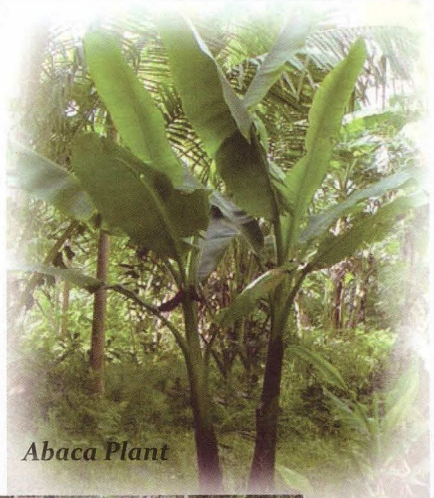

Philippine
Natural
Fibers

Philippine Natural Fibers

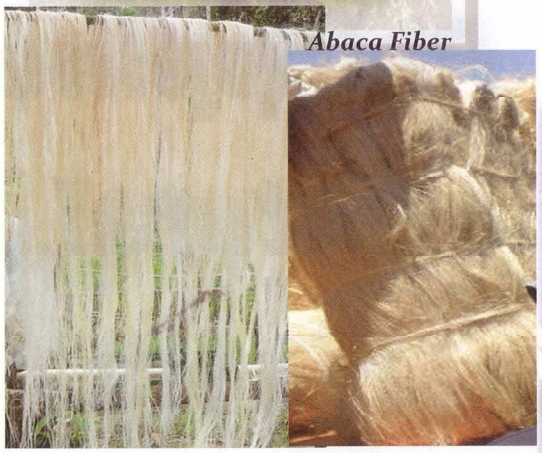
ABACA

Abaca, also known internationally as "Manila Hemp", is one of the country's best-known export products. Growing abundantly in the Bicol, Visayas and Mindanao regions, abaca belongs to the ***Musaceae*** family and bears a strong resemblance to banana. However, compared to banana, the stalks of abaca are more slender and its leaves are narrower and more pointed. A distinguishing dark line on the right hand side of the upper surface of the leaf blade is pronounced in abaca. Its fruits are smaller, non-edible and contain many seeds.



Abaca Plant

Historically, abaca did not start out as the wonder plant that it is today. It took more than 100 years for abaca to be known as a source of fiber for rope manufacturing, and later on, for fibercraft and pulp and specialty paper.

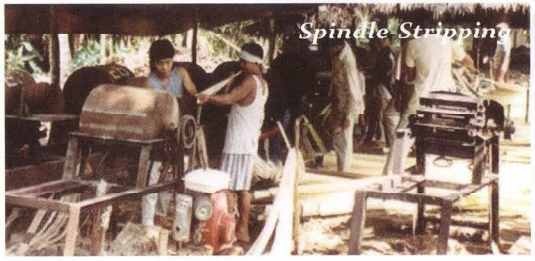


Abaca Fiber

METHODS OF EXTRACTION

The abaca fiber comes from the stalk of the plant.

The methods of abaca fiber extraction are hand-stripping, spindle-stripping, and decortication.



Spindle-Stripping

Hand-stripping is a process of extracting fiber in which the tuxy, the outer covering of the leafsheath, is placed under a serrated knife. With pressure applied on the knife, fiber is then extracted by pulling the tuxy manually. **Spindle-stripping**, on the other hand, is a semi-mechanized process wherein the tuxy, placed between a stripping knife and a block, is pulled through a rotating wooden spindle driven by an engine or motor of sufficient power. **Decortication** is an extraction process using a decorticating machine wherein abaca leafsheaths are fed into the machine.

