Diversity of Use of Doum Palm (*Hyphaene compressa*) Leaves in Kenya

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1. Undegraded stand of *Hyphaene compressa*, Eastern Region, Kenya.

Doum palm leaves fulfill many subsistence and economic needs of the nomadic pastoralist and agro-pastoralist communities in the northern and eastern regions of Kenya. The leaves provide a range of products, which contribute to most aspects of their livelihoods.

2. Products made from sword leaves of *Hyphaene compressa*, Northern Region, Kenya.

Hyphaene compressa H. Wendl. (doum palm) is a widespread palm in eastern Africa, being particularly abundant along the coast of Kenya and Tanzania. In the dry lands of Kenya it occurs in isolated populations and is mainly confined to riverine forests (Fig. 1). The palm is common along the coastal strip, riverine ecosystems of the dry-lands and scattered within open savannah grasslands (Dale & Greenway 1961, Beentje 1994). It is most abundant in low sandy places and secondary forests. In the northern and eastern regions of the country, the species contributes significantly to the livelihood and welfare of the local communities, who are mainly nomadic pastoralists and agro-pastoralists. The species is used in several ways. Products ranging from thatch, ropes, baskets, nuts, dye and medicine are derived from the species. The doum palm dominates forests and woodlands, serves as sources of dry season grazing during drought and also protects the riverbanks. Along the shores of Lake Turkana fourteen different economic uses of the species have been recorded (Awuondo 1990). Among them leaf was the most used part of the palm. Leaves and petioles are the major building materials for the *manyattas* (traditional dome-shaped houses) and *makuti* (strips of mature green palm leaflets tied in a dense row along a leaf stalk) for the modern houses (see below). Leaves are used to make mats, carpets and baskets for sale. Ropes, webbed stick wheels (used for bundling fish) and wicker baskets (for catching fish) are made and sold to fishermen. However, information about the full array and magnitude of products derived from the leaves among communities living in the dry lands of Kenya is incomplete. Although palm leaf use by Turkana has been reported (Hoebeke 1989, Awuondo 1990), this is the first time the different uses by Tharaka, Kamba and Borana communities have been recorded.

The climate of the study area is characterized by erratic annual rainfall. Apart from famine relief, the availability of resources that support life, such as water and forage for livestock, is highly variable in time and space. When livestock productivity and herd numbers are low, the pastoralists will seek out alternative livelihoods. In most cases these will involve activities such as rain-fed agriculture, the making of *makuti* and the weaving of baskets. For instance, the drought of 1992 pushed most Turkana pastoralists to resort to craft activity. The creation of a United Nations High Commissioner for Refugees (UNHCR) refugee camp in the district fuelled the demand for palm-based crafts. With ever-increasing droughts, more pastoralists resorted to weaving, leading to over-harvesting of woodlands near urban centers (Amwatta 1993). Consequently this has led to reduction in quality of basketry.

In this study, I examined the diversity of use of the palm leaves among the four ethnic communities. The first objective was to document the uses of leaves for both domestic and commercial needs. The second objective was to assess the availability of the leaves for the various needs.

Study area

The study was done in the northern and eastern regions of Kenya. The regions lie between 3º 14′N 35º 1′E and 2º 39′S 39º 02′E. The vegetation is predominantly dry bush-land with pockets of

Table 1. Parts of palm leaf used by different pastoral communities

Pastoral community	Part of leaf used		
	Sword leaf	**Mature green**	**Stalk**
Turkana	Baskets, tablemats, brooms, carpets, ropes, baskets, floor mats, lampshades, hammocks and hats	Traditional thatch, *makuti,* webbed stick wheels and wicker	Decoration of commercial buildings; wicker chairs
Kamba	–	Mats, brooms	Wicker chairs, door shutters and cupboards
Borana	Sleeping mats and traditional thatch	–	Decorating shops; walls of food stores
Tharaka	–	Sleeping mats, hats baskets and brooms	Wicker chairs

montane/hilltop forests and inselbergs, which are hot spots of endemism. *Hyphaene compressa* is mainly observed at altitudes of 380 – 980 m above sea level along the margins of lakes, swamps and rivers. The mean annual rainfall varies between 150 and 600 mm, with mean annual temperature of 36ºC and 38ºC. The soils are calcareous, salty and alkaline (pH 9), which produces a poor physical structure. The shore of Lake Turkana, Turkwel River Ecosystems, Meru National Park and Tsavo West National Park are the areas where the palm is most abundant.

