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Natural  
Fibres

INSIGHT

Mad about Mohair

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## Textile Recycling **STATE OF PLAY**



**Apparel Insider**

FROM THE PUBLISHERS  
OF APPAREL INSIDER

# Editorial

**W**elcome to the inaugural issue of Natural Fibres Insight. This title is produced by the publishers of Apparel Insider and will appear on a quarterly basis in both digital and print format.

Why natural fibres? This is an easy one. Firstly, because from a purely journalistic perspective, natural fibres are manna from heaven. There are endless storytelling and news angles around natural fibres. It's no exaggeration to say we could have filled the first issue of this title four times over. We were inundated with submissions for content.

The other reason is because natural fibres are inherently sustainable, provided they are produced responsibly. This is despite what the naysayers might claim.

We've all seen the debate around greenwashing in recent years. The phrase 'greenhushing' is also being pushed by some. This refers to the idea that some brands deliberately under-report

or hide green credentials from public view to evade scrutiny or accusations of greenwashing.

I have reservations as to whether greenhushing is even a thing. It seems more likely that some brands and their supporters are simply frustrated the party is over as far as being able to make bogus environmental claims is concerned. Tough.

And yet consider the claims of cotton. It's soft, comfortable, versatile, durable, absorbent, hypoallergenic and biodegradable. If cotton were invented tomorrow investors would be all over it.

The same could be said for wool. Natural, biodegradable, durable, it keeps you warm when it's cold and cool when it's warm. Wool really is quite miraculous.

No other materials come close to achieving the unique properties of cotton or wool – or silk, or alpaca or myriad of other natural fibres for that matter.

My point being, with natural fibres there is no need to greenhush. By sticking to some of the well-established facts above, fashion brands can tell a wonderful story about their clothing collections without the need to embellish or exaggerate. These fibres speak for themselves.

That's not to say natural fibres don't bring with them social and environmental challenges. Of course they do, and we will be covering the complex and nuanced issues involved in natural fibres supply chains in this publication.

On balance, however, natural fibres are a great bet for the environment. We should cherish them.

Enjoy the read.



**Brett Mathews**

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Crispin Argento asks whose responsibility is it to safeguard the future of cotton and how we make cotton truly sustainable in terms of people, profit, and planet

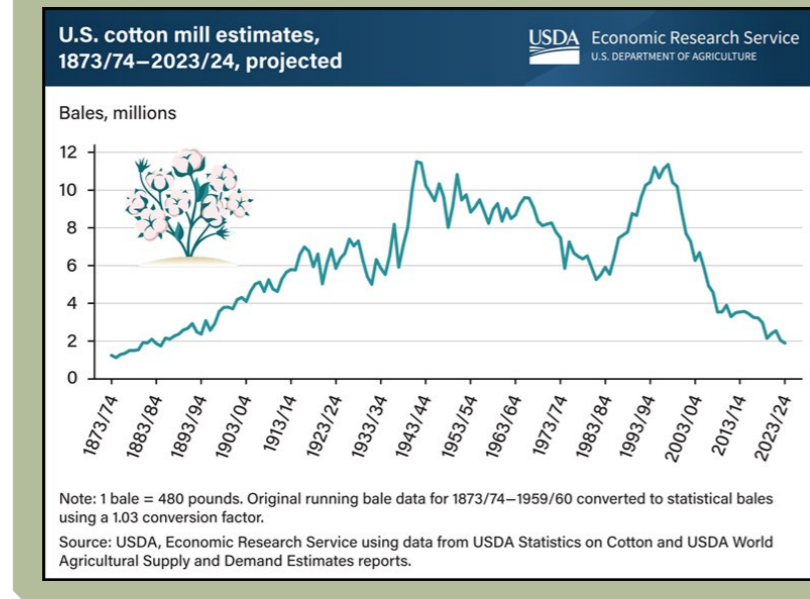
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## American mills on track for record lows

**NEW YORK** - American mills are on track to process the least cotton in 2024 since 1885 – the same year the Statue of Liberty arrived in New York. A recent US Department of Agriculture forecast showed US textile mills will process just 1.74 million bales of cotton in the 2023-2024 marketing year which ends in July. The figure is nearly 15 per cent less than last year and lower than the agency's prior forecast.

US cotton mill use has been mostly on a downward trend since the early 1940s when cotton use peaked during World War II. After the war, synthetic fibres were developed and began being substituted for cotton. Use of synthetics for textiles continued to expand and further reduced cotton mill use through the early 1980s when the downward trend was dramatically reversed.

Promotion efforts via the Caribbean Basin Initiative and later the North American Free Trade Agreement



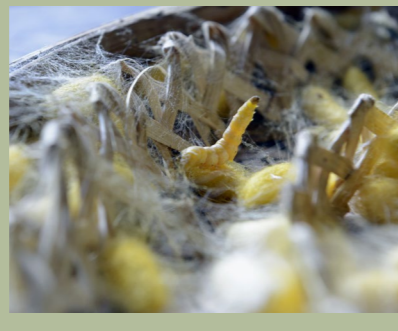
(NAFTA) supported US cotton yarn and fabric production. US cotton mill use rose, peaking again in the mid-1990s, before the World Trade Organization (WTO) Agreement on Textiles and Clothing began phasing out quotas on developed countries' textile and apparel product imports.

In recent months, there has been lots of talk about textile plants closing in

the US. Eight textile plants across the Southern United States closed between August and December 2023, according to the National Council of Textile Organizations. Some commentators are claiming the growing use of the de minimis rule which allows consignments of US\$800 or less to enter the US duty free is harming domestic textile production.

## Trudel to offer traceable silk

**ZÜRICH** – Swiss traceable textile specialist Haelixa has announced a new partnership with Trudel Silk to provide 100 per cent traceable silk from China. The partnership will see silk fibres used in Trudel's spun silk yarns marked with a specific DNA per farm. Samples of yarn, fabrics, and finished products will undergo testing to verify the presence of original silk fibre and, based on the



reporting, fashion brands will be able to trace the finished accessories or garments to Trudel.

The new partnership represents a potential breakthrough for fashion brands seeking assurances around ethical and environmental considerations in their silk supply chains.

Founded in 1914, Swiss-Italian company Trudel Silk is a global leader for GOTS-certified and recycled silk products. Haelixa uses advanced DNA markers to provide complete supply chain traceability for textile fibres. China is the largest silk-producing country in the world. The country produces 46,700 metric tonnes of silk annually.

## New York pledges natural fibre support

**NEW YORK** - New York State Governor Kathy Hochul says her administration had proposed the state's 2025 executive budget includes US\$5m allotment for hemp and bio-based product processing. The investment could increase the production of natural fibres, which some fashion companies have been

looking to adopt in line with sustainability commitments.

Governor Hochul also announced the recommendations of the Natural Textile Development Workgroup, convened in partnership with the Department of Agriculture and Markets and Empire State Development and comprised of stakeholders in different areas of the textile industry and other related sectors.

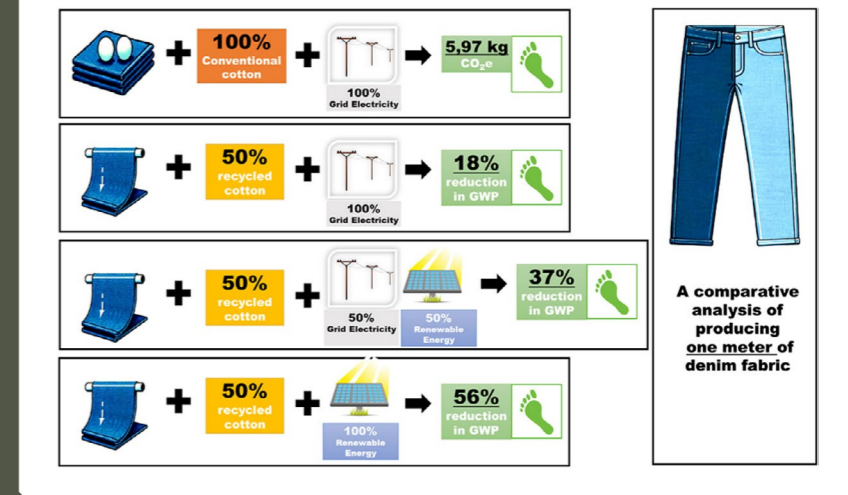
The workgroup is tasked with studying and identifying ways to increase the natural fibre and textile industry's

contribution to the New York State economy; increasing the number of jobs within the textile industry; identifying ways to support and increase private investment in New York State enterprises that produce and process natural fibres and textiles; encouraging the development of new businesses within and supporting the natural textile industry; and improving public knowledge of, and appreciation for, the benefits of natural fibres textiles and sales opportunities within, and outside of, New York State.

## Study measures denim impacts in different scenarios

**LONDON** - Researchers writing in the *Journal of Cleaner Production* looked at how using recycled cotton, and switching to renewable energy sources could help lessen the environmental impact of denim production. The study looked at different scenarios, including using different amounts of recycled cotton and types of renewable energy to see which had the biggest impact on emissions.

They found using a blend of 50 per cent recycled cotton instead of regular cotton, and switching from regular energy to renewable energy, made a sizeable difference in reducing environmen-



tal impact. For example, one scenario showed an 18 per cent decrease in Global Warming Potential, and 25 per cent less Eutrophication and Acidification, along with a 15 per cent drop in Abiotic Depletion (using up non-renewable re-

sources like fossil fuels). When solar energy was used in an alternative scenario, these reductions were reduced further, while of all renewable energy options studied, hydropower had the lowest environmental impact.

## Climate change could increase cotton yields

**LONDON** – A study published in *Industrial Crops and Products* looked at how climate change might affect cotton farming in China, specifically how the timing of planting cotton seeds could impact yields. Researchers used a computer model called AquaCrop for their calculations. They used data from 27 different climate models to predict what the climate might be like in China's main cotton-growing

areas in the future, specifically from 2021 to 2060 and from 2061 to 2100. They looked at two different scenarios: one where society takes steps to reduce greenhouse gas emissions and one where emissions continue to rise. In the future, they note temperatures are expected to rise a lot compared to the past few decades. Rainfall during the cotton growing season might increase overall, but it could vary a lot from place to place and from year to year. Thus, the amount of water that plants need (called evapotranspiration) might decrease in some future scenarios

and increase in others. Overall, they found that cotton yield could increase by about 10-14 per cent by the 2040s and by even more in the 2080s compared to the recent past. Planting cotton seeds earlier in the year could help increase yield. For example, planting at the end of March might lead to about a 5 per cent increase in yield compared to planting in mid-May. In summary, the interesting conclusion of the research is that climate change could be good for cotton farming in China, and planting seeds earlier might help farmers deal with the changes.

## Novel approach to keratin fibres

**LONDON** - By breaking wool down into its smallest components, researchers showed it is possible to make valuable materials for a range of purposes. These findings were documented in a paper in the *Royal Society of Chemistry Advances*. The paper notes that merino wool yarn has tiny fibres made of a protein called keratin. In this study, researchers used a simple method to separate these tiny fibres from the larger structure of the wool. They found that by

treating the wool with a strong alkaline solution, they could dissolve certain parts of it, leaving the keratin fibres behind. These fibres tend to clump together and develop a positive charge when mixed with acetic acid. They can also dissolve and change shape when exposed to strong acids, alkaline substances, or mechanical force. The researchers used a gentle chemical treatment along with mechanical stirring to break apart these clumps of fibres into individual strands. By soaking the wool fibres in an alkaline solution, they could remove the outer layer. Then, by adding a weak acetic acid, they were able to create a slight

electrical charge on the fibres' surface. This charge helped to push the fibres apart. After loosening the fibres, the researchers used mechanical force (blending at high speed) to break them down further into even smaller pieces - nano fibres. This method allowed them to produce extremely thin fibres, just 25 nm in diameter, from the merino wool yarn. These tiny keratin fibres were then used to make transparent thin films. These thin films have many potential uses, including dressing wounds, delivering drugs, filtering liquids, making capacitors, and creating thin film transistors.

