

United States Department of Agriculture



Natural Resources Conservation Service  
West National Technology Support Center  
1201 NE Lloyd Blvd., Ste. 1000  
Portland, Oregon 97232  
Phone: 503-273-2427  
FAX: 503-273-2401

---

SUBJECT: Plant Release Packet Review

DATE: July 24, 2008

TO: Steve Parr, Mgr.  
Colorado Environmental Plant Center  
Meeker, Colorado

FILE CODE: 190-18

The plant release committee has reviewed the Longridge Germplasm Utah serviceberry release packet and determined, based on the information provided to us, that 13 points should be awarded for the release (see attachment). The committee recommends that you submit the packet to your cooperators for signatures after making suggested modifications to the Plant Guide and brochure and forward it on to National Headquarters (NHQ) for the final signature.

You will need to include a copy of this letter when submitting the packet to NHQ for verification that the release packet has been reviewed by the plant release committee.

/s/

JAMES A BRIGGS  
Plant Materials Specialist

cc:

Pat Davey, PMS, Lakewood, Colo

Robert Escherman, National Program Leader-Plant Materials, NRCS, Washington, D.C.

Joel Douglas, Plant Materials Specialist, CNTSC, NRCS, Ft. Worth, Texas

John Englert, PMC Manager, National Plant Materials Center, NRCS, Beltsville, Maryland

*Helping People Help the Land*

An Equal Opportunity Provider and Employer



**UPPER COLORADO ENVIRONMENTAL PLANT CENTER  
MEEKER, COLORADO**

**and**

**UNITED STATES DEPARTMENT OF AGRICULTURE  
NATURAL RESOURCES CONSERVATION SERVICE  
LAKEWOOD, COLORADO**

**and**

**COLORADO STATE AGRICULTURAL EXPERIMENT STATION  
FORT COLLINS, COLORADO**

**NOTICE OF RELEASE OF LONG RIDGE GERmplasm  
UTAH SERVICEBERRY**

Upper Colorado Environmental Plant Center (UCEPC), the Natural Resources Conservation Service, U.S. Department of Agriculture, and the Colorado State Agricultural Experiment Station announce the naming and release of Long Ridge Germplasm Utah serviceberry (*Amelanchier utahensis* Koehne). Long Ridge Germplasm Utah serviceberry has been assigned the NRCS accession number 9021438, and is released as a selected class of certified seed (natural track).

This alternative release is justified because there is no release of this species. In addition, the site of the seed source on the Roan Plateau and the Piceance Basin of western Colorado and eastern Utah is undergoing substantial disturbance from oil and gas development. Seed increase and plant production of specific ecotypes, especially for use in the central Rocky Mountains, is needed for increased opportunities for site specific and site-adapted products.

**Collection Site Information:** Accession 9021438 was collected in 1975 at an elevation of 8100 feet above Parachute Creek in Garfield County, Colorado, by H. Hodgkinson. The collection was obtained from Long Ridge in Major Land Resource Area (MLRA) 48A, Township 5S, Range 95W in Sections 15 - 17. Approximations for the site include 16 inches of annual precipitation and an 80 day growing season.

**Description:** Long Ridge Germplasm Utah serviceberry is a native clump forming, multi-stemmed, deciduous shrub. The multiple stems arise from root crowns or short rootstocks, and the species has an extensive root system. The leaves are alternate, simple, oblong to nearly round, from one to two inches in size with margins toothed above the middle of the leaf. The flowers are showy white racemes with five lobed, bell shaped calyxes, and five strap-shaped white petals about one-half inch long. Mature fruit are fleshy and red to dark purple miniature apple-like pomes with 4-10 seeds (Harrington 1964, Wasser 1982, and SCS 1988). The dark color of the fruit and the “fleshiness” are somewhat unique as a Utah serviceberry, and this trait is consistent with Long Ridge Germplasm.

Long Ridge Germplasm is a large statured serviceberry, with mature plants reaching an average height of 350 centimeters and a canopy width of 450 centimeters. Besides the large size, Long Ridge Germplasm does not readily produce sprouts or suckers when compared to other sources. Long Ridge Germplasm begins flowering in May and the fruit is ripe in early to mid August (UCEPC Annual Technical Reports 1977-1988).

