Ecotan leathers will work particularly well in shoes because they will promote foot health. If they are later recycled into fertiliser, which the Biocircular concept makes possible, they can also help alleviate the environmental challenge of millions of pairs of shoes going into landfill every year.

ALL CREDITS: SILVATEAM

Tired of just talking about sustainability

Towards the end of 2020, Italian leather chemicals manufacturer Silvateam presented a new project called Ecotan. The director of the group's leather business unit, Antonio Battaglia, has made it clear that the idea is one that Silvateam finalised during the lockdown imposed by covid-19. By December, there were 20 tanneries around the world already using the technology [see separate article in the Technology section of this issue of *World Leather*].

"We worked on this new project in response to demand from tanners and brands for fashion leather that is completely sustainable," Mr Battaglia says. He explains that Ecotan uses natural products and harmless manmade additives. Leathers made using the new concept will work in harmony with people's skin when they wear the material in shoes and other finished goods. At the end of a product's useful life, he adds, specialist partners will take the material back and use it to make fertiliser. It is this that will make leather made using the Ecotan technology truly "biocircular", Mr Battaglia insists. He says: "The leather will go into fertiliser, the fertiliser will help plants grow, the plants will feed cattle and, when the cattle go to slaughter, tanners will use the hides, a by-product of the food industry, to make more leather."

A stimulating discussion with an insightful sustainable footwear expert and the extra time to think during months of lockdown were the catalysts that helped Silvateam put in place all the pieces required for making leather "completely sustainable".

Matching results

Mr Battaglia points out that Silvateam has always worked at being "a sustainable provider of leather technologies", presenting its vegetable extract-based solutions as a sustainable method for tanning leather. In the last ten years, he says the group has worked hard to develop more of these solutions and improve them. Its aim, he explains, has been to offer plant-based products that will allow tanners to achieve the same results as they could using non-chrome minerals such as aluminium or glutaraldehyde, and even, in some cases, results that match those of chrome tanning.

The company's efforts over the last decade have also focused on making sure its own processes are sustainable. It has, for example, partnered with universities, research institutions and consultancies to determine what volumes of its products deriving from chestnut, tara, quebracho and others it can supply sustainably. "As a result, we know that, just working in the same regions where we work today, we can supply ten times as much of these vegetable extracts as we do at the moment," he says, "and we can do this in a sustainable way."

Studies examining the health benefits of leather containing these vegetable tannins have followed. These have shown the tannins to have a strong antibacterial effect. "This effect is preserved in the finished leather," Mr Battaglia continues. "It's not about killing bacteria but, in the example of a shoe made from this leather, preserving the natural flora of the foot and not letting the bacteria that develop inside the shoe proliferate."

More than biodegradable

Questions have followed about the biodegradability of leather and about the possibility of making it into compost at the end of the finished product's lifecycle. The director of the Silvateam leather business unit says that tanning is about stopping hides from being biodegradable. "A raw hide is the most biodegradable thing you could find," he says, "but the treatment it undergoes makes it non-biodegradable. We wanted a solution, to make leather truly sustainable, because I think it's a shame that a shoe or a bag cannot be recycled and have to be thrown away with the general garbage."

He says this is more urgent for shoes than for bags. Leather bags, usually, last a long time, but you only have to ask any parent of small children how many pairs of shoes they have to buy and, when a child, quickly grows out of them, throw away. He also points out that Silvateam was far from alone in wondering about this; many of the big fashion houses had begun asking about the possibility of adding this aspect to leather's sustainability story.

High in nutrients

Silvateam has worked with a partner, Tuscany-based fertiliser producer Fertilizzanti Certaldo, to find a solution, one that goes beyond biodegradability to turn leather into compost. Fertilizzanti Certaldo is already taking regular delivery of shavings and scraps from vegetable-tanning leather producers in the local district and processing them into a slow-release fertiliser that is high in nutrients. "It's a beautiful product," Antonio Battaglia comments. "It's certified for organic farming and can compete with the most expensive, most concentrated fertilisers in the market."

He says Silvateam was in no doubt that semi-processed material as well as raw scraps would allow Fertilizzanti Certaldo to continue to make the fertiliser and keep its organic certification. "It's not a composting of the material," he explains. "It undergoes chemical processing, in which all pollutants are extracted and disposed of safely." But an interesting discussion soon developed over the possibilities for including finished leather in the material mix of the ingredients of the fertiliser. "We are all aware that about 50% of leather is scrapped," Mr Battaglia continues, "with all the cutting for leathergoods and shoes."