## Myanmar expands cotton production

**YANGON** - Myanmar is gearing up for a substantial increase in cotton cultivation, targeting over 600,000 acres across six states and regions in the upcoming fiscal year 2024-25. The goal is to bolster the nation's agricultural sector and foster economic growth. Union Minister for Agriculture, Livestock, and Irrigation U Min Naung disclosed plans to cultivate 612,712 acres of cotton in 19 designated zones spanning six regions and states throughout



Myanmar. This strategic expansion is anticipated to not only meet domestic demand but also to enhance the country's export capabilities. Looking ahead, Myanmar envisions further expansion, with a target of 747,000 acres earmarked for cotton plantations by the fiscal year 2027-28. Local sources claim Myanmar has an average cotton yield of approximately

1,143 kg per acre, which is exceptional by international standards. While not as prominent as some other crops, cotton farming plays a significant role in Myanmar's agricultural sector. The country's warm climate and fertile land make it suitable for cotton cultivation, and efforts to expand production underscore its potential contribution to the economy.

## Fabulous Fibre project supports UK wool sector

**LONDON** - In a bid to enhance productivity, sustainability, and resilience in the UK wool industry, a pioneering collaborative research project titled 'Fabulous Fibre' has been launched. Spearheaded by the National Sheep Association (NSA) in conjunction with industry partners, the 12-month project aims to elevate the quality of UK wool by focusing on breeding sheep with finer wool. The cornerstone of the initiative lies in the reduction of the micron count of UK sheep breeds. Micron count, which indicates the diameter of wool fibres, plays a crucial role in determining the softness and value of the wool, with

lower micron counts signifying softer and more valuable wool.

At present, farmers face challenges in optimising their flocks due to limited data on individual sheep's wool quality. Traditional testing methods involve assessing mixed batches from multiple farms, offering scant insight into the potential of individual animals. Consequently, wool often sells for lower prices due to inconsistent quality. The Fabulous Fibre project holds several potential benefits, including increased profitability as finer wool commands premium prices. Also, by prioritising premium wool production, farmers can potentially reduce flock sizes while maintaining profitability, thus mitigating their environmental footprint. The project's initial phase is already underway and involves several key activities, including identifying superior breeding stock within Frank Langrish's



sheep flock, evaluating lambs born in 2024 to assess genetic control of micron count and testing using an on-farm, portable wool tester for real-time data collection. Although the initial focus is on one breed on a single farm, the project team is actively seeking funding for a three-year expansion aimed at benefiting all UK wool producers across various breeds.

## Leather's carbon footprint over-stated, claims study

**COLORADO** - A recent preliminary Life Cycle Assessment (LCA) of cowhide production in the United States has challenged previous notions about the environmental impact of leather, suggesting it is far lower than indicated by the Higg Index, a commonly used tool in the fashion industry. Conducted by Greg Thoma, director

of agricultural modelling and lifecycle assessment for Colorado State University's AgNext program, the study was funded by the Leather and Hide Council of America (L&HCA). It found that the environmental footprint of cowhide production, when compared to leather, was overstated by up to 8,000 times by the Higg Index.

Kevin Latner, vice president of sustainability at the Leather & Hide Council of America, highlighted the study's implications for the textile industry, suggesting that leather could be a more sustainable alternative to oil-derived synthetics. He

stressed the importance of credible and transparent data to inform decisions and urged the industry to adopt standard metrics for evaluating environmental impact. The LCA also revealed insights into the impact of animal husbandry practices on leather production. Grass-fed cattle were found to have a slightly higher carbon footprint than feed-finished cattle due to the longer time required to reach slaughter weight. Conversely, feed-finished cattle had a slightly higher carbon footprint than dairy cattle, attributed to the environmental impacts associated with milk production.

# IWTO outlines concerns about PEF methodology



**B RUSSELS** - In the heart of the European Union, the fashion industry finds itself at a crossroads amid growing concerns over climate change and environmental degradation. Against this backdrop, stakeholders are engaged in heated discussions on the elusive concept of sustainability and how to attain it. Even politicians are now getting involved, with members of parliament from the likes of France and Germany now regularly having their say on environmental issues in the fashion industry.

The burning questions: Do we need more recycled products? Better consumer education? Stricter regulations? Or perhaps a gentle nudge towards greener purchasing habits?

Enter the Product Environmental Footprint (PEF), a cornerstone of the European Union's sustainability playbook. Developed by the European Commission, PEF offers a systematic approach to assess and communicate the environmental impact of products throughout their lifecycle. It aims to standardise measurements of crucial factors like greenhouse gas emissions, water usage, and resource depletion.

Championed for several years by EU policymakers, PEF holds promise as a tool for identifying areas for environmental improvement and guiding decisions by businesses, consumers, and policymakers alike. With a close eye on high emissions sectors such as apparel and footwear, the EU has been pushing for wider adoption of PEF methodologies as part of its broader environmental agenda.

But is PEF the silver bullet for a more sustainable fashion industry? The International Wool Textile Organisation (IWTO) is supportive of EU efforts on green issues but has reservations about PEF in its present format. Here, I will outline some of our concerns about the methodology's current limitations and the potential impact of these if PEF is rolled out for apparel.

The PEF rules being developed for apparel and footwear are the first time the PEF will be used to compare farmed products with mined products. In many ways, this is comparing apples with oranges and is hugely problematic.

PEF uses a lifecycle analysis (LCA) approach. Sadly, this falls short in assessing the true impact of synthetic fibres such as polyester. For instance, via its use of LCA, PEF does not account for the environmental impacts of forming oil, and only minutely accounts for the release of its carbon into the atmosphere - carbon that had been safely stored underground for millions of years. On the other hand, the impacts of forming natural fibres on a farm are fully accounted for, significantly advantaging the PEF score for synthetic clothing.

It also treats all microfibres equally. This is despite the fact that unlike microplastics released from synthetics, natural fibres such as wool offer biodegradable alternatives. Release of the nutrients from products back to the soil for use again is vital to long term sustainability, yet the PEF scoring system does not presently reward these natural fibres for such obvious attributes.

The failure to integrate microplastic impacts into the overall PEF score, but rather relegating them to 'additional information', has the effect of concealing crucial information from well-intended consumers and not influencing their purchasing choices.

PEF in its current form also fails to fully account for the circular attributes of natural fibres, including their renewability, reuse and recycling potential.

Without improvement, PEF threatens to undermine the EU's broader environmental goals, including promoting a circular economy, combating plastic pollution, and putting fast fashion out of fashion. Despite the EU's genuine commitment to green initiatives, there is a risk that PEF will push consumers towards purchasing decisions which are bad for the environment. This is in none of our interests, and this is clearly not the intention of EU policy makers.

The Commission's public consultation on PEF is now open, and responses are more than welcome before its closure on 28 April 2024.

As this discussion continues, stakeholder help is needed to re-target PEF and ensure it aligns with the EU's ambitions for a greener future. The clock is ticking, but with concerted efforts, a more sustainable path forward - one which better reflects the relative environmental attributes of natural fibres compared with their synthetic counterparts - is possible.

**Dalena White,**  
Secretary General, IWTO

# Fashion for food



**UMBRIA** - Can clothing be used to grow food? Could cotton scraps be used as fertiliser? Might we end up eating our own clothing? These are some of the intriguing possibilities raised by a project in Italy which saw scraps of waste denim fabric used as fertiliser to grow tomatoes in Italy's Umbrian countryside.

*Natural Fibres Insight* recently caught up with the companies behind the work, Candiani Denim and Quintosapora.

Candiani is an Italian denim weaving business founded in 1938 which supplies some of the world's best-known fashion brands. Quintosapora is an innovative project which farms according to organic, regenerative, and biodynamic principles, making use of various agricultural techniques, including agroforestry, EM technology and Biochar.

We've followed Candiani for several years, ever since the company developed COREVA a stretch denim which uses plant-based yarns to replace conventionally used elastane.

This is a big deal for fashion - or it should be. Elastane is huge thorn in the side of recycling efforts. Fashion brands publicly claim to care deeply about recycling yet continue to use elastane in growing quantities.

To our knowledge efforts have been made previously to develop natural, recyclable versions of elastane, but none have become widespread in the mainstream fashion space.

We spoke to Alberto Candiani, owner of Candiani Denim, to find out more about his work with Quintosapora and to find out what gives COREVA its fertilising qualities.

We wanted to know, firstly, how Candiani has made denim stretchable without adding elastane.

Candiani told *Natural Fibres Insight*: "We combine the natural rubber elastomer with regeneratively grown cotton, regenagri certified, mainly sourced from European farms in Spain and Greece, and in a small percentage also from California and Brazil.

"This allows the fabric to biodegrade and to turn into compost at its end of life, avoiding the problems of conventional synthetic elastomers which release microplastics into the environment. Another important element that distinguishes COREVA from conventional synthetic elastomers is that it's easier to recycle at its end of life. Due to its physical characteristics the natural rubber yarn is easier to separate from the cotton a synthetic yarn."

Candiani has previously developed product partnership with specialists, in the case of elastomers collaborating with The Lycra Company and Asahi Kasei.

Candiani adds: "When we decided to pursue the research for a bio-based alternative we were alone. Therefore, it took us five years to develop, test and patent COREVA."

COREVA was patented in 2020 and launched via collaborations with Stella McCartney, Denham the Jeanmaker, Kings of Indigo, CLOSED, Outerknown, Heron Preston and Jacob Cohen to name a few.

There is heightened interest in the product although the names mentioned are mainly niche and high-end fashion. Candiani says: "A growing number of brands are currently introducing the technology into their collections. The brand Triarchy currently holds the exclusive rights to use it in the US market and has dressed several celebrities during Oscars week in Los Angeles with bespoke COREVA designs."

But how did a stretch denim developed for fashion brands come to be used as fertiliser to grow food? Candiani says COREVA was initially tested for biodegradability and compostability according to EU Standard EN 13432.

He adds: "We passed the test with flying colours. The tests results illustrated some phyto-regenerative properties, meaning [COREVA scraps] add nutrients to the soil and support plant growth. Mung bean and barley seeds grew extremely well in the COREVA compost.

"So, we decided to take it further and test COREVA on the field to see if it could help grow the raw material jeans are made of ... cotton. In 2022 we conducted a pilot in the US together with Rodale Institute in which we grew regenerative cotton using COREVA offcuts, and it worked."

Another pilot in 2023, at Quintosapora, Umbria saw tomatoes grown using COREVA offcuts as fertiliser. These tomatoes were turned into pasta sauce and served to the audience of the Green Carpet Fashion Awards in Los Angeles in early March 2024

In the name of transparency, all results from the testing have been published on the website of Candiani. These include the finding of biodegradability

and composting tests carried out by the Rodale Institute which looked at the effect of COREVA denim on cotton plant growth and soil characteristics.

Could COREVA offcuts be commercialised as a fertiliser? Candiani says this would not be possible because while a commercial fertiliser adds a specific, standard number of nutrients to the soil, COREVA adds a smaller number and thus cannot be defined as a commercial fertiliser.

This project brought to mind work by Hong Kong Research Institute of Textiles and Apparel (HKRITA) which last year launched a pilot study in India to trial the use of cotton textile waste - in powder form.

HKRITA partnered the India based apparel manufacturer, Shahi Exports Pvt Ltd, for a pilot-study on the use of 'Absorboost', the brand name for this cotton waste.

Previous tests found plants grown with Absorboost had a higher yield compared to control lines, offering further evidence of the remarkable lifeblood giving qualities of the humble cotton plant.

Candiani told us this work does not stop here and, in many ways, can be viewed as a showcase for what is possible in this space.

Candiani has always been keen on ex-

ploring the outer limits of sustainable textile production and is a genuine innovator in this space.

He told *Natural Fibres Insight*: "In a circular economy a jean must last as long as possible and only when it is no longer repairable does it go through first an upcycling process, then a downcycling process and finally through the recycling process. When a jean is recycled a part of the fibres can be reused to make a new yarn, fabric, jean but another part is too weak to be spun and will always be inevitably waste.

"With COREVA, we want to make sure this waste can go back to nature and help grow new raw materials. Now that we have proven this is possible, we aim [to create] a platform which can connect industrial denim production with regenerative agriculture. It requires solid industrial partners, legislators, logistics and communication to build and scale the solution offered by COREVA into a virtuous cycle."