**Method of Breeding and Selection:** Long Ridge Germplasm was selected after seven years of evaluations based on results of three separate studies, two of which were conducted on site. These studies included an evaluation of serviceberry tublings, a serviceberry germination study, and an off-center performance study.

The Initial Evaluation Planting of tublings conducted at UCEPC contained fourteen serviceberry accessions. The project utilized container grown tublings that were planted in 1977. Although the project was evaluated through 1988, there was enough data from the three studies to make the 1984 evaluation the year of decision for selecting materials for further development, and Table 1 summarizes that evaluation. The accessions were represented by different numbers of plants, and this, too, is shown in the table. Twenty-two individual plants comprised the Long Ridge collection.

**Table 1. Seven Year (1977-1984) Performance Evaluation of Serviceberry at Upper Colorado Environmental Plant Center, Meeker, Colorado.**

Accession No.	Number Planted	Survival		Vigor	Seed	Ht (cm)	Wd (cm)	Wildlife Use
		Number	Percent					
9021438	22	18	81.8	3	Heavy	195	275	Very Light
9021439	12	10	83.3	3	Moderate	215	250	Very Light
9021440	22	19	86.4	3	Average	175	250	Very Light
9021441	6	6	100.0	3	Average	190	200	Very Light
9021442	22	18	81.8	3	Average	138	175	Very Light
9021443	22	22	100.0	3	Heavy	170	230	Very Light
9015830	18	16	88.9	3	Moderate	167	195	Very Light
9021445	23	21	91.3	3	Light	190	215	Light
9021446	22	20	90.9	3	Heavy	152	182	Very Light
9021454	10	6	60.0	3	None	158	190	Very Light
9021447	4	4	100.0	3	Heavy	170	188	Very Light
9021448	2	2	100.0	3	Heavy	170	190	Very Light
9021449	22	22	100.0	3	Heavy	193	195	Very Light
9021450	24	21	87.5	3	Moderate	165	185	Very Light
<b>Mean:</b>			<b>89.4</b>			<b>174.9</b>	<b>208.6</b>	

Vigor is an estimated value: 1 = high, 9 = low.

Project planted 1977

Long Ridge Germplasm was one of two accessions of large serviceberry plants. Although it did not have as good of survival as many of the other entries, it did have good survival at nearly 82% and was a heavy seed producer.

The seed germination study was planted in 1976 and evaluated through 1978. Six of the fourteen accessions from the previous project were included in this study. Results of the study are summarized in Table 2. Rows of each accession were two feet apart and two feet long. Seeding was conducted October 20, 1976. Approximately 30 seeds per foot of row were planted one half inch deep. The seeding was mulched with wheat straw and received one to two inches of supplemental irrigation.

**Table 2. Summary of Serviceberry Response to Direct Seeding at Upper Colorado Environmental Plant Center, Meeker, Colorado**

Accession #	5/2/1977	8/22/1977		4/25/1978			10/13/1978		Interpretative Values				
	Spring Emergence I-9	% Stand	Vigor I-9	% Stand	Vigor I-9	Height in Cm.	% Stand	Vigor I-9	Germinated Readily I-9	Germinated Slowly I-9	Produced Strong Seedling I-9	Winter Hardiness as Seedlings I-9	Overall Direct Seeding Potential
9021438	5	75	3	75	1	9	75	1	5	2	1	1	1
9021439	5	60	5	90	5	5	90	5	5	2	3	2	3
9015830	5	75	5	90	3	7	90	5	5	2	3	2	3
9021445	7	75	5	90	5	5	90	5	5	2	3	2	3
9021447	5	60	5	90	5	5	90	5	5	2	3	2	3
9021450	3	50	5	90	7	3	90	5	4	5	5	2	3

Numerical rating of 1 to 9 with 1 being best

The two year study showed that Long Ridge Germplasm, accession 9021438, had good cover, excellent vigor, and was the tallest serviceberry the only time that height was recorded. Since superior vigor was exhibited by Long Ridge Germplasm seedlings over a two-year period, it was concluded that it was the most likely to be successfully established by direct seeding.

