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and

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
HELENA, MONTANA

and

MONTANA AGRICULTURAL EXPERIMENT STATION
BOZEMAN, MONTANA

and

WYOMING AGRICULTURAL EXPERIMENT STATION
LARAMIE, WYOMING

**NOTICE OF RELEASE OF DUPUYER STREAMBANK GERmplasm
SILVERBERRY
SOURCE-IDENTIFIED CLASS OF NATURAL GERmplasm**

The United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS, formerly the Soil Conservation Service) and the Montana Department of Natural Resources and Conservation announce the naming and release of Source-Identified germplasm of Dupuyer Streambank Germplasm silverberry, *Elaeagnus commutata* Bernh. ex. Rydb. This germplasm was identified by the USDA/NRCS Montana Riparian Team, Bozeman, Montana and the USDA/NRCS Plant Materials Center at Bridger, Montana.

Dupuyer Streambank Germplasm silverberry has been assigned the NRCS accession number 9081339. It was selected primarily for its vigorous sprouting, potential tolerance of temporary inundation, ease of propagation, and hardiness in the northern Plains for use in streambank stabilization applications, wildlife habitat projects, and potentially, windbreak and shelterbelt systems.

COLLECTION SITE INFORMATION: Dupuyer Streambank Germplasm silverberry was identified and collected by the NRCS Montana Riparian and Wetlands Team in Pondera County along Dupuyer Creek approximately 0.25 miles due south of the Dupuyer Diversion. The site is located in Section 28, Township 29N, Range 6W at a North Latitude of 48°14'30.53" and a West Longitude of 112°23'15.45". The area is classified as Major Land Resource Area 46, Northern Rocky Mountain Foothills. The elevation of the original collection site was 1,175 meters (3,857 feet), on a 2 percent or less slope with a westerly exposure. The soils are mapped as Havre/Ryell fine loams. The original collection site is located in USDA Hardiness Zone 3b (-30° to -35°F) or 4a (-25° to -30°F) in annual precipitation zone of 305 to 356 millimeters (12 to 14 inches). Plants growing in association include sandbar willow *Salix exigua*, cottonwood *Populus* species, and miscellaneous sedges *Carex* species and rushes. Seed collections were originally made on November 6, 1997 by Joe Carleton of the Intermountain Riparian and Wetlands Resource Technical Team, Bozeman, Montana.

SELECTION STATEMENT: Dupuyer Streambank Germplasm silverberry was identified for its ability to stabilize and armor streambanks by the vegetative spread of underground shoots. It appears to tolerate saturated soil conditions well, at least for short periodic events. It was also identified for its hardiness in Montana and its ease of propagation by seed and stem cuttings. Limited commercial availability of local ecotypes and an urgent need for species diversity in riparian restoration and stabilization work in the northern Plains warrants the use of the prevarietal release procedure. Field

testing of this ecotype, as well as two additional ecotypes, has been initiated in plantings at Huntley, Montana; Pinedale, Wyoming; and Cutbank, Montana.

Dupuyer Streambank Germplasm silverberry is one of two Source-Identified germplasms currently being released by Montana NRCS for riparian stabilization. Dupuyer Streambank Germplasm silverberry is recommended for lower riparian, bottomland sites characterized by high levels of soil moisture and periods of temporary inundation. In contrast, Pondera Floodplain Germplasm silverberry is recommended for upper streambank and floodplain terraces characterized by fairly well drained sites and adequate, but not excessive, available soil moisture. These recommendations are based on the site conditions observed at each respective germplasm source, under naturally occurring field conditions.

ECOTYPE DESCRIPTION:

Botanical Characteristics: Dupuyer Streambank Germplasm silverberry has the same general botanical, foliage, fruit, seed and phenological attributes noted below for the species as a whole. Slight variations in stem form, leaf shape and color, and rates of growth have been noted between Dupuyer Streambank Germplasm silverberry and other seed sources, but are not considered significant. Dupuyer Streambank Germplasm silverberry is a native shrub with potential use in streambank stabilization, wildlife habitat, windbreaks, and naturalistic landscaping projects. It is a multi-stemmed, suckering, 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 similarity 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.

Propagation by 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 germplasms 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)

Vegetative Propagation: 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 germplasms of silverberry, Bridger PMC 1998.

Seed-Source	Accession Number	Origin	Treatment (hormone)	Number Stuck	Number Rooted	Percent Rooting
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)	

ENVIRONMENTAL IMPACT ASSESSMENT: Dupuyer Streambank Germplasm silverberry demonstrates growth, reproductive habits, and ecological niche functions comparable to the species as a whole, as observed in its original collection site and as compared to silverberry performance overall in Montana. It is a native species that spreads readily via underground shoots and is capable of forming dense colonies of thicket-like growth. In naturally occurring populations in Montana, silverberry is not invasive. It can be considered comparable to colonizing members of the Genus willow *Salix*, quaking aspen *Populus tremuloides*, and other sprouting native species such as American plum *Prunus americana* and snowberry *Symphoricarpos albus*. It tends to spread vegetatively more readily on moist, high fertility sites where competition from other species is moderate. It may spread between and within rows of windbreak and shelterbelt systems but is usually controlled by frequent mechanical cultivation as part of standard windbreak maintenance operations.

ANTICIPATED CONSERVATION USE: Dupuyer Streambank Germplasm 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. 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 Conservation Tree/Shrub Suitability Groups 1, 3, 4, 5, 6, and 9 (see Subgroups for more specific 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. It is also susceptible to girdling by rodents and rabbits.

POTENTIAL AREA OF ADAPTATION: Dupuyer Streambank Germplasm silverberry should grow well in all areas where the species is found occurring in Montana and Wyoming east of the Continental Divide. It may also perform well in western Montana and Wyoming but has not been field tested in those areas to date. It is considered USDA Hardiness Zone 2 hardy, capable of tolerating average

minimum winter temperatures of -40° to -46°C (-40° to -50°F). Although it prefers moist, well-drained sites associated with riparian and streambank environments, it will tolerate relatively low annual precipitation zones (12 inches) and heavy soils given proper establishment care and regular weed maintenance.

AVAILABILITY OF PLANT MATERIALS: Seed and cuttings of Dupuyer Streambank Germplasm silverberry are available from the original collection site with permission of the private landowner. Contact the USDA/NRCS Plant Materials Specialist, Federal Building, Room 443, 10 East Babcock Street, Bozeman, Montana 59715 or the Bridger Plant Materials Center, Route 2, Box 1189, Bridger, Montana 59014 for more information. Propagules may also be available from the Nursery Supervisor, Montana Conservation Seedling Nursery, 2705 Spurgin Road, Missoula, Montana 59804. Propagules may also be available from commercial nurseries as advertised.

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