Marula

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This is the fifteenth in a series of articles on indigenous plants that have traditionally been used by humans in southern Africa for food, medicine, crafts, and charms. Some of these plants are now threatened while others that once formed an important part of our diet have been forgotten. It is hoped that these articles will help revive an interest in growing, using and conserving a valuable indigenous resource. Please note that cited traditional information about medicinal use of plants does not constitute a recommendation for their use for self-treatment. Improper or uninformed use of wild plants can be extremely dangerous.

The African marula (Sclerocarya birrea subsp. cafra) is one of the continent's most highly-prized indigenous fruit trees. It is the only tree in well-populated rural areas, protected by traditional custom for its abundant fruit crop and its shade. It is justly famous for its fruit, all parts of which are highly nutritious, and is known internationally as the basis for the prize-winning Amarula Cream liqueur. The ripe fruit is collected in large quantities in rural areas for eating, making a potent beer, and for the oil-rich, highly nutritious seeds. The ripe fruits are also much sought after by elephants, who will break off large branches in their eagerness to feed on the fruit, leaves and bark, and by baboons, monkeys and many smaller mammal species.

Where do we find Marula?
The Marula occurs throughout savannah grassland and bushveld Africa, from West Africa and Ethiopia to KwaZulu-Natal. Its distribution may be linked to the spread of Iron Age farmers as they moved from East Africa southwards during the past 2500 years. Archaeological evidence shows that the fruits have been used for some 12,000 years but only more recently in KwaZulu-Natal. It first appears in cave deposits in the Durban area (eShongweni) from some 2000 years ago.

The tree favours sandy soils in frost-free areas below 1500 m altitude and with an annual rainfall of 200-1400 mm. Marulas are often found in groves on ridge tops in association with old krahal sites. There are only four species of Sclerocarya, all of them from tropical and southern Africa, the Marula being the most widespread.

What does it look like?
A medium to large tree up to 10 m in height with a single stem and spreading, deciduous canopy. The bark is grey and peels off in flat, roundish discs exposing the lighter, younger bark giving the tree its typically blotchy look. The twigs are thickish, and the spirally arranged, pinnately compound leaves are borne terminally. The trees are dioecious (male and female flowers are borne on separate trees), the flowers usually appearing just before the leaves in early summer, with the large, up to 40 mm in diameter, fruit ripening in February and March. The fruit falls from the tree when still green and ripens to a pale yellow on the ground. The fruit has a succulent, tart, white flesh with a strong, distinctive flavour. Inside is a walnut-sized, thick-walled two to three-chambered stone protecting the seed kernels. At the end of each chamber is a small circular tight-fitting plug which can be hooked out with a bent pin when dry.

Ecology and pests
Wildlife, from elephants to insects feed on the fruit. Some moths including the African moon moth (Argema mimosae, Family Saturniidae) breed on the tree. The tough silk pupal cases of the moon moth are used traditionally by the Swazi and Zulu people for anklet rattles by tribal dancers.

Traditional and future uses
All parts of the fruit of Marula are edible. The flavour of Marula fruit has been described as pleasant, sour-sweet, and tart. The pulp can be consumed raw or boiled into a thick, black consistency and used for sweetening porridge. The fruit pulp when boiled, strained, and then boiled with sugar makes a delicious amber-coloured jelly.

A popular, fermented alcoholic beverage is prepared from the ripe fruit. The yeast occurring naturally in the fruit is normally used for spontaneous fermentation. This beverage, commonly known as Marula beer, has approximately twice as much ascorbic acid as orange juice and thus is an excellent source of vitamin C.

The seed kernels, described as a delicacy, are commonly used to supplement diet during winter or drought periods in countries such as Angola, Tanzania and Zambia, as the oil in the seed is rich in protein. They are mixed with vegetables or meat or may be pounded and made into a cake before consumption.

The wood is used for furniture, paneling, flooring, carvings and household utensils like spoons. The inner layer of bark makes a strong rope. Drums and yokes for certain animals are made from the wood of this tree. In Namibia some people use the wood for sledges. Boats are also made from the trunk. Red-brown dye can be produced from the fresh inner bark. The gum, which is rich in tannin, is mixed with soot and used as ink. A relatively good quality rope can be made from the inner bark.

In traditional medicine the powdered bark is used for a wide variety of purposes: as treatment and prophylaxis for malaria, and treatment of dysentery, diarrhoea, rheumatism and haemorrhoids. An applied infusion of the inner bark of the Marula tree is used to alleviate pain from scorpion stings and snake bites. Roots and bark are also used as laxatives. The leaves are chewed to aid indigestion and to treat heartburn and an infusion of the leaves to treat gonorrhoea. Marula oil, made from the seed kernel, is used as a skin care oil.
Commercial aspects
Its use as a source of nutritious fruit, oil, wood, and shade, its rapid growth from seed or cuttings and its ability to tolerate climatic conditions that range from near arid (less than 200 mm of annual rainfall) to well-watered make the Marula a prime candidate for helping relieve impoverished rural life in many areas of Africa. Experimental plantings here and in Israel suggest that it has great potential as a multi-purpose food crop.

