



BIRD'S-FOOT TREFOIL

Lotus corniculatus L.

Plant Symbol = LOCO6

Alternative Names

Birdfoot deervetch

Description

General: Bird's-foot trefoil is a moderately long-lived, herbaceous, perennial legume native to Eurasia (Grant and Small, 1996). It has a well-developed, branching, tap-like root. Plant height varies depending on growth habit which can be prostrate, ascending or erect. Stems are slender, branched and moderately leafy. Leaves are alternate and consist of 5 leaflets. Inflorescences have bright yellow to tinged red flowers in 4-8 compact florets arranged in a whorl, or umbel, at the end of the flowering stems. Plants remain green and succulent through seed ripening. Long cylindrical seed pods turn tan to dark brown when ripe and extend outward from the stalk, appearing like a bird's foot. Pods contain 15-20 seeds that discharge when mature pods split and twist spirally (Seany and Henson, 1970).



Figure 1: Close up of mature bird's-foot trefoil flowers.
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Distribution: Bird's-foot trefoil occurs naturally throughout Europe, Central Asia and the highlands of northern Africa. It is adapted to the temperate regions of South America, Australia, New Zealand, and North America (Steiner, 1999; Vuckovic et al., 2007). For a current United States distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

Habitat: Bird's-foot trefoil grows best in areas that receive 20 inches or more of precipitation. It performs well on low and moderately fertile soils with relatively poor internal drainage but is less productive than alfalfa on fertile, deep, well-drained soils (Schaller et al., 1978). It can withstand and grows well on shallow soils, saline-alkaline soils, and soils of medium acidity.

Uses

Forage: This species is used as a perennial forage legume in pastures and has a high nutritive value and digestibility (Sareen, 2004; Churkova et al., 2016). This includes high crude protein, crude fiber, as well as other nutrient concentrations important for muscle development, milk production, and growth (Vuckovic et al., 2007). Bird's-foot trefoil contains condensed tannins which prevent bloat in grazing animals and protect plant proteins from degradation in the rumen (Wang et al., 1996). It plays an important role as a non-bloating legume in diversified pasture mixes when combined with grasses. Conservation Reserve Program (CRP) mixes often include bird's-foot trefoil, especially those designed for erosion control, wildlife habitat, and forage production (Ogle et al., 2011).

Erosion control: Due to its perennial nature, deep rooting, drought resistance, spreading habit, and ability to reseed naturally, bird's-foot trefoil is a valuable plant to use for bank and slope stabilization (MacDonald, 1946). Seeding bird's-foot trefoil with early establishing grasses is recommended to control wind and water erosion, as it is slow to establish.

Status

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

Inoculate seed with appropriate Rhizobium bacteria to ensure sufficient root nodulation. Seeding rates are 8 to 10 pounds per acre under normal conditions. However, broadcast seeding requires 10 to 18 pounds of bird's-foot trefoil (MacDonald, 1946). Seeding rates for erosion control practices may be considerably higher depending on the mix and geographic location.



Figure 2: Mature seed pods of bird's-foot trefoil with intact and shattered seed.
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Seed placement should be no deeper than ¼ inch into a clean and firm seedbed. Seeding behind a grain drill, followed by light covering with a weeder, roller, chain, or harrow, has resulted in good establishment (MacDonald, 1946). Likewise, establishment has been successful either broadcasting between cultipacker treatments on well-prepared soil or when shallow-seeded using a drill. Poor stand establishment may result from poor seedbed preparation, deep seeding, inadequate soil fertility, failure to use specific inoculant, and excessive competition from weeds.

Seedlings are more successful in early spring than in late summer or fall (Hall and Cherney, 2025). Planting bird's-foot trefoil in a mix with grasses such as orchardgrass (*Dactylis glomerata*), timothy (*Phleum pratense*), meadow foxtail (*Alopecurus pratensis*), or tall fescue (*Schedonorus arundinaceus*) has been successful. Midsummer seedings are hazardous unless soil moisture is above normal and growing conditions are good.

