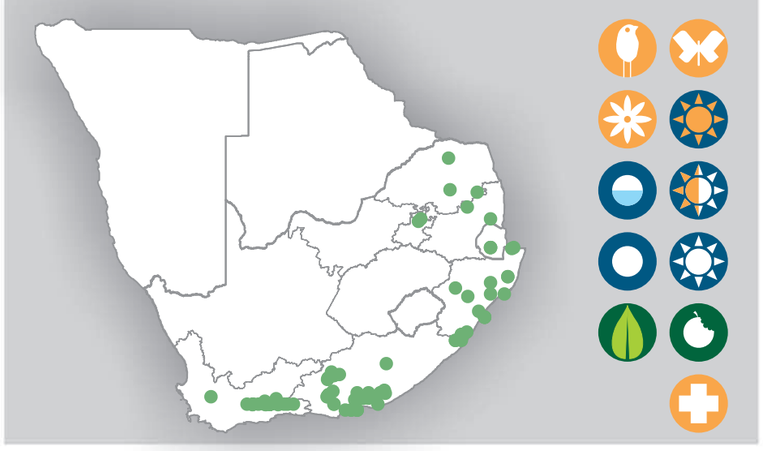
SANBI
Biodiversity for Life
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2021 trees of the year

Portulacaria afra

Jacq.



Family: Didiereaceae
National tree number: 104

Common names: porkbush, elephant-food (English); *spekboom* (Afrikaans); *isambilane* (isiZulu); *igqwanitsha* (isiXhosa); *sidondwane* (siSwati); *tshilepwete* (Tshivenda)

A succulent, evergreen shrub with many stems that grows up to 5 m high. Young branches are smooth, red-brown to grey, with marks on them caused by leaves that fell off. Older branches are grey with horizontal bands. Leaves are small, round, fleshy and in pairs along the reddish stem. Flowers are small, pale pink to purple and star-shaped. Fruits are pink, berry-like, with a single seed in each.



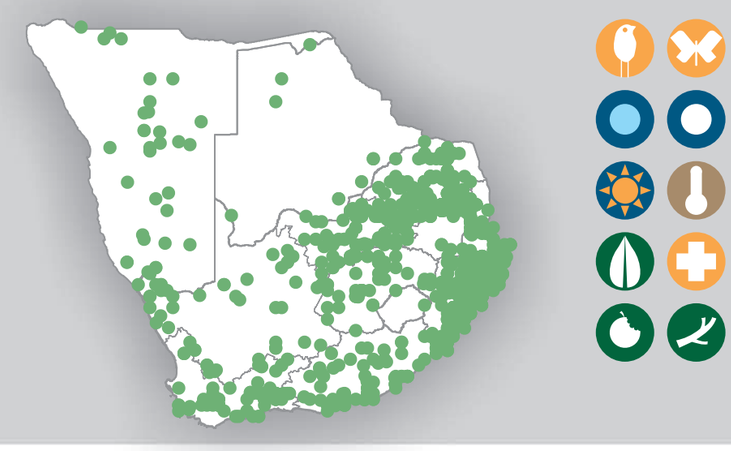






Vachellia karroo

(Hayne) Banfi & Galasso



Family: Fabaceae
National tree number: 172

Common names: sweet thorn (English); *soetdoring* (Afrikaans); *mooka* (Sepedi); *mooka* for mature trees, *mookana* for young plants (Setswana); *umunga* (isiZulu); *umnga* (isiXhosa); *singa* (siSwati); *leoka* (Sesotho); *muunga* (Tshivenda); *munga* (Xitsonga)

A dense, small to medium-sized tree with a round crown. It grows up to 12 m high, or higher under favourable conditions. Bark on the trunk is reddish brown to black. Leaves are feathery (bipinnately compound). It has straight, white, paired thorns, especially on the lower branches. Flowers are sweet-smelling yellow balls. Fruits are brown pods that open when dry. Seeds are flat.



