

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
EAST LANSING, MICHIGAN

NOTICE OF RELEASE OF VINTAGE GERMPLASM COMMON ELDERBERRY
SELECTED CLASS OF NATURAL GERMPLASM

The U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) announces the release of a selected ecotype of common elderberry [*Sambucus nigra* L. ssp. *canadensis* (L.) R. Bolli] for the Great Lakes region.

As a selected release, this plant will be referred to as Vintage Germplasm common elderberry. It has been assigned the NRCS accession number 9084126.

Collection Site Information: Dormant vegetative material was collected in 1998 from Tipton County, Indiana, at 40° 17' 30" N. latitude and 86° 12' 00" W. longitude by Glenn Hartman. The collection site was in Major Land Resource Area 111a, Plant Hardiness Zone 5B. The mean annual precipitation was 96 cm (38 inches). The original plants were grown from this vegetative material then transplanted into evaluation plots.

Description: Vintage Germplasm common elderberry is a stoloniferous, multi-stemmed, native perennial shrub that exhibited 3-year growth up to 22 dm (88 in) tall and 35 dm (137 in) wide. The thick, roughened and furrowed bark is yellowish-brown to brown. Twigs are stout, light brown to gray, covered with numerous small wart-like bumps (lenticels) and have white pith. Compound leaves are set oppositely in pairs in a feather-like arrangement. Leaflets are oval to lance-shaped and up to 15 cm (6 in) long and 2.5 cm (1 in) wide. The leaf scars are large, opposite and connected by a ridge. Buds are opposite and protrude from the stem. Fragrant white flowers are arranged in flat-topped clusters measuring 10 – 25 cm (4 – 10 in) across, and are arranged in branched clusters of five. Fruit ripen from late July to September.

Method of Selection: Thirty-one collections of common elderberry were assembled from five states. Dormant vegetative cuttings from each collection were planted in the greenhouse to establish plants for field testing. In 1998 plants from the greenhouse were placed in replicated field experiments in Michigan for a 3-year evaluation of survival, vigor, plant height and width, disease resistance, and flower abundance. Accession 9084126 was selected for further testing based on the results of those initial replicated field experiments.

Accession 9084126 was tested in field plantings and Plant Materials Program Inter-Center evaluations for survival, height, spread, and fruit abundance. Seed germination procedures were also developed for this accession. See the attached *Data to Support Release of Vintage Germplasm common elderberry* for additional information.

Environmental Impact Assessment: Vintage Germplasm common elderberry is a selection of naturally occurring germplasm and has been unaltered. Vintage Germplasm did not meet the assessment of a plant which could become invasive based on the environmental evaluation process adopted by the NRCS Plant Materials Program.

Anticipated Conservation Use: Vintage Germplasm common elderberry is intended for use in streambank and shoreline stabilization as an alternative to introduced plant species. It can be used for enhancement of riparian corridors and provide food and shelter for wildlife.

Anticipated Area of Adaptation: The anticipated area of use of Vintage Germplasm is within the Great Lakes region and upper mid-west United States, which is well within the species' range. Vintage Germplasm inhabits well drained soils near streams and adjacent bottomlands as well as in forests and muck soils.

Availability of Plant Materials: Generation 1 (G1), equivalent to Foundation Seed, will be maintained by the USDA-NRCS Rose Lake Plant Materials Center, East Lansing, Michigan, and is available in limited quantities to interested parties for increase purposes.

References:

Gleason H. 1963. *The New Britton and Brown Illustrated Flora. Vol. 3.* New York: Hafner Publishing Company. 595 pp.

Gleason H. and A. Conquist. 1991. *Manual of Vascular Plants of Northeastern United States and Adjacent Canada. 2nd Edition.* Bronx, New York: The New York Botanical Garden. 910 pp.

USDA, NRCS. 2010. The PLANTS Database (<http://plants.usda.gov>, 22 February 2010). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

Voss, E. 1996. *Michigan Flora. Part III, Dicots Concluded.* Cranbrook Institute of Science Bulletin 61 and University of Michigan Herbarium. Ann Arbor, MI: Cranbrook Institute of Science. 622 pp.

