



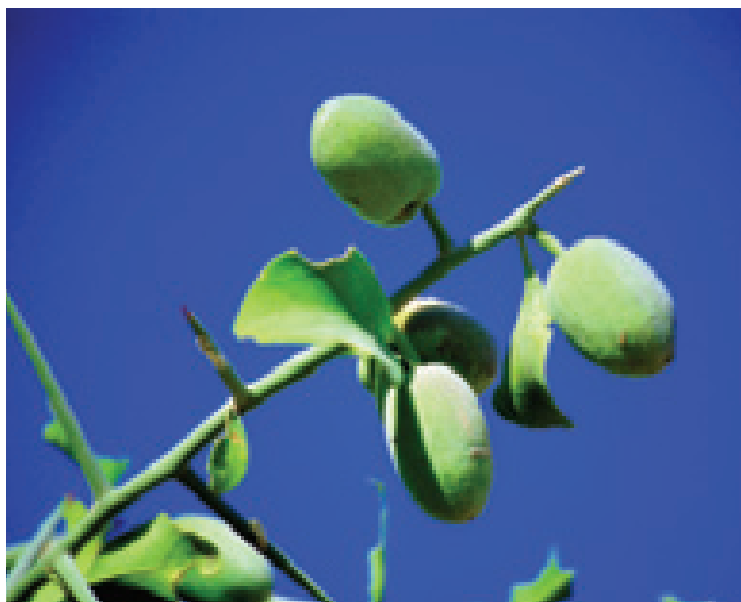
BALANITES AEGYPTIACA

Balanites is widespread in the Lake Chad Basin. It is a deep-rooted tree that can live for more than 100 years. Found on varied soils, it prefers valley soils but will grow in sand, sandy loams, clays, cracking clay and alluvial soils. Ecologically, it is very flexible, with excellent persistence. It withstands occasional flooding, can adapt to a wide range of situations and climatic conditions, has good drought tolerance and is not damaged by grass fires (except young trees) because of its deep taproot and thick bark. It invades areas that have periodic fires and areas with heavy livestock activity. Young plants are fairly termite-resistant.

B. aegyptiaca grows slowly and requires protection as a seedling. It attracts numerous insects but is very resilient. It is no longer much used in the rehabilitation of degraded areas and in desertification control projects because of its slow growth, but its planting should be encouraged because the tree is highly adapted to the ecosystem and has multiple uses.

Fruits appear in August and September and up to 125 kg of ripe fruit can be harvested. Fruits are called wild dates. The fruit pulp, although bitter, is edible. The tree produces fruit even in dry years, which makes it a highly appreciated food source. Pounded fruits make a refreshing drink, which becomes alcoholic if left to ferment. The fruit has been used in the treatment of liver and spleen diseases. It is also known to kill the snails that carry schistosomiasis and bilharzia flukes. The kernels are a source of cooking oil, soap and medicines (see Table 11).

The wood is used in the manufacture of tools, furniture, small dams and boats. Since it is durable and resistant to insects,



NEAR BOL, CHAD

THE FRUIT OF *BALANITES* IS EDIBLE

it is ideal for tool handles and domestic items, such as spoons. It is also valued as firewood, because it produces almost no smoke and has a calorific value of 19.2 MJ per kg. Rooted cuttings readily form a living fence. Protein-rich leaves and shoots are an excellent source of fodder for livestock. The leaves make very good mulch and the tree is nitrogen-fixing ^{(5.26), (5.27), (5.28)}. Young branches are sometimes used to prepare a sauce.

Fishing with poison made from the bark of *B. aegyptiaca* is a widespread practice in the Lake Chad Basin, although clearly it can only be used in certain locations, i.e. not in the lake itself, nor in the rivers. This technique is mainly used in the wadis or pools, where water levels fall as the dry season approaches. Women pulverize the bark and add water to make a paste, which is then placed in the pools. After four to six hours, the fish float to the surface where they can be gathered easily.

The poison does not affect species of *Silurides* or *Dipneustes*, but all other species trapped in these pools are susceptible and can be fished using this method. The poison apparently causes no ill effects to the people who eat the fish.