Finally, we asked Candiani his thoughts on the fashion industry generally and the debate around natural fibres versus synthetics. Does he believe like some that we should be looking to phase out polyester and oil-derived fibres altogether?

He told us: "Our vision is to link industrial denim production with regener-

**Q and A with Alessandro Giuglioli, co-founder, and farmer at Quintosapora**

**What have been the main lessons you have learned from this project?**

*Firstly, when likeminded people meet to solve a challenge, we can achieve seemingly impossible targets. At farming and soil level we discovered that the soil remained softer but also the denim seemed to increase the water retention on the soil. We discovered that less water is required to look after the tomato plants, which is a positive result as water scarcity is one of the main issues in agriculture. We carried out chemical analysis throughout the project and the results confirm that soil chemical composition was unchanged, demonstrating that soil and produce remained perfectly healthy. Furthermore, we are returning organic matter (cotton) into the soil.*

**Can you see any scope for any further collaborations with Candiani?**

*Yes, we are already working on what we can achieve next. Growing tomatoes was successful, now we are discussing how we can use COREVA on other plants in different ways. To grow the tomatoes, we dug a trench in the field, samples of denim were added to the soil, covered, and planted on top. Now we could potentially use COREVA as mulching technique thus helping us manage weed infestation next to the plants making our farm processes more efficient and reducing the amount of work required to tender to our plants.*



ative agriculture, giving birth to what we could call regenerative fashion. To accomplish this vision, we believe natural fibres must prevail in fashion as they can return to nature at the end of the useful life of a garment.

"If we consider the fashion industry's biggest problem is overproduction, where a sickening amount of unsold, unworn garments end up in landfills every year, natural fibres have a dramatically different impact on the environment compared to synthetic fibres. So, my belief is that the future of fashion has to be fossil-fuel-free."

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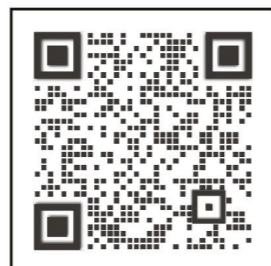
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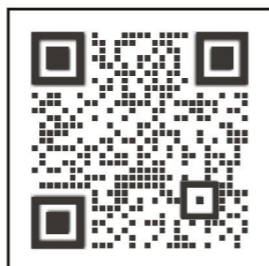
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Advocates of sustainability schemes, particularly organic cotton and the Responsible Wool Standard, must demonize conventional cotton and merino wool to justify the price premiums required to maintain each standard

## Making sense of the EU's 'ecodesign' proposals

**B**RUSSELS – The European Union has a wide-ranging green agenda and the fashion industry, with its resource-intensive supply chains, is in the sights of EU policymakers.

On this front, the EU has proposed new rules called the Ecodesign for Sustainable Products Regulation (ESPR) which aim to make sure products are designed in a way that's better for the environment. The rules cover things such as how much energy products use, how long they last, and how easy they are to recycle.

The European Commission asked its Joint Research Centre (JRC) to make a report about which products should follow these rules first. The report, called 'Ecodesign for Sustainable Products Regulation - preliminary study on new product priorities,' came out in January 2023. This looked at different products, with clothing and footwear among the ones they recommended for new rules.

In March 2024, a white paper was issued which assessed the draft JRC Report's 'potential measures' for Textiles and Footwear.

The paper was funded by Cotton Research and Development Corporation of Australia (CRDC) and written by Terry Townsend and Veronica Bates Kassatly. Natural Fibres Insight spoke to the authors.

**Natural Fibres Insight:** Firstly, could you tell us what the rationale and thinking was behind this report and how it came about?

**Veronica Bates Kassatly:** At the beginning of last year Allan Williams and I were discussing sustainable apparel research in general and which topics most urgently needed to be addressed. We agreed that EU legislation was one area that would have a major impact, not just on cotton farmers but on climate change, global justice, and other areas that so many of us feel transcend our personal interests.

After some discussion, in July 2023 we decided that the place to start was with the ESPR. Originally, I had a different co-author, but we had barely started before personal issues intervened. Terry agreed to serve as a co-author, and the rest, as they say, is history. Incidentally, the CRDC also commissioned Terry and I to produce

a brief primer on the proposed French PEF, which was published in March.

**Natural Fibres Insight:** Your report focuses on the JRC report but makes a lot of broader points about how we measure sustainability in fashion value chains. It's a long report so for those who don't have the time to read it all, what would you suggest are the key and salient takeaways?

**Terry Townsend:** Sustainability is definable and is defined by a series of global agreements from the Covenant on Economic, Social, and Cultural Rights to the SDGs. Accordingly, no hunger/no poverty, respect for local rights and customs, local sovereignty over local resources and reductions in GHG emissions are bedrock principles of sustainability.

The JRC report is not consistent with these principles.

The recommendations contained in the JRC report would not meaningfully reduce GHG emissions within the fashion value chain. All the focus of the JRC report is on natural fibres, and none of the recommendations relate

to polyester or to emissions in the textile-production phases of clothing and apparel production.

If adopted, the recommendations in the JRC report would cause the EU to violate its commitments as a member of the World Trade Organization and would undermine SDGs 1 & 2, no hunger/no poverty. The whole point of the JRC recommendations is to steer European consumers away from products made of natural fibres. Such recommendations would constitute impermissible non-tariff barriers to trade under WTO rules, and they would undermine the livelihoods of millions of natural fibre producers around the world.

We point out that many of the recommendations contained in the JRC report are based on faulty data, often from single sources with vested commercial interests.

We also point out that the JRC report contains tired old tropes about cotton production and fertilizer, pesticide, water and land use. We provide objective data showing that cotton farmers are technically competent and environmentally responsible, and that input use associated with cotton production is roughly equivalent to the proportion of arable land around the world used in cotton production.

**Natural Fibres Insight:** The EU generally appears to be sincere in its efforts to encourage more sustainable purchasing practices by consumers and to this end has spent many years developing tools such as the Product Environmental Footprint etc. But despite these efforts, this report suggests it is going down the wrong path and listening to the wrong people. Is that a fair comment?

**Terry Townsend:** The PEF technical secretariat is dominated by brands and retailers with a vested interest in the continuation of fast fashion business models. Accordingly, the proposals for PEF, rather than supporting sustainability are sustaining fast fashion.

**Natural Fibres Insight:** Your report states: “We are particularly concerned by the draft JRC Report’s analysis of climate change. For textiles and footwear, this appears to rely almost exclusively

on a single paper written by McKinsey for the Global Fashion Agenda (GFA). The data in this GFA study is neither internally consistent nor consistent with any other study of climate impacts in the apparel supply chain that we have been able to identify.”

We read this paper by McKinsey and were similarly alarmed. How and why do you think McKinsey and GFA got things so spectacularly wrong?

**Veronica Bates Kassatly:** I am not going to speculate. Many publications have used that data and repeated the Fashion on Climate claims as fact. I think it is those journalists who owe it to us to find the answer to that question.

**Natural Fibres Insight:** Did you approach them to ask about their analysis?

**Veronica Bates Kassatly:** I reached out to them trying to get the underlying data sources, and GFA and McKinsey were both sent copies of the report before it was released. But this is not a paper on Fashion and Climate. We aimed only to ascertain if the draft JRC report’s analysis of climate change was robust and substantiated. It isn’t.

**Natural Fibres Insight:** Poor data seems to be a recurring theme in our industry, and natural fibres often seem to be penalised as a result. Is this by chance or design in your view?

**Terry Townsend:** Demonization is profitable. Advocates of sustainability schemes must demonize conventional cotton and merino wool to justify the price premiums required to maintain each standard. Demonization includes the use of data decades out of date as if it were current, the use of worst-case situations as if they were representative, the use of subjective language to paint negative images rather than using objective language to inform, as well as using exaggerations, distortions and outright falsehoods.

Brands and retailers strive to differentiate their products in competitive market environments. By demonizing conventionally produced fibres, brands and retailers hope to cultivate virtuous images which can translate into increased sales.

Only by volubly challenging those who demonize, with public, specific, fact-based rebuttals, will natural fibre industries be able to make demonization expensive and

WORLD FIBRE PRODUCTION					
	2020	2021	2022, est.	Pct of total fibres in 2022	Pct of natural fibres in 2022
	Metric Tonnes			%	%
Abaca	75,889	83,501	72,000	0.06%	0.2%
Agave Fibres	40,625	40,743	41,000	0.04%	0.1%
Coir, without pith	1,101,498	1,115,349	1,145,000	1.0%	3.5%
Cotton Lint	23,989,000	25,176,000	25,314,609	22.1%	76.5%
Other Fibre Crops, raw, n.e.c.	739,145	755,326	733,000	0.6%	2.2%
Flax, processed but not spun	974,806	896,636	851,805	0.7%	2.6%
True Hemp, raw or retted	251,062	302,318	272,000	0.24%	0.8%
Jute, Kenaf & Allied Fibres	2,874,800	3,175,600	3,095,000	2.7%	9.4%
Kapok fibre	78,674	82,150	80,000	0.07%	0.2%
Ramie, raw or retted	62,228	10,138	10,000	0.01%	0.0%
Sisal, Henequen and similar hard fibres	280,800	281,400	273,000	0.2%	0.8%
Silk, raw	91,765	86,311	91,221	0.08%	0.3%
Wool, clean	1,019,575	1,037,933	1,053,000	0.9%	3.2%
Other animal fibres	27,000	26,460	27,000	0.02%	0.1%
<b>Total Natural Fibres</b>	<b>31,606,868</b>	<b>33,069,866</b>	<b>33,100,000</b>	<b>28.9%</b>	<b>100.0%</b>
Cellulosic	6,600,000	7,155,000	7,334,000	6.4%	
Synthetic Filament	49,514,000	53,029,000	53,981,000	47.1%	
Synthetic Staple	19,750,000	20,050,000	20,178,000	17.6%	
<b>Total Manmade Fibres</b>	<b>75,864,000</b>	<b>80,234,000</b>	<b>81,493,000</b>	<b>71.1%</b>	
<b>Total Fibre Production</b>	<b>107,470,868</b>	<b>113,303,866</b>	<b>114,593,000</b>	<b>100.0%</b>	

Table 1. Source: dnfi.org/dnfi-world-natural-fibre-update-November-2023

■ The JRC recommendations appear designed to steer European consumers away from products made of natural fibres. However, as this table shows, natural fibres make up less than one third of the total fibre mix

thus shift the structure of incentives that currently makes demonization profitable.

**Natural Fibres Insight:** Your report states: “But it is unreasonable for EU policy-makers to expect the JRC to use what are basically marketing tools from these corporations as guides for global policy.” Has the EU allowed itself to be overly swayed/influenced by industry? And do you see this changing as we move forwards?

**Veronica Bates Kassatly:** We are making the point that the EU - indeed many legislators - are trying to develop and enact policy without having done the groundwork. Not only are they ignoring socioeconomic impact, but they are also trying to measure comparative environmental impact without first commissioning the data needed to make comparative assertions. They are using a random assortment of LCAs - or Life Cycle Analyses - all prepared using different boundaries and methodologies, with more or less representative data in terms of geographies and time frames. LCA theory, indeed data theory, says you can’t compare studies using different boundaries and methodologies, so the approach is unscientific.

As to whether that will change, this is politics. All this legislation will be voted on by MEPs who want to be re-elected. In my experience, when you explain to the general public what is being proposed and how sustainability is being measured they are shocked, but getting the message out is not easy.

**Natural Fibres Insight:** Your report suggests the draft JRC report, in common with the proposed EU use of PEF, does not attempt to consider the potential socioeconomic impact of its requirements on cotton producers in poorer countries. This seems a glaring omission given the SDGs etc. Cotton (and, indeed, wool) farmers generally seem to be scapegoated by the fashion industry at times. Why do you think this is and what do you think needs to be done to amplify their voices?

**Veronica Bates Kassatly:** Our report doesn’t suggest. It documents. We cite the draft JRC Report: “\*Please note that in this context sustainable does not include the social dimension.” Similarly, if you look at both the EU and the French PEF, not one of the variables included covers the socioeconomic dimension.

