

Albizia lebeck

kokko, Indian siris, East Indian walnut

LOCAL NAMES

Amharic (lebbek); Arabic (lebbek, labakh, daqn el-Basha, dign el basha, laebach); Bengali (sirisha, sirish); Burmese (kokko); Creole (tcha tcha); English (english woman's tongue, siris tree, woman's tongue tree, East Indian walnut, acacia amarilla, fry wood, lebbeck, Indian siris); Filipino (langil, aninapla); French (bois noir, bois savane, tcha tcha); Gujarati (polo barashio); Hindi (kothia koro, kalbaghi, hirih, siris, sirs, garso); Indonesian (kitoke, tekik, tarisi); Javanese (tekik); Khmer (chreh); Lao (Sino-Tibetan) (Ka `sê); Malay (batai, batai batu, kungkur, oriang); Nepali (kalo siris); Sanskrit (sirisha); Spanish (faurestina, florestina, cabellos de ángel, Aroma, amor plantónico, algarroba de olor, lengua viperina, acacia chachá, lengua de mujer, aroma francesca); Swahili (mkungu, mkingu); Tamil (vagei, karuvagai, vagai); Thai (cha kham, chamchuri, suek, phruek, kampu); Trade name (Indian siris, kokko, East Indian walnut); Vietnamese (trát, bô kêt tây, s[os]ng r[aaj]n, h[ow]jp hoan, lim xanh)

BOTANIC DESCRIPTION

Albizia lebeck can attain a height of 30 m and a diameter of 1 m; more often it is 15-20 m tall with a diameter of 50 cm; bark grey-violet with rusty brown breathing pores, rough and fissured.

Compound leaves bipinnate, glabrous or slightly hairy on the axis; pinnae in 2-4 pairs, each with 2-11 pairs of obliquely oblong leaflets 15-45 x 8-22 mm, shortly stalked; glabrous glands are raised, elliptic to circular, on the upper side of the stalk close to the base and between most pairs of leaflets.

Flowers appear shortly after new leaves, are white, heavily scented, with the stamens free above the corolla, in heads 18-36 mm across excluding the stamens, on a stout stalk 5-7.5 cm long, appearing singly or in small clusters in the leaf axils and in terminal panicles; stamens 30-40, yellowish-green on top side, white underside, up to 5 cm long; flower-stalks up to 5 mm long; corolla tube, 1 cm long.

Pods pale straw to light brown at maturity, narrow-oblong, 15-26 x 3-5 cm, papery, leathery, flat and not raised or constricted between seeds; seeds brown, flat, orbicular or elliptic, 8-10 x 6-7 mm; transversely placed with 6-12 in each pod.

The genus is named after Filippo del Albizzi, a Florentine nobleman who in 1749 introduced *A. julibrissin* into cultivation. The species name is from the Arabic name for this plant, 'laebach'. When agitated by the wind, the pods and enclosed seeds are said to produce an incessant rattle likened to women's chatter, hence the name 'woman's tongue'.

BIOLOGY

A. lebeck is hermaphroditic. In its natural habitat, flowering occurs from September to October; mature pods remain on the tree for long periods and are available May-July. In Sudan it flowers from March to May and fruits from May to August. Flowers are bisexual.

Benth.

Fabaceae - Mimosoideae



Flowers and pods (Gutteridge R.C.)



Habit at Deering Park, Florida (Forest and Kim Starr)



Leaves and fruit at Happy Valley, Maui, Hawaii (Forest and Kim Starr)

Albizia lebeck

Benth.

Fabaceae - Mimosoideae

kokko, Indian siris, East Indian walnut

ECOLOGY

A. lebeck is a dominant species in semi-evergreen vine forests (monsoon forest) in areas with a mean annual rainfall of 1300-1500 mm and a very dry winter. It is also found in semi-deciduous microphyll vine thicket on screes of quartz sandstone mountains. It can withstand long, hot, dry periods and cold winters. The species occurs on soils overlying basalt and among sandstone boulders and basalt outcrops on breakaway slopes. It is also found on the banks of riverine sites, on stabilized dunes or low lateritic ledges above the beach. After the 1st year, it can tolerate droughts and some frost.

