



SUSTRAINY

Sustainable action Training for Youth



Co-funded by the
Erasmus+ Programme
of the European Union

SUSTRAINY PROJECT



PANORAMA OF SUSTAINABLE BUSINESSES PRACTICES

VALUE RECOVERING –
ORANGE FIBER

The project has been funded with support from the European Commission. This publication reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Value Recovering – Orange Fiber



Copyright: FreePik.Adobe Stock.

Category – Key words	Value Recovery, Supply, Material, Fashion, Fiber, Orange, Recycling, Sustainable
Who?	Orange Fiber
Location	Italy
Years of implementation	From 2014- ongoing
Website	http://orangefiber.it/en/



Abstract

Problem to solve:

Oranges have been part our diet for centuries due to its nutritional and medicinal values. Since the 1980s, orange production has continued to grow across the world, and in 2014, it has reached 68,925,200 tons. Nevertheless, orange consumption generates orange peel wastes (around 3.8 mln t/yr) that could environmental pollution if not properly handled.

Description of the solution:

Like many other food waste products, scientific research coined that orange peels are a potential biofuel. Leading the research is the Orange Peel Exploitation Company. Oranges peels can also be exploited as fiber in the textile and fabric production benefiting greatly to the sustainable fashion industry. We will focus on this second usage of orange peels.

Orange Fiber is an innovative SME based in Catania, Sicily. It was founded in 2014 and already in 2017 it presented its first fashion brand collection in cooperation with the internationally renowned house Salvatore Ferragamo.

Orange Fiber has patented and manufactures sustainable fabrics for fashion from citrus juice by-products. Following a collaboration with Politecnico di Milano University, they developed an innovative process that allows turning the by-product and waste from the citrus processing industry into a high-quality fabric that can respond to the need for sustainability and innovation of fashion brands.

Design and Implementation:

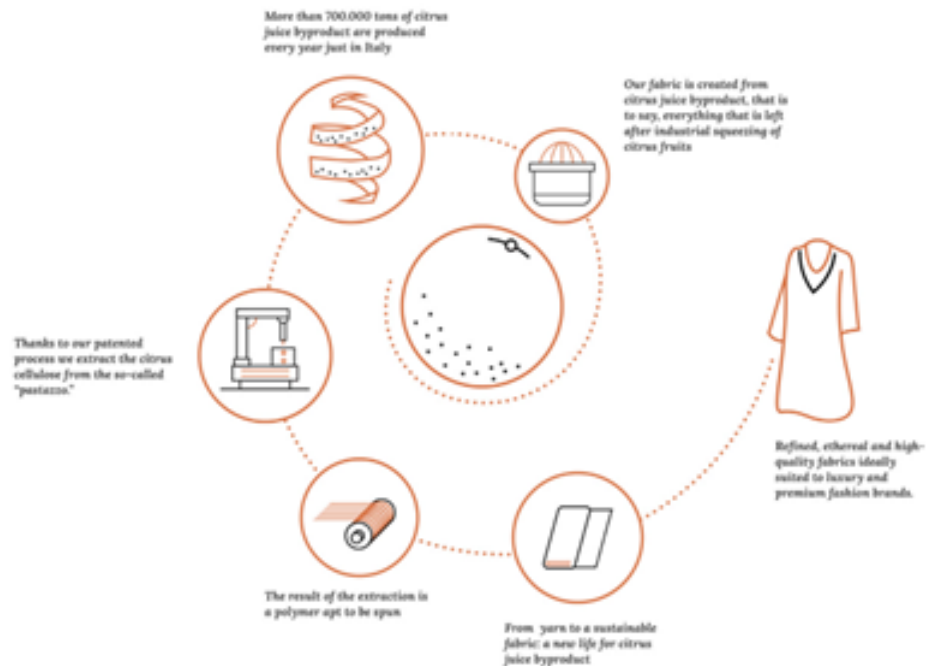
The Orange Fiber system was patented in Italy in 2013 and benefits from an international parent since 2014.

