

Faidherbia albida (Delile) A.Chev.

Family : Fabaceae (pod-bearing family)

Common names : Ana tree (Eng.); Anaboom (Afr.); Mogabo (Sepedi); Mokosho (Setswana); umHlalankwazi (IsiZulu); Muhoto (Venda)

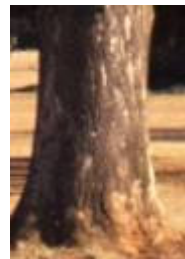
National tree list no. : 159



This relatively drought-resistant tree makes an interesting specimen if planted in a park. It can survive occasional frost (up to 5 days per year).

Description

Faidherbia albida is one of the fastest growing indigenous trees. It is deciduous and can grow up to 30 m tall. It has branching stems and an erect to roundish crown. Greenish grey to whitish grey colour and smoothness is evident on the young stems, but grey and smooth to rough on older branches and stems. The straight, whitish thorns, which are in pairs, are up to 40 mm long.



Pale grey-green leaves which are twice-compound, have a conspicuous gland at the base of each pair of pinnae (leaflets).

Scented, pale cream-coloured flowers form an elongated spike up to 35-160 x 20 mm. The flowers show from March to September, followed by fruit from September to December. The fruit is orange to red-brown in colour, non-splitting and curved to twisted pod. The size of the pods fruit ranges from 100-350 x 20-50 mm. The seeds are mostly eaten by Brown Playboy butterfly larvae.



Status

The Ana tree is one of the protected trees in South Africa .

Distribution and habitat

This tree's distribution is from Israel in the north to Kwazulu-Natal in the south. It grows in waterlogged soils along rivers, swamps, floodplains and dry river courses.

Derivation of name and historical aspect

Albida means somewhat white, and refers to the whitish stem of the Ana tree.

Ecology

It is a valuable fodder tree for game and domestic animals. It is mostly browsed by, elephants, giraffe, kudu, nyala, and impala. This plant loses its leaves in summer, thus providing fodder during the winter. The leaves are nutritious; the seeds have high protein content, and the pods are high in starch.

Uses and cultural aspects

In the landscape, it can make an interesting specimen when planted in a park or a big garden. The Ana tree has an extensive root system and can be planted close together in rows in a contour to stabilize eroded soils.

It can be planted in groups of ten to twelve scattered in the veld to provide fodder.

The seeds can be boiled and eaten, but first the skin has to be removed. Also the pods may be dried and ground into flour, which is edible. Again, the pods are said to have been used as fish poison. In Namibia , strips of bark are used as dental floss.



The Ana tree can also be used medicinally. A decoction of the bark is used to treat diarrhoea, bleeding and inflamed eyes. It can be used as an emetic as well.

Growing *Faidherbia albida*

Faidherbia is one of the acacias. Its seeds need to be treated with boiling water before sowing. The seeds can be immersed in hot water overnight. Select swollen seeds, they are the ones that are viable (are able to germinate) and sow them in river sand. Seeds must not be buried deep, but must be covered with a layer of sand the same size as the seeds.

The seeds usually germinate after two to five days. The seedling develops a long taproot and must be transplanted directly into the garden. The correct time to transplant the seedlings is when they have reached a height of 50 mm. Caution must be taken to protect young plants from frost.

Young trees are mostly attacked by white Australian bug. They can be treated with systemic (absorbed by the plant system) insecticides.

References and further reading

- Coates Palgrave, M. 2002. *Keith Coates Palgrave Trees of southern Africa* , edn 3. Struik, Cape Town.
- Joffe, P. 2001. *Creative gardening with indigenous plants* . Briza Publications, Pretoria.
- Van Wyk, A.E. & Van Wyk,P. 2001. *Field guide to trees of southern Africa* . Struik, Cape Town.
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Faidherbia albida: Direct seeding experiments in an arid environment

[Articles](#)

Written: April 1991

For reference: Eden Foundation, Sweden (1991:1)

Summary:

In 1990, a field experiment was carried out to find out how best to establish a healthy population of *Faidherbia albida* by direct sowing, without the use of plant nurseries, irrigation or inorganic fertilisers. Five different seed treatments including 'No treatment' and two sowing depths were tested. Best results were obtained if the seeds were physically scarified as compared with the hot water treatment and 'No treatment'. 26% (95/360) seeds germinated if nicked and sown at 15mm sowing depth, and about 18% (~66/360) seeds germinated if treated by cutting or abrasion, also at 15mm sowing depth. Poorer results were obtained if seeds were sown at 10mm sowing depth. The total rainfall was 172mm with a one month drought period, one week after sowing. Almost all the seedlings which survived until the end of September still had green leaves at the end of December. Based on the experiences of 1989, many of the seedlings which survived until the end of the year are expected to survive until the next rainy season.

