



# Fruits for the Future Monkey Orange

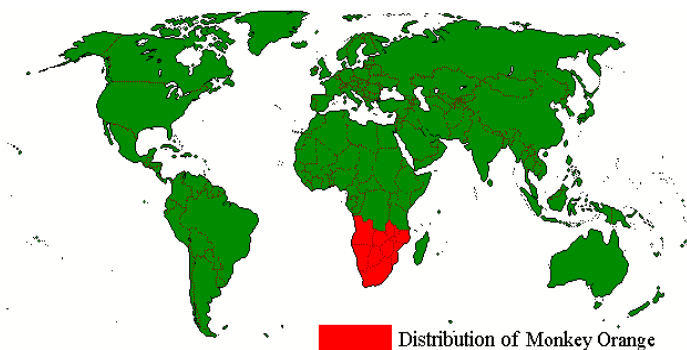
International Centre for Underutilized Crops.

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**What is monkey orange?** Monkey orange is the name of the fruit from the tree of *Strychnos cocculoides* (Baker). This species belongs to the Loganiaceae family which contains about 200 species in total. It is a small tree up to 5m tall with spreading branches and a rounded crown. It is usually covered in spines over 1cm in length. The branches have longitudinal corky ridges. The bark is creamy-brown, cracked or fissured, with raised flakes, and is corky. The leaves tend to be rounded or heart-shaped at the base. The flowers vary in colour and may be anything from white, pale green, cream or yellow and appear in short dense bunches at the end of the branches. It is a monoecious tree, containing separate male and female flowers on the same plant. During the first 3 years of growth, the tree develops very slowly, this is due to the build up of the

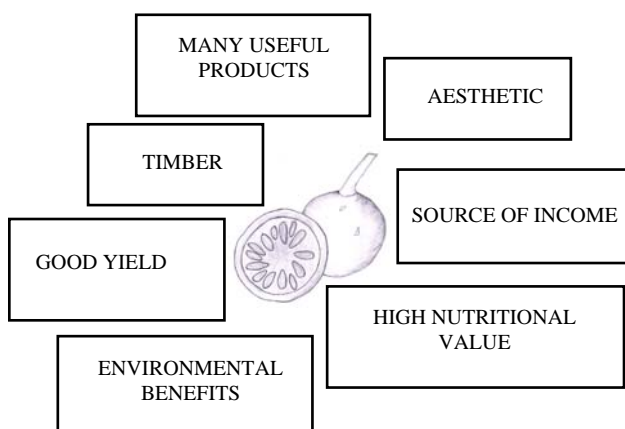
root biomass providing a strong anchor before the production of a lead stem. The fruit is round and about 7cm in diameter with a hard pericarp (shell) and the seeds embedded in the pulp. The fruit is usually dark green and white speckled when unripe, becoming yellow or orange when ripe. Fruits are available for harvesting from October to December (dry season). There is often a mixture of mature and immature fruits on the same tree.



Distribution of Monkey Orange

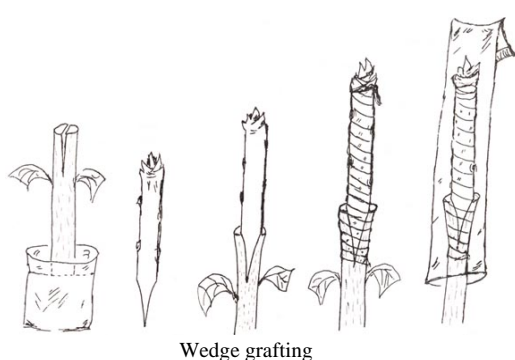
**Where does the monkey orange tree grow?** The genus *Strychnos* is found widely in parts of the tropics in Africa, South America and India, however the monkey orange tree is restricted to Central and Southern Africa. It grows on a wide range of soils from deep, well drained sandy soils on rocky slopes to acidic grey clays or yellow-red loams. It has a very high altitudinal range from 400 to 2000 m above sea level. It grows in semi-arid areas with rainfall as low as 600mm for example, on the fringes of the Kalahari Desert, to the sub-humid tropics up to 1200mm. It is a drought tolerant, semi-deciduous species, which drops its leaves in the dry season.

