JAD

NEW MEXICO STATE UNIVERSITY
AGRICULTURAL EXPERIMENT STATION,
NEW MEXICO STATE HIGHWAY DEPARTMENT,
COLORADO STATE UNIVERSITY
AND
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

T 4712

NOTICE OF THE NAMING AND RELEASING OF 'BANDERA' ROCKY MT. PENSTEMON FOR SOIL STABILIZATION, ROADSIDE BEAUTIFICATION, AND GROUND COVER IN IRRIGATED BEDS.

The Agricultural Experiment Station of New Mexico State University, the New Mexico State Highway Department, Colorado State University, and the U. S. Department of Agriculture, Soil Conservation Service announce the naming and release for commercial seed and nursery production of Bandera Rocky Mt. penstemon (Penstemon strictis Benth.). Bandera was evaluated at the Los Lunas Plant Materials Center, Middle Rio Grande Branch Station, New Mexico State University with field testing in highway median, rest area, and roadside stabilization plantings by the New Mexico State Highway Department and at other sites by other cooperators of the Soil Conservation Service.

Description: Bandera was tested as NM-628. It is a herbaceous long-lived perennial flowering plant with entire, glabrous, dark and shiny green leaves. The basal leaves are narrowly oblanceolate, with tips obtuse to accuminate, The basal portion of the leaves tapers into a somewhat winged petiole. The leaves are abundant, forming a basal rosette, a portion of which turn reddish purple in color in the winter. The remainder stay green throughout the year. Under cultivation, basal leaves range from 1/2 to 2 1/2 cm. in width and 3 to 15 cm. in length.1/

Stems are stout, ranging from spreading to upright, and attaining heights of 20 to 70 cm. under cultivation. Cauline leaves are sessile, oblanceolate to lanceolate, ovate-lanceolate or lanclinear, attenuate, and clasping. They range in size up to 2 cm. in width and 10 cm. in length.

Inflorenscence is an elongate raceme, slender, secund, with leafy bracts below, and with branches and flowers ascending erect. Calyx is glabrous, 3-5 mm. long, lobes ovate to oblong ovate,

1/ Description and natural geographic range of adaptation adapted from: Harrington, H. D., 1964. Manual of the Plants of Colorado. Sage Books, Denver, Colo., 666 pp.

rounded or with a short acute tip. The corolla is deep blue. The tube and throat are often much lighter, sometimes violet in color. The petals are glabrous, 22–30 mm. long, strongly bilabiate and spreading with the upper lip arched and the lower lip reflexed. Flowers are abundant and determinate. The plants flower from mid-May to mid-June at Los Lunas. Seed matures in the early part of August.

Roots are mostly fibrous and abundant in the top 6 inches of the soil. Basal portions of stems layer readily. Individual plants range from 10 to 31 inches in diameter, averaging about 20 inches.

Natural range of adaptation is from southern Wyoming to central New Mexico, northeastern Arizona and Utah. It is very common across the western half of Colorado in association with sagebrush or timber on gravelly, rocky, or sandy loam soils from 6,000 to 11,000 feet in elevation.

Use: The fibrous root system and the layering habit make this a valuable stabilization plant. The evergreen basal rosette and spreading habit make it suitable as a ground cover plant. The abundance and character of the flowers make it an attractive plant for roadside plantings.

Testing: Original seed was collected August 25, 1964 at New Canyon Campground, Cibola National Forest northwest of Mountainair, New Mexico by Glenn C. Niner. Elevation is approximately 7,400 feet in the ponderosa pine zone and rainfall is estimated at 16–18 inches annually.

Initial seed increase was made at the Los Lunas Plant Materials Center in 1965. No selection pressure was applied during seed increase.

Bandera Rocky Mt. penstemon has been grown in field-size plantings at the Plant Materials Center since 1965. In all, six plantings were made. Five of these plantings have resulted in good to excellent stands under a variety of conditions. One planting failed. Although direct germination tests without seed treatment have resulted in germination of 64 to 89 percent after a 20-day test period, field plantings exhibit staggered emergence. Best results were obtained from late fall or early winter plantings which were kept moist to allow natural cold stratification. The one failure occurred when the penstemon was interplanted into a rye cover crop, An extremely dry, windy winter and competition from rye made it impossible to keep the soil around the seed moist enough to accomplish stratification.

Bandera Rocky Mt. penstemon has been included in several field evaluation plantings in New Mexico and Colorado. It has been established from seed and by potted plants and clones. Good to excellent results were obtained by all methods. Plants have done well with adequate care in areas where environmental conditions were suitable.