Introduction:

Faidherbia albida (Del.) A.Chev. (syn. *Acacia albida* Del.), is appreciated in many parts of the Sahel for its ability to provide shade in the hot season, good quality fodder, improve soil fertility through litter fall and nitrogen fixation. It is a perennial, and can therefore be a tool for halting the advancing desert, and is reputed to be edible. *Faidherbia albida* has been cited as a source of edible seeds (Booth and Wickens 1988, Kunkel 1984) which can be boiled and then eaten, and pods have been listed as rich in starch (Kunkel 1984). This species can be found around Tanout, both beside river beds and on plateaux, where the average annual rainfall has been 201mm between 1971-1990 and 177mm between 1981- 1990. (Tanout is located 12km north of Eden's field station).

The chief goal of the research presented in this paper was to find out how best to establish a healthy population of *Faidherbia albida* by direct sowing, without the use of plant nurseries, irrigation or inorganic fertilisers.

Materials and methods.

Seeds for the experiment were gathered by Eden in February 1990 from trees around Tanout. Laboratory tests showed 100% viability.

Seeds were scarified using the following techniques, before sowing in the field:

- a. No treatment (Control).
- b. Nicking with nail clippers.
- c. Cutting with a sharp knife.
- d. Abrasion with a grindstone.
- e. 100 C 12 hours - by pouring boiling water over the seeds and then leaving them to soak in the cooling water for 12 hours. (About ten times volume of water:seeds was used).

The seeds were sown at two different sowing depths, 10mm and 15mm. (See Burford Briscoe 1989, and Doran and Gunn 1986, for further information on seed treatments). Seeds were sown on the 1st and 2nd of August 1990 in the middle of the rainy season, and the seedlings were measured six weeks after sowing.

Seeds were sown in plots of 0.5 ha each with 10 seeds per hole. 4 replicated plots of each treatment

seeds were sown in plots of 9 holes each, with 10 seeds per hole. 4 replicated plots of each treatment combination (scarification + sowing depth) were sown. A total of 360 seeds were sown for each treatment combination. The plots were arranged in a completely randomised design among plots of other perennial species undergoing similar tests. Competing plants were removed from around the seedlings at least twice during the rainy season.

The soil in the experimental area was a mixture of two main types, namely a fine red sandy soil with an overlay of coarse pale yellow sand of varying depths.

Results and discussion.

The results are presented in Tables 1A and 1B. They show very significant differences between treatments. Generally, the physical scarification techniques provided the best results compared with 'No treatment' and the hot water treatment. The differences between seed treatments were significant at the 1% level. 15mm sowing depth gave a significantly better result at the 5% level than 10mm sowing depth. One reason for this was that mice and ants mostly tended to disturb and/or eat seeds sown at the more shallow depths.

It was interesting to note that the total rainfall was 172mm for 1990 at the field station, 92mm fell before sowing and 80mm fell after sowing. The rain fell in a few erratically spaced showers after sowing with only 4mm falling during a drought period of one month, a week after sowing. It was therefore quite remarkable that many seedlings survived this drought period, (the seedlings were counted after the September rains). Almost all the seedlings which remained after thinning down to one seedling per hole, which was done after counting in September, still had green leaves at the end of December 1990. According to the experiences of the 1989 season, seedlings which survived until the end of the year remained alive until the following rainy season. (About 200mm rain fell in Tanout in 1989). So we expect many of the *Faidherbia albida* seedlings to survive until the following rainy season.

References.

- Booth F.E.M. and G.E. Wickens (1988) Non-timber uses of selected arid zone trees and shrubs in Africa. FAO Conservation Guide 19. Pub. FAO, Rome, Italy, pp.176.
- Burford Briscoe C. (1989) Field Trials Manual for Multipurpose Tree Species. Manual No.3. Pub. Winrock International Institute for Agricultural Development, Arlington U.S.A., pp.163.
- Doran J.C. and B.V. Gunn (1986) Treatments to Promote Seed Germination in Australian Acacias, pp. 57-63, in Australian Acacias in Developing Countries. Proc. of an International Workshop, Forestry Training Centre, Gympie, , Australia, 4-7 August 1986. Queensland Proceedings No.16, pp. 196.
- Kunkel G. (1984) Plants for Human Consumption, an annotated checklist of the edible phanerogams and ferns. Pub. Koeltz Scientific Books, Koenigstein, Germany, pp. 393.

TABLE 1A: Effect of different treatments on the germination of *Faidherbia albida* when sown at 10mm sowing depth.