Methods

Interviews were conducted with farmers, pastoral women and men weavers, leaf harvesters, vendors and women's groups, to compile information on the products made, origin of products, the users, methods of harvest, prices and the period of availability. Major local and regional markets in the region were visited and doum palm based products being sold listed.

Results

Palm leaf use

The most commonly used material from the species is the leaf. The age at which the leaf is harvested is dependant on the product to be made from it. Depending on the age of the leaf when it is harvested and its treatment afterwards, uses among the different pastoral communities are shown in Table 1.

Sword leaf

The sword leaf (immature, still closed) is cut, processed and used to make mats, baskets, hats, brooms and trays (Fig. 2). The unexpanded leaf is skillfully cut by pushing a machete against the leaf base. The sword leaves, which are about 80–150 cm long, are opened by hand and sun dried, after which they are split up into long thin strips. The long strips are dyed and are then ready for use or sale to weavers. The number of colors and patterns used differ from community to community with Turkana and Borana exhibiting higher skills than Kamba and Tharaka. Among the Borana weavers, the leaf is cut, opened, split and woven into fine thatch (*gella*). The Turkanas beat the immature closed leaves with a wooden club on a stone anvil until fibers inside are freed to make ropes. The beaten fibers are also made into strings and then woven into open mesh hammocks. The other tribes did not mention these two uses. In Turkana, the type of use most common was making of laundry baskets, which are very popular with urban dwellers.

Beautiful laundry baskets, floor mats, fruit baskets, lampshades, tablemats and hats are made out of the young leaves. These handicrafts are destined for urban consumers and are traded at local, national, regional and international markets. The marketing of these products is specialized, involving producers, retailers and wholesalers. The handicraft cottage industry has played a crucial

3. Hut and fence made from mature dry leaves of *Hyphaene compressa*, Northern Region, Kenya.

role in raising the living standards of the pastoral women through the creation of jobs, directly or indirectly. The large Turkana women's handicraft co-operative society handles the sale of members' products. In the eastern region no such marketing society exists, and every weaver sells products either in the local market or to middlemen. Quality and prices varies from region to region. The highest quality and hence most expensive products are found among the Turkanas and Boranas. For instance, a wedding mat costs about $2 whereas the most expensive mat in Kamba would be less than half a dollar. On average there were 30–45 mat sellers in the regional markets in the eastern region. Buyers interviewed complained of deteriorating quality of mats due to scarcity of good quality sword leaves.

Mature leaf

The communities use mature green leaves for a number of purposes of which thatch (*makuti*) by the Turkana and basketry by other communities were the most important. Mature dry leaves are used for building purposes (Fig. 3) and fire-making. Nomadic architectural styles used by the Borana and Turkana communities are changing greatly at present from dome-shaped huts to modern rectangular huts. Turkana dome-shaped huts use dead leaves whereas the modern rectangular use *makuti*. The volumes of leaves used for the dome-shaped huts are low due to the need for mobility in the seasonal movements. The settled lifestyle has given greater scope for a range of architectural styles with corresponding higher volumes of leaves. Consequently, *makuti* has become a commercial commodity and is being sold in local markets and most of it is also used for roofing tourist restaurants and refugee camps established by UNHCR in the northern region. In an effort to support the local population the UNHCR encouraged *makuti* as the sole thatch for the refugee huts. However, this did not last long. The scarcity of weaving material in the vicinity of Lodwar and environs became apparent in 1993. By the year 2001, the shortage became alarming and UNHCR abandoned the use of *makuti* after protests from local environmentalists. At the time of this study *makuti* sale still took place on a small scale by the refugees (for repairs) and by local people for thatching new houses (Amwatta 2002).

In the eastern region mature green leaves are cut and opened into strips for weaving mats, baskets

and hats, and making brooms. The mature green leaves were bought from private farms at 2 US cents per leaf. Due to high demand for the leaves, cases of over-cutting of leaves were observed on all the farms visited. Frequent conflicts between the weavers and the national park managers due to poaching of leaves from the protected areas have been reported.

Leaf stalks

The leaf stalk is a secondary product in the northern region. The stalks are mainly collected from dry mature leaves free of charge. They are used for building, furniture, fencing and decorating tourist hotels/homes (Fig. 4). In the eastern region, stalks are sold to wicker chair makers. The traditional wicker chairs are very popular among the Kambas. Cases of people stealing leaves from private farms to make these chairs were often mentioned in Kamba area.

