



Utilizing *Cucurbita moschata* Duch. (Winter Squash) Fruit Peels as a Viable Component of Paper

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Abstract

Cucurbita moschata Duch., more commonly known as winter squash, is economically and globally important. However, given the current fact that one-third of the food made for human consumption is wasted and never consumed, this fruit is not being utilized to its full potential. Similar to the main component of fruit-based papers such as bananas, coconuts, and corn, winter squash is rich in soluble and insoluble fiber. With the aim of resolving the 12th United Nations Sustainable Development Goal: Responsible Consumption and Production, the effectiveness, durability, tensile strength, and biodegradability of winter squash peels as the main component of homemade paper production will be investigated. After thorough research, the produced paper was only able to pass the test of tensile strength while the tests of durability and biodegradability did not pass possibly due to the limited testing procedures and allotted time for testing. Therefore, the utilization of winter squash in paper production was ineffective in terms of the aforementioned criteria and needs further research to be classified as an effective alternative component of paper.

Introduction

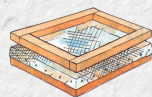
Background	Gap to Bridge	Scope and Limitations
Tree-based paper has been utilized for various purposes all throughout the years.	A solution to be provided for United Nations Sustainable Development Goal #12: Responsible Consumption and Production.	Research will be limited to <i>Cucurbita moschata</i> Duch. (Winter Squash) peels which are locally available in the Philippines.

Problem and Significance

It takes 2-3 kilograms of trees to produce 1 kilogram of paper, which causes mass deforestation. Therefore, the researchers have decided to create a prototype paper utilizing winter squash peels in an attempt to reduce the effects of this problem.

Research Question: *How effective are winter squash peels as the main component of paper production in terms of tensile strength, durability, and biodegradability?*




Independent Variable: winter squash peels
 Dependent Variable: viable and stable paper
 Intervening Variable: paper production process



Methodology



Results and Conclusion

Tensile Strength	Durability	Biodegradability	Conclusion
<p>The average tensile strength of the paper was found to be 5.06 Pa.</p> 	<p>On average, it took 7.2 trials of the scratch test for the paper to tear.</p> 	<p>After a 10-day soil burial, the paper had an average mass of 0.0047g, having no substantial difference from the previous 0.00488g average.</p> 	<p><i>Cucurbita moschata</i> Duch. (winter squash) fruit peels being an effective component of paper in terms of tensile strength, durability, and biodegradability is not completely accurate since the paper only passed the test for tensile strength.</p>

Recommendations

- Utilize proper laboratory equipment and measuring devices within the same testing environment to achieve more accurate results.

References

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