Uapaca kirkiana

Muell. Arg.

Euphorbiaceae

masuku

LOCAL NAMES
Bemba (musuku); Chichewa (mkusu); English (wild loquat); Lozi (musuku,chilundu,muhaka); Lunda (kabofa); Ndebele (muzanje,umhobohobo); Nyanja (mpotopoto,msuku); Shona (muzhanje,umhobohobo); Swahili (nkusu,mkusu); Trade name (masuku)

BOTANIC DESCRIPTION
Uapaca kirkiana is a small to medium-sized evergreen or semi-deciduous tree with spreading multiple branches forming a dense rounded crown. The trunk is short and stout, attaining a height of 5-12 m and diameter of 5-25 cm. The bark is dark grey or grey-brown, thick and deeply fissured. Branchlets short, thick with prominent leaf scars. The young shoots are covered with creamy-brown hairs.

Leaves are simple and alternately arranged in clusters concentrated at the ends of branchlets, 7-36 x 4-24 cm, secondary nerves parallel and quite prominent beneath, in 12-16 pairs. The young leaves are covered with curly hairs on the undersurface.

Flower buds globose, flowers pale yellow, borne in short slender asicular and axillary peduncles. The male flowers are in dense clusters, the female flowers solitary; male and female flowers borne on different trees.

Fruit is round, skin tough, yellow-brown, up to 3.3 cm in diameter, the flesh yellowish, edible and sweet tasting with a pear-like flavour. Fruit contains 3-4 seeds. Seeds white, up to 2 cm long, 1.3 cm. thick.

'Uapaca' is derived from the Malagasy name 'voa-paca' used for the Madagascar species; U. thouarsii, which was the 1st member of the genus to be scientifically described by Ballion. The specific epithet kirkiana was given in honour of Sir John Kirk, explorer and naturalist (1832-1922).

BIOLOGY
Flowering occurs at the peak of the rainy season. Trees can remain in flower for several months. The species is dioecious and therefore out-crossing. Only casual mentions indicate either insects or specifically bees and wind as possible pollination vectors. Fruit development, a 5-8 month process, commences in the rainy season but extends through the dry season into the next rainy season. It is widely claimed that U. kirkiana is animal dispersed, the sugary pulp, which forms 40-60% of the fresh fruit, making it attractive to a wide range of mammals and birds. The genus is stable, with a chromosome number (2n=26) and devoid of polyploidy.

U. kirkiana fruits (Anthony Simons)

Female tree retained in crop land in Eastern Zambia. (Anthony Simons)

Fruit for sale in Malawi (Anthony Simons)

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ECOLOGY
The tree is found in lowland forest, secondary miombo woodland such as clearing and gaps, and open woodland. Grows in well-drained escarpments, with infertile sand or gravel soils of acidic reaction. Frost-free sites are most ideal.
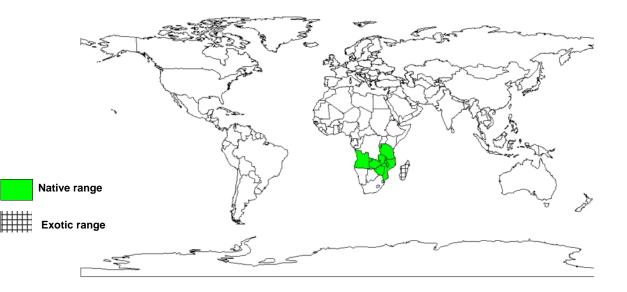
BIOPHYSICAL LIMITS
Altitude: 500-2000 m, Mean annual temperature: 12-29 deg. C, Mean annual rainfall: 500-2000 mm

Soil type: U. kirkiana grows on ferruginous or ferralitic soils derived from different metamorphic and igneous rock types. Tolerates poor, shallow, gravel and sandy loam soils. Soil is acidic, pH 4-6.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Burundi, Democratic Republic of Congo, Malawi, Mozambique, Tanzania, Zambia, Zimbabwe
Exotic: Madagascar

Native range

Exotic range

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.

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PRODUCTS

Food: U. kirkiana is highly regarded for its edible fruit. It contains 1.8 mg/g ascorbic acid and is used to prepare sweetmeats or jams. A seasoning for food is obtained from the wood ash. It is an important famine food.

Fodder: Fruits can contribute to animal feed. The flush of leaves at the end of the dry season is utilized by cattle as fodder in the absence of more palatable alternatives.

Apiculture: Flowers are valuable for honey production.

Fuel: U. kirkiana charcoal is highly regarded, and many trees are cut for this purpose. It is also a good source of firewood.

Timber: Wood is light with white sapwood and reddish-brown, figured heartwood. It is hard and durable, has a straight grain, saws clean and can be planed to a smooth finish. It glues well, holds nails firmly and takes a clear varnish finish. Suitable for general carpentry, house building and domestic utensils, furniture and joinery, carvings and boxes. It is termite resistant.

Tannin or dyestuff: A blue dye is made from the roots.

Alcohol: In Malawi and Zambia, the popular brands of Uapaca wine, 'mulunguzi' and 'masaku', are produced commercially and found in city supermarkets. In Malawi the fruit is also used to produce an opaque beer called 'napolo ukana' and a gin called 'kachasu'.

Poison: The leaves are used as a cockroach repellent in homes.

Medicine: An infusion made from the roots is used to treat indigestion and dysentery.

Other products: The fruit is a significant source of income in rural areas, demand for which has recently increased by the development of the cottage wine industry. The thick, broad leaves are used as wrappers for storage of processed food. In winter, the tree is host to the hemipterous Encosternum delegoruri, which in Malawi and Zimbabwe is sold for cash in the market and is an important source of protein and money.

SERVICES

Erosion control: As a dominant or codominant tree of the miombo vegetation in hilly sites, it is useful in watershed management.

Shade or shelter: The dense rounded crown of U. kirkiana provides good shade.

Soil improver: In natural stands, U. kirkiana forms a mutual association with mycorrhizae.

Ornamental: The spreading multiple branches and small yellow flowers makes U. kirkiana a popular ornamental tree.

Boundary or barrier or support: The tree is a suitable boundary species.

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TREE MANAGEMENT
In natural stands, the trees coppice well after cutting or pollarding. Grows slowly when it is not managed, but growth rates improve tremendously with inoculation and weeding.

Total fire protection of planted stands is mandatory for successful establishment, after which, the use of fire as a management tool could be applied as appropriate.

GERMPLASM MANAGEMENT
Seeds are viable for only about 3 weeks.

PESTS AND DISEASES
No serious pests and diseases have so far been reported to attack U. kirkiana in natural populations or planted stands. Phytophagus insects: Cercoplastes uapacae, Ledapis spp., Microsyagrus rosae and Euphoia spp., may cause 10-20% foliar damage. Necrosis linked with Pestalotiopsis versicolour, leaf spots caused by Cercospora spp., and mildews and sooty moulds such as Cladosporium cladosporiodes have been recorded on U. kirkiana foliage. The leaves are often infected by blight.

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SUGGESTED CITATION