Hand-Stripping

AREAS OF PRODUCTION

Abaca is grown in 49 provinces with the following as the top ten producers:

1. Catanduanes
2. Leyte
3. Northern Samar
4. Davao Oriental
5. Sulu
6. Surigao del Sur
7. Bukidnon
8. Southern Leyte
9. Davao del Sur
10. Aklan

Grades

Abaca fibers are generally classified into 9 grades. These are:

Excellent	(S2, S3)
Good	(I, G, H)
Fair	(JK, M1)
Residual	(Y, OT)

Uses

Abaca fiber is processed into fibercrafts including furniture, cordage, textile/fabrics, nonwovens and disposables, pulp and specialty papers like currency notes, cigarette paper, meat and sausage casings, teabags, stencil paper, hi-tech capacitor paper and other specialty papers requiring high porosity, excellent tear, bursting and tensile strength.

Major Markets

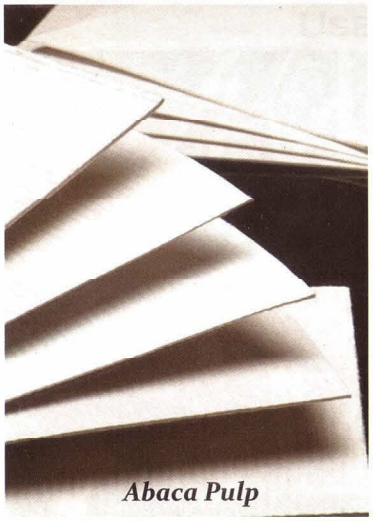
About 80% of the total fiber production are sold to local processors/manufacturers of pulp, cordage and fibercrafts. The United States, United Kingdom, Japan and China are the major markets abroad.

For manufactures, the major markets are:

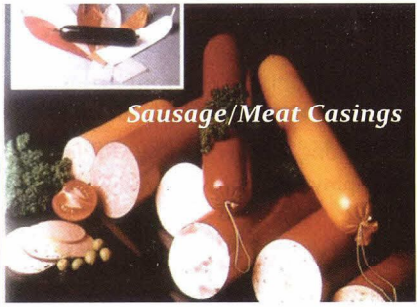
Pulp - Germany, Japan, UK & France

Cordage - USA, Canada, Germany & Asian countries

Fibercrafts - USA, Japan, Italy, UK & France



Abaca Pulp

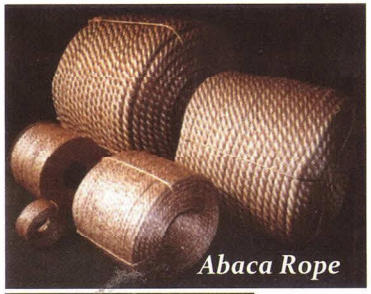


Sausage/Meat Casings

Abaca Vase

Japanese Yen

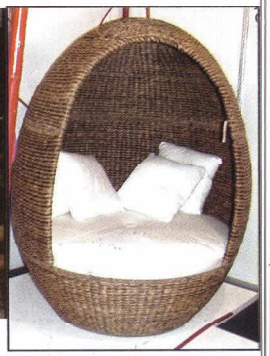
Philippine Peso



Abaca Rope

Fashion Wear

Tinalak Weaving



Abaca Scrunch

Abaca Sinamay

Abaca Lamps

Abaca Furniture

Piña Fiber

Pineapple, ***Ananas comosus*** (Linn) Merr., is an herbaceous plant with long, narrow, fairly stiff leaves with margins usually spiny except in few varieties.

The piña fiber is extracted from the leaves of the pineapple plant. In particular, the native variety "Red Spanish", yields excellent fiber for hand-weaving.

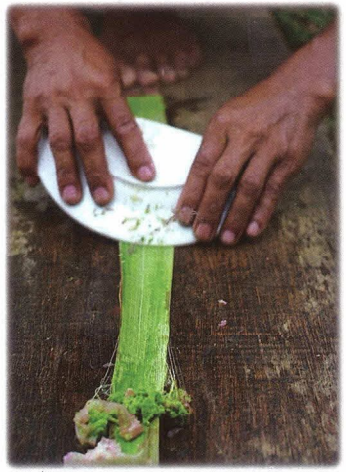
Red Spanish variety

Methods of Extraction

HAND-SCRAPING

This is the most common method used especially in Aklan, the center of the Philippine piña fiber industry.

