‘Plains’ Blackfoot Daisy (*Melampodium leucanthum*)

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Additional index words. Asteraceae, composite, drought tolerance, native plant, wildflower

Blackfoot Daisy (*Melampodium leucanthum* Torr. & Gray) is a common wildflower native to much of Arizona, New Mexico, Texas, Oklahoma, Kansas, and Colorado (Stuessy, 1972). This perennial subshrub is characterized by a tight mound of white composite flowers with golden centers and linear leaves. Correll and Johnston (1970) have reported that this attractive native plant flourishes in calcareous gravelly soils. Indigenous to regions receiving 40 to 70 cm of annual rainfall, Blackfoot Daisy is found along roadsides in the high plains, shortgrass prairies, uplands, and on limestone outcroppings exhibiting disturbed soils of the southwestern U.S. (Borland, 1998). The long period of bloom and tolerance to the heat and drought of its native environment make this plant desirable for use in water-conserving landscapes. The unusual name Blackfoot Daisy is derived from the foot-shaped bract that surrounds the seed and turns black at maturity (Diggs et al., 1999).

Blackfoot Daisy occurs as both a diploid and a tetraploid that are morphologically indistinguishable. Turner and King (1961) suggest the ploidy level does not appear to be influenced by geography or ecologic conditions. Populations of both ploidy levels have been found growing among each other.

In 1996, we initiated a breeding project to identify wildflowers with potential for landscape use in demanding environments. Accessions with outstanding attributes were collected and selection trials conducted over several seasons. ‘Plains’ Blackfoot Daisy is the first formal release from our program. It was developed through 6 years of recurrent phenotypic selection for increased branching, compact growth habit and increased floral density. The unique, reflexed flower form is a distinguishing trait that helps to distinguish ‘Plains’ Blackfoot Daisy from other *Melampodium leucanthum* genotypes.

Origin

Seed from 11 accessions exhibiting a compact growth habit and exceptional number of flowers was preferentially collected during Spring 1996 from the Cross Timbers and Prairies, Edwards Plateau, High Plains, and Rolling High Plains vegetational areas of Texas (Correll and Johnston, 1970) and grown the following spring in the greenhouse. Seedlings were transplanted into field plots at the Texas Tech University experimental farm in Lubbock in an Amarillo fine sandy loam (fine-loamy, mixed, superactive, thermic Aridic Paleustalfs), which provided excellent drainage. The accessions were screened at peak bloom for compact growth, uniform flowering and overall appearance. Seed of the two best accessions were advanced to the 1998 trial, where they were compared with 15 additional accessions that had been collected across the region in 1997. Based on these trials, accession TTU-T19 was found to be superior in all characteristics. The plant trials were moved the following year to the Texas A&M Research and Extension Center in Dallas where the soil is a Austin silty clay (fine-silty, carbonatic, thermic Udorthentic Haplustolls) that provided much less drainage. About 200 plants of TTU-T19 were planted in the field under open pollination in 1999 and ~80% of the plants were selected for good stem strength, compact growth or high density branching and were allowed to cross pollinate. A recurrent, phenotypic selection procedure was used to screen this material again in 2000 (Cycle 2), 2001 (Cycle 3), and 2002 (Cycle 4). Intercrossed seeds from ~800 plants grown in 2002 from the Cycle 4 material were bulked to provide breeders seed and is being released as ‘Plains’ Blackfoot Daisy.

Description

‘Plains’ Blackfoot daisy exhibits a plant height at maturity of 20 to 25 cm with a spread of 60 to 70 cm. The perennial subshrub is composed of 20 to 35 branches forming a dense crown covered with 150 to 300 composite flowers that are 21 to 22 mm in diameter. Each floral head has 8 white (10, Munsell Color Chart) (Munsell Color, 1977) ray flowers that are 8 to 10 mm long and 5 to 7 mm wide with 3 teeth on the outer margin and subtended by a small foot-shaped bract. These petals surround a tight mound of yellow disk flowers (5Y/8/12, Munsell Color Chart). ‘Plains’ blooms from late spring until frost. The attractive foliage provides interest when the plant is out of bloom. The linear leaves have opposite leaf attachment and are covered with strigulose hairs on both surfaces. The foliage is light green (7.5GY/5/4, Munsell Color Chart) with an entire margin, 5.5 to 6 mm leaf width and 43 to 45 mm leaf length. The mature fruit is composed of inner phyllaries that surround the achene of the ray-flower and develop into a hood-like attachment. This structure remains attached to the seed at maturity. The seeds are dark brown (5YR/3/2, Munsell Color Chart) with the attached structure a brown color (7.5YR/4/4, Munsell Color Chart). ‘Plains’ seed is 5 to 5.5 mm long and 3.25 to 4.25 mm wide. The average 1000 seed weight is 3.12 g.

Performance

During the 2000 and 2001 growing seasons at Dallas, Texas, plants randomly selected from Cycle 3 and Cycle 4 populations were compared to a commercially available common seed source of Blackfoot Daisy using a randomized complete block design. Each of the four blocks contained five plants and were transplanted into unamended soil and given supplemental irrigation as necessary. ‘Plains’ developed significantly more flowers and a greater number of branches, than the commercial variety (Table 1). This increase in flower and branch number created a more dense appearance (Fig. 1) than in the commercial control (Fig. 2).

‘Plains’ is recommended for use in water-conserving landscapes and low maintenance plantings. Plants may be propagated by tip cutting or via seed (Borland, 1998; Hipp et al., 1989). The seed propagates easily but should not be held in open storage for more than a year as viability may be reduced (Borland, 1998).

Drainage is critical for this plant to prevent over-watering. In areas with heavy soils,

Table 1. Comparison of a commercially available common *Melampodium leucanthum* and *Melampodium leucanthum* ‘Plains’ in field trials, Dallas, Texas.

Germplasm source	Petal width (mm)	No. of branches	No. of flowers	Plant ht (cm)	Plant width (cm)
Common	5.40 (0.25) ²	15.4 (0.52)	146 (19.59)	227.7 (3.11)	61.10 (5.85)
‘Plains’	5.87 (0.19)	31.0 (0.32)	229 (18.33)	224.6 (3.09)	66.18 (4.32)
Significance	*	*	*	NS	NS

²Means represent separate measurements of 15 plants of each germplasm source. Numbers within the parentheses are the SE about the mean.

^{NS} Nonsignificant or significant *t* test at *P* ≤ 0.05.

Received for publication 7 Feb. 2003. Accepted for publication 29 June 2003. Texas Tech University manuscript no. T-4-537. This work was funded in part by a Texas Department of Agriculture-TIE Grant.

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CULTIVAR AND GERMPLASM RELEASES

Fig. 1. *Melampodium leucanthum* 'Plains' at peak bloom.

Fig. 2. Commercial source of common *Melampodium leucanthum* at peak bloom.

raised beds are recommended. Deep infrequent watering is the most efficient way to maintain 'Plains' once it is established in the landscape. 'Plains' blooms throughout much of the growing season with minimal care. Spent flowers drop easily so dead heading is not necessary; however, the plant responds to shearing if a more compact habit is desired.

Availability

For availability of both experimental and commercial seed, contact the corresponding author, Texas A&M Research and Extension Center at Dallas, 17360 Coit Road, Dallas, TX 75252 (972-231-5362).

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