COTTON CONNECT

IMPACT REPORT 2024

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Photo by Shubham Gandhi
Cover photo by Ahmed Emad

REEL COTTON HIGHLIGHTS

Full REEL Cotton Programme results are reported from page 11

Reduced chemical pesticide use by

21.4%

Reduced chemical fertiliser use by

17.5%

Reduced water use by

21.9%

Increased yield by

6.1%

Reduced input costs by

14.3%

Increased profit by

26.1%

INTRODUCTION FROM CEO

Alison Ward
Chief Executive Officer,
CottonConnect

Photo by Prakash Philip

We are truly living in a VUCA (Volatility, Uncertainty, Complexity and Ambiguity) world and we see changing global and local politics, economics, and social impact almost daily.

As we navigate this changing world, a partnership approach is essential for us to work together as a sector. It's the only way to address these challenges and turn issues into opportunities. Our working partnerships include brand partners, government associations and representatives, relevant supportive agencies, supply chain actors, our implementing partners, and of course, most importantly, the farmers themselves.

We can clearly see a shift from potential green-washing to green-hushing, as new legislation and frameworks are implemented across key consumer markets, so a focus on assuring the outcomes and impact of our work through strong monitoring and evaluation frameworks is essential. To this end, last year we launched a new portal for our TraceBale system and supported the virtual chain of custody via improvements in the physical chain of custody. This includes unique QR codes for farmer purchases, supply chain executives located at the gins, and the roll-out of a DNA marker to provide further assurance from gin to garment.

Regenerative agriculture is certainly the new focus for the fashion sector and beyond. To demonstrate the validity of this farming system we need to show credible outcomes leading to impact at a farm level. We launched our first REEL Regenerative Code back in 2021 and for the past four years we have been working to understand how these practices can be best applied in the smallholder and medium-sized farm context. This is based on a philosophy of 'think global, act local'. We trained over 250,000 farmers on more regenerative agriculture practices in 2023-24 and have been able to measure demonstrable positive outcomes from this farming system, including soil health improvements and greater biodiversity. Our move to a REEL Standard in April 2025 will further support the robustness of programme validation and acceptable claims about these outcomes.

We also aim to demonstrate that our work throughout the supply chain, from farmer upwards, positively contributes to our clients' goals of reducing greenhouse gas (GHG) emissions. This year we publish our second LCA study, which analysed how the outcomes of our sustainable agricultural practices in the REEL Cotton Programme translated into reducing GHG emissions. We saw that farm level irrigation and reductions in fertiliser contribute to a saving potential of 1.20 kg CO_2 eq., or 35.39%, per kg fibre. The long-term impact of these reductions will be reflected in healthier farming communities, who make more income, based on competitiveness and attractiveness, and the obvious benefits of a more sustainable supply chain for everyone.

By sharing the insights in this impact report, we hope to encourage and help other contributors in the textiles industry to collectively work on increasing responsible production of raw materials and supporting smallholder farmers to attain a resilient future.

EXECUTIVE SUMMARY

CottonConnect delivers agricultural training programmes to improve the sustainability of cotton production and support farmers' livelihoods.
In the cotton growing year 2023-24, CottonConnect trained over 452,000 farmers in sustainable agricultural practices in India, Pakistan, Bangladesh, China, Egypt, and Türkiye, increasing farmers' yield and income whilst reducing environmental impacts.

CottonConnect is a company with a social purpose to reimagine cotton supply chains and help textile producers and farmers enjoy better livelihoods. It helps brands access more sustainable cotton and other natural fibres to create transparent, traceable, and resilient supply chains that will continue to deliver the best raw materials.

The cotton grown is directly traceable through supply chain linkages into brands' supply chains. In 2023-24, 193,468 MT lint cotton was traced through CottonConnect's traceability software tool TraceBale.

Monitoring and reducing carbon emissions to combat climate change is an increasingly important part of sustainable raw material production. CottonConnect's 2024 Life Cycle Assessment (LCA) study of the REEL Cotton Programme calculated a 35% saving potential in CO_2 equivalent, primarily due to reduced use of chemical fertilisers, reduced field emissions, and irrigation methods.