However, unlike other indigenous fruit trees, it does not break its dormancy until the rain comes. The monkey orange tree is found growing in open spaces around homestead farms and is often inter-planted in conserved secondary natural forest surrounding the homestead.



**Why should you grow the monkey orange tree?** The monkey orange fruit has a sweet, brown, jelly-like flesh surrounding the seeds. It is rich in crude protein, phosphorus, magnesium, potassium and has moderate amounts of vitamin C. It starts fruiting early, between 4 and 5 years. A mature tree may yield from 300 to 400 fruits per tree/ per year and it does not normally experience off years. Even in drought years, high fruit yields have been recorded. It is a small tree, which makes harvesting the fruits easier. It is often planted as a boundary or barrier tree because its sharp spines can stop animals from entering secluded areas. Few pests have been observed, however black aphids can attack in the nursery, producing a sooty mould which attracts ants.

**Economics of monkey orange** - The ripe monkey orange fruit is sold in rural and urban local and regional markets especially between Zimbabwe and Botswana; and Tanzania and Kenya. In Gaborone, Botswana, one fruit can fetch up to \$0.25 which is a high price, compared to other indigenous and exotic fruits. The hard shell of the fruit offers protection; it therefore has a longer shelf life than many other fruits and this facilitates its transportation over long distances. The Basarwa (bushmen) sometimes pick the green fruits before they are fully ripe and bury them in the sand where they stay for several months and slowly ripen as a ploy to keep them away from other people and wild animals. The monkey orange tree has a large economic potential.



Wedge grafting



**How do you grow monkey orange?** The monkey orange tree is commonly grown from seed. The seeds can be collected from high quality fruits and thoroughly cleaned, removing all traces of the pulp, which clings tenaciously to the seed. The seeds will germinate without any pre-treatment, however, soaking in hot water for 24-48 hours will improve germination. The seed should be sown at a depth of 2-3cm in pots or seedbeds. Germination should occur in 2-4 weeks. Seed viability is high within 6 months of extraction from the fruit, after this time, it sharply declines. Vegetative

propagation using grafting has been successful for the development of true to type clones. Unlike other species, this does not necessarily shorten the period to first fruiting because by the time the graft starts flowering, the vegetative structure is still too small to support the weight of even a single fruit. The most successful grafting methods with this species are wedge, whip-and-tongue or whip. Wedge and whip-and-tongue grafting are preferred as they produce much stronger graft unions compared to whip grafting. The tree coppices well when pollarded and quality materials can be collected for grafting. Seedlings or saplings transplanted in the field require protection from fire. Weeds should be cleared regularly, until the trees are established.



**What are the uses of monkey orange?** Monkey orange is a multipurpose tree. The fruit is rich in sugars, essential vitamins, minerals, oils and proteins. Traditionally it is eaten raw or made into jam, juice and a variety of wines. The jam has good keeping qualities and is preferred to other indigenous fruits. It is also used for firewood, construction, and medicine; the hard outer shell is prepared as an art craft. The contents of the hard shell are removed through a small hole, the dry seeds are then re-introduced and the hole is sealed with a part of a stem, which acts as a handle, it is used as a traditional percussion music instrument. The tree produces a hard wood with straight bore, which is good for construction. The soft, white, pliable wood is very tough and is used to make tool handles and building materials. A toxic dye can be extracted from the fruit and provides a protective layer against insects (on colour trays and containers). The fruit is also used as a soap for washing clothes. The fruit can be mixed with sugar or honey for the



treatment of coughs and can also be used in the preparation of eardrops. Fresh leaves pounded into a paste are used to treat sores. Chewing of the root is reported to help in the treatment eczema and a root decoction can be taken as a drink for curing gonorrhoea. The fresh leaves are crushed and soaked in water, the drained liquid is used as a spray for vegetables to repel insects such as aphids and scales. The monkey orange tree is planted along boundaries and near home compounds; it is protected because of the fruit.

#### Further Reading

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