

Development of Fabric from Sansevieria Trifasciata (Snake Plant)

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ABSTRACT

The study aimed to investigate the potential of Sansevieria Trifasciata fiber for textile application. By using the Sansevieria Trifasciata fiber, the researcher attempted to produce a fabric that can compete with other native fabrics here in the Philippines. This natural fiber from Sansevieria Trifasciata is hoped to support, promote and encourage the growth and development of other native products in the Philippines particularly in the province of Isabela. To assess the acceptability of Sansevieria Trifasciata fabric, a group of students and teachers/trainers were asked to do the evaluation along these criteria: appearance, durability, usefulness and eco-friendliness. Results of evaluation showed high acceptability of the product.

The product has unique property which makes it capable of withstanding pressure without any fiber degradation. The developed fabric's breaking strength likewise revealed that it has physical potential to be used in manufacturing goods made of fabric. Due to its great strength, cost-effectiveness and renewable source, fabric developed from Sansevieria Trifasciata fiber has potential use in the clothing industry.

Keywords

Extraction, Fabric, Fiber, Retting Method

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Introduction

The fashion industry is one of the most dynamic fields today. It has been growing and expanding throughout the years, and as the market grows and evolves, customers need to become more specific and unique. Subsequently, it is the second most polluting industry in the world. Waste from chemicals and dyes and fabric crop from some manufacturers which resort to burning unused clothing if the supply overtakes demand. (The Manila Collectible, 2017)

However, there is a sustainable fashion movement catching momentum of the fashion apparel industry in following the footsteps of the food industry in the efforts to produce products from certified organic materials, without the use of harmful chemicals. The aim is to produce pesticide-free fibers, otherwise known as organic fibers. Naturally, these products are intended to appeal to the same eco-friendly consumers already hooked on organic food. This is the target group of the eco-friendly fabric business. Today's consumers are demanding safer, more eco-friendly options for all aspects of life and clothing are no exception.

It is for this reason that the researcher conducted this study to discover more about Sansevieria, how it can be made into an eco-friendly product that will help not only the environment but also the clothing industry.

Hence, the study focused on the possible extraction of fiber from Sansevieria Trifasciata plant for textile applications. Furthermore, by using the Sansevieria trifasciata fiber, the researcher attempted to produce a fabric that can compete with the other native fabrics here in the Philippines like piña fabric, corn husk fabric, water hyacinth fabric, coconut husk fabric and many others. This Sansevieria trifasciata fabric will support, promote and encourage the growth and development of native products in the Philippines particularly in the Province of Isabela.

EXPERIMENT

Materials

Sansevieria trifasciata (snakeplant) leaves samples were collected and gathered from barangay Minabang, Morado and Pasa in the City of Ilagan, Isabela. The leaves were prepared and immersed in the retting solution for three weeks (Fig. 1). The extracted fibers were brought to the DOST-Philippine Textile Research Institute (PTRI) in Taguig for the physical testing and weaving process.



Fig. 1 Water retting

B. Methods

It started from the collection and preparation of samples, then the fabric production, after which, the developed fabric was evaluated by respondents (Fig. 2). After the valuation of end product, the results were gathered and analyzed.

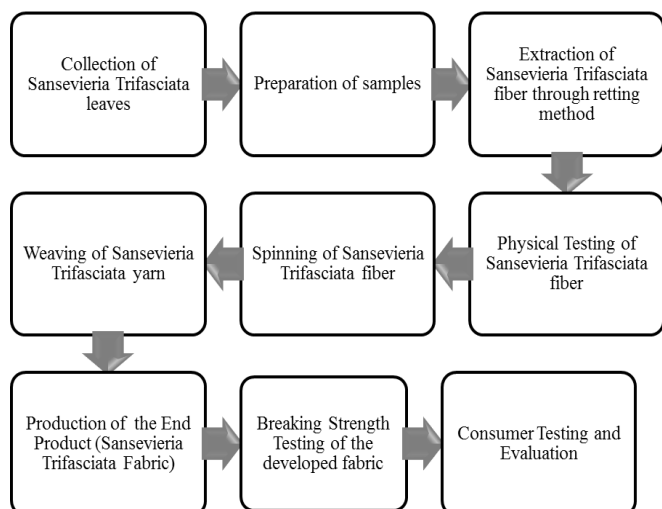


Fig. 2 Production flow chart

Physical Testing Laboratory Test Result

Physical tests have proven that it can also compete with the other native fabrics here in the Philippines. This less explored natural fiber from Sansevieria trifasciata will support, promote and encourage the growth and development of native products.

Tensile Strength, kgf (N) examination confirmed the average elongation break at 2.5% indicating that sansevieria trifasciata fibers has unique property especially capable of withstanding pressure without any fiber degradation.