This doesn’t just apply to cotton and it’s not just an omission. It’s a violation of the EU’s global commitments not to consider the environment as separate from human wants and needs, to promote the SDGs in all EU policies, and to evaluate biodiversity in a manner consistent with the contribution and rights of indigenous peoples and local communities including their Right to development.

One of our criticisms of the draft JRC Report is precisely that at no point does it consider whether its proposals make economic sense or how they align with prevailing economic incentives and disincentives. Fashion is big business. Whatever the economics incentivize and the law permits will occur. If producing sustainably made money, everyone would be producing sustainably.

With the exception of Patagonia, C&A, and Bestseller, virtually all the big brands are publicly held. They cannot legally spend their shareholders’ money on evaluating the socio-economic impact of their production choices if they are not required to. Particularly when it is highly likely that such studies would show that cheap polyester has almost no benefit and that (relatively) extremely expensive cashmere and silk do.

What needs to be done is for the EU, the sustainable fashion industry, and each and every one of us to honour our global commitments. Whether you are considering sustainability legislation, marketing, or reporting, the question to ask is: How does it reduce poverty and hunger? How does it equitably reduce GHG emissions? How does it preserve both biodiversity and the income and prospects of local - and particularly indigenous - populations?

**Natural Fibres Insight:** Have you approached the EU with your findings and/or do you have any lines of communication with EU policy makers?

**Veronica Bates Kassatly:** We have no lines of communication with EU policy-makers. Whilst on a panel in Venice last October, I mentioned the fact that I was working on such a report and a member of the JRC who was in the audience, later gave me her card and asked me to send the paper to her when it came out. I did

so and assured her that we would be happy to answer any questions. I have not heard back. I also sent the paper to several contacts who do have such lines of communication. I don’t know if they passed it on.

**Natural Fibres Insight:** Just generally, based on your findings and other research, what practical proposals would you suggest for the EU to better help consumers to make greener decisions when purchasing fashion?

**Veronica Bates Kassatly:** I have been saying the same thing since I first started to work in this space. This is a quote from a pro bono piece that I wrote for Apparel Insider in 2019: “Clothes are consumer durables, not paper napkins, so cradle to gate - as used in current sustainability measures - is seriously misleading.” The impact that matters is the impact per wear. The only person who knows how many times an item will be worn is the person who buys it.

That’s all consumers need to understand. How a brand sells is as important as how it produces. As our report demonstrates, simple arithmetic tells us that even if a specific garment does have a lower impact in production, the company itself could still have a significantly higher negative impact in total production and waste.

Consumers should focus on whether they need, want, love, and will wear the garment for long enough to warrant the impact of its production. Everything else is a distraction.

At the moment, sustainability is seen as a tool to sell more. Sustainability marketing is an oxymoron. The obvious conclusion is that the EU should not allow brands to make consumer-facing sustainability claims at all. Whether this applies to their general production or to claims made for specific products.

#### About the authors

**Veronica Bates Kassatly** is an independent analyst and consultant on sustainable fashion.

**Terry Townsend** is member of the Discover Natural Fibres Initiative and consultant on natural fibre issues. He is a former executive director of the International Cotton Advisory Committee.



# A life in wool

**SALTAIRE** - Peter Ackroyd will have been in the wool industry for 50 years in September of this year. His has been a fascinating career which has taken him around the world more times than he probably cares to remember. Indeed, as I sat down to interview him at his home in West Yorkshire, he was looking forward to a trip to Australia for the annual IWTO Conference. He told me he'd be spending a few weeks Down Under as well as in South Africa lecturing.

There are no signs of any winding down, which should be a relief to anybody who cares about wool given that Ackroyd has spent so long making the business and sustainability case for this much-cherished fibre. For a long-time he has been able to draw on support in his endeavours from King Charles III of England, no less. More on that later. We talk over the course of a few hours during which we have a stroll around his stunning hometown of Saltaire. There we visit Salts Mill, now a thriving creative hub housing dozens of gorgeous David Hockney canvasses, but which for a long time was the epicentre of Yorkshire's once legendary wool industry.

"My parents were in wool, my father was a spinner in Guiseley at Wendy Wools," Ackroyd tells me. "Wool, mainly Australian, has been in the family for the last four generations."

Ackroyd's wool career started in 1974. Initially he worked for Courtaulds in France before returning to the UK to head up the British Wool Textile Export Association, where he worked for 30 years. He headed up the IWTO from 2011 to 2019 and has been Woolmark's global strategic advisor since 2011.

During this time, Ackroyd watched an industry which once employed as many as 70,000 people enter a period of gradual albeit not completely terminal decline. Like other UK manufacturing sectors, wool has been offshored in a process which accelerated significantly



in the late 1980s and 90s.

"What I've seen in my time is the shift from bulk to niche," he says. "The journey has been painful and difficult, but the niche is now doing rather well, but at only 20 per cent of what the bulk once was."

Ackroyd takes me on a journey through the region's wool industry past and it's a fascinating one. "The first wool arrived here from Australia in 1807, just before the Industrial Revolution, and it grew from there," he says. "It was brought over to Farsley by Samuel Marsden, an Anglican vicar."

Previously, in 1797, merino sheep had been sent to Australia from Cape Town, South Africa.

At William Thompson's mill in Yorkshire in 1808, Australian wool was woven into a piece of cloth from which a black suit was tailored. Marsden wore the suit when first introduced to King George III.

"We talk about British wool from that time, but it wasn't British at all, it was what we'd call colonial wool," Ackroyd says. "The Industrial Revolution was fuelled by wools from South Africa, Australia and New Zealand."

"The basic difference between the British and 'colonial' wool was that the merino was much finer. It was quite revolutionary. Breeds in this area were course – around 35 to 38 microns. The Australian breeds, while not as fine as they are now, were more like 22-23 microns."

"They were used for suits, uniforms etc. In the 19th and 20th century, my gran used to tell me there were 70,000 people working in the worsted wool industry in this part of the world. It was huge. There must have been 20 mills in the Aire Valley, each producing 20 million metres of worsted cloth per year."

This was a time when all the army wore wool uniforms. Ackroyd tells me that in 1938, the UK purchased the entire Australian wool clip for army uniforms in anticipation of war.

Those halcyon days for the industry are long gone. The large mills have all disappeared from the area. Neighbouring Leeds was once home to huge clothing manufacturers, but they moved offshore. Leeds began to reinvent itself as a professional and financial services centre in the 1980s. But the legacy of its industrial past can still be seen along the Leeds-Liverpool canal where huge mills which once

dotted the waterside have been converted into flats, restaurants and trendy bars. I ask Ackroyd whether there was a point where he could see the writing on the wall for the UK wool and clothing industries. He says: "This was when manufacturers of clothing started to move out of the UK from Leeds and North-East England. When Dewhurst started to close and move offshore, I thought, 'hmm, there's something wrong here'." Dewhurst now has production centres scattered across Asia, including Bangladesh, China, India and Vietnam among others.

"This was the late 1980s, early 90s," Ackroyd continues. "All the manufacturers started to move offshore, firstly to Eastern Europe, then China via Hong Kong, then Vietnam and finally Bangladesh."

Each move brought cheaper labour. Bangladesh has the lowest wage rates in the world for garment workers outside Africa, where garment production has been stop-start over the years.

"Will mass production ever come back here? Not in my lifetime," Ackroyd says.

And yet, there are manufacturers in the textile trade doing okay in the UK. He adds: "There are now around 40 mills in the UK and the common denominator is that they are niche, they are weaving wool and natural fibre fabrics, and they are all export orientated to countries that like the concept of having a British fabric suit. Companies in Yorkshire, Scotland etc are 85 to 90 per cent export. What is not exported directly will be re-exported by third parties in the UK."

Since 2010, Ackroyd has been involved in the Campaign for Wool, a twice-yearly consumer-focused campaign which promotes the qualities of wool – namely that it is natural, durable and biodegradable. The work is funded by wool growers from Australia, the UK, South Africa and New Zealand and a key factor in its success has been the support of King Charles III.

"This was King Charles' idea," Ackroyd tells me. "He called us to a meeting in February 2009 at Clarence house where we had dinner. He said he wanted to launch a campaign to help wool growers. It has been partially successful, but what it has not done to date is raise the price of strong wool to acceptable levels to cross bred wool growers."

Royal approval has been a huge boon to the British clothing industry. Accordingly, uncertainty around the King's health (and his ascension to the throne) has been a challenge for companies with Royal Warrants by Appointment such as John Smedley, Burberry and others.



*Saltaire was founded by Sir Titus Salt, a woollen textiles manufacturer. He moved his entire business from Bradford, in part to site his large mill by a canal and railway.*

*Designed by Lockwood and Mawson, work on Salts Mill began in 1851. The building borrows heavily from Italian architecture. It's a truly stunning piece of architecture which has been lovingly preserved.*

*The mill used wool from alpacas which Titus combined with other materials to create new varieties of worsted cloth.*

*As well as his new mill, Titus Salt – a true visionary – built smart stone houses for his workers. There were wash-houses with running water, bath-houses, a hospital, and an institute for recreation and education, including a library, reading room, concert hall, billiard room and gymnasium.*

*All remain today and Saltaire itself has been designated as a world heritage site.*

"We know the King is not terribly well now but what we do have is the Campaign for Wool which was signed by King Charles III in 2010 and lots of mills are very happy with that Royal seal of approval," Ackroyd says.

I've always been a big fan of any consumer-facing campaigns around sustainability and fashion. Too many of these conversations take place within industry and there is a risk of echo chambers developing at times.

That's why I liked the Campaign for Wool and feel it has been – and can continue to be – a force for good. Asked about the goals of the campaign, Ackroyd says: "It's to get people to understand that wool is totally sustainable. Non-natural fibres sectors tend to scapegoat wool to hide a multitude of their own short-comings. "All I ask is that they leave us alone. We are just over one per cent of the global fibre mix. If everybody in the world stopped using polyester, people would be stark naked."

"But wool is a great investment on capital. It's durable. You won't need to get rid of it and hardly ever need to wash it, if at all. It's an investment by the whole fashion industry. As the late Vivienne Westwood told me years ago, 'buy less buy wool'."

## Study explores cottonseed as a co-product

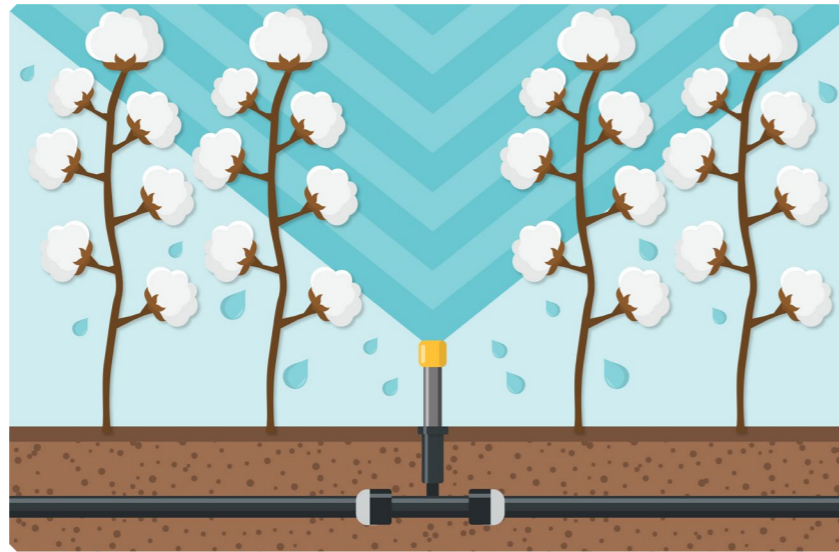
A recent study attempted to more accurately ascertain the environmental footprint of cotton. Cotton lint, the primary material for textile manufacturing, shares its origin with an essential byproduct, cottonseed, during its cultivation process. The division of environmental impacts between these two products is a pivotal aspect of assessing cotton's overall environmental footprint. The research, published by the American Society of Agricultural and Biological Engineers, looked at the various methods of allocating environmental impacts between cotton lint and cottonseed, providing insights aligned with ISO standards. The study explored several 'co-product' treatment strategies, including partitioning based on mass, economic value, biophysical factors, and cereal unit comparisons, as well as substitution methods, sometimes referred to as system expansion. The findings highlighted a significant

variance in the global warming potential associated with cotton lint production, with estimated impacts ranging from a negligible -0.01 to 4.24 CO<sub>2</sub>/kg of lint, considering a 95 per cent confidence interval.

