

Agricultural Research Information System
Inventions-Plant Materials Dockets Disclosure

Attachment 1

Docket No: 0005.05 FY: 2005

Variety Name or Germplasm Designation: PUEBLO

Crop(Common Name): BOTTLEBRUSH SQUIRRELTAIL

Genus: Elymus Elymoides [raf.]

Species: swezey ssp. brevifolius

Certified Seed? Yes

PVP No:

Is or was there a CRADA? No

ARS CRADA No:

1. Was this plant material developed in cooperation with a university experiment station or other organization? What resources were contributed by the cooperator. e.g. technicians, breeders, land, facilities, services, test date, etc. List all cooperator employees who were directly involved in the breeding and selection of this material

The Upper Colorado Environmental Plant Center; United States Department of Agriculture, Natural Resources Conservation Service; United States Department of Agriculture, Agricultural Research Service; and Colorado State Agricultural Experiment Station announce the release of a selected class of bottlebrush squirreltail (*Elymus elymoides* [Raf.] Swezey ssp. *brevifolius*) for the revegetation of disturbed sites within the natural range of this subspecies.

Because this is a selected class release (natural track), this plant will be referred to as Pueblo Germplasm bottlebrush squirreltail. This collection was assigned the Natural Resources Conservation Service (NRCS) accession number 9040187. Pueblo Germplasm is released as a selected class of certified seed (natural track).

This alternative release is justified because there is no release of the subspecies *E. elymoides* ssp. *brevifolius* from a single source. Tusas Germplasm bottlebrush squirreltail, released by Los Lunas PMC, is a composite of eight accessions originating in New Mexico. Pueblo Germplasm, along with Wapiti Germplasm, will represent the only releases of ssp. *brevifolius* from single sources. Furthermore, the subspecies *brevifolius* is the most prevalent subspecies in the Rocky Mountains. Bottlebrush squirreltail germplasms Fish Creek and Toe Jam Creek represent *E. elymoides* ssp. *elymoides* and *E. elymoides* ssp. *californicus* respectively. Seed increase 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: Pueblo Germplasm bottlebrush squirreltail (accession 9040187) was originally collected August, 1976 by Larry Klock of the Natural Resources Conservation Service. The collection site is southwest of Pueblo, Colorado in Pueblo County (SE 1/4, SW1/4, Sec. 19, T22S, R68W). The landform consists of steep side slopes of benches, mesas and mountains. The site elevation is approximately 7200 feet and the soils are shallow and gravelly. Associated species included western wheatgrass, cheatgrass, yellow sweetclover, annual sunflower and Gambel oak.

2. Provide a full description of the plant material to be released. Please include the complete text of the proposed release notice. Detailed instructions available.

Bottlebrush squirreltail, *Elymus elymoides*, is a cool-season native perennial bunchgrass. The plant grows 8-25 inches tall, and occurs primarily on dry, gravelly or saline soils and is common on hillsides and alkaline flats. The stiff, involute leaf blades expand up to 3/16 of an inch in width and often become smooth or softly pubescent. The spikes of the inflorescence have long divergent awns and are commonly enclosed at the upper part of

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the sheath. The spikelets are two flowered at each node of a disarticulating rachis with the rachis breaking at the base of each joint. The spikelets drop from the seed head and are disseminated by the wind into surrounding areas.

Bottlebrush squirreltail is widely distributed spanning from Mexico to British Columbia and from the west coast to the Dakotas and south to Oklahoma and Texas. It also occupies a wide range of elevations from 4,000 to 10,500 feet. As a species, *Elymus elymoides* has good drought resistance and tolerance to saline-alkali soils. The plant is also useful for erosion control and has become an important tool for oil shale restoration and coal mine reclamation. It establishes easily and creates a good environment for succession. Bottlebrush squirreltail is also quite resistant to fire. The tussocks of squirreltail have low densities and burn quickly and at relatively low temperatures when compared to other perennial bunchgrasses such as needle-and-thread and bluebunch wheatgrass. As a result, meristematic crown tissue of burned squirreltail plants generally survives. Bottlebrush squirreltail is valuable winter forage for many domestic and wildlife species because of its long green period. Pueblo Germplasm bottlebrush squirreltail obtains a height of 12 to 18 inches, and initiates growth and matures approximately 10 days to two weeks later than the Wapiti selection of bottlebrush squirreltail.

Method of Breeding and/or Selection: A total of 8 bottlebrush squirreltail accessions were collected from sites along the east and west side of the Rocky Mountains and eastern Utah. These collections were established and initially evaluated in 1983 for survival, overall forage production, potential seed production, and seedling vigor. In 1984, the accessions were evaluated for percent stand, leaf height, vigor, leaf abundance, stem height and seed production. In 1987, the last year of the initial evaluation, two accessions were identified for further testing and seed increase. Pueblo bottlebrush squirreltail and another top accession, Wapiti, were the two chosen for further development.

