

Irvingia gabonensis

dika nut

LOCAL NAMES

English (wild mango, native mango, duiker nut, bush mango, bread tree, African mango tree); French (manguier sauvage, bobo); Hausa (goron, biri); Igbo (obono); Trade name (dika nut); Yoruba (oro)

BOTANIC DESCRIPTION

Irvingia gabonensis grows to a height of 15-40 m, bole slightly buttressed. It has a dense, compact crown, branchlets ending in a narrow, curved, stipular sheath covering the leaf bud. Bark greyish, smooth or very slightly scaly; slash yellowish-brown to light yellow, brittle.

Leaves 5-15 x 2.5-6 cm, elliptic to slightly obovate, 1 margin often a little more rounded than the other, acute or shortly acuminate, cuneate or slightly rounded at the base; leathery dark green and glossy above; with 5-10 pairs of irregular lateral veins, the lower ones running out nearly to the margin.

Flowers yellowish to greenish-white, in slender, clustered racemes or small panicles above the leaves and about as long as them, or on the branchlets and younger branchlets; individual flower stalks slender, about 6 mm long, petals bent right back and soon falling off, disc bright yellow.

Fruits yellowish when ripe, broadly ellipsoid and variable in size between varieties, 5-7.5 cm with a yellow, fibrous pulp surrounding a large seed.

The genus name commemorates E.G. Irving, 1816-1855, a Scots botanist.

BIOLOGY

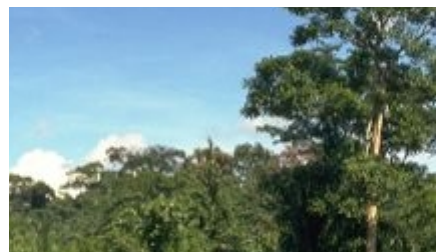
I. gabonensis is hermaphroditic, with flowers being pollinated by Coleoptera, Diptera, Hymenoptera and Lepidoptera. In Nigeria, flowering is from March to June and there are 2 fruiting seasons, from April to July and September to October. Seed dispersal is by specialized vertebrates, such as elephants.

(Aubrey-Lecomte ex O. Rorke)
Baill.

Irvingiaceae



Fruit on three-year-old trees in Onne, Nigeria. (Anthony Simons)



Tree in degraded forest near Port Harcourt, Nigeria. (Anthony Simons)



Kernels (centre) from fruits in Cameroon (Zac Tchoundjeu)

Irvingia gabonensis

(Aubrey-Lecomte ex O. Rorke)
Baill.

Irvingiaceae

dika nut

ECOLOGY

I. gabonensis occurs in the wild in lowland forest; 2-3 trees occur together and in some areas it is reported to be gregarious. The dika nut tree is a species of dense moist forest.

BIOPHYSICAL LIMITS

Altitude: 200-500 m, Mean annual temperature: 25-32 deg. C, Mean annual rainfall: 1500-3000 mm

Soil type: Does not have any particular soil preference; grows well in well-drained, acidic soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Cameroon, Central African Republic, Congo, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Gabon, Ghana, Guinea-Bissau, Liberia, Nigeria, Senegal, Sierra Leone, Sudan, Uganda

Exotic: Benin, Sao Tome et Principe



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.

Irvingia gabonensis

(Aubrey-Lecomte ex O. Rorke)
Baill.

Irvingiaceae

dika nut

PRODUCTS

Food: Fruit pulp is palatable and can be used for a fruit drink and for jam production. The kernel can be processed into flour by extraction, drying and grinding. The pounded seed is added to meat and various vegetable dishes as a sauce. Margarine and cooking oil can be obtained from the kernels.

Fodder: Seeds are used as cattle cake in Ghana.

Timber: Wood pale brown, very hard and fine grained, not easy to cut, which limits its usefulness. Its weight precludes it from all but the most rugged construction work, e.g. for railway ties. Useful for making canoes and pestles for yam mortars; also suitable for boards, planking, ship decking and paving blocks.

Tannin or dyestuff: Reported to contain tannin in both bark and roots.

Lipids: Kernels contain oil used for making soaps, cosmetics and pharmaceuticals.

Wax: Contains waxes useful as an adjunct in making medicinal tablets.

Medicine: Relieves diarrhoea and dysentery. Used internally as a purgative, for gastrointestinal and liver conditions, for sterility, hernias and urethral discharge, and is considered to be a powerful aphrodisiac.

Other products: In its native range, the seed is a valuable source of cash income. In southern Cameroon, the seeds could be described as the most important, legal, non-timber forest product from the area.

SERVICES

Erosion control: Planted alongside other species to check soil erosion.