RESULTS AND DISCUSSION

Physical properties showed this fiber has good strength, fineness with low elongation. Length of

25 mm gage indicates that it can be easily made into yarn of coarser count. Tensile Strength, kgf (N) examination confirmed the average elongation break at 2.5% indicating that sansevieria trifasciata fibers has unique property especially capable of withstanding pressure without any fiber degradation. The developed fabric's breaking strength at 4.8% reveals that it has physical potential to be used in manufacturing goods made of fabric. The group of students and teacher/trainer-respondents found Sansevieria Trifasciata fabric "highly acceptable" in terms of appearance, durability, usefulness, and eco-friendliness. The fashion designers/boutique owners/workers rated the produced fabric "acceptable". Moreover, no significant difference was found in the evaluation of the three groups of respondents on the acceptability of Sansevieria Trifasciata Fiber as new fabric with regard to appearance, durability, usefulness and eco-friendliness.

Respondents' Evaluation on the Developed Fabric from Sansevieria Trifasciata Fiber

Table 1

Summary of Respondents' Evaluation on the Developed/Produced Fabric from Sansevieria Trifasciata Fiber

Criteria	Students		Professor s/ Teachers/ Trainers		Experts	
	Me an	Q D	Me an	Q D	Me an	Q D
A. Appe aranc e	4.6 1	H A	4.4 8	A	4.3 4	A
B. Dura bility	4.5 2	H A	4.5 7	H A	4.4 0	A
C. Usefu lness	4.5 9	H A	4.5 0	H A	4.4 8	A
D. Eco- friendliness	4.7 4	H A	4.5 8	H A	4.4 7	A
Grand Weighted Mean	4.6 1	H A	4.5 3	H A	4.4 2	A

The summary on Table of evaluation reveals that in terms of appearance, durability, usefulness and eco-friendliness, the group of students and professor/teacher/trainer-

evaluators rated it as “highly acceptable” as shown by the grand weighted means of 4.61 and 4.42 respectively.

Along all the criteria, the expert group rated it “acceptable” with grand weighted mean of 4.42. This implies that the expert-evaluators perceived the finished or produced fabric quite differently with the other two groups of evaluators.

Nonetheless, the two ratings “highly acceptable” and an “acceptable” still indicate potential application of Snake Plant fabric in composites such as woven.

Comparison in the evaluation of the three groups of respondents on the acceptability of *Sansevieria Trifasciata* fabric

Table 2

*Summary of Analysis of Variance of Respondents' Evaluation on the Acceptability of Fabric with *Sansevieria Trifasciata* Fiber*

	Sum of Square s	Df	Mean Squar e	F	p- value
Between Groups	.528	2	.264	1.74 3	.180
Within Groups	17.725	117	.151		
TOTAL	18.253	119			

Table shows comparison in the evaluation of the three groups of respondents on the acceptability of *Sansevieria Trifasciata* Fabric. With an F value equal to 1.743, and p-value = 0.18 greater than 0.05 level of significance, the null hypothesis is accepted. This means that all the respondents agreed on the acceptability of the fabric. As seen in the table, the computed F ratio values are less than the critical F ratio value.

Therefore, there is no significant difference among the evaluations of the three groups of respondents on the acceptability of the fabric with *sansevieria trifasciata* fiber in terms of appearance, durability, usefulness, and eco-friendliness.

CONCLUSION

In the light of the afore-enumerated findings, the study concludes that *Sansevieria Trifasciata*

(Snake Plant) is a good source of fabric. Fabric produced from this plant is comparable in quality to what is extracted from other sources or materials like piña fabric, corn husk fabric, water hyacinth fabric, coconut husk fabric and other native sources.

Its texture, translucence, stiffness, crease resistance and odor are acceptable though there still need further development. Generally, the fabric produced from *Sansevieria Trifasciata* is potential for garment production and can be widely commercialized given its being readily available in the locality.

REFERENCES

- [1] Rinaldi, Bandinelli, R. (2013). New Product Development in the Fashion Industry: An Empirical Investigation of Italian Firms. *International Journal of Engineering Business Management* Special Issue on Innovations in Fashion Industry, 5.
- [2] Anon, (2001) Commodity and trade division', Food and Agriculture Organization of the United Nations, Economic and Social Department (ES), Retrieved from <http://www.fao.org/>.
- [3] Karus, M. and Kaup, M. (2002): Use of natural fibers in the Germany automotive industry, Retrieved from <http://www.commonlink.com/~olsen/hemp/IHA/>
- [4] The Manila Collectible, 2017University of Illinois Extension. “Horticulture and the Environment” April 20, 2008 Retrieved from <http://web.extension.uiuc.edu/cook/urbanhort.html>
- [5] Bungag, N. (2017), Acceptability of Corn Zea Mays Husk Fiber as Raw Material in Fabric Making. Published Thesis, Marikina Polytechnic College.
- [6] Manipon, R. (2017), Dyeing Fabrics Using Indigenous Materials. Unpublished Thesis. Isabel State University.
- [7] Robson, D., Hague, J., Newman, G., Jeronimidis, G., and