

Chapter 2 Use of Fibers in Africa

Preface

This report provides a historical summary of the use of fibers in Africa by adding and supplementing the description of the fibers that are used for "fold plaiting" based on the "Fabrics of Africa" [Iseki 2000] that was written by the author based on the theme of the textiles of West Africa.

As is well known, the African continent is geographically classified into the North, East, West, Central, and South regions. However, as the characteristics of the region North of the Sahara desert differ from those of other African regions in terms of the history, society, and culture, in this report, Africa refers to the countries south of the Sahara desert.

In Africa, bark, raffia, cotton, wool, and silk are used as the materials for textiles (fabrics). (Table 2-1, p.16)

Among these textile fiber raw materials, the production areas of bark, raffia, wool and silk are restrictive because of the environmental condition of their growing, and use of these materials are decreasing year by year. On the contrary, cotton has become an important cash crop due to the unrestricted production areas of traditional textile fabrics and the policies of African Governments for continuing raw cotton plantations of the colonial era, and large cotton farms are dotted over the savannah regions. Currently, cotton spinning and fabric production are mechanized locally and the use of imported synthetic fabrics is also increasing.

2-1. Bark fabrics

Bark fibers tend to be hard, so they require processing such as beating, boiling with lixivium, and rinsing with water. Raffia fibers seem to have spread over a wide forest area of West Africa due to its easy fiber extraction. However, in many areas, barks are still used as fabrics without weaving technology.

It is assumed that the use of bark fabrics started from the prehistoric era in Africa. The habitat of trees that are used for bark fabrics is concentrated in the tropical zone of Africa at the North-South latitude of 15 degrees on either side of the Equator. The natural ecosystem of equatorial Africa encompasses two types, tropical rainforest that is hot and humid all year round, and savannah where a rainy season and dry season alternate every year.

Bark fabric trees in the savannah regions grow on the land adjacent to rivers and swamps. (Most of the trees that were observed by the author belong to the fig family of Moraceae.)

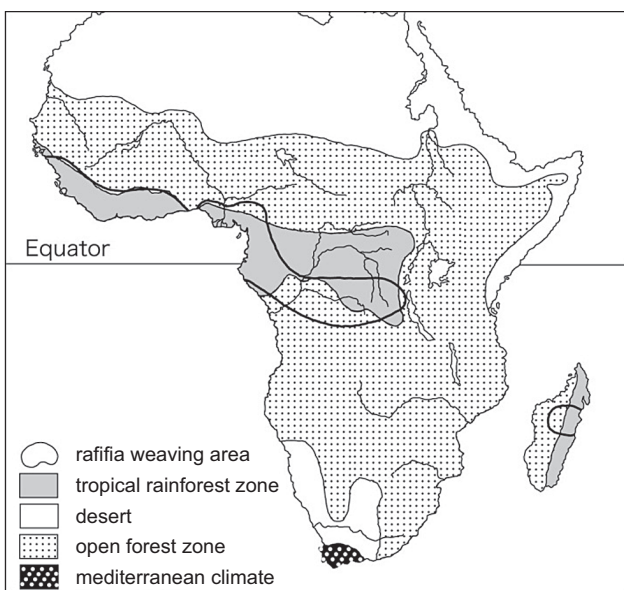
The geographic distribution of bark fabric production extends from the Madagascar Island to the Republic of Rwanda, the Republic of Uganda, and the Republic of Malawi, to the Republic of Zambia in East Africa, and the Congo of the Congo River basin, the Republic of Angola, the Republic of Gabon, the Republic of Central Africa, and the Republic of Cameroon in Central Africa. In these areas, bark fabrics are used in the same way as animal skins. In the South East region of Nigeria located on the coast of the Gulf of Guinea and the Republic of Togo, bark fabrics are used for funerals and in the Ashanti Empire (Ghana), such fabrics are used for the "King's rebirth ceremony" and the "New King's inauguration