TABLE 11 KERNELS OF *BALANITES AEGYPTIACA*

COMPOSITION	
Cellulose	4.56%
Lipids	41.20%
Carbohydrates	20.76%
Proteins	26.86%
Ash	3.02%
Water	3.60%

Source: P. Créac'h, 1993 ^(4.3)

<< LEFT: *BALANITES* IS SELDOM PLANTED FOR REHABILITATION OF DEGRADED AREAS BECAUSE OF ITS SLOW GROWTH, BUT ITS PLANTING SHOULD BE ENCOURAGED BECAUSE IT IS HIGHLY ADAPTED TO THE ECOSYSTEM

FAIDHERBIA ALBIDA

Faidherbia albida is a monotypic genus and is normally a deciduous tree, reaching 15–25 m in height, with a trunk of 1 m in diameter. It flowers at the beginning of the dry season, just after coming into leaf. It remains in leaf throughout the dry season and loses its leaves in the rainy season, providing shade when it is hot and allowing crops to be grown in its vicinity during the rains.

It grows in the Sudanian-Saharan savannahs, from Senegal to East Africa, where its leaves and fruit are used by pastoralists as fodder for cattle and small ruminants in the dry season. In Nigeria the pods are appreciated by camels. It does best in sandy soils, flourishing in the same areas as millet.

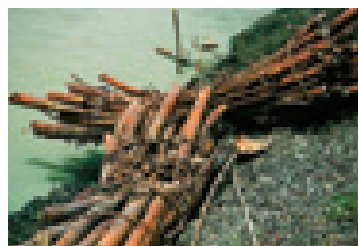


FAIDHERBIA ALBIDA (PLATE 29)

F. albida is widely used and is well documented for increasing the yields of crops grown beneath it. The gum that spontaneously exudes from the trunk is sometimes collected like gum arabic, but it does not have the same properties. The timber, although straight-grained, dense and weighty, is soft and fibrous. It is used for building animal enclosures, huts and dug-out canoes, as well as for making many household objects and tools. In Nigeria, the bark is pounded and used as a packing material for goods carried on pack animals. The wood ash is used in soap-making and as a tanning agent for hides.

The tree is also highly valued in terms of conservation. It is the only species to lose its leaves during the rainy season, so farming under these trees is not only possible but also profitable. According to FAO ^[5.29], a full-grown tree can produce more than 100 kg of pods each year. Some scientists believe that, with proper management, yields could be increased to a much higher level than those of the grasses and annual crops grown beneath the tree. (Trees reach 2–4 m after only three or four years growth.)

This species of acacia also has a use in traditional medicinal. The root is used to treat nausea, pneumonia, coughing and diarrhoea, while the bark is effective as a disinfectant and for reducing fevers. The gum is used for treating inflammations and eye infections ^[5.30].



NEAR KALAMALOUÉ, CAMEROON



FLOATING ISLAND NEAR BOL, CHAD

AESCHYNOMENE ELAPHROXYLON

This soft-stemmed shrub with large orange-yellow flowers is found on the banks of rivers and lakes in Africa. From 2.5 to 8 m tall, it grows extremely quickly and can form very dense mats, where wildlife proliferates but fishing becomes very difficult. Seeds are transported by wind and water. The wood is lighter than cork and very resistant. It is used locally to make boats and rafts ^[1.4].



AESCHYNOMENE ELAPHROXYLON (PLATE 30)



BLANDOUA MARKET (KOUSSERI), CAMEROON

FRUITS OF *ZIZIPHUS* ARE RICH IN CAROTENE, VITAMINS A AND C, AND FATTY OILS

ZIZIPHUS MAURITIANA

This is a spiny, evergreen shrub or small tree of the Rhamnaceae family, up to 15 m high, with a trunk 40 cm or more in diameter; leaves are variable and alternate, in two rows. The fruit is a drupe, globose to ovoid in shape, and up to 64 cm when cultivated, usually much smaller in the wild. It is known for its ability to withstand difficult conditions, such as soil salinity, drought and waterlogging. *Z. mauritiana* is a fast-growing species. Fruiting starts after three to five years.

The fruit is eaten fresh or dried and can be made into a floury meal, butter, or a cheese-like paste that is used as a

condiment. It is also used for sweet-making and pickling and is a good source of carotene, vitamins A and C, and fatty oils. A refreshing drink is prepared by macerating the fruit in water.

