

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
PULLMAN, WASHINGTON

NOTICE OF RELEASE
OF NEWPORT GERmplasm SASKATOON SERVICEBERRY

Amelanchier alnifolia (Nutt.) Nutt. ex M. Roemer var. *alnifolia* from Newport, Washington

The Natural Resources Conservation Service, U.S. Department of Agriculture announces the release of a selected ecotype of SASKATOON SERVICEBERRY (*Amelanchier alnifolia* var. *alnifolia*).

Species:	<i>Amelanchier alnifolia</i> var. <i>alnifolia</i>
Common Name:	Saskatoon serviceberry
Release Name:	Newport Germplasm
Plant Symbol:	AMALA
Accession Numbers:	9033548, T33548

Origin: Native plants near Newport, Pend O'Reille County, Washington, at 2130 feet, Major Land Resource Area E-44.

Description: Newport Germplasm is a deciduous shrub up to 4.9 feet in height and 4.1 feet in width. It produces numerous stems, leaves and fruit. Plants are rhizomatous and have an extensive root system with a massive root crown with horizontal and vertical rhizomes. Plants tend to have a short, spreading growth form with numerous stems, attributes which were deemed desirable for riparian plantings.

Newport Germplasm represents three plants surviving of the six original plants.

It was selected from a Pullman Plant Materials Center study of 222 Saskatoon serviceberry accessions, 169 of which were planted in the field. The study was evaluated from 1983 - 1995. Newport Germplasm was rated excellent in vigor, stem and leaf abundance and good in fruit production. It was a shorter plant than the planting average and other selections.

Areas of Adaptation: Saskatoon serviceberry is naturally found on slopes adjacent to riparian areas and on uplands on dry rocky slopes in precipitation zones with a minimum of 12-14 inches of mean annual precipitation. It occurs in lowlands in interior valleys to near timberline. Its native range is from southern Alaska to California; east to Alberta, the Dakotas and south to New Mexico and Arizona. It occurs with white alder, Douglas hawthorn, chokecherry, mountain ash and elderberry in riparian zones throughout its distribution area. It occurs with many other plant associations, depending on the geographic region of concern.

Anticipated Conservation Use: The primary potential use is in rehabilitation efforts in riparian areas in the Pacific Northwest. Other uses occur in reclamation projects, diversity enhancement, wildlife and shelterbelt plantings. It is an excellent plant for erosion control on streambanks and other sites with adequate moisture. It is an attractive plant for landscaping as a screen or hedge. Conservation practices that may use serviceberry plantings include Channel Vegetation, Conservation Cover, Critical Area Planting, Riparian Forest Buffer and Streambank and Shoreline Protection.

National Environmental Policy Act (NEPA): An Environmental Evaluation worksheet was completed according to the NRCS National Plant Materials Manual, Exhibit 540-31 and attached to the release documentation.

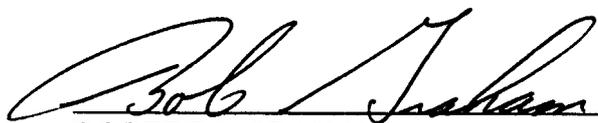
Maintenance of Newport Germplasm Serviceberry: The USDA Natural Resources Conservation Service, Plant Materials Center, Pullman, Washington will maintain the genetic material and make material available on a limited basis to nurseries and researchers.

Notice of Release of Newport Germplasm serviceberry (continued)



LEONARD JORDAN
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

6/7/00
Date



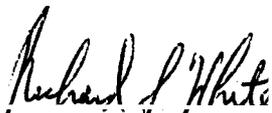
ROBERT J. GRAHAM
State Conservationist
Natural Resources Conservation Service
Portland, Oregon

6/12/00
Date



RICHARD W. SIMS
State Conservationist
Natural Resources Conservation Service
Boise, Idaho

6/15/00
Date



Drane Gelburd
Deputy Chief for Science and Technology
Natural Resources Conservation Service
Washington, D.C.

