'Cedar' Palmer Penstemon: A Selected Penstemon for Semiarid Ranges

Richard Stevens and Stephen B. Monsen

Recently 'Cedar' Palmer penstemon *(Penstemon palmeri* var. *palmeri)* was developed and released by Utah Division of Wildlife Resources and the Intermountain Research Station, Forest Service, and Soil Conservation Service, U.S. Department of Agriculture. The Agriculture Experiment Station of New Mexico State University, Colorado State University, University of Idaho, and Utah State University also participated in the release.

'Cedar' has the ability to establish, persist, and to provide forage diversity on winter, spring, fall, and summer game and livestock ranges. Small birds, big game, and livestock selectively use 'Cedar'. It produces a considerable amount of succulent foliage during the spring and summer growing periods. This selection also provides high quality forage during the winter. A large percentage of the basal leaves remain green during winter months, providing succulent feed during critical periods. The forb provides good ground cover for erosion control and stabilization of disturbed sites and burns. A thick fibrous taproot up to 3 feet deep is produced that aids in its ability to persist under semiarid conditions. Because of the abundant flowers, pleasing aroma, and persistent foliage, 'Cedar' is also useful for horticultural and landscape plantings.

'Cedar' has long (over 4 feet), erect, flowering stalks that arise from a thick crown. Large pink to lavender-pink blossoms with red-violet throats occur along the stalks for several weeks in late spring and early summer. The flowers have a unique and pleasant fragrance not found in other penstemon species. As seed matures the flowering stalks dry.

Origin and Study Sites

The original seed of 'Cedar' was collected in 1939 by A. Perry Plummer from a native stand approximately 15 miles west of Cedar City, Utah (see map), in a mixed pinyon-juniper, big sagebrush community. The area, at an elevation of 5,800 feet, receives 9 to 12 inches of annual precipitation. The soil is a Hiko Peak gravelly loam, deep, well drained, moderately to strongly alkaline, and is strongly calcareous below a depth of approximately 16 inches. Seed from the original site was entered into comparative study at 20 locations in Utah, with up to 17 other accessions. Additional test

Original collection site and areas where 'Cedar' Palmer penstemon has been tested. Black dots indicate test sites, and the circle indicates the original collection site.

and range plantings were subsequently extended to sites in Idaho, Montana, Wyoming, Nevada, Colorado, New Mexico, Arizona, and Oregon. 'Cedar' was also evaluated for revegetation of mine spoils and disturbed areas within the Intermountain Region.

'Cedar' was adapted to more sites, established better, was generally the most aggressive spreader, and produced as much or more forage than the other accessions tested. Test plantings have been extended to large tracts in conjunction with other herbaceous plants. Even though 'Cedar' originated on a gravelly loam soil it has proven well adapted to heavy soils, fine sandy loam, and rocky soils ranging from slightly acid to strongly alkaline. It has performed well in tests on infertile, disturbed soils. 'Cedar' grows best in areas receiving 10 to 16 inches annual precipitation, but once established, it will persist on sites receiving as low as 8 inches of annual precipitation.

Establishment

'Cedar' has been successfully planted on rangelands, road cuts and fills, mining disturbances, and as an ornamental. Seed can be broadcast (by hand, ground rig, aerially) or