Prepared by:

J. W. Leif, J. C. Durling, and D. W. Burgdorf. USDA-NRCS Rose Lake Plant Materials Center, 7472 Stoll Road, East Lansing, Michigan 48823.

Signatures for release of:

**Vintage Germplasm Common elderberry [*Sambucus nigra* L. *ssp. canadensis* (L.)
R. Bolli]**

Carla Gregory
Acting State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
East Lansing, MI

Date

Michael Hubbs
Ecological Sciences Division Director
United States Department of Agriculture
Natural Resources Conservation Service
Washington, DC

Date

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Data to Support Release of Vintage Germplasm common elderberry

Table 1. Performance summary of *Sambucus nigra* L. ssp. *canadensis* (L.) R. Bolli. USDA-NRCS Rose Lake Plant Materials Center, E. Lansing, MI.

accession number	canopy height (in)			canopy width (in)			canopy density [†]		spread [‡]	fruit abundance [§]		browse damage [¶]	basal stems
	1998	1999	2000	1998	1999	2000	1999	2000	1999	1999	2000	1998	1998
9070258	21.5	44.5	66.5	51.6	77.8	104.0	7.2	5.5	8.4	7.0	5.5	7.0	2.4
9070259	34.6	70.7	87.2	52.7	90.5	112.6	3.6	3.2	7.0	3.6	4.0	7.4	2.4
9070260	26.0	55.8	72.4	30.6	60.4	75.7	4.8	5.2	6.6	9.0	7.2	6.6	2.2
9070261	23.5	46.3	44.0	31.3	43.6	57.6	7.0	7.5	7.8	9.0	8.5	7.0	1.8
9070269	15.8	21.3	65.0	16.8	19.0	51.0	8.3	7.0	9.0	9.0	9.0	7.8	1.3
9070270	24.7	51.7	84.3	31.6	53.0	95.3	7.8	6.0	7.6	8.8	7.7	7.2	2.2
9070271	28.2	53.4	76.4	35.1	63.4	97.9	5.4	5.3	7.8	8.8	6.0	5.6	2.6
9070272	25.2	44.5	60.0	28.9	54.3	79.8	6.3	6.0	7.8	9.0	7.8	7.6	1.8
9070274	31.0	58.7	75.9	44.6	66.4	95.2	6.4	5.6	7.8	7.6	5.6	6.8	2.6
9070275	35.3	56.5	72.5	44.6	71.9	81.3	5.2	5.6	7.4	7.4	5.0	7.8	3.8
9070276	30.9	48.6	60.7	51.9	64.2	73.9	7.0	7.6	6.8	7.4	6.8	7.8	3.2
9070279	38.1	64.8	77.1	33.5	69.1	91.0	6.3	4.8	7.0	7.8	7.3	8.4	2.4
9070280	27.5	52.2	67.6	44.8	62.0	72.1	5.8	6.2	7.2	8.0	6.2	6.6	2.6
9070281	26.0	48.6	67.0	36.4	59.5	69.9	5.8	6.8	7.8	7.6	7.6	7.6	2.8
9070289	28.0	36.7	54.8	23.3	58.2	47.8	6.0	7.3	7.0	8.7	8.3	6.0	4.0
9070290	24.4	41.5	56.8	29.1	39.2	60.1	6.4	7.0	7.0	9.0	8.3	8.2	2.6
9070296	24.1	44.0	62.0	38.3	64.3	72.3	6.5	6.3	8.5	8.8	8.8	7.5	1.5
9070297	22.6	44.2	55.3	40.2	72.8	85.8	7.4	7.0	8.4	7.2	6.3	8.4	1.4
9070298	19.8	39.5	59.3	28.1	44.8	58.8	6.6	7.6	7.0	6.8	7.6	7.0	3.6
9070299	22.7	38.5	60.1	41.6	49.2	60.3	7.0	7.2	6.8	8.8	7.6	8.0	1.8
9070300	24.0	45.5	63.2	28.5	58.9	70.5	6.2	6.2	8.4	5.4	6.8	7.6	1.6
release 9084126	35.5	75.8	87.6	45.3	100.4	136.7	4.8	4.0	8.0	6.8	5.0	6.2	2.2
9084127	19.1	50.0	49.2	14.0	33.3	47.0	6.7	8.0	8.3	8.0	8.0	7.8	1.8
9084128	21.6	51.3	79.5	31.5	75.6	86.0	6.0	4.5	8.4	6.6	5.0	7.2	1.4
9084130	15.3	33.3	50.3	21.3	33.1	45.5	6.8	7.4	7.8	7.6	7.6	8.2	1.8
9084131	24.0	44.0	58.7	30.8	45.8	62.3	6.4	7.4	7.4	8.8	8.2	6.0	3.8
9084133	14.8	28.0	52.7	22.3	25.7	33.8	8.0	8.0	7.3	9.0	9.0	7.7	1.7
9084134	22.0	53.0	69.0	30.8	54.5	114.0	6.5	6.0	5.7	7.0	6.0	7.5	1.3
9084135	20.2	39.2	55.4	27.3	32.5	41.9	6.8	7.4	7.4	8.6	8.2	4.3	3.0
9084138	11.1	26.0	53.7	12.1	41.3	56.0	7.7	8.3	8.3	9.0	8.3	8.8	1.3
9084140	24.2	42.5	68.7	35.5	84.0	91.8	6.7	5.7	7.3	8.3	7.0	6.7	2.3
mean	24.6	46.8	64.9	33.3	57.1	75.1	6.4	6.4	7.6	7.9	7.1	7.2	2.3
significance	0.0000	0.0000	ns	0.0000	0.0001	0.0000	0.0020	0.0001	ns	0.0006	0.0024	ns	0.0001