This led to work with another partner, Biofin, part of Gruppo Biokimica. To complement Silvateam's plant-based products, its long-term partner Biofin is supplying a range of leather finishing chemicals and dyes for tanners who have signed up for the Biocircular concept to use. These products do nothing to compromise Fertilizzanti Certaldo's work with the material that is left after leather manufacturing and cutting: the left over leather works as raw material for the fertiliser.

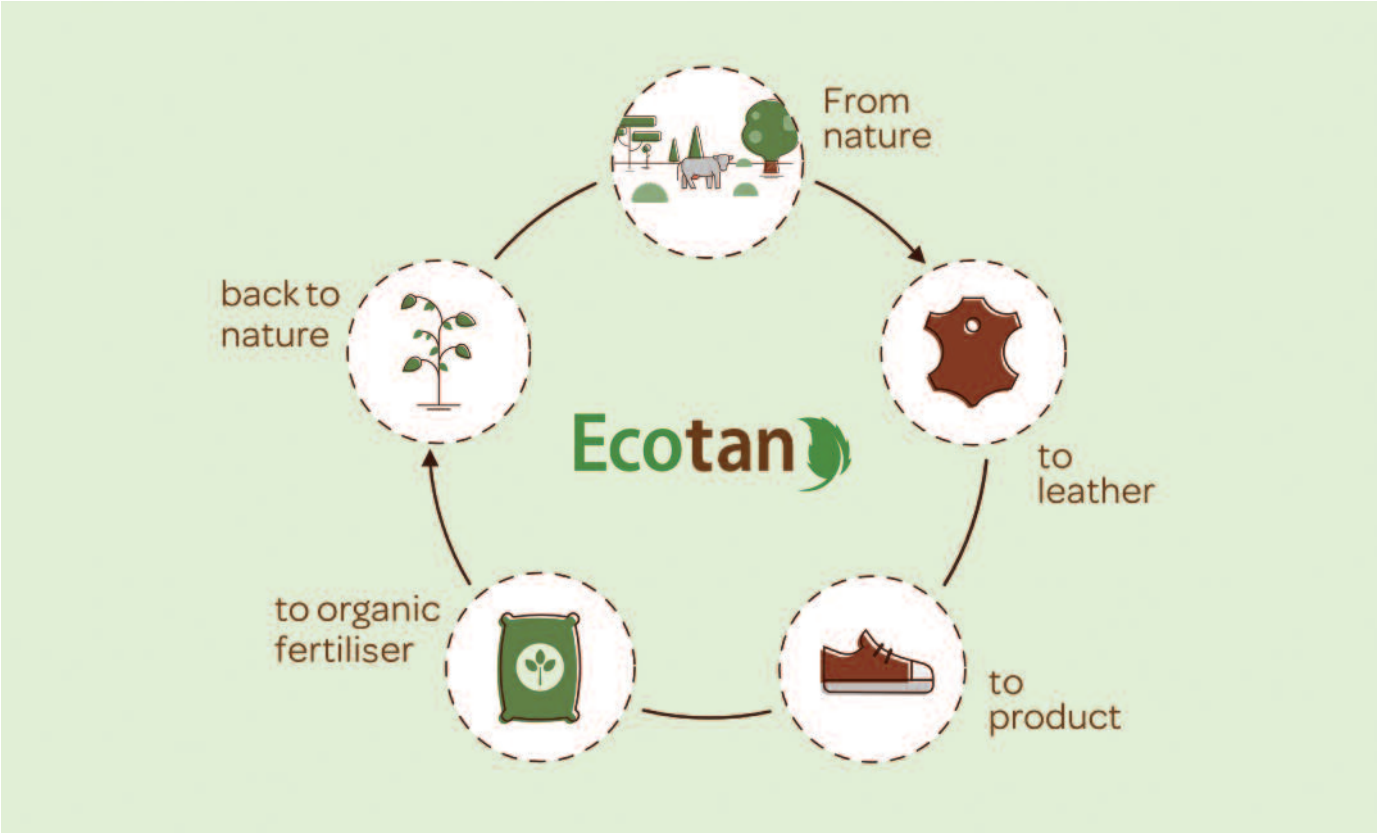
Brands have said they no longer want just to talk just about sustainability, but to take action. The Biocircular idea can bring them closer to totally sustainable leather.

A product that cannot be attacked

Mr Battaglia's view is that these developments will allow tanners adopting Ecotan to make a powerful statement about the leather they produce. Many of these companies had already been putting out "strong messages" about the sustainability of their leather, he says, but the biocircular approach adds a new dimension. Part of the push came from discussions in the early part of 2020 with Pete Lankford, who set up as an independent sustainable design consultant in 2019 after more than 20 years with Timberland. Mr Lankford liked the thinking behind the Ecotan range that Silvateam had but urged the company to come up with a solution for fully sustainable footwear.