BIOPHYSICAL LIMITS

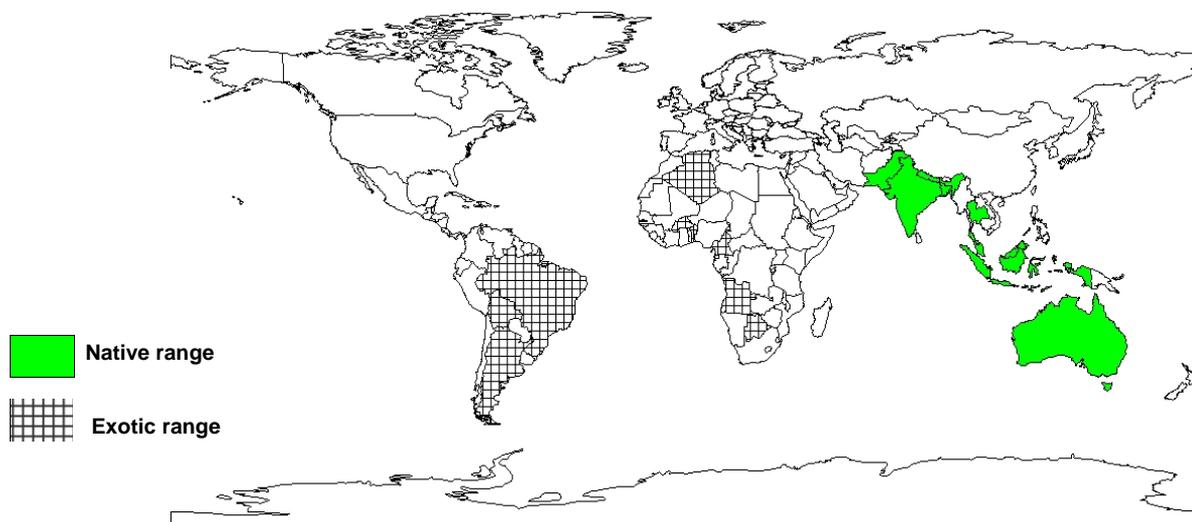
Altitude: 0-1 800 m, Mean annual temperature: 19-35°C, Mean annual rainfall: 500-2 500 mm

Soil type: Establishes well on fertile, well-drained loamy soils but poorly on heavy clays. Tolerates acidity, alkalinity, heavy and eroded soils, and waterlogged soils. Examples of soil types include, shallow sandy soils, laterite and loam laterite.

DOCUMENTED SPECIES DISTRIBUTION

Native: Australia, Bangladesh, India, Indonesia, Malaysia, Myanmar, Nepal, Pakistan, Thailand

Exotic: Algeria, Angola, Argentina, Barbados, Benin, Bolivia, Botswana, Brazil, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Chile, Colombia, Congo, Cote d'Ivoire, Cuba, Democratic Republic of Congo, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, Equatorial Guinea, Eritrea, Ethiopia, French Guiana, Gabon, Gambia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana, Honduras, Jamaica, Kenya, Lesotho, Liberia, Libyan Arab Jamahiriya, Madagascar, Malawi, Mali, Mauritania, Mexico, Morocco, Mozambique, Namibia, Nicaragua, Niger, Nigeria, Panama, Paraguay, Peru, Puerto Rico, Rwanda, Sao Tome et Principe, Seychelles, Sierra Leone, Somalia, South Africa, St Lucia, Sudan, Surinam, Swaziland, Tanzania, Togo, Trinidad and Tobago, Tunisia, Uganda, Uruguay, Venezuela, Virgin Islands (US), Zambia, Zimbabwe



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.

Albizia lebbeck

kokko, Indian siris, East Indian walnut

Benth.

Fabaceae - Mimosoideae

Albizia lebbek

kokko, Indian siris, East Indian walnut

Benth.

Fabaceae - Mimosoideae

PRODUCTS

Fodder: *A. lebbek* is grown in some areas primarily as fodder for camels, water buffalo and cattle. The leaves are reported to be good fodder, with 17-26% crude protein; 100 kg of leaves yield 11-12 kg of digestible protein, and 37 kg of digestible carbohydrates. The pods contain saponin and are not eaten in large amounts by sheep, although cattle eat them readily.

Apiculture: Its whitish flowers are fragrant, attracting bees. Highly regarded by bee-keepers for the light-coloured honey its nectar provides.

Fuel: An excellent fuelwood species with a calorific value of 5200 kcal/g. *A. amara* fruits can yield 10 barrels of ethanol per hectare.

Timber: Sapwood is pale; heartwood is dark brown with black streaks and very decorative. It is moderately heavy and hard, strong and fairly durable, with a specific gravity of 0.5-0.6 kg/cubic m. The wood seasons well, works and polishes easily, can be used for interior moulding, parquet, furniture, panelling, turnery and general construction. It is also used for making agricultural implements and mine props. Timber plantations in India clear felled after 25-30 years yield about 10-12 cubic m/ha per year of timber, but under semi-arid conditions and on shallow soils, a mean increment of 2-3 cubic m/ha is obtained.

Gum or resin: The trunk yields a reddish gum that is used as an adulterant of gum arabic.

Tannin or dyestuff: The bark is used locally in India for tanning fishing nets (tannin content of 7-11%).

Medicine: Leaves and seeds are used for eye problems, and the bark to treat boils. Saponin from pods and roots has spermicidal activity.

Other products: When dried and pounded, the bark can be used for soap.