Z. mauritiana produces excellent firewood (the sapwood yields 20.5 MJ per kg) and good charcoal. Its drooping branches are easily accessible for harvesting. It yields a medium- to heavy-weight hardwood with a density of 535–1 080 kg per m³. The wood is used for general construction, cabinet work, and the manufacture of furniture, tool handles and agricultural implements. This species is ideally suited to stabilizing coastal sand dunes and controlling soil erosion [5.31], [5.32].



ZIZIPHUS MAURITIANA [PLATE 31]



THE DUM PALM GROWS NATURALLY, BUT IT IS ALSO PLANTED AND CULTIVATED TO PROVIDE FOOD AND SERVICES

>> RIGHT: THE TRUNK AND LEAVES OF THE DUM PALM PROVIDE MATERIALS FOR MAKING ROPE, TWINE, WEAVING AND CONSTRUCTION

DUM PALM **(*HYPHAENE THEBAICA*)**

The dum palm, or gingerbread palm, is a deciduous, usually branched palm with two, four, eight or 16 heads of fan-shaped leaves. It occurs as dense, fire-resistant forests on coastal arid regions from East Africa to the continent of India. It is found in all the floodplains around Lake Chad and on the banks of the rivers that flow into the lake. It is propagated from seeds, and takes

a long time to become established, but it can also be propagated from the suckers that originate from its base.

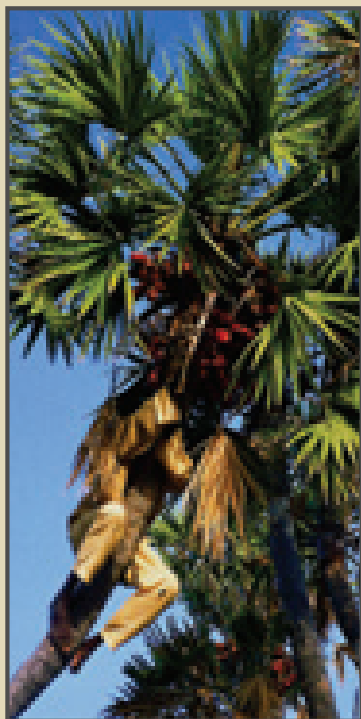
To the peoples of the deserts, where dum palms are found, this tree is a life sustainer. The trunk and leaves are used in much the same way as those of other palms: for making rope, twine, weaving and construction. The young leaves, before they unfold, are also used for weaving versatile mats. The sap obtained from

tapping the apex of the palm is used for the usual wide range of purposes. The fruit pulp has a smell of gingerbread, hence the name “gingerbread palm”. It is used in cooking in various ways, and varieties differ in their edibility.

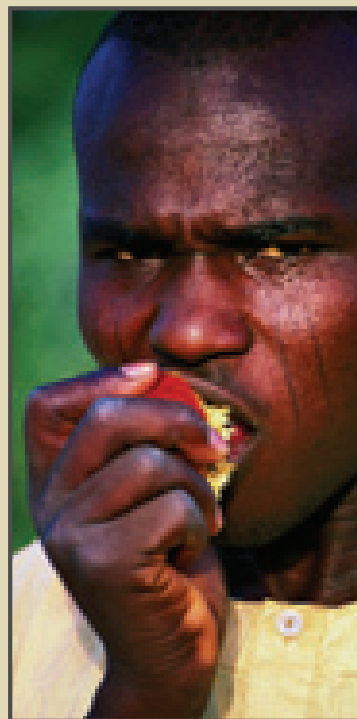
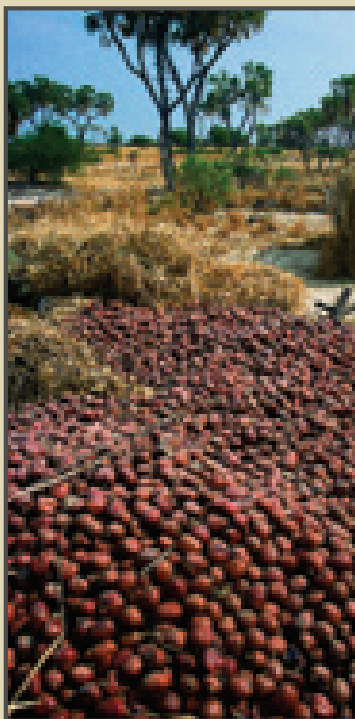
The dum palm is currently being tested for its antifungal properties. Results have shown that a solution made from the fruits may be valuable in the treatment of fungal diseases ^{[5.33], [5.34], [5.35]}.



