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Notes on the Palms of Guinea-Bissau

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Remote and lesser-known countries hold a certain fascination for the visitor because there is a sense of discovery in observing how people live and make use of their natural environment. Guinea-Bissau, wedged between Senegal and Guinea in West Africa, is such a place. Formerly Portuguese Guinea, this small nation is about equal in area to the states of Massachusetts and Connecticut.

The literature on African vegetation commonly mentions the paucity of palm genera and species in this the largest tropical area of the world (see Tomlinson 1962). Although smaller in area, tropical Asia and tropical America each has more types of palms. The contrast is strikingly shown by the fact that Cuba has a greater diversity of palms than continental Africa (Corner 1966). But what may be lacking in diversity is, at least in West Africa, more than compensated for by the sheer numbers of palms. They represent a common element of the vegetation landscape. Most prevalent is the African oil palm (*Elaeis guineensis*), certainly as useful a plant in West Africa as the coconut is in Polynesia. This holds true for Guinea-Bissau. Of secondary importance is the African fan palm (*Borassus aethiopum*), found throughout the continent.

I had the good fortune of spending three

1. Subspontaneous oil palms amid and adjacent to rice fields near Saucunda.

2. Utensils used for simple manual extraction of palm oil on a farm near Bafatá.

months in Guinea-Bissau in 1982, working as a consultant on an agricultural development project in the central part of the country. I took the opportunity to collect some notes on palm products, particularly those from the two mentioned above.

African Oil Palm

This pinnate-leafed palm has a dual role in the Guinea-Bissau economy in that it provides a major export (kernels) and furnishes palm oil, palm wine and other products for local consumption. Oil palms are abundant in the littoral zone, on the offshore islands and in the river valleys. Because of the long association with human activities, it is impossible to determine the precise ecological niche of this palm anywhere in West Africa. For that reason it is most often described as being subspontaneous. When forests containing oil palms are cleared for agriculture, the palms are commonly left standing (Fig. 1). Over generations, and if allowed to regenerate naturally, the palms form nearly pure stands. The palm's resistance to fire, extensively used in land clearing and for weed control, also gives it an advantage over other woody species.

Oil palms in Guinea-Bissau are of the *dura* type, which have large kernels and low to medium mesocarp content. Estimates place the area under oil palm in the country at about 100,000 ha. This figure is for natural stands; formal plantations do not exist.

Apart from a single industrial palm oil processing plant in Bubaque, on one of the offshore islands, the extraction of palm oil is a simple cottage industry solely for the domestic market. Palm oil is derived from the mesocarp pulp of the fruit, has a reddish-orange color because it is rich in carotene and is locally known as *chebeu*. The kernel contains a clear oil designated in the trade as palm kernel oil. Figure 2 shows some of the utensils used in the manual extraction process. Fruit bunches are harvested and transported to a local processing site. The fruits are removed from the bunches, loaded into

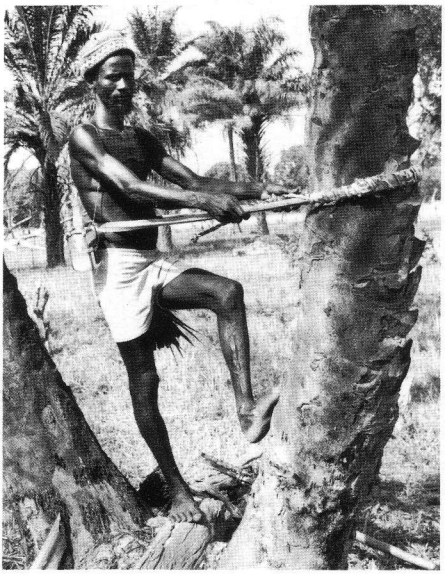
3. Oil palm kernels drying in the sun wreathed by empty fruit bunches on a farm near Bafatá.

large baskets such as the one in the foreground of the photograph, and dumped into used oil drums of boiling water. After being cooked for a few hours, the fruits are removed from the water, pounded to break up the pulp, and then returned to the boiling water. The oil separates from the pulp and floats to the top where it is skimmed off. The pans in the photograph are used to transport the pulp and the palm oil. The crude oil is filtered of impurities and sold in various-sized recycled glass bottles. This is the traditional cooking oil of the country and is also said to have cosmetic and medicinal applications.