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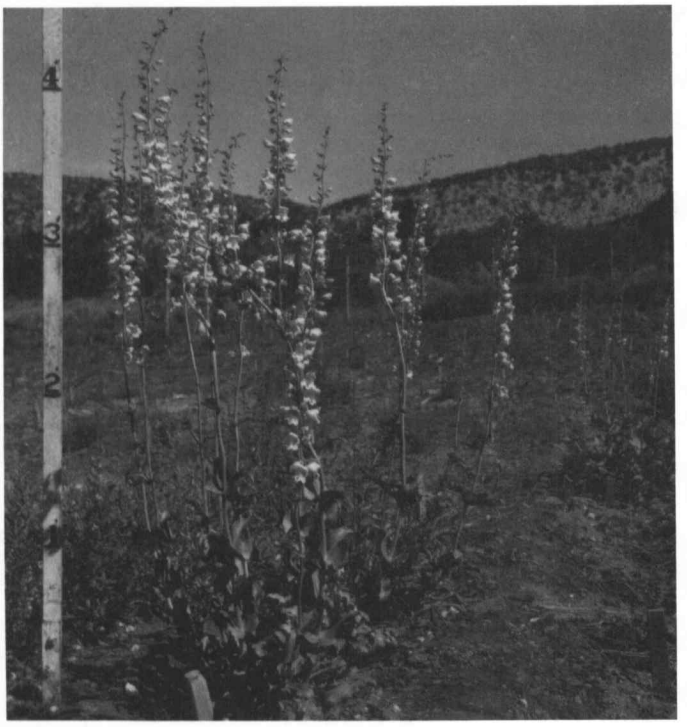

This 'Cedar' Palmer penstemon is 3 years old and 4 feet tall.

drilled. If drilled we recommend that 'Cedar' be drilled through a legume box or with a seed dilutent such as rice hulls. Seeds are small and may separate from other seeds during planting. The seeds should be covered but not more than a quarter inch deep. Due to seed dormancy, fall seedings are recommended. Although seeds are small, they have firm coats and may persist in the soil for a number of years. Seedlings and mature plants of 'Cedar' have excellent winter hardiness and drought tolerance. Seedlings are well adapted to mixed plantings and compete successfully with most herbaceous species. The forb performs best in open stands but will grow in association with grasses, low shrubs, and intermediate shrubs including big sagebrush and antelope bitterbrush. Extensive regeneration can occur by natural seeding. Mature plants are not long-lived, living 5 to 7 years.

Plantings for seed production should be in rows spaced 30 to 42 inches apart, with seeding rates of about 1 to 2 pounds per acre pure live seed. Seed yields have averaged about 100 pounds per acre on nonirrigated sites. An abundance of seed is normally produced even during dry years. The seed normally ripens from mid-August to mid-September and is mature when the seed capsule dries and becomes hard and dark in color. Seeds will shatter once capsules have opened. Seeds can be collected by hand beating or with commercial combining, and separated from the capsule by use of a hammermill or barley debearder followed by fan cleaning. Seeds can be easily cleaned to a purity of 95%. Cleaned seed should be allowed to dry and then can be stored in an open dry warehouse. An after-ripening of 2 to 3 months is needed before germination is determined. There are approximately 600,000 seeds per pound. Seed germination averages about 80%, yet a variation of 15 to 20% in the germination rate has been recorded from different years of production. Seeds retain viability when stored in an open warehouse for up to 7 years.

'Cedar' is subject to diseases associated with alfalfa and potatoes. When grown on cultivated fields, infestation may occur particularly on heavy, poorly drained soils. Flowers are insect-pollinated, and a reduction in seed yields may occur if insect populations are reduced.

Where Seed Can Be Obtained

Recognized classes of seed are breeder, foundation, registered, and certified. Breeder seed will be maintained at Soil Conservation Service, Los Lunas Plant Materials Center, Los Lunas, New Mexico.

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We are seeking nominees to replace associate editors who will be leaving the editorial board of the *Journal of Range Management* in February 1989. Scientists in range wildlife, animal nutrition, and forage selection and quality are especially needed. Associate editors serve a 2-year term with an additional 2 years possible. Attendance at the editorial board meeting at the Society's annual meeting is strongly encouraged. Candidates should be experienced in research and show sound judgment in dealing with others. They may be asked for a list of representative publications as well as references for their work as reviewers of articles. Nominators should determine first that the nominee is willing to serve as an associate editor.

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To nominate: Send the name, address, and telephone number of the nominee, along with brief comments on the nominee's qualifications to Pat Smith, Editor, Journal of Range Management, 1839 York St., Denver, CO 80206 by September 30, 1988. For additional information, contact Dr. Smith at (303)355-7070.

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