottom of the stem with a shallow, 2.5 to 3.8 cm (1 to 1.5 in.) vertical slice that just exposes the bark cambium. Lightly mist the base of the cutting prior to treatment with 3,000 to 5,000 ppm indole-3-butyric acid (IBA) powder. Place the cuttings in a well-drained, sterile media such as a mix of sand, perlite, and/or vermiculite. Use overhead, intermittent mist and 21° to 24°C (70° to

75°F) bottom heat. As an alternative, cuttings may be placed directly into 4 to 6 inch pots under mist until rooting. In such cases, amend the propagation mix with a 50 percent peat-lite mix. Cuttings should root in about 8 weeks. Pot into a 1- to 2-gallon pot in a well-drained, peat-lite mix with baseline nutrition. Harden-off for 2 months outdoors prior to field planting. Anticipate losses of 10 to 15 percent as a result of lifting and transplanting. No information is available on softwood propagation or root cuttings, but both are assumed to work well. Information on the field propagation of this species by dormant, unrooted hardwood cuttings is not available, but may prove successful on favorable sites.

TABLE 2. Adventitious rooting of three ecotypes of silverberry, Bridger PMC 1998.

SEED-SOURCE	ACCESSION NUMBER	ORIGIN	TREATMENT (HORMONE)	NUMBER STUCK	NUMBER ROOTED	PERCENT ROOTING
			IBA			
PMC Source	9005352	Wheatland Co., MT (at Bridger PMC)	Rootone®	18	17	94
			16,000 ppm	18	18	100
			45,000 ppm	14	14	100
			Dip-N-Gro®	18	17	94
					Mean:	(97)
Streambank	9081339	Pondera Co., MT	Rootone®	18	17	94
			16,000 ppm	18	17	94
			45,000 ppm	18	16	89
			Dip-N-Gro®	18	17	94
					Mean:	(93)
Floodplain	9081340	Pondera Co., MT	Rootone®	18	18	100
			16,000 ppm	18	16	89
			45,000 ppm	18	15	83
			Dip-N-Gro®	18	18	100
					Mean:	(93)
				Grand	Mean:	(94)

III. USES:

Silverberry has several valuable conservation uses. It readily sprouts by suckers, especially on moist, fertile sites, making it useful in streambank stabilization work (NRCS Montana is currently testing three ecotypes for this purpose). It is adaptable to high pH (8.0) and saline soils. It is quite drought tolerant and will grow well in 279 to 305 mm (11 to 12 in.) annual precipitation zones in eastern Montana, once established. Silverberry is USDA Hardiness Zone 2 hardy, tolerating -40° to -46°C (-40° to -59°F) average minimum winter temperatures. It is a potential shrub component in windbreak and shelterbelt systems, although it may, however, prove unacceptably vigorous on moist, high fertility sites. Mechanical cultivation between rows has effectively controlled the spread of suckers into adjacent rows in a long-term planting at the PMC. It is recommended for all Plant Adaptation Zones and Conservation Tree/Shrub Suitability Groups (CTSGs) 1, 3, 4, 5, 6, and 9 (see Subgroups for more information). Silverberry provides dense, thicket-like cover for numerous wildlife species. The buds and fruit are food for song and game birds. Although this species provides emergency food for deer during critical winter periods, it has a lower palatability for deer and cattle than many other sources of browse. Moose are also thought to utilize silverberry for browse.

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