8/2/00
Date

United States Department of Agriculture
Natural Resources Conservation Service
Pullman Plant Materials Center
104 Hulbert Hall
Pullman, WA

**Documentation for the “Selected” Release
of
Newport Germplasm
Serviceberry**

Scientific Name: *Amelanchier alnifolia* (Nutt.) Nutt. ex. M. Roemer var. *alnifolia*

Common Name: Saskatoon serviceberry

Identification Used: 9033548, T33548

Origin: Seed was collected by Wayne Crowder in August, 1982 near Newport, WA on level ground at 2130 feet elevation (650 m). Associated plants were Ponderosa pine, Douglas fir and snowberry. Major Land Resource Area (MLRA) was E-44 (Northern Rocky Mountain Valleys). Mean annual precipitation was 30 inches (76 cm).

Plant Description: Newport Germplasm serviceberry is a native multi-stemmed, spreading, deciduous shrub with alternate branching, massive root crown, horizontal and vertical rhizomes and an extensive root system. Flowers are white racemes. Mature fruit are purplish black. Saskatoon serviceberry (*Amelanchier alnifolia* var. *alnifolia*) occurs from southern Alaska to California; east to Alberta, the Dakotas and Michigan and south to New Mexico and Arizona.

Mature height of Newport Germplasm serviceberry was 59 inches (150 cm) and mature canopy width was 49 inches (125 cm) in 11 years at Pullman, WA on an upland site with 20 inches (50.8 cm) average annual precipitation. The site also supported a mature stand of Durar hard fescue immediately adjacent to the serviceberry plants. Five year data indicated height at 22 inches (57 cm) and canopy width at 12 inches (30 cm).

Method of Development: Newport Germplasm was selected from among a collection of 222 accessions, 169 of which were successfully established in the field in groups of six plants per accession in 1983 and 1984. The collection was evaluated from 1983 through 1995. Selection was made in 1994 based on overall plant vigor, growth form (short, spreading), stem abundance, foliage abundance and occurrence of the original collection site in MLRA E-44. Newport Germplasm is cold hardy and has no noted disease problems.

Areas of Adaptation: Serviceberry as a species is cold-hardy and is adapted to dry, rocky slopes in full sunlight or partial shade. It also occurs on moist fertile soils, forming an underbrush in aspen and lodgepole pine. It occurs from near sea level to 9000 feet elevation. It occurs in many areas down to 14 inches mean annual precipitation.

Successional Status: Saskatoon serviceberry is most vigorous in seral plant communities. It rarely establishes from seed in early stages of primary succession. It is common after disturbances such as fire, logging or insect outbreak. Serviceberry in forests is fire-dependent, where sprouting from crowns and rhizomes is the primary reproductive means. Serviceberry grows in open sun to moderate shade, but is intolerant of deep shade. It is suppressed in shade and is not normally found in closed canopy forests. It is found in the understory of mixed open forests.

Uses: Serviceberry is used in riparian, reclamation projects, diversity enhancement, wildlife, and shelterbelt plantings. It can be used as a shrub row in multiple row windbreaks. It is planted using containerized materials. Serviceberry is a valued browse plant for wildlife. It is utilized by elk, deer, black bear, beaver, hares, upland game birds, mountain goat, bighorn sheep and bison. It is also used by domestic livestock including cattle, goats and sheep.

Serviceberry is noted as having been used by Native Americans. Fruit was dried and used for winter food. It was also used in pemmican.

Propagation: Newport Germplasm serviceberry can easily be propagated from seed. The seed should be fall sown outside or for greenhouse planting, the seed should be cold-stratified with moisture at about 40° F for 120 to 180 days. Seed does not need scarification.

Establishment: Serviceberry can be established in the field via containerized plants. Supplemental water may be necessary, depending on site conditions. Control of competing vegetation may be necessary.

Serviceberry is recommended for rehabilitating moist sites within its range. It is well adapted to disturbed sites, stabilizes soil and is relatively easy to establish.