[†] canopy density rating: 1=most dense, 9=least dense

[‡] canopy spread rating: 1=most spreading, 9=least spreading

[§] fruit abundance rating: 1=most abundant, 9=least abundant

[¶] browse damage rating: 1=most damage, 9=least damage

Off Center Plantings and Inter-Center Nursery Evaluation:

Off Center Planting – Sheboygan Falls, Wisconsin, 2004. Ten plants were propagated vegetatively in the winter of 2004 and sent to Sheboygan Falls in May, 2004.

Comments from Dexter Porter, District Conservationist – The summer of 2004 was wet, especially spring and early summer (20 inches of rain in 1.5 months). Only one of the 10 plants survived. In 2005 the remaining plant had good branch development, but by the end of the summer there was evidence of severe deer browse. The plant did not survive in 2006.

Off Center Planting – Sheboygan Falls, Wisconsin, 2007. Twelve plants were propagated vegetatively in winter of 2006 and sent to Sheboygan Falls in May, 2007.

Comments from Dexter Porter, District Conservationist – Observations taken in October, 2007. All 12 plants are alive and look “great.” The 2007 planting consisted of large specimens. Older transplant stock is recommended.

Inter-Center Nursery Evaluation – Big Flats Plant Materials Center, Big Flats, New York, 2005. Ten plants were propagated vegetatively in 2005 and sent to Big Flats Plant Materials Center in May, 2005.

Comments from Martin van der Grinten, PMC Manager – Average plant height was 24 inches. The plants were heavily browsed by deer.
No data could be collected due to heavy deer browse.

Comparison of Seed Germination Techniques for Vintage Germplasm common elderberry (accession 9084126) [*Sambucus nigra* L. ssp. *canadensis* (L) R. Bolli]

Materials and Methods

Fruits from common elderberry accession 9084126 were harvested by hand in September 2007. Berries were depulped using a food blender (blades covered) partially filled with water. The mixture was then hand screened, and empty seeds and debris were separated from viable seed by floating the materials in water (adapted from Quicksand, KY PMC). Seeds were allowed to dry for 72 hours after depulping.