← Photograph 2-1 (left) and ↑ 2-2 (above) show bark fabrics of Ganda, Uganda

Photograph 2-1) After collecting the bark from a fig tree, the bark is regenerated by wrapping the trunk with banana leaves. Photograph 2-2) The bark that was removed from the trunk is placed on a wooden platform and is expanded to the shape of the fabric by hitting it with a mallet. (Photographed by Jun Mori, 1968)

ceremony" only, and other dyed fabrics (Adinkra cloth) are used for funerals. Bark fabrics are also produced in the countries on the coast of the Atlantic Ocean such as the Republic of Liberia. As cotton fabrics spread among the general West African population from the middle of the 20th Century, the use of bark fabrics, which are some of the original fabrics, has shifted from clothing material to "burial - fabrics for wrapping ancestors' spirits." The ritual of using bark fabrics as the costumes for presenting the actualized images of ancestors' spirits to the people is carried out as a tradition in various areas. The bark fabric production areas often overlap with the production areas of raffia fabrics that are described below. (Map 2-1)



Map 2-1)
Tropical zones of Africa and distribution of raffia weaving areas (created by the author)

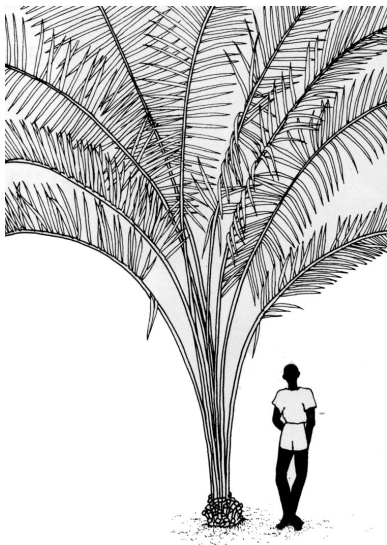
2-2. Raffia Fibers

Raffia fabrics refer to the fabrics that are woven by a primitive vertical loom or oblique loom using leaf fibers of raffia palms as the material. In the modern era in which manufactured cotton fabrics are widely used, raffia fabrics are used for everyday garments or "ceremonial costumes" among some ethnic groups of Central Africa from the coast of the Gulf of Guinea. Recently, even in the areas that produce cotton fabrics, some ethnic groups weave raffia for the adulthood ceremony and raffia fabrics exist as the "original fabrics" prior to cotton fabrics as well as bark fabrics.

2-2-2. Geographic distribution of raffia fabric production and fiber collection

Raffia is a plant that belongs to a palm genus that originated from Madagascar and grows in tropical rainforests, along river banks of the savannah, marshes, and swamps in the areas stretching from Madagascar, where it originated, to the Congo and Gabon of Central Africa, Cameroon, Nigeria, and Liberia alongside of the Gulf of Guinea. The distribution area presents a raffia belt spread. There are many different varieties of raffia and six types of raffia are used for their fibers including *Raphia vinifera* and *Raphia ruffia*. (Map 2-1).

Raffia fibers are still widely used and are sold in various places from the savannah region at the South end of the Sahara, in which raffia does not grow, to the coastal region of Guinea. Raffia is processed as strings or used unprocessed for tying raffia shanks or sticks. The flesh of the fruit is used for poisoning fishes, the ash of the bunchy sepals is used for seasoning, and raffia wine is produced from the root. The leaf stems and rachises are used as building materials for houses and furniture, and the skins of leaf stems are used for baskets after being torn into thin pieces. Fibers used for woven fabrics are collected from the back of the young leaves that have just emerged and are still closed in a spear shape.



Raffia fibers are used for woven fabrics without twisting. (Photograph 2-3). The fibers are also used as strings by twisting them into a two-fold yarn with the palms and thighs. After collecting the fibers, the skins are dried and used as the core materials of basket weaving. (Photograph 2-4)

Figure 2-1 Raffia palm (*Raphia* sp.)