BLANGOUA MARKET (KOUSSERI), CAMEROON



THE FRUIT PULP OF THE DUM PALM SMELLS OF GINGERBREAD , HENCE THE NAME "GINGERBREAD PALM"



DEWA VILLAGE (DIFFA), THE NIGER

The myriad uses of the dum palm

17 October 2001

Malam Fatori, Nigeria

Near Malam Fatori, on the road that leads to Damassak, in Bornu state, we make a slight detour to visit a Kanembu village. It is a small settlement of no more than 50 families, similar to many others hidden among the dunes. But this village is particularly interesting to us because of the special attention its inhabitants pay to the dum palm. This is evidenced by a large stockpile of dum palm fruit, measuring at least 7 m square and 2 m high, which stands at the entrance to the village. All around, there are palm trees growing, mostly over 15 m high and all with the characteristic division between the two main branches.

22 October 2001

Dewa, the Niger

Along the way, this time between Malam Kournadi and Diffa, we stop to photograph some superb specimens of dum palms. Our arrival is greeted with great cordiality, and the villagers vie with each other to respond to our curious questions about the use of this tree. One of them, Abdü, a young man who cannot have been more than 20 years old, climbs nimbly up a tree to fetch fresh fruit for us. There is very little flesh around the large kernel in the centre, but what there is has a pleasantly sweet flavour.

In these villages, and later in N'Djamena, we learn about the extraordinary versatility of this tree.

- > Each dum palm yields around 40 fruits a year, usually picked by hand by young men like Abdü, who climb up the trunk with bare hands and feet.
- > Its leaves are dried and plaited into mats, which are used for sleeping and shelter, as we have seen almost everywhere.
- > Wood from its trunk is fashioned into kitchen utensils, while the fibres, soaked and mixed with those of the *Calotropis* (which give greater elasticity) produce strong ropes. In the Niger, they are used to tie up large boxes packed with smoked fish, ready for export to Nigeria.
- > The roots of the dum palm are used to make fish traps – the double-chambered type. We have seen them at the mouth of the River Chari.
- > The fruits themselves are generally used to make sweets, but in times of drought they represent an important source of food for survival.



PORT OF BLANGOUA, CAMEROON

DUM PALMS GROW IN THE FLOODPLAINS AND ON RIVER BANKS. THE LEAVES ARE PROCESSED AND TRADED OVER A WIDE AREA

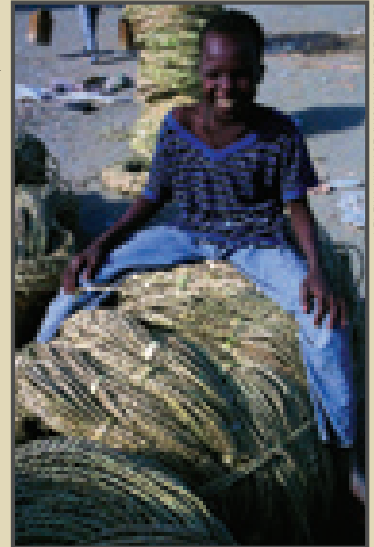
The dum palm has medicinal properties as well. The flesh of the fruit, dried and pulverized to produce an antiseptic powder, is used to treat epizootic aphtha in animals (foot-and-mouth disease). The usual treatment consists of three applications a day, for two or three days. An extract produced by boiling down the root is used to treat bilharzia.

The kernel, which is white and extremely hard, is known as “vegetable ivory”. For generations, it has been used to make small precious objects, and even today it is used industrially to make buttons.



N'SUIMI MARKET, THE NIGER

DUM PALM MAT



LELEWA VILLAGE (N'SUIMI), THE NIGER

DUM PALM ROPES