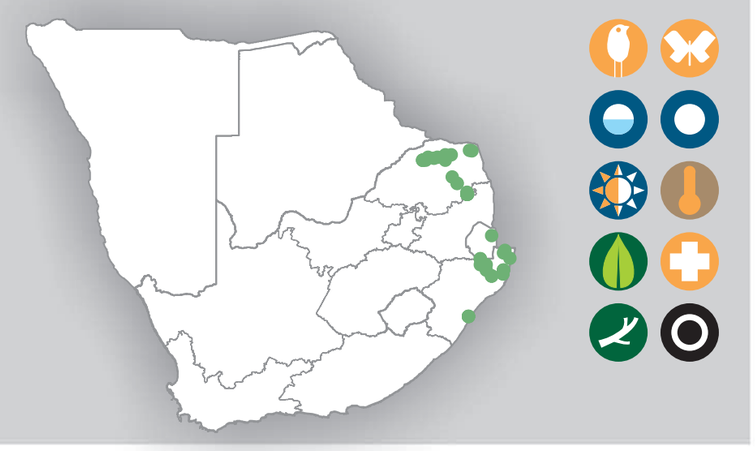






Warburgia salutaris

(G.Bertol.) Chiov.



Family: Canellaceae
National tree number: 488

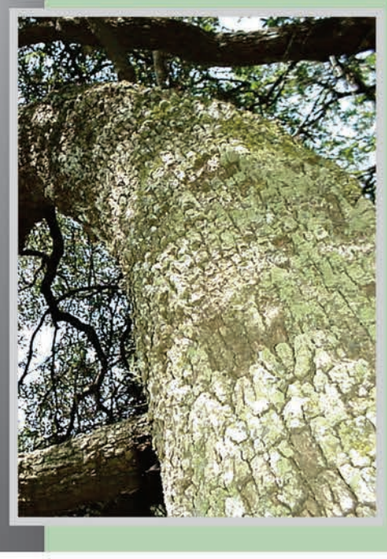
Common names: pepperbark-tree (English); *peperbasboom* (Afrikaans); *isibhaha* (isiZulu); *mulanga* (Tshivenda); *xibaha* (Xitsonga); *sibhaha* (siSwati); *molaka* (Sepedi)

An aromatic, smooth, evergreen tree, usually up to 12 m high, but sometimes up to 20 m high. The trunk is dark brown with many small light brown or red bulges sticking out, which gives the 'pepper' effect, so that the trunk looks rough. Young stems and branches are smooth. Leaves are simple and arranged in a spiral towards the tips of branchlets; they are beautiful blue-green and become olive-green. Flowers are small, green-yellow or white. Fruits somewhat pear-shaped, at first glossy green, turning purple with a white bloom on them. There are many kidney-shaped seeds in the fruits.











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Although great care has been taken regarding accuracy of the information, SANBI does not assume responsibility for any harm resulting from the medicinal use of any trees described in this poster.

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REPUBLIC OF SOUTH AFRICA

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Warburgia salutaris

(G.Bertol.) Chiov.

General appearance

An aromatic, glabrous, evergreen, erect tree, usually up to 12 m high, occasionally up to 20 m high. Stem smooth, glabrous, green and light grey, turning darker and rougher cracked greyish-brown, with prominent, corky, raised yellow lenticels, developing a mottled appearance. Inner bark reddish-brown tinged with a spicy, somewhat peppery aroma. Leaves alternately arranged, blue-green, maturing to a glossy, deep olive-green, simple, coriaceous, glabrous, elliptic to oblong-lanceolate, up to 40–110 × 10–30 mm, usually carried towards tips of branchlets with a peppery smell when crushed; margins entire; adaxial surface dark, abaxial surface paler, dull green, with obscure venation and clear gland dots; petiole short, up to 5 mm long. Flowers axillary, singly or in compact, few-flowered clusters, bisexual, small, greenish-yellow, 5–7 mm in diameter; sepals 3, fleshly; petals 10, obovate, overlapping, gland-dotted, in 2 rows of 5, outer row of petals thicker, larger, greenish, inner row of petals thinner, yellowish. Flowering time: April–June. Fruits nearly cylindrical to oval berries, indehiscent, glossy, gland-dotted, up to 50 mm wide, coriaceous, green, maturing to rough, leathery purple with white bloom, ripening from October to December. Seeds many, reniform, some recalcitrant with oily endosperm, maturing from dark green to purple-black, with whitish bloom.