Photograph 2-3) Weaving with raffia
(Photographed by the author in 1986 in Kuba, Congo)



Photograph 2-4) Making raffia baskets: Costume baskets that are made by women with raffia fibers using the skins of raffia leaves as the core material based on the coiling technique (Photographed by the author in 1986 in Tikar, Cameroon)

2-3. Silk

In the African region south of the Sahara, silk is rarely used and its limited use can be witnessed only in a part of the Sahel strip¹ and the Madagascar Island. In Africa, several types of silkworms of the line caterpillar species are used for silk. Of those types, *Anaphe infracta* (photograph 2-7) that forms a large cocoon of about 15 cm and *Anaphe venata* (photographs 2-5 and 2-6) [ISEKI 1985: 5-8] that form a group of small cocoons are well known. Normally, these silkworms form cocoons by leeching off evergreen high-tree Tamarind (*Tamarindus indica* L.) of the pea species and Parkia (*Parkia biglobosa*) of the same species.

Most of these types of silks are used for embroideries on the chest, collar, and back of the male costumes in Islamic ceremonies. Weavers of Yoruba, Nigeria also use silks for fabrics. Pastor Kanuri provides silk fibers to the weavers in Yoruba. They collect silk while moving through the savannah and forests, make embroideries, and sell the products at the "markets" in Hausa and Yoruba². The supply and demand network from the collection of cocoons in the savannah to the production of finished textiles in the coastal region has been established in Nigeria.

¹ The Sahel Strip refers to the strip from the East to the West of the Sahara from Mauritania to Sudan.

² Confirmed by the author at Garoua, Cameroon; Kano, Nigeria; and Sikasso, Mali.



↑ Top left Photograph 2-5) Cocoon of *Anaphe venata* that is produced by a group of young worms

↑ Top right Photograph 2-6) Spinning of *Anaphe venata* (Photographed by the author in 1983, Housa, Nigeria)

← Photograph 2-7) Cocoon of *Anaphe infracta* (provided by Juraku Co., Ltd.)

The inhabitants in the South of Burkina Faso and the Ashanti of Ghana have been using silk threads for textiles. However, most of the silk threads were obtained by unbinding silk textiles obtained from Europeans who advanced to the coast of the Gulf of Guinea.

The technique for weaving gorgeous traditional ceremonial fabrics by unbound threads started in the 17th Century and its central region was the imperial court craft center of Kumasi [BODWICH 1819: 331] [RATTRAY 1927: 220].

From the 19th Century, red-violet silk fabrics and silk threads that were produced in France and Italy were brought into the West African region by caravans on the Sahara and became important trade products. The use of silks has spread among the weavers of many ethnic groups as well as the Ashanti. However, in the 20th Century, imported threads produced in Britain replaced silks and since then synthetic fibers have completely taken over its position.

2-4. Wool

In the African region South of the Sahara, wool was used only in limited areas as were silk fibers. These areas include some areas at the South end of the Sahara and the Niger Delta area where sheep can be reared and the groups that weave wool are also limited to the ethnic groups of Housa, Fulbe, Sobga, and Tuareg. Of the wool fabrics produced by these groups, blankets called Kass "have been highly appreciated by the people in the southern forestry regions for many centuries" [PICTON/MACK 1979: 107]. In particular, the blankets were in high demand among courtiers of the Ashanti in Ghana.

2-5. Cotton

2-5-1. About cotton

There are two sources of cotton, one is the annual plant, Malvaceae, and the other is the perennial cotton plant. One type is a cotton fabric piece discovered in the Archaeological Ruins at Moenjo-Daro of Indus around 2500 to 2300 BC. This type of cotton was produced by cultivating the wild cotton that grew in Africa as *Gossypium herbaceum* and *Gossypium arboreum*. It is normally referred to as Asian cotton. The other type originated from Peru and Bolivia and is referred to as American cotton. American cotton is further classified into land cotton based in Mexico and Guatemala and sea land cotton (Peru cotton) based in Peru and Bolivia in the Andes.

