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SEED LEAFLET

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Prosopis juliflora (Sw.) DC.

Taxonomy and nomenclature

Family: Leguminosae, Mimosiodeae
Synonym: *Mimosa juliflora* Swartz
Vernacular/Common names: Mesquite (general for S. American *Prosopis* spp.), Velvet mesquite.
Related species of interests. *Prosopis* encompasses a large number of important tree species from dry zones, several of them with high salt tolerance. Main distribution is in America (e.g. *P. alba*, *P. tamarugo*, *P. chilensis, P. pallida*); in Africa occurs *P. africana* and in S. Asia *P. cineraria*.

Distribution and habitat

Prosopis juliflora is indigenous to northern South America (Columbia and Venezuela), Central America (Guatemala, Honduras, Panama) and some Caribbean Islands (West Indies). It has been widely planted in many dry areas in the tropics, where it has often spread and become a noxious weed.

P. juliflora is a species of the very hot and dry semi-deserts, with 150-700 mm rain and temperatures approaching 50°C. It grows from sea level to 1500 masl. It has an exorbitant ability to form deep growing roots and survive extremely dry conditions. It can grow on most arid soil types including alkaline and saline types.

Uses

A MPTS with many applications. The wood is hard, heavy, durable, and rot-resistant. It is easy to work and is used for most types of woodwork and carpentry articles. It doesn't reach large dimensions, so it has limited use in larger constructions. It makes excellent charcoal and firewood.

Flowers produce abundant nectar and are useful for honey production. Tannin can be extracted from the bark and the sap yields a fine rubber. Pods and to a certain degree leaves are used as fodder for livestock. Flour made from pounded dry pods is a traditional food among some American indians.

Because of its superior drought resistance, the species can be used for reclamation and rehabilitation of degraded and saline arid land, e.g. mines and dune stabilisation.

Botanical description

Prosopis juliflora is a small, usually < 12 meter deciduous tree or shrub. The crown is often wide, umbrella-shaped and open. Branches are characteristic zig-zag formed with long thorns in pairs at each bend. The thorns are modified stipules.

Leaves pinnately compound with 10-15 pairs of 5-10, linear-oblong leaflets, with rounded apex, hairy and glabrous.

The flowers are placed in long cylindrical spikes; they are regular and the corolla is pentamerous.

Plate from book: Flora de Filipinas (1880-1883), Francisco Manuel Blanco (O.S.A.)

Fruit and Seed description

Fruit: The indehiscent pods are long, pulpy, and yellowish when ripe. They are 10-15 cm long, cylindrical and slightly constricted between the 8-15 seed.
Seed: Seeds are very hard-coated. They are oval – elliptic, 2½-7 mm long, 1½-4 mm wide, smooth, light brown. 1000 seed weight 35-40g, equivalent to 25-30,000 seed per kg.

Flowering and fruiting habit

Flowering may start as early as 2-3 years. Pollination by various insects including bees. *P. juliflora* can have a very high fruit production

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Free standing tree. www.unesco.org/csi/

Harvest

Harvest by picking up pods under the trees or beating or shaking fruit bearing branches. Harvest time is not critical unless seeds are strongly attached by bruchids or pods are removed by browsers.

Processing and handling

Seeds should be extracted from the dry pods by breaking the pods, e.g. by beating, flailing or threshing. After disintegration of pods, seeds are extracted by a combination of sifting and winnowing.

Alternatively pods can be fed to goats and the seeds, most of which pass undamaged, can be extracted from the dung.

Storage and viability

Seeds dried to < 6-7% can be stored seeds can be stored at ambient temperature for 20 to 30 years. For long term storage cooled conditions are recommended.

Dormancy and pretreatment

Seeds exhibit very strong physical dormancy and very few seeds will germinate without pretreatment. High germination percentage can be achieved by manual scarification e.g. nicking, filing or hot wire burning. Bulk treatment e.g. by pouring boiling water over the seeds and letting them cool and imbibe in the water for 24 hours. Non-imbibed seed can be given a second treatment. Alternatively seeds can be scarified in 20% sulphuric acid for 1 hour or concentrated sulphuric acid for 20 minutes.

Sowing and germination

Germination is epigeal. Seeds may be sown in pots or seed beds for later transplanting. Germination is usually fast with paracotyledons unfolded after 4-5 days. With efficient pretreatment, germination can be more than 95%.

Selected readings

El Fadl, M.A. 1997. Management of *Prosopis juliflora* for use in agroforestrt systems in the Sudan. Tropical Forestry Reports 16. University of Helsinki.

Pasiecznik, N.M., P. Felker, P.J.C Harris, L.N. Harsh, **G. Cruz, J.C. Tewari, K. Cadoret and L.J. Maldonado 2001**. The Prosopis juliflora – Prosopis pallida Complex: A monograph

Cadoret, K., N.M. Pasiecznik and P.J.C. Harris, 2000. The genus Prosopis: A reference

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Seedleaflets are a series of species wise extension leaflets for tropical forest species with special emphasis on seed technology. Leaflets are compiled from existing literature and research available at the time of writing. In order to currently improve recommendations, FLD encourage feedback from users and researchers who have experience with the species. Comments, corrections, improvements and amendments will be incorporated into future edited leaflets. Please write your comments to: SL-International@life.ku.dk