

Afzelia quanzensis

mahogany bean, lucky bean tree, chamfuti, afzelia

Welw.

Fabaceae - Caesalpinioideae

LOCAL NAMES

Afrikaans (peulmahonie); Bemba (mupapa); English (chemnen, Rhodesian mahogany, pod mahogany, lucky bean tree, mahogany bean, afzelia); Lozi (mwande); Lunda (mwala); Nyanja (mkolando, mpapa); Swahili (mambakofi, mbambakofi, mbarika, mkomge, mkongo, mkumbakusi, mbemba kofi); Tongan (mupapa); Trade name (mahogany bean, lucky bean tree, chamfuti, afzelia); Zulu (umShamfuthi, iNkehli, umHlavusi)

BOTANIC DESCRIPTION

Afzelia quanzensis is a deep-rooted, deciduous tree, 4-24 (35 max.) m high, with a huge, spreading crown; straight trunk up to about 1 m in diameter; bark quite smooth, grey-green or creamy-brown to pale grey, seamed crosswise or beautifully patterned with raised rings that flake off irregularly in circular patches.

New foliage is copper coloured and glossy, becoming dark green with age; leaves alternate, 30 cm long, divided once, made up of 4-7 pairs of oval or elliptic leaflets, usually about 4-13 x 3-7 cm, shiny, smooth, with wavy edges, borne on very short stalks that are twisted and swollen at the junction with the twig; apex generally rounded or obtuse and slightly notched; base cuneate or rounded.

Buds long, green, well-shaped, in rather short terminal racemes, opening into fragrant flowers that have 4 green, boat-shaped sepals 0.9-1.7 cm long, from which protrudes a single flaring, orange-red petal with yellow veining, which is bilobed, up to 2.5 cm long (other petals are reduced to small scales); stamens puffy, long and white. Only 1 flower head opens at a time.

Fruit large, thick, hard, smooth, dark brown, flat, woody pod, usually up to about 12-23 (30 max.) cm long, 5-10 cm wide, 1.9 cm thick; 6-10 seeds, hard, shiny, oblong, black beans, with a red or orange aril.

'Afzelia' is named after Adam Afzelius of Uppsala, Sweden, who lived in Sierra Leone; 'quanzensis' is named after the Cuanza River in Angola.

BIOLOGY

In Kenya, *A. quanzensis* flowers in March and April, followed by a seeding period from October to December. In Zambia, flowers appear between July and November and the pods mature about 1 year later. In southern Africa, flowering occurs from October to December and fruiting from April to August. Flowers are attractive to insects, which may be the pollinating agents. Hornbills open the freshly split pods to eat the red arils and in the process discard the seeds, dropping them to the ground, where they germinate if rodents do not eat them.



Larvae of the maize cobbler attacking seeds of *Afzelia quanzensis*, surrounded by frass and webbing, in East Africa (PPB 42(3))

Afzelia quanzensis

Welw.

mahogany bean, lucky bean tree, chamfuti, afzelia

Fabaceae - Caesalpinioideae

ECOLOGY

A. quanzensis occurs from Somalia in the north to Kwazulu Natal in the south and is mainly found in the coastal region in Kenya. It grows in low-lying woodland, dry deciduous or sandveld forests, dense bushland, around lake basins or at edges of dry evergreen forests. It is normally the dominant species when it occurs in areas with deep sandy soils. *A. quanzensis* is very drought resistant but frost sensitive and slow growing in colder areas. Most of the largest specimens of this tree have been felled and cut up for railway sleepers. It is now a protected tree in South Africa.

BIOPHYSICAL LIMITS

Altitude: 0-1 300 m,

Soil type: *A. quanzensis* prefers light, medium, well-drained sandy soils.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Botswana, Kenya, Mozambique, Somalia, South Africa, Swaziland, Tanzania, Zambia, Zimbabwe

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.

