**NETTLES**

**Introduction**

Most of us try to avoid stinging nettles, but soon we could be tempted to put them right next to our skin. Clothing made from stinging-nettle fiber is about to hit the catwalk and an Italian fashion house has started to produce a range of nettle jackets.

This new trend for stinging-nettle fiber has been driven by concern over the environmental damage caused by the processing of fabrics such as cotton. In the hunt for new, ecologically friendly fabrics, stinging-nettle fiber has come up smelling of roses.

Clothing made from nettles is not a new idea; for the past 2,000 years people have worn fabrics made from these stinging plants. But nettles lost their popularity when cotton arrived in the 16th century, because cotton was easier to harvest and spin.

Nettles made a brief comeback during the First World War, when Germany suffered a shortage of cotton and nettles were used to produce German army uniforms. Now, new advances in spinning technologies and cross-breeding to produce super-high-fiber plants mean that stinging nettles are set to become the latest fashion.

The nettle is a highly successful plant found all over the temperate areas of the world. It spreads by means of seeds and underground rhizomes that creep around just under the surface of the soil.

The jagged leaves held in pairs along the square stems are easily recognizable particularly after having experienced the sting.

The plant itself is variable growing from 0.6 to 2 meters plus in height and can be found in a variety of habitats and soil types. It prefers rich soils and therefore does well around human settlements benefiting from the waste we produce - often indicating where old settlements have long since disappeared from the countryside.

**Properties**

The fibers of the stinging nettle have a special characteristic in the fact that they are **hollow** which means they can accumulate air inside thus creating a natural insulation. To create a cool fiber for Summer the yarn lengths are twisted closing the hollow core and reducing insulation. In Winter with a low twist the hollow fiber remains open maintaining a constant temperature.

**What is in the sting?**

The stinging structure of the nettle is very similar to the hypodermic needle although it predates that man-made invention by millions of years! Each sting is actually a hollow hair stiffened by silica with a swollen base that contains the venom. The tip of this hair is very brittle and when brushed against, no matter how lightly, it breaks off, exposing a sharp point that penetrates the skin and delivers its stinging payload.

It used to be thought that the main constituent of the sting was formic acid - the same chemical used by ants, giving that never forgotten burning sensation that demands to be scratched. Although formic acid is present in the sting, recent research has shown that the main chemicals are histamine, acetylcholine and 5-hydroxytryptamine (serotonin). A fourth ingredient has yet to be identified.

Remember when stung a natural remedy will often be found close at hand. The leaves of the dock contain chemicals that neutralize the sting and also cool the skin.

**Applications**

Clothing from nettles

*Nettle fabric suit*

Ouch! you may be thinking, but the nettle has been used to produce a fine fiber that can be spun and woven into cloth. Cloth has been woven from the fibers in mature nettle stems for many centuries - frequently used for tablecloths and sheets in Scotland.

Being similar in texture to those materials produced by flax and hemp fibers the cloth also became widely used by the German army during the First World War when there was a shortage of cotton for the soldiers' uniforms.

The juice of the stems and leaves has been used to produce a permanent green dye, while a yellow dye can be obtained from boiling the roots. Both colours have been used extensively in Russia.

An Italian fashion company introduced an environmentally friendly alternative to contemporary textiles and dyes. They have woven fabric from stinging nettle fibers, used in the past for the uniforms of Napoleon's soldiers and also to replace cotton yarns that were unavailable during World War I and II. The name URTICA, as it is called in Europe, derives from the Latin word "uro" which means to burn.

Existing problems in the agricultural sector underline the need for alternative crops. The stinging nettle is a perennial plant which thrives on nitrogenous and over-fertilized soil and also has environmentally sound cultivation methods as well as a resistance to diseases and pests so they do not need dangerous pollutants to protect them.

**Wild nettle collecting and yarn processing in Nepal**

Part of the world's wild nettle supply is collected from remote, high-altitude Himalayan ranges. A three days walk from village and 5-6 days collecting and back to the village. They take the bark from the plant and they lay it in sunlight for 3 days to dry and then they process bio-logically. Then a big pond with water is created and the nettle is put inside the water for 10 days. When it is ready to clean, it is rinsed with clean water.
The spun yarn is produce in the villages by hand. Now 80 thousand villagers from different parts of Nepal are involved in nettle (and also hemp) yarn processing work. They spin about one kilo of yarn in 10 days.

*Natural nettle fibre with raw bark (also called 'lokta')*

**Yarn**

Wild Nettle (and wild hemp) yarn is not coming in regular color and regular yarn sizes because it is spun by hand and by natural process. Now our supplier partner is using these hemp and nettle yarns to blend with cotton, soybean, bamboo, linen and other natural fibers. Main end uses are hand tuft knotted carpet and knitting wear.

*Natural nettle fibre processed in the raw (also called ‘puwa’)*

**Processability**

**Nettle Research**

If Professor Ray Harwood has his way, we'll all be wearing T-shirts and bikinis made from stinging nettles.

When Ray Harwood toils in his Leicestershire allotment, he takes particular care with his nettles. Despite risking multiple stinging and abrasions, he tends to them as though they are rare orchids. "Everybody there laughs at me when I'm weeding my nettles," he says as he picks the burrs from his trousers, the result of a recent session. "They think it's just a weed. But they're worth their weight in gold."