Immediately after this encounter, the participants in the conversation found themselves with extra thinking time during three months of lockdown, with travel cancelled and factories closed. "It was quite stimulating," Mr Battaglia says. "The tanning world was like a desert, but we were able to work every day on taking elements that we had already and combining them with new technologies, as well as, with certified guarantees for consumers. Biocircular leather is the result. Bio because all of the tannage is made either with vegetable tannins that are certified by the Programme for the Endorsement of Forest Certification (PEFC) or with synthetic polymers made from molecules that are deemed completely safe. And it is circular because all of the leathers produced are recyclable. It is meant for the shoe industry, leathergoods and automotive."

Silvateam set up a series of presentations on Ecotan at the



September edition of Lineapelle in Milan. The show was much quieter than usual for reasons everyone is familiar with, but Mr Battaglia says his company's booth was busy and that the level of interest in biocircular leather was high. The new system for recovering, dismantling and re-engineering leather for recycling into a value-added product that will help farmers produce olives, fruit, vegetables and other crops attracted a great deal of attention from tanners, designers and fashion brands. "It was exciting," he says.

The tanneries that are the early adopters of Biocircular are already selling leather that can, one day, be recycled in this way. "The bricks are in place for us to build the future recyclability of leather," Mr Battaglia says. "And I think it's very important. If plastic were to be seen as a sustainable alternative to leather, this would be a disaster for the image of leather and the work we have all been doing for decades. Leather should be clearly conceived as a sustainable product. With Ecotan, we wanted to create a product that cannot be attacked."

Sell the idea to the consumer

Antonio Battaglia goes on to point out that there is, as yet, no international agreement on what does or does not constitute sustainable leather. But there are strong opinions among people in the fashion industry about this. He adds: "This is relevant because these are the people who have to sell the idea to the consumer. In all the conversations that we have had with them, it's been clear that, first of all, they want products for which they cannot be attacked. They want products that comply with Zero Discharge of Hazardous Chemicals certification. They want metal-free. But the real need that they have is this idea of making leather that cannot be attacked for containing anything toxic."

This is the clear feedback that Silvateam says it has received and the company's view is that using natural solutions is the best way of making leather that goes back to the industry's roots.

"But it's not only that," he concludes. "When I talk about biocircular leather that is totally sustainable, it's really that we want a product that is good at its birth, during its life and in its after-life when the consumer is done with it. We have to be grateful to Pete Lankford for coming up with this definition of sustainability."

Fashion house consensus

This has coincided with a consensus that has emerged from discussions with major fashion houses. They are tired of talking about sustainability and they want to take action. According to the company, Ecotan offers tanners the chance to do this, to move beyond talking and to take action, with data, documentation and certification to back up every step, with proof that what they are saying is true.

Tanners have been involved from the start because Silvateam knew the brands would want to see and try out biocircular leather for themselves. Therefore, it chose a group of leather manufacturers from among its "best customers", taking into account geography and the types of leather each one makes, and invited them to adopt their own Ecotan leather ranges. By the end of 2020, leather manufacturers in Italy, France, Brazil, Mexico, Argentina, Turkey, Taiwan and China were involved. Some specialise in small skins, others in automotive, others in making leather for fashion brands. Together, these tanneries will be able to supply biocircular leathers made from bovine hides or from lamb and goatskins. Some of the partner tanneries and leather suppliers Silvateam has named so far are La Scarpa, Volpi and Conceria Valdarno from Italy; Mégisserie Richard, Tanneries Haas, Rial and André Hiriar from France; Wyny,

Curfimex and Panamericana del Bajío from Mexico; JBS Couros from Brazil; Sadesa from Argentina, and Sepiciler from Turkey.

These companies are already making Ecotan leathers, although it is still a little too soon for them to have received a meaningful reaction from the market, Mr Battaglia says. He pays tribute to the work Silvateam's technicians have done to put together all the pieces of the puzzle necessary to make the Ecotan picture complete. He underlines two important catalysts. The first was the exchanges with former Timberland executive Pete Lankford. He says leather chemicals manufacturers can sometimes feel "far removed from fashion houses and their needs", but that the conversation about this with Mr Lankford was "exciting and extremely interesting". The second catalyst was the lockdown in the first half of 2020, which gave everyone involved "time to think" that they would not otherwise have had, leading to their decision to try something new, to turn the crisis into an opportunity.

Carefully selected tanners have been involved in the Ecotan project from the outset.

Some major brands have spoken openly and publicly about their desire to have this leather that Silvateam has described as completely sustainable. "Biocircularity is an answer," Mr Battaglia concludes. "Our main partners in the tanning world will be able to meet these requests."