Initial Evaluation Performance at the Pullman PMC: Newport Germplasm serviceberry was noted as having good stem abundance, foliage abundance and had a more spreading form than other accessions.

Wildlife Potential: Serviceberry is a valuable wildlife plant. It is utilized by elk, deer, black bear, beaver, hares, upland game birds, mountain goat, bighorn sheep and bison.

Livestock: Serviceberry is rated fair to good in palatability to cattle, goats – good, domestic sheep – fair to good and horses – poor to fair.

Poisonous Properties: There is documentation concerning poisoning of cattle, sheep and goats. Serviceberry contains cyanogenic glucosides, which are hydrolysed by rumen bacteria to free hydrogen cyanide (HCN). The cyanide blocks the action of the cellular enzyme cytochrome oxidase, thereby preventing hemoglobin from releasing oxygen to the tissues. HCN occurs in the twigs before the leaves appear and during the bloom period. The level of HCN potential is highest in new-growth twigs, especially during dry years.

Weediness: Serviceberry is not generally considered to be a weed.

Wetland Indicator: Facultative Upland (FACU): usually occurs in non-wetlands (estimated probability 67-99%), but occasionally found in wetlands (1 – 33% probability). (USFWS, Region 9 - Pacific Northwest)

Maintenance of Newport Germplasm (9033548) Serviceberry: The NRCS Plant Materials Center at Pullman, WA will maintain seed production blocks. Limited amounts of seed will be supplied to interested nurseries for seed production block establishment and to researchers as requested and as available.

National Environmental Policy Act (NEPA) Consideration: This material is native germplasm. It is a common plant through much of the West. Serviceberry is not considered a weed. See attached environmental evaluation.

SERVICEBERRY EVALUATIONS SUMMARY, 1983-1995

SUMMARY: Newport Germplasm serviceberry (9033548) compared very favorably with the initial evaluation planting averages. Means of Newport Germplasm for various parameters across years versus the planting means are listed in Table 1. Newport Germplasm stood out even though as years progressed in the evaluation, only the better accessions were evaluated in the planting. Most rated parameters including vigor, stem abundance and foliage abundance were consistently above that of the planting. Average seed(fruit) production was also above that of the planting.

BACKGROUND: The majority of the collections were from native serviceberry stands in eastern Washington, eastern Oregon and north Idaho.

Breakdown for Major Land Resource Areas(MLRA) represented in the collection follows:

<u>MLRA</u>	<u>No. Accessions</u>
A2	1
B6	3
B8	34
B9	56
B10	5
B11	1
B13	1
D25	2
E43	84
E44	33
Other	2*
TOTAL	222

*Source was materials from USDA Agriculture Research Service Plant Introduction Station.

The collection(fruit) was stored at 32" F and cleaned in a speed controlled blender. Seed was surface dried and stored at 40" F in cloth bags. Seed was fall sown in outside plant beds. Spring germinated plants were transferred to 10 cubic inch Ray Leach super cell cone-tainers. Plants were placed in a growth chamber to accelerate growth, then placed in a lath house on August 5. Plants were transferred in October for over-wintering to the PMC cold frame. Five accessions were field planted April 7, 1983 and the rest of the 169 accessions were planted April 16, 1984.

The collection was planted into an existing stand of Durar hard fescue which was established in 1982. The fescue had 3 foot squares spot sprayed with Glyphosate(Roundup) 5 days prior to planting. Hand weeding was used in the planting year to reduce competition. The site was an upland on Thatuna silt loam soil.

Newport Germplasm (9033548) was selected from the initial evaluation collection in Field Q1.

GROWTH RATES: The following chart represents growth rates in the initial evaluation planting (IEP).