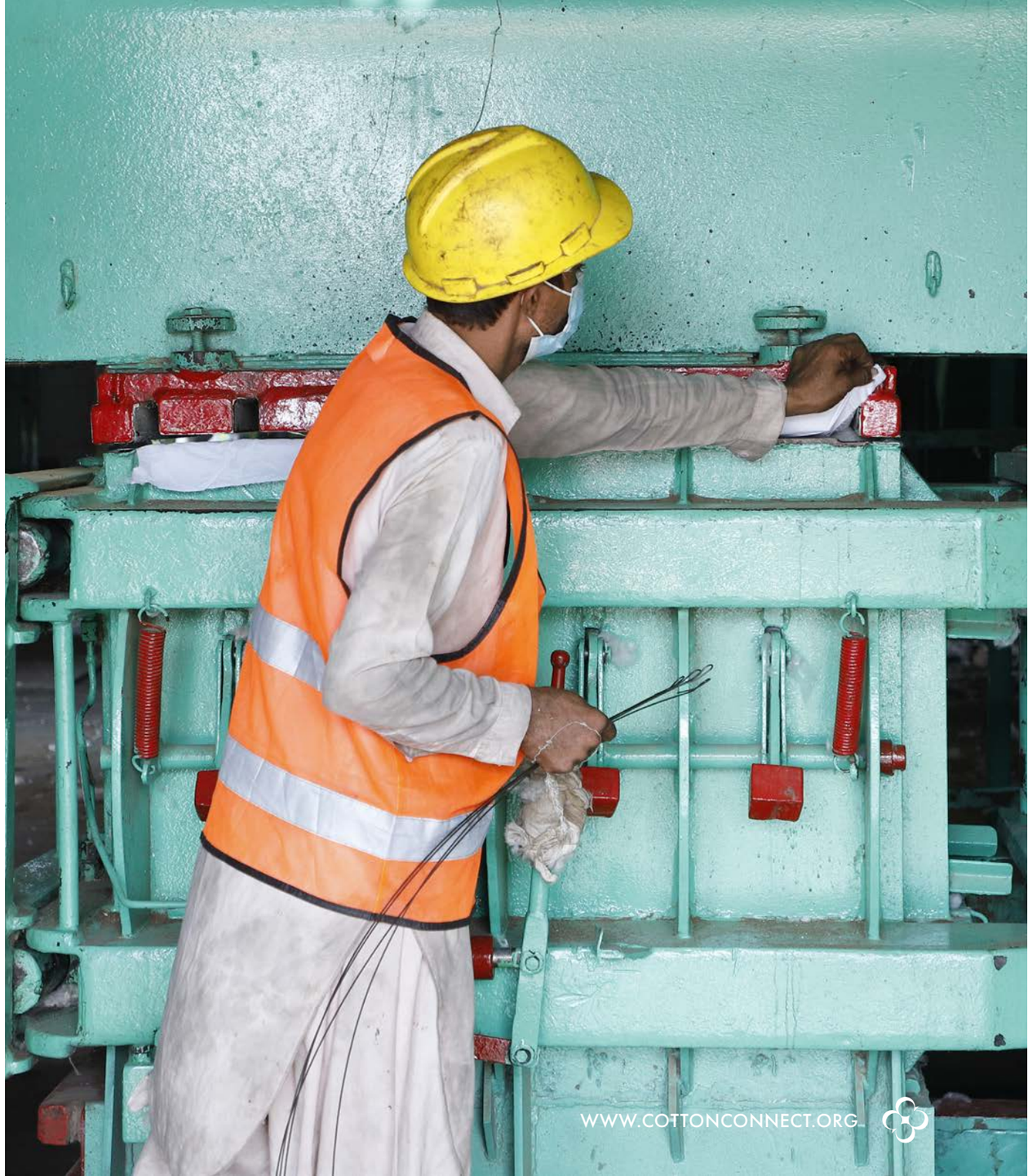


Photo by Irshad Ali

REEL Cotton

The results of the REEL Cotton Programme in 2023-24 show a reduction in impact on the environment and an improvement in farmers' income from cotton farming, compared with control farmers.

- **Reduced chemical pesticide use by 21.4%**
- **Reduced chemical fertiliser use by 17.5%**
- **Reduced water use by 21.9%**
- **Increased yield by 6.1%**
- **Reduced input costs by 14.3%**
- **Increased profit by 26.1%**

These results, which are second and third-party verified, relate to the REEL Cotton Theory of Change, specifically in the areas of sustainable land management and environmental stewardship. The results are achieved by supporting farmers to adopt the sustainable agricultural practices taught in the REEL Cotton Programme. The results from farmers trained in the REEL Cotton Programme are compared with a sample of conventional farmers, called control farmers, to analyse the difference in outcomes between programme and conventional agricultural practices.

