

Medicago arborea seed parents, and M. sativa s.l. pollen parents used in M. arborea X M. sativa crosses at Wisconsin 2000-2009.

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The objective of using *M. arborea* as the seed parent is the transfer of alfalfa traits to *M. arborea*, especially the regenerative crown. No hybrids were obtained in crosses using *M. arborea* as the seed parent, in spite of testing a wide array of parents of both species. Nonetheless, this work will continue. This report is to record materials used thus far. Dormant and non-dormant *M. sativa* pollen parents were used, as well as two alfalfa X *M. arborea* hybrids that produced pollen. Crossing was done by hand in the greenhouse in the spring of the year. The number of *M. arborea* flowers varied year to year. In general, at least 25 *M. arborea* flowers were pollinated, and in a few cases 100 or more flowers were pollinated with *M. sativa* pollen. A few seeds were produced on every *M. arborea* plants used as a seed parent, but they were from self fertilization. Individual seeds were scarified and planted in Jiffy-7 peat moss pellets. Seedlings were transplanted once in the greenhouse, before being transplanted in the field. This sequence was followed every year. Seedlings varied in vigor, but all were self progeny, based on *M. arborea* morphology. Unusual plants, and a sampling of others was transplanted to the greenhouse in the fall, and carried until spring when most flowered. All the plants had yellow, *M. arborea* flowers. It was learned that most *M. arborea* plants produce self seed, although *M. arborea* tends to be less self fertile than alfalfa. A picture of non inbred, and first generation inbred plants is at the end of this report.

M. arborea

Origin

WISYN-1	PI 199254, PI 330677, PI 504540 (Greece); PI 249937 (Israel)
ARC	Italy (S. Arcioni – Perugia)
AUSYN-0	North Africa, Spain, Greece (J. Irwin – Qld AU)

M. sativa s.l. – Non-Dormant Material

Wadi-Quat; Saudi-Arabia (L. Teuber – Davis CA USA)

Siwa Oasis; Egypt (C. Scotti – Lodi IT)

Oman; Oman (J. Irwin – Qld AU)

M. sativa s.l. – Dormant Material

Wisconsin-adapted stocks, varied each year in greenhouse

Vernal – Wisconsin Agric. Expt. Station 1953

Blaser XL – Forage Genetics USA

Magnum III – Dairyland Seeds USA

WISFAL – *Medicago falcata*-Tetraploid 1992

M. sativa X M. arborea Hybrid Derivatives

Sac-2 – Hybrid plant with pollen

Sac-4 – Hybrid plant with pollen



Top Row: *Medicago arborea* F1 plants from hand crosses.

Pedigree: *M. arborea*-1 X *M. arborea*-4

Bottom Row: First generation plants from self pollination of *M. arborea*-1 (S1s).

Inbreeding depression is apparent in the S1 plants. S1s on the right side are very weak, and appear to have no more than 25% of non-inbred biomass.