Irvingia gabonensis

(Aubrey-Lecomte ex O. Rorke)
Baill.

Irvingiaceae

dika nut

TREE MANAGEMENT

I. gabonensis responds well to pruning. Maintenance operations such as watering and weeding are required in the nursery.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox.

PESTS AND DISEASES

Unripe fruits are attacked by rodents, including squirrels, which gnaw through the mesocarp and the pyrene to reach the seed. Red forest pigs split the pyrenes open and eat the seeds.

Irvingia gabonensis

(Aubrey-Lecomte ex O. Rorke)
Baill.

dika nut

Irvingiaceae

FURTHER READING

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

Anegbeh PO, Tchoundjeu Z, Iruka CG, Nkirika CN. 2005. Vegetative propagation of indigenous fruit trees: influence of defoliation on survival of rooted marcots air-layered plants of *Irvingia gabonensis* and *Dacryodes edulis* in Onne, Niger Delta Region of Nigeria: International Journal of Agricultural and Rural Development. 6:119-125.

Anegbeh PO, Usoro C, Ukafor V, Tchoundjeu Z, Leakey RR, Schreckenber K. 2003. Domestication of *Irvingia gabonensis*: 3. phenotypic variation of fruits and kernels in a Nigerian village: Agroforestry Systems. 58(3):213-218.

Atangana AR, Tchoundjeu Z, Fondoun JM, Asaah E, Ndoumbe M, Leakey RR.B. 2001. Domestication of *Irvingia gabonensis*: 1. Phenotypic variation in fruits and kernels in two populations from Cameroon: Agroforestry Systems. 53(1):55-64.

Burkill HM. 1994. Useful plants of West Tropical Africa. Vol. 2. Families E-I. Royal Botanical Gardens, Kew.

Eggeling. 1940. Indigenous trees of Uganda. Govt. of Uganda.

Hamilton A.C. 1981. A field guide to Uganda forest trees.

Harris DJ. 1993. A taxonomic revision and ethnobotanical survey of the Irvingiaceae in Africa. A thesis submitted for the degree of Doctor of Philosophy to the University of Oxford.

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

Keay RW. 1989. Trees of Nigeria. Clarendon Press Oxford.

Leakey RRB, Fondoun JM, Atangana A, Tchoundjeu Z. 2000. Quantitative descriptors of variation in the fruits and seeds of *Irvingia gabonensis*. The Netherlands: Kluwer Academic Publishers. Agroforestry Systems. 50(1):47-58.

Leakey RRB, Greenwell P, Hall MN, Atangana AR, Usoro C, Anegbeh PO, Fondoun JM, Tchoundjeu Z. 2005. Domestication of *Irvingia gabonensis*: 4. tree-to-tree variation in food-thickening properties and in fat and protein contents of dika nut: Food Chemistry. 90:365-378.

Leakey RRB, Tchoundjeu Z, Smith RI, Munro RC, Fondoun J, Kengue J, Anegbeh PO, Atangana AR, Waruhiu AN, Asaah E, Usoro C, Ukafor V. 2004. Evidence that subsistence farmers have domesticated indigenous fruits *Dacryodes edulis* and *Irvingia gabonensis* in Cameroon and Nigeria: Agroforestry Systems. 60(2):101-111.

Leakey RRB, Tchoundjeu Z. 2001. Diversification of tree crops: domestication of companion crops for poverty reduction and environmental services: Experimental Agriculture. 37(3):279-296.

Shiembo PN, Newton AC, Leakey RRB. 1996. Vegetative propagation of *Irvingia gabonensis*: a West African fruit tree: Forest Ecology and Management. 87(1-3):185-192.

Tchoundjeu Z, Atangana AR. 2007. *Irvingia gabonensis* Aubrey-Lecomte ex O Rorke Baill.: In: van der Vossen, HAM & Mkamilo GS. eds. 2007. Plant resources of tropical Africa 14. Vegetable oils. Wageningen: PROTA Foundation. p. 95-102.

Ude GN, Dimkpa CO, Anegbeh PO, Shaibu AA, Tenkouano A, Pillay M, Tchoundjeu Z. 2006. Analysis of genetic diversity in accessions of *Irvingia gabonensis* Aubry-Lecomte ex O Rorke Baill: African Journal of Biotechnology. 5(3):219-223.

Ujor GC. 1994. Southern Nigeria: phenology, floral biology and varietal characteristics. Unpub. Ph.D. Thesis. University of Ibadan.

Whitmore TC (ed). 1983. Tree Flora of Malaya: A manual for Foresters. Vol. 2. Forest Department, Ministry of Primary Industries. Malaysia.

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/>)