
***AN ANALYTICAL STUDY OF THE IMPORTANCE OF SOME FOOD WASTE
IN MAKING TEXTILE FIBERS***

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Abstract

The research problem is summarized in providing sustainable fibers as a solution to companies facing problems related to environmental problems; these fibers are also conducive to meeting the market requirements of high quality products these days, as banana fibers possess many beneficial physical and chemical properties that enhance their use in clothing. Research aims to converting banana cultivation waste into environmentally friendly textile fibers. And the sustainable management of natural resources such as bananas in the fabric industry.(3)

key words:(Bananas - food waste - Textil - Recycling – Sustainable) .

1. Introduction

With the passage of time, the prosperity of modern technology, and the world's tendency to manufacture environmentally friendly fibers, we find that the world's eyes have turned towards the manufacture of textile fibers from the residues of some foods such as shrimp peel and banana stems, among others. In our research, we specialize in transferring the banana leg waste in the textile fibers industry.(8) In recent times, the banana transformation experience in the textile industry has become a global experiment that the world seeks to preserve the environment from pollution resulting from burning banana cultivation waste. Given the large quantities of water consumed by cotton cultivation, and the state of water shortages and droughts in many regions around the world, researchers and specialists began to search for an alternative capable of providing fibers and yarns, and

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Swiss experiments have already succeeded in reaching the possibility of producing fibers and yarns from the trunks of banana trees or plants. Pinch, shrimp, peel, wood, or flax are called sustainable alternatives, as the textile industry tends to produce alternative fabric fibers that are less harmful to the environment. In this research, the two researchers presented an illustrative analytical study on the importance of producing environmentally friendly and sustainable textile fibers from some food waste, especially banana plant waste. (6,8)

2. Material and Methods

2.1. Materials

Bananas is the largest flowering herbaceous plant, and everything that appears on the surface of it grows from an underground structure called the corm. The plant is somewhat tall and powerful, and is often mistakenly thought to be trees. (4)

One of the most important fruit crops in the world that is grown on vast areas in the tropics because of its valuable applications in the food industry. Its massive by-products are an excellent source of high-value raw materials for use in the textile and other industries by recycling its agricultural waste. Banana fiber, also known as "Musa fiber", is one of the strongest natural fibers in the world. As it is biodegradable, the fibers consist of thicker cell tissues, are grouped together by natural gums and mainly consist of cellulose, hemicellulose and lignin. They are similar to natural bamboo fibers, but their circulation, softness and strength are better. (3,4)

2.2. Methods

2.2.1. How to use banana fibers:

Banana fibers can be used to make a number of different textiles with different weights and thicknesses, depending on which part of the banana roots the fibers were extracted from.

Fibers make very strong paper, which is suitable to replace non-biodegradable or animal-based materials in some industrial and fashionable

applications. "In addition to being naturally water-resistant, fire-resistant and recyclable, according to the article (" Green Banana " (Studies have confirmed that, on average, a person consumes about 11.9 kg of bananas annually. But more than a billion tons of banana tree trunks are disposed of each year, and research indicates that it takes 37 kg of stems to produce a kilo of banana fibers.(1)

2.2.2. The registered uses for the different parts of the banana plant are as follows:

Bananas are the main source of starch for many inhabitants of the tropical regions of the world. The fruit is eaten and peeled either raw or cooked, where it is fried, and jam is also made from it. And pancakes, as you make from it dried or fried slices, while dried bananas are ground and made from flour, bread.(3)

2.2.2.1. The peel is used as it is as feed either for the animal, for poultry, and even for fish, as it is used for water purification, as it can extract heavy minerals from river water.(5) It also used banana peel powder to filter heavy metals and radioactive materials resulting from industrial pollution for the nuclear and fertilizer industries, it is used Banana peel is also used to make compost. It is also used as food for the earthworm farm. It is also used as a fresh tooth whitening and facial beautification. It is used on the skin to treat ants, mosquitoes, and minor scratches. Vinegar is also made of it, and the shoe shines with it.(1)

2.2.2.2. Flowers are eaten as vegetables, either raw, steamed, or cooked with soups, curries, and fried foods, the taste of which resembles the taste of artichoke.(3)

2.2.2.3. The leaves are usually used as environmentally friendly food containers. They are also used in cooking, food, or food packaging for roasting, or dried and used as food packages or cups for liquid foods.(4)

2.2.2.4. False trunk represents the main mass of what is known as the "waste" of the banana plant. The false stem has received a large number of recent research where we can use it to produce bioethanol as a biofuel, in

addition to paper, textiles, handicrafts, and fertilizers, as well as its use in dyeing, and in Anti-corrosion extract.(1)

The false stem is the main source of so-called banana fibers, which were used 13 centuries ago in the textile industry in Japan and vary according to the smoothness of the fibers.(2)

2.2.2.5. Banana Sap is a liquid extracted from a false stem, crusts, or banana fruits. It can be used as an adhesive.(5)

2.2.3. Search data collection tools:

2.2.3.1. The form (questionnaire) is considered the most suitable for achieving the research objectives.

2.2.3.2. Observation as a tool for research pathways to generate ideas and gather information related to research.

Statistical analysis:

Results are expressed as the mean value ± standard deviation (SD) , Data were statistically analyzed using analysis of variance and least significant difference using SAS (1985). Significant differences were determined at the $p \leq 0.05$ level .

