

## Kigelia pinnata

(Jacq.) DC.

Bignoniaceae

### LOCAL NAMES

Afrikaans (worsboom); Arabic (abu shutor, um shatur, um mashatur, abu sidra); Bemba (mufungufungu); English (sausage tree); Fula (jilahi); German (Leberwurstbaum); Hausa (rawuya); Igbo (uturubein); Lozi (mufungufungu, muzungula, mPolata); Luganda (mussa); Lunda (ifungufungu, mufunofuno); Nyanja (chizutu, mvula); Swahili (mvungunya, mvungwa, mwegea, mwicha, mvungavunga); Tigrigna (mederba); Tongan (muzungula, muVeve); Yoruba (pandoro)

### BOTANIC DESCRIPTION

*Kigelia africana* is a medium to large tree, up to 25 m in height, with a dense rounded crown; bark grey, generally smooth in large specimens, flaking in thin, round patches.

Leaves opposite, crowded near the ends of branches, compound, with 3-5 pairs of leaflets plus a terminal leaflet; leaflets oblong, up to 6 x 10 cm, leathery, roughly hairy on both surfaces, rather yellowish-green above, paler green below, apex broadly tapering to rounded; base square, asymmetric in the lateral leaflets, symmetric in the terminal leaflet; margin entire, sometimes obscurely toothed, wavy; the lower leaflets shortly petiolulate, the terminal pair without petiolules; petiole up to 15 cm long.

Flowers striking, dark maroon with heavy yellow veining on the outside, cup shaped, asymmetric, up to 15 cm across the mouth, unpleasant smelling; in 6- to 12-flowered, lax, pendulous sprays up to 90 cm long. Calyx shortly tubular with 2-5 ribbed lobes; corolla widely cup shaped with 5 broad spreading lobes; stamens 4, slightly protruding beyond the mouth of the corolla tube; ovary 1-chambered.

Fruit very unusual, sausage shaped, up to 1 m x 18 cm, greyish-brown, heavily dotted with lenticels, indehiscent, heavy, weighing up to 12 kg, containing a fibrous pulp in which are embedded many seeds.

The common name 'sausage tree' is derived from the cylindrical shape of the fruit. *Kigelia* is the latinized version of a Mozambique name and 'africana' means simply 'from Africa'.

### BIOLOGY

Bats pollinate the bisexual flowers of *K. africana*. In South Africa, flowering occurs from August to October and fruiting from December to June.



*K. pinnata* in Kabalega Falls National Park, Uganda. (Patrick Maundu)



Fruit (Trade winds fruit)



Flower and foliage (Trade winds fruit)

**ECOLOGY**

A tree widespread in Africa, found primarily in wet savannah woodland spreading into gallery woodland and along rivers in moist forests. In open woodland and in riverine fringes, it occurs at low altitudes.

**BIOPHYSICAL LIMITS**

Altitude: 0-1800 m, Mean annual rainfall: 600-1400 mm

Soil type: Peat, medium loam.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Angola, Botswana, Burundi, Cameroon, Central African Republic, Chad, Congo, Cote d'Ivoire, Democratic Republic of Congo, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Liberia, Malawi, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zanzibar, Zimbabwe

Exotic: Australia, United States of America



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:** Ripe fruits are inedible, although slices of baked fruit are added to beer to aid in fermentation of local honey beer, for example throughout East Africa. In times of food shortage, the seeds are roasted in hot ashes and eaten.

**Fodder:** When the flowers and leaves fall to the ground they are eaten by game and livestock.

**Apiculture:** The large, maroon flowers attract bees and are a source of bee forage.

**Timber:** Wood is moderately heavy (air-dry 720 kg/cubic m). The wood is easy to work and produces a good-quality timber for general use. The sapwood is whitish or yellow and, although rather soft, has been used for planking, yokes, fruit boxes and shelving. Heartwood is light brown and is used for drums, utensils and cutlery. In South Africa, inhabitants of the areas along larger rivers, especially the Chobe and Zambezi, make their dugout canoes from *K. africana*.

