



ROOIKRANS

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Of all the introduced Australian *Acacia* species in South Africa, rooikrans (*Acacia cyclops* A. Cunn. ex G. Don.; family Fabaceae) is the most widely distributed and has already proved its ability to invade, overshadow and destroy indigenous vegetation.

In Afrikaans Rooikrans is also known as "hoenderboom", "wildebos", "baaibos" and sometimes erroneously as "stinkboontjie". The colloquial Afrikaans name rooikrans is regularly used by English-speaking people, but it is also sometimes called "red eye" or "red wreath acacia".

MORPHOLOGY

Rooikrans is a thornless, evergreen shrub or tree with a dense, untidy appearance with a lot of dead wood and old pods. Along the coast it usually grows in the form of a low shrub, reaching a height of 1,5 m. In the interior it assumes a tree shape with an average height of 3 m, although it can reach a height of 8 m. The young branches are slightly angular and smooth.

The plant does not have true leaves, but



FIG. 1 - When the pods are mature, they curl and rupture along both seams to expose the seeds with their conspicuous orange or bright red seed stalks

flattened petioles (phyllodes) which assume the shape of leaves. The first true leaves of a plant are sometimes pinniform, similar to those of our indigenous *Acacia* species, but these are soon replaced by phyllodes. These phyllodes are 3 to 9 cm long and up to 1,5 cm wide, oblong and straight and grow in a hanging position. The young phyllodes are shiny but later lose their lustre. The phyllodes are characterised by three to five prominent, parallel midribs which are connected by near-parallel lateral nerves. A minute nectar gland, just visible with the naked eye, occurs near the base of each phyllode.

In contrast with other *Acacia* species which provide a spectacular show at flowering time, rooikrans does not produce all its flowers simultaneously. The globose, bright-yellow inflorescences, 7 to 8 mm in diameter, are borne singly or in pairs in the axils of the upper phyllodes, mainly from October to February, but also sporadically throughout the year.

The pods are oblong, compressed, undulate or twisted, not constricted between the seeds. They are up to 15 cm long and 1,3 cm broad. The pods are attached to the peduncle in groups of two to seven. When the pods are mature, they curl, rupture along both seams to expose the seeds, and remain attached to the plant throughout the year.

The seeds are dark-brown to black, oval and compressed. They are partially encircled by a conspicuous fleshy, orange or bright red seed stalk which is typically arranged in a double semi-circular layer around the seeds. The fresh seeds have an unpleasant smell - very similar to leeks. Birds enjoy eating the succulent seed stalks and thus help to spread the seeds.

Rooikrans can easily be confused with blackwood (*A. melanoxylon* R. Br.), especially because of their similar succulent seed stalks. That of blackwood is, however, dull red and not bright-red or orange like that of rooikrans. Blackwood also has many more pinniform leaves on the coppice-shoots, the phyllodes are sickle-shaped and darker green, and a conspicuous reticulate-veined pattern occurs between the parallel midribs. The blackwood tree also grows much taller than rooikrans, namely 10 to 35 m, and the inflorescences are creamy-yellow or dull yellow.

DISTRIBUTION

Rooikrans is indigenous to the winter rainfall areas of Western Australia, into the western parts of Southern Australia, where an annual rainfall of at least 254 mm is recorded. It grows mainly in the coastal areas, sometimes less than 50 m from the high-water mark. The plants are usually sparsely distributed, rarely forming dense stands in Australia.

Rooikrans was first mentioned in South Africa in 1857 when it was planted on the Cape Flats

together with other trees, to prevent loose sand from covering the road between Cape Town and Bellville. The seed was later spread to many other sites along the Cape coast for drift-sand control - from Port Nolloth to Port Elizabeth. Once it was established, rooikrans rapidly invaded the natural vegetation. It now occurs in profusion in the Cape coastal area from Komaggas, just south of Port Nolloth, to Transkei, and is even found at Lüderitz in SWA.

On the Cape Flats, however, rooikrans is gradually being replaced by Port Jackson willow because the former is more often used as firewood and does not grow as fast as Port Jackson willow, nor does it sprout as readily after being chopped down.

