

LOCAL NAMES

English (mkanyi fat, kagne butter); Swahili (mwaka, mshambe, mkimbo, mkanye, mkani, mkange)

BOTANIC DESCRIPTION

Allanblackia stuhlmannii is a tall evergreen forest tree to 40 m tall, with a straight, occasionally buttressed bole. The branches are usually drooping and often conspicuously whorled. Bark dark grey or black, sometimes smooth or with rough square scales. The slash is red with white stripes, fibrous/ granular, exuding a clear exudate latex, which later turns yellowish.

Leaves simple, opposite, deep green, 5-19.5 cm long by 1.2-7 cm wide; oblong or elliptic elongated, abruptly and sharply acuminate, cuneate at the base; with many pairs of very thin lateral nerves running at a wide angle to the midrib; stalk stout, 1-2 cm long.

Flower large, waxy, unisexual, usually solitary in axils, very fragrant, up to 5 cm across when expanded and 1.5 cm across in bud form. Stalk 6-8 cm long with 5 unequal overlapping, rounded and concave red or pale yellow sepals. Petals 5, cream or scarlet rounded about 2 cm long. Male flowers in a terminal raceme, crowded towards the apex of the drooping branches. Anthers on both faces of stamen bundles. Stamen-bundle flattened, club-like, yellow, and waxy, about 1.5 cm long. Female flowers with stamens reduced to staminodes; ovary ovoid, 1.5 cm long, glabrous with 2-4 ovules per locules, arranged in 2 rows; with the large 5-lobed stigmas forming a cap over the apex.

Fruit is a large ovoid 5-lobed drupe, 16-34 cm long by 15-17 cm wide with tough flesh, brown or red-brown, oblong or subglobose, producing a yellow latex, hanging at the end of a short stalk.

Seeds brittle-shelled, four-angled, about 4 cm long by 3 cm wide, 40-100 per fruit, embedded in a gelatinous pulp.

The generic name 'Allanblackia' is after a 19th-century Kew botanist, Allan Black.

There are 9 species in the genus *Allanblackia* accepted according to Bamps (1969). These are *A. ulugurensis* Engl., *A. stuhlmannii* Engl. (endemic to East Africa), *A. kisonghi* Vermeesen, *A. kimbiliensis* Spill (endemic to Congo-Kinshasa). The rest such as *Allanblackia floribunda* Oliv., *A. parviflora* A. Chevalier, *A. gabonensis* (Pellegr.) Bamps, *A. marienii* Staner, *A. stanerana* Exell & Mendonca occur in several countries of Central Africa.

BIOLOGY

The falling of mature fruits and flowering occur simultaneously. Flowering begins in November through February during the short rains. Fruiting occurs a year after fertilization (January through April). Short-tongued insects pollinate this species. Rodents and monkeys such as *Lophocebus albigena*, *Cercopithecus aethiops*, *Cercopithecus cephus*, *Cercopithecus pogonias* and *Cercopithecus nictitans* eat the flowers and fruits, thus dispersing the seeds



Fallen fruits in Amani (AFT team)



Several fruiting trees on farm, Amani (AFT team)



seedlings at Nguu (AFT team)

ECOLOGY

A. stuhlmannii is found in intermediate evergreen montane rain-forest on seaward slopes of Usambara, Nguru and Ulunguru mountains associated with *Cephalosphaora usambarensis*, *Newtonia buchananii*, *Beilschmedia kweo*, *Parinari excelsa*, *Myrianthus arboreus*, *Isoberlinia scheffleri* and *Macaranga kilimandscharica*.

BIOPHYSICAL LIMITS

Altitude: 540-1600 m

Mean annual temperature: 12.8-27 Deg C

Mean annual rainfall: 1200-2400 mm.

Soil type: The soils are kaolinitic type especially the red sandy loam soil derived from granite, gneiss and sedimentary rock or coarse siliceous rock that are dominated by latosols.

DOCUMENTED SPECIES DISTRIBUTION

Native: Tanzania

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: Seeds are pounded and cooked to extract an edible fat. In Amani (Tanzania), the seeds were extensively used as a butter substitute in manufacture of chocolate during the First World War. Recently, GAPEX company had been buying seeds at 2-3 Tshs per kilogram for oil extraction.

Fodder: The bitter seedcake is used as an animal feed

Apiculture: The Tree is a bee-forage

Resins or Dyestuffs: The bark produces a yellow dye.

Timber: The wood has timber value and is used in furniture, boxes, crates, beehives and water containers.

Medicine: Fresh leaves are chewed to cure coughs. The oil from seeds is drunk in small quantities twice a day for rheumatism. Leaves and roots are used as medicine for impotence.

Lipids: Seeds yield an edible fat used in cooking, lighting and liniment. Seed kernels amount to 60-80% of the whole seed weight. The unusual hard white fat consists of 52-58% stearic acid and 39-45% oleic acid. It therefore has a considerable attention, based on its unusual fat composition.

SERVICES

Shade or shelter: The tree is used for shade and amenity.

TREE MANAGEMENT

This is a potential plantation species that should be grown in full sun on well-drained soil.

GERMPLASM MANAGEMENT

Mature fruits fall on the ground from which they can be collected. The fruit is opened. In freshly fallen fruit the flesh inside is fairly tough; but as fruit decays, its toughness decreases. The seeds are extracted from decaying tissues and dried in the sun. The seed storage behaviour is recalcitrant. There are about 100 seeds/kg.

FURTHER READNG

Bamps P, Robson N & Verdcourt B. 1978. Flora of tropical East Africa. Guttiferae. Crown Agents, London.

Eckey EW. 1954. Vegetable Fats and Oils, Reinhold Publishing Corp. p 687

FAO. 1983. Food and fruit bearing forest species. 1: Examples from Eastern Africa. FAO Forestry Paper. 44/1. Rome.

Fuller RW, Blunt JW, Boswell JL, Cardellina JH, and Boyd MR.: 1999. Guttiferone F, the first prenylated benzophenone from *Allanblackia stuhlmannii*. J. Nat. Prod. 62: 130-132.

Hilditch. 1958. Chemical Contribution of Natural Fats. pp 264-5.

Mabberley DJ. 1987. The plant-book: A portable dictionary of the higher plants. Cambridge, UK: Cambridge Univ. Press.

Menniger AD. 1977. Edible nuts of the world. Horticultural Books Inc.

Peters CR, O'Brien EM and Drummond RB. 1992. Edible wild plants of sub-Saharan Africa. Royal Botanic Gardens, Kew.

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/>)