

Prosopis chilensis

(Molina) Stuntz

Fabaceae - Mimosoideae

algarrobo blanco

LOCAL NAMES

Afrikaans (suidwesdoring); Arabic (temer musa); English (mesquite, Chilean mesquite); Hindi (vilayati kikkar, vilayati khejra, vilayati babul, kabuli kikkar); Spanish (algarrobo blanco, algarroba); Trade name (algarrobo blanco)

BOTANIC DESCRIPTION

Prosopis chilensis is a small to medium sized tree up to 12 m in height and 1 m in diameter; bark brown, fissured; spines a pair, stout, yellow, glabrous; root system reportedly shallow and spreading.

The leaves are compound, each with numerous leaflets along several pairs of pinnae. *P. chilensis* has 10-29 leaflets per pinnae and no more than two pairs of pinnae per leaf. The leaflets are about 1 cm apart.

The flowers are greenish-white to yellow, abundant and occur in spike-like racemes.

The pods are beige to off-white, about 15 cm long and 15 mm wide.

The pods have a tendency to be rolled up along the axis. Seeds many, bean-shaped, oblong, 6-7 mm long, flattened, brown, each in 4-angled case.

BIOLOGY

Flowering regularly in spring and sometimes sporadically again in late summer and like other members of the genus *Prosopis*, it is diploid, self-incompatible and insect pollinated.

Prosopis chilensis

(Molina) Stuntz

Fabaceae - Mimosoideae

algarrobo blanco

ECOLOGY

P. chilensis is found in the arid and semi-arid regions with ground water of between 3 and 10 m below the surface, such as drainage channels along ground water sinks. It has been observed to grow in seawater salinity. It is a common ruderal weed, coming up singly and in groups along roadsides, round habitations, on refuse dumps and in other disturbed habitats.

BIOPHYSICAL LIMITS

Altitude: 340-1 230 m, Mean annual temperature: -12-45 deg. C, Mean annual rainfall: 350-400 mm

Soil type: Found in sandy, alkaline soils and has proved to be salt tolerant.

DOCUMENTED SPECIES DISTRIBUTION

Native: Argentina, Chile, Peru, Uruguay

Exotic: Benin, Burkina Faso, Cameroon, Chad, Cote d'Ivoire, Eritrea, Gabon, Gambia, Ghana, Guinea, India, Kenya, Liberia, Mali, Mauritania, Namibia, Niger, Nigeria, Senegal, Sierra Leone, South Africa, Tanzania, Togo, US



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.

Prosopis chilensis

(Molina) Stuntz

Fabaceae - Mimosoideae

algarrobo blanco

PRODUCTS

Food: The pods are eaten by the native people (Northern Argentina), especially as a ground flour.

Fodder: The pods and not the leaves are readily eaten by livestock. They have as high as 35% sugar content and contain 10-12% crude protein. Seeds are sometimes ground in a concentrate for animal feeds. Large trees, 40 cm in basal diameter and 7 m in canopy diameter, may produce 40 kg of pods under optimal condition.

Apiculture: *P. chilensis* is a good source of nectar and pollen. A pale amber-coloured honey of medium density and good flavour is produced in abundance. Its flowering season is short and therefore it is not able to support a large swarm of bees throughout the year.

Fuel: When burnt *P. chilensis* ignites readily, has a high calorific value, emits intense heat, makes enduring embers and leaves little ash. The wood makes good charcoal and could be exploited commercially to supply industrial and domestic demand using portable kilns.

Fibre: Wood yields sulphate pulp for writing and printing works.

Timber: *P. chilensis* wood is relatively dense (about 700-800 kg/m³). It is valued for furniture, doors, cobblestones and parquet floors. The wood has a low volumetric shrinkage hence joints in furniture have much less tendency to open during conditions of changing humidity.

Gum or resin: The bark exudes an amber-coloured, translucent gum similar to gum arabic used in mucilage and an ingredient in medicine.

SERVICES

Erosion control: *P. chilensis* is a candidate for erosion control and soil stabilization in arid lands, due to its deep rooting habit.

Shade or shelter: *P. chilensis* planted as a hedgerow provides shade for fruit trees, field crops and to the homesteads. Shade provided in paddocks not only eases the lot of farm animals but also substantially increases meat production.

Nitrogen fixing: Like other legumes, *P. chilensis* is able to fix atmospheric nitrogen in its root nodules.

Ornamental: Due to its broad, rounded, open head of bright green foliage supported by gracefully arched spineless branchlets, its rapid growth and large size, *P. chilensis* has widely been used as an ornamental tree in Argentina, Arizona and California.

Boundary or barrier or support: *P. chilensis* could possibly be used to an advantage as barrier plant to form stock-proof hedgerow. If selectively coppiced on a cutting rotation of five years, such hedgerows would, by way of bonus, also provide a perennial source of pods and firewood.

Intercropping: Grasses and other plants have been said to grow better in association with *P. chilensis*, benefiting from shelter, humus and nitrogen which it fixes. When integrated into an agroforestry system, shelter-belts, avenues and groves of *P. chilensis* would make a major impact on the micro-climate as well as provide various products and services. The pods could be collected and crushed, or animals with access to the pods should not be allowed to roam freely so as to minimize the risk of uncontrolled spread.

Prosopis chilensis

(Molina) Stuntz

Fabaceae - Mimosoideae

algarrobo blanco

TREE MANAGEMENT

Spacing of 6 x 6 m to 13 x 13 m would be ideal. Mechanical and chemical weed controls are needed to maximize growth. Due to abundant growth of basal branches, pruning at the age of 4- 6 years is necessary to allow animal access to the forage which falls from the trees.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox; viability can be maintained for several years in hermetic storage at room temperature with 5-9% mc. There are about 36 000 seeds/kg.

PESTS AND DISEASES

Twig girdling insects (*Oncideres* spp.) causes minor damage to this tree. An un-described disease causes the terminal shoots to die. This necrosis gradually spreads downward and eventually may kill the entire tree.

Prosopis chilensis

(Molina) Stuntz

Fabaceae - Mimosoideae

algarrobo blanco

FURTHER READING

Albrecht J. ed. 1993. Tree seed hand book of Kenya. GTZ Forestry Seed Center Muguga, Nairobi, Kenya.

Anon. 1986. The useful plants of India. Publications & Information Directorate, CSIR, New Delhi, India.

Clinch NJL, Bennison JJ, Paterson RT. 1993. Use of trees by livestock. I:Prosopis. Chattam, UK, NRI.

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

ICRAF. 1992. A selection of useful trees and shrubs for Kenya: Notes on their identification, propagation and management for use by farming and pastoral communities. ICRAF.

Mbuya LP et al. 1994. Useful trees and shrubs for Tanzania: Identification, Propagation and Management for Agricultural and Pastoral Communities. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).

National Academy of Sciences. 1980. Firewood crops. National Academy Press. Washington D.C.

NFTA. 1989. NFT gums: ancient and modern commercial products. NFTA 89-01. Waimanalo.

NFTA. 1991. Prosopis alba and Prosopis chilensis: subtropical semi-arid fuel and fodder trees. NFTA 91-02. Waimanalo.

Peter G von Carlowitz.1991. Multipurpose Trees and Shrubs-Sources of Seeds and Inoculants. ICRAF. Nairobi, Kenya

Poyton RJ. 1990. The genus Prosopis in southern Africa. South African Forestry Journal. 152: 62-66.

SUGGESTED CITATION

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