Mimosa pigra

L.

Fabaceae - Mimosoideae

LOCAL NAMES
English (pricky wood weed,mimosa,giant sensitive plant,catclaw mimosa,black mimosa); French (amourette riviére); Spanish (zorzon,zarza,dormilona); Thai (maiyaraap ton,mai yah raap yak)

BOTANIC DESCRIPTION
Mimosa pigra is a prickly mimosoid shrub. Stems are branched, 2-6 m long, with dense growth. The stem has 5 ridges from which spines and bristles arise.

Leaves about 20 cm long and pinnate; 7-16 pairs pinnae, each pinna composed of 25-40 linear pinnules. Petioles and leaves spiny and hispid. The leaves are not as sensitive to physical stimulation as those of some other Mimosa spp.

Many globose inflorescences arise from the end of the stem and from leaf axils. Pale reddish-purple stamens conspicuous in the florets.

Pods compressed, 5-10 cm long, about 2 cm wide and densely hispid.

The generic name ‘mimosa’ is from the Greek meaning to imitate or mimic. This refers to some species of the genus that may appear to imitate animals because the sensitive leaflets move and fold up when touched.

BIOLOGY
M. pigra is a sexually propagated species, but the details of its breeding biology are not yet clear. It flowers every month, but abundant flowering and seed production occur mainly in the rainy season. The development of young inflorescence to anthesis takes 7-9 days, and to pod maturity 28-30 days. The period between flower-bud formation and seed ripening is about 5 weeks. Pods are hirsute, breaking into partially dehiscent segments, each with a seed. Seeds of this prickly shrub spread through river systems by floating downstream. They are also carried between river systems by animals, or in mud on vehicles.

M. pigra is native to the New World but has been widely introduced across the tropics and is sometimes describes as the World's worst weed invading flood plain sites and forming dense spiny impenetrable thickets near Chiang Mai, Thailand. (Colin E. Hughes)

Leaves, flower heads and pods of M. pigra. (Colin E. Hughes)

Pods of M. pigra break up when ripe, forming single-seeded "envelopes" which float on water allowing wide seed dispersal during flooding, and promote the invasion of this species across flood plains. (Colin E. Hughes)

ECOLOGY

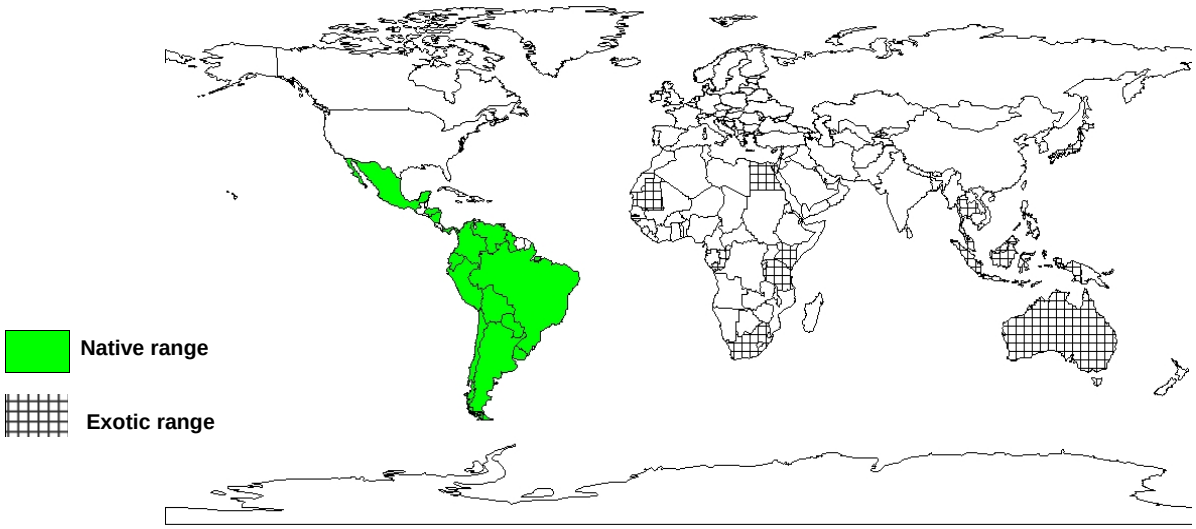
M. pigra is a legume of moist, open sites in the tropics, forming a monospecific stand and competing with sedgeland and grassland communities so that the ground flora under dense stands is sparse to non-existent. Its favoured habitat is around water and on floodplains. Since the late 1970s, the plant has become a serious weed of pastureland and national parks in northern Australia. M. pigra has several characteristics that enable it to do well in open disturbed sites: it grows quickly, it can withstand drought and floods, and the seeds float. It threatens biological diversity by replacing wetlands with an impenetrable thorny thicket. It is also detrimental to pastoralism, tourism and traditional use of land by Aboriginal people.