Propagation: Plantings produce seed during the second growing season, and have remained in production for four years at Los Lunas. Good seed yields were obtained for two years. A 66%yield reduction was caused by Fusarium wilt. Scale was an occasional problem.

Seed production averaged 150 pounds pure-live-seed per acre per year for 4 years. Purity averaged 93%and germination 79%. (See Table 1). Seed was direct combined and processed on an air-screen cleaner.

Seed Source: Breeder seed will be produced by the Los Lunas Plant Materials Center. Limited quantities of foundation seed will be available through Soil and Water Conservation Districts and Crop Improvement Associations.

Approval signatures:

Marvin L Wilson 3/30/73

Marvin L. Wilson, Associate Director Date
New Mexico Agricultural Experiment Station

A. Baltensperger 30 March 73

Arden Baltensperger, Head Date
Agronomy Department, New Mexico State University

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Horticulture Dept., New Mexico State University

3/30/73
Date

Marion Strong, State Conservationist acting

USDA, Soil Conservation Service

New Mexico State Highway Department

4-26-72
Date

D. D. Johnson, Associate Director
Colorado Agricultural Experiment Station
Colorado State University

4/18/73
Date

Table 1. Seed yields of Bandera Rocky Mt. penstemon at the Los Lunas Plant Materials Center, 1966 through 1972.

Year Planted	Field No.	Bulk Seed (lbs./acre)	Purity %	Germ. %	Pure Live Seed (lbs./acre)	Harvest Date
1965	1A	Packet	-	-	-	7/66
1966	1A	Packet	-	-	-	7/67
1967	5	-a/	-	-	-	-
-	1A		-	-	-	7/68
-	5	126	75	12	11	
1968	2	-	-	-	-	-
-	2	298	89	64	169	8/6/89
-	2	285	97	89	246	8/10/70
-	2	123	94	77	89	8/16/71
-	2	134	92	87	107	8/22/72
1972	3	-	-	-	-	-
4 yr. avg.	2	210	93	79	152	

a/ Production from field 1A was combined with that from field 5 and yield data was not kept separate.

Table 2. Results of various plantings of Bandera Rocky Mt. penstemon in New Mexico and Colorado.

Planting location	Planting date	Method	Stand[a/]	Performance[a/]	Spread est.avg.
PMC 1A	11/65	seed[1/]	1	1	solid
PMC 1A	12/66	seed[1/]	1	1	solid
PMC 5	1/67	seed[2/]	4	3	-
PMC 2	1/68	seed[3/]	3	3	-
PMC 2	1/71	seed[4/]	0	0	-
			3	2	-
			% live		
Rio Grande					
Gorge Bridge	6/68	potted[5/]	56	1	20"
Farmington median	5/68	potted[6/]	60	1	12"
			Stand[a/]		
Snn Juan-Chama					
diversion	9/70	seed[7/]	5	3	4"
Jewett Gap roadside	8/70	seed[8/]	3	1	-
			% live		
Los Chavez					
Baptist Church	2/70	cloned!	100 est.	1	solid

a Stand and performance ratings: 1=best, 9=poorest, 0=dead.

1/ Bed plantings under overhead irrigation sprinklers.

2/ Flat planted in rows and flood irrigated. Mulching with hay vs. no mulch appeared to have no influence on final stand. Performance was downgraded due to the high incidence of Fusarium wilt which killed many plants.

3/ Flat planted in rows and sprinkler irrigated for stand establishment; then flood irrigated. Performance ratings downgraded because stands declined as result of Fusarium wilt.

4/ Seedbed prepared by roto-tilling in a rye cover crop, flat planted in rows and flood irrigated, Dry spring winds and rye competition caused stand failure,

5/ Small plants with 3 to 5 leaves in the basal rosette and about 3 to 4 inches in diameter were potted in 2 1/2 x 2 1/2 x 9 inch tar-paper pots. Plants were watered regularly with a garden hose.

6/ Same size plants and pots as used in 5/ above, Plants were irrigated periodically through 1971, but died when irrigation was discontinued.

7/ Dryland planting on granetic spoils from San Juan-Chama diversion tunnel.

8/ Dryland planting seeded in the late summer of 1970. First seedlings were found in 1971 when emergence was good. Additional seedlings emerged during the summer of 1972.

9/ This planting on a sub-irrigated saline soil dominated by salt grass and alkali sacaton. Watered periodically with a garden hose.