Distribution and habitat

Warburgia salutaris prefers cool, south-facing slopes in kloofs, often found on dry rocky hillsides, in wet evergreen forests, wooded ravines and bushveld. In South Africa, it occurs along coastal forests of KwaZulu-Natal, eastern and northern Limpopo, and in Mpumalanga. It also occurs in Eswatini, Zimbabwe, southern Mozambique and into tropical Africa, including Malawi and Zambia.

Meaning of name

The genus was named after German-Jewish botanist, Dr Otto Warburg (1859–1938). Born in Hamburg, he lectured botany at the University of Berlin, authored numerous botanical papers, was a notable industrial agriculture expert and later became a founder of Jerusalem's institute of natural history. The specific epithet is Latin for 'healthful'. The English common name relates to the pungent inner bark with its peppery taste. *Isibaha* is an old name found throughout the history of Africa and thought to be based on an Arabian word which dates back to the days when Arabs traded with people from Africa.

Ecology and uses

This is one of the most highly valued medicinal plant species in southern Africa. Due to its high demand, it is regarded as a highly threatened species throughout its South African range. It is over-exploited in many regions and threatened throughout its rage.

The whole plant is commonly used in traditional and modern herbal medicine, with the bark being the most preferred part. Thick bark from mature trees is preferred by herbalist as it is considered to be more potent and effective. Herbalists harvest bark by stripping it along the length of the trunk, ring-barking and cutting branches. The bark is also a part of many magical and ritual ceremonies and it is believed to induce trances or to invoke the goodwill of ancestors.

Other ecological notes and traditional uses:

- Leaves are used to flavour soups and curries, for a herbal tea and tablets made from the leaves are used as a natural antibiotic that is especially effective against oral thrush. An excellent mulch or green manure is also made from the leaves.
- The bark contains mannitol and has many uses. Dried and ground it is variously used to treat malaria, colds, chest pains, coughs, diarrhoea, muscle pains, stomach aches, to clear sinuses and for general body pains. Blended with fat, it is used as an ointment to treat burns, skin irritations, sores and for wound dressing. A resin can be extracted from the bark and it is a source of tannins for dying.
- The wood is used for fuel, to make charcoal and occasionally used for furniture and tools.

As a garden tree

The tree makes a good drought-resistant shade tree, although it's slow-growing and requires a warm, sunlit, frost-free setting in well-drained soil that is rich in compost. Plants can be grown from seeds and cuttings. Seeds are recalcitrant and can be stored for a short time at 3°C, but should preferably be sown as soon as they are removed from the fruit. Seeds are prone to damage from insect pests such as the marula fly. Soak fruit in cold water overnight and remove seeds from the fruit pulp the next morning. Sow seeds in trays in a mixture of sieved compost and river sand, covering them lightly. Keep the tray moist, seeds germinate readily and will emerge after about 21 days. Transplant seedlings when they reach 50 mm in height or at the two-leaf stage. Pot seedlings into small containers with a general mixture of sand, keep them for a year before planting out. Trees can also be propagated from cuttings made from late spring to midsummer. Cut an apical shoot tip of about 150 mm with 3–4 nodes and strip lower leaves. Cutting should be made early in the morning and kept in a bucket of water until ready to be inserted in trays with washed river sand under mist. Trays should be placed in an intermittent misting system with heating bench at 27°C. Bottom heating improves the strike rate, as it promotes callusing at the basal node, a necessary step in development. Cuttings will root in 3–6 weeks.

