

**Medicago polymorpha L. (Fabaceae)**  
**Burclover**

**Description.** Annual, mat- to mound-like, often branching from the base, the stems 3-5(8) dm long, prostrate to ascending, glabrous to sparsely hispid. Leaves alternate, petiolate, trifoliolate, leaflets 0.5-2 cm long, obovate to obcordate, sharply denticulate near the apex; stipules lanceolate to ovate-lanceolate, deeply and sharply toothed. Inflorescences axillary, composed of 1-6 flowers, peduncles 0.5-2.5 cm long. Calyx 2-3.5 mm long, sparsely villosulous, tubular, lobes 5, ± equal; corollas papilionaceous, 3-5 mm long, petals yellow; stamens 10; ovary superior. Fruits strongly coiled 2-3 times at maturity, 4-18 mm in diameter, surface reticulate, keeled, with 1-2 rows of strongly curved to hooked prickles. In California, flowering from March to August. (Abrams 1944, Barneby 1989, Clapham et al. 1962, Heyn 1963, Isely 1993, Lesins and Lesins 1979, Munz 1959, Tutin 1968).

Synonyms: *M. denticulata* Willd., *M. hispida* Gaertner

**Note:** *Medicago sativa* L. (alfalfa, lucerne) is grown widely as a hay and forage crop (Lesins and Lesins 1979), as source of nectar (Richards 1996), and as a beneficial inter-crop (source of nitrogen fixation) in orchards (Paris et al. 1994-1995). Thus, there exists a considerable literature on cultivation, but relatively little pertinent to its control as a weed.

**Geographic distribution.** A native of southern Europe, bur clover has become naturalized throughout warm temperate North America (southern and Pacific U.S.), Chile, Australia, southern Africa, Japan, and Hawaii (Arnold and de Wet 1993, Barneby 1989, Chapman 1991, Gleason and Cronquist 1991, Heyn 1963, Montenegro et al. 1991, Ohwi 1965, Wagner et al. 1990)

Bur clover was first reported (under the name *M. denticulata* Willd.) from California by Brewer et al. (1876). However, Hendry and Bellue (1925) provided evidence that it was present in California prior to the mid 1700s. Bur clover is found all the northern Channel islands (Junak et al. 1997) and is widespread through most of California (Anonymous 1998, Isely 1993).

**Reproductive and vegetative biology.** The breeding system of *M. polymorpha* has not been specifically studied, but other annual species in related genera are self-compatible, partly self-pollinating, and visited primarily by small bees (Faegri and van der Pijl 1966, Proctor et al. 1996). *Medicago sativa* is also self-compatible, but depends strongly on bee pollination for full seed set; lack of bees significantly reduces seed set in cultivated populations (Bohart 1962, Leppik 1966, Lesins 1961, Proctor et al. 1996, Richards 1996, Robinson et al. 1989, Small et al. 1997, Stephen 1961).

In a comparative study of 6 annual grassland species, *M. polymorpha* was considered to have relatively high levels of seed dispersability, significant numbers of seeds in the soil seed bank, and high levels of seedling mortality (Jain 1979). No other literature was found pertinent to the biology of either species as weeds.

Seedling radicles of alfalfa are capable of penetrating an array of substrates, including clays (Campbell and Swain 1973). Once established, it shows high productivity in mixtures with other species, especially annuals and shallow-rooted taxa (Harper 1977, Spandl et al. 1997).

Competitiveness in alfalfa is attributable, in part, to its deep-set rhizomes and allelopathic affect of stems and leaves (Chung and Miller 1995, Harper 1977). Tesar (1993) also reported allelopathic affects from seedlings and juvenile plants treated with glyphosate.

**Ecological distribution.** Bur clover occurs on sandy to gravelly soils, rocky slopes, roadsides, fields, waste places, disturbed sites, whereas alfalfa tends to occur along ditches, fallow fields, and roadsides (Abrams 1944, Clapham et al. 1962, Isely 1993, Munz 1959). Bur clover is an important component of annual grasslands (Heady 1988) and also has been reported as invading coastal salt marshes (MacDonald 1988).

**Weed status.** Neither *Medicago polymorpha* nor *Medicago sativa* are considered noxious weeds in agricultural or horticultural practice, at least at a global level (not listed by Holm et al. 1977), nor are they considered noxious weeds by the State Dept. of Food and Agriculture (Anonymous 1996). *Medicago lupulina* L. (black medic) is the only species in the genus listed for the United States in Lorenzi and Jeffery (1987).

**Microbial pathogens.** Alfalfa has been reported as a host to alfalfa mosaic virus (McKirby and Jones 1994), anthracnose caused by *Colletotrichum* (Latunde-Dada et al. 1997, O'Neill 1996, O'Neill and Saunders 1994), leaf wilt, caused by *Fusarium avenaceum* (Czembor and Strobel 1997), *Pythium* (Denman et al. 1995), and *Verticillium* wilt (Huang et al. 1994). Mosaic virus remained endemic to cultivated fields of alfalfa and in fields dominated by *Medicago polymorpha* for up to 7 years, primarily through dormant, but infected seed banks (McKirby and Jones 1994). Variable patterns of susceptibility and resistance to *Aphanomyces* were studied by Vincelli et al. (1995).

**Insect pathogens.** Schaber and Entz (1994) reported two bugs (*Lygus*, *Adelphocoris*) as affecting alfalfa production. No other literature was found that reported *Medicago* species as hosts of deleterious insects. Small (1996) reviewed evidence for both deliberate and coincidental selection of resistance to insect herbivory in the agronomic development of cultivated alfalfa.

**Herbicide control.** Dicamba is the only herbicide recommended (for black medic) by Lorenzi and Jeffery (1987). Dicamba was also found effective in controlling alfalfa in corn fields (Swanton et al. 1998). Glyphosate was used to control alfalfa infestations at the seedling stage, prior to cultivation of other crops (Tesar 1993). Other herbicides used to treat alfalfa include imazethapyr, hexazinone, terbacil, metribuzin, dichlobenil, and chlorsulfuron (Malik et al. 1993, Wilson 1994). Most studies of herbicides involving alfalfa were used to control other weeds. Malik et al. (1993), however, found that dichlobenil and chlorsulfuron significantly damaged alfalfa after treatment for undesirable species in cultivated fields. Mixtures of imazethapyr and trifluralin (Darwent et al. 1997, Oliveira et al. 1997), did not affect cultivated alfalfa. Metribuzin, however, was found to damage alfalfa under all treatments (Oliveira et al. 1997).

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