Tree factsheet

Swietenia macrophylla King

Martha Chaves, edited by Leo Goudzwaard

taxonomy	
author, year	King, 1886
synonym	*Swietenia candollei* Pittier ; *Swietenia tessmannii* Harms ; *Swietenia krukovii* Gleason ; *Swietenia belizensis* Lundell ; *Swietenia macrophylla*var. *marabaensis* Ledoux & Lobato.
family	Meliaceae
Eng. Name	Big-leaf mahogany; Honduras mahogony
other names	aguano, mogno, caoba
Dutch name	Honduras mahonie
subspecies	
varieties	*S. humilis* proposed as an ecotype by Helgason et al. 1996
hybrids	Hybrids of *S. humilis x S.macrophylla* (Costa Rica); *S. mahagoni x S.macrophylla* (Caribbian islands)
references	CAB International. 2005. The Forestry Compendium. www.cabicompendium.org/fc
	Conabio. www.conabio.gob.mx/conocimiento/info_especies/arboles/doctos/37-melia5m.pdf#search=%22Swietenia%20macrophylla%22
	Lugo, A.E.; Figueroa, J.C. & Alayon, M (eds). 2003. Big-leaf Mahogany: Genetics, Ecology and Management. 433 pg. Springer: New York
	Lugo, A.E. & Fu, S. 2003. Structure and Dynamics of Mahogany plantations in Puerto Rico. pp:288-328 in: Big-leaf Mahogany. E. Lugo, J.C. Figueroa, M. Alayón (eds). Springer: New York
	Mayhew, J.E. & Newton, A.C. 1998. The silvicullture of Mahogany. CABI
	USDA Natural Resource Conservation Service plants.usda.gov/java/factSheet
morphology	
crown habit	umbrella-shaped crown. fast-growing perennial tree with tall straight, cylindrical bole clear of branches for 12-18m, often with high buttresses.
max. height (m)	50
max. dbh (cm)	200
actual sizes –location, country -	
oldest tree –location-	
leaf length (cm)	16-40
leaf petiole (cm)	0.5-1.2
leaf colour upper surface	dark glossy green
leaf colour under surface	lighter green
leaves arrangement	pinnate leaves arranged alternately an clustered at the ends of branchlets, each leaf consists of 3- 6 pairs of opposite or occasionally subopposite leaflets that are typically 9-14 x 3-5 cm, usually oblong to oblong-lanceolate or ovate-lanceolate
flowering	takes place annually with the timing varying between locations according to climate, usually takes place when trees are deciduous or just coming into new leaf and shortly before the rainy season. In Bolivia flower and leaf production occur simultaneously in September at the onset of the rainy season. In Central America, northern parts of South America, and the Philippines the trees flower in March-June In the southern hemisphere flowering is from September to November. (See pg.4)
flowering plant	monoecious, both sexes in the same inflorescence, with unisexual flowers
flower, inflorescence description	small flowers are borne in auxiliary or sub-terminal inflorescences, unisexual, with both sexes similar, green yellowish, corolla with 5 petals.Each inflorescence is 10-20 cm in length with short lateral, spreading, glabrous branches, generally shorter than the leaves.
flower diameter (mm)	6 to 8 mm

