

**LOCAL NAMES**

Afrikaans (doringboom,soetdoring,witdoring,karoodoring); English (white-thorn,sweet thorn,Cape thorn tree,mimosa thorn,karoo-thorn); Ndebele (isinga); Shona (mubayamhondoro,muunga,munenje); Tswana (mookana,mooka); Xhosa (umNga); Zulu (umNga,isiKhombe)

**BOTANIC DESCRIPTION**

Acacia karroo is an evergreen tree 3-15 m tall, rarely shrubby; bark on trunk dark red-brown to blackish; young branchlets glabrous or rarely sparsely and inconspicuously puberulous, also with small inconspicuous pale to reddish sessile glands; epidermis flaking off to expose a dark rusty red, not powdery under bark, sometimes grey to brown and persistent; stipules spinescent, up to 7 (max. 17) cm long, rather robust, whitish, often deflexed, sometimes fusiform-inflated, up to 1 cm or more.

Leaves with small to large (sometimes paired) gland at the junction of each pinna-pair, rarely lacking at the basal 1-2 pairs; sometimes a large gland on the upper side of the petiole; pinnae 2-7 pairs; leaflets 5-15 pairs, 4-7 x 1-3 mm, glabrous or rarely with minutely ciliate margins, glandular, obtuse to subacute but not spinulose-mucronate at the apex; lateral nerves invisible on the underside.

Flowers deep or golden yellow, in axillary pedunculate heads 8-12 mm in diameter borne along shoots of the current season, sometimes aggregated into leaflets' terminal racemes. Calyx 1.25-2 mm long, subglabrous; corolla 2.5-3 mm long, glabrous or almost so.

Pods dehiscent, 6-16 x 0.6-0.9 cm, linear, falcate, usually constricted between the seeds, glabrous except for small usually inconspicuous glands; seeds olive-green to brown, 5-8 x 3-5 mm, oblong-elliptic, compressed; areole 4.5-5.5 x 2-3.5 mm.

The generic name 'acacia' comes from the Greek word 'akis', meaning a point or a barb. The specific name 'karoo' does not signify that this is a species of the Karroo alone, but that it is a principal and most conspicuous tree of this semi-desert of southern Africa.

**BIOLOGY**

The species has a mixed mating system. It exhibits a tendency towards out-crossing, as evidenced by the existence of trees that are entirely male. It is zoomophilous, principally insect pollinated because the strong colour of inflorescence and the heavy pollen grains attract insects. Isolated plants bear no fruits. Pollinators include the Coleoptera, Diptera, Hymenoptera and Lepidoptera. Pods are dehiscent on the trees but not explosive; hence dispersal is principally by cattle and other herbivores ingesting seed and voiding them through their dung.



Typical habit of dwarf coastal form found on heavy clay soils (Ellis RP)



Deep golden yellow pom-pom like flowers borne in long, loosely packed terminal panicle-like sprays. Synchronised flowering occurs at regular intervals throughout spring and summer. Strongly scented and provides excellent bee food. (Ellis RP)



Grey, relatively smooth bark of this ecotype of sweet thorn. Differs from typical dark, rough, longitudinally fissured bark. (Ellis RP)

**ECOLOGY**

A pioneer species with a climax of 40 years, it occupies a successional position between the tropical forest and the bushveld. It grows in riverine communities and even in arid environments, where it can do well provided there is an assured supply of groundwater. Large specimens are an indicator of underground water. *A. karroo* is included in the national weed list in South Africa. It competes for space, water and nutrients with pasture grasses, thus replacing them. Sweet thorn is frost- and drought-tolerant.

**BIOPHYSICAL LIMITS**

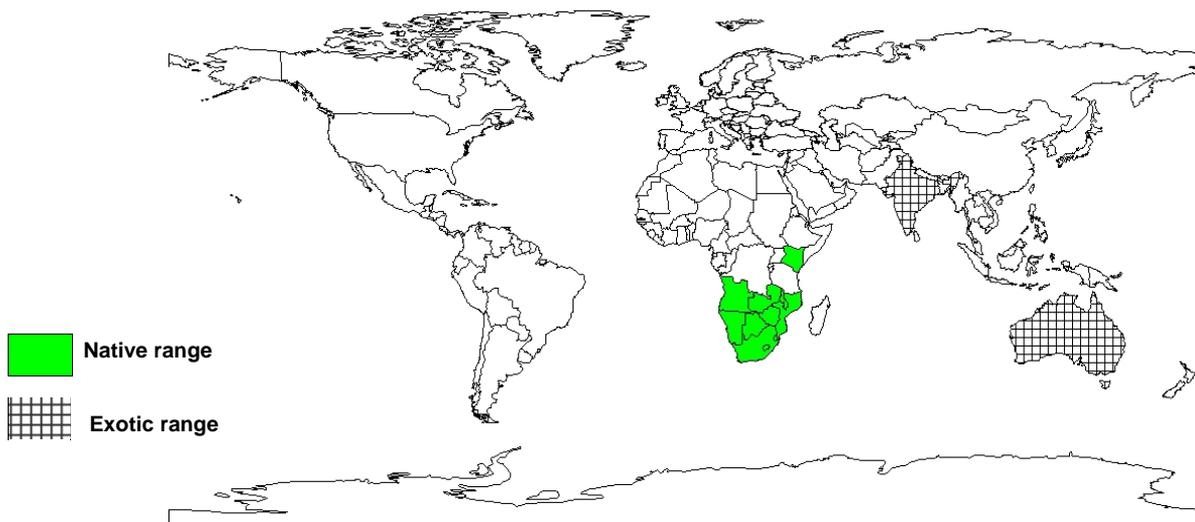
Altitude: 0-1 000 m, Mean annual temperature: 12-40 deg. C, Mean annual rainfall: 200-1 500 mm