This method is crude and tedious and uses tools such as porcelain plate, coconut shell, plastic comb and sea shells. It produces good quality fibers and makes possible the separation of the "liniuan" (fine fiber) from the "bastos" (coarse fiber). "Liniuan" is the material used in weaving the elegant pure piña cloth.



Hand-Scraping

DECORTICATION

Fiber extraction is done with the use of a decorticating machine. With this method, the fine and coarse fibers are mixed together.

Types

Basically, there are two types of hand-scraped piña fiber: "liniuan" (fine fiber) and "bastos" (coarse fiber).

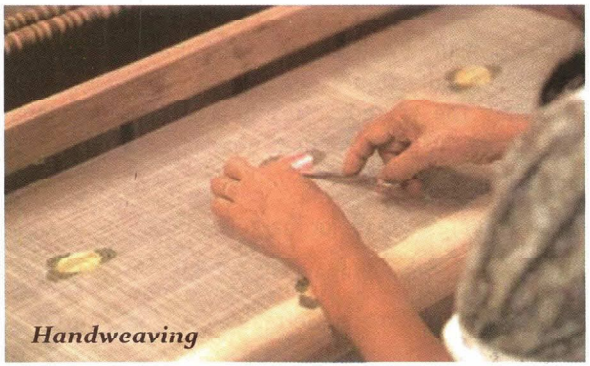
Knotted Piña Fiber

Areas of Production

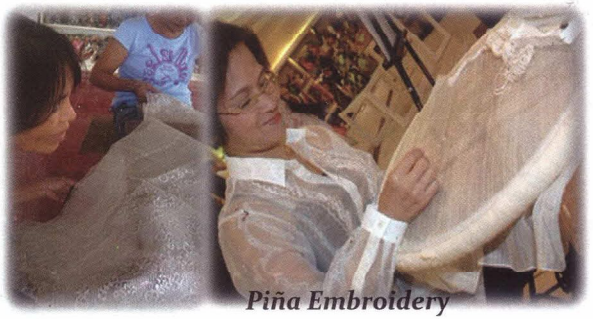
Hand-scraped piña fiber is produced in Aklan and Palawan while the decorticated ones are found in Camarines Norte.

Decortication

Decorticated Piña Fiber



Handweaving



Piña Embroidery

Fashion Wear

Embroidered Piña Products

Uses

Each strand of hand-scraped piña fiber is knotted one by one by hand to form a continuous filament for hand weaving into piña cloth. The piña cloth is an excellent material for making "Barong Tagalog", the Philippine national costume.

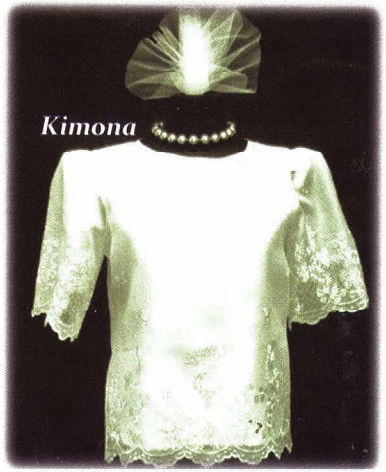
The piña cloth are also used for gowns, kimonas, panuelos, table linens, handkerchiefs, doilies, bags, table napkins and other useful materials.

Piña fiber is also an excellent material for handmade papermaking.

Major Markets

Hand-scraped piña fiber are sold to handloom weavers based in the provinces of Aklan and Palawan for the production of piña cloth.

The piña cloth is considered a special fabric by embroiderers and designers . They use the special fabric to create high-end products.



Baptismal Gown

Coir

Coir is obtained from the husk of the coconut, ***Cocos nucifera***, a perennial palm found in tropical countries. There are two types of coir, the white or yarn fiber and the brown fiber. The white fiber is longer and finer. The brown fiber is further classified into two categories: bristle fiber and mattress fiber.