Rooikrans is well established in the mountain fynbos and lowland fynbos. It now also occurs in open patches in the Southern and Eastern Cape forests and is encroaching the succulent Karoo. It is also expected to invade river banks and other damp areas in the Karoo.

However, it is unlikely that it will be able to compete with the indigenous vegetation of the subtropical regions of the dry Cape interior, or that it will be able to survive the cold on the high mountain ranges. It usually grows only in winter rainfall areas or regions where rain occurs throughout the year, and which are situated below 300 m above sea level.

Rooikrans is resistant to drought, wind and frost, but prefers a rainfall between 200 and 800 mm per annum. It grows on both acid and calcareous sand. It is a tree which needs light and it cannot survive in deep shade.

Rooikrans usually makes its first appearance in disturbed areas, especially along rivers, roads, on fallow lands, and also after veld fires, when it could rapidly supplant the established vegetation.

GROWTH AND PROPAGATION

Rooikrans annually produces large quantities of seed with succulent, red seed stalks which are readily eaten by small rodents, baboons, pheasants, guinea-fowl, water-fowl, bulbuls and various types of doves and starlings. These animals, as well as man and his implements, help to disperse the seeds over vast distances.

The seeds with their hard testa remain viable for long periods in the soil, but after a veld fire, when the testa has become permeable, rooikrans seeds germinate very rapidly. *Acacia* species also secrete certain substances which suppress the germination and growth of indigenous plant species, giving the former the opportunity to form dense infestations.

Other factors which contribute to the successful establishment of rooikrans in the Cape are the fact that the poor sandy soil of the Cape can be enriched

by rooikrans since it fixes nitrogen in the soil and accumulates organic material in the soil.

Moreover, in South Africa rooikrans has fewer natural enemies than in its original habitat; this allows it to grow and propagate rapidly here. Vegetative growth occurs mainly in spring and during the first 2 years the tree grows from 1 to 2 m. In contrast with Port Jackson, rooikrans will rarely coppice again after it has been burnt or chopped down.

DANGERS

Once rooikrans has become established over a wide area, it is extremely difficult to eradicate or to replace with other vegetation. In the lowland fynbos, rooikrans forms dense, impenetrable thickets with intertwined crowns which supplant all natural vegetation.

In the sandy north-western areas it becomes an umbrella-shaped tree as animals remove the lower branches. Apart from the fact that very few plants can survive under rooikrans trees, the few plants that *do* grow there are trampled by animals seeking shade. This causes the formation of sand dunes.

In many areas dense stands of rooikrans along the roads obscure the scenery. The monotonous expanse of untidy trees is also less attractive to the tourist than the natural indigenous vegetation.

It has also been established that an increase in Australian acacias often goes hand in hand with an increase in rodents which ingest the seeds, and it can be expected that baboon numbers will also increase.

USEFUL CHARACTERISTICS

In Australia rooikrans wood is used for making spears, boomerangs, boats, railway sleepers, handles, wheels, yokes, gates, furniture and tobacco pipes. In South Africa it is a popular source of firewood and

stockfeed.

Game and goats eat the phyllodes, and the ground pods can be fed to cattle. However, when the whole pods are used as stockfeed, the danger exists that the seeds can be spread to adjoining veld.

Rooikrans is also used to fix sand, as a windbreak, as timber and as corner posts for fences.

It enriches the soil through nitrogen fixation and by adding organic substances, and for this reason it is also used for making compost, although the heat generated during the rotting process could cause the seeds to germinate.

LEGISLATION

Under the Conservation of Agricultural Resources Act of 1983 (Act 43 of 1983), rooikrans is proclaimed an invader plant. In terms of this regulation this plant must be effectively controlled if it grows on any farm unit in the Republic to the detriment of the production potential of the natural agricultural resources.

CONTROL

Young plants can be uprooted by hand, and the stems of medium-sized trees can be ring-barked as low as possible. Old trees are chopped down as low as possible, the bark is stripped to the ground, and the dead wood is piled over the stump so that rodents can eat the seeds. When the branches are dry, they are burnt to destroy the seeds in the ground. The fire must, however, be very slow and hot to ensure that the seeds are completely destroyed.

It is unnecessary to treat the stems with chemicals since the tree will not coppice after a good burning or effective chopping down. Follow-up work to remove young seedlings will be necessary after this treatment.