TREATMENT	REPLICATIONS				TOTAL NO. SEEDLINGS	% TOTAL SEEDS SOWN
Control	0	0	0	1	1	0.28%
Nicking	2	14	9	18	43	11.24%
Cutting	6	0	0	1	7	1.94%
Abrasion	3	6	8	1	18	5.00%
100 C; 12h	6	0	4	1	5	1.39%

Observed F= 5.19

Desired F at 5% = 2.06 at 10% = 4.80

Required F at 5% = 3.06; at 1% = 4.89

TABLE 1B: Effect of different treatment on the germination of *Faidherbia albida* when sown at 15mm sowing depth.

TREATMENT	REPLICATIONS				TOTAL NO. SEEDLINGS	% TOTAL SEEDS SOWN
Control	1	0	0	4	5	1.39%
Nicking	15	27	21	32	95	26.39%
Cutting	1	3	36	25	65	18.06%
Abrasion	23	23	16	5	67	18.61%
100 C; 12h	0	3	0	1	4	1.11

Observed F = 4.90

Required F at 5% = 3.06; at 1% = 4.89

N.B. Differences between the two sowing depths were significant at the 5% level but not at 1%.

Observed F = 7.27

Required F at 5% = 4.10; at 1% = 7.35.

TABLE 2: Rainfall after sowing date.

DATE	RAINFALL
2nd August	1.0mm
5th August	10.0mm
8th August	47.5mm
18th August	1.0mm
23rd August	3.0mm
10th September	13.2mm
11th September	4.3mm

This article was originally presented at the workshop on Faidherbia albida (Acacia albida) entitled "Faidherbia albida in the West African semi-arid tropics", held in Niamey, Niger, between the 22nd and 26th of April 1991. There were 96 participants at the workshop including 55 Africans and 41 Europeans and Americans. 13 Africans came from Niger, 4 from Mali, 1 from Chad and 13 from Nigeria.


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Faidherbia albida Del. A. Chev.

Leguminosae

Author: [Le Houérou](#)

Synonyms

- *Acacia gyrocarpa* Hochst.
- *Acacia leucocephala* Benth.
- *Acacia saccharata* Benth.
- *Acacia albida* Del.

Faidherbia albida has a particular taxonomic position intermediate between the genus *Acacia* and the genus *Inga*.



Common names

Kad (Senegal), haraz (the Sudan), appling acacia, winter thorn.

Description

One of the largest of the *Acacia* trees in Africa reaching up to 25 m high in height and over 1 m dbh. As the elevation of the site increases its size becomes smaller (Tohill, 1954). Roots can reach aquifers up to 80 m below the surface. Young trees have inverted cone-shaped crown, old trees with a hemispherical large canopy. Young branches and twigs are cream coloured to whitish, stipular spines whitish, straight in axillary pairs, somewhat swollen at the base, up to 5 cm long, with a brown tip. Bark grey, rough, deeply fissurated and scaly with age. Slash pink to light brown and fibrous. Bipinnate leaves blue-green with 3-12 pairs of pinnae carrying, 6-23 pairs of leaflets up to 12 mm long x 5 mm wide, partly overlapping. Contrary to all other native "acacias" *albida* sheds its leaves in the rainy season and keeps them throughout the dry season, which is made possible by the fact that the species behaves as a phreatophyte. Other characteristics are the lack of glands on the petioles, but present between each pair of pinnae. Inflorescence in dense spikes 7-10 cm long x 1.5-2 cm wide, cream colored very fragrant. Pods quite typical bright orange to reddish-brown in colour 10-15cm long x 2-3 cm wide (hence the vernacular name of "apple-ring acacia"), containing 10-20 shining dark-brown seeds with a small characteristic tubercule. It remains leafless during the rains and assumes new foliage and flowers after the commencement of the dry season (Dalzeil, 1955).

Habitat

Commonly distributed on flood plains and banks of large rivers on alluvial soil, where it may occur in pure stands or as a constituent of riparian woodland (Wilson and Bredon, 1963).

Temperature

It is tolerant to frost, unlike many Sahel species.

Water

In Senegal, its distribution strikingly coincides with the isopiezometric line of 80 m of maximum depth of aquifers, which suggests it can reach water down to that depth, but it also occurs in the rice fields of Casamance under 1,500 mm of MAR with hydromorphic gley soils ; it is also present in the "koris" (=dry wadis) of the Air mountains under MAR of 50-100 mm.

Distribution

Throughout tropical Africa, from Egypt, Senegal and the Gambia south to the Transvaal and Natal. Svria. Palestine. India. In Africa. it is widely distributed from the drv vallevs

and many other regions, and it is widely distributed from the dry valleys of the Sahara, the Negev and the Namib, throughout West, East and South Africa, only missing North of the Sahara and in the Congo Basin. It occurs up to elevations of 2,700 m (Jebel Marra).

