THE BRANDING INNOVATION OF MENS STREETWEAR FROM BORASSUS FRUIT FIBRES FOR ZENNIALS GENERATION BY USING CIRCULAR DESIGN

Worrapat Meangruamyard*, Boon-arak Raksawong**
Faculty of Fine and Applied Arts, Chulalongkorn University, Bangkok, Thailand
E-mail: 6480037735@student.chula.ac.th

ABSTRACT

The objectives of Creative innovation of men's streetwear brand from Borassus fruit fiber for the Zennials with a circular design concept aimed to discover the potential approach for developing Borassus fruit fiber. It was experimental and qualitative research The researcher studied the properties of Borassus fruit fiber from agricultural waste and experimentally processed it into textiles.

The findings revealed that the properties of Borassus fruit fiber were 7-14 cm long and yellow. It would turn brown when it dried and it had high hardness. In experiments, the Borassus fruit fiber can be softened by boiling them with 500 g of ash and 15 liters of water per 300 g. It could be woven with cotton for being textiles by 3 ratios as follows: Ratio 1: 50% Borassus fruit fiber mixed with 50% cotton found that the textile was higher in hardness. Ratio 2: 30% Borassus fruit fiber mixed with 70% cotton found that the textile was lower in hardness. Ratio 3: 15% Borassus fruit fiber mixed with 85% cotton found that the textile was obviously soft and could be processed into lifestyle products such as clothes, bags, hats, and shoes. Thus, Borassus fruit fiber can be an alternative material that reduces agricultural waste and increases the efficient use of resources. Moreover, it is an environmentally friendly alternative material that aligns with the circular economy.

Keywords: Borassus fruit fiber, textile, circular economy, innovation

INTRODUCTION

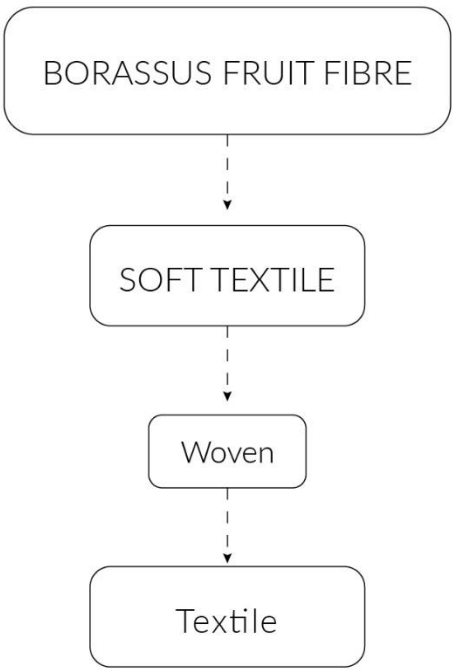
The selection of environmentally friendly materials and products has increasingly attracted consumers, especially the textile industry that plays an important role in their lives. therefore, product groups and textile products that are environmentally friendly are in demand in the market continuously Production processes using local natural raw materials or cash crops and agricultural wastes are applied to design and wisdom. For this reason, the concept of turning agricultural waste into cultural textiles has become popular. (Office of the Higher Education Policy Council, National Science, Research and Innovation, 2021)

Thailand is a lowland area rich in natural resources such as soil, water and forest resources. These resources make Thailand an ideal land for planting. Therefore, the researcher sees the process of processing sugar pulp from waste that affects the environment by landfilling or burning process. The researcher chose to study the area in Phetchaburi because it is the province with the highest number of sugar palm trees in Thailand. Palmyra Palm is an economic plant

of Phetchaburi that has been associated with the traditional way of life and wisdom of the community. Phetchaburi is a city full with relevant lifestyles and is known for sugar palm. In many communities where there are sugar palm trees, villagers also use sugar as a food and supplementary occupation to support their family until it becomes a continuous industry such as the confectionery business which generates a lot of waste. The Talay processing process is simple. Khun Somya Mingmueang gave information on the process of preparing Borassus fruit fiber from making desserts. She crushes the meat of palm seed to sell at 25-30 baht per kilo. The amount that can be made of Borassus fruit fiber per day is about 10-20 kilograms per day. Sugar palm seeds will be sold for further cultivation. The price is 100 seeds for 50 baht. Therefore, it leaves Borassus fruit fiber as waste material. The way to get rid of Borassus fruit fiber is to burn them or landfill them. As a result, the environment in the community smells or creates pollution in the atmosphere. Therefore, the researcher has a way to develop waste from Borassus fruit fiber to develop into textiles to help reduce agricultural waste (Chanphen Chumsaeng and Pitak Upan, 2013:11) (Phanyot Worachetwarawat, Ms. Pattrapa Joypot, and Pornpayom Worachetwarawat, 2016 :5)

By exploring such problems, the waste from the crushing process can add valueless to environmentally friendly fashion textiles. It is to create value for agricultural waste by developing them into qualified textiles to produce lifestyle products such as clothes, bags, hats, and shoes. In addition, palm fiber textiles can be an alternative material that reduces agricultural waste. It promotes the efficient use of resources and is an environmentally friendly alternative material. It also aligns significantly with the idea of a circular economy.