Height and canopy for serviceberry

	Heights (cm)			
	2 years	5 years	10 years	12 years
Planting Means	33.1	59.2	214.1	221.0
Newport Germplasm	34.0	57.0	140.0	150.0
9033580	33.0	60.0	172.0	175.0
9033672	45.0	150.0	295.0	310.0

	Canopy Width (cm)			
	3 years	5 years	10 years	12 years
Planting Means	23.3	32.1	137.9	147.2
Newport Germplasm	30.0	30.0	105.0	125.0
9033580	22.0	35.0	130.0	130.0
9033672	42.0	70.0	170.0	180.0

INITIAL EVALUATION PLANTING MEANS VS NEWPORT GERMPLOSM (9033548)

The following table summarizes some of the data from the initial evaluation planting that is not year dependent.

Table 1. Newport Germplasm (9033548) and planting means across years, Field Q1, Pullman PMC.

----dates----	Planting Means	9033548 ²	9033580 ³	9033672 ⁴
Recovery	April 16	April 15	April 8	April 6
Bloom	May 2	May 11	May 3	April 23
Fruit Mature	July 14	July 24	July 18	July 15
Dormant	Oct. 13	Oct. 17	Oct. 20	Oct. 20
Leaf Fall	Oct. 13	Oct. 11	Oct. 15	Oct. 16
----ratings ¹ ----				
vigor 1	2.6	1.8	2.1	1.2
vigor 2	2.7	1.9	2.5	1.5
stem abundance	2.9	2.0	2.4	1.4
foliage abundance	2.7	2.0	1.8	1.3
cold resistance	1.2	1.5	1.1	1.1
seed amount	5.9	5.0	3.8	6.3

¹ Ratings are 1-9, with 1 best

² Newport Germplasm

³ Kendrick Germplasm

⁴ Okanogan Germplasm

Table 2. Serviceberry yearly performance average (1982-1995) for the planting versus the selected accessions. Location: Pullman PMC, Pullman, WA. Field Q1.

	Planting	-----Accessions-----		
		9033548 ¹	9033580 ²	9033672 ³
1983				
No. accessions evaluated (T)	5	--	--	--
Total no. field transplants	30	--	--	--
No. plants survived	20(66%)	--	--	--
Vigor 1*	3.4	--	--	--
Spring establishment height (cm)	10.6	--	--	--
End of season height (cm)	23.0	--	--	--
Average growth (cm)	12.4	--	--	--
1984				
No. acc. evaluated (T)	169	1	1	1
No. plants survived	910(90%)	6	6	5
Vigor 1*	3.3	2	3	1
Height (cm)	23	26	31	25
1985				
No. acc. evaluated (T)	169	1	1	1
No. plants survived	718(71%)	5	6	5
No. plants bloomed	0	0	0	0
No. plants matured fruit	0	0	0	0
Recovery date	04/22	04/22	04/22	04/22
Dormant date	10/15	10/17	10/17	10/17
Vigor 1*	3.4	4	3	1
Vigor 2*	3.8	3	4	1
Height (cm)	33	34	33	45
1986				
No. acc. evaluated (T)	161	1	1	1
No. plants survived	555(55%)	4	6	5
No. plants bloomed	20	0	0	0
No. plants matured fruit	11	0	0	0
Recovery date	04/07	03/27	03/27	03/27
Dormant date	10/10	10/08	10/16	10/17
Leaf fall date	10/10	10/08	10/08	10/17
Vigor 1*	3.6	1	2	2
Vigor 2*	3.6	1	2	2
Stem abundance*	3.4	1	3	2
Foliage abundance*	3.4	1	2	2
Disease resistance*	1.6	2	2	2
Insect resistance*	1.0	1	1	1
Cold resistance*	1.0	1	1	1
Drought resistance*	1.9	2	3	2
Height (cm)	41.7	50	45	67
Canopy cover (cm)	23.3	30	22	42