Fodder

Cattle and other livestock feed on fresh young palms or dry leaves during droughts. In the eastern region palms are left scattered in the pasturelands for this purpose. The leaves therefore provide the dry season fodder in the region. No mention was made of this particular use of the species in the northern region.

Palm leaf availability

Of the 56 weavers interviewed in Turkana, 52 (81%) said that they had difficulty in obtaining leaves for *makuti* making. Thirty (59%) complained that they had to travel a long distance (>3 km) to source the leaves. Twenty-eight (48%) of the Kamba and fifty-six (84%) of Tharaka weavers interviewed bought all the leaves they used. Seventy-two (82%) of all the weavers interviewed bought all the leaves they used. The dyed split sword leaves were sold at 2 US cents.

The species is in an incipient state of domestication in the study area. Turkana, Borana and Kamba agro-pastoralists spare mature doum palm trees scattered in the farmlands and pasturelands for provision of both products and services. Among these three ethnic communities no attempt to plant the species was reported. Planting of the species using seeds was reported among the Tharakas, showing that here the species is in a semi-domesticated state. The main primary product driving these domestication initiatives is leaf production.

Traditional management techniques

Exploitation of palm leaves was sustainable under the traditional resource management systems. However, the traditional management systems began to breakdown during the last decade (Barrow 1991). Following the settling of the pastoralists, over-exploitation of indigenous woody vegetation and over-grazing of the herbaceous vegetation layers have become intensive. This has resulted in localized loss of vegetation cover in general and of doum palm in particular around settlements (Amwatta1993). Among the Turkana weavers we established that some traditional management practices to ensure

4. Hotel veranda decorated with leaf stalks of *Hyphaene compressa*, Northern Region, Kenya.

sustainable leaf supply still exist. According to the leaf harvesters interviewed three rules are observed to achieve this namely:

Reduced leaf harvesting during dry seasons by concentrating on weaving products such as brooms and sleeping mats that use fewer leaves.

If two sword leaves are present, only the larger one is cut, while the other is left to develop into a fully expanded leaf.

Only sword leaves between 80–150 cm long are cut. Cutting a sword leaves shorter than 50 cm tall will tend to damage the growing point and may result in death of the shoot.

Discussion

Harvesting of doum palm products on a commercial scale will inevitably affect the riverine forests in one way or the other. Often the impact will be significant. *Makuti* has become a commercial commodity and is being sold in the local markets in Turkana district. Each piece of *makuti* consumes six mature green leaves (Hoebeke 1989). The species develops six leaves per year (Hoebeke 1989). Due to rapid increase in urban populations and settling of the pastoralists, the subsequent high demand for *makuti* has lead to over-utilization of areas near settled areas and urban centers in the northern region (Amwatta 1999). Awuondo (1990) found that destruction of the vegetation cover in Kalakol area was mainly by the poor and destitute who had been rendered stockless due to years of recurrent droughts. To them woodland products provide the major source of earning a living. Charcoal, firewood, building posts and basketry are some of the items in high demand in the urban centers, thus providing a stimulus for the extraction of woodland-based resources. He further observed that the over-exploitation of doum palm demonstrated the severity with which woodland cover could be mismanaged in a desperate attempt to make meager living in the absence of perceived or real alternative.

The species is already classified as threatened due to habitat degradation (Kigomo 1998). Very little empirical data exist on how the species could be sustainably managed. Ratsirarson (1996), while studying *Dypsis decaryi*, recommended that annual leaf harvesting be no more than 25 percent of the leaves per tree per year. Among some of the sites studied in both the regions, harvest level was 67 percent, which could affect the regeneration. However, intensive defoliation was found to increase density and the number of sucker shoots of the species (Oba 1990). However, there is concern over the possibility of reduction in the natural genetic diversity as a consequence of the increased asexual reproduction.

Conclusions

The palm leaf is a resource of significant economic value to the nomadic pastoralists and agro-pastoralists in the study area. It is the next viable livelihood alternative, after livestock, for the poor pastoralists women. The major threats to sustainable availability of the palm leaf resource are widespread over-harvesting, particularly around increasing permanent settlements. Clearance for agriculture along the few permanent watercourses is also a major problem. These factors threaten the palm leaf base hence the livelihood of the already poor communities.

Recommendations

Efforts should be made to build on and support the existing rudimentary management and informal cultivation initiatives by the agro-pastoralists. Research on the quantity of products and their availability should be conducted to develop management guidelines for leaf extraction.

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