Management

Bird's-foot trefoil yields less than alfalfa on fertile, well-drained soils, but can produce better than alfalfa on poorly drained, low pH soils. To achieve high yields however, fertility requirements are similar to alfalfa (Hall and Cherney, 2025). Use

soil tests for appropriate fertilizer and lime recommendations. In soils low in phosphorous, place in bands 1½ - 2" directly below the seed for best utilization. Since bird's-foot trefoil seedlings grow quite slowly, rapidly growing weeds will shade and stunt their growth. Early weed control will greatly improve the chance of a successful planting. Control pests, especially spittlebugs and leafhoppers.

To protect the life of the stand, bird's-foot trefoil requires careful management. Bird's-foot reseeds well and stands will persist if allowed to mature and produce seed every third year. Regrowth of bird's-foot trefoil differs from that of alfalfa in that it originates at buds formed in leaf axils. Close grazing that takes all stem growth is very detrimental to regrowth and stand life. Delay spring grazing until plants are at least 8 inches high. Hay harvest should leave 4 to 6 inches of stubble to ensure good regrowth. Allow sufficient time for regrowth between cuttings or grazing to maintain the stand longevity. A study that looked at four grazing intervals of bird's-foot trefoil found that the highest total herbage yields and highest seedling numbers were at 4-week intervals. Furthermore, this timeframe promoted the survival and productivity of established plants, allowing sufficient seedling recruitment and weed suppression (Bologna, 1996). Heavy grazing pressure may be appropriate in the spring and summer; however, harvesting or grazing between September 1st and the first killing frost decreases winter survival and subsequent spring growth (Hall and Cherney, 2025).

Pests and Potential Problems

Crown and root rots are the most significant diseases of bird's-foot trefoil, particularly in wet conditions (MacDonald, 1946). The trefoil seed chalcid, *Bruchophagus kolobovae* Fed., is a small, black, wasp-like insect that can be destructive in seed fields (Peterson, 1991). Fusarium wilt has caused significant decline of bird's-foot trefoil, but there have been efforts to breed higher resistance to this disease (Altier et al., 2000).

Control

This plant may become weedy or invasive in some regions or habitats and may displace desirable vegetation if not properly managed. Please contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely.

Seeds and Plant Production

The average weight per 1000 seed is 1.16 grams and the average number of seed per pound is 396,000 (MacDonald, 1946). Germination occurs within 24-48 hours under optimal conditions, though there is a significant amount of hard seed in this

species (MacDonald, 1946). Several studies have shown a wide range of hard seed percentages between 20-46% (Vuckovic et al., 2007), around 50% (Taylor et al., 1973) or anywhere from 56-73% (Bologna et al., 1996). Morphologically, the number of pods per raceme varied between 1.8 and 5.2, while the number of seeds per pod varied from 8.4 to 25.6 (Vuckovic et al., 2007).

Seed pod shattering is a serious problem in *Lotus corniculatus*. Seed lost due to shattering is between 65% and 85% (Sareen, 2004; Winch et al., 1985). To avoid seed loss from shattering, researchers suggest cutting the crop just before maturity in the morning while the plants are still moist with dew and then drying the plants before threshing them later (MacDonald, 1946).

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

Varieties of bird's-foot trefoil are characterized into either prostrate/grazing types or erect/haying types. Some of the most common upright or hay-type varieties used in the Northeast US are 'Maitland', 'Viking', and 'Mansfield'. 'Leo', 'Empire', 'Dawn', and 'Fergus' are low-growing, pasture-type varieties. In a 2016 study that looked at the content of crude protein, structural fiber components, digestibility and feeding value, cultivars 'Pardee', 'Witt', and 'Bright' placed in the top three (Churkova et al., 2016). 'Cascade', 'Granger', 'Mackinaw', and 'Kalo' are principal cultivars in the west. Seed is readily available at commercial seedhouses.



Figure 3: Bird's-foot trefoil seeds at 5x magnification. USDA-NRCS Pullman WA Plant Materials Center

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