T = total

* Ratings 1-9, with 1 best

1 Newport Germplasm

2 Kendrick Germplasm

3 Okanogan Germplasm

Table 2. continued

	Planting	-----Accessions-----		
		9033548	9033580	9033672
1987				
No. acc. evaluated (T)	154	1	1	1
No. plants survived	455(45%)	4	6	5
No. plants bloomed	61	1	2	0
No. plants matured fruit	35	0	2	0
Fruit mature date	07/07	--	--	--
Recovery date	04/15	04/17	04/02	04/02
Dormant date	10/11	10/10	10/17	10/17
Leaf fall date	10/17	10/17	10/17	10/17
Vigor 1*	3.1	1	1	1
Vigor 2*	3.4	3	2	2
Stem abundance*	3.1	1	2	1
Foliage abundance*	3.5	2	1	2
Disease resistance*	1.9	2	2	2
Insect resistance*	1.0	1	1	1
Cold resistance*	1.0	1	1	1
Drought resistance*	3.1	3	2	3
Height (cm)	51.0	50	55	95
Canopy cover (cm)	27.4	30	35	50
1988				
No. acc. evaluated (T)	140	1	1	1
No. plants survived	372(37%)	4	6	5
No. plants bloomed	64	1	4	3
No. plants matured fruit	30	0	2	3
Bloom date	05/08	05/10	05/01	04/27
Fruit mature date	--	--	--	--
Recovery date	04/20	04/12	04/05	04/02
Dormant date	10/19	11/04	11/04	11/04
Leaf fall date	10/13	10/12	10/21	10/12
Vigor 1*	3.5	2	2	2
Vigor 2*	4.0	2	3	2
Stem abundance*	3.4	2	2	1
Foliage abundance*	3.9	2	2	2
Disease resistance*	1.6	1	2	2
Insect resistance*	1.1	1	2	1
Cold resistance*	1.4	1	1	1
Drought resistance*	3.2	2	2	3
Seed amount*	9.0	9	9	9
Height (cm)	59.2	57	60	150
Canopy Cover (cm)	32.1	30	35	70

T = total

* Ratings 1-9, with 1 best

Table 2. continued

	Planting	Accessions		
		9033548	9033580	9033672
1989				
No. acc. evaluated (T)	130	1	1	1
No. plants survived	342(34%)	4	6	5
No. plants bloomed	89	0	3	4
No. plants matured fruit	44	0	2	4
Bloom date	05/05	--	05/01	04/24
Fruit mature date	07/10	--	--	07/11
Recovery date	04/21	04/24	04/14	04/10
Dormant date	10/12	10/16	10/16	10/16
Leaf fall date	10/11	10/09	10/16	10/20
Vigor 1*	3.1	1	2	1
Vigor 2*	3.1	2	2	1
Stem abundance*	3.1	2	2	1
Foliage abundance*	3.4	2	2	1
Disease resistance*	1.6	1	1	2
Insect resistance*	1.0	1	1	1
Cold resistance*	1.0	1	1	1
Drought resistance*	2.9	1	2	2
Seed amount*	6.0	--	--	--
Height (cm)	69.7	60	70	183
Canopy cover (cm)	39.6	45	40	70
1990				
No. acc. evaluated (T)	72	1	1	1
No. plants survived	301(30%)	4	6	5
No. plants bloomed	31	0	0	2
No. plants matured fruit	29	0	0	2
Bloom date	--	--	--	04/10
Fruit mature date	--	--	--	07/13
Vigor 1*	1.9	2	2	1
Vigor 2*	2.0	2	3	1
Stem abundance*	2.0	2	2	1
Foliage abundance*	2.1	3	2	1
Disease resistance*	1.3	1	1	2
Insect resistance*	1.1	2	1	1
Cold resistance*	1.1	2	1	1
Drought resistance*	1.9	2	2	2
Seed amount*	7.3	--	--	9
Height (cm)	141.6	75	80	243
Canopy cover (cm)	77.1	60	50	107