**Tannin or dyestuff:** A black dye can be produced from the fruit. Tannin can be extracted from the roots and stem bark.

**Poison:** The fruit extract is reported to have molluscicidal properties. Raw fruit are poisonous to humans.

**Medicine:** Bark and leaves are used for bladder trouble/kidney disease, an enema or drink of the boiled root and stem bark for piles; wounds, sores and cuts are treated with a leaf and bark decoction or bark; bark and leaf decoctions are antidotes for snakebite. The unripe fruits are said to be poisonous but are taken as a remedy for syphilis and rheumatism, and boiled fruit is massaged into the body for lumbago. In South Africa, the fruits are used as a dressing for ulcers or to increase the flow of milk in lactating women. In northern Nigeria, the fruit is used in some districts as a purgative, and in others to treat dysentery. The leaf alone, or with other ingredients, is useful for diarrhoea and dysentery. The fruits and bark, ground and boiled in water, are taken either orally or as an enema in treating children's stomach ailments. The fruits and roots of *K. africana* are boiled along with the stem and tassels of a plantain for postpartum haemorrhage. Decoctions of the stem bark are used for spleen infection, gonorrhoea and syphilis. A cream made from fruit extract is used to remove sunspots known as 'solar keratosis', particularly on the face and hands.

**SERVICES**

**Erosion control:** The sausage tree is suitable for riverbank stabilization.

**Shade or shelter:** *K. africana* makes a good shade tree, casting dense shade, though it is not advisable to park a vehicle or to put up a tent underneath a sausage tree during the fruiting period. The 'sausages' that drop every so often weigh up to 12 kg and can cause considerable damage.

**Ornamental:** With its fast growth rate, spreading canopy and interesting flowers and fruits, it makes a good street tree and is popular for this purpose in various towns in the countries north of South Africa and in Australia. It can be used successfully for bonsai, the thick stem being an attractive feature.

**Other services:** In Nigeria pieces of fruit soaked in water, together with small pieces of metal are sprinkled with young palm fronds, stimulate the germination of yam tubers as well as promote a good harvest.

**TREE MANAGEMENT**

*K. africana* is a relatively slow-growing tree; depending on the climate, it reaches good shade proportions in 4-5 years. The growth rate is at least 1 m/year, but it is slower in colder areas. It is not frost resistant, but if young plants are protected for the 1st 2-3 years from cold winds in colder areas, they will survive.

**GERMPLASM MANAGEMENT**

Seed storage behaviour is orthodox; viability is maintained for more than 3 years in hermetic storage at ambient temperature with 11-15% mc; dry seeds store well in a cool place. There are approximately 9700 seeds/kg.

**PESTS AND DISEASES**

A rust disease caused by *Newinia kigeliae* has been reported.

**FURTHER READING**

- Abbiw D. 1990. Useful plants of Ghana. Intermediate Technology Publications and the Royal Botanical Gardens, Kew.
- Bein E. 1996. Useful trees and shrubs in Eritrea. Regional Soil Conservation Unit (RSCU), Nairobi, Kenya.
- Coates-Palgrave K. 1988. Trees of southern Africa. C.S. Struik Publishers Cape Town.
- Dale IR, Greenway PJ. 1961. Kenya trees and shrubs. Buchanan's Kenya Estates Ltd.
- FAO. 1986. Some medicinal plants of Africa and Latin America. FAO Forestry Paper. 67. Rome.
- 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).
- Oliver-Beyer B. 1986. Medicinal plants in tropical West Africa. Cambridge University Press. Cambridge.
- Peter G von Carlowitz. 1991. Multipurpose Trees and Shrubs-Sources of Seeds and Inoculants. ICRAF. Nairobi, Kenya
- Singh J, Rana J and Chauhan SVS. 1999. Effect of abiotic factors on pollination of *Kigelia pinnata*. Journal of Tree Sciences. 18(1&2):16-23.
- Venter F, Venter J-A. 1996. Making the most of Indigenous trees. Briza Publications.
- Williams R.O & OBE. 1949. The useful and ornamental plants in Zanzibar and Pemba. Zanzibar Protectorate.

**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>)