The first prototypes of fabric were presented at the Milan Expo in 2014 during the Vogue Fashion's Night Out. The trademark was registered, and the textile market tested by strategic partners in the supply chain. The first pilot plant for the extraction of pulp from citrus was opened in December 2015 in Sicily.

On Earth Day in 2017, the very first fashion collection made with the exclusive Orange Fiber fabric was launched by Salvatore Ferragamo : "the collaboration represents the shared ethical values underlying the project, shaping the fabric and showcasing its potential for elegant and sustainable applications."

<http://orangefiber.it/en/company/>





Process explained by Orange Fiber on how fabric is created from citrus juice byproduct (everything that is left after the industrial squeezing of the juice). Copyright Orange Fiber.

1. More than 700 000 tons of citric juice byproduct are produced in Italy every year
2. Orange Fiber patented process allows to extract the citrus cellulose from the so called "pastazzo"
3. The result of the extraction is a polymer (fiber) that can be spun (transformed in textile yarns)
4. The yarn is used to produce sustainable fabric
5. The fabric is used to create refined, ethereal and high-quality clothes ideally suited to luxury and premium fashion brands.

Funding:

Since it was created, the company raised over 1 million euros thanks to a mix of angel investors, public funds and grants/prizes. It also raised investment through crowdfunding on the CrowdForMe platform. In 2019, Orange Fiber has launched an investment plan in order to increase its production capacity and meet the demands of numerous fashion brands, including H&M.



Concept Addressed

Value Recovery focuses on the application of recycling and recovering strategies in a products' after-use phase. Products and materials are re-processed to minimize waste and resource use. The development of reverse logistics is essential enabling the conversion of products and materials from the consumption phase to the production phase. It is always aimed to recover and recycle the materials at their highest value possible.

Relevance

Added value:

- o Creation of new standards in the luxury industry (Luxury 3.0) valuing the future of taste, wearable design and sustainable use of resources respecting our planet.
- o Potential to recycle the more than 700 000 tons of citrus waste produced every year in Italy
- o Fighting illegal or prohibitively expensive legal disposal practices
- o Support sustainable fashion by involving internationally renowned brands such as Salvatore Ferragamo and H&M
- o In 2015, Orange Fiber won the Global Change Award by the H&M Foundation
- o Valuing disruptive technology and innovative material in the textile industry

Challenges:

- o Need to address the risk in loss of quality of the product
- o Need to address the risk in loss in design
- o Need to ensure that energy input is not excessive
- o Need to insure financing
- o Need to insure intellectual property rights (IPR) protection for the mechanism/innovation developed



Tips to implement

- o Explore new ideas and products based on scientific evidence
- o Explore different types of investment that value sustainable products and productions
- o Focus on visibility and marketing impact
- o Focus on market and consumers needs
- o Focus on resources and market gaps
- o Focus on the sustainable production goals

Bibliography

Monteiro Santos.C, Dweck.J, Silva Viotto.R, Rosa.A, Cardoso de Morais.L (2015) Application of orange peel waste in the production of solid biofuels and biosorbents . Elsevier. Bioresource Technology. Vol 196, pp.469-479.

<https://www.sciencedirect.com/science/article/pii/S0960852415010858>

Mueller.N (2017) How orange peels are saving the world. Garden Collage Blog.
<https://gardencollage.com/change/sustainability/orange-peels-saving-world/>

Stolz.S (2019) Orange Fiber: sustainable fashion made of orange peel. RESET Digital for Good Blog.

<https://en.reset.org/blog/orange-fiber-sustainable-fashion-made-orange-peel-10142019>

Transparency Market Research (2017) Orange peel extract market – global industry analysis, size, share, growth, trends and forecast 2017-2025.

<https://www.transparencymarketresearch.com/orange-peel-extract-market.html>

Biovoices Platform: <https://www.biovoices.eu/gallery/orange/orange-/#>

Market redesign, Value Recovery Methodology: <https://marketredesign.com/value-recovery-methodology/>

Orange Fiber presented by H&M: <https://hmgroup.com/our-stories/orange-fiber/>

