

LOCAL NAMES

Afrikaans (kameeldoring); English (giraffe thorn, rubber thorn tree, camel thorn); Hindi (odassithai, jala, karodei); Lozi (muhoto); Ndebele (umwadwa, umwhohlo); Nyanja (mkunku, nyafungo); Somali (jifjif, sarmaan); Tongan (mungoshia); Tswana (mogotho)

BOTANIC DESCRIPTION

A large, spreading tree, 9-10 (max. 18) m high, branching about 2 m above the ground; occasionally a shrub barely 2 m tall; crown rounded, dense, spreading up to 18 m; branches drooping at the ends; sapwood yellow and the under bark is reddish; bark dark greyish-brown to blackish, rough, fibrous, fissured, often flaking off in thick, woody strips when old; young twigs shiny, purplish or reddish, without hairs, distinctively zigzag shaped; taproots, long.

Leaves with 2-5 pairs of pinnae, each bearing 8-15 pairs of bluish-green leaflets 4-10 x 1-4 mm, remaining conspicuously green in the dry season; thorns dark brown, later grey or whitish, in pairs at the nodes, stout and straight, 1-5 cm long, at right angles to each other and pointing in the opposite direction to the previous pair; base of older thorns often inflated into an enlarged ant-gall 0.5-2 cm wide.

Inflorescence consists of a ball of bright golden yellow, solitary or clustered, fragrant flowers.

Pods green, broad, large, 1.3-2.5 cm thick but flattened, spongy within, half-moon shaped, 6-13 x 1.8-6.5 cm, curved through to 90-180 degrees, semi-woody, indehiscent, covered in dense grey hairs and containing hard, brown seeds that lie in several rows; some pods thin, round and long.

The generic name 'acacia' comes from the Greek word 'akis', meaning a point or a barb. The scientific name 'erioloba' is Latin for 'half-moon shaped', referring to the shape of the pods.

BIOLOGY

A. erioloba hybridizes with *A. haematoxylon*, and the resulting progeny looks extremely similar to *A. erioloba* but has glands on the pods typical of *A. haematoxylon*. Trees usually flower at about 10 years, and by 20 years they can produce regular crops of large pods. In the Kuiseb River Valley, Namibia, trees produce no pods until they are more than 3 m high and develop spreading canopies. It is among the 1st acacias to flower in early spring, August to October in southern Africa, on the previous year's growth. The main flowering period is in the spring but it can start in winter and end in summer. At the peak of its flowering period the temperatures are likely to be high, frosts infrequent and thunderstorms unusual. Trees are insect pollinated with greater insect activity during the early hours of the morning before sunrise. The indehiscent pods, which ripen in autumn and winter, are favoured by large browsing herbivores, which disperse the seeds.



Grown in Nigeria for fodder (Anthony Simons)



Variation in pod shape and size from range-wide collection in southern Africa (Richard Barnes)



Tree: Heavily browsed population near Toteng, Botswana. (Chris Fagg)

ECOLOGY

A. erioloba is frost and drought resistant. It is the dominant tree on the desert plains, sometimes occurring in beds or on the banks of rivers. Trees occurring outside this favoured habitat are usually stunted. Young plants require large amounts of light.

BIOPHYSICAL LIMITS

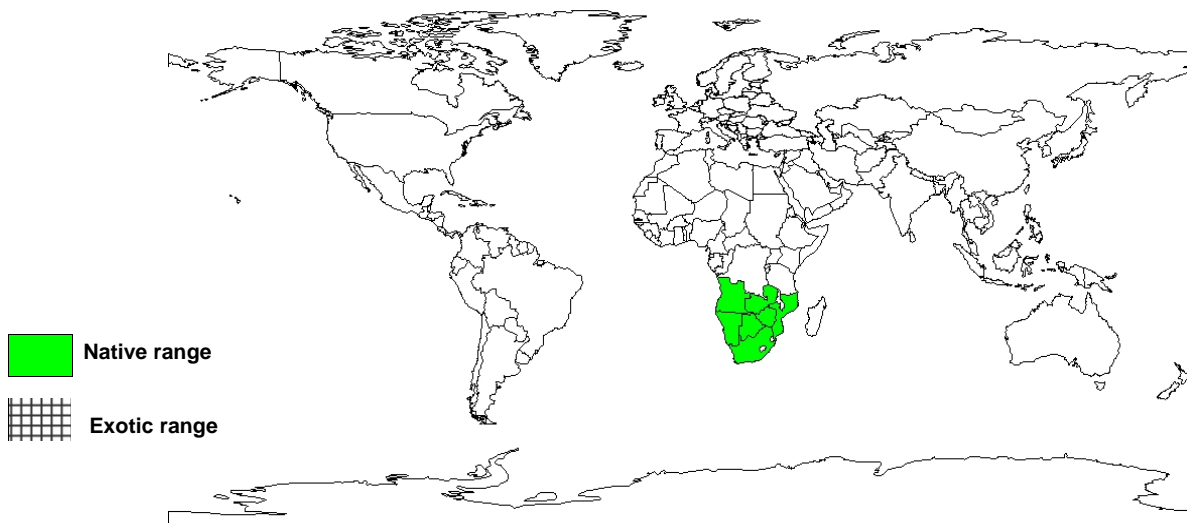
Altitude: 200-1 200 m, Mean annual temperature: 12-29 deg. C, Mean annual rainfall: 250-1 000 mm.