Comparing the methodologies, it becomes apparent that mass partitioning often results in the lowest environmental impact estimations for cotton lint, whereas economic partitioning and substitution approaches can am-

plify perceived impacts in other environmental categories. Among the evaluated methods, cereal unit and biophysical allocations were endorsed for their compliance with the stringent ISO 1044 standards.

This analysis could potentially help organisations in the cotton industry to navigate the complexities of life cycle assessment (LCA) while setting a benchmark for co-product treatment in agricultural life cycle analysis.



## US hemp facility up and running

DALLAS - Panda Biotech has announced commercial operations have officially begun at the Panda Hemp Gin, its landmark industrial hemp processing facility in Wichita Falls, Texas. The 500,000-square-foot building situated on 97 acres is the first of its kind and the largest in the Western Hemisphere, with the capacity to process 10 metric tons of industrial hemp into textile-grade fibre, hurd, short-fibre/hurd mix, and nutrient-rich micronized hurd per hour. It is claimed to be a zero-waste process, utilising every part of the industrial hemp stalk, and operating solely on 100 per cent renewable energy. The Panda Hemp Gin is fully operational, and production will continue to ramp up in the coming months. In February, the commissioning process of

Panda's 600-yard-long processing line and three miles of overhead pneumatic duct lines, including each piece of equipment for decortication, refining, blending, mechanical cottonization, hurd bagging and storage, and baling, was successfully completed.

"Panda Biotech's state-of-the-art industrial hemp processing facility is a monumental achievement and a game-changer for both agriculture and industry," said Dixie Carter, president of Panda Biotech. "As research and development in this area continue to advance, industrial hemp fiber and cellulose will help transform numerous industries with sustainable goals and challenges. Panda's industrial hemp will play a pivotal role in satisfying significant global market demand for renewable processes and products."

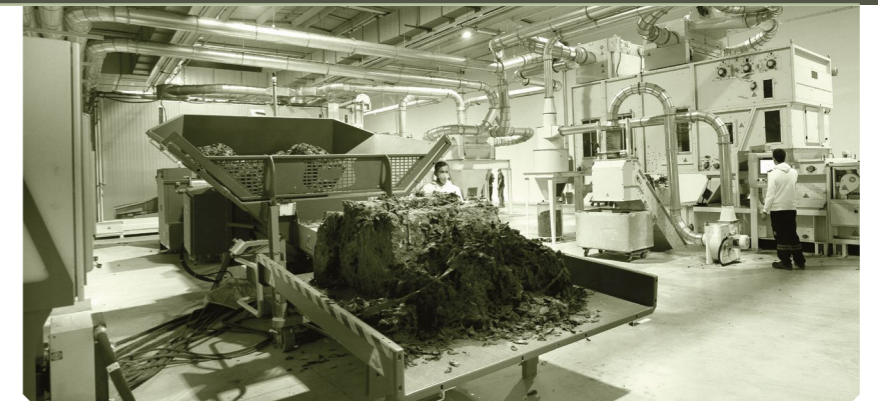
Industrial hemp is considered one of the most versatile raw materials available with a wide variety of potential uses. The Panda Hemp Gin will focus on providing five main product lines



from hemp, including mechanically cottonized fibre, decorticated fibre, hurd (cellulose), short-fibre/hurd mix, and nutrient-rich micronized hemp dust. The applications for each product vary broadly from consumer and industrial textiles, non-wovens, paper products, bioplastics, biofuel, animal bedding, fiberglass substitute and construction materials such as hempcrete, mulch, insulation.

# ISKO takes recycled route in sustainability journey

BURSA - ISKO, the world's largest producer of denim, has in recent years made a significant shift towards the use of recycled cotton. The driving force behind this transformation is a venture by ISKO's parent company, SANKO Tekstil, called RE&UP Technologies. This initiative is using textile-to-textile recycling technology, establishing a closed-loop system that transforms end-of-life textile waste into recycled materials for the industry. "RE&UP Technologies represents a step forward, enabling the fashion and textile industry to shift towards circularity," an ISKO representative told Natural Fibres Insight. "This seamless ecosystem for textile waste offers the industry recycled textile raw materials at scale, marking a significant leap towards sustainability." Traditionally sourcing first-generation cotton primarily from Turkey, ISKO has now pivoted towards recycled cotton. This move not only reflects the company's commitment to sustainability but also broadens its sourcing horizon. "Our cotton now comes from textile waste, a sustainable source that underscores our commitment to minimising environmental impact," they told us. Transparency throughout the supply chain, from cotton farms to the final product, is a critical aspect of ISKO's operations. "With a major focus now on recycled cotton, sourced from textile waste, we're enhancing our supply chain's sustainability," ISKO told us. The term 'sustainable cotton' often gets



tossed around in the industry, but ISKO aims to redefine what it truly means. "We prefer to focus on what will genuinely cause the lowest impact on our environment. Using more recycled cotton not only diverts textile waste from incineration and landfill but also saves natural resources," ISKO told us, shedding light on the company's pragmatic approach to sustainability.

The company places an emphasis on adhering to recognised cotton standards and certifications such as OCS, GOTS, GRS, and RCS. "Using certified fibres and materials ensures our work towards a better textile industry is genuine, credible, and transparent," the company pointed out, underscoring the importance of independent third-party certifications in ISKO's work.

Labour rights and fair wages in cotton production are paramount to ISKO. "All our suppliers and partners are required to sign our Supplier Social Compliance Policy. It's a commitment to high labour standards, environmental protection, and maintaining health and safety," ISKO told Natural Fibres Insight.

In response to the volatility of cotton prices, especially in the aftermath of the pandemic, ISKO has leveraged its vertical setup to maintain efficiency and cost-effectiveness. "Being in a vertical setup with SANKO puts us in a better position than most for efficiency on cost for our customers," the representative explained.

ISKO has also developed Environmental Product Declarations (EPDs) for all its fabrics. "Our EPDs measure the environmental impact of 1m<sup>2</sup> of fabric, ensuring key sustainability KPIs can be tracked, monitored, and reduced. This transparency is crucial for us, our customers, and even our peers," the company said, emphasising the role of EPDs in ISKO's environmental accountability.

Addressing the environmental footprint of cotton, ISKO relies on third-party verified life cycle assessment data. "With the use of more recycled cotton, the environmental footprint of our cotton is significantly less than that of virgin cotton," the company clarified, again highlighting the benefits of recycled cotton which various studies have shown has a significantly reduced carbon footprint compared to its virgin counterpart. Despite the negative press surrounding cotton's environmental impact, ISKO remains optimistic about its future. "Cotton is the most widely used natural fibre in the world. By eliminating wastewater discharge, using bluesign-approved chemicals, and committing to significant reductions in greenhouse gas emissions, we're minimising our environmental impact," ISKO added, reinforcing its commitment to improving the industry through sustainable practices



# Q and A with Jesse Daystar

**N**ORTH CAROLINA - Dr Jesse Daystar, vice president and chief sustainability at Cotton Incorporated, is one of the most respected names globally in the arena of cotton and cellulosic fibre research. He has led research and consulting in product sustainability, biomaterials, biochemicals, and bioenergy. His research has produced numerous publications, sustainability and chemical and engineering tools, and certifications for clients including the USDA and the U.S. Department of Energy. *Natural Fibres Insight* caught up with him to talk about cotton as a sustainable fibre, countering misinformation and the use of LCAs to measure sustainability, among other issues.

**Natural Fibres Insight:** What do you see as the key industry trends and issues in cotton production the present time?

**Jesse Daystar:** Regenerative agriculture will be key to improving sustainability in cotton production and we're encouraged to see the continued adoption of no-till farming, cover cropping, crop rotation, and integrated pest management (IPM). Regenerative agriculture is unique in that it stresses not only reducing the impact of cotton production, but also improving the environment where cotton is grown. This is somewhat unique to cotton in that the actual product a person buys could have helped improve the soil it was originally grown in.

However, for many farmers, the transition to regenerative or more sustainable practices can pose a significant financial hurdle, impeding their ability to implement these methodologies. The upfront investment required in infrastructure, training, and technology often presents a formidable barrier.

To address this challenge, Cotton Incorporated collaborates closely with leading agricultural universities, offering financial support, technical guidance,



and essential supplies to researchers dedicated to making these technologies more accessible to small farmers. One such project is the U.S. Climate Smart Cotton Program is a 5-year, collaborative pilot to provide technical and financial assistance to 1,650 US cotton farmers, including historically underserved cotton producers to advance adoption of climate smart conservation practices on 1.2 million acres.

**Natural Fibres Insight:** There is a continued debate about whether cotton is a sustainable fibre and cotton still receives bad press in some quarters. How would you make the sustainability case for cotton?

**Jesse Daystar:** Cotton is a versatile fibre that helps meet the needs of a growing global population. As a plant, a fibre or a textile, cotton is naturally circular. It can be used in many ways, repurposed or reused and it biodegrades naturally in tested water and land environments. These characteristics set cotton far apart from synthetic fibres, particularly those made from petrochemicals such as polyester which shed microplastics into the environment, adding to the significant and growing problem of plastic pollution in the world's ecosystems.

In the last half a century, the cotton industry has advanced the science of growing and processing cotton and manufacturing cotton products. New technologies, techniques and tools have unlocked efficiencies and reduced environmental impacts.

**Natural Fibres Insight:** For a period, there was a lot of misinformation flying around about cotton in terms of exaggerated figures on its water use, for instance. How successful do you think organisations such as Cotton Incorporated and (as an example) the Transformers Foundation have been at counteracting this?

**Jesse Daystar:** The cotton industry has faced persistent challenges in dispelling misinformation, particularly concerning its water usage. It is imperative that all stakeholders, including growers, policymakers, brands, retailers, industry journalists, and consumers, understand the source of information shared and where to access accurate information to facilitate meaningful progress toward sustainability.

Cotton, like all plants, needs water to grow. But did you know that most US cotton is produced using only natural rainfall? With just one acre-inch of rain, modern cotton varieties tend to yield at least 50 pounds of lint and 75 pounds of seed – enough to make more than 170 t-shirts and feed more than 10 cows.

The Transformers Foundation has made significant strides in debunking enduring myths surrounding cotton production by leveraging verified data. Furthermore, organisations like the International Cotton Advisory Committee (ICAC) provide valuable yearly statistics through publications their Cotton Data Handbook. Despite these

efforts, incorrect information about cotton production continues to proliferate online.

**Natural Fibres Insight:** What kind of environmental progress have U.S. cotton farmers made since the turn of the century in terms of reduced water use and other sustainability metrics?

**Jesse Daystar:** Cotton agriculture around the world has evolved dramatically over the years. In the U.S. in particular, the commitment to innovation and continuous improvement has led to significant reductions in the water, land and energy needed to produce cotton, and decreased soil loss and greenhouse gas emissions – all while increasing crop yields.

Documented evidence spanning the past four decades highlights significant achievements by U.S. cotton growers, including a remarkable 58 per cent reduction in water usage, a

30.6 per cent decrease in energy consumption, and a substantial 25 per cent reduction in greenhouse gas emissions. These advancements underscore the industry's proactive efforts to enhance sustainability practices and promote environmental stewardship in cotton production.

**Natural Fibres Insight:** Also, on the above, do you expect to see further progress being made? Or has much of the low hanging fruit in terms of gains now been taken?

**Jesse Daystar:** The US cotton industry has established a set of goals to achieve within the ten years between 2015 and 2025 to further improve cotton sustainability and lead the world in responsible cotton production. These goals include increasing soil carbon by 30 per cent, increasing land use efficiency by 13 per cent, decreasing greenhouse gas emissions by 39 per cent, decreasing soil loss per acre by 50 per cent, decreasing water use by 18 per cent, and decreasing energy use by 15 per cent.