Afzelia quanzensis

Welw.

mahogany bean, lucky bean tree, chamfuti, afzelia

Fabaceae - Caesalpinioideae

PRODUCTS

Food: *A. quanzensis* leaves are eaten as a vegetable.

Fodder: The bark and leaves are eaten by elephants, and the leaves are browsed by eland and grey duiker. Dropped flowers also are eaten by game.

Timber: Sapwood is pale brown, and heartwood is dark reddish-brown with paler patches. The wood is hard and easy to work; it polishes well, is durable, resistant to termites and borers on the ground and teredo in seawater. It can be used for construction of doors, shutters, general outdoor joinery, furniture, wagons, railway sleepers, musical instruments and in boat building.

Medicine: Roots provide medicine against gonorrhoea, chest pains, kidney problems, bilharzia, eye problems and snakebite. They can be chewed as an aphrodisiac. A mixture of pounded bark and python fat is applied on eczematous spots of the skin, and a small piece of bark is applied to an aching tooth.

Other products: Seeds are sold as curios or strung into necklaces.

SERVICES

Shade or shelter: The huge, spreading crown provides good shade.

Ornamental: *A. quanzensis* is a handsome tree that can be planted in gardens and parks, and it is one of the best indigenous species for bonsai.

Other services: Bark of trees is used as a hunting charm.

Afzelia quanzensis

Welw.

Fabaceae - Caesalpinioideae

mahogany bean, lucky bean tree, chamfuti, afzelia

TREE MANAGEMENT

Now rare, *A. quanzensis* merits extensive replanting in coastal districts. It is fast growing when young, with growth rates about 50-60 cm/year. In about 7 years a tree with a good shape, an attractive thick stem and a spreading crown can be obtained.

GERMPLASM MANAGEMENT

Extracted seeds can be dried in the sun to 6-10% mc before storing. Mature and properly dried seeds can be stored in airtight containers at 3 deg. C. in a cold store for several years. Seeds 10 years old may germinate, but their viability will have decreased to at most 30%. On average there are about 250-480 seeds/kg.

PESTS AND DISEASES

Seeds are eaten by baboons, monkeys, squirrels and hornbills. Larvae of several species of butterflies feed on the leaves.

Afzelia quanzensis

mahogany bean, lucky bean tree, chamfuti, afzelia

Welw.

Fabaceae - Caesalpinioideae

FURTHER READING

- Albrecht J. ed. 1993. Tree seed hand book of Kenya. GTZ Forestry Seed Center Muguga, Nairobi, Kenya.
- Beentje HJ. 1994. Kenya trees, shrubs and lianas. National Museums of 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.
- Hines DA, Eckman K. 1993. Indigenous multipurpose trees for Tanzania: uses and economic benefits to the people. Cultural survival Canada and Development Services Foundation of Tanzania.
- Hong TD, Linington S, Ellis RH. 1996. Seed storage behaviour: a compendium. Handbooks for Genebanks: No. 4. IPGRI.
- ICRAF. 1992. A selection of useful trees and shrubs for Kenya: Notes on their identification, propagation and management for use by farming and pastoral communities. ICRAF.
- Kokwaro JO. 1976. Medicinal plants of East Africa. East African Literature Bureau.
- Mbuya LP et al. 1994. Useful trees and shrubs for Tanzania: Identification, Propagation and Management for Agricultural and Pastoral Communities. Regional Soil Conservation Unit (RSCU), Swedish International Development Authority (SIDA).
- Noad T, Birnie A. 1989. Trees of Kenya. General Printers, Nairobi.
- Palmer E, Pitman N. 1972. Trees of Southern Africa Vol. 2. A.A. Balkema Cape Town.
- Storrs AEG. 1995. Know your trees: some common trees found in Zambia. Regional Soil Conservation Unit (RSCU).
- Tietema T, Merkesdal E and Schroten J. 1992. Seed germination of indigenous trees in Botswana. Acts Press.
- 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, 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/>)