(These two types of cotton were supposed to have co-existed over 300 million years ago when the African continent and American continent were connected.)

2-5-2. Types of cotton and the distribution

The most important fiber material in the South of the Sahara is cotton. The research conducted by Hutchinson for tracing the origin of cotton worldwide revealed that six types of wild cotton (belonging to *Gossypium* of the Malvaceae genus) grow in Africa and three types of cotton grow in the dry regions of East Africa, Sahara, and Kalahari, which are *anomalum*, *herbaecum*, and *stocksii* respectively. The *anomalum* type spreads in the Sahel region of West Africa [HUTCHINSON 1954: 226]. (However, these types of cotton produce short fibers and it is doubtful whether they were used as fiber materials.) Currently, most of the cotton that is woven manually in African regions is a hybrid of the types that have been brought from Asia and America over the past several hundred years.



Photograph 2-8) Shrub type cotton

(Photograph taken by the author in 1986 in Kinshasa, Congo)



Photograph 2-9) Shrub type cotton

Among the types of cotton observed in the many regions researched by the author including Togo and Ghana in West Africa, the cotton referred to by the local people is the American type grass cotton and the shrub type cotton of the *hirsutum* species (photographs 2-8 and 2-9) referred to as "old cotton."

2-5-3. Historical data on cotton

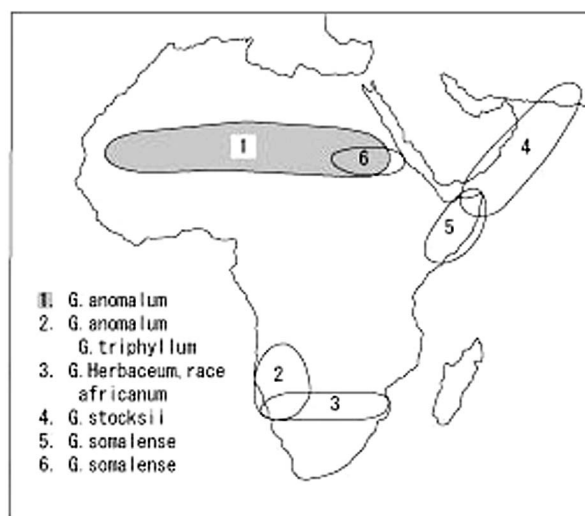
A great deal of information is available on the topic of cotton in West Africa from around the 11th Century. For cotton textiles, a large amount of cotton and wool fabrics that are assumed to be from the 11th Century were discovered in the caves of the Cliffs of Bandiagara, which is East of the Niger Delta, an area inhabited by the Dogon tribe in the Republic of Mali. The threads that were spun in various thicknesses and the designs of the hoods, ponchos, and torn fabrics represent the advanced spinning and weaving techniques of the ethnic groups that produced the fabrics.

After arriving in 1460 at the island chain of the Verde Cape of Dakar in the current Republic of Senegal, the Portuguese started cotton cultivation and a plantation plan with irrigation facilities and commenced the export of cotton to Europe by the end of the 15th Century. Portuguese merchants exchanged fabrics produced in Morocco and cheap glass beads and brass products produced in Europe with local cotton fabrics from the coast of West Africa, thus using the cotton for trade with other regions that did not produce complete textiles.

Valentim Fernandes who visited the coast of West Africa at the beginning of the 16th Century reported that in the Wolof Empire, cotton garments that had been available only to rich people only 50 years previously were already widely used among the common people. For the people of Toucouleur in the middle stream region of the Senegal River, he recorded the cotton cultivation in this region, spinning by men and women, and jackets produced by stitching fabrics of the width of a palm to make a jacket of the width of both arms stretched out. He also described that in the current Republic of Gambia, the King of Malinke wore a cotton garment, cotton brought from the Verde island chain and red fabrics and blankets brought by the Portuguese from their country were sold to the inhabitants in Malinke, and Portuguese purchased cotton fabrics that were woven by the people in Malinke and sold to other regions [FERNANDES 1951: 13, 21].