3. Results and Discussion

Table No. (1) “Distribution of Phrases of Questionnaire Scores” according to the Likart Five-Point Scal.

The answers	Absolutely ok	suitable	Somewhat OK	Not agree	Not quite agree
Grades	5	4	3	2	1

The source is prepared by the researcher

Table No. (2) “Questionnaire consistency coefficients”

The variable name	Banana textile production strategy	sustainable development	Resolution
Alpha stability factor	0.91	o.88	0.93

The source is prepared by the researcher and these outputs are obtained by spss

It is noted from the previous table that the stability coefficient for all variables is acceptable because it is higher than (0.60) where the stability coefficient of the questionnaire as a whole reached 0.93, and the data was analyzed by SPSS program as it contains a large set of statistical tests that fall within the descriptive statistics such as iterations, averages and standard deviation as well as statistics Inferential such as correlation coefficient, contrast, and othe.

- Arithmetic mean (SMA): - (We note that if the average value ranges between (0.01 and 2.49)), its meaning is that the level is weak and if it ranges between (2.5 and 3.49) this means that the level is strong, but if it ranges between (3.5 and 5) then this It means that the level is strong, too.
- Standard deviation is one of the most important scattering scales.

Table (3): Level of demand for recycling banana waste to obtain various textiles.

Number of forms	SMA	Standard deviation	The value
39	3.15	0.456	medial

The source is prepared by the researcher by SPSS

The previous table summarizes the results of the level of demand for the recycling of banana waste to obtain various textiles, which came at an average level, where the value of the arithmetic average reached 3.15 greater than the hypothetical average, and the value of the standard deviation was weak, and accordingly, it can be said that there is medial level.

Table (4) the level of sustainable development in preparing woven banana waste

Number of forms	SMA	Standard deviation	The value
22	3.5	0.411	medial

The source is prepared by the researcher by SPSS

The previous table summarizes the results of the level of sustainable development in the production of textiles from banana waste at a strong average level, where the value of the arithmetic average reached 3.5 and the value of the standard deviation came weak and accordingly, it can be said

that there is a strong level of sustainable development in the field of textile manufacturing from banana plant waste.

- The correlation coefficient was established to determine the relationship between a banana tissue production strategy and the dimensions of sustainable development.

Table (5) explains the relationship between the strategy of producing nonwovens from banana waste to preserve the environment and the dimensions of sustainable development.

Banana textile production strategy	Pearson correlation coefficient	Significance level	The value
sustainable development			
The Economic dimension	0.639**	0.001	Function
The Social dimension	0.480**	0.002	Function
The environmental dimension	0.921**	0.001	Function

(**)Correlation at function 0.01

The previous table shows that there is a strong positive correlation between the strategy of producing nonwovens from banana waste and the environmental dimension of 0.921 ** while there is an average relationship with the economic dimension of 0.639 ** on the contrary the weak relationship with the social dimension 0.480**.

Correlation coefficients are significant at the level (0.01), and thus it can be said that there is an internal consistency between the axes of the questionnaire, which indicates the validity and homogeneity of the axes of the questionnaire.

It is also clear that all values of the stability coefficients by calculating the alpha coefficient are indicative at the level (0.01), which indicates the stability of the questionnaire.

Conclusions

- There are statistically significant differences around the world’s trend for textiles from banana cultivation waste instead of using cotton to conserve the environment.

Paying attention to sustainable development as it is one of the goals of the 2030 Vision.

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دراسة تحليلية لأهمية بعض مخلفات الأغذية في صناعة ألياف نسيجية

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الملخص العربي

مع مرور الوقت وازدهار التكنولوجيا الحديثة واتجاه العالم نحو صناعة ألياف صديقة للبيئة، نجد أن أنظار العالم اتجهت نحو صناعة الألياف النسيجية من مخلفات بعض الأغذية مثل قشر الجمبري وسيقان الموز وغيرها. ونخص في بحثنا هذا تحويل مخلفات سيقان الموز في صناعة ألياف نسيجية، ففي الأونة الأخيرة، أصبحت تجربة تحويل الموز في صناعة القماش تجربة عالمية يسعى اليها العالم للحفاظ على البيئة من التلوث الذي ينتج عن حرق مخلفات زراعة الموز (٣) وتتلخص مشكلة البحث في تحليل مدى الاقبال على توفير ألياف مستدامة من مخلفات بعض الاغذية ونخص في بحثنا هذا مخلفات نبات الموز كحلاً للمشكلات التي تتعلق البيئية؛ وايضا هذه الألياف مواتية لتلبية متطلبات السوق من منتجات ذات جودة عالية في هذه الأيام، حيث تمتلك ألياف الموز كثيراً من الخصائص الفيزيائية والكيميائية المفيدة التي تعزز استخدامها في الملابس وجاءت نتائج البحث بالاقبال بقيمة متوسطة على هذه الاليف حيث ان مازال هناك العديد يفضلون القطن العضوى.

الكلمات المفتاحية: الموز - مخلفات الأغذية - النسيج - اعادة التدوير - الاستدامة .

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