pollination	by insects: bees and moths are believed to be the main pollen vectors, thrips may act as pollinators.
fruit; length	large (12-15 x 6-8 cm), woody, erect, capsules, oblong to slightly sub-globulus. The outer valves are thick and becoming woody with a coriaceous surface when mature. When dry, the 4 or 5 valved fruits split open from the base, or from the base and the apex simultaneously. The centre of the fruit is a thick, woody 5 angled columella extending to the apex from which the seeds hang pendulous by their wing, leaving conspicuous seed scars after their release.
fruiting	takes place annually with the timing varying between locations according to climate. In Central America, northern parts of South America, and the Philippines the fruits mature from December-March. In the southern hemisphere is from June-September
seed; length	seeds are chestnut colored and 7.5-12 cm in length with wings, 1 cm without, irregular Forms. There are usually about 35-45 winged seeds per fruit.
seed-wing length (cm)	6-7
weight of seeds (kg)	13.000 to 20.000 seeds kg^{-1}
seeds ripen	from end of January to beginning of march, also in July
seed dispersal	by container, wind. Median seed dispersal distance of 32-36 m (Bolivia) and a maximum distance of over 80m. This distance depend on the height of the tree, the height and density of surrounding vegetation and the strength of wind at the time of release.
habitat	
natural distribution	natural distribution from 20°N to 18°S in tropical America. Widely distributed species occurring from the Atlantic regions of south-east Mexico, through Central America (Belize, Guatemala, Honduras, El Salvador, Nicaragua, Costa Rica, Panama), northern South America (Colombia, Venezuela, Ecuador, Peru) and across the southern Amazon Basin, in Bolivia and Brazil.
area natural habitat (ha)	
introduced countries	widely grown across the tropics both on a research scale and as extensive plantations.
plant communities natural area	semi evergreen and evergreen rain forests, dry forests, moist forests, rain forests, riparian forest, secondary forests
soil type, water	adapted to fine and medium textured soils, not coarse soils, low moisture. Found growing on alluvial soils of considerable fertility, and soils derived from limestone, granite, andesite and other sedimentary, igneous or metamorphic rock formation.
pH-KCl	maximum 7.0 and minimum 4.0
soil fertility	It tolerates soils ranging from deep, poorly drained, acid clays of the wooded swamps, to well drained alkaline soils of the limestone uplands. Maximum development is attained on deep, fertile, moist, well-drained, neutral to mildly alkaline soils.
light	shade intolerant, strongly light-demanding
“optimum natural development”	under tropical dry forest conditions: annual precipitation of 1000-2000 mm, mean annual temperature of 24°C and potential evapo-transpiration ratio of 1-2.
management	
status natural range	
status introduced range	
first plantation outside natural range	
area of plantations (ha)	150.000 ha (Pandey in press, cited by Lugo & Fu 2003) widely planted in south and south-east Asia, the Pacific Islands, the Caribbean and tropical Africa. Substantial areas of plantation have been established in Indonesia, Fiji and parts of Central America.
application	timber tree
propagation	seed
regeneration	planting
optimal gap size for regeneration	It grows mostly at low average density of one mature tree per hectare or fewer, with no smaller trees and no seedlings or samplings (<1ha^2)
resprouting after cutting	no
growth rate	1 cm dbh yr^{-1} in trees between 15-30 years old
diseases	Reported affecting seedlings in nurseries: *Botryodiplodia theobromae* (stem rot), *Corticium koleroga* (thread blight), *Fusarium* spp. (damping-off fungus), *Pellicularia* spp. (thread blight), *Rhizoctonia solani* (damping-off fungus), *Sclerotium* spp.

insects	Young trees attacked by the shoot borer *Hypsipyla grandella* (common pest). Other pests reported affecting seedlings in nurseries are: *Acrocerops auricilla* (leaf miner), *Diaprepes abbreviatus* (sugarcan weevil), *Helopittis antonii* (leaf bug), *Xyleborus abrup-toides* and *X. caffeae* (ambrosia beetle)
wood	
trade name	Honduras mahogany
wood structures key characteristics	True mahogany wood can be identified by its storied rays – on the flat- sawn surface short dark flecks tend to form wavy horizontal bands across the board.
density heartwood (kg/m^3)	540 (at 12% moisture content)
elastic modulus (N/mm^2)	10.600
fungi class durability heartwood	2; durable
heartwood colour	light tan to reddish brown
sapwood colour	reddish brown
contents	
products	principally used for furniture and veneers, being easy to work and strong for its weight, it is suited to a wide range of uses including light construction work, boat building, musical instruments, models and pattern making, sawn or hewn building timbers, carpentry/joinery wall paneling, woodware, turnery, wood based materials, plywood (see pg.5)
market	High value and quality furniture timber: Sawn timber up to US$1000 per cubic meter. It has been internationally traded for over 400 years. An annual trade between 70.000 and 140.000 m^3 to USA
non-timber products	
seeds	Cosmetic products produced from the oil of the seeds. The infusion of the seeds is used as tonic, painkiller and against typhoid fever
bark	Used to tan leather and cloth because it has a high content of tannins.