Propagation

Propagation in the traditional agrosystems was done from naturally grown seedlings in millet fields, selected and nurtured by the farmers until they reach a size above the reach of livestock (0.5-0.8 m per year). Direct seeding of pregerminated seeds was very successful in Senegal (Cazet, 1987, 1988; Cazet & Sadio, 1988) and should be encouraged for its low cost, and therefore sustainability. But direct seeding has also a constraint as it requires a careful weeding in the young stages of establishment, to avoid competition for water.

Products & uses

Land fertility : it has been shown than millet yields under *Faidherbia* are, on average, 2.5 times higher than away from the trees (Charreau & Vidal, 1965 ; Dancette & Poulain, 1969 ; Radwanski & Wickens, 1967), detailed studies of water and nutrient balance and turnover fully explained this effect. The similar system with millet-*Prosopis cineraria* in Rajasthan (India) produced similar results (Mann & Saxena, 1980 ; Mann & Shankaranayan, 1980). The wood, soft and of medium quality is used as timber, handicraft, various tools, fuel and charcoal. Boudet (1970) suggested that it be planted as a windbreak in West Africa and lopped in the dry season for livestock feed. Charreau and Vidal (1965) state that the fertility-building ability of *F. albida* has long been known in Senegal and that populations of the trees are protected and may reach a density of 40 to 50 trees/ha. From mineralization of leaf drop and nodulation there is a marked increase in fertility from the dripping of the tree to the trunk, particularly in nitrogen, phosphorus and exchangeable calcium. Millet (*Pennisetum typhoides*) yields are multiplied 2.5 times and protein content by a factor of 3 or 4 near the trees. Annual accession of fertility per 150 m² has been calculated as 183 kg. CaO, 39 kg. MgO, 19 kg. K₂O, 75 kg. N, 27 kg. P₂O₅ and 20 kg. S. Other uses : the bark contains 20-25 % tannins, wood ashes are used for making soap, seeds are eaten in time of dearth. Medicinal uses are : febrifuge, haemorrhage, cough, pneumonia, kidney disorders, vomiting, diarrhoea, postpartum complications, psychological disorders, ophtalmia, rheumatism, heart tonic. It has played an important rôle in the development of centuries-old agrarian civilizations in large parts of the African continent.

Nutritional Quality and Animal Production

It produces a large number of twisted pods which are relished by camels, cattle and game animals. The pods are indehiscent, and Lamprey (1967) believes that passage through the animal is necessary to stimulate germination. Forage production is ca 20-30 kg per tree per annum either from lopped foliage or from pods, (it must be the one or the other, one cannot get both on the same tree), which for a density of 25 trees per hectare corresponds with 500-750 kg DM ha yr⁻¹, i.e. the full ration of 1 to 1.5 sheep per hectare per annum, i.e. 40 to 60 kg lwt/ha/yr (whilst the optimum stocking rate in the Sahel rangelands is ca 25 kg lwt/ha/yr), at the same time the system allows for an additional production of 1,220 to 1,500 kg of millet grain, and 2,500 -3,000 of stalks.

Links:

- [Crop index of the Purdue University](#): Information about distribution, ecology, use, yields etc.
- [Agroforestry in Africa](#): Information and drawings
- [Dryzone forestry](#): Botany, distribution, ecology and use of *F. albida*; with drawings of pods and branch
- [Conservation and utilisation of Faidherbia albida Del A. Chev. \(syn. Acacia albida\) gene resources](#): : Article abstract
- [Revegetating arid lands](#): General information about direct seeding as a solution
- [Agroforestry in the Sahelian and Sudanian zones of West Africa](#): [English](#); [French](#)

Links for the genus:

- [The WattleWeb](#): Acacias from A-Z
- [Seed treatment and inoculation](#): Instructions for acacias and other NFT (Nitrogen Fixing Trees)
- [Sustainable livestock production](#): Indigenous knowledge in utilization of local trees and shrubs in central Tanzania
- [Purdue University](#)

References

[Aubréville 1950](#) ; [Brenan 1957a](#) ; [Brenan 1959](#) ; [Catinot 1967](#) ; [Berhaut 1975](#) ; [Giffard 1964](#) ; [Giffard 1971](#) ; [Giffard 1974a](#) ; [Giffard 1974b](#) ; [Charreeau & Vidal 1965](#) ; [Dancette & Poulain 1968](#) ; [Wickens 1969](#) ; [Weber et al. 1977](#) ; [Felker 1979](#) ; [Von Maydell 1983/86](#) ; [Baumer 1983](#) ; [Le Houérou 1980a](#) ; [Le Houérou 1980c](#) ; [Geerling 1982/88](#) ; [CTFT 1988](#) ; [CTFT 1996](#) ; [Fagg 1992](#) ; [Vandenbelt 1992](#) ; [Burkill 1995](#) ; [Wickens et al. 1995](#) ; [Dommergues & al. 1999](#).