Coir was the first hard fiber introduced to European ropemakers. Records indicate that as far back as the 19th century, the Philippines has been producing coir which was then made into ropes or twines for fishing and farming purposes.

Methods of Extraction

Coir is mechanically extracted either by the wet milling process which involves retting or by the dry milling process which utilizes a special machine called "down decorticator". The dry milling process is considered to be the most efficient and convenient method.

The husk contains about 30 percent fiber and 70 percent coir dust. Of the extractable fiber, 40 percent is bristle fiber and 60 percent is mattress fiber.

Grades

Coir has four grades:

CH1 - coir good

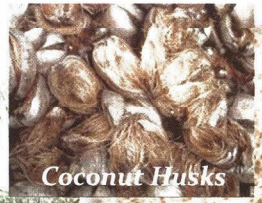
CH2 - coir fair

CH3 - coir mixed

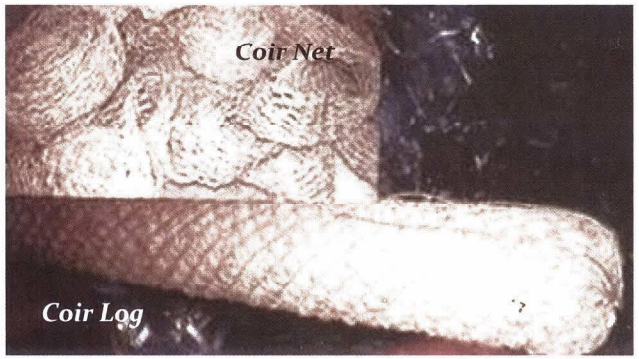
CH4 - coir mattress

Areas of Production

The producing areas are Davao del Sur, Davao Oriental, Laguna, Sarangani, Quezon and Davao del Norte.


Coconut Husks

Coir


Coir Net

Coir Log

Coir Twine

Uses

The fiber is made into mats and mattings, twines, ropes and cordage, filters, wall coverings, brooms, brushes, tufted carpets and rugs, mattresses, cushion and padding materials, insulation materials, caulking materials for boats, filtration pads and carpet underlay.

Coir recently found application in geotextiles, considered as the hope of the industry because of the great potential it offers.

An important use for coir dust, otherwise known as a waste product of coir fiber extraction, has recently evolved. Coir dust is now exported and used as substitute for peat moss, soil mulching, soil conditioning agent and other uses.

Major Markets

Coir is utilized by local manufacturers who process the fiber into a variety of uses.

Abroad, the major markets for coir are China, Taiwan, South Korea, Japan and Singapore.

Coir Carpet

Coir Brush

Coir Matting

Silk

Silk is extruded by a domesticated silkworm known as ***Bombyx mori*** which feeds solely on mulberry leaves. The silkworm spins cocoon from which continuous raw silk filaments are extracted.

Silk is regarded as the queen of fabrics because of its beauty and elegance.

Compared with other man-made and natural fibers, silk has excellent characteristics which make it a supreme fabric material in the textile industry. Silk is considered as the lightest fiber, has great elasticity, resilience and warmth, making it an excellent textile material.

Reeling

Reeling is the process of unwinding the cocoons to produce a continuous thread of raw silk fit for weaving. Reeling involves various operations like drying of fresh cocoons, sorting and cooking of dried cocoons, reeling and re-reeling of raw silk.

Uses

Silk is made into "Barong Tagalog", gowns, shawls, handkerchiefs, linens, fashionable garments, men's and ladies' accessories, home furnishings, novelty/gift items and for other consumer and industrial applications.

Areas of Production

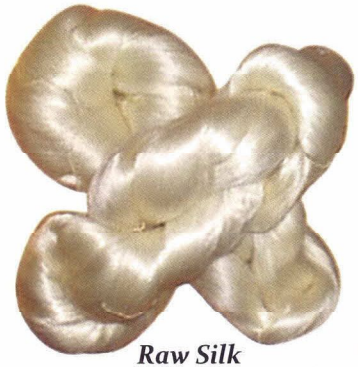
The cocoon-producing areas are the Cordillera Administrative Region (CAR), Region I and Western Visayas.

