

**LOCAL NAMES**

English (eru); French (koko); Igbo (okazi); Portuguese (nkoko)

**BOTANIC DESCRIPTION**

*Gnetum africanum* is a dioecious forest perennial liana up to 10 m long but sometimes longer; branches somewhat thickened at the nodes, glabrous.

Leaves decussately opposite, sometimes in whorls of 3, simple, ovate-oblong or elliptic-oblong, more rarely lanceolate, 5-13 cm long, 2-5 cm broad, attenuate at base, abruptly acuminate, obtuse or minutely apiculate, entire, thick-papery, glabrous, pale green above, paler beneath, with 3-6 pairs of strongly curved lateral veins looped near the margin; stipules absent; petiole up to 1 cm long.

Inflorescence an unbranched catkin, axillary or terminal on a short branch, solitary but male inflorescences at apex of branches often in groups of 3, up to 8 cm long, jointed, peduncle 1-1.5 cm long, with a pair of scale-like, triangular bracts; male inflorescence with slender internodes and whorls of flowers at nodes; female inflorescence with slightly turbinate internodes and 2-3 flowers at each node. Flowers small, c. 2 mm long, with moniliform hairs at base and an envelope; male flowers with a tubular envelope and exerted staminal column bearing 2 anthers; female flowers with cupular envelope and naked, sessile ovule.

Seed resembling a drupe, ellipsoid, 10-15 mm × 4-8 mm, apiculate, enclosed in the fleshy envelope, orange-red when ripe, with copious endosperm.

This lianoid species lacks fibre-tracheids characteristic of *G. gnemon*. However, tori are clearly present in tracheary elements of this species.

In Africa, there are only two species, *G. africanum* and *G. buchholzianum*. The specific epithet *africanum* refers to its African origin.

The plant is threatened with disappearance because of intensive gathering and cultural practices which are destroying the forests which support these plants. Possible introduction into farm systems is a step in the right direction in conserving this plant.

**BIOLOGY**

This is a dioecious plant with distinct differences in male and female inflorescence structure and size. Female plants often show more vigorous growth with stronger stems than male plants.

*G. africanum* continues to grow during the dry season and new shoots may develop where the stem has been cut or where side shoots have been removed. New shoots are also formed from rhizomes that spread along the forest floor. The distinctly coloured drupe-like seeds are probably dispersed by birds and other animals.



*Gnetum africanum* leaves (commercialization) (Ebenezer Asaah)

**ECOLOGY**

*G. africanum* is an endangered liane normally found in humid tropical forest. It is usually found with other climbers on middle- and under-storey trees, frequently forming thickets. It can also be found in riverine forest in areas that are otherwise too dry for the species. *Gnetum africanum* is mostly found at the periphery of primary forest and in secondary forest. It extends in distribution from SE Nigeria, to Congo and as far as Angola in the south.

**BIOPHYSICAL LIMITS**

Altitude: 0-1200 m

Mean annual rainfall: 3000 mm

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Angola, Cameroon, Central African Republic, Congo, Democratic Republic of Congo, Gabon, Nigeria

Exotic:



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.

**PRODUCTS**

**Food:** The leaves of this species are edible, as are those of other American and Asian *Gnetum* species. *G. africanum* holds an important place in the diets of many people in central Africa. In the Congo *Gnetum* consumption has been evaluated at 2g /capita. Women play a great role in the gathering and selling of the much relished leaves all year round. Commerce in *Gnetum* has increased considerably. A company, 'Paysans Centrafricains' has exported leaves to Europe particularly France and Belgium.

It is a significant source of protein (16.5% dry wt.) carbohydrates (70.6% dry wt.), essential amino acids (isoleucine, leucine, lysine, methionine, phenylalanine, threonine, tryptophan and valine), non essential amino acids (aspartic acid, serine, glutamic acid, proline, glycine, alanine, cysteine, tyrosine, histidine and arginine) and mineral constituents i.e. macro and micro-elements (7.0% dry wt.).

It can be eaten raw, but is generally added to meat and fish dishes after cooking time. The fruit and seeds are edible.

**Lipids:** The leaf fat content in *Gnetum* is significant, up to 14.20% (Okafor et al.1996.).

**Alcohol:** The potential of African species to yield a potable sap as the Asian species is worth investigation.

**Medicine:** The leaves are used to treat enlarged spleen, sore throat and also used as a cathartic. The plant provides an arrow poison antidote. In West Africa chopped leaves are used as a dressing on furuncles to hasten maturation. The stem is used in making preparations to ease childbirth.

