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Forest Ecology and Forest Management Group

Tree factsheet

Tectona grandis L.

Tini Gurmartine, edited by Leo Goudzwaard

taxonomy	
author, year	Linnaeus, Carl, 1781
synonym	*Tectona tecka Lour.* (1790) *Theka grandis* (L. f.) Lam. *Jatus grandis* (L. f.) Kuntze
family	*Verbenaceae*
Eng. Name	teak, Indian oak, Bangkok teak, teak (wood) tree
other names	sagwan, thekku (India); jati, deleg, kulidawa (Indonesia); sak (Laos); kyun (Myanmar); sak, mai-sak (Thailand); djati, dalanang (Philippines); teca (Spain, Brazil); teck (French)
subspecies	
varieties	
hybrids	
references	Soerianegara, I.; Lemmens, R.H.M.J.. PROSEA Project. 1993. Plant Resources of South-East Asia No.5 (1): timber trees: major commercial timbers. Wageningen, Netherlands. Pudoc Scientific Publishers. 610 p.; ill.
	Tewari, D.N. 1992. A Monograph on Teak (Tectona grandis). International Book Distributors, Dehra Dun. India.
	The Forestry Compendium. CAB International. http://www.cabicompendium.org/fc/home.asp
	White, K.J. 1991. Teak: Some aspects of research and development. FAO Regional Office for Asia and the Pacific (RAFA). Bangkok.
morphology	
crown habit	rounded and open crown
max. height (m)	up to 45-(50)
max. dbh (cm)	up to 150(-250)
actual sizes –location-	
oldest tree –location-	
leaf length (cm)	11(-20)-55 cm x 6(-15)-37 cm (Prosea); 15-90 x 6-50 cm (FC CABI) 20-50 cm x 15-40 cm (Tewari)
leaf petiole (cm)	5-6 cm
leaf colour upper surface	dark green
leaf colour under surface	silvery
leaves arrangement	opposite decussate (occasionally three at a node or rarely alternate in seedlings)
flowering	June-September
flowering plant	monoecious
flower	hermaphroditic
flower diameter pollen cones (cm)	

inflorescence description, length	actinomorphic, pedicelled, pedicels 2-3 mm long, furfuraceous. Calyx 4-5 x 3-3.5 mm, globose campanulate, densely tomentellous, lobes 6 (5 or 7), ovate-oblong, obtuse, 2 mm long, often reflexed. Corolla white, sometimes with pale bluish shade, tube broadly cylindrical, lobes 6 (5 or 7), ovate-oblong or ovate-elliptic, 3 x 3.5 mm, glabrous, overlapping, reflexed. Stamens 6 (5 or 7), 3-4 mm long, filaments glabrous, anthers ovate or oblong, yellow. Ovary densely pubescent, 4-celled, ovules one in each cell, hemianatropus; style 4-5 mm long, pubescent towards base with branched hairs; stigma 2-lobbed, lobes often adpressed.
pollination	insects (bumble bees, bees and wasps), mainly Ceratina spp. (wind pollination may also occur)
fruit; description	drupaceous, 1.2-1.8 cm long and wide, subglobose or subtetragonous, enclosed in the enlarged inflated calyx, pericarp densely felted-tomentose with irregularly branched pale brown hairs, endocarp bony; fruiting calyx 1.5-2.5 cm long and 1.2-2.2 cm wide, pale brown, irregularly plaited, seeds 1-4.
fruiting period	
fruit; length	1.2-1.8 cm
fruit petiole (cm)	
seed; length	
seed-wing length (cm)	fruiting calyx 1.5-2.5 cm long and 1.2-2.2 cm wide
weight 1000 seeds (g)	40-70
seeds ripen	November-January and fall gradually
seed dispersal	water
seed longevity, dormancy	seed with thick fruits wall often carry over till a second season without loss or even with gain in ultimate germination
habitat	
natural distribution	India, Myanmar, Thailand and Laos
introduced countries	South East Asia (Bangladesh, Cambodia, Nepal, Pakistan, Japan, Sri Lanka, Taiwan, Vietnam) Pacific (Australia, Fiji Islands, U.S. Pacific Islands) East Africa (Kenya, Malawi, Somalia, Sudan, Tanzania, Uganda, Zimbabwe) West Africa (Benin, Ghana, Guinea, Ivory Coast, Nigeria, Senegal, Togo) South Africa Carribbean (Cuba, Honduras, Jamaica, Nicaragua, Panama, Puerto Rico, West Indies) South America (Argentina, Brazil, Colombia, Surinam, Venezuela) Central America (Belize, Costa Rica, El Salvador)
area natural habitat	
soil type, water	deep, porous, well-drained soils; alfisols; alluvial soils; colluvial soils; ferralsols; gravelly soils; lateritic soils; red soils; ultisols; vertisols
pH-KCl	6.5-7.5
soil fertility	fertile
light	strong light demander, intolerant of shade and requiring complete overhead light
plant communities natural area	
climate	tropical; tolerates drought, fire, wind
management	
status natural range	
status introduced range	
first plantation outside natural range	1600-1700 (Indonesia)
application	timber, ornamental and medicinal tree
propagation	seed; cuttings; suckers; grafting; tissue culture
regeneration	natural regeneration; direct sowing; planting stock
optimal gap size for regeneration	
resprouting after cutting	yes
growth rate (M.A.I. in $m^3ha^{-1}j^{-1}$)	old plantation: 2.6 (Bangladesh), 6.2 (China), 4.4-4.9 (India), 4.0-6.5 (Indonesia),7.5 (Srilangka), 4.3 (Tanzania) young plantation: 7.4 (Bangladesh), 10.5 (China), 16.0 (Cote d'Ivory), 5.8 (Indonesia), 9.6-11.0 (Srilangka), 13.5 (Thailand)