Soil type: Prefers heavy black, hydromorphic cracking vertisols with high pH, deep alluvial clay-loam soils in river valleys and sometimes on shale and even on acid soils.

**DOCUMENTED SPECIES DISTRIBUTION**

Native: Angola, Botswana, Kenya, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe

Exotic: Australia, India, Israel



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.

**PRODUCTS**

**Food:** The gum is eaten as a confection; seeds are substitute for coffee, and children chew the sweet thorns.

**Fodder:** Foliage, flowers and green pods are important browse for livestock. Cattle do not browse it as much as do goats, when it is the only green forage in the woodland at the end of the dry season. Green foliage and pods contain 14-15% proteins (as percentage of dry matter).

**Apiculture:** The long flowering season makes it a useful tree for apiculture. Bees collect pollen and nectar from the flowers.

**Fuel:** It burns brightly, with very little smoke and no odour. It splits easily and once dried does not absorb moisture from the atmosphere. It has calcium oxalate crystals that give its embers high temperatures and make them long lasting. These clean burning traits, ideal for cooking and heating, make it excellent firewood wherever it grows. In the coastal dunes of Zululand, South Africa, it is reputed as an excellent charcoal source.

**Fibre:** Root bark is used for twine and rope (like in the traditional Nama mat house).

**Timber:** Few trees reach a commercial size, limiting their commercial use. The wood saws easily, planes to a smooth finish, is moderately durable, and glues and varnishes well for furniture. It is, however, likely to twist in seasoning and is susceptible to attack by borers and fungi. Kraft properties have been tested, and it pulps quite easily under standard kraft macro-pulping conditions.

**Gum or resin:** *A. karroo* gum is used regionally in southern Africa as a substitute for gum arabic. It cannot be exported to Europe or the USA because it has not been cleared for toxins. Annual production is 25-30 t/ha.

**Tannin or dyestuff:** The Nama people of southern Africa extract a red dye from the bark. The bark contains up to 19% tannins, which when used for tanning, give the leather a red colour.

**Poison:** Roots are placed in fowl runs to control external parasites.

**Medicine:** In Zimbabwe, a root infusion is taken for pain in the alimentary canal, rheumatism, convulsions, gonorrhoea and as an aphrodisiac. Root powder is applied to penile sores for syphilis. A bark decoction is an emetic for diarrhoea in humans and 'tulp' poisoning in cattle.

**SERVICES**

**Reclamation:** It is universally accepted for use as a rehabilitation plant in degraded sites and dunes. It flushes when the temperatures are highest and before the rains, when there is a great need for shade to reduce soil temperatures.

**Nitrogen fixing:** Nodulation increases soil fertility through nitrogen fixation. In the communal areas of Zimbabwe, it is well known that dryland crop yields increase where *A. karroo* has grown and been cleared.

**Soil improver:** It stimulates the development of an understorey of perennials, palatable and nutritious grasses (*Cenchrus ciliaris*, *Panicum maximum*) through providing them shade, fixing nitrogen and improving soil structure and infiltration. *A. karroo* is considered to be a good indicator of fertile soils for crops and an indicator of surface or underground water.

**Intercropping:** Its deep root system and nodulation make *A. karroo* suitable for intercropping.

**TREE MANAGEMENT**

Stand establishment of this species is either through natural regenerations or planting stock. *A. karroo* tolerates drought, fire, frost and termites. It also regenerates rapidly through suckers and fixes nitrogen. It is difficult to handle due to its thorns, and it is an aggressive colonizer, easily taking over grasslands. Its invasive root system means that it is unsuitable for planting near buildings or paved pathways.

**GERMPLASM MANAGEMENT**

Seed must be soaked in hot water, left overnight, and then sown the next morning. Seeds are planted either directly into small black nursery bags or in flat seedling trays filled with seedling mix. Seeds germinate in 3-12 days.

**PESTS AND DISEASES**

Many species of the Bruchidae family parasitize seeds of acacias, including *A. karroo*. Psychid wattle bagworm (*Kotochalia junodi* Heylaerts) defoliates even large trees. Parasitic plants include *Loranthus dregei*, *Moquinella rubra*, *Viscum capense* and *V. rotundifolium*. Fungi include rust fungi like *Ravenelia macowaniana*.

**FURTHER READING**

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**SUGGESTED CITATION**

Orwa C, A Mutua, Kindt R, Jamnadass R, S Anthony. 2009 *Agroforestry Database: a tree reference and selection guide version 4.0* (<http://www.worldagroforestry.org/sites/treedbs/treedatabases.asp>)