The vitamin C content of the fruit is 54 mg/100 g, which is 2–3 times that of the citrus orange. The fruit is commercially harvested and the juice extracted for making a delicate-flavoured jelly and for the production of a famous liqueur, Amarula Cream™, marketed internationally by the Cape’s Distell group.

The seeds are high in fat (56–51%), protein (28–31%), citric acid (2.02%), and also contain malic acids, sugar, phosphorus, magnesium, copper, zinc, thiamine and nicotinic acid. Protein contents of 54–70% have been reported for de-fatted nuts. The seed kernels yield oil (1 ton of fruit yields 60 l of oil) with a quality and fatty acid composition comparable to olive oil but 10 times more stable and with preservative properties which have been used for preserving meat for up to a year.

**WHAT S IN A NAME?**

**Botanical name:** Sclerocarya birrea subsp. caffra (Sond.) I.O. Kokwaro. The generic name Sclerocarya is derived from two Greek words, skleros (hard) and karyaon (nut). The specific name birrea is from birre, the common name for the tree in Senegal. The subspecific name caffra refers to KAFFARIA (an early colonial name for the Eastern Cape and the hinterland of South Africa).

**Family name:** Marulas belong to the mango family, Anacardiaceae, along with mangos, pistachios, cashews, the African Wild Plum (Harpagophytum opuliferum) and the African wild cusut trees and shrubs (Gerris spp., formerly in the genus Rhus). The members of the family are characterized by having a resinous sap that can be rich in turpindols (the base for natural turpentine) which can cause severe skin, breathing and eye allergic reactions as is the case with the North American Poison Ivy (Toxiodendron radicans).

**Common names:** Marula (English); Morula(Tswana); Mareloa (Afrikaans); umGuru (Zulu); Homeid (Arabic).

The oil has been used for lighting, cooking and as a cosmetic. The seed kernels are an excellent alternative to pecans or walnuts when making fruit or carrot cake.

The wood is light reddish-brown to whitish with no definite heartwood, soft and light (air-dry 560 kg/m3). As trees attain large diameters, the wood is preferred for mortars, pestles, bowls and various local crafts, saddles, furniture and heavy crates. In South Africa, commercial utilization of the wood was halted in 1962 when the tree was officially declared a protected species throughout the country.

**ACKNOWLEDGEMENTS**

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Marula fruit and leaves. Photo: Phakamani Xaba.

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**An easy guide to growing MARULA**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>ENVIRONMENT REQUIRED FOR SUCCESS</th>
<th>TREATMENT</th>
<th>TIME</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed harvesting and preparation</td>
<td>Mature fruit drops when still green and ripens to a yellow colour on the ground; fallen fruit can then be harvested.</td>
<td>Seed should be cleaned of the flesh and can be stored until spring.</td>
<td>Seed ripens between October and December.</td>
<td>Cleaned seed should be sun-dried for a short while before storing under cool, dry air conditions. Viability is lost if left in the open for longer than a month. There are approximately 400 seeds/kg.</td>
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<td>Seed saving, germination and growing out</td>
<td>Sow seed in trays on a mixture of loamy soil and river-sand (1:1) and lightly cover with same.</td>
<td>Soak seed in water overnight, so that they absorb water and soften the seed coat.</td>
<td>Sow seed in early spring to early summer for best results. Seeds will start germinating within a month.</td>
<td>Seedlings should be left in trays until they have 2 leaves then re-pot into 2 litre bags with 2:1 mix of river-sand, compost and loam soil.</td>
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<td>Vegetative propagation</td>
<td>Cut trunk sections, including an apical shoot tip, 300–500 mm in length. Hardwood cuttings root best. For more rapid establishment cut larger hard wood trunks 100–150 mm in diameter and 2 m long.</td>
<td>Trim cuttings to 3 to 4 nodes (8–10 cm long) and strip the lower leaves. Place cuttings in washed river-sand in cutting beds with underbed heating.</td>
<td>Cuttings and trunk sections should be taken in late winter or early spring. It takes 3 to 4 months for the cuttings to root strongly enough to be repotted into 1.5 litre bags. Rooting hormones help speed the process.</td>
<td>Grafting of 5–10 cm of scion material cut from the tips of branches is possible in late winter/early spring just as dormancy breaks. Root suckers can also be used to propagate clones. One of the fastest growing trees in South Africa with a growth rate of up to 1.5 m/year. Coppicing is a suitable practice.</td>
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<td>Cultivation</td>
<td>Marula is sensitive to frost and enjoys well-drained but fertile soils in full sunlight.</td>
<td>Compost regularly and prune to encourage upwards growth.</td>
<td>Transplant seedlings and plants in mid- to late winter.</td>
<td>Marula is waterwise and does not require a lot of watering.</td>
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