

## The Weavability of Waste Plants and Their Application in Fashion and Textile Design

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**Abstract :** The dwindling of resources requires a more sustainable design. New technology could bring new materials and processing techniques to the fashion industry and push it to a more sustainable future. Thus this paper explores cutting-edge researches on the life-cycle of closed-loop products and aims to find innovative ways to recycle and upcycle. For such a goal, the author investigated how low utilization plants and leftover fiber could be turned into ecological textiles in fashion. Through examining the physical and chemical properties (cellulose content/ fiber form) of ecological textiles to explore their wearability, this paper analyzed the prospect of bio-fabrics (weavable plants) in body-oriented fashion design and their potential in sustainable fashion and textile design. By extracting cellulose from 9 different types or sections of plants, the author intends to find an appropriate method (such as ion solution extraction) to mostly increase the weavability of plants, so raw materials could be more effectively changed into fabrics. All first-hand experiment data were carefully collected and then analyzed under the guidance of related theories. The result of the analysis was recorded in detail and presented in an understandable way. Various research methods are adopted through this project, including field trip and experiments to make comparisons and recycle materials. Cross-discipline cooperation is also conducted for related knowledge and theories. From this, experiment data will be collected, analyzed, and interpreted into a description and visualization results. Based on the above conclusions, it is possible to apply weavable plant fibres to develop new textile and fashion.

**Keywords :** wearable bio-textile, sustainability, economy, ecology, technology, weavability, fashion design

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