Table 3 below summarizes a 17 year study of nine serviceberry accessions planted on a strip coal mine between Meeker and Craig, Colorado, planted in 1977.

**Table 3. Seventeen Year Summary of Serviceberry Performance at Colowyo Coal Company**

<b>Accession No.</b>	<b>% Survival</b>	<b>Vigor</b>	<b>Height</b>	<b>Width</b>	<b>Seed</b>
<b>9021438</b>	<b>40%</b>	<b>3</b>	<b>154</b>	<b>145</b>	<b>Light</b>
9021440	10%	6	16	14	None
9021442	30%	4	62	75	Very Light
9021443	20%	4	95	90	Very Light
9015830	60%	4	115	115	Moderate
9021449	50%	4	110	100	Light
9021445	20%	5	110	100	Very Light
9021446	20%	5	45	50	None
9021450	20%	4	110	115	Moderate
<b>Mean:</b>	<b>30%</b>		<b>91</b>	<b>89</b>	

Vigor estimated value: 1 = high, 9 = low.

Again, survival was not the best for the Long Ridge Germplasm accession, but vigor and plant size were superior to the other accessions.

In 1984, seven years after the initial plantings, the results from these three studies provided enough evidence to establish an isolated seed increase planting. This was accomplished by transplanting 30 greenhouse produced tublings. Notes were taken on the increase project for six years with the final data being obtained in 1990. The increase planting has served as the seed source for Long Ridge Germplasm.

The selection of Long Ridge Germplasm was made from overall performance based on seed emergence, satisfactory survival, vigor, seed production, seedling vigor, and plant size. Eleven years after planting, Long Ridge Germplasm serviceberry was one of the largest accessions in the study, averaging 230 centimeters in height and 320 centimeters in width from evaluations of 18 plants surviving out of 22 planted.

Additional plantings were conducted at other off-center sites near Pinedale, Wyoming and Silverton, Colorado. Both sites have short growing seasons and very cold (-40 degree F) winter temperatures. Long Ridge Germplasm transplants did not survive at the Standard Metals Mine study in Silverton and only one transplant out of 5 survived eight years after planting at Soda Lake near Pinedale.

In 2006, seed from the increase block was direct seeded along with 15 other shrubs in four replications at UCEPC. Long Ridge Germplasm was superior to 12 different shrub species for percent plant stand, and was exceeded only by Maybell Select Germplasm antelope bitterbrush. The summary of the first year of data is provided in Table 4.

**Table 4. Percent Plant Stand for 16 shrub species direct seeded at Upper Colorado Environmental Plant Center, Meeker, Colorado\***

<b>Common Name</b>	<b>Scientific Name</b>	<b>Percent Plant Stand</b>
Antelope Bitterbrush	<i>Purshia tridentata</i>	96.6 a **
Utah Serviceberry	<i>Amelanchier utahensis</i> #9021438	91.7 a
Fringed Sage	<i>Artemisia frigida</i>	90.0 a
Squaw Apple	<i>Peraphyllum ramosissimum</i>	71.6 ab
Cliff Fendlerbush	<i>Fendlera rupicola</i>	55.0 bc
Golden Currant	<i>Ribes aureum</i>	43.3 cd
Silver Sage	<i>Artemisia cana</i>	41.7 cd
Silver Buffaloberry	<i>Shepherdia argentea</i>	21.7 de
Black Chokecherry	<i>Prunus virginiana</i> var. <i>melanocarpa</i>	11.7 e
Basin Big Sagebrush	<i>Artemisia tridentata</i> spp. <i>tridentata</i>	6.7 e
Red Barberry	<i>Berberis haematocarpa</i>	5 e
Smith's Buckthorn	<i>Rhamnus smithii</i>	1.7 e
Apache Plume	<i>Fallugia paradoxa</i>	0 e
Wyoming Big Sagebrush	<i>Artemisia tridentata</i> spp. <i>wyomingensis</i>	0 e
Rockspirea	<i>Holodiscus dumosus</i>	0 e
Little Leaf Mockorange	<i>Philadelphus microphyllus</i>	0 e

\* Planting Date: November 6, 2006

\*\* Means followed by the same letters are not significantly different as determined by least significant difference test at P<0.05.