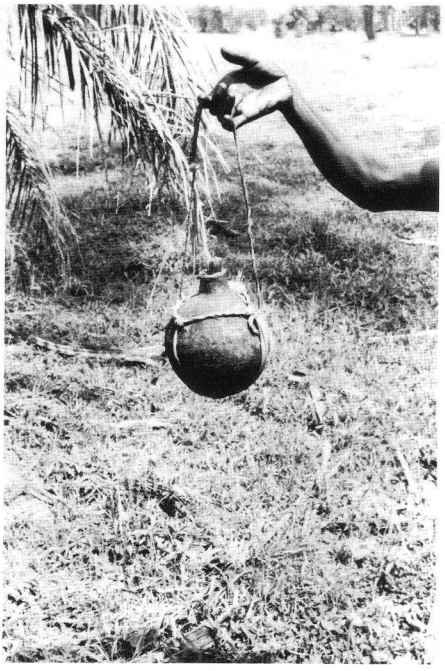
Most of the pulp having been removed during the extraction of palm oil, the remaining seeds are spread in the sun to dry and then more commonly cracked by hand to remove the kernels. Mechanized shelling by means of a small portable gasoline-powered machine is now being done to an undetermined degree in Guinea-Bissau. The extracted kernels are dried in the sun (Fig. 3) and exported. There is not the industrial capacity within the country to express the palm kernel oil. Production of palm kernels in 1982 was estimated to be 10,000 mt; that of palm oil 5,500 mt (FAO 1983).

The tapping of oil palms for palm wine is commonplace in Guinea-Bissau and throughout West Africa. Palm wine is the usual designation for the sap which ferments very quickly into a weak alcoholic beverage. This is equivalent to the palm toddy of Asia.

Oil palms selected for tapping must be cleared of dead leaves to permit easy access to the male inflorescences. A small incision is made in an unopened inflorescence and a receptacle positioned below it to collect the sap. A small funnel is made from a palm leaflet and placed in the neck of the bottle to direct the dripping sap. The man pictured in Figure 4 is ready to climb a palm with the aid of a beltlike device and empty the glass bottles of palm wine. The more traditional receptacle in Guinea-Bissau is a clay bottle (*moringo*) (Fig. 5). The bottle rests in a sling made of oil palm leaf fiber. The two loose ends



4. Tapper preparing to climb an oil palm near Saucunda.



5. Clay bottle suspended in its sling made of oil palm leaf fiber for palm wine collection near Bafatá.

6. Clay bottles attached to an oil palm for wine collection near Bafatá.

7. Oil palm trunks used for bridge construction near Jabicunda.

of the sling are fastened around the inflorescence to hold the bottle in place.

The beltlike device for climbing oil palms in Guinea-Bissau (Fig. 4) deserves further elaboration. Just as a paratrooper folds his own parachute, tradition has it that the palm wine tapper fashions his own belt, which is made from a fresh oil palm leaf. The midrib is stripped and bent to give it an elliptical shape. One end of the midrib is cut thin and flexible with a thick piece left at the extreme end to facilitate tying it to the opposite end where the midrib fibers have been separated and braided into a rope about 60 cm long. These ends are on the left side of the belt. Where the belt comes in contact with the trunk it often is wrapped with extra fiber to reduce wear. To climb a tree the tapper loops one end of the belt around the trunk and the other around his lower back, and secures the two ends. Grasping the sides of the belt, he leans forward and jumps the belt up the trunk a short distance. Then, leaning back against the belt, walks an equal distance up the rough trunk. The knot is secure enough that when he reaches the crown the tapper can have both hands free for work. Anyone who has seen an electrician ascend a wooden utility pole using a leather belt and spikes attached to his shoes can visualize the process of collecting palm wine. A belt made from an oil palm leaf midrib lasts about one month.

On one of my field trips I was able to borrow a belt and, to the great amusement of those assembled, made a shaky but successful ascent of an oil palm. Quite taken by the ingenuity of the belts, I later had one made. It, along with a clay bottle in a sling, occupies a prominent place on the wall of my office.

Palm wine yields vary considerably, but I was told that 10–15 liters per day per tree was about average. The oil palms are

8. African fan palms in the village of Nhacra.

tapped only during the dry season when the sap yield is sufficient to justify the labor. Inflorescence tapping decreases the tree's fruit yield, but apparently does not do any permanent damage. Palm wine has a milky appearance because of its high yeast content. The taste is pleasant. I sampled it on several occasions under different circumstances and found it best just after being collected (fermentation occurs within the receptacle on the tree) and at ambient temperature. Within a few hours palm wine becomes unpleasantly bitter. This beverage is popular among non-Moslems in the rural areas and is a good source of vitamin B complex. In 1982 a liter of palm wine cost the equivalent of 40 cents. It is not marketed in any organized fashion. Because of its high yeast content, palm wine is used in making leavened bread.