Framework



Research Objectives

1. To find ways to develop textiles from waste Borassus fruit fiber.

2 To find ways to create value for agricultural waste Borassus fruit fiber

Research Scope

The scope of this study is as follows:

Content Scope

1. Study the characteristics and properties of waste Borassus fruit fiber.

2. Study the process of weaving from natural fibers.

Area Scope

1. Study the production source at Nong Kra Jed Sub-district, Ban Lad District, Phetchaburi Province.

2. Study the hand-woven silk source at Ban Noi Na Charoen, Sisaket Province.

Research Methodology

This research is applied to textile design and finds ways to develop textiles from Borassus fruit fiber. It is to reduce waste from Borassus fruit fiber by landfill and incineration. It also reduces air pollution and disturbing odors in the community. Studies from various sources such as literature, articles, relevant research and interviews have the following research methodology.

Step 1 Collect and analyze data for developing textiles made from Borassus fruit fiber.

1.1 Collect information from documents, literature, articles and related research.

1.2 Conduct the actual-site surey and collect qualitative data by taking pictures and taking notes.

Step 2 Borassus fruit fiber processing from palmyra palm crushing waste

2.1 Adjust the properties of Borassus fruit fiber to be suitable for use as textiles.

2.2 Process Borassus fruit fiber into lifestyle textiles products such as clothes, bags, shoes, and hats.

RESULTS

Part 1: From collecting data on Borassus fruit fiber, it revealed that there are 3 species of sugar palm trees in Phetchaburi Province. It can be divided into Mor Palm, Kai Palm, and Mixed Palm. It consists of about 1-20 sugar palms. The appearance of the toddy palm fruit is spherical and shiny and the end of the fruit is yellow. When the fruit is ripe, it will be black, and fragrant. Inside the fruit, there is yellow tissue. The fruit is about 15-20 centimeters in size. It has 1-3 large and hard seeds. The length of the fiber is 7-14 centimeters depending on the size of the palm. Borassus fruit fiber is yellow. When it is crushed to remove the pulp, Borassus fruit fibers will turn pale yellow. After Borassus fruit fiber dries, it turns brown. The properties of Borassus fruit fiber are hard. After palmyra palm crushing, Borassus fruit fiber is immediately burned or landfilled, causing agricultural waste and odor to the community.

Figure 1 Borassus fruit fiber waste
Source: Waraphat Muangruamyat, (2023)

Figure 2 Burning and landfilling of Borassus fruit fiber
Source: Waraphat Muangruamyat, (2023)

Part 2: Borassus fruit fiber processing from palmyra palm crushing waste

2.1 Experimental processing of adjusting the properties of Borassus fruit fiber to be suitable for use as textiles.

Borassus fruit fiber contains flax, cellulose, and hemicellulose. In particular, it has a high content of cellulose. Therefore, the researcher experimented Borassus fruit fiber that had been crushed to decompose the fiber structure and boiled it with ash water at the appropriate ratio for 3 hours. It is to keep the fibers soft for the textile process. There are steps as follows:

1. Cut off the Borassus fruit fiber from the seeds.
2. Clean and crush the fibers to break down the structure.
3. Clean the Borassus fruit fiber for the second time.
4. Bring it to boil with ashes according to the ratio.
5. Clean the Borassus fruit fiber for the third time.
6. Dry Borassus fruit fiber until it can be used in the weaving process.