M. pigra presents a very different picture in its native range, where its natural habitat is mainly marginal areas of canals, rivers and lakes, and this gives some hope to researchers looking for biological controls. In Mexico, for example, it is a rather obscure weed.

DOCUMENTED SPECIES DISTRIBUTION

Native: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, French Guiana, Guadeloupe, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Surinam, Uruguay, Venezuela

Exotic: Australia, Congo, Egypt, Indonesia, Japan, Kenya, Malaysia, Mauritania, South Africa, Tanzania, Thailand, US, Vietnam, Zambia



The map above shows countries where the species has been planted. It does neither suggest that the species can be planted in every ecological zone within that country, nor that the species can not be planted in other countries than those depicted. Since some tree species are invasive, you need to follow biosafety procedures that apply to your planting site.

PRODUCTS
Apiculture: According to reliable beekeepers in Thailand, M. pigra can serve as a pollen source for bees.

Fuel: When groundwater levels start falling at the beginning of the dry season, the defoliated stems and branches are left and become dry. These dry materials are collected and utilized as firewood by the low-income people living in the vicinity of the reservoirs. The use of this material as firewood releases the wood harvesting pressure in the upstream area of the reservoir.

Tannin or dyestuff: The root yields 10% tannin.

Medicine: M. pigra is used in tropical Africa as a tonic and for diarrhoea, gonorrhoea and blood poisoning. In Tanzania, the powdered leaf is taken with water to relieve swelling. In Zambia, the root ash is sprinkled over leprous patches on the skin. The root is apparently aphrodisiac to some persons and calming to others. The seed is emetic and an expectorant and is used for tooth troubles. The leaf is said to contain mimosine; it is purgative and perhaps tonic.

SERVICES
Erosion control: M. pigra can be used on the steep banks of water reservoirs as an erosion-control measure.

Soil improver: It has been used as a green manure and cover crop in Thailand since the 1960s.

Pollution control: M. pigra grown at the damp water-inlet areas in reservoirs can remove debris from floodwater entering the reservoir.

TREE MANAGEMENT
Mature M. pigra is resistant to fire, the majority of plants regrowing from the base of stems. Young plants are more susceptible, but a large proportion also regrow. Plants that are 1st stressed with herbicides have a higher level of mortality than unstressed plants. The burn season is also important; there is higher mortality when plants are drought stressed than from burning soon after rain.

Mimosa infestations can expand very rapidly, so it is important to prevent the spread to new areas, as well as to control existing infestations. Current control methods are costly and require lengthy ongoing commitment.

GERMPLASM MANAGEMENT
Seed storage behaviour is orthodox under long-term storage. The oldest recorded collection is 4 years old.

PESTS AND DISEASES
A number of insects have been found associated with M. pigra. They include Membracidae, Fulgoridae, Flatidae and Aphididae, which are mainly foliage pests. Other pests include Riptortus linearis (young shoots and pods), Hypomeces squamosus (bark and leaves), Indarbela maculata (bark and stems), Sagra femorata (stems) and Euproctis fraterna (young shoots, leaves and flowers).

FURTHER READNG

AICAF. 1997. Weeds in the tropics. Association for International Cooperation of Agriculture and Forestry, Japan.

Beentje HJ. 1994. Kenya trees, shrubs and lianas. National Museums of Kenya.

Dale IR, Greenway PJ. 1961. Kenya trees and shrubs. Buchanan's Kenya Estates Ltd.

Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. Handbooks for Genebanks: No. 4. IPGRI.

Lonsdale M, Braithwaite R. 1988. The shrub that conquered bush. New Scientist. 1634:52-55.

Lonsdale WM, Miller IL. 1993. Fire as a management tool for a tropical woody weed: Mimosa pigra in northern Australia. Journal of Environmental Management. 39(2): 77-87.

USAID. 1983. Mimosa pigra management. Proceedings of an International Symposium, 22-26, 1982, Chiang Mai, Thailand. USAID.

Watt JM, Breyer-Brandwijk. 1962. Medicinal and poisonous plants of southern and eastern Africa. E & S Livingstone Ltd.

SUGGESTED CITATION

Orwa C, Mutua A , Kindt R , Jamnadass R, Simons A. 2009. Agroforestree Database:a tree reference and selection guide version 4.0 (http://www.worldagroforestry.org/af/treedb/)