This report by Fernandes indicates that one of the important reasons for spreading cotton fabrics over the coastal region of West Africa is that the Portuguese, who used cotton of the Verde island line as one of the trade products of West Africa, supplied raw materials to the coastal regions, collected cotton fabrics brought from the regions of advanced weaving techniques, and took them to the coastal regions that did not have the advanced techniques.

Many garments from the 18th Century are reported in the description of [ROMER 1769: 172] in the textile craft center in the court of Kumasi of the Ashanti Empire, the current Republic of Ghana, which has developed rapidly in the forest area and in the portrayal of customs and manners of the emerging Empire. Based on these facts, dramatic development can be assumed in the cultivation of cotton as the raw material in West Africa during the 18th Century. With the infiltration of the Islamic religion, the use of "fabrics for burial," "spread of garments," and "narrow cotton fabrics" as a method of payment



Map 2-2) Cotton of Africa
(Created by the author: sourced by HUTCHINSON J.B. "New Evidence on the Origin of the Old World Cottons heredity")

have spread in the inland regions. As the regions were far from the regions where European trade products were exchanged, such use is assumed to be based on the spread of weaving techniques by the people of West Africa.

The trading power with Europe in the coastal regions shifted from Portugal to France and England and from around 1725, the fabrics that had previously been brought from India and Asia began to be replaced with cheaper fabrics produced in Europe. Such a shift had an impact on the production of fabrics woven by the people of the coastal regions and they were to face a crisis [MONTEL 1927: 37]. However, the production of simple daily garments and ceremonial fabrics has continued up to the current date.

In the latter half of the 19th Century, the advance into Africa by powerful European countries accelerated, and starting with the coastal trade by the Portuguese in the middle of the 15th Century, Holland, England, and France made inroads to the coastal region of West Africa. With the sudden rise of the textile industry caused by the industrial revolution, the securing of the cotton demand regions as the material and cotton product supply regions became the objective. Therefore, of the colonial development projects of Europe in the 19th and 20th Centuries, cotton cultivation was selected as the first main focus project of the plantation crops. Infiltration of Islam and Christianity resulted in the spread of garments to the general public, thereby developing, in Africa, the unique ethnic costumes of Africa made from cotton fabrics produced in Asia and Europe. In particular, a set of women's costume that requires fabric of at least 8 m for the hood, waistcloth, and blouse was completed.

In parallel to such cotton cultivation, cotton fabric production in West Africa, where cotton cultivation using the old method had been inherited by individual farmers, seems to have become rather more active from the end of the 19th Century to the beginning of the 20th Century and up to this date.

Various traditional costumes that were collected during material culture research conducted in various areas of West Africa that occurred concurrently with the introduction of manufactured cotton fabrics from the coastal region to the inland regions are stored in the museums and art museums of the colonial countries. Most of the costumes were not ordinary garments used at the time of the research and were used as costumes of royalty and aristocrats and ceremonial costumes, particularly "burial fabrics" and "funeral fabrics." It is considered that most of the "African fabrics" prior to the spread of cotton fabrics are used as the devices to indicate "authority" or to "wrap death."

2-3. Use of fibers for fold plaiting

As described at the beginning of this article, the author has been engaged in research based on dyeing and textiles in Africa. In addition to the dyed textile products, the author frequently observed that, in these countries, garments and various everyday tools were produced using simple techniques such as "bundle," "tie," and "plait" of specific plant fibers, vines, and tree barks and such products are used for various ceremonies. The author also observed a simple "tying" action that is used as a unit of material distribution.

However, research on the daily fiber use based on the simple technique and the existing knowledge such as "knotting" that has been used as the measuring rule of the regional societies has not been in the focus of the research on Africa. The author has not paid any special attention to baskets that are made by the techniques of simple coiling or twist-plaiting and mats by the fold plaiting technique using the leaf stems of palms, wisteria, and pramineae plants as the materials.