T =total

* Ratings 1-9, with 1 best

Table 2. continued

	Planting	-----Accessions-----		
		9033548	9033580	9033672
1991				
No. acc. evaluated (T)	7	1	1	1
No. plants survived	288(28%)	4	6	5
No. plants bloomed	20	2	4	5
No. plants matured fruit	20	2	4	5
Fruit mature date	07/22	07/24	07/24	07/18
Vigor 1*	1.7	2	3	1
Vigor 2*	1.9	2	3	1
Stem abundance*	2.4	3	3	1
Foliage abundance*	2.3	3	2	1
Disease resistance*	1.3	1	2	1
Insect resistance*	1.3	2	1	1
Cold resistance*	1.7	2	2	1
Drought resistance*	2.0	2	2	1
Seed amount*	4.1	6	3	4
Height (cm)	172.1	100	140	265
Canopy cover (cm)	102.1	80	100	120
1992				
No. acc. evaluated (T)	7	1	1	1
No. plants survived	271(27%)	5	6	5
No. plants bloomed	18	2	6	5
No. plants matured fruit	12	1	6	0
Recovery date	04/08	04/14	04/01	04/01
Bloom date	04/14	--	--	04/14
Fruit mature date	07/16	07/23	07/18	--
Vigor 1*	1.7	1	1	1
Vigor 2*	1.9	1	1	2
Stem abundance*	2.6	1	2	1
Foliage abundance*	2.1	1	1	1
Disease resistance*	1.0	1	1	1
Insect resistance*	1.3	1	1	1
Cold resistance*	1.7	1	1	1
Drought resistance*	1.9	2	1	2
Seed amount*	7.8	4	1	9
Height (cm)	199.3	125	140	275
Canopy cover (cm)	117.9	145	190	150

T =total

* Ratings 1-9, with 1 best

Table 2. continued.

	Planting	-----Accessions-----		
		9033548	9033580	9033672
1993				
No. acc. evaluated (T)	7	1	1	1
No. plants survived	268(27%)	3	6	5
No. plants bloomed	23	3	6	5
No. plants matured fruit	57	3	6	5
Recovery date	04/19	04/23	04/16	04/09
Bloom date	05/11	05/13	05/10	05/10
Vigor 1 *	1.9	3	2	1
Vigor 2 *	1.9	2	3	1
Stem abundance*	2.7	3	3	2
Foliage abundance*	2.1	2	2	1
Disease resistance*	1.0	1	1	1
Insect resistance*	1.0	1	1	1
Cold resistance*	1.0	1	1	1
Drought resistance*	1.9	2	2	2
Seed amount*	3.9	4	3	2
Height (cm)	214.1	140	172	295
Canopy cover (cm)	137.9	105	130	170
1994				
No. acc. evaluated (T)	9	1	1	1
No. plants survived	255(25%)	3	6	5
No. plants bloomed	30	3	6	5
No. plants matured fruit	30	3	6	5
Fruit mature date	07/06	--	07/05	07/10
Vigor 1 *	1.9	2	2	1
Vigor 2 *	2.0	2	3	1
Stem abundance*	3.0	3	3	2
Foliage abundance*	2.2	2	2	1
Disease resistance*	1.6	2	2	1
Insect resistance*	1.0	1	1	1
Cold resistance*	1.0	1	1	1
Drought resistance*	1.8	1	1	1
Seed amount*	5.7	6	6	6
Height (cm)	205.2	150	172	310
Canopy cover (cm)	138.3	125	130	180
1995				
No. acc. evaluated (T)	9	1	1	1
No. plants survived	254(25%)	3	6	5
No. plants bloomed	33	3	6	5
No. plants matured fruit	33	3	6	5
Fruit mature date	07/25	07/25	07/25	07/25
Vigor 1 *	1.9	1	2	1
Vigor 2 *	1.9	2	1	2
Stem abundance*	2.8	2	2	2
Foliage abundance*	2.2	2	2	1
Disease resistance*	1.2	1	1	1
Insect resistance*	1.0	1	1	1
Cold resistance*	1.0	1	1	1
Drought resistance*	1.2	1	1	1
Seed amount*	4.7	1	1	5
Height (cm)	221.1	150	175	310
Canopy cover (cm)	147.2	125	130	180

T = total

*Ratings 1-9, with 1 best

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