

# CLOTHING DESIGN FROM WOVEN FABRIC OF THE NAPIA GRASS FIBERS

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## ABSTRACT

Clothing design from woven fabric of Napier grass fibers: The objectives of this study were (1) to investigate the properties and high performance of Napier grass woven fabric, and (2) to design for irritation performance or compliance of Napier grass woven fabric on various occasions. The research team studied the properties and continuous use of Napier grass fiber woven fabrics for appropriate clothing.

The study results revealed that Napier grass fiber, or Banana grass, is a type of natural fiber with a diameter somewhat larger than other types. The fibers, extracted from the trunk, are rough and must undergo a spinning process mixed with other natural fibers, such as cotton, to hold the Napier grass fibers together before being spun into yarn. The assembled fabric has a slightly rough texture and an uneven surface, characteristic of natural fiber woven fabric, providing good ventilation and water absorption for dyeing. After the finishing process, which involves adding additives to increase fabric properties, the fabric becomes softer. When dyed with natural extracts, it creates patterns suitable for clothing.

Based on the fabric properties, the research team used it as raw material to design ready-to-wear clothing for the target group—new-generation, working-age individuals in urban settings, who value nature, health, and the environment. The clothing can be worn to work and on various occasions in daily life, comprising a total of 5 styles.

**Keywords:** woven fabric , fibers , Napier grass , Pennisetum purpureum , clothing

## INTRODUCTION

"Napier grass (*Pennisetum purpureum*) is native to African countries and is currently found growing throughout the world in warm climates. In Thailand, Napier grass was first brought from Malaysia and planted in 1929. Napier grass fiber, or Bana grass, is a type of natural fiber with a diameter somewhat larger than other types of natural fibers. It features large trunks and long leaves, with the fibers primarily located in the trunk.

Napier grass is a grass with large stems, and the trunk breaks into clumps. New plants can be planted as the trunk is strong, with some short trunks underground. Above ground, the trunk has a spherical shape and is upright, with a size of 2-2.5 centimeters and a height ranging from 2 to 6 meters. The trunk has joints, resulting in shorter fibers. Research on fibers from Napier grass aims to develop them for weaving into fabric. Soft fibers such as cotton, kapok, and linen are blended with Napier grass in ratios of 30/70 and 50/50. The blended fibers are then spun into strands for weaving into fabric. This ratio experiment explores differences in texture and various characteristics of the fabric, contributing to the potential development of the fashion industry in the future.







The research team, considering the guidelines for designing clothing, targets the new generation of individuals living in the city but desiring a simple life. They appreciate dressing up, traveling, and being close to nature, while also caring about health and the environment. In today's fast-paced urban life, many people are in a hurry, from the new generation to working-

age individuals. They have embraced fabric woven from this natural fiber, using it as a raw material for designing ready-to-wear clothing.



**Figure 1:** woven fabric of the Napier grass fibers  
**Source:** Siratcha Samleethong

**Table 1:** Napier grass fibers fabric to natural dyed

Plants used for dyeing	How to dye	The resulting color	Dyeing pictures	Fabric after dyeing
dye from Lac	hot dyeing	Magenta tone		
Turmeric mixed with Samor Thai	hot dyeing	Yellow-green tone		
Indigo dye	Cold dyeing	Blue-green tone		

## OBJECTIVE

1. To study the properties and characteristics of Napier fiber woven fabric.
2. To design men's or women's clothing suitable for Napier grass fiber woven fabric and different occasions of wearing.

## RESEARCH METHODOLOGY

This research study employs qualitative research methods to examine the structure, characteristics, and properties of woven fabrics made from Napier grass fibers. The aim is to collect information and use it as a guideline for designing ready-to-wear clothing.

The research process includes detailed study methods, data collection plans, and is divided into three parts:

Part 1: Study and collect data on the content properties of woven fabric Napier grass fibers from various documents or academic articles.

Part 2: Study the target group.

Part 3: Analyze and synthesize data to determine clothing design guidelines that suit the target group and occasions of wearing.

## RESEARCH RESULTS

Napier grass fibers, also known as Banana grass fibers, are a type of natural fiber. The diameter is somewhat larger than other types of natural fibers, featuring large trunks and long leaves. Fibers extracted from the trunk are rough and hard, requiring a spinning process mixed with other natural fibers such as cotton fibers to hold them together before being spun into yarn. When woven with cotton fibers, the resulting fabric has a slightly rough texture. According to Chanoknart Mayusoh (2015), "the rather rough, uneven surface is one of the charms and uniqueness of natural fiber woven fabric." In terms of ventilation and water absorption, the fabric performs well. After the finishing process, which involves adding additives to enhance raw fabric properties, such as softening, the fabric becomes softer. When dyed with natural extracts, it creates patterns suitable for clothing.

Based on the fabric properties, the research team has utilized it as raw material for designing ready-to-wear clothing for the target group—the new generation, working-age individuals living in urban areas with a lifestyle that values nature, health, and the environment. The clothing can be worn to work and on various occasions in daily life, featuring 5 styles as illustrated in the sketch design (Picture 2) and collection (Pictures 3–7).



**Figure 2:** sketch design  
**Source:** Siratcha Samleethong



**Figure 3:** Napier grass woven fabric dyed naturally from Indigo  
**Source:** Siratcha Samleethong



**Figure 4:** Napier grass woven fabric dyed naturally from Lac.  
**Source:** Siratcha Samleethong



**Figure 5:** Napier grass woven fabric dyed naturally from Lac  
**Source:** Siratcha Samleethong



**Figure 6:** Napier grass woven fabric dyed naturally from turmeric and Chebulic Myrobalans  
**Source:** Siratcha Samleethong



**Figure 7:** Napier grass woven fabric dyed naturally from Indigo  
**Source:** Siratcha Samleethong

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