Silkworms

Cocoons

Handloom Weaving

Silk Yarn



Raw Silk

Major Markets

Locally-produced silk is used mainly by handloom weavers for the production of pure or blended silk fabrics. The fabrics are sold to both the local and foreign markets particularly to France, Australia and Hong Kong.

Silk Yarn

Barong Tagalog

Fashion Wear

Shawls

Shoes

Heads of states wearing Barong Tagalog of Philippine Silk (APEC Summit 2006)

Pillowcase

Buri

Buri, ***Corypha elata*** (Roxb) is a palm with large, fan-shaped leaves and stout petioles ranging from two to three meters in length.

Three types of fiber may be obtained from the buri palm: buntal, raffia and buri.

Buntal fiber is extracted from the petioles of the palm by means of hand pulling or retting. Raffia is the young shoot or leaf of the palm while buri is the matured leaf of the palm.

Grades

Hand pulled and retted buntal fibers have four (4) grades, namely: BUN-1, BUN-2, BUN-3 and BUN-4.

For bleached and unbleached raffia, the grades include RAF-1, RAF-2 and RAF-R.

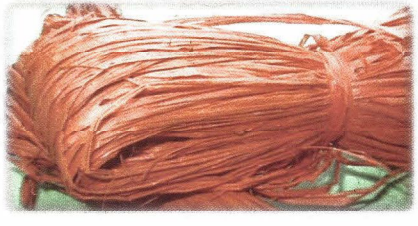
Uses

Buntal fiber is most commonly used for hat making as well as for other utility and fibercraft items, accessories, floor or whisk brooms and for specialty papers.

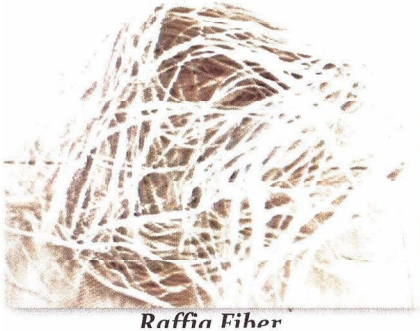
Raffia is loom-woven into fabrics or used as wall coverings, upholstery materials, folding doors, window hangings and fibercrafts such as bags, hats, placemats, slippers, portfolios and other decorative items.

Buri is primarily made into placemats, hats and braids.

Buri Palm



Dyed Raffia



Raffia Fiber

Buntal Fiber

Braided Buri

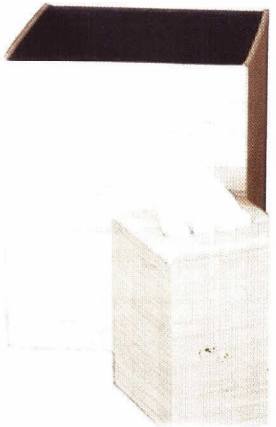
Areas of Production

Buntal	Bohol, Pangasinan, Palawan, Marinduque, & Quezon
Buri	Quezon, Capiz, Aklan, Pangasinan, & Bohol
Raffia	Bohol, Aklan, & Quezon

Buri Gift Box

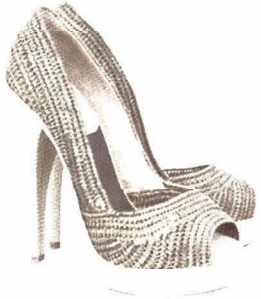
Major Markets

Buntal Hats	United States
	Australia
	United Kingdom
Raffia Hats	Japan
Buri products	United States
	Australia
	Europe