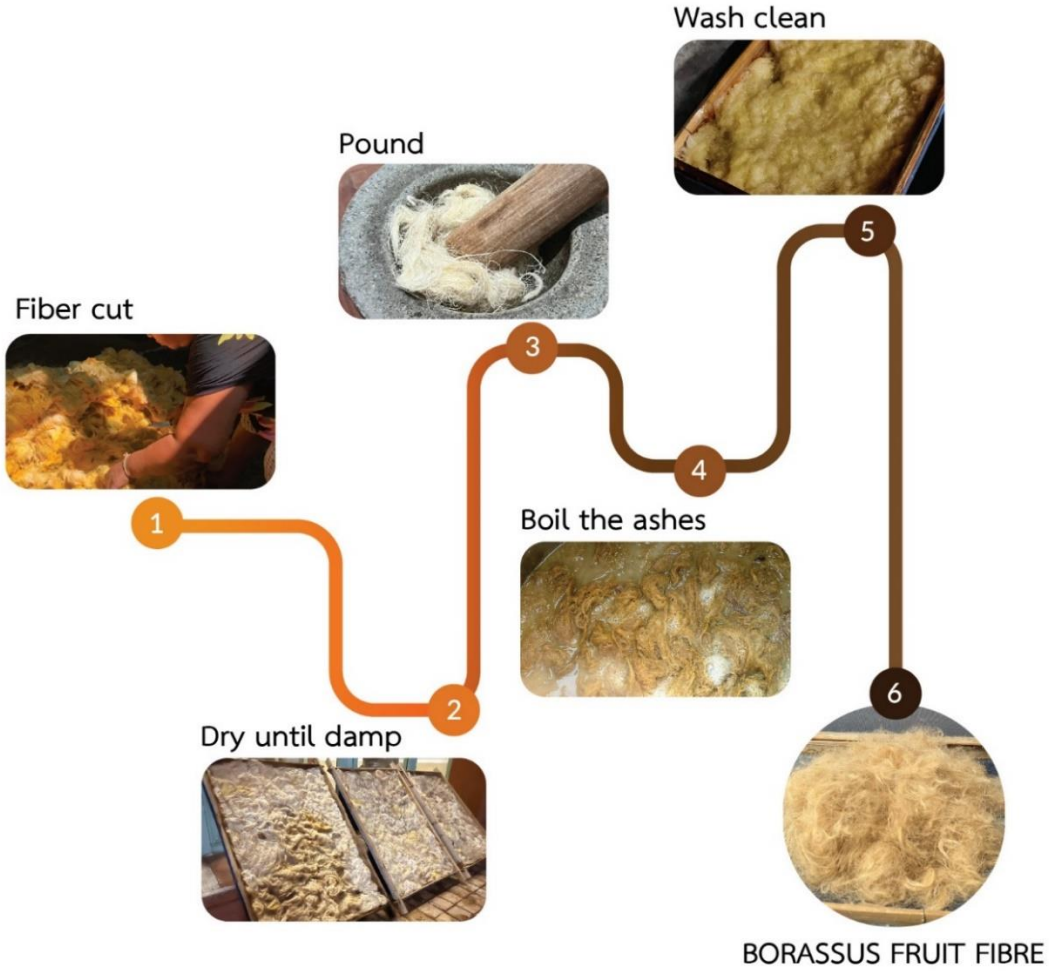


Figure 3 Borassus fruit fiber preparation process
Source: Waraphat Muangruamyat, (2023)

As Borassus fruit fiber undergoes 6 processes, it is fluffier than unprocessed fiber.

Unprocessed fibers **Processed fibers**

Figure 4 Difference of Borassus fruit fibers
Source: Waraphat Muangruamyat, (2023)

By adjusting Borassus fruit fiber properties, it was found that Borassus fruit fiber has hardness from sugar palm fiber structure as follows: Linen 12.20% Cellulose 62.90% Hemicellulose 18.42% In particular, it has a high content of cellulose. The researcher experimented Borassus fruit fiber that had been crushed to decompose the fiber structure and boiled it with ash water at t the rate of 500 grams of ash, 15 liters of water per 300 grams of fiber for 3 hours. It could make the fiber less harsh significantly.

2.2 Experimental processing of Borassus fruit fiber into textiles that can be designed into lifestyle products such as clothing, bags, shoes and hats.

After Borassus fruit fiber has the proper properties, it is woven and mixed with cotton for textile using the following ratios:

Ratio 1: Borassus fruit fiber 50% mixed with cotton 50%

The textile was very harsh.

Ratio 2: Borassus fruit fiber 30% mixed with cotton 70%

The textile was less harsh.

Ratio 3: Borassus fruit fiber 15% mixed with cotton 85%

The textile was noticeably softer.

It can be summarized as Table 1.

Table 1 : Summarize the experimental results of textile hardness from the ratio between Borassus fruit fiber mixed with cotton.

The ratio between Borassus fruit fiber mixed with cotton.	Textile from Borassus fruit fiber	Harshness
50 : 50		High
30 : 70		Medium
15 : 85		Low

CONCLUSION AND DISCUSSION OF RESEARCH RESULT

Borassus fruit fiber has a high cellulose content of 62.90%. The fiber is yellow in color and about 7-14 cm long. It has a relatively large fiber size. Therefore, it is harsh.

Decomposition by pounding and boiling with ash water can make Borassus fruit fibers less hard. Borassus fruit fiber textiles that are suitable for this research are cotton as a blend with ratio 3.

Borassus fruit fiber 15% and cotton 85% result in a soft fabric. This textile has the least hardness. It can be made into lifestyle products.

In addition, Borassus fruit fiber textiles obtained from this research reduce agricultural waste that negatively affects the environment. It is also an efficient use of resources. It is an environmentally friendly alternative material in line with the idea of a circular economy.

SUGGESTION

1. The experimental process is just a preliminary experiment. If the ratio of ingredients used in boiling is improved, it will be possible to obtain better material properties.

2. If there is a use of modern machinery, it will help the textiles to be completer and more standardized.

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