The U.S. Cotton Trust Protocol was initiated in 2020 to substantiate and validate U.S. cotton's sustainability progress. As noted in the programme's third annual report, we are still seeing progress made. For example, the 2025 National Goal aims to achieve a substantial 39 per cent reduction in greenhouse gas emissions compared to the 2015 Trust Protocol baseline. In the context of the 2022/23 Trust Protocol aggregate data, greenhouse gas emissions per pound of fibre for Trust Protocol growers stood at 1.9 CO<sub>2</sub>e. Relative to the representative group from 2015, Trust Protocol growers in the 2022/23 cotton growing season reduced GHG Emissions by 21 per cent, marking a significant step towards the overarching 2025 National Goal.

**Natural Fibres Insight:** Where do you stand on Life Cycle Assessments (LCAs) in terms of cotton and sustainability? Do they still have a role to play?

**Jesse Daystar:** LCAs continue to play a crucial role in evaluating the environmental footprint of cotton production. LCAs provide valuable insights into resource use, emissions, and impacts throughout the entire lifecycle of cotton products, guiding decision-making and driving continuous improvement in sustainability practices. That being said, reading an LCA is like looking through a keyhole: you can see important information, however, it is only a piece of the information you need to make decisions surrounding sustainability. Social aspects, economics, and lack of certain indicators like microplastic impact are important to consider and currently fall outside the scope of most LCAs.

Cotton Incorporated developed a first-of-its-kind Global Cotton Life Cycle Assessment in 2010, and last updated in 2016. We continue to be pioneers in LCA both in agriculture and in the apparel industry. We continue that leadership today with several

active LCAs examining U.S. cotton production, cottonseed as animal feed, and working with researchers to develop LCA metrics to quantify the environmental impacts of microplastics.

**Natural Fibres Insight:** Would you like to see more independent LCAs for cotton production?

**Jesse Daystar:** While having data on how cotton impacts the environment is crucial, that data itself doesn't drive improvement. It is important that we measure and track improvements, but simply increasing measurements won't necessarily help. What will help is supporting growers at the farm level in adopting new conservation practices. It's only when improvements are implemented on the farm that they manifest in the data.

Speaking of data, LCAs are great for some purposes, but they are costly, rely on numerous assumptions and contain much uncertainty. Often, data and metrics closer to the on-farm intervention can be more descriptive of the progress made in stationarity and have much less uncertainty. While there is a place for more LCAs and updating old ones, the industry would be well served to put investments in LCAs in context of investments made on the farm to share the risk of adopting new conservation practices like cover crops.

## About Cotton Incorporated

*Cotton Incorporated is a not-for-profit research and promotion organisation that was founded in 1970 to support the global cotton industry. It is funded by cotton growers and importers, to increase the demand and profitability of cotton through research and promotion*



**Jesse Daystar**

*Vice president and chief sustainability at Cotton Incorporated*

# Better Cotton facing fresh scandal in Brazil

**L**ONDON – Better Cotton is the world’s largest standard for natural fibres. The Swiss-based NGO has been no stranger to controversy over the years, most notably when in 2019 it was discovered to have been working with XPCC as its implementing partner in China – at the time Better Cotton’s largest market. XPCC is a quasi-military organisation with links to forced and prison labour in the Xinjiang Uyghur Autonomous Region (XUAR) of China.

Since that time, cotton from Xinjiang has been off-limits for global fashion brands and now serves China’s domestic market. Better Cotton has shifted its focus elsewhere, most notably to Brazil, which is now its largest market in terms of volumes. Brazil grew almost two million metric tonnes of Better Cotton in the 2022-23 season, more than twice the amount of Better Cotton’s second largest market, India. Brazil represents more than a third of Better Cotton’s total cotton volumes globally.

As the latest issue of *Natural Fibres Insight* went to press, Better Cotton was facing a fresh crisis. A new report from UK environmental NGO Earthsight presented evidence suggesting clothing from H&M and Zara has links to large-scale illegal deforestation, land

grabbing, violence and corruption pertaining to the Brazilian cotton sector.

All the tainted cotton traced by Earthsight was certified as “sustainable” by Better Cotton.

Earthsight spent more than a year analysing satellite images, court rulings, shipment records and going undercover at global trade shows to trace nearly a million tonnes of tainted cotton from “some of the most notorious estates in Brazil” to clothing manufacturers in Asia that supply Zara and H&M.

Much of the report is focused on the Cerrado region which covers a quarter of Brazil and is home to 5 per cent of all the world’s species, including the giant anteater and giant armadillo.

It points out that over half the Cerrado region has been cleared for large-scale agriculture, mostly in recent decades. Because of this, hundreds of species now face extinction.

Brazil has increased cotton production dramatically in recent decades, almost all in the Cerrado, where it is now routinely grown in rotation with soy. By 2030, Brazil is expected to overtake the US as the world’s largest cotton exporter.

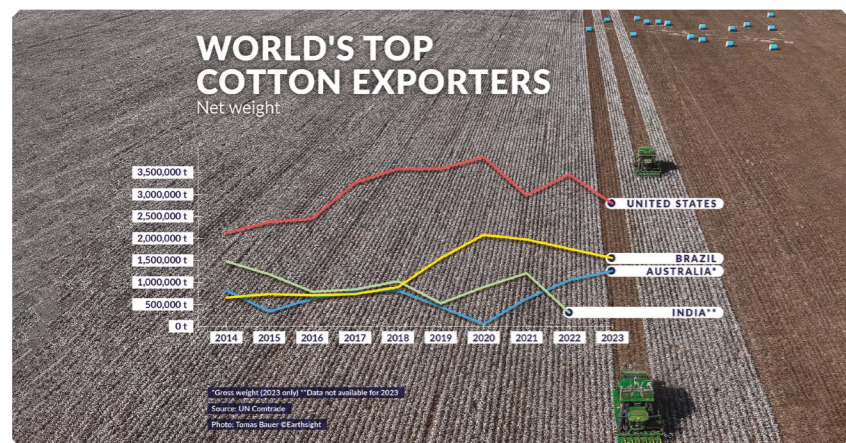
The report adds: “As cotton grew, traditional communities declined. A ruinous

mix of corruption, greed, violence and impunity has led to the blatant theft of public lands and dispossession of local communities. People that have lived in harmony with the Cerrado for centuries are forced off their land, blocked from subsistence activities, subjected to surveillance, intimidation and cattle theft by estate gunmen, as well as shootings and other violent attacks on their leaders.”

Better Cotton launched an inquiry in response to Earthsight’s findings. Its rules were updated on 1 March, but Earthsight says these rules remain “riddled with holes, conflicts of interest and weak enforcement.”

In a statement, Better Cotton said: “It is important to note that Better Cotton does not operate our standard system directly in Brazil. Brazilian cotton farms are certified against the Responsible Brazilian Cotton Program (ABR), which is owned and managed by our Strategic Partner, ABRAPA. Through our strategic agreement and a thorough benchmarking process, we recognise the ABR standard system as equivalent to the Better Cotton Standard System. Since the farms compliance with the ABR/Better Cotton Standard has been determined by ABRAPA according to their own protocol, we have asked ABRAPA to investigate.”

For reference, The Associação Brasileira dos Produtores de Algodão (ABRAPA) became a Better Cotton Programme Partner in 2010. In 2014, ABRAPA became a strategic partner after completing a benchmarking process that aligned ABRAPA’s own sustainable cotton programme, the Algodão Brasileira Responsável (or ABR programme), with the Better Cotton Standard. This means cotton farmers growing cotton in a way that respects the ABR programme can sell their cotton as Better Cotton.



# The home of recycled wool



**P**RATO – We often hear the statistic that just one per cent of clothing globally is recycled. This estimate includes all clothing, and nobody can be sure how accurate it is. It would be interesting, however, to know what this figure would be if we just considered wool clothing.

Wool has a long, highly successful history of recycling. People were giving wool fibres a second life long before the notion of ‘circularity’ became a marketing phrase for just about every major fashion brand.

The best-known hub for wool recycling is in Prato, Italy where the practice dates back to the 19th century. Compressed bales of wool clothing arrive in Prato from all over the world, where they are sorted into piles of the same colour before being mechanically recycled for a second life.

*Natural Fibres Insight* spoke to Mattia Trovato, head of communication with Manteco, one of the most prominent players in Prato’s recycled wool sector. Manteco was established in 1941 and initially produced recycled wool yarns, obtained by regenerating old military

wool clothes and blankets.

Trovato says demand for recycled wool has boomed in recent years, particularly post-pandemic. “We have seen a large increase in demand for recycled and also certified materials,” he tells us. “Our percentage of recycled wool before the pandemic was 20-25 per cent, today it is 40-42 per cent.”

We spoke to Manteco a week before it produced a circularity report. This showed that in 2023, the company produced 7,359,464 metres of fabric, processing 5,223,871 kg of raw materials. In total, Manteco recovered and reused almost 80 (79.4) per cent of its production waste – a remarkable figure which shows the possibilities when working with wool fibres.

People often ask about the quality of recycled textile fibres. On this, Trovato says recycled fabrics produced by Manteco must, “pass the same tests as their virgin counterparts.” The recycled products must be durable, “otherwise it doesn’t make sense,” Trovato adds.

Manteco works in a horizontal supply chain, partnering in the district with

different weavers, spinners, finishers and other players in the region’s burgeoning wool supply chain.

Traceability, that much-debated topic in fashion circles, is a built into the company’s DNA. All its recycled wool is traceable via its local supply chain with all partner companies located within a 10-mile radius of Manteco’s Toscana HQ in Prato.

The business has also carried out two lifecycle assessments (LCAs) on its products. One of these, carried out in accordance with UNI EN ISO 14040, UNI EN ISO 14044 and UNI EN ISO 14025 standards, found its recycled wool impacts 99.2 per cent less on climate change, 99.9 per cent less on water use and 93.3 per cent less on energy consumption than its virgin counterpart.

One of the reasons for these savings is that Manteco creates colours for its recycled wool fabrics without using dyes and chemicals (dyeing and finishing is a highly resource-intensive process). Instead, the company uses a mechanical technique to mix different shades of recycled fibres to develop ‘recipes’ of colours without the use of dyes.

The company also has a virgin wool line but even there, the focus is on minimising waste. Its extra fine virgin wool – brand name, ‘ReviWool’ – is made of co-product fibres from the worsting process of virgin wool, which are recovered and processed through the woollen process to create premium quality textiles with a lower environmental impact.

Again, the business proves its claims and has produced an LCA on this issue. This found ReviWool, compared to generic virgin wool tops, impacts 65.6 per cent less on climate change, 65.5 per cent less on water use and 65.6 per cent less on total energy consumption. These impacts were calculated and certified according to the international Environmental Product Declaration (EPD) scheme, in accordance with the international standard ISO 14025.

Not surprisingly, Manteco now counts many of the world’s leading international fashion brands among its customers. Many are increasingly demanding high-quality information such as this from their suppliers to back green claims; wool products make it easy to deliver.

# SFA supports herders as dzud hits Mongolia

**U**LAANBAATAR – Since February, Mongolia has been grappling with a severe and prolonged cold spell, known as 'dzud', which is wreaking havoc on rural livestock herders. According to the National Agency of Meteorology and Environmental Monitoring (NAMEM), 90 per cent of the country has faced extreme, high, or moderate risk due to dzud.

Families reliant on livestock herding for survival are bearing the brunt of the extreme winter weather. With freezing water sources and grazing areas blanketed in snow, cashmere herds have been succumbing to cold and malnutrition.

The Sustainable Fibre Alliance (SFA) works with established herder organisations that consist of multiple herding families in a communal grazing area, supporting them in governance, capacity building, and participatory planning to bring benefits to their livelihood.

Throughout the early weeks of the dzud, it began raising funds internally with support from SFA members and partners to look to purchase and deliver essential items, such as fodders, blankets for animals, salt, supplements, batteries, medicines, and milk supplements for newborn animals. These items were purchased from local suppliers at the province level and handed over to herder organisation leaders, ensuring efficient distribution to herders in need, as well as supporting local businesses.