**Other products:** The supple stem is used in making traps for game catching and portage straps. *Gnetum africanum* leaves contain C-glycosylflavones, including 2"-xylosylisoswertisin and 2"-glucosylisoswertisin, compounds; also presence of 2"-O-rhamnnylisoswertisin and apigenin-7-hesperidoside.

**SERVICES**

Has significant cultural value in traditional ceremonies.

**TREE MANAGEMENT**

*Gnetum africanum* is still mainly collected from wild stands, but farmers often retain it when clearing fields. If cultivated, farmers need to provide support, e.g. by using commercial plantations of rubber trees, oil palm and other tree crops. Fences were only found to be successful when there is enough shade, and they are generally too expensive. Fully exposed plants do not grow well; their leaves are thin and pale green, and traders reject them.

**PESTS AND DISEASES**

Mealy bugs are the main pest in the nursery. When eru is grown along dead poles attacked by termites, these insects will damage adjacent leaves. Diseases have not been found to reduce productivity of eru.

**FURTHER READING**

- Burkill HM. 1994. Useful plants of West Tropical Africa. Vol. 2. Families E-I. Royal Botanical Gardens, Kew.
- Carlquist S and Robinson AA. 1995. Wood and bark anatomy of the African species of *Gnetum*. *Botanical Journal of the Linnean Society*. 18(2):123-137.
- Fondoun JM & Tiki Manga T. 2000. Farmers' indigenous practices for conserving *Garcinia kola* and *Gnetum africanum* in southern Cameroon. *Agroforestry Systems*. 48: 289-302.
- Hladik CM, Hladik A & Linares OF. 1993. Tropical forests, people and food. Man and the biosphere series volume 13. Parthenon Publishing Group, Carnforth, United Kingdom. pp. 177-181.
- HMialoundama F. 1993. Tropical forests, people and food: Biocultural interactions and applications to development. In: Hladik C. et al.(Eds.). *Man and the Biosphere Series*; Vol. 13 p. 177- 181, UNESCO.
- Hutchinson J and Dalziel JM. 1954. *Flora of West Tropical Africa*, Vol. 1, Part1. Crown Agents for Overseas Administrations.
- Ingleby K. 1999. *Scleroderma sinnamarense* Mont. and *Gnetum africanum* Welw. In: Agerer R, Danielson RM, Ingleby K, Luoma D & Treu R. (Editors). *Descriptions of Ectomycorrhizae*. Volume 4. Einhorn Verlag, Germany. pp. 127-133.
- Kanmegne J, Belinga JMO, Degrande A, Tchoundjeu Z, Manga TT. 2007. Gender analysis in the commercialization of *Gnetum africanum*/*buchholzianum* in the Lékié division in Cameroon: *Journal of Food, Agriculture & Environment*. 5(1):243-247.
- Manga TT, Tita DF, Facheux C, Mbosso C, Mbile P, Tchoundjeu Z. 2007. Harvest and post-harvest techniques *Irvingia* spp., *Gnetum africanum*, *Cola* spp., *Ricinodendron heudelottii*. Bamako, Mali: World Agroforestry Centre ICRAF. 8p.
- Okafor JC et al. 1996. Strategies for enhancement of utilization potential of edible woody forest species of South-eastern Nigeria. In: *The Biodiversity of African Plants: Proceedings* (Maesen LJG et al. eds.) p. 684-695, Kluwer Academic Publishers.
- Schippers RR. 2000. African indigenous vegetables. An overview of the cultivated species. Natural Resources Institute/ACP-EU Technical Centre for Agricultural and Rural Cooperation, Chatham, United Kingdom. 214 pp.
- Shiembo PN, Newton AC & Leakey RRB. 1996. Vegetative propagation of *Gnetum africanum* Welw., a leafy vegetable from West Africa. *Journal of Horticultural Science*. 71: 149-155.
- Shiembo PN. 1997. Domestication of *Gnetum* spp. by vegetative propagation techniques. In: Schippers RR & Budd L. (Editors). *Proceedings of a Workshop on African Indigenous Vegetables*, Limbe, Cameroon, 13-18 January 1997. pp. 31-35

**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/>)