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2021
trees of the year



Portulacaria afra

Jacq.

General appearance

Evergreen, succulent, soft-wooded, multi-stemmed tree, up to 4–5 m high, sometimes a sprawling shrub. Bark globrous, green when young, becoming glossy red-brown to slate-grey with conspicuous leaf scars. Young branches brittle, brackish easily, older branches grey with horizontal bands. Leaves fleshy, simple, opposite, almost circular to obovate, 25 × 17 mm, orrgped at right angles to each other along stems, different shades of green from pale blue-grey to dark green, opex with a short abrupt point, petiole almost absent. Flowers small, pale pink to purple, star-shaped, clustered toward end of branches; sepals two, membranous; petals five, pointed; style short with three stigmas; only flowering when grown in conditions similar to its indigenous habitat. Flowering time: October–November. Fruits thin, transparent to pink, indehiscent, up to 5 mm long, single-seeded. Fruiting time: November–December.

Distribution and habitat

Portulacaria afra occurs naturally from the dry river valleys of the Eastern Cape, on rocky slopes of the Western Cape, northwards into KwaZulu-Natal, Limpopo, Mpumalanga, Eswatini and further north in Mozambique. It grows in dry flatlands and north-facing rocky slopes in bushveld and savanna thicket.

Meaning of name

The name *Portulacaria* is in reference to the taxon's resemblance to the genus *Portulaca*. The specific epithet alludes to its African distribution. *Portulacaria* has only two species indigenous to South Africa.

Ecology and uses

Plants grow in rocky areas, often among other succulent shrubs. It is best known for its carbon storage capabilities of about 10 kg of carbon per hectare, thereby acting as a carbon sponge by absorbing carbon from the atmosphere, in turn combating climate change. It is adapted to dry conditions and can survive on 250–350 mm of water a year.

Portulacaria afra can photosynthesise using CAM (crassulacean acid metabolism) photosynthesis. During dry periods the stomata open at night to allow carbon dioxide to enter, which is then used the next day for photosynthesis. The closed stomata restrict moisture loss during the day. This mechanism allows it to adapt to extreme weather conditions and it can survive anything, from droughts to frost.

As a garden tree

This is a drought tolerant and fire-resistant plant that can be turned into a hedge, bonsai or used as a large bush. Quick and easy to propagate, the plant prefers dry areas, full sun and well-drained soil, although it can adapt to semi-shade. Indoor settings and even well-watered flowerbeds. It can be grown from seeds, but is usually propagated from cuttings. Cuttings should be made just above the second or third nodes to encourage new growth. Allow one or two days of drying out before planting. Keep them in a warm, shady position until they root, usually within 4–6 weeks. Transfer them to well-drained soil (cactus soil or equal amounts of potting soil and sand mixed together) and only water when necessary. When growing them as house plants, use unglazed pots to help excess moisture evaporate and choose a location with indirect sunlight. Leaves that fall off while pruning may root on their own. Fertilise plants in pots monthly during growing season and ensure that the drainage holes are large and unblocked. Allow soil to dry out completely between waterings to prevent rot.

Other ecological notes and traditional uses:

- Domestic and wild animals, including elephants, browse the plant in times of heat and drought.
- The roots help to hold the soil matrix and prevent soil erosion.
- Crushed leaves may be rubbed on blisters and corns on feet for relief. Leaves are also chewed to treat sore throats and mouth infections, and eaten by breastfeeding mothers to increase milk supply. The leaves can be used in salads or soups to add flavour.
- The flowers are rich in nectar and attract bees, other insects and birds.