At the beginning of March, the SFA Mongolia team delivered aid to herder cooperatives in the Arkhangai region of Mongolia, who shared their experiences and hardships for their livestock, livelihoods, and communities. "We are extremely grateful for SFA [members and partners] providing us 15 tons of feeds, the much-needed aid in this crucial time," one of the herder cooperatives said in a video widely



## What is Dzud?

*Primarily occurring in the steppe regions of central and east Asia, Dzud manifests as a winter weather phenomenon characterised by deep snow, severe cold, or other conditions that render forage unavailable or inaccessible, resulting in significant livestock mortality. Dzud is deemed a disaster due to its profound impact on the livestock populations that sustain the livelihoods of approximately one-third of Mongolia's populace.*

*Beyond the devastating toll on livestock, Dzud poses threats to human lives by creating impassable travel conditions and disrupting transportation networks. This renders essential supplies such as food, drink, fuel, and medicine unreachable for an extended period, surpassing the regular supply reserves of households. The resulting devastation can have far-reaching consequences, profoundly affecting household livelihoods as well as local and national economies.*

*Each variant of Dzud presents its own set of extreme challenges that strain herders beyond their preparations for the already harsh Mongolian winters.*

shared on social media.

This year's dzud is particularly harsh, affecting 90 per cent of Mongolians, significantly higher than in previous years. For nomadic herders, the toll is not just economic but existential, with livestock losses jeopardising their way of life.

There are broader issues at play here which illustrate how fashion supply chains – cashmere, in this instance – are already being impacted by climate change.

Mongolia, with its vast expanses of steppe and semi-arid terrain, stands uniquely vulnerable to the impacts of climate change. As a nation heavily reliant on traditional nomadic herding practices and natural resource-based industries, such as cashmere production, any shifts in climate patterns have profound implications.

Rising temperatures and altered precipitation patterns are already disrupting Mongolia's fragile ecosystems. Increased frequency and severity of extreme weather events, including dzuds, exacerbate the challenges faced by herders, leading to significant livestock losses and threatening the livelihoods of rural communities.

Moreover, the warming climate is affecting Mongolia's water resources, crucial for both agriculture and herding. Declining water availability can further strain already vulnerable communities, exacerbating competition for resources and potentially leading to conflicts.

Cashmere production, a cornerstone of Mongolia's economy, is particularly susceptible to climate change. Cashmere goats require specific environmental conditions for optimal health and wool production. As temperatures rise and grasslands degrade, the quality and quantity of cashmere fibre are at risk. Additionally, increased temperatures can promote the spread of diseases among livestock, further jeopardising cashmere production.

Addressing these challenges requires concerted efforts at both local and global levels, including sustainable land management practices, improved water resource management, and support for alternative livelihoods to reduce dependence on vulnerable industries like cashmere production.

# Cotton subsidies: friend or foe?

**C**otton remains a point of controversy in global trade, representing one of the most subsidised commodities worldwide. The subsidy market has long been dominated by developed nations like the United States as well as the European Union, however, in recent years the landscape of cotton subsidies has undergone a significant transformation. Emerging economies such as China and India have become primary players, and this is reshaping the economics and politics of cotton production – a new paper claims.

Published in *Global Studies Quarterly*, the paper notes that, for decades, subsidies provided by wealthier nations have distorted global cotton markets, "depressing prices and undermining the economic viability of farmers in less affluent countries."

The authors argue that cotton subsidies have been particularly contentious due to their profound impact on developing countries, where agriculture forms the backbone of the economy. Indeed, in recent years, organisations such as Oxfam and international institutions like the World Bank and IMF have criticised these practices, arguing that they harm the livelihoods of farmers in the Global South, perpetuating poverty and economic disparity.

In Africa, countries like Mali, Chad, Benin, and Burkina Faso, collectively known as the Cotton-4, depend heavily on cotton exports. The paper argues that subsidies from richer nations have long undercut these countries' market competitiveness, despite their efficient production ca-



pabilities.

For instance, in Burkina Faso, cotton accounts for nearly 60 per cent of the nation's export earnings, highlighting its critical economic role.

The authors claim that the argument for reducing global cotton subsidies is strong, not only to enhance cotton prices but also to improve the livelihoods of millions of farmers by shifting production to these competitive African nations.

The narrative that once painted the US as the chief subsidiser has shifted dramatically. The authors of the paper point out that China has now taken the lead, with subsidies in the last decade totalling US\$41bn, outstripping all other nations. China's subsidies, driven by both economic and internal security motives, particularly in the politically sensitive region of Xinjiang, have led to increased domestic production and altered global cotton dynamics, the paper argues. This shift has implications for global cotton pricing and production patterns, impacting farmers worldwide.

India has also emerged as another significant subsidiser. The paper points out that growth in India's cotton subsidies is not only reshaping its own agricultural landscape but also affecting global markets due to the sheer scale of India's cotton market. India's approach includes extensive support through market price support and input subsidies.

The paper argues that the environmental impact of such subsidies is profound. The authors claim that, in India, excessive groundwater usage and fertilizer application have led to

severe ecological imbalances. They claim this situation is unsustainable, potentially threatening future agricultural productivity and food security.

To offer a counterpoint here, subsidies in India are being used to support millions of smallholder farmers in cotton production – potentially lifting them and their families out of poverty.

The paper argues that India and China need to rethink their subsidy frameworks, possibly shifting towards less distortionary support mechanisms that could foster sustainable growth and development. However, it is not made entirely clear what such support mechanisms might entail.

The authors also argue that the ongoing shift in global cotton subsidy dynamics necessitates a "re-evaluation of international trade policies," suggesting that as developing nations like China and India become the main actors in cotton subsidization, their policies increasingly influence global markets and prices, affecting farmers from Africa to Asia.

Good luck telling China it needs to re-evaluate its international trade policies (or India for that matter)!

We're not entirely sure about some of the arguments made in this paper but it is an interesting read which raises some interesting talking points nonetheless.

**The full paper can be found here:**  
<https://academic.oup.com/isagsq/article/4/2/ksae012/7642831>

# Funding boost for wool smallholders in Lesotho

**L**ESOTHO - How do small, independent, natural fibres businesses and farmers gain access to global markets? This a perennial challenge across all natural fibres industries and one which is particularly pronounced in developing countries.

Thus, the significance of a new financing agreement aimed at improving the livelihoods of wool and mohair farmers in Lesotho, Africa, which was recently agreed by the UN's International Fund for Agricultural Development (IFAD) and Kingdom of Lesotho.

The far-reaching Wool and Mohair Value-chain Competitiveness Project (WaMCoP) aims to increase the economic and climate resilience of 225,000 rural people.

Wool and mohair play a significant role in Lesotho's rural economy, accounting for 60 per cent of agricultural exports and supporting more than 25 per cent of the rural population. Lesotho is the second largest mohair producer globally, behind South Africa.

The seven-year project will initially focus on the Mokhotlong, Maseru Rural, Quthing and Thaba Tseka districts, which produce the highest quantities of wool and mohair - and which have significant levels of poverty. Eventually it will be scaled up to the rest of the country to reach more rural people.

In Lesotho, the bulk of mohair fibres are sourced from small-scale farmers. However, climate change, unreliable input supply, overstocking, and poor land and rangeland conditions are impacting their production. These challenges are further compounded by lack of coordination, the absence of a certification system (which global fashion brands are increasingly asking for) and limited understanding of how to capitalise on new market demands.

Notably, the project is also partnering



Photo credits @IFAD/Guy Stubbs

*Lesotho is a small, mountainous, landlocked country surrounded by its much larger neighbor, South Africa. It has a population of about two million and is an enclave of South Africa, with which it shares a 1,106 km border. Lesotho is unique in that it is not just land-locked, but also entirely enclosed by South Africa.*

*Wool and mohair account for almost two thirds of Lesotho's agricultural exports and the agricultural sector is a major source of livelihoods. The raising of wool sheep and mohair goats contributes significantly to the livelihood of about 45,000 rural Basotho families and is concentrated in districts recording high levels of poverty.*

*Lesotho's wool and mohair sector faces key constraints, including mistrust and limited value coordination, limited access to finance, and poor management of critical public assets such as shearing sheds, sheep, and goat studs for improved breeds.*

*Further, heavy dependence on South Africa for input procurement and access to services constrains individual farmers, associations, and larger private sector actors.*

with Ethical Fashion Initiative to, "help re-conceptualise the cottage industry in the country and establish sustainable market linkages for intermediary and finished wool and mohair products."

The hope is that this will not only help the national fashion industry but also

help develop a Basotho brand for wool and mohair fibres.

Further, the project will support government and value chain players to set up a responsible production certification system, in line with the global market guidelines. Certification will



Photo credits @IFAD/Guy Stubbs

introduce traceability to assist buyers to verify and identify wool and mohair produced in farming systems.

Asked about the rationale behind the project, Edith Kirumba, IFAD country director, Lesotho, told *Natural Fibres Insight*: "IFAD has been a key player in the development of the wool and mohair value chain in Lesotho, but for the country to retain its global standing as a producer of good quality wool, there is need to address the demands from the global market.

"WaMCoP is very timely as it will help the country to continue building the sector, while addressing new market demands through innovative approaches such as traceability, ethical and responsible production, thus allowing small-scale farmers to participate in the global market system."

Funding levels are significant. WaMCoP is funded by IFAD US\$20.2m, OPEC Fund US\$20m, GEF US\$6m, Government of Lesotho US\$8m. The total funding pot is US\$72m, with a financing envelope of US\$11.8m open to new and interested financiers.

We also spoke to Edith Kirumba, IFAD

country director, Lesotho, Zambia and Botswana. We asked her, firstly, how wool and mohair farmers will be supported specifically via these new funding streams.

She told us: "It will help them get certification for the wool and mohair they are producing to enable them to leverage the premium prices certified wool attracts. [There will also be] training on responsible and sustainable wool and mohair production that focuses on animal well-being and management of the environment."

She added: "Farmers do not work in isolation, therefore, the project will also support other stakeholders in the value chain (shearing, spinning, weaving, buyers among others)."

She also said farmers would be able to access in-kind loans from a Wool and Mohair Fund and also be connected to niche markets such as luxury which are looking for certified traceable fibres.

Farmers will be also trained on animal health, nutrition and breeding and will, "benefit from an improved and enabling regulatory environment," according to Kirumba.

What about climate change? This is a critical issue in natural fibres supply chains, and one which even credit risk agencies are looking at with regards to materiality risk for brands sourcing in industries with high exposure to climate change.

On this, Kirumba told us: "The project will promote better rangeland and sustainable land management practices such as control of soil erosion and water harvesting. "[It] will also promote intensification of livestock production systems, by facilitating access to better breeds and inputs increasing the output per animal."

Further, the project will promote the use of renewable energy alternatives, "such as energy saving cook stoves at household level and solar systems in shearing sheds."

On timelines Kirumba said the expectation is that by 2025, we should already start seeing some results such as the set-up of a social enterprise for artisans and the identification of shearing sheds for certification. "We hope to see the first shipment of certified wool and mohair from Lesotho in 2026," she added.

# Exploring the sustainable future of mohair

By **Lauren Moore**,  
head of communications and  
sustainability at Mohair South Africa



The fashion and textiles industries are experiencing a pivotal moment marked by growing environmental awareness and ethical concerns. Consumers are increasingly seeking products that reflect their personal style and align with their values of sustainability and social responsibility. This shift in consumer behaviour has prompted organisations worldwide to confront the harsh realities of their impact on the ecological crisis, reassess their supply chains and prioritise sourcing sustainable materials.

Amid the evolving landscape of the fashion industry, mohair stands out as a luxurious, ancient, and celebrated natural fibre sourced from Angora goats. Mohair is key in the drive to redefine fashion through a sustainable lens. Beyond its lustre and aesthetic appeal, mohair features a range of eco-friendly qualities that emphasise its sustainability. Mohair is inherently durable and resilient, a fibre that can withstand wear and tear over time, reducing the need for frequent replacement. This longevity aligns with the principles of a circular economy, promoting a "make, use, and reuse" model over a linear "take, make, and waste" approach. The added beauty of mohair is that it is a renewable resource. Angora goats produce mohair bi-annually through shearing, and sustainable farming practices ensure the continued welfare of the goats and the

sustainability of mohair production.

