

Silky prairie clover

Dalea villosa (Nutt.) Spreng.

Plant Symbol = DAVI

Common Names: hairy prairie clover

Scientific Names: *Dalea villosa* var. *villosa*
Petalostemon villosum

Description

General: Silky prairie clover, a member of the Fabaceae (Pea) family, is a native, warm season, perennial legume. This plant produces numerous lateral roots extending outward 2 to 3 feet in the first foot of soil and a taproot system penetrating 4 to 5 feet deep (Weaver and Albertson 1956).

Erect, branched stems 8 to 20 inches tall arise from a dense root crown. The alternate, odd-pinnately compound leaves are 0.75 to 1.5 inches long and 0.5 to 1 inch wide covered with silky hairs. The individual leaflets are elliptic, 0.25 to 0.5 inch long, less than 0.1 inch wide (2.5 mm) with smooth margins and blunt tips. The flower spike is 1 to 5 inches long and composed of tightly packed flowers of pink, lavender, or white. The seedpod (fruit) is about 0.12 inch long (3 mm) and covered in woolly hairs. At maturity, the pods contain small, smooth brown seeds. (Diggs et al. 1999, Kansas Wildflowers and Grasses 2016 and Minnesota Wildflowers 2016).

Distribution: The prairie clover genus, *Dalea*, contains approximately 160 native species from Canada to Argentina (Diggs et al. 1999). Silky prairie clover is found from southeast and east Texas north through the Great Plains to Montana and east to Michigan (Diggs, Jr. et al. 1999, USDA-NRCS PLANTS database 2016). For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Silky prairie clover is found on sites with deep, sandy soils such as deserts, shifting or partially stabilized sand dunes, dry prairies, and open woodlands on sparsely vegetated sites. Associated plants include prairie sand reed (*Calamovilfa longifolia*), sand bluestem (*Andropogon hallii*), needle and thread grass (*Stipa comata*), white sagebrush (*Artemisia ludoviciana*), leafy spurge (*Euphorbia esula*), and prairie junegrass (*Koeleria macrantha*) (Smith 1998, Kansas Wildflowers and Grasses 2016, Montana Field Guide 2016).

Adaptation

Silky prairie clover prefers sandy soils (Smith 1998) but will grow well on silt loam soils (Lindgren et al. 2003). It is considered drought tolerant (Todd et al. 2010). Potter (1953) observed silky prairie clover seedlings recovering completely after being in a permanently wilted state for three days. Smith (1998) notes silky prairie clover grows in low precipitation areas receiving only 11.8 inches of annual rainfall.

Uses

Livestock

Silky prairie clover has fair forage value (Vallentine and Burzlaff 1964) and may replace other plants that have weakened or died in a stand. It is a preferred forage for cattle and sheep during spring and summer (USDA-NRCS 2016a).



Silky prairie clover plant. (Photo credit: Alan Shadow-ETPMC).

Wildlife

Deer, elk, bison, and antelope readily graze the entire plant during spring and summer (USDA-NRCS 2016a). Deer browse on the flowering stems and seed heads. Hamm (2011) mentions mule deer also feed on silky prairie clover. Robson (2014) reported bees and wasps were the main pollinators of silky prairie clover. Silky prairie clover begins flowering from the bottom and proceeds to the top of the bloom spike. Forbes (1967) noted that a band of florets around the spike would open, then wither as another band above it opened. This flowering sequence is clearly shown on the center spike in the photo at right.

Special Uses

Prairie clovers are useful for roadside vegetation, parks, recreation areas and soil stabilization, and silky prairie clover for native landscaping (Lindgren et al. 2003). Remnant populations of this species have been found in east Texas on sites with deep, sandy soils. These sites exist in regions that were historically longleaf pine. Silky prairie clover prefers disturbed sites with little vegetative competition and could play a role as a soil stabilizer on sandy sites (Lindgren et al. 2003).

Ethnobotany

Silky prairie clover was used for medicinal purposes by the Lakota tribe (Black Elk and Flying By, Sr. 1998). A decoction made from the root of the plant was used as a laxative and the leaves and blossoms were consumed to reduce throat swelling.

Status

Threatened or Endangered: It is considered endangered in Iowa (PLANTS Database 2016) and of special concern in Wisconsin (Wisconsin Department of Natural Resources 2016).

Wetland Indicator: *Not listed on the Army Corps of Engineers 2016 National Wetland Plant List (Lichvar et al. 2016)*

Weedy or Invasive:

This plant may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. Please consult with your local NRCS Field Office, Cooperative Extension Service office, state natural resource, or state agriculture department regarding its status and use.

Please consult the PLANTS Web site (<http://plants.usda.gov/>) and your state's Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Planting Guidelines

Silky prairie clover is very similar in growth form and seed size to purple and white prairie clovers, *Dalea purpurea* and *Dalea candida*, and would follow similar guidelines for planting. Silky prairie clover requires a sandy soil. Begin field preparation well in advance of planting to establish a weed free seedbed with tillage and (or) herbicide application. Prior to planting, the seedbed must be firmed and have accumulated soil moisture for improved establishment success. Planting should be done in the spring from mid-February to mid-May (USDA-NRCS 2014). As with *D. purpurea* and *D. candida*, silky prairie clover contains a high percentage of hard seed. Seed should be scarified before planting to improve germination and early stand establishment (Schellenberg and Biligetu 2015). Mechanical scarification using sandpaper or a laboratory scarifier is acceptable. Seed should be inoculated with *Rhizobium* strain Type F prior to planting (Wynia 2008a). Cool-moist seed stratification is not necessary and may decrease seed germination (Lindgren et al. 2003).