Harwood believes that the future lies in the common stinging nettle, *urtica dioica*. As professor of the textile engineering and materials research group at Leicester's De Montfort University, he is involved in the first contemporary British project to develop nettles as a fabric. It's called Sting -Sustainable Technologies in Nettle Growing - and was started in 2004 with funding from the Department of Environment Food and Rural Affairs (Defra) and its agent, the Central Science Laboratory (CSL). If his work proves successful, we may all be wearing nettle T-shirts in ten years' time.

The name was coined by Harwood's colleague and soon-to-be wife Jane Wyatt. "I love a nice acronym," says Wyatt, who clearly has some publicity nous, unlike her fiancé who prefers a more sober approach. As Harwood repeatedly insists, his is a serious project that concerns a good deal more than "gimmicky fashion items". Which is, of course, exactly how nettle fabric has been marketed so far. The same year the Italian fashion house Nettle yarn - the novelty natural fiber for non-stinging clothes Corpo Nova introduced various nettle-related products, including jeans with nettle yarn that were a huge hit at Selfridges. Japanese fashion buyers have bought all the nettle yarn they can find. And even Harwood's own department has played its part in the stinger vogue; Wyatt's student Alex Dear produced (and subsequently modeled) a pink bikini made of nettle fabric.

Harwood doesn't want nettle fashion to be just a flash in the pan. "The point is that nettles have to be made into a commodity," he says. "Fashion gimmicks don't employ people." He also believes that nettles could represent work as well as textiles, and could help revive Britain's rural economy.

"I was skeptical about nettles at first," he says. But his interest grew in the mid-1990s when his team started the revive the use of flax and hemp. "No one's got hemp to the quality we've made," says Harwood, holding up a great bundle of the stuff, "but it's difficult to regulate its

growth." Unlike nettles, which are already well established as a viable, and legal, cash crop. Nettle soup is a hedgerow treat, while Cornish Yarg cheese is one of several that come wrapped in dried nettles. A delicious nettle tortellini is available in Italy. And that's not counting nettle teas and cordials; wines and beers; shampoos and conditioners.

The stinger is becoming known as a bit of a wonder plant, and has been used to treat prostate disease, allergies and arthritis. There's even a national "Be Nice to Nettles" week. At this point I have to ask the billion dollar question: how do they get rid of the sting? Harwood replies with the air of someone for whom this particular enquiry grew tiresome years ago. "You cut them and dehydrate them, the pressure goes, so there's no sting." So, you can wear your nettle underpants without fear. Instead, Harwood wants to talk about the potential of nettle fabric as a commodity, and, most importantly, the size of the plant - an interest inspired by Interface Fabrics, a company that produces industrial chair coverings. "The taller the nettle, the stronger the fiber," says Harwood.

I try to imagine a field full of stingers waving in the breeze: bushy deep-green plants six or seven feet high, planted in rows a couple of feet apart and attractive to wildlife such as butterflies and voles. Apparently, there's already a willing army of farmers ready to turn their land over to the stinger.

Harwood says that he has two lined up already, and at the Royal Show received enquiries from another 20 who were all looking for something different to grow. "Farmers are very inquisitive, but what they need is a consistent nettle - hardy, tall-growing, perennial," says Sting's research fellow, the plant scientist Russell Sharp.

So why do we need nettle cloth at all? The research is part of a long-term investigation by the European Union into alternative crops that farmers can grow to stop them overproducing food. "Nettles grow in most parts of Europe," says Harwood. "They hate drought so they will grow in rainy areas that aren't suitable for other crops, such as western Scotland." Harwood adds that the desire to explore the worth of nettles is also driven by the world's over-reliance on cotton. "At the moment we produce about 20 million tons of fiber a year and 18 million tons of it is cotton," he says. "It needs special hot conditions and comes from countries such as India, Pakistan, China and Sudan. Cotton is still the most worn fiber in the world and global demand is increasing, particularly in the developing countries." But cotton is not environmentally friendly (despite being a natural fiber). Its cultivation accounts for 20 per cent of the world's pesticides, and also uses chemicals that arise from oil production. "And as we know, oil is becoming more expensive," he adds.

Nettle wear is therefore a greener option, and has something of a history. Before the 1660s cotton wasn't used in great quantities. Flax and wool were the main textiles, and nettles were an alternative. "There's a lot of anecdotal evidence about wild nettles being used," says Wyatt. "For instance, Elizabeth I slept in a 'nettle bed', which we think means the textile covering rather than the stuffing." Napoleon's army is thought to have been clad in nettles, and the plant was frequently used to make tablecloths and sheets in Scotland, where the term "nettle cloth" became a catch-all term for any fine material.

However, the nettle's finest hour arrived during the First World War. "Britain and the US controlled the whole of the cotton industry," says Harwood.

"We didn't supply the Germans, so there's some evidence that they used nettles for making things such as sandbags, straps, rucksacks and harnesses." The same thing happened during the Second World War, when cotton shortages saw nettles used to make parachutes.

Sting has already looked into the research conducted at the Botanic Institute in Hamburg by Herr Beidermann, the father of modern nettle cultivation, between the 1920s and the 1950s. His work was continued by a successor called Gisela Presling, who retired this year. Alas, she has not yet shared her nettle know-how.