

Burning Pineapple Leaves Inspires Innovative New Fabrics

A Start-up Story: ECOSOI, Vietnam

While seeing farmers burn pineapple leaves might leave many people in despair, the sight inspired Vu Thi Lieu to create new fabrics. Her invention of a machine that turns leaves into pineapple yarn creates new fabrics, mitigates climate change and raises farmers' incomes.

Burning Pineapples inspired Innovative New Fabrics

When ECOSOI CEO Vu Thi Lieu visited a province in northern Vietnam that is famous for producing pineapples several years ago, she saw that a lot of pineapple waste was being burned. As an environmental expert and as a professor, she knew the burning had harmful effects on air quality, water and soil. While she realised she could not stop the burning right away, since the farmers cared more about their livelihoods than the burning, she wanted to prevent the pollution and knew she had to come up with a solution.

Inventing a Machine to Create Fibre from Pineapple Leaves

When she returned to Hanoi, she used her skills to invent a machine to extract the fibre from the pineapple leaf, which gives farmers a motivation to stop burning pineapple leaves and helps them make higher profits.

The solution has a multitude of positive impacts. The pineapple leaves are utilised rather than being burned, which eliminates tons of waste and mitigates CO2 emissions. It can also create a better livelihood for thousands in the local communities, including those who are disadvantaged. Moreover, the solution decreases the use of pesticides, protects microflora and improves the value of the pineapples.

Vu's first step with the machine was to produce pineapple fibre. However, no one wanted to buy it because it's a new material that nobody in Vietnam had heard about. She then realised she needed to start with the target customer and end use in mind, so she devised a way to turn the fibre into pineapple yarn, which she hoped to sell to a textile factory. She got positive feedback from a textile factory manager, who was interested in the ecofriendly and chemical-free product. While the manager wanted to buy the yarn, the material was still too new, and he could not persuade senior managers to buy pineapple yarn in large quantities. She realised she had to develop another idea to make the yarn into something tangible that would be easy for customers to understand. She then created a method for turning the yarn into pineapple fabric.

The pineapple fibre, yarn and fabric have three main competitive advantages compared to other natural fibres such as cotton, Vu explained. First, almost all other natural fibres, yarns and fabrics other than pineapple use chemicals in the production process. ECOSOI uses a chemical-free process, which is better for customers' health. Vu's research and testing have also shown that pineapple fibre, yarn and fabric are highly durable, sweat absorbent, easy to dye and anti-microbial. Lastly, they have less impact on the environment because the leaves are simply byproducts from pineapple processing factories. For other natural materials, such as cotton, producers have to grow crops specifically to use for their manufacturing. Pineapple leaves are a byproduct of canning factories, so they are non-invasive to the soil and farmers don't have to plant crops just to provide raw materials.

Scaling Up Production for a Massive Market

After its founding in late 2021, ECOSOI spent 2022 and the first half of 2023 in research and product development. It pivoted to market testing and prototyping in mid-2023. They plan to finish the testing by the end of 2023 and shift into full-on sales.

The global fabric market was estimated to be at least US\$500 billion in 2022, with the natural fabric portion of that total being a smaller [US\\$70 billion](#), so there is plenty of demand for

fabrics. While the market potential for ECOSOI's products is huge, the start-up will ramp up gradually over the next few years and then expects breakout volume within five years.

Based on feedback from potential customers, Vu expects revenue of US\$4-\$5 million within three years, with a margin of 20-22 percent. She targets volumes of US\$40-\$50 million within five years.

While production volumes are low now, as ECOSOI is still in the pilot phase, production will need to increase rapidly to reach those targets. Vu expects to outsource in order scale up production. ECOSOI plans to transfer technology and technical guidance as well as quality control to local communities that grow pineapples so they can buy the machines and turn the pineapple leaves into fibre and then yarn. ECOSOI will buy the yarn and sell it to an outsourced manufacturing firm that will produce the fabric. This process enables ECOSOI to produce fabric more effectively, Vu said, so it can meet customer demand.

ECOSOI has two patents to protect that production, one for the machine and one for the process. Vu invented both the machine that turns leaves into fibre and the process to turn the fibre into yarn.

Customer-Focused Sales and Marketing

ECOSOI plans to sell fabric directly to fashion designers, interior designers and architects so they can make clothes, curtains or other products. Their first step is to educate the market about how pineapple fabric is easy to use and high quality. Textile companies in Europe, the US and Japan have shown great interest in their materials.

ECOSOI also benefits from one of the core team, Rachel Isenschmid, being Swiss and living in Switzerland. Rachel created an outlet in Switzerland for ECOSOI to introduce and display its products so potential customers in European markets can see and experience them. Once demand from the European market ramps up, they can turn that outlet into a store.

So far, marketing has been very low-key. As a small start-up with limited resources for sales and marketing, they have relied primarily on digital marketing. They use social media and the website as well as national broadcast channels within Vietnam for marketing.

Once they finish market testing and have more demand, Vu said they plan to identify which markets have the most potential and develop a strategy that may include hiring a sales agent in high-potential markets.

A Bright Future

While pineapple fibre does not yet make it to standard lists of natural fibres, ECOSOI could change the industry. At the same time, it can achieve Vu's dream of mitigating climate change and giving farmers better lives by stopping the burning of pineapple leaves.