The author had an opportunity to observe a process of making a mat by a Fanti female using the leaves of the screw pine genus (*Pandanus* sp.) as the materials. The technique was neither plaiting nor weaving, and rather is a transitional technique between "plaiting and weaving."

2-3-1. "Plait weaving" as a transition to the handloom

As far as the author knows, no report has been presented for the <plait weaving> that is assumed to be the shift from plaiting to fabric weaving in research on Africa. However, one of the three photographs of Fulbe girls plaiting grass mats by stretching strings in the page of 'Plaiting grass' in "Living in Savannah" written by Junzo Kawada [KAWADA 1995: 118] (Photograph 2-10) shows the transitional stage to the weaving technology.



Photograph 2-10) Fold plaiting technique that is generally seen in Africa

Top, left and right: Fold plaiting technique that is generally seen in Africa - Sourced from [Junzo Kawada 1995: 118]

Bottom left: Method of return weaving by the Fulbe tribe by stretching a twisted string as the vertical string, placing a stem of the gamineae plant on the fixed vertical thin string at a right angle - Source from [Junzo Kawada 1995: 118]

Bottom, right: Fold plaiting technique that is generally seen in Africa - Sourced from [ETINNE-NUGUE 1987: 83]

Such technical consideration will be discussed separately. However, while noting the fiber crafts produced using the fold plaiting technique in Africa during the research in Gabon, the author found that animal skins, fibers of gramineae, banana fibers, and long thin supple branches of shrubs are commonly

used everywhere. The author frequently witnessed the basic technique common for production using fibers. For instance, when making strings from hard animal skins or barks, the skin or bark is torn into thin pieces, then softened by chewing before using and also the young leaves of palm trees are used for making soft bags and hats. Most of the plants are dried after collecting and moistened while in use.

In general, baskets and mats that are produced using the fold plaiting technique are classified by region, ethnic group, technique, and material by the researchers. However, as found in the research on textile fabrics, different production techniques and materials are often used even if the products appear to be identical.

2-3-2. Sieve produced in Ethiopia as an example of fold plaiting

One of the research countries visited by the author, Ethiopia in East Africa, is well known for its variety of grain cultivation and cultivation of teff gramineae (*Eragrostis tef* (Zucc.) Trotter) and ensete musa spp. (*Ensete ventriosum* (Welw.) Cheesman) and sieves are used for refinement of these crops. When



Photograph 2-11) Making a sieve using young palm leaves (*Elaeis guineensis* JACQ) (Photographed by the author in 2009 in Ali, Ethiopia)



Photograph 2-12) Making a sieve using (*Scirpus grossus* L.) (Photographed by the author in 2009 in Ali, Ethiopia)

conducting research on "sieves," the author observed that each of the seven ethnic groups of Ethiopia used different gramineae plants and Arecaceae plants and also used different techniques for producing the net section, which is the base. However, the differences in the configuration and fiber materials used in the sieves are not noticeable unless they are observed in detail.

2-4. Summary

This report introduced the historical data regarding barks, raffia, silk, wool, and cotton that have been used as fibers, in particular, for the textile fabrics in Africa. The report also mentions that these textile fabrics were used as "burial fabrics," "funeral fabrics," devices for presenting authority, and "wrapping death - ancestor's spirits" and at the same time how the cotton production history of Africa from the 16th Century had played a role associated with the economic history of Europe and Asia.

However, systematization of the use of plants for fold plaiting craft products has not yet been clarified. The author noticed some items during summarization of this report. For instance, sieves used in

Ethiopia that were studied by the author can be associated with the slag strainers used for "brewage" such as sorghum (*Sorghum vulgare* PERS.) that spreads over the entire Sahel area. Instead of limiting the use within farming tools, the use of gamineae plants is connected from dots to a line through this association and consequently, the author can have a glimpse of a "local wine belt" up to the far West Africa.

The author wishes to end the summary of this report by expecting, in the near future, schematization of fold plaiting craft products of African regions that are currently in dot form.