In Guinea-Bissau there is no current program to produce commercially and market palm wine, although the technology has been developed in Nigeria. There, the bottling and preservation of palm wine was investigated by Levi and Oruche (1957); a study of palm wine production was carried out by Tuley (1965); the Nigerian Institute for Oil Palm Research conducted experiments on tapping palms in the late 1960s and early 1970s; and the potential for improving traditional oil palm wine production was the subject of a recent article by Okereke (1982).

Other uses of the oil palm in Guinea-Bissau include weaving coarse baskets and mats from the leaves. These also are employed for thatching and to make fences. Small bridges are constructed with oil palm trunks (Fig. 7). The palm heart is eaten when trees are felled. Weaverbirds like the oil palm and use the leaflets

to build their distinctive suspended nests. The oil palm is normally unbranched, but if some physical damage causes it to fork, such a tree in West Africa is thought to have taboo properties (Gledhill 1972).

African Fan Palm

In Guinea-Bissau, this attractive palm has the vernacular name *cibe*. Although it is not a source of oil, it furnishes other products similar to those from the oil palm. The classic savanna palm of Africa, it can be found growing in close proximity to the oil palm in Guinea-Bissau. The number of African fan palms within the country has been reduced significantly through a combination of land clearing, cutting the tree for its wood and insect pests which have become more severe as a result of upsetting the ecological balance by removal of the natural forest (Castel-Branco and Tordo 1956). A few relatively young palms are shown in Figure 8.

For purposes of weaving and thatching, African fan palm leaves are the preferred type. Quality hats, baskets and purses are woven from the leaves and command the highest prices on local markets. The entire leaf is employed in thatching, frequently as the supporting layer for the traditional grass roofs. I have seen individuals carrying freshly-cut leaves as rain umbrellas and the leaves spread over charcoal to keep it from getting wet.

The African fan palm bears green fruits which are about the size of an orange. When immature, the soft endosperm can be eaten raw and the mesocarp pulp sliced and cooked. The pulp of the ripe fruit is eaten fresh. When felled, the palm heart is extracted from the trunk and eaten. These palms also are tapped for palm wine in the same manner as described for the oil palm. Exploitation of this palm is not as widespread as it once was, due to their reduced numbers. I saw relatively few tall mature trees, possibly because it is they which furnish the best wood.

Other Palms

At least three other palm genera may be native to Guinea-Bissau. Raffia palms (*tara*) grow along the coast according to Mota (1954). Based upon the distribution of *Raphia* species provided by Russell (1964), *R. palma-pinus* and *R. sudanica* may be represented. I was unable to investigate utilization of raffia palms; however, in Nigeria, the palms are tapped for wine and, in the 19th century, oil was extracted from the fruit pulp on a small scale. Raffia oil is similar in quality to palm oil and has the same uses (Otedoh 1974).

The coastal forests of Guinea-Bissau also probably harbor climbing rattans, although I have no confirmation of this. The geographic range of *Laccosperma* (*Ancistrophyllum*) *secundiflorum* and *Calamus deeratus* reported by Irvine (1961) suggests that they may be found within the country.

Coconuts have been in West Africa since their 16th-century introduction by the Portuguese, and probably reached Guinea-Bissau as early as any place in the region. This palm is cultivated informally in the coastal region of the country. Husked coconuts are sold in local markets and copra made for export. Production of coconuts in 1982 was estimated to be 25,000 mt and copra production 5,000 mt (FAO 1983).

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McCOY, R. E. (ed.) Lethal Yellowing of Palms. Bulletin 834, 100 pp. Institute of Food and Agricultural Sciences, University of Florida, Gainesville. 1983.

Several articles on lethal yellowing have appeared in *Principes* since an epidemic of the disease occurred in southern Florida in the early 1970s. A serious threat to plantations of tall varieties of coconut throughout the world, lethal yellowing also attacks more than two dozen other economic and ornamental palms.

This book draws together the results of a decade of research into the origin, cause and control of lethal yellowing. Ten scientists who worked on the problem in Florida are listed as coauthors. The book is divided into seven chapters and handsomely illustrated with 34 figures, including 21 color photographs. It contains an extensive bibliography of 176 references.

Strong evidence now supports the thesis that a planthopper (*Myndus crudus*) is the insect vector of the disease. Recommendations for control include eradication of diseased palms, antibiotic treatment of infected trees while resistant palms are established to replace them, and containment of the disease. The latter is not encouraging as lethal yellowing was identified in the Yucatan Peninsula of Mexico in 1982. However, any success in slowing the spread will permit more research to be completed and allow for substitution of resistant palms in threatened areas.

The authors are to be congratulated on this excellent study of such a serious palm disease.

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