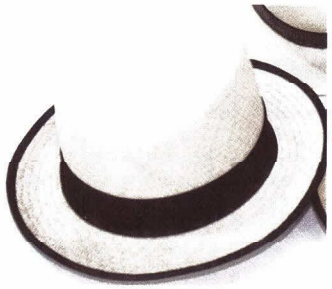


Buntal Wastebasket and Tissue Holder

Buntal Bag



Raffia Shoes



Raffia Hat

Buri Fan

SALAGO

Salago, a shrub native to Eastern Asia, Australia and the Pacific Islands, belongs to the ***Thymelaceae*** family, genus ***Wikstroemia Sp.***

METHODS OF EXTRACTION

Hand-cleaned method – The half of the bark covering the stem is peeled off from the butt end. The same is done with the remaining half. Then, with bare hands or with the use of blunt instrument, the scale attachments of the fibers are scraped off until the fiber is clean.

Boiling or steaming method – Cut stems are arranged in a container with bamboo slats at the bottom. This is to prevent the stems from coming in contact with the boiling water during the process to avoid discoloration. Outer scales are removed by gripping the stem firmly with used jute sack or synthetic overlaps with one hand and sliding it through the palm of the other hand. This method gives high fiber recovery and good storage quality.

USES

Salago yields exquisite and lustrous fiber which is an excellent material in the manufacture of specialty paper like currency paper, bank notes, checks, bond paper for legal documents, certificates and insurance policies requiring a certain degree of permanence, strength and durability. It is also suitable for the manufacture of stencil paper, handmade paper and may provide a good supplement for long-fibered pulp as a reinforcing material for the manufacture of paper where short fibered pulp is used. Its other industrial applications are for making Japanese sliding doors (shoji), kimono and components for radio and microcomputers.

GRADES

Hand cleaned

SG-1 (Salago Superior)

SG-2 (Salago Good)

SG-3 (Salago Fair)

SG-X (Salago Residual)

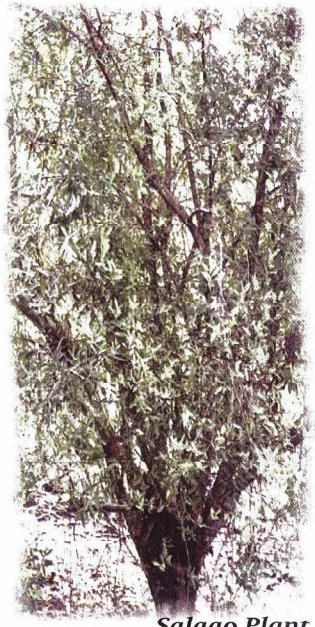
Steamed

S-SG-1 (Steamed Salago Superior)

S-SG-2 (Steamed Salago Good)

S-SG-3 (Steamed Salago Fair)

S-SG-X (Steamed Salago Residual)



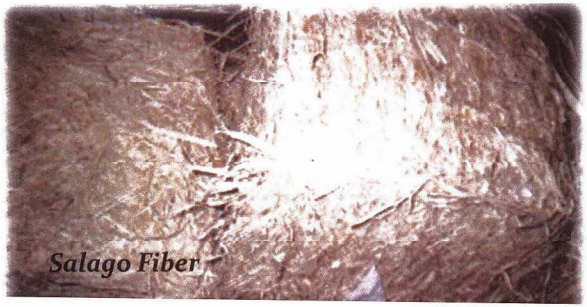
Salago Plant

MAJOR MARKETS

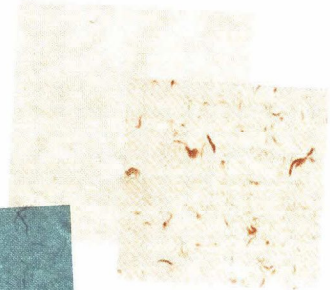
The major markets for salago fiber are Japan, Taiwan, Thailand and China.

AREAS OF PRODUCTION

Salago generally grows wild in the different parts of the country. Its commercial production, however, is concentrated mostly in Central Visayas. Other producing areas include Bicol and Western Visayas.



Salago Fiber



Salago Paper

Maguey

Maguey, ***Agave cantala*** (Roxb), belongs to the **Amaryllidaceae** family, genus ***Agave Sp***.

