

Herbaceous Mimosa Potential as a Pasture Legume

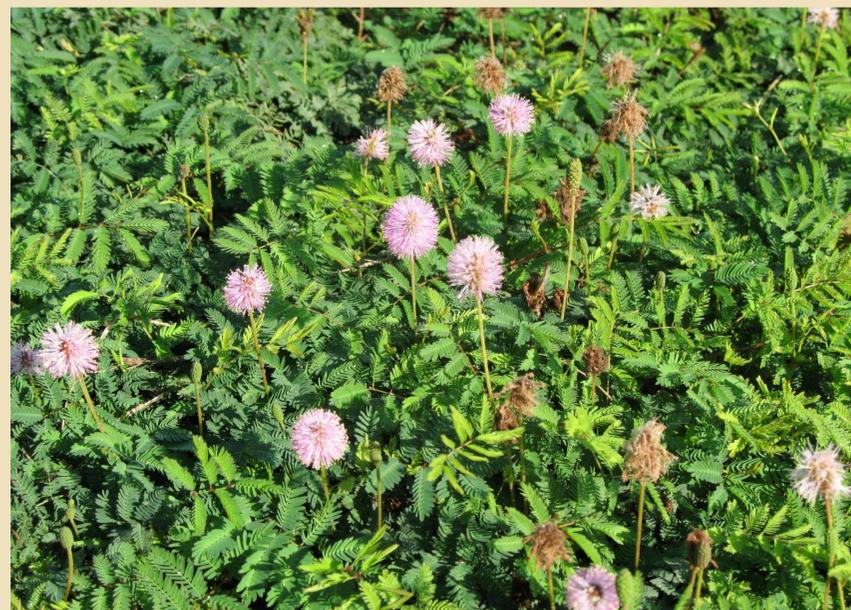
W.D. Pitman¹, Alan Shadow², and Stacia Davis³

¹Louisiana State University Agricultural Center, Hill Farm Research Station, Homer, LA; ²USDA, NRCS, East Texas Plant Materials Center, Nacogdoches, TX;

³Louisiana State University Agricultural Center, Red River Research Station, Bossier City, LA

Abstract

Herbaceous mimosa (*Mimosa strigillosa*) is a perennial, warm-season, native legume adapted to a wide range of soil types across the Gulf Coast region of the southeastern USA. Low, dense growth from spreading stolons is supported by a deep, extensive root system. Crockett Germplasm was released for conservation uses by the USDA-NRCS East Texas Plant Materials Center in Nacogdoches, Texas, and landscape use has been recommended for the species by the University of Florida Environmental Horticulture Department (IFAS Extension Publication ENH 1075). Evaluations at multiple locations across Texas and Louisiana demonstrated wide adaptation, and, despite the low growth, forage production exceeded that of selected upright-growing native legume species with forage nutritive value comparable to available warm-season forage legumes. Recent evaluations provide preliminary assessments of seed production, stand establishment, and response to grazing by beef cattle. Seed increase at the East Texas Plant Materials Center has provided insights for production, harvest, and processing seed. Plantings on 5 ha of pasture area on clay bottomland in northwestern Louisiana have allowed preliminary assessments of stand establishment, seedling response to irrigation, and plant response to grazing. Some key aspects of seed production include requirements of a level soil surface and weed-free production fields because of cutting heights near the soil surface and limited available herbicides for selective weed control. Cattle readily grazed the herbaceous mimosa, and selective grazing within bermudagrass pasture resulted in gradual defoliation of herbaceous mimosa to only 2 to 3 cm above the soil surface. In 2012 and 2013, irrigation of seedling stands enhanced seedling survival and plant spread compared to non-irrigated areas during extended dry periods on clay soil. In 2014, irrigation increased weed competition which was detrimental to herbaceous mimosa seedling survival compared to non-irrigated areas with less weed competition. Even though wide adaptation and forage characteristics of this native legume indicate usefulness as a pasture species, stand establishment and grazing management require appropriate strategies. Planting approaches to minimize both drought hazards and excessive weed competition are needed. Grazing management will require appropriate stocking rates and perhaps periods of grazing deferment to maintain plant vigor.



Crockett Germplasm herbaceous mimosa (*Mimosa strigillosa*)

General Characteristics: Herbaceous mimosa is a low-growing, stoloniferous, perennial, warm-season legume with a deep extensive root system.

Adaptation: Natural populations have been reported on sites ranging from the Gulf Prairies and Marshes of South Texas to clay and sandy floodplains in Louisiana to well-drained upland soils of northern Florida. Herbaceous mimosa occurs naturally, sometimes as dense stands, on disturbed sites including road ditches and vacant city lots indicating substantial colonization ability. Successful plantings have resulted on sandy loam sites from annual rainfall zones of just over 400 mm on the Rolling Plains of northern Texas to 1900 mm on the Coastal Plain in Louisiana, as well as on clay soil of river bottomland in Louisiana.



Dense stolons with new spring regrowth

Grazing: Herbaceous mimosa has been documented as a high priority forage plant for white-tailed deer on some sites in South Texas. Plantings in Louisiana were readily grazed by beef cattle (both mature cows and yearlings) with selective grazing occurring within areas of mixtures of the legume with bermudagrass. Prolonged access resulted in defoliation of herbaceous mimosa to within 2 to 3 cm of the soil surface throughout the pasture area where the legume was not protected by dense bermudagrass.

Moisture effects: Established plants are tolerant of drought and flooding. Stand failures have resulted from inadequate rainfall for seedling survival. Irrigated plantings on clay soil in 2012 and 2013 established where flooded but not on non-irrigated portions of the pasture. In 2014, sprinkler irrigation resulted in dense weeds with limited survival of herbaceous mimosa seedlings.



Herbage nutritive value is indicated by the range of reported crude protein values for herbaceous mimosa from 7.5% for stems to 24.5% for leaves compared to a crude protein range obtained for cowpea of 6.4% for stems to 22.7% for leaves.

Opportunities and Recommendations

- *Herbaceous mimosa is adapted to a wide variety of soil types.
- *Insufficient moisture and plant competition can limit stand establishment.
- *Early planting may allow seedling growth before summer heat stress.
- *Irrigation can enhance seedling survival of summer drought.
- *Weed control during establishment can be critical.
- *Forage produced is leafy and palatable with high crude protein concentration.
- *Grazing management approaches involving rotational stocking or periods of deferment from grazing will be required to overcome high palatability and the resulting selective grazing.

References

- Noah, R.L., J.P. Muir, R.D. Wittie, D.H. Kattes, W.D. Pitman, G.L. Rea, and M.R. Brakie. 2012. Prairie acacia, panicled tick-clover, and herbaceous mimosa herbage, nitrogen and seed yields, nutritive value and regional adaptation. *Agronomy Journal* 104: 265-270.
- Norcini, J.G., and J.H. Aldrich. 2007. Native wildflowers: *Mimosa strigillosa* Torr. & A. Gray. Publication No. ENH-1075. Environmental Horticulture Department, Florida Cooperative Extension Service, Gainesville, FL.
- Pitman, W.D. 2009. Establishment and survival of native legumes on upland sites in Louisiana. *Native Plants Journal* 10: 240-250.
- USDA-NRCS. 2012. Release brochure for Crockett Germplasm herbaceous mimosa (*Mimosa strigillosa*). USDA-Natural Resources Conservation Service, East Texas Plant Materials Center, Nacogdoches, TX.