

How Sicilian oranges are being made into clothes

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Orange Fiber

The fibre made from the oranges can be blended with other yarns to make clothing

From fashion to energy - the rind and seeds of Sicily's most famous citrus fruit, the humble orange, are being used in a range of greener, healthier business initiatives.

In 2011, Adriana Santonocito was a design student in Milan when she first had the idea of making sustainable textiles from what was naturally abundant, and widely wasted, in her native Sicilian city of Catania.

Her challenge was to find a way for the rinds of hundreds of thousands of tonnes of oranges to be put to good use.

Now, thanks to her creative thinking, it is possible to make whole items of clothing using fibre that originated from the fruit.

Chemical process

Ms Santonocito's concept was inspired by a question posed in her university dissertation. Could a luxurious silk foulard be made from citrus by-products, that would otherwise be thrown away or fed to cattle?



Orange Fiber

Orange Fiber uses chemical reagents to separate the cellulose from the orange remains. The question was particularly relevant in Sicily, where many thousands of tonnes of citrus fruit are juiced every year, leaving massive amounts of waste.

The 39-year-old found her answer in the university's labs, and it earned her a patent.

It was already known that cellulose could be extracted from orange rinds. But Ms Santonocito discovered that, using chemical reagents, it could then be turned into yarn, which could be dyed and blended with other textiles, such as cotton or polyester.

Together with her university colleague Enrica Arena, she founded Orange Fiber in 2014, and set about selling the silk-like material to clothes-makers.



Orange Fiber

Adriana and Enrica now head up a 12-strong team

This year, the famous Italian fashion label Salvatore Ferragamo used it in its spring-summer collection. The aim was to make its high-end shirts, dresses and foulards more sustainable.

Orange Fiber, which now has a team of 12 people, operates from a local juice-processing plant, where it gets its waste material for free.

The business is partially seasonal, operating during the months of the year when the juice-maker works. But once the orange rind has been transformed into cellulose, it can be put in storage for use later.

Antonio Perdicizzi, an early investor in Orange Fiber, says the firm stood out to him because, unlike most innovative start-ups in Italy, it isn't digital.



Orange Fiber

Fiber uses the rinds of juiced oranges

"Italy doesn't invest much in innovation, but brilliant ideas and skills win despite a lack of resources," he adds.

Rosario Faraci, a professor of business, economics and management at the University of Catania, says the firm is an example of how "creativity and entrepreneurial spirit" is creating new jobs and businesses in the region.

Fibre - not fat

Oranges could also make baked goods healthier, and stay fresher, thanks to a new procedure which transforms them into an innovative fat-free flour.

The new technique is currently being tested at the University of Catania and results are encouraging.

At the moment, almost all bakers use fat, such as butter or margarine in their cooking.

But according to the research, half of this fat could be replaced by using flour obtained from orange rinds, seeds, and part of the pulp not used in juice-making.



Orietta Scardino

Local bakers and pastry chefs in Acireale, near Catania, liked the new flour

Like Orange Fiber, the researchers obtain the raw materials they need from local juice makers. They wash the rinds to remove the bitter flavour, then dry, process and whiten what remains.

Salvatore Barbagallo, a professor of agriculture at the University of Catania, says the flour is "perfectly sustainable" and costs almost nothing to produce. It also has "no impact" on the taste and fragrance of food that contains it.

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