Mohair's versatility shines through its ability to blend beautifully with other natural fibres, such as wool or silk, resulting in distinctive and sustainable textile blends that cater to a wide range of environmentally conscious products. Furthermore, mohair production positively impacts communities, providing livelihoods for tens of thousands of people, particularly those in the Karoo region who are directly involved in Angora goat farming and mohair production.

The European Union's environmental protection and animal welfare legislation significantly promotes sustainability within the textile industry. The EU has raised the bar for sustainable fibre sourcing and production with stringent regulations, including directives on chemical usage, waste management, and animal welfare standards. Furthermore, the EU's focus on promoting circular economy principles, such as product reuse, recycling, and resource efficiency, highlights the importance of minimising environmental impact throughout the textile supply chain. Europe is a significant region for the mohair industry, as roughly half of the mohair produced in South Africa is exported to Italy for spinning.

Additionally, the escalating climate crisis has brought increased scrutiny to the fashion industry's environmental footprint. Heightened public awareness

of issues like carbon emissions, water usage, and pollution has led consumers to demand greater brand transparency and accountability. This shift in consumer behaviour has compelled fashion companies to reassess their production processes and supply chain practices to align with sustainability goals.

The textile industry is shifting towards more sustainable practices in response to these challenges. This transition involves reducing carbon emissions, minimising resource consumption, and prioritising social and environmental responsibility throughout the value chain. Companies increasingly embrace circular economy principles, emphasising product durability, reparability, and recyclability to reduce waste and promote resource efficiency. There is a growing emphasis on ethical sourcing practices, including fair labour standards and supply chain transparency, to ensure that products are produced humanely.

As sustainability becomes increasingly prioritised in the fashion and textiles industry, there has been a notable surge in demand for sustainable fibres. Brands are actively transitioning to preferred materials that offer superior environmental and social benefits compared to conventional alternatives. This responsible sourcing shift aligns with consumer values and contributes to measurable positive impacts for producers. By opting for sustainable fibres, brands support practices that promote environmental stewardship, ethical sourcing, and social responsibility throughout the supply chain. This transition underscores a collective commitment to fostering a more sustainable and equitable future for producers and consumers.

Ultimately, the textile industry's journey towards sustainability requires a holistic approach that considers environmental, social, and economic factors. The industry can mitigate its envi-

ronmental impact by transitioning from high-volume production models to value-driven practices within planetary boundaries while promoting long-term resilience and prosperity.

The South African mohair industry has embarked on a proactive journey towards validated sustainability in response to the evolving landscape of consumer preferences and environmental concerns. This focused effort is guided by initiatives to enhance transparency, ethical production practices, and environmental stewardship throughout the mohair supply chain. These endeavours are central to adopting and adhering to certifications such as the Responsible Mohair Standards (RMS).

This standard, developed by Textile Exchange, serves as a benchmark for ensuring compliance with rigorous criteria pertaining to animal welfare, land management, and social responsibility across all stages of mohair production. For instance, the RMS mandates humane treatment of Angora goats, including provisions for proper shearing techniques and living conditions that prioritise animal welfare. Furthermore, the standards encompass sustainable land management practices, such as soil conservation and biodiversity preservation, to mitigate the environmental impact of mohair farming. Additionally, the RMS emphasises social responsibility by promoting fair labour practices and community engagement initiatives within mohair-producing regions.

By collaborating with Textile Exchange, embracing this certification, and actively pursuing sustainable practices, the mohair industry is safeguarding the well-being of animals and ecosystems and fostering trust and accountability within the global supply chain.

The widespread adoption of the RMS by South African farmers (81 per cent of South African mohair is RMS certified), as well as international manufacturers and brands, is truly noteworthy. This significant uptake underscores a global commitment to ethical sourcing practices within the mohair industry. Furthermore, the embrace of RMS certification by numerous companies beyond the farmgate further demonstrates the widespread recognition and endorsement of these stringent standards for responsible mohair production. Mohair South Africa supports our

farmers in their sustainability efforts by providing a range of resources to enhance their operations at the farm level. Through collaborative efforts with The Mohair Empowerment Trust, we organise training days and workshops to educate farmers and farm workers on Angora goat handling and health best practices. Our dedicated industry veterinarian, Dr Mackie Hobson, plays a crucial role in these initiatives, providing support during training sessions and offering ongoing veterinary assistance to our producers as needed. Together with Dr Hobson, we've developed comprehensive best practice guidelines for Angora Health Management, which are available in manuals and instructional videos. These valuable resources can be accessed through <https://www.angoras.co.za/>.

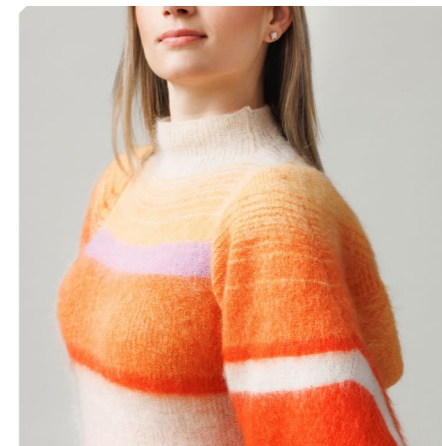
Mohair South Africa has partnered with Integrity Ag, a company specialising in environmental assessments, to conduct comprehensive life cycle assessments (LCAs) of mohair production. These assessments delve into every stage of the production process, from mohair production on the farm to the eventual disposal of end products. Through meticulous analysis, stakeholders can identify areas where environmental impacts are most significant and devise targeted strategies for improvement. By implementing sustainable practices informed by LCA findings, such as optimising resource usage, reducing emissions, and enhancing waste management systems, the mohair industry can effectively mitigate its environmental footprint and bolster its overall sustainability credentials.

As a further step towards reinforcing transparency within the supply chain, Mohair South Africa has collaborated with Oritain to enhance the traceability and authenticity of mohair fibre. At present, brands and stakeholders within the supply chain can verify via

Oritain whether the mohair they purchased comes from South Africa. To offer deepened traceability possibilities, Mohair South Africa is currently conducting a pilot project with farmers to trace the mohair back to a specific farm within South Africa's mohair-producing region. Leveraging cutting-edge forensic science and technology, Oritain conducts thorough analyses to verify the origin of mohair fibre with unparalleled accuracy and reliability. By meticulously examining the unique chemical signatures inherent in mohair from different producing regions and farms, Oritain provides manufacturers, brands, and consumers with assurance regarding sustainability and ethical production practices. This level of traceability empowers stakeholders to make informed decisions aligned with their sustainability goals and values. Additionally, Oritain's expertise is critical in combating fraud and counterfeit products, safeguarding the mohair industry's integrity and bolstering consumer trust.

Mohair South Africa is committed to supporting the rapidly growing demand for fibres from regenerative sources. Many brands and retailers across the globe are looking to source fibres and raw materials from farms that use a progressive approach to holistic farm management practices. Such practices are essential as they help revitalise the soil, capture carbon emissions, and increase carbon food security while storing water. Mohair South Africa supports the drive to highlight the positive impact of regenerative practices on mohair-producing farms and encourages our producers to engage in available programs.

As the fashion industry progresses towards sustainable models, mohair remains at the forefront of innovation and adaptation. Through embracing sustainability initiatives, representing the industry at international trade shows and conferences, investing in ethical production practices, fostering collaboration across the supply chain, and leveraging storytelling as our core instrument for engagement, the mohair industry is paving the way for a more sustainable future - one that prioritises environmental integrity, social responsibility, and consumer well-being. From farm to fabric, Mohair South Africa is dedicated to shaping a more sustainable future for mohair.



# All Growers, Everywhere

**A**round the world, there are an estimated 28 million growers (farmers) who choose to grow cotton each year, collectively producing 25 million metric tonnes of fibre.

Together, these growers generate an estimated US\$50-60bn per year in fibre value. Of this figure, it is estimated that cotton production impacts the lives of 250 million others working on farms and in value chains from gins to merchants, spinners to textiles manufacturers, to the brands and retailers who need cotton for their products and businesses to satisfy client and consumer demand.

Although figures are difficult to come by, considering that cotton fibres make up approximately of 25 per cent of all fibres used in textiles around the world, it is estimated that cotton is responsible for more than US\$500bn in economic value at the retail level. It is likely, however, that cotton value far exceeds this because it is found in so many products that contain other blended fibres as well. These include

denim and bedding that are cotton rich, yet are blended with other fibres for performance and cost considerations; cotton is fast becoming a premium product as synthetic fibres continue to gain market share.

Of the 28 million growers, approximately 3.5 million or 12 per cent are enrolled in or are attributed to one or more preferred fibre schemes recognised by the fibre, textile and fashion sector.

These schemes include Better Cotton (2.2 million growers), Cotton Made in Africa (CMiA) (900 thousand growers), organic (300 thousand growers) and a handful of other schemes such as the United States Cotton Trust Protocol, RegenAgri and Fairtrade.

The vast majority of these growers are small holders who grow cotton on less than two hectares of land.

There is much to celebrate in terms of progress that the sector has made over the last two decades since these schemes were established and 'sustainable cotton' was born. Moreover,

it should be noted that despite being 12 per cent of the number of growers, as much as 25 per cent of total cotton production volumes can be attributed to one or more of these schemes.

However, whether one defines success from the number of growers enrolled or from the volume of fibres produced or both, there remains a lot of work that must be done to close what we refer to at the Sourcery as the 'impact gap.' In other words, how do we engage the remaining 24.5 million human beings that grow some 18 million metric tonnes of fibre? How do we further support the 3.5 million that are already enrolled in one of these preferred fibre schemes to ensure they can continue to progress?

If we take seriously the claims that government, civil society and many agronomic and soils experts have put forward, it seems that the future of cotton remains uncertain with regards to the effects related to climate change. These include, but are not limited to, unpredictable weather patterns, access to water, soil erosion and health, shrinking biodiversity among other concerns that will affect the future of our sector.

Already, in recent years we have experienced some early signs of what the future may hold as droughts, floods and increased pest attacks in the United States, Pakistan and India as well as other cotton growing regions have affected yield, quality and environmental progress.

In addition to these climate change



As we reflect on the last two decades of 'sustainable cotton' and the progress that must be made by 2030 and beyond, how can we close this impact gap where 'all growers, everywhere' are engaged, recognised, rewarded and prepared for the future?

At the current rate of progress, assuming we continue to rely primarily on philanthropic funding pools to fund 'sustainable cotton' and traditional trading markets to buy and sell cotton, it will take another 160 years to close this gap.

Are there other ways that perhaps look beyond philanthropy to close this gap? Do we need to rethink the cotton trade? How do we accelerate progress and scale impact?

In building the Sourcery and its Direct-to-Grower sourcing solution over the last four years, these questions and others loom overhead and are debated by our team and our partners regularly. Irrespective of the performative 160-year timeline to ensure that all growers, everywhere are more sustainable, we know that if we were to add up the full amount of funding that has been poured into the 3.5 million growers over the last two decades that we will need billions of dollars more invested to sustain these growers and reach the other 24.5 million growers around the world. This is not a viable and scalable business model for the future.

The real question we have for those reading this is, how do we leverage traditional economic growth drivers, such as shifting government policy and subsidies schemes to work for cotton? How do we create products, services and assets that attract financiers and investors to invest in the future of cotton? How do we rewrite the rules to transform trade so that it works for 'sustainable cotton' and not against it? How do we close this impact gap in this century and not the next one?

Whose responsibility is it to safeguard the future of cotton? How do we make cotton truly sustainable in terms of people, profit, and planet?

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challenges, there also prolonged economic challenges confronting cotton production. This is especially true among many rural agricultural communities who have depended on cotton as a primary cash crop.

Many of these communities remain under resourced and marginalized, and face economic challenges that threaten their ability to continue to grow cotton long into the future as they continue to experience cotton revenue and profitability shortfalls as demand and the trading markets remain too volatile for growers to plan for their future.

If you ask many of them, as we have, their sons, daughters do not want to grow cotton, let alone continue to farm the land for which we all depend on for food and fuel as well as other natural fibres.

Some of these challenges go beyond cotton from a market standpoint, but cotton remains the lifeblood of many of these communities especially in India, Pakistan and several cotton grower regions across the United States where cotton is a way of life as much as it is a livelihood. These and other challenges must be met with equal solutions.



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