

Khaya ivorensis

African mahogany

A. Chev.

Meliaceae

LOCAL NAMES

English (Nigerian mahogany, Ivory Coast mahogany, Gold Coast mahogany, African mahogany); French (acajoud'Afrique, acajou); German (rotes-Khaya, mahagoni); Indonesian (kaya); Trade name (African mahogany)

BOTANIC DESCRIPTION

Khaya ivorensis is a very large tree that attains a height of 40-50 m and a dbh of up to 2 m. Bole straight, unbranched up to 30 m above the ground with well-developed plank buttresses; bark thick and coarse, reddish-brown, and with a bitter taste. The foliage of the widely spreading crown is dark.

Leaves are evenly pinnate, with 4-7 pairs of leaflets, 7.5-14 cm long by 2.5-4.5 cm broad, oblong, abruptly long-acuminate at the apex (the tip very long and conspicuous in seedling and saplings); stalk of leaflets about 4 mm long.

Flowers very many, small, white, in panicles at the ends of branchlets.

Fruits rounded woody capsules usually with 5 valves, each valve 7.5-8.5 cm long and 2.5-4 mm thick, thinner than those of *K. grandifoliola*; when fully ripe, the valves open to release about 15 flat-winged seeds, each about 2.5 cm in diameter and narrowly winged all round.

BIOLOGY

K. ivorensis produces a new crown of leaves usually between September and November, but the fresh leaves may begin to appear before the old ones fall. The flowering season is July to January, with most of the trees being in flower between September and December. The small white flowers are hermaphroditic. Fruits develop quickly and are conspicuous, as they stick up from the crown of the tree. They open and ripen from February to May. The seeds are wind distributed but do not travel far from the mother tree. The empty capsule may remain on the tree for several months.



Khaya ivorensis:
36-year-old tree: Forestry Research Institute of Ghana trial plots at Benso in the wet evergreen forest ecological zone on Ghana. (Dominic Blay Jr.)

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ECOLOGY

K. ivorensis is deciduous only in drier climates. Scattered specimens can be found in semi-deciduous lowland rainforest, usually with a short dry season. It occurs either in small groups or singly, for the most part on moist valley sites. It tolerates periodic flooding during the rainy season. In evergreen forests, it favours soils with a low water-storage capacity. *K. ivorensis* is a light-demanding species, although the young trees tolerate a certain amount of shade. The species is distributed through coastal West Africa, Cote d'Ivoire through Ghana and southern Nigeria to Cameroon, growing mostly in rainforest but extending into dry forests.

BIOPHYSICAL LIMITS

Altitude: 0-450 m, Mean annual temperature: (max. 18) 24-27 deg. C, Mean annual rainfall: 1600-2500 mm

Soil type: It prefers cool land, wet alluvial soils and cool clays.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Benin, Cameroon, Cote d'Ivoire, Gabon, Ghana, Nigeria, Togo

Exotic: Fiji, Indonesia, Malaysia



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.

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PRODUCTS

Timber: The sapwood is yellowish-brown, and the heartwood, which is not always readily distinguishable from the former, is pale reddish-brown. The wood is durable and has a fine fairly regular grain; it is easy to work and season but is difficult to impregnate. It has a mean specific gravity of 0.53 g/cubic m. The wood commands a very high price on the market, and is used above all for high-quality cabinet work, furniture and expensive interior finishing. Large quantities are also used for boat and ship construction. A high percentage of the wood sold in Europe as 'mahogany' comes from *K. ivorensis*.

Medicine: Bitter bark used for coughs and whooping cough. When mixed with black peppercorns, used to treat diarrhoea and dysentery. A bark decoction is used as a drink or bath for back pains and as a lotion for rheumatism.

SERVICES

Soil improver: *K. ivorensis* has been used for enrichment planting.

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TREE MANAGEMENT

Planting has been done with some success within its natural habitat. Because of insect damage, pure stands are rarely planted; instead, they are planted with mixed stands and with close spacing. *K. ivorensis* grows very quickly; for example in Cote d'Ivoire, 4-year-old trees attained heights of 7-13 m with an annual growth increment of 2.3 m and a diameter growth of 2.5 cm/yr. In Malaysia, a final density of 80 trees/ha and a rotation of about 30 years in mixed plantations are recommended. Light requirement for optimal development is 50-90% of full daylight. The stem form is variable, and strong lateral competition is needed to obtain straight and upright trunks.

GERMPLASM MANAGEMENT

There is a rapid loss of seed viability. Seed storage behaviour is orthodox; seeds tolerate desiccation to 6% mc, 44% germinate following 2 years subsequent hermetic storage at 2 deg. C. There are 3200-7600 seeds/kg.

PESTS AND DISEASES

In addition to *Hypsipyla robusta*, the sapwood borer, *Apathe monachus* also occurs, especially in Nigeria. Fungal diseases include *Fomes noxius* (Basidiomycetes), which attacks the roots, and *Uredo tesoensis*, which afflicts the leaves.

Injuries to the wood of live trees can provoke the formation of traumatic resin canals.

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FURTHER READING

Abbiw D. 1990. Useful plants of Ghana. Intermediate Technology Publications and the Royal Botanical Gardens, Kew.

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

Lamprecht H. 1989. Silviculture in the tropics: tropical forest ecosystems and their tree species; possibilities and methods for their long-term utilization. Dt. Ges. für. Techn. Zusammenarbeit (GTZ) GmbH, Eschborn. (Translated by Brose J et. al.).

Sosef MSM, Hong LT, Prawirohatmodjo S. (eds.). 1998. PROSEA 5(3) Timber trees: lesser known species. Backhuys Publishers, Leiden.

Taylor CJ. 1960. Synecology and silviculture in Ghana. CJ Taylor.

Tchoundjeu Z, Leakey RRB. 2000. Vegetative propagation of *Khaya ivorensis* African mahogany: effects of stockplant flushing cycle, auxin and leaf area on carbohydrate and nutrient dynamics of cuttings: *Journal of Tropical Forest Science*. 12:77-91.

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>)