

Acacia albida Del.

Mimosaceae

Apple-Ring Acacia, Ana Tree, Winter Thorn

Uses

Acacia albida is a widely used tree well documented for increasing the yields of crops grown under it. According to VITA (1977) "*A. albida* is highly valued in conservation efforts. It is the only species which loses its leaves during the rainy season; therefore, farming under these trees is not only possible but profitable." It is held sacred by the Africans of the Transvaal. In Nigeria, the pod is used as camel food. The gum that exudes spontaneously from the trunk is sometimes collected like gum arabic. The timber, though straight grained, close, and weighty, is soft, fibrous, and unsuitable for agricultural implements (Watt & Breyer-Brandwijk, 1962). One writer even questions its value for fuel wood. Masai use it as the soft flat wood upon which the firestick is twirled to make fire. Wood is used for canoes, mortars, and pestles. The bark is pounded in Nigeria and used as a packing material on pack animals. Ashes of the wood are used in making soap and as a depilatory and tanning agent for hides. VITA (1977) says the wood is used for carving; the thorny branches useful for a natural barbed fence. Pods and foliage are highly regarded as livestock fodder. Some 90% of Senegalese farmers interviewed by Felker (1981) collected, stored, and rationed *Acacia alba* pods to livestock. Rhodesians use the pods to stupefy fish. Humans eat the boiled seeds in times of scarcity in Rhodesia. Apparently it is erroneously taken as an indicator of a shallow well site.

Folk Medicine

Reported to serve as an emetic in fevers (Masai), taken for diarrhea in Tanganyika. Also used for colds, diarrhea, hemorrhage, and ophthalmia in West Africa. The bark of the Ana tree is a folk remedy for diarrhea among several tribes. On the Ivory Coast it is used for leprosy. The bark decoction curtails nausea. A liniment, made by steeping the bark, is used for bathing and massage in pneumonia. The bark infusion is used for difficult delivery, and is used as a febrifuge for cough (Irvine, 1961). Pods worn as charm by African women and children to avert smallpox.

Chemistry

The following table is reproduced, with permission from FAO's Tropical Feeds (1981):

Nutritive Table (Gohl, 1981)

	DM	As % of dry matter						
		CP	CF	Ash	EE	NFE	Ca	P
Fresh flowers, Sudan	17.8	19.0	12.5	9.7	1.6	57.2		
Fresh whole leaves, Niger		19.7	19.6	7.2	1.6	51.9	1.00	0.23
Fresh leaflets, Sudan	36.3	17.1	12.4	8.4	2.3	59.8		
Pods, Tanzania		8.8	24.4	3.7	1.4	61.7	0.65	0.23
Pods, Niger		14.3	24.7	6.3	1.5	53.2	1.11	0.14

	Pod digestibility				
	CP	CF	EE	NFE	ME
Cattle	51.0	16.5	71.4	74.8	2.09

Bark contains 2–28% tannin, the fruit 5–13%.

Description

A large thorny tree up to 20 m high and >2 m in diameter; bole forming up to 1/3 of height of tree; bark dull grey, fissured when old, crown dense; tree puts out leaves during dry season and sheds them during rains; branchlets light grey, spiny only at nodes, spines straight, up to 1 in. long; leaves pale and glaucous, bluish grey, glabrous or pubescent, 2-pinnate, 9 to numerous pairs of pinnae, cup-like glands on rachis, each pinna with 12 or more pairs of leaflets, leaflets oblong, up to 1 cm long, hairy, unequal at base;

flowers (Jan., Apr., Nov.) in yellow spikes 10–12.5 cm long; fruits (Jan., May, Nov.) bright yellowish green when dry, up to 12–15 x 4 cm, slightly curved, ends rounded (Irvine, 1961).

Germplasm

Reported from the African Center of Diversity, the Ana Tree, or cvs thereof, is reported to tolerate poor soil, drought, savanna, and some waterlogging (VITA, 1977). Back in 1978, when Senegalese farmers wanted seedlings, none were available. There is great variability in the morphology and pod yields. Selection of wild plants for pod yield and/or fast growth would be a worthwhile contribution to arid developing countries. ($2n = 26$)

Distribution

Native to the Transvaal and Southwest Africa, through West and North Africa to Egypt, East Africa.

