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'Prairie Palette' Penstemon

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Penstemon grandiflorus Nutt. (Scrophulariaceae Juss.), commonly known as the shell-leaf penstemon or large beardtongue, is indigenous from North Dakota to Texas and from Wyoming to Illinois (Gleason, 1952). Leaves are large, almost heart-shaped, gray-green, smooth, and cupped. The erect stems range from 50 to 120 cm tall. It is a large-flowered species with normal floral colors of pink to light lavender (Wilde, 1995). Two white-flowered forms of *P. grandiflorus* ('Albus' and 'Prairie Snow') have been reported (Lindgren, 1990; Lindgren and Davenport, 1992). Anthers are pale green, widely divergent, but not explanate. Stamines are recurved abruptly at the tip bearing minute orange hairs apically. This species is adapted to a wide range of climatic conditions but, as with many midwestern U.S. species, does best in sunny sites and well-drained soils (Barr, 1983). A short-lived perennial, plants of *P. grandiflorus* form rosettes the first year of growth and start flowering the second year. Barr (1983) stated that *P. grandiflorus* usually lives for only 3 to 4 years. Several leaf spot diseases (*Cercospora* sp. and *Septoria* sp.) can infect the foliage, especially in the presence of higher than normal moisture (Uhlinger and Viehmeyer, 1971). Named cultivars include 'Fate', 'Fate-Seeba', 'Leana Seeba', 'Seeba', and 'Avalon', all reported to be hybrids between *P. grandiflorus* × *P. murrayanus* Hook. (Lindgren and Davenport, 1992). 'Prairie Palette' is a proposed seed mix for large areas, such as roadsides, meadows, or prairie restoration projects. Single specimens can be planted, but the floral color varies among plants. This population contains many floral colors, whereas other sources of this species for roadsides and prairie restoration plantings contain plants with few colors. Also, plants were selected for a lower overall incidence of leafspot disease as compared with other populations.

Origin

The germplasm collection for this mix began in 1976. Sources of parent material included field collections, crosses made between

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outstanding plants in this genus, and as seed from the American Penstemon Society seed exchange. The material was field evaluated for floral color and reduced disease tolerance until 1992. In 1993, 29 plants that exhibited a wide range of floral colors and exhibited the best disease tolerance were selected from the collection. Disease ratings for leaf spots were based on the percentage of leaf area infected, with 1 = no disease, 2 = 1% to 25% infected, 3 = 26% to 50% infected, 4 = 50% to 75% infected, and 5 = 76% to 100% infected. Seeds were collected from each of these 29 plants and planted in field plots in 1994. The floral colors included white, shades of pink, shades of red, and shades of lavender to dark purple. Seeds from these progeny were mixed to form the base population of 'Prairie Palette'. The name 'Prairie Palette' was selected to be consistent with previous releases from the Univ. of Nebraska West Central Research and Extension Center (e.g., 'Prairie Snow' penstemon, 'Prairie Splendor' penstemon, 'Prairie Pink' dianthus, and 'Prairie Petite' lilac), and has been registered with the American Penstemon Society registrar. Palette refers to the plants' range of floral colors. Release of 'Prairie Palette' is timed to honor the 20th anniversary of the Nebraska Statewide Arboretum.

Description

Reproductive parts of 'Prairie Palette' are consistent in size, regardless of environmental plantings. The inflorescence is 40 to 49 mm long with 0 to 14 flowers per axil. The calyx is 7.1 to 7.8 mm long. The corolla is 35 to 42 mm long with the upper corolla lip (2-lobed) 12.5 to 13.5 mm wide and the lower corolla (3-lobed) 20.9 to 23.0 mm wide. Stamens are 27.5 to 31.9 mm long. Stamines are 28.0 to 32.1 mm and the pistil 24.2 to 30.0 mm long. Seeds

are $\approx 2 \times 2.5$ mm. Seed coat color varies from light to dark brown, 165B to 200C (Royal Horticultural Society, 1982).

'Prairie Palette' was grown in bare soil and in a grassy roadside area (Table 1). Of the 672 plants of 'Prairie Palette' transplanted to field plots in 1994, 98% of the plants flowered and produced seed in 1995, 92% in 1996, and 9.8% in 1997. Seed was only counted in 1997. Despite being short-lived, self-seeding usually is adequate to sustain the stand.

Penstemon grandiflorus plants, including this selection, are susceptible to leaf-spot diseases (*Cercospora* sp. and *Septoria* sp.) under conditions of moderate rainfall and/or high humidity. However, this mix was selected for a lower incidence of disease overall. Other pests observed on this species, with only limited injury at North Platte, Nebr., included spider mites (*Tetranychus telarius* Linne) and stalk borers (*Papaipema nebris* Guenee). The degree of pest infection varies with year and with location.

Propagation

Seeds can be planted directly in fall/spring plantings. No specific seed germination studies were conducted with this selection. However, Lindgren (1990) reported that germination of *P. grandiflorus* 'Prairie Snow' seed averaged 2.6% with no cold stratification and 60.0% with a 10-week stratification. Salac and Hess (1975) reported that germination of 1-year-old seed of *P. grandiflorus* varied from 10% following dry storage to 90% following stratification at 4 °C. Our observations indicated that seeds 3 to 4 years old germinated as well as seeds 1 to 2 years old (data not shown). The longevity of *P. grandiflorus* seed helps assure its survival in the wild.

Availability

Inquiries concerning the availability of seed should be addressed to the Univ. of Nebraska West Central Research and Extension Center, Attention: Dale T. Lindgren, Route 4, Box 46A, North Platte, NE 69101.

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Table 1. Performance^a of 'Prairie Palette' penstemon in two different environments.

Trait	Performance	
	In bare soil (33 plants)	In grass (35 plants)
Height (cm)	46-119	49-90
Stalks/plant	1-9	1-4
Leaf		
Width (mm)	36-87	27-65
Length (mm)	45-100	35-78
Nodes per plant		
Bearing flowers	5-17	3-10
Not bearing flowers	12-22	5-10
Pods/plant	11-172	3-90
Seeds/pod	3-150	52-115
Wt. of seeds/pod (mg)	3.3-269.4	9.5-285.5
Disease rating ^b	1-5	1-4

^aNumbers represent range of readings.

^bDisease ratings are on a scale of 1 to 5 with 1 = no disease to 5 = 75% to 100% of foliage infected.

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