diseases	*Olivea tectonae* (rust stem and leaf); *Phyllactinia guttata* and *Uncinula tectonae* (mildew); *Cercopora tectonae* (leaf spot); *Nectria haematococca* (stem canker); *Corticium salmonicolor* (pink disease); *Phomopsis tectonae* in combination with *Colletotrichum gloeosporioides* (leaf spots); *Pseudomonas tectonae* and *P. tectonae* (wilt); *Fusarium oxyporum* (damp.off); *Armillariella mellea* (root rot); *Helicobasidium compactum*, *Phellinus noxius*, *Rigidoporus lignous*, *R. zonalis* and *Peniophora rhizomorpho-sulphurea* (butt rot); *Pellinus noxius*, *P. lamaoensis*, *Ustulina deusta*, *Polyporus rubidus*, *Ganoderma applanatum* and *R. zonalis* (heart rots); *Cossus cadambae* (trunk borer); *Phialophora richardsiae* (die-back of trees); *Dendrophthoe falcata* (the mistletoe)
insects	*Holotrichia spp.*(white grubs); *Sahyadrassus malabaricus* (sapling borer); *Cossus cadambae* (trunk borer); *Hyblaea puera* (defoliators); *Eutectona machaeralis*, *Pyrausta machaeralis*, *Hapalia machaeralis* and *Eutectona machaeralis* (skeletonizer); *Xyleutes ceramica* (bee hole borer and shoot borer); *Duomitus ceramicus* (bee hole borer); *Zouzera coffeae* (shoot borer);*Pagida salvaris*; *Machaerota elegans; Mylabris phalerata; Dichocrosis punctiferalis; Eublemma spp.; Xyleborus destructuens;Calotermes tectonae; X. padestruens and Coptotermes elisae (*termites*)*
wood	
trade name	teak
wood structures key characteristics of pores	Ring-porous, growth ring distinct; vessel with tyloses and also with white powdery deposit, large, distinctly visible, solitary, oval in outline
density heartwood (kg/m^3)	(480-) 610-750 (-850) kg/cubic meter (at 12% moisture content)
wood	resistance to decay, excellent retention of shape under varying condition of moistures and high strength
sapwood	perishable and is quickly destroyed by rot, termites or borers
elastic modulus	10.700
total above ground biomass	114 t/ha (20 years old teak plantation in India); 130 t/ha (38 years old teak plantation in India)
fungi class durability heartwood	1; extremely durable; resistant to decay, termite and insect attack for very long periods
heartwood colour	light-golden brown when fresh, turning brown or dark brown on exposure open with darker streaks
sapwood colour	white or pale yellow
contents	resinous
products	firewood; round wood; transmission poles; posts; stakes; piles; pit props; building poles; round wood structures; sawn or hewn building timbers; for heavy construction,; beams; for light construction; carpentry/joinery; flooring; wall paneling; shingles; engineering structures; bridges; hydraulic works; railway sleepers; containers; pallets; crates; boxes; cases; tanks; vats; cooperage; woodware; industrial and domestic woodware; tool handles; brushes; cutlery; toys; musical instruments; sports equipment; wood carvings; turnery; furniture; veneers; boats; vehicle bodies; wood based materials; plywood; wood extractives (including oil)
non-timber products	
seed, flower, leaf, bark, root	oils, medicinal products, dyestuffs seed: diuretic, promote growth of hair (oil). flower: diuretic, use to treat biliousness, bronchitis and urinary disorders. leaf: dyeing silk, wool and cotton (contain yellow or red dye), effective against mycobacterium tuberculosis, use for wrapping and packing fresh meat and fishes and also for thatching huts, use for making medium strong boards through thermoplaticization and processing. bark: useful against bronchitis, good source of oxalic acid. root: used for dying mattings to a yellowish-brown colour.

fruits of Tectona grandis (photo Wikipedia)