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(Table 2-1) Use of plant fibers of Africa confirmed by the author

| Fiber category | Fiber type | Material type | Scientific name | Features/applications |
|----------------|---------------------------|--------------------|--|--|
| Plant fiber | Seed floss | Gossypium | <i>Gossypim anomalum/G. triphyllum</i> <i>G. herbaceum/G. stocksii</i> <i>G. somalense</i> | There is a wide variety of fibers and the uses vary according to the length and thickness. Used for textile fabrics. |
| | | Bombay ceiba | <i>Ceiba pentandra</i> | Yellowish tan, very light, and strong gloss. Used for filling cotton of beds. |
| | Bast fiber | Baobab | <i>Adansonia</i> | (Used for filling cotton). The bark is used for strings. |
| | | Ficus varieagta | <i>Ficus varieagta</i> | Used for bark fabrics |
| | | Antiaris toxicaria | <i>Antiaris toxicaria</i> LESCH | Used for bark fabrics and baskets |
| | | Ficus natalensis | <i>Ficus natalensis</i> | Used for bark fabrics |
| | | Parkia | <i>Parkia Biglobasa</i> | Used for binding by tearing barks |
| | | Silver birch | <i>Wikstroemia</i> sp. | Used for strings |
| | | Girardinia | <i>Girardinia</i> sp. | Highly durable and glossy. Used for nets. |
| | | Kenaf Hibiscus | Kenaf, <i>Hibiscus cannabinus</i> L. | The fibers are rougher and harder than yellow jute. Used for strings. |
| | | Pueraria | <i>Pueraria lobata</i> | Glossy and transparent fiber. Used for knitting. |
| | Leaf veins and leaf stems | Plantain Banana | <i>Musa sapientum</i> L. | Glossy and transparent fiber. Used for strings. |
| | | Ensete | <i>Ensete ventricosum</i> (Welw.) Cheesman | Soft white fiber. Used for strings and mats. |
| | | Raffia palm | <i>Raphia ruffia/Raphia vinifera</i> | Back skin of young leaf is used. Rough, hard, and very strong. Used for textile fabrics and baskets |
| | | Date palm | <i>Phoenix dactylifera</i> L. | Back skin of young leaf is used for weaving and plaiting. Leaf stems are used for baskets, mats, and furniture. |
| | | Agave | <i>Agave americana</i> var. <i>marginata</i> | High moisture absorption and used for ropes and nets. |
| | | Oil palm | <i>Elaeis guineensis</i> JACQ | Leaf stems are used for baskets. |
| | | Wisteria | <i>Calameae Kunth ex Lecoq & Juillet</i> | The rough and hard fibers are used for baskets and furniture. |
| | | Pandanaceae | <i>Pandanus</i> sp. | Fibers collected from leaves and aerial roots of a variety of pandanaceae are used for mats. |
| | Stems | Cyperaceous | <i>Scirpus grossus</i> L. | The stems are used for baskets, mats, and sieves. |
| | | Setaria | <i>Setaria</i> sp. | The woven spikes are used for baskets and sieves. |
| | | Pennisetum | <i>Pennisetum</i> sp. | Used for roofs and fences. |
| | | Bamboo | <i>Thamnocalamus</i> sp. etc | Used for tools and furniture. |
| | | Reed | <i>Phragmites karka/Vetiveria nigriflora</i> | The first joint from the spikes is woven. Used for baskets and sieves. |
| | Fruit | Coconut palm | <i>Cocos nucifera</i> L. | Highly durable for friction. Used for scrub brushes. |
| Fiber | Sheep wool | Sheep | Unavailable | Glossy bristly hair |
| | Camel wool | Camel | <i>Camelus dromedarius</i> L. | Used for strings |
| | Other animal wool | Horse | <i>Equus caballus</i> | The manes and tails are used for strings. |
| | Silk | Anaphe | <i>Anaphe infracta/A. venata</i> | Brownish red. Used for textile fabrics and embroidery threads. |