

Utah Trefoil

Lotus utahensis Ottley

Plant Symbol = LOUT3

Common Names:

Utah lotus, Utah bird's-foot trefoil, Utah birdsfoot trefoil

Scientific Names:

Lotus utahensis Ottley

Description

General: Utah trefoil is described as a perennial leguminous species with erect-ascending stems from a shallow tap root.

Plants senesce each winter with all above-ground growth dying back to the root crowns. Plants reach full bloom in mid to late June to early July with seed pods reaching full maturity in mid-July when the pods naturally split (Stettler, 2016a). It has many primary stems that have an upright growth pattern with dense green foliage and pale yellow to dark yellow flowers, usually in groups of five (Stettler, 2016a). Leaves are sessile, palmate, with 3 to 5 leaflets averaging 2 to 28 mm long, 1.5 to 7 mm wide, and spatula shaped to oblanceolate or oblong, obtuse to acute. The flowers are 12 to 16 mm long, yellow, suffused with red; calyx 4.5 to 8.7 mm long, with a 3.3-4.5 mm long tube. The fruit is a narrowly oblong pod, 22 to 35 mm long, 2.5 to 3.5 mm wide, minutely strigulose to glabrate (Welsh et al., 2003).

Distribution: Utah trefoil occurs in southern Utah, Nevada and parts of Arizona (Welsh et al., 2003). It is plentiful in the southern Great Basin and the Mojave Basin and Range (Stettler, 2016a), where it is found on the plateaus of Utah in Beaver, Garfield, Iron, Kane, Millard, Piute, Sevier, Utah, Washington, and Wayne counties. It is also found on the Kaibab Plateau in northwestern Arizona, in the mountains of central Arizona, and into Lincoln County, Nevada. For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Utah trefoil is found in semi-arid areas of the Intermountain West among sagebrush, pinyon-juniper, mountain brush, aspen, and spruce-fir communities at 1470 to 2850 m. (4800-9350 ft.) (Cronquist et al., 1989; Welsh et al., 2003).

Adaptation

Utah trefoil is commonly found growing in open, dry, stony or sandy soils in sites receiving 30-50 cm (12-20 in.) of annual precipitation. Early trials of 14 accessions of Utah trefoil suggest that plants will be adapted to a wide range of environmental conditions at restoration sites, which may improve seeding success. The average elevation of the 14 collection sites was 2261 m. (7418ft.) (Stettler, 2016a).

Uses

Restoration: Utah trefoil may have potential for rangeland restoration and rehabilitation in the Intermountain West (Stettler, 2016a). As a native legume, Utah trefoil would add a nitrogen-fixing component to rangeland plant mixtures.



Wildlife/forage: Regrowth in trial plots of Utah trefoil was heavily grazed by rabbits and/or mule deer, showing that this species is useful for feed even despite its relatively high levels of tannins (Stettler, 2016a). Species of the genus *Lotus* L. have been recognized as important to agriculture due to their high digestibility and crude protein content (Escaray et al., 2012). Their condensed tannin content, which is important for forage quality because it reduces the risk of bloat, improves nutrient absorption, reduces protein degradation in the rumen (Undersander et al., 1993; Smith and Kelmen, 1997), and controls intestinal parasites (Novobilsky et al., 2011).

Pollinator: Utah trefoil should be considered for use in Intermountain West pollinator plantings and CRP. Native bees of the genera *Anthidium*, *Bombus*, and *Megachile* have been most frequently observed in association with this species of trefoil (Ikerd, 2016).

Status

Weedy or Invasive: This native forb/legume has not been shown to become problematic within its native range. 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

Utah trefoil seed used in preliminary field trials were acid scarified for 10-20 minutes, followed by inoculation with a peat-based *Rhizobium*. Until specific propagation methods are developed for Utah trefoil, one might use the seeding recommendations made for birdsfoot trefoil seed production as a guide (Stettler, 2016b).

Management

Utah trefoil should be used as a minor component of restoration seed mixtures. Management strategies should be based on the key species in the established plant community. Grazing should be deferred on seeded lands for at least two growing seasons to allow for full stand establishment.

Pests and Potential Problems

There are no known pests or potential problems associated with Utah trefoil.

Environmental Concerns

Utah trefoil is a natural component of many native plant communities in North America. There are no known environmental concerns regarding Utah trefoil.

Seeds and Plant Production

There are approximately 122,580 seeds/lb of Utah trefoil and a bushel weight of approximately 60.5 lb/bu. The full stand seeding rate is 9 lbs PLS/ac, based on a target rate of 25 to 30 PLS/ft. Although currently there is no commercially available seed, certain collections have shown promise for agronomic seed production because they produce pods on tall upright stems, which should allow seed to be mechanically harvested (Stettler, 2016a).



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

At present there have not been any cultivars selected or improved, but early trials conducted by the ARS Forage and Range Research Laboratory in Logan, UT have shown promise for future production of selected cultivars (Stettler, 2016a). Cultivars may be selected based on the local climate, resistance to pests, seedling establishment, seed production, and intended use. Consult with your local land-grant university, local extension office, or local USDA-NRCS office for recommendations on adapted sources for use in your area.

Literature Cited

Cronquist, A., A. Holmgren, N. Holmgren, J. Reveal, P. Holmgren. 1989. Intermountain Flora: Vascular Plants of the Intermountain West USA. Vol. 3b Fabales. The New York Botanical Garden. Bronx, NY. 279p.

- Escaray, F. J., A.B. Menendez, A. Gàrriz, F. L. Pieckenstain, M. J. Estrella, L. N. Castagno, P. Carrasco, J. Sanjuàn, O. A. Ruiz. 2012. Ecological and agronomic importance of the plant genus *Lotus*. Its application in grassland sustainability and the amelioration of constrained and contaminated soils. *Plant Science* 182:121-133.
- Ikerd, H. 2016. Personal communication. USDA-ARS Bee Biology and Systematics Laboratory. Logan, UT.
- Novobilisky, A., I. Mueller-Harvey, S. M. Thamsborg. 2011. Condensed tannins act against cattle nematodes. *Veterinary Parasitology* 182:213-220.
- Smith, K. F., W. M. Kelman. 1997. Predicting condensed tannin concentrations in *Lotus uliginosus* Schkuhr using near-infrared reflectance spectroscopy. *Journal of the Science of Food and Agriculture* 75:263-267.
- Stettler, J. 2016a. Utah Lotus: North American legume for possible uses in rangeland revegetation in the southern Great Basin of the western United States. Unpublished M.S. thesis. Utah State University. Logan Utah.
- Stettler, J. 2016b. Personal communication. PhD candidate. Brigham Young University. Provo, UT.
- Undersander, D., L. Greub, R. Leep, P. Beuselinck, J. Wedberg, D. Smith, K. Kelling, J. Doll, D. Cosgrove, C. Grau, S. Peterson, M. Wipfli, J. English. 1993. Birdsfoot trefoil for grazing and harvested forage. University Extension, Iowa State University, Ames, IA.
- Welsh, S., N. Atwood, S. Goodrich, L. Higgins. 2003. A Utah Flora. Brigham Young University. Provo, UT. 912p.

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