A maguey plant grows into a rosette of leaves which droops into a horizontal position when it matures. The leaves which crowd on the stem are fleshy, thick and persistent for several years. The thin grayish leaves end in terminal spines and bear marginal prickles.

Methods of Extraction

DECORTICATION

The leaves are fed directly into the decorticating machine wherein extraction is faster and the color of the fiber is lighter compared to retted fiber.

RETTING

Retting is the traditional method of maguey fiber extraction. Bundled leaves are submerged either in retting tank or in rivers or creeks. When retting in salt water, the leaves are first split into halves, cutting off the butt ends half-way to the tips. In fresh water retting, the leaves are split into several pieces 1 to 2 centimeters wide with the use of a knife. Retting process usually takes 15 days in salt water and 20 – 30 days in fresh water.

Grades

Principal Grades

MR-1 (Maguey One)

MR-2 (Maguey Two)

MR-3 (Maguey Three)

Secondary Grades

MR-O (Maguey String)

MR-T (Maguey Tow)

MR-Y (Maguey Damaged)

Maguey Fiber

Uses

Maguey fiber is utilized in the manufacture of cordage, ropes and twines, carpets, handmade paper and other fibercraft items. In addition, cottonized maguey can be blended with acrylic or polyester fiber to be spun into industrial yarns suitable for wall covering, upholstery, bags and curtain materials.

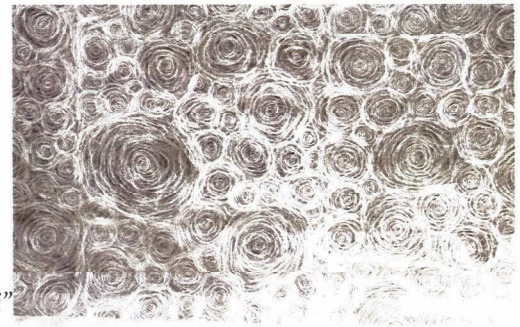
Markets

The bulk of maguey is consumed locally by twine makers and fibercraft processors.

Areas of Production

The areas of production include Bohol, Cebu and Pangasinan.

Maguey Plant



"Tagasi"

RAMIE

Ramie, ***Boehmeria nivea*** (L) Gaud is a bast fiber plant which was introduced to the Philippines from Japan in 1911. Its commercial production started in 1930 in the Mindanao areas.


Ramie Plant

The plant produces a large number of erect and slender stems or stalks, usually non-branching and growing from four (4) to seven (7) feet at maturity. It has heart-shaped, lustrous green leaves which are silvery white underneath, 7.5 to 15 cms. long with clusters of small greenish flowers, ranging from 8 to 16 mm. in diameter. The stalks turn brown and woody as they mature.

METHODS OF EXTRACTION AND GRADES

Ramie fiber is extracted from the stalk of the plant using a decorticating machine. Decorticated ramie has the following grades:

RD-A	(Ramie Special)
RD-1	(Ramie Good)
RD-2	(Ramie Fair)
RD-3	(Ramie Short)
RD-O	(String)
RD-T	(Tow)
RD-W	(Waste)


Ramie Fabrics


Ramie Linen

USES

Ramie is considered to be the strongest among vegetable fibers, having a tensile strength eight times that of cotton and silk. Its most important use is for clothing purposes, either pure or blended. As a fabric, ramie is a good material for dyeing, does not readily fade, is easily laundered, dries quickly and becomes smoother and more lustrous with repeated washing. Ramie fabric is made into clothing apparels, bed sheets, napkins, table cloths, knit products, traveling materials and pillow cases.

Other uses of ramie fiber are for carpet backings, flag buntings, fire hoses and a variety of industrial products such as yarns, sewing threads, fishnets and fishing lines, naval cordage, sail cloth, canvas, cable insulation and sacks.

". . . abaca fibres are a renewable resource *par excellence* and can form part of the overall solution to climate change."

Food and Agriculture Organization (FAO)
of the United Nations