SERVICES

Erosion control: Due to its extensive, fairly shallow root system, *A. lebbek* is a good soil binder and is recommended for eroded lands and erosion control, for example along river embankments.

Shade or shelter: The species is commonly grown as a shade tree in pastures, tea, coffee and cardamom plantations, and along avenues. It can be planted in exposed coastal situations and as quick-growing shelter for less hardy plants.

Nitrogen fixing: *A. lebbek* is not *Rhizobium* specific, and native strains are nearly always capable of producing an abundance of nodules.

Soil improver: The nitrogen-rich leaves are valuable as mulch and green manure.

Ornamental: In India *A. lebbek* is often planted along roads and in homegardens.

Albizia lebbbeck

kokko, Indian siris, East Indian walnut

Benth.

Fabaceae - Mimosoideae

TREE MANAGEMENT

A. lebbbeck coppices well, responds to pollarding, pruning and lopping, and will produce root suckers if the roots are exposed. Typical spacing is 3 x 3 m for fuelwood, and 5 x 5 m for timber. Fuelwood plantations spaced at 3 x 3 m clear felled on a 10-year rotation produce about 50 cubic m/ha of stacked fuelwood. In Queensland A. lebbek reaches about 11 m in height and 50 cm dbh in 30 years. The trees are vulnerable to strong winds and are killed by even light fires.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox. Viability is maintained for several years in hermetic storage at room temperature with 11-15% mc; even seeds stored 30 years show 5% viability. However, the seed is liable to bruchid attack, which may occur while the pods are still on the tree, so a little contact insecticide should be mixed with the stored seed. There are about 5000-12 000 seeds/kg.

PESTS AND DISEASES

Root rot, stem cankers, heart rot, spot fungi and rust can damage the tree, as well as a wide range of insect pests, including leaf- and bark-feeding caterpillars, sap suckers, wood and seed borers and defoliators such as psyllids. In Nigeria ,the striped mealy bug, *Ferrisia virgata*, harms the tree.

kokko, Indian siris, East Indian walnut

FURTHER READNG

- Anon. 1986. The useful plants of India. Publications & Information Directorate, CSIR, New Delhi, India.
- Bein E. 1996. Useful trees and shrubs in Eritrea. Regional Soil Conservation Unit (RSCU), Nairobi, Kenya.
- Bekele-Tesemma A, Birnie A, Tengnas B. 1993. Useful trees and shrubs for Ethiopia. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).
- Council for Scientific and Industrial Research (CSIR). 1986. The useful plants of India. Publications and Information Directorate, New Delhi.
- Doran CJ, Turnbull JW (eds.). 1997. Australian trees and shrubs: species for land rehabilitation and farm planting in the tropics. ACIAR monograph No. 24, 384 p.
- El Amin HM. 1990. Trees and shrubs of the Sudan. Ithaca Press, Exeter.
- El Hadidi MN, Boulos L. 1988. The trees of Egypt. The American University in Cairo Press. 113, Sharia Kasr el Aini.
- Hocking D. 1993. Trees for Drylands. Oxford & IBH Publishing Co. New Delhi.
- 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.
- Jackson JK. 1987. Manual of afforestation in Nepal. Department of Forestry, Kathmandu.
- Katende AB et al. 1995. Useful trees and shrubs for Uganda. Identification, Propagation and Management for Agricultural and Pastoral Communities. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).
- Kayastha BP. 1985. Silvics of the trees of Nepal. Community Forest Development Project, Kathmandu.
- Keay RW. 1989. Trees of Nigeria. Clarendon Press Oxford.
- MacDicken GK. 1994. Selection and management of nitrogen fixing trees. Winrock International, and Bangkok: FAO.
- 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. 1988. Albizia lebbeck - A promising fodder tree for semi-arid regions. NFTA 88-03. Waimanalo.
- Noad T, Birnie A. 1989. Trees of Kenya. General Printers, Nairobi.
- Singh RV. 1982. Fodder trees of India. Oxford & IBH Co. New Delhi, India.
- Sosef MSM, Hong LT, Prawirohatmodjo S. (eds.). 1998. PROSEA 5(3) Timber trees: lesser known species. Backhuys Publishers, Leiden.
- t Mannelje L, Jones RM. 1992. Plant Resources of South-East Asia. No. 4: Forages. Pudoc Scientific Publishers, Wageningen.
- Webb DB, Wood PJ, Henman GS. 1984. A guide to species selection for tropical and sub-tropical plantations. Tropical Forestry Papers No. 15, 2nd edition. Commonwealth Forestry Institute, Oxford University Press.
- Williams R.O & OBE. 1949. The useful and ornamental plants in Zanzibar and Pemba. Zanzibar Protectorate.

SUGGESTED CITATION

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 Agroforestry Database: a tree reference and selection guide version 4.0 (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)