Tetrazolium test on the seed viability was 26%.

All treatments were started on September 14, 2007. Seed treatments are listed in Table 2. Seeds receiving no pretreatment were planted in greenhouse containers on September 14. Seeds receiving pretreatment were planted when stratification period was complete. Planting media was Suremix Coir Mix (pH 5.2 – 5.4). Plants were grown in the greenhouse with overhead irrigation + fertilizer and supplemental light.

Three replicates of 100 seeds for each treatment were planted in greenhouse containers. Germination was evaluated 48 days after planting. Germination, expressed as the percentage of seeds planted, was subjected to analysis of variance. Mean separation using Least Significant Difference (0.05) was calculated for the data using Statistix® 8.

Table 2. Germination of Vintage Germplasm common elderberry seeds.

Scarification	Stratification	Stratification Media	Germination (%) ¹
None	None		1.3 bc
None	90-day cold (4°C)	Damp Sphagnum Peat Moss	9.3 b
None	60-day warm (24°C) 90-day cold (4°C)	Perlite	18.0 a
None	60-day warm (24°C) 90-day cold (4°C)	Damp Sphagnum Peat Moss	18.0 a
24-hr hot water soak	60-day warm (24°C) 60-day cold (4°C)	Damp Sphagnum Peat Moss	0 c
10-min 90% sulfuric acid	60-day cold (4°C)	Damp Sphagnum Peat Moss	19.0 a

¹Means followed by the same letter are not statistically different using Least Significant Difference mean separation.

Germination using either a sulfuric acid scarification followed by a 60-day cold stratification, or a 60-day warm stratification followed by 90-day cold stratification was significantly higher than other treatments in the test. Cold stratification alone was not as effective in promoting germination as acid scarification followed by cold stratification, or warm stratification followed by cold stratification.

Recommendation

When propagating Vintage Germplasm common elderberry (accession 9084126) by seed, a pretreatment scheme of sulfuric acid followed by a 60-day cold stratification, or a 60-day warm stratification followed by a 90-day cold stratification should be used to enhance germination.

References for seed germination experiment

Anonymous. 2001. Propagation protocol for production of *Sambucus canadensis* seeds; USDA-NRCS Quicksand Plant Materials Center, Quicksand, KY. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 14 May 2008). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

Dirr, M. A., and C. W. Heuser, Jr. 1987. The Reference Manual of Woody Plant Propagation from Seed to Tissue Culture. Varsity Press. Athens, GA. 239 p.

Heit, C. E. 1967. Propagation from Seed. Part 6. Hardseededness – a critical factor. American Nurseryman 125:10 – 12.

Krefting, L. W., and E. I. Roe. 1949. Role of Some Birds and Mammals in Seed Germination. Ecol. Monogr. 19:269 – 286.

Laurie, Alex, and L. C. Chadwick. 1931. The Modern Nursery – A Guide to Plant Propagation, Culture, and Handling. Macmillan Co., New York, NY. 494 p., illus.

Ritter, C. M., and G. W. McKee. 1964. The Elderberry, History, Classification, and Culture, PA Agr. Exp. Sta. Bull. 709:21.

Schultz, Jan; Beyer, Patty; Williams, Julie. 2001. Propagation protocol for production of container *Sambucus canadensis* L. plants; USDA FS – Hiawatha National Forest, Marquette, Michigan. In: Native Plant Network. URL: <http://www.nativeplantnetwork.org> (accessed 14 May 2008). Moscow (ID): University of Idaho, College of Natural Resources, Forest Research Nursery.

U. S. Forest Service. 1948. Woody-Plant Seed Manual. USDA Misc. Publ. 654, 416 p., illus.

Worley, D. Michael and C. M. Nixon. 1974. Shrubs and Vines for Northeastern Wildlife. USDA Forest Service General Technical Report NE-9. 180 p.