

Terminalia ivorensis

idigbo, framiré, black afara

A. Chev.

Combretaceae

LOCAL NAMES

English (black afara); French (framiré); Spanish (terminalia); Swahili (mwalambe); Trade name (idigbo,framiré,black afara)

BOTANIC DESCRIPTION

Terminalia ivorensis is a large deciduous forest tree ranging in height from 15 to 46 m, branchless for up to 30 m, dbh 2-4.75 m. Bole clean, very straight with small buttresses and sometimes fluted. Mature trees very flat topped with a wide horizontal canopy of evenly distributed foliage arising from the apex of the straight bole. In young trees, the branches are whorled; deciduous, young shoots and foliage falling a few years after initial growth, leaving sockets to mark their original position on the bole. Bark smooth and light grey to dark brown when young and on branchlets; in mature trees often blackish, with deep longitudinal fissures. The bark flakes off in long thin strips. Slash yellow. *T. ivorensis* forms a good taproot supported by 6-8 powerful lateral roots. There is also evidence of a widespread and rather superficial root system.

Leaves 6.4-12.7 x 2.5-6 cm, whorled, simple, oval, blunt tipped with orange-brown hairs below and on veins above, also on the short stalks; 6-7 pairs widely spaced veins, prominent below.

Flowers in axillary spikes 7.6-10.2 cm long with bisexual flowers nearly to the apex. The lower receptacle is densely tomentose, the upper receptacle less so.

Fruit winged and somewhat variable in size, especially in the width of the wings. Elongated and narrow, emarginate and slightly decurrent, 5.8-10 x 1.7-2 cm, finely tomentose with very short reddish or orange-brown hairs, pedicel 7-11 mm long. When ripe it is reddish-brown and woody, frequently having a weevil hole; oval seed in the centre, 1.5 cm.

The generic name comes from the Latin 'terminalis' (ending), and refers to the habit of the leaves being crowded at the ends of the shoots.

BIOLOGY

Terminalia is self-incompatible; the flowers are bisexual. Selection and breeding started in the 1960s in Africa. Since then, trees with superior growth rate and stem form have been selected, and clone banks have been established.

Flowering begins in April after the new leaves have begun to appear and lasts until June, in its native range. The interval between the opening of the leaf buds and flowering is 3-4 weeks. The flowers are fertilized by insects. Fruiting, which begins in December, is abundant from January to March.

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ECOLOGY

T. ivorensis is sometimes found in rainforest conditions but is predominantly a tree of seasonal forest zones. It is an emergent in the upperstorey of seasonal forest but sometimes loses its vertical-growing leader, resulting in considerable variation in height of mature trees. A strong light demander and a good colonizer of abandoned farmlands, *T. ivorensis* can withstand short periods of inundation, though it is usually sensitive to waterlogging. For optimum development, *T. ivorensis* requires high, well-distributed rainfall. It is very vulnerable to fire.

BIOPHYSICAL LIMITS

Altitude: 0-1 200 m, Mean annual temperature: 20-33 deg. C, Mean annual rainfall: 1 250-3 000 mm

Soil type: The most suitable soils are lateritic loams, well-drained loams, sandy loams, clay loams and volcanic soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Cameroon, Cote d'Ivoire, Ghana, Guinea, Guinea-Bissau, Liberia, Nigeria, Sierra Leone

Exotic: Fiji, Solomon Islands, South Africa, Tanzania, Trinidad and Tobago, Uganda, 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.

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PRODUCTS

Fuel: The wood of *T. ivorensis* is used for firewood and charcoal.

Timber: A useful timber species with yellow-brown wood similar to oak; it dries quickly and well. It is similar in weight to mahogany. The wood is acid and corrosive if placed in contact with some metals, especially iron. The density of the pale yellow to pale greenish-brown wood is 450-675 kg/m³ at 12% mc. Wood of *T. ivorensis* resists fungi and is moderately resistant to termites. The wood is used for fine carpentry, joinery, building, flooring and plywood manufacture.

SERVICES

Shade or shelter: The tree provides good shade and is planted with coffee, banana and cocoa.

Intercropping: *T. ivorensis* may be established by the taungya system. This method of planting is feasible the early stages up to 5 years.

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TREE MANAGEMENT

A very fast rate of growth, straight stem and self-pruning habit, even at an early stage, make this an ideal species for the creation of large-scale, even-aged plantations. The tree coppices well even to an advanced age, but it is normally managed on a coppice rotation. It is killed by drought within a few weeks of planting. On plantations, weeding up to the 2nd year and line cleaning or creeper cutting from the 3rd year up to the 6th year may be necessary. Because of the wide-spreading branches, *T. ivorensis* is more suitable for line planting than for planting in pure plantations.

The rotation applied in favourable locations in Africa is 40 years.

GERMPLASM MANAGEMENT

Orthodox seed storage behaviour; seeds maintained viability at 8.6% mc. Seeds can be stored in room temperature for up to 3 or 4 months. If stored in airtight containers at temperatures of 5 to -5 deg. C, they can be stored for up to 1 year. Can also be stored as dry fruit. There are 5500-7300 seeds/kg.

PESTS AND DISEASES

A 3-mm-long weevil (*Nanophyes* spp.), is the most serious pest. The weevil deposits its eggs in the ripening seed on the tree and can reduce germination to 40%. Evidence of die-back, leafspot and canker has been found on *T. ivorensis*.

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FURTHER READNG

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

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).

Lamb AFA, Ntima OO. 1971. Fast growing timber trees of the lowland tropics No. 5. Terminalia ivorensis. Commonwealth Forestry Institute. University of Oxford.

Lemmens RHMJ, Soerianegara I, Wong WC (eds.). 1995. Plant Resources of South-east Asia. No 5(2). Timber trees: minor commercial timbers. Backhuys Publishers, Leiden.

Wadsworth FH. 1997. Forest production for tropical America. Agricultural Handbook 710. United States Department of Agriculture.

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/>)