Ecology

Probably ranging from Tropical Thorn to Subtropical Moist Forest Life Zones, the Ana Tree is reported to tolerate annual precipitation of 3 to 6dm. Irvine (1961) describes it as the largest thorn tree in Savanna Forest, especially in inhabited areas; often left untouched, sometimes gregarious. In more mesic Sahelian regions (400–600 mm/yr), yields of millet, peanuts, and sorghum are increased from ca 500 to ca 900 kg/ha/yr by growing under the canopy of *Acacia albida* (Felker, 1978). Does best in sandy soils, growing well where millet grows. Though faring best on sandy soils, it will tolerate heavier soils with some waterlogging.

Cultivation

As late as 1978, techniques for establishing new seedlings had not been worked out, according to Felker (1978). Seeds devoid of bruchid holes should be scarified and started in deep containers to accommodate development of the tap root. Good-sized plants develop in 10–14 weeks, but frequent root pruning is advised. Transplants from the wild are usually unsuccessful because of the long tap root. VITA (1977) has a novel approach, feeding the seed to livestock, which then graze the desired areas, eliminating seeds with their manure. Nursery plantings, spaced at 10 x 10 m may require watering at first, and protection from grazing animals for 5–8 years.

Harvesting

Peasants gather pods to feed to their cattle, or lop the foliage in the dry season, when most other trees are leafless.

Yields and Economics

According to FAO (1980) a full grown tree can produce more than 100 kg pod/yr. Felker (1978) notes that pod yields range from 6–135 kg/tree. Some scientists believe that yields could be managed to a much higher level than those of the grasses and annual crops grown under the tree. Trees have reached 2 to 4 m after only 3 or 4 years growth.

Energy

Related species such as *Acacia tortilis* have been reported to yield giraffe forage to the tune of 5 MT/ha/yr. Yield increases under *Acacia albida* correlate with a several fold increase in soil N and organic matter, coupled with improved soil water-holding capacity. *Acacia albida* has been shown to nodulate and reduce acetylene. While Acacias cannot be recommended for cold and/or humid or everwet climates, they are suggested by the NAS (1980a) as firewood sources in developing countries. Among the species they consider are *Acacia arabica*, *auriculiformis*, *brachystachya*, *cambagei*, *cyanophylla*, *cyclops*, *dealbata*, *decurrens*, *ehrenbergiana*, *fistula*, *heteracantha*, *holosericea*, *lysiophloia*, *mangium*, *mearnsii*, *mollissima*, *nilotica*, *nubica*, *raddiana*, *saligna*, *senegal*, *seyal*, *spirocarpa*, *tortilis*, and *verek*. The Ana Tree was not recommended for firewood.

Biotic Factors

Caterpillars, locusts, and grazing animals may destroy the seedlings.

References

FAO Handbooks in Press (FAO, 1982)

1. Taxonomy of *Acacia* spp.
2. Seed Collection, Handling, Storage and Treatment of *Acacia* spp.
3. Seed Insects in *Acacia* spp.

FAO. 1980a. 1979. Production yearbook. vol. 33. FAO, Rome.

Felker, P. 1981. Uses of tree legumes in semiarid regions. *Econ. Bot.* 35(2):174–186.

Felker, P. 1978. State of the art: *Acacia albida* as a complementary intercrop with annual crops. USAID Information Services. Washington.

Gohl, B. 1981. Tropical feeds. Feed information summaries and nutritive values. FAO Animal Production and Health Series 12. FAO, Rome.

Irvine, F.R. 1961. Woody plants of Ghana. Oxford University Press. London.

N.A.S. 1980a. Firewood crops. Shrub and tree species for energy production. National Academy of Sciences, Washington, DC.

VITA. 1977. Reforestation in arid lands. VITA Publications. Manual Series 37E.

Watt, J.M. and Breyer-Brandwijk, M.G. 1962. The medicinal and poisonous plants of southern and eastern Africa. 2nd ed. E.&S. Livingstone, Ltd., Edinburgh and London.