**Ecological Considerations and Evaluations:** While many serviceberry ecotypes readily sprout from root suckers, Long Ridge Germplasm is a weak sprouter and has been observed self propagating more often from seed than from sprouts or suckers. In the 30 years that UCEPC has grown serviceberry, it has not displayed aggressive behavior and is not considered weedy.

An Environmental Evaluation of Plant Materials Releases was completed using guidelines established by NRCS, over 30 years of production experience on site at UCEPC, and a general knowledge of a very prevalent species in the area. The environmental assessment indicated a release of this plant would have a low impact on habitats and ecosystems and that it is easy to manage once established.

Utah serviceberry is considered to be an important browse for livestock and wildlife. However, when forced to graze strictly on a closely related species, Saskatoon serviceberry, toxic effects have been documented in both cattle and mule deer (Majak, et al. 1980). Saskatoon serviceberry is capable of producing toxic levels of hydrogen cyanide (HCN) or prussic acid. The HCN is generated enzymatically from cyanogenic glycosides when plant tissue is fragmented during mastication and rumination. Hydrogen cyanide is very toxic because it blocks aerobic cellular respiration. No such studies were found that identified a similar effect from Utah serviceberry, but some correlation may be expected.

**Conservation Use:** Utah serviceberry is a valuable plant for wildlife habitat, providing both food and cover for many species. Its leaves and twigs are readily consumed by big game

animals, and its berries are relished by many species of birds, wildlife, and livestock (Wasser 1982, SCS 1988). Specifically, Columbian sharptail grouse use buds of serviceberry in the winter-spring seasons (Dargan et al. 1942). Its massive root system is beneficial in reducing erosion in rangeland and mined land plantings, and its growth form and showy white flowers are an attractive addition in natural landscape and urban xeriscapes (Zlatnik 1999). As a result, it is used in wildlife habitat enhancement plantings, range and mined land reclamation plantings, shelterbelts, windbreaks and other native landscape plantings.

Native Americans ate the berries fresh and dried, often mixed with other foods for sweetening and flavor. The wood was used for arrow shafts, digging sticks, and tool handles (Dunmire et al. 1997).

Its most common name, “serviceberry”, originated with early settlers who used its flowers for spring burial services (Schneider and Schneider, 2008).

**Area of Adaptation:** The species is well adapted to deep, fertile, well drained, medium textured soils. It can be found in weakly acidic to weakly basic soils, but does not tolerate saline soils or high water tables. It is well suited to sites with 16 to 20 inches of annual precipitation, but can be found at sites with 12 to 16 inches as well. It is an abundant shrub in MLRAs 34, 36, 47, and 48 of western Colorado, eastern Utah, and southern Wyoming, and generally occupies warmer, drier sites than Saskatoon serviceberry. Utah serviceberry is found from Washington to California east to Montana, Colorado, and Texas at elevations ranging from 5000 to 9500 feet in Colorado (Harrington 1964). Long Ridge Germplasm has been tested near Pinedale, Wyoming, and Meeker, Silverton, Steamboat Springs, and Craig, Colorado. Additional testing will need to be conducted in locations where Utah serviceberry, rather than only Saskatoon serviceberry, is suited.

**Availability of Plant Material:** Upper Colorado Environmental Plant Center will maintain G1 seed. G1 seed and G2 plants will be available to growers and nurseries. Growers and nurseries may sell G2 seed or G2 plants. No seed or plants beyond G2 will be eligible for certification as Long Ridge Germplasm.

## **References:**

Dargan, L. M., H. R. Sheperd, and R. N. Randall. 1942. Data on sharp-tailed grouse in Moffat and Routt Counties. Colorado Game and Fish Dept., Sage Grouse Survey, Volume 4. 28p

Dunmire, W.W. and G. D. Tierney. 1997. Wild Plants and Native Peoples of the Four Corners. Museum of New Mexico Press, Santa Fe, New Mexico. 313 p.

Harrington, H.D. 1964. Manual of the Plants of Colorado. Second edition. The Swallow Press Incorporated. Chicago, Illinois.

Majak. W., T. Udenberg, L. J. Clark and A. McLean. March 1980. Toxicity of Saskatoon Serviceberry to Cattle. Can. Vet. J. 21:74-76.