Silky Prairie clover seed is very small. Planting depth is critical and planting too deeply can result in stand failures. A grain drill equipped with depth bands and a legume box is the preferred method for planting. Drilling seed provides good seed placement and seed-to-soil contact. Seed should be planted approximately ½ inch deep (Forbes 1967). Avoid planting into a



Silky prairie clover spikes in bloom. Notice the flowers began at the bottom of the spike and continue upward. (Photo credit: Alan Shadow – ETPMC)

fluffy or loose seedbed. Soil can sluff off into tracks left by the planter press wheels and bury the seed too deeply after the first rain event resulting in stand failures.

Silky prairie clover seed may also be broadcast planted. If seed is broadcast planted, a carrier agent such as sand or cat litter is required to help prevent planting at too high a rate and improve seed distribution. If possible, seed should be incorporated with a drag or cultipacker after broadcast planting. Timing broadcast plantings to rain events will help incorporate seed into the soil and improve establishment. Spraying slurry mixtures through hydromulchers may also be effective where applicable.

Plant silky prairie clover at a rate of 30 PLS seeds per ft² (drilled) or 5 PLS lb/ acre respectively. Seeding rates should be increased by 25% or more when broadcast planting. When planting seed mixes, adjust the seeding rate according to the percent of silky prairie clover in the mixture. There are approximately 253,500 seed/lb.

Management

Do not graze silky prairie clover the year of establishment and limit livestock grazing until plants are well established. Silky prairie clover constitutes 1 to 2% of the plant community in the Central High Tableland area of western Nebraska, Kansas and eastern Colorado and contributes 19 to 38 pounds of forage per acre (USDA-NRCS 2009). Persistent overgrazing and trampling by sheep and cattle will reduce the vigor of silky prairie clover stands (Hamm 2011). Box (1967) noted this plant is adversely effected when grazed during a drought.

Pests and Potential Problems

Lindgren (2003) mentions seedling damping off disease as a problem during establishment. In field trials, silky prairie clover has shown moderate susceptibility (51 to 75% stand reduction) to aminopyralid herbicides (Halstvedt 2012).

Environmental Concerns

Silky prairie clover is listed as endangered in some areas of its range of occurrence. Weeds such as leafy spurge (*Euphorbia esula*), an aggressive invasive species, threaten silky prairie clover habitat and potentially reduce native populations (Manitoba Conservation Wildlife and Ecosystem Protection Branch 2007). Silky prairie is considered a desirable plant within its native range and has no known negative effects on the environment.

Control

Silky prairie clover may be controlled by mechanical means such as mowing or by applying a broad spectrum herbicide. Contact your local agricultural extension specialist or county weed specialist to learn what herbicides works best in your area and how to use them safely. Always read label and safety instructions for each control method. Trade names and control measures appear in this document only to provide specific information. USDA NRCS does not guarantee or warranty the products and control methods named, and other products may be equally effective.

Seed and Plant Production

Use soil test recommendations to determine soil fertility and pH of the planting site. If needed, amend pH to a level of 6.0 to 8.0 with lime according to soil test recommendations. For seed production, amend fertility (P and K) according to soil tests after plants have had at least one growing season to establish. This will minimize competition from warm season weeds during the growing season.

To establish a seed production field by direct seeding, plant silky prairie clover seed into rows 18 to 30 inches apart (Wynia 2008) using a planting rate of 6 PLS lb/acre. Allow enough space between rows for cultivation, herbicide application, and harvesting equipment. Silky prairie clover may be transplanted as seedlings to establish seed production fields where applicable. Transplanting reduces the time needed to achieve a solid stand, allows for use of pre-emergent herbicides and reduces the amount of weed competition typically seen in fields planted from seed. Transplants may be grown in the greenhouse using standard greenhouse production practices. Before planting to a seed production field, seedlings are hardened off in a shade house for approximately two weeks.

Once plants are beyond the seedling stage, cultivation and selective post-emergence herbicides are recommended to reduce weed competition and maintain stand integrity. Annual warm season grasses and broadleaf weeds are the biggest challenge for establishment and seed production of prairie clovers (Wynia 2008). Consult your local extension weed specialist for recommended herbicides. Always read and follow label directions when applying herbicides.

Seed production can be expected the second year (Wynia 2008). Seed can be collected by hand stripping pods from mature plants, processing them with a hammermill, and cleaning with an air-screen cleaner. Seed can be combined harvested, dried, and cleaned with an air-screen cleaner. For seed longevity, store seed in a temperature (60 F or less) and relative humidity (40 % or less) controlled environment (Row and Wynia 2006, Harrington 1960, Tallgrass Prairie Center 2016).

Cultivars, Improved, and Selected Materials (and area of origin)

Seed of silky prairie clover is commercially available. ‘Sandhills Satin’ silky prairie clover is a release from the University of Nebraska and Nebraska Statewide Arboretum. It is a seed propagated line descending from one seedling plant from a population in northern Lincoln County, NE (Lindgren et al. 2003). Improved materials should be selected based on the local climate, resistance to local pests, and intended use. Consult with your local land grant university, local extension or local USDA NRCS office for recommendations on adapted materials for use in your area or for recommendations when considering using native harvested seed for planting.

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