

## alfalfa

### *Medicago sativa* ssp. *sativa* L.

Synonyms: *Medicago media* Pers., *Medicago sativa* ssp. *varia* (Martyn) Arcang., *Medicago x varia* Martyn.

Other common names: common alfalfa, luzerne

Family: Fabaceae

**Invasiveness Rank:** 59 The invasiveness rank is calculated based on a species' ecological impacts, biological attributes, distribution, and response to control measures. The ranks are scaled from 0 to 100, with 0 representing a plant that poses no threat to native ecosystems and 100 representing a plant that poses a major threat to native ecosystems.

#### Description

Alfalfa is a perennial herb that grows up to 91 cm high. Multiple, erect stems grow from a thick, somewhat woody crown. Leaves are alternate and composed of 3 leaflets. Leaflets are ovate, hairy, and 13 to 38 mm long. Central leaflets are stalked, while lateral leaflets are sessile. Flowers are blue or purple and 13 mm long. They are arranged in oblong clusters in leaf axils. Fruits are spirally-coiled pods. Each fruit is 6 to 13 mm long and encloses several seeds (Hultén 1968, Hitchcock and Cronquist 1973, Royer and Dickinson 1999).



*Medicago sativa* ssp. *sativa* L.

**Similar species:** Alfalfa readily hybridizes with yellow alfalfa, *M. sativa* ssp. *falcata* (L.) Arcang., to produce intermediate forms (Small and Brookes 1984). Yellow

alfalfa can be distinguished from alfalfa because it has yellow flowers and straight or slightly curved, but not coiled, pods. Both alfalfa and yellow alfalfa can easily be confused with other weedy, trifoliate legumes, such as *Melilotus* and *Trifolium* species. Alfalfa can be distinguished from other trifoliate legumes, even when not in flower or fruit, by the presence of longer stalks on the central leaflets than on the lateral leaflets and toothed margins on the leaves.



Fruits of *Medicago sativa* ssp. *sativa* L.

#### Ecological Impact

**Impact on community composition, structure, and interactions:** 27 bird species and 46 mammal species are known to consume alfalfa (Graham 1941). Most big game animals, including moose and mule deer, eat alfalfa (Leach 1956, Kufeld 1973). Many small mammals, including marmots, mice, and ground squirrels, graze on alfalfa. Waterfowl, such as American wigeons and mallards, eat the leaves, flowers, and seeds. Seeds are also consumed by rodents, rabbits, and upland birds. Alfalfa is a source of nectar and pollen for insects (Graham 1941, Stanton 1974), and it is particularly attractive to solitary bees (Carlson pers. obs.). Dabbling ducks (mallards, blue-winged teals, northern pintail, northern shovelers, and American

wigeons) nest in alfalfa stands (Klett et al. 1984). Undisturbed alfalfa fields provide food and cover for a variety of birds, including sharp-tailed grouse, American bitterns, marsh hawks, short-eared owls, and passerines (Duebber et al. 1981).

**Impact on ecosystem processes:** *Rhizobia* bacteria located in the roots of alfalfa alter soil conditions by fixing atmospheric nitrogen (USDA 2002). By increasing the nutrient contents of the soil, alfalfa may facilitate the establishment of other exotic or native species.

### Biology and Invasive Potential

**Reproductive potential:** Alfalfa reproduces by seed only (USDA 2002). The mean number of seed produced by an individual plant has been documented at 5,320 (Stevens 1932).

**Role of disturbance in establishment:** Alfalfa generally establishes on disturbed ground. However, it establishes easily after seeding on undisturbed ranch lands (Hultén 1968, Hitchcock and Cronquist 1973, Royer and Dickinson 1999, MAFRI 2004).

**Potential for long-distance dispersal:** Alfalfa seeds are large and do not disperse easily. Herbivores facilitate the spread of seeds (Leach 1956, Kufeld 1973, Duebber et al. 1981).

**Potential to be spread by human activity:** Alfalfa is cultivated worldwide. It is planted for erosion-control projects and wildlife habitat and rangeland restoration. It is cultivated for hay and as a nectar source for honey bees (McLean et al. 1971). The utility of this species has probably contributed to its spread.

**Germination requirements:** Alfalfa seeds require scarification, a burial depth of 6 to 13 mm, and moist conditions to germinate efficiently. Sufficient soil moisture is also critical for root establishment (MAFRI 2004).

**Growth requirements:** Alfalfa is best adapted to medium-textured soils with pH between 6 and 8. It requires a minimum of 26 cm of precipitation annually, at least half of which must be received as rain (as opposed to snow). Alfalfa can withstand temperatures as low as -36°C. It requires 100 frost-free days to grow and reproduce successfully. Alfalfa is highly tolerant of drought and fire, but it cannot tolerate flooding, poor soil drainage, salinity, or shading (USDA 2002).

**Congeneric weeds:** Yellow alfalfa (*Medicago sativa* ssp. *falcata*), black medick (*M. lupulina*), burclover (*M.*

*polymorpha*), and burr medick (*M. minima*) are known to occur as non-native weeds in North America (USDA 2002). Burclover is considered a noxious weed in Arizona (Invaders 2010).

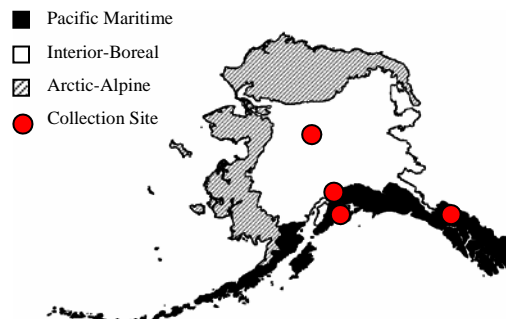
### Legal Listings

- Has not been declared noxious
- Listed noxious in Alaska
- Listed noxious by other states
- Federal noxious weed
- Listed noxious in Canada or other countries

### Distribution and Abundance

Alfalfa occasionally establishes in roadsides, waste areas (Hultén 1968, Hitchcock and Cronquist 1973), and active or abandoned agricultural fields (Royer and Dickinson 1999).

**Native and current distribution:** Alfalfa is native to southwestern Asia. It was first cultivated in Iran and now has a worldwide distribution as an agricultural crop. This species is widely planted in the continental U.S. and Canada, and it has naturalized in many of the areas in which it has been cultivated. Alfalfa is not well adapted for cultivation in Alaska (J. Conn – pers. com.). It has been documented from the Pacific Maritime and Interior-Boreal ecogeographic regions of Alaska (AKEPIC 2010).



Distribution of alfalfa in Alaska

### Management

Control measures have not been developed because of the value of alfalfa as an agricultural crop. Alfalfa is susceptible to herbicides (Bowes 1982, Cogliastro et al. 1990).

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