Soil Conservation Service (SCS). 1988. Plant materials handbook. Distributed by US Dept. of the Interior. Office of Surface Mining, Reclamation and Enforcement.

Pullman Plant Materials Center. 2000. *Notice of Release of Okanogan Germplasm Saskatoon Serviceberry*. P1-2. USDA NRCS Pullman Plant Materials Center, Pullman WA.

Saskatoon Serviceberry Toxic to Deer. pp. 362-364. *The Journal of Wildlife Management*: Vol. 49, No. 2 (Apr., 1985)

Schneider, Al and Betty. "Amelanchier utahensis". *Wildflowers, Ferns, and Trees of the Four Corners Region of Colorado, New Mexico, Arizona and Utah*. 2008.

<<http://swcoloradowildflower.com>> (22 July 2008)

Upper Colorado Environmental Plant Center. 1977- 1988. Annual Technical Reports. Meeker, CO. Unpublished. Meeker, CO.

USDA, SCS. 1981. Land Resource Regions and Major Land Resource Areas of the United States. *Agriculture Handbook* 296.

USDA, NRCS. 2007. The PLANTS Database (<http://plants.usda.gov>, 17 July 2008). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, NRCS. Plant Guide, Saskatoon. Guy Nesom. January 2001. North Carolina Botanical Garden.

USDA, NRCS. Plant Fact Sheet, Utah Serviceberry. Dr. Gary Noller. In press. Upper Colorado Environmental Plant Center.

Wasser, C.L. 1982. Ecology and culture of selected species useful in revegetating disturbed lands in the West. US Fish and Wildlife Service (FWS/OBS-82/56).

Zlatnik, Elena. 1999. *Amelanchier utahensis*. In: Fire Effects Information System. US Dept. of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory.

Available: <<http://www.fs.fed.us/database/feis/plants/shrub/ameuta/all.html>>

**Prepared by:**

Steve Parr  
Upper Colorado Environmental Plant Center  
5538 County Road 4  
Meeker, CO 81641

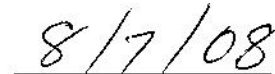
Marti Walsh  
Upper Colorado Environmental Plant Center  
5538 County Road 4  
Meeker, CO 81641

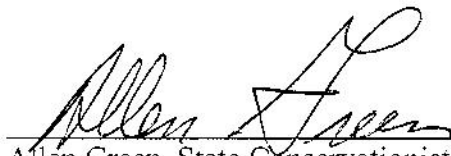


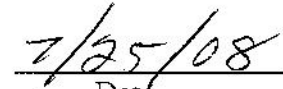
Signatures for the release of:

Long Ridge Germplasm  
Utah serviceberry *Amelanchier utahensis* Koehne

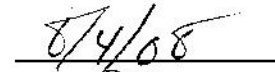
  
\_\_\_\_\_  
Wade Cox, President  
Upper Colorado Environmental Plant Center  
Meeker, Colorado

  
\_\_\_\_\_  
Date

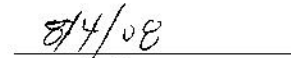
  
\_\_\_\_\_  
Allen Green, State Conservationist, Colorado  
USDA Natural Resources Conservation Service  
Lakewood, Colorado

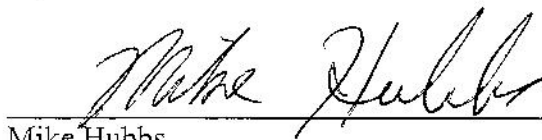
  
\_\_\_\_\_  
Date

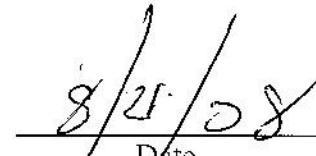
  
\_\_\_\_\_  
Dr. Lee Sommers, Director  
Colorado Agricultural Experiment Station  
Fort Collins, Colorado

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Dr. S. J. Wallner  
Colorado Agricultural Experiment Station  
Fort Collins, Colorado

  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Mike Hubbs  
Director, Ecological Sciences Division  
United States Department of Agriculture  
Natural Resources Conservation Service  
Washington, D.C.

  
\_\_\_\_\_  
Date