Ecological Considerations and Evaluation: Pueblo Germplasm bottlebrush squirreltail was produced from 1990 to 2001 in UCEPC seed production fields and did not demonstrate a cultural concern during production. Because the seed is dispersed quite easily by wind, open, fallow fields may be subject to bottlebrush squirreltail invasion. However, the selection has met the criteria for releasing as per the Environmental Evaluation of NRCS Plant Releases (attached). This release is of a native species that is widely distributed throughout western North America, and of a subspecies that is an important range component in the central Rocky Mountains with recognized benefits to domestic livestock, wildlife and for use in reclamation and revegetation.

3. Discuss who is expected to use the released plant material and how they will use it? What public or private organizations have requested this material for research, breeding or testing purposes? Have you consulted with any commodity groups?

Conservation Use: The potential uses of Pueblo Germplasm bottlebrush squirreltail include erosion control and domestic livestock and wildlife forage production. The plant establishes easily, remains green for a long period and is palatable throughout the winter. Bottlebrush squirreltail is also an important source for fire restoration. It is quick to establish, has a proficient seed dispersal mechanism, and is resistant to fire damage. Bottlebrush squirreltail has also shown that it can become a good competitor with undesirable annual weed species. Bottlebrush squirreltail is recognized as being one native perennial bunchgrass that has potential for broad-scale application in range seedings where introduced products such as crested and Siberian wheatgrasses and Russian wildryes have been used traditionally. Excellent seed dispersal, ability to tolerate fire, and excellent seedling vigor are all attributes that will allow this selection of bottlebrush squirreltail to be used in many conservation applications.

Anticipated Area of Adaptation: Bottlebrush squirreltail is a perennial bunchgrass, commonly found on south facing slopes with a wide topographic range from the desert plains to mountain slopes. It inhabits dry, gravelly soils, but is also found on heavier

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soils such as saline-alkali sites, and is well adapted to harsh environments and extreme conditions. The Natural Resources Conservation Service range site descriptions for Colorado lists bottlebrush squirreltail as occurring naturally on 46 of 64 sites. Range sites supporting high densities of bottlebrush squirreltail are generally found to receive 7 to 15 inches of precipitation. The soils can be loamy, calcareous, gravelly, shallow, or salty, and the most commonly associated plant species are western wheatgrass, Indian ricegrass, galleta grass, and winterfat. Squirreltail exceeds 10 to 15 percent of the total production on range sites titled Mountain Loam, Limy Bench, Mountain Outwash, Shallow Slopes, and Salt Desert Breaks. Pueblo bottlebrush squirreltail is potentially adapted for use throughout the above areas.

Availability of Plant Materials: The Upper Colorado Environmental Plant Center will maintain G1 and G2 seed. G2 seed will be available to growers. Growers may produce one generation (G3) beyond G2 Pueblo Germplasm seed. Any seed used for certified seed production of Pueblo Germplasm must be obtained from UCEPC.

4. List any publications and/or public use of this plant material. Has the material been provided to anyone outside of USDA for field testing purposes? Have seeds, cuttings, fruit or other materials been sold by cooperators?

5. If plant variety protection has been requested, explain how such protection will facilitate technology transfer that would otherwise not occur if the variety is publicly released. Does the variety have any special characteristics that would make protection desirable, e.g. niche market use, transgenic incorporates proprietary technology owned by others, requires identity preservation, etc.

6. If plant variety protection has been requested, is there an international market for this variety. If so, in what countries? Have you sent the variety to anyone outside the U.S. for testing or breeding?

IF YOU ARE A USDA EMPLOYEE, By signing this form you acknowledge that:

a. The invention described herein (1) was made during working hours, or (2) was made with a contribution by the Government of facilities, equipment, materials, funds, or information, or of time or services of other Government employees on official duty, or (3) bears a direct relation to, and/or was made in consequences of your official duties. (If it meets NONE of these criteria, contact the Office of General Counsel and do NOT sign this form.)

b. You may be entitled to foreign rights in the invention, and foreign rights may be jeopardized by publishing or disclosing the invention before a patent application is filed in the U.S. Patent and Trademark Office.

Inventors:

Docket No: 0005.05 FY: 2005

Inventors:**ROBINSON SCOTT**

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Phone:

Email:

UPPER COLORADO ENVIRONMENTAL PLANT CENTER (UC)

Recommend:	Date	Approval
RL:		
CD/LD/DAD:		
AD:		

Approve/Concur: NPS Plant
Materials Coord:

Deputy Admin:

Deputy Asst
Admin, OTT:

**** UNOFFICIAL ****