Soil type: A. erioloba prefers well-drained sandy soils of acidic reaction.

DOCUMENTED SPECIES DISTRIBUTION

Native: Angola, Botswana, Mozambique, Namibia, South Africa, Zambia, Zimbabwe

Exotic:



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: *A. erioloba* produces a good quality, edible gum. Seeds have been used as a substitute for coffee.

Fodder: Leaves and pods are eaten by livestock and are a valuable source of fodder in the dry season. Pods are highly nutritious, their feeding value matching that of legume hay; a noticeable increase in the milk yield of cows that have eaten them has been reported.

Apiculture: Flowers are a source of nectar for honeybees.

Fuel: *A. erioloba* is a source of firewood for much of the Kalahari region in southern Africa.

Timber: The wood is hard, durable and resistant to borers and termites. The heartwood is dark purple and has been used for poles, especially for the center posts for houses, mine props, wagon building, utensils and even machinery (but the machinery must be kept well oiled). Roots are used as a substitute for reeds to make flutes.

Poison: The prussic acid that is sometimes present in the pods and foliage may poison animals.

Medicine: Gum from the tree is used as a cure for gonorrhoea. Bark is burned, crushed and used for relieving headache. Pods are ground into a powder to treat ear infections. Roots are used as a cough remedy.

Other products: The Bushmen of Botswana use the skin of the root to make quivers for their poisoned arrows.

SERVICES

Erosion control: *A. erioloba* has been planted to help in sand dune stabilization, thus is useful in combating soil erosion.

Shade or shelter: Mature trees provide shade in desert areas and the wood is used for construction of enclosures in southern Africa.

Ornamental: The beautiful tree is suitable for planting in amenity areas.

TREE MANAGEMENT

A. erioloba, which bears valuable pod crops, can be grown on perennial grassland at a rate of 5-10 trees/ha without damage to the grass yield. It is advisable that the tree be grown in the habitat to which it is naturally adapted. The number of pods/tree is 25-1 200, and each pod weighs 7.4-30.2 g. The total weight of pods produced is about 600 kg/ha, with an annual yield of pods from a natural stand of mature trees being conservatively estimated at 1-2 t/ha. Cattle pass large quantities of seeds (about 50 seeds/dropping) in their dung. This facilitates bush encroachment by *A. erioloba* and other acacias with indehiscent pods. It is therefore included among 1652 taxa shown to be weedy in certain situations in southern Africa. It competes with other plants for space, light and nutriment. This species is valued throughout its range for its products and services and is rarely the subject of eradication measures. Two chemicals that are selective of woody species, tebuthiuron and ethidimuron, successfully control the species should it become a problem. Fire causes young *A. erioloba* trees to coppice and well-established, scrubby trees may thicken up.

GERMPLASM MANAGEMENT

Seed storage behaviour is orthodox; seeds retain their viability for many years even at room temperature. Bruchid larvae within the seed continue to be active after the seed has been extracted and stored. The adults or larvae of some species emerge and may even re-enter the exit holes to lay eggs or to produce a 2nd generation of larvae that feed on the seed. Storage at temperatures near freezing point reduces bruchid beetle activity, and subzero temperatures of -20-30 deg. C may kill the larvae without damaging the seed. On average there are 22 000 seeds/kg.

PESTS AND DISEASES

Trees have died after being ring barked by elephants. Branches of trees often break under the heavy weight of nests of communal weaverbirds. The tree is virtually free from defoliating insects throughout its range. Pods and seeds are susceptible to insect attack, the most important insect pests are the larvae of bruchid beetles, which infest the seeds. This may be due to the cultivation of crops around the trees. *A. erioloba* is resistant to termite attack. Recently the activities of an unidentified bark beetle have been associated with dead branches. Periodically, patchy die-back, mainly in the crowns of mature trees, has been noticed in Zimbabwe.

FURTHER READNG

Barnes RD et. al. 1997. *Acacia erioloba* monograph and annotated bibliography. Tropical Forestry Papers No. Oxford Forestry Institute. Oxford University Press.

Coates-Palgrave K. 1988. *Trees of southern Africa*. C.S. Struik Publishers Cape Town.

Erkkila A, Harri S. 1992. *Silva Carelica Forestry in Namibia 1850-1990*. University of Joensuu.

Palmer E, Pitman N. 1972. *Trees of Southern Africa Vol. 2*. A.A. Balkema Cape Town.

Storrs AEG. 1995. *Know your trees: some common trees found in Zambia*. Regional Soil Conservation Unit (RSCU).

Tietema T, Merkesdal E and Schroten J. 1992. *Seed germination of indigenous trees in Botswana*. Acts Press.

Timberlake J, Fagg C and Barnes R. 1999. *Field guide to the Acacias of Zimbabwe*. CBC Publishings, Zimbabwe.

Timberlake J. 1980. *Handbook of Botswana Acacias*. Ministry of Agriculture, Botswana.

Venter F, Venter J-A. 1996. *Making the most of Indigenous trees*. Briza Publications.

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>)