Vachellia karroo

(Hayne) Banfi & Galasso

General appearance

Small to medium-sized tree, 5–12 m high, large specimens in favourable conditions up to 20 m high. Usually single-stemmed, sometimes multi-stemmed, branching high above the ground to give a rounded crown appearance. Bark rough, longitudinally fissured on trunk; young branchlets rusty red; spines in pairs on branches, large, long, straight, white. Leaves generally dense, dark, bipinnately compound, ± 5 pairs of leaflets, each with 10 or more pairs of pinnas, each pinna ± 5 mm long. Inflorescences round, yellow, sweetly scented, 15 mm in diameter. Flowering time: usually October–February. Fruits long, narrow, spirally twisted, dehiscent pods with minor constrictions between seeds. Seeds flat, obovate, 6–8 × 4–6 mm, usually olive green maturing to rusty brown; 6–10 per pod. Fruiting time: January–April.

Distribution and habitat

A common tree in southern Africa, found in all South African provinces and neighbouring countries. It grows in a variety of habitats and different soil types, including sand dunes.

Meaning of name

The genus name *Vachellia*, is named after George Harvey Vachell (1790–1839), chaplain to the British East India Company in Macao, who collected plants in China. The specific epithet, '*karroo*' is one of the old spellings of Karoo; its spelling cannot be corrected because of the laws governing botanical nomenclature. *Vachellia karroo* gets its common name, sweet thorn, from the gum produced from wounds in the bark.

Ecology and uses

The tree is adaptable, with the ability to establish itself without shade, shelter or protection from fires, from which it is able to regenerate. It is fast growing, tolerant to defoliation and resistant to fire and frost. Its seeds are tolerant of high temperatures and may be stimulated to germinate after a fire event.

Vachellia karroo is known to form root nodules that contain nitrogen-fixing *Rhizobium* bacteria. These microorganisms have enzyme systems that can convert atmospheric nitrogen to nitrogen compounds that are useful to plants for the construction of amino acids.

The tree has deep roots and can use water from deep underground to grow in arid and inhospitable environments and can be used as a potential indicator of underground water in arid regions. It is also considered an indicator of sweet veld with fertile soils, which is highly valued for good grazing. It is an ecologically and socio-economically important species and an asset to any farm as it forms an important part of the diet of a wide range of herbivore species. The spines offer protection from herbivory and encourage bird nesting.

Other ecological notes and traditional uses:

- Giraffes, antelope and goats feed on the leaves. Larvae of several butterfly species use it as a feed plant.
- The flowers contain large amounts of pollen, are rich in protein and a food source for certain birds and monkeys. The flowers also yield high volumes of nectar that attract bees, which is important to the bee farming and honey industry.
- Seeds and pods are rich in protein and used as feed supplements for livestock during winter. Seeds are also roasted and used as coffee substitute.
- Various root, bark, gum and leaf infusions are used as remedy for diarrhoea, dysentery, for colic in infants, as an emollient or astringent, for colds, conjunctivitis, haemorrhage and a boiled liquid from the bark is sometimes used to treat cattle with tulp poisoning (caused by *Moraea* species).
- The wood is strong and used for making furniture, poles, fence-posts, building traditional huts, wooden ornaments, etc.
- The bark is used to make strong ropes and mats, as fuelwood to start fires and for tanning leather.
- The gum is eaten by people and animals, used for confectionary, thickening foods, as an adhesive, and used in pharmaceutical and cosmetic industries.
- The thorns are used as sewing needles, pegs or pins.

As a garden tree

In summer *Vachellia karroo* makes for beautiful shade trees in large gardens. Because of its aggressive and damaging roots, it shouldn't be planted close to built structures. They make great windbreaks on farms and are excellent fodder trees. Trees may live for up to 40 years and can easily be propagated from seeds. Seeds should be soaked in hot water for a while, then immersed in cold water and left overnight. Sow seeds the next morning either directly into small nursery bags or in seedling trays filled with seedling mix, lightly cover with soil and keep moist. Place the trays or bags in a warm and bright area. Seeds germinate in less than two weeks and seedlings should be transplanted when the second leaves appear. Their growth rate is up to 1 m per year in bright, sunlit conditions. It is recommended to provide the saplings with adequate trunk support as they grow rapidly.