Fibre and fabric manufacturers, under pressure like every industry to rely less on petrochemicals, are becoming more and more creative in sourcing new raw materials. In the course of 2009, there has been a series of announcements highlighting new textile materials derived from different kinds of food.

Food for thought

Food is a contentious issue because of its uneven distribution across the world; many have too little, some have way too much.

The former chairman of multinational consumer products manufacturer Unilever, Antony Burgmans said a few years ago that he had grave concerns about the speed with which farmers were dedicating land to crops that can be processed into bio-fuels at the expense of food. He said: "Around a billion people don't get enough calories every day. I think that would make it morally unacceptable to put food into your car."

It's unlikely he would find it any more acceptable for the wealthy to wear materials that might have contributed to the fight against hunger. Nevertheless, manufacturers of fibres and fabrics are finding ways to turn unwanted material from the food supply chain into interesting raw materials for textiles. It's hardly a new idea, as the well documented examples of fibre from corn, coconut, pineapple and seaweed prove, but the keen interest among consumers for clothing that is in touch with the natural world seems to have generated a new crop of fibres from food in recent months.

Constant skin treatment

Reinforcing the point that fabric from food is far from new, Italian yarn manufacturer Maclodio has resurrected a 75-year-old idea to extend its product range. Essentially Milkofil is a new fibre, but is based on an idea that Italian chemist Antonio Ferretti first came up with in 1934.

As the name suggests, it is a yarn derived from milk (of which there is currently a surplus in the European Union, the US and other parts of the world), and its gentleness and compatibility with the human skin make it particularly suited to base-layer garments for sports and outdoor activity, as well as for baby clothes, bedding and everyday underwear, according to Maclodio.

Daniele Beringheli, a senior consultant at the company, says that Maclodio began making Milkofil about a year ago. He points out that Antonio Ferretti's idea had come at a time when Italy wanted to use only Italian fibres (a stipulation of the government at the time) and



The castor oil plant, Ricinus communis. Its seeds are the source of the nylon-11 polymer, which Unitika and Groupe Sofila are using to make greener yarns.

Ilmari Karonen/Wikipedia

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that, by 1939, two million kilos of it were produced. However, restrictions on fibre imports disappeared after World War II, and the fibre Ferretti made from casein, the main protein in milk, was forgotten.

Maclodio has said that Milkofil benefits from milk amino acids, which are naturally present in it; these can offer wearers of clothing made from it a simple and constant skin treatment. "It creates light weaves with a lovely silky look that allows the skin to breath and humidity to be absorbed," the Brescia-based company adds.

Mr Beringheli says he thinks it may take some time for the market to become "passionate" about Milkofil, but insists there has been plenty of early interest.

Maclodio is already incorporating the new product into a range of blends, including a 70/30 mix with cotton, a 35/35/30 mix with cotton and linen, a 35/55/10 blend with viscose and silk, and a 35/55/10 blend with cotton and cashmere. Mr Beringheli believes cotton-Milkofil mixes could be particularly good for sports applications such as polo shirts.

Coffee time

Taiwan-based fabric manufacturer Singtex has launched a new product derived from recycled coffee grounds. Most coffee grounds end up in landfill, Singtex explains, which contributes to the world's waste management problem. Using a patented masterbatch process, it has found a way to convert unwanted coffee grounds into the new S.Cafe yarn, which it then uses to produce a variety of knitted, woven and softshell fabrics.

The company says that the new fabrics offer a series of performance qualities including odour and moisture management, UV protection, and, of course, a good eco story to boot. The idea has already won the support of several major international coffeehouse chains operating in Taiwan. It has also won early support from a company in Taiwan that is a licensed partner of French-based outdoor clothing firm Eider. Eider Taiwan has already brought to the local market a range of T-shirts containing the coffee fibre.

From tiny seeds

Japanese fibre and fabric manufacturer Unitika has also brought a new product to market, based on the nylon-11 polymer that French chemical firm Arkema produces from the seeds of the castor oil plant, *Ricinus communis*. These plants grow in greatest volume in India, China, Brazil and tropical Africa and are the source of the castor oil that is the basis of the polymer that Arkema markets under the brand name Rilsan. The significance of this is that, while the raw seeds are highly toxic, the food-grade castor oil that can be refined from them crops up in all kinds of interesting edibles, including as a flavouring in sweets and chocolates.

Shinichiro Soejima, an assistant manager at Unitika, has said that the new product offers user companies a way to reduce their carbon footprint because it comes from a natural, renewable source. "This is new for us," he says, "but it's allowing us to produce a fabric with good abrasion resistance and the capacity to withstand temperatures of up to minus 40 degrees Celsius without becoming hard. So our thinking is that it will be very good for winter sportswear."



Singtex has begun to make a new yarn called S.Cafe. Eider Taiwan has already used the product in a range of T-shirts that have high levels of odour and moisture management and UV protection.

Groupe Sofila, especially its Condamin Prodon component, is equally keen on the castor oil-based polymer. The Laval-based yarn producer uses it in a new product called Greenfil. Condamin's Augustin Bidault explains that Arkema has been producing Rilsan for decades and that the polymer initially found its way into the textile supply chain in the 1950s and 60s. "But it got left behind because everything then was going down the petroleum route," he says. "Now it's been rediscovered and it is like having a new product, one that can go into all synthetic yarn applications, but we have to re-value it and find a new way to express the technical advantages it can offer in textile applications today."

Change of mentality

Mr Bidault insists that, for some performance criteria, Greenfil can match the best synthetic fibres in the market; its capacity for quick drying is the first example he quotes, but, as Unitika has found too, it also has good abrasion resistance, good dimensional stability and good resistance to substances such as acid.

"So out customers can use Greenfil for performance and sports applications," he continues. "It lasts well, and it won't lose its colour or shape with age. It will be popular in sports fashion because it comes from a plant, and it will compete with other green fibres. There are arguments and counter-arguments for all fibres, and there is room for all of them. It's a question of mentality and I think people's mentality is changing."

He believes this question of a changing mentality is more important than economic concerns that may exist over using green fibres and yarns compared to more traditional ones. Cheap fashion often involves maximum transportation and companies taking advantage of the cheapest labour available globally, he says, and there is a lot of waste. He concludes: "This has to stop.".

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