REEL Regenerative

CottonConnect launched the REEL Regenerative Code in 2021, and over the past four years has been working to understand how regenerative agriculture can support smallholder farmers and increase resilience for cotton farming communities. In order to drive developments in regenerative farming practices, CottonConnect has introduced a REEL Regenerative Centre of Excellence across geographical markets. In 2023-24, 305 farmers in the second year of a REEL Regenerative programme reported a 4.8% increase in yield, 9.8% reduction in input cost, and 14% reduction in water use compared with control farmers. The second year saw a marked increase in the number of programme farmers adopting regenerative practices.

- **87% of farmers used all natural inputs in the field, increased from 4.3% in the first year**
- **23% of farmers practiced crop rotation, increased from 1.8% in the first year**
- **87% of farmers used bio-pesticides in the second year, increased from 11% in the first year**
- **100% of farmers used natural fertiliser in the field**
- **92% of farmers used farm manure in the farms**
- **41% less GHG emissions compared with control farms**

Organic cotton

In CottonConnect's Organic Cotton Farmer Training Programme in Pakistan, the original 25 farmers enrolled since 2021-22 profited 12% in 2022-23 and 15% in 2023-24 compared with conventional farmers, despite a lower yield, due to a 63% reduction in input cost.

The 137 farmers joining the programme in 2023-24 incurred 39% less input costs, and made a slight profit. The findings confirm that farmers converting to organic farming practices are gradually able to make profits by reducing input costs and improving yields.

The Regenerative Organic Cotton programme in India in 2023-24 trained 391 farmers in regenerative organic practices.

- **Farmers practicing crop cover to maintain soil health increased from 52% to 100%**
- **Farmers practicing crop rotation increased from 91% to 100%**
- **Farmers adopting agroforestry increased from 53% to 100%**
- **Regenerative farmers received 4.9% more profit than the control farmers**

Responsible Business for Gins

In 2023, CottonConnect published the first-ever Responsible Business for Gins Code of Conduct, designed to raise the standards in the crucial process of ginning in the cotton supply chain. The Responsible Business for Gins programme has expanded to more gins and regions, including Türkiye.

Aggregated results from HSSE Gin programmes in India, Pakistan, Bangladesh, China, and Türkiye in 2023-24 show:

- **Compliance with safety aspects increased from 42% to 87%**
- **Adoption of precautionary measures increased from 70% to 91%**
- **Use of Personal Protective Equipment (PPE) by gin workers increased from 56% to 97%**

CottonConnect Goals progress

GHG Emissions: Reduce greenhouse gas emissions for REEL Cotton by 50% by 2030 (from the baseline year 2017) – **On track**

Biodiversity: More than 90% of REEL Cotton farmers are trained to adopt regenerative practices by 2030 – **On track**

Soil Health: 100% of REEL Cotton farmers improve soil health by 2030 – **In measurement**

Traceability: 100% of REEL Cotton is Traceable by 2025 – **Achieved**

Smallholder livelihoods: Increase the net income and resilience in a sustainable manner for one million cotton farmers and workers by 2030 – **On track**

Women's empowerment: 500,000 women taking part in Women in Cotton programmes by 2030 – **On track**

Findings

- REEL Cotton programmes achieved positive results in 2023-24, reducing the use of chemical pesticides, chemical fertilisers, and water, while increasing farmers' yields and incomes. With increased profits, farmers can invest in their farms, enhancing long-term resilience.
- Positive benefits from regenerative agriculture practices are recorded in REEL Regenerative and organic regenerative programmes.
- A LCA study demonstrated the benefits of the sustainable practices outlined by the REEL Cotton Code of Conduct in reducing the negative impact of cotton cultivation on the environment across all impact categories, with a climate change saving potential of 35%.
- Cotton procurement and processing of all REEL Cotton and REEL Regenerative programmes are traced through TraceBale, with an increase in cotton lint being traced in 2023-24.
- Women Climate Change Ambassadors have each trained 30 farmers each, imparting climate change mitigation knowledge to over 1,200 women, confirming the pilot's training model.
- Organic cotton programmes demonstrate the potential for farmers converting to organic farming practices to make profits by reducing input costs and gradually improving yields.
- Regular on-site soil testing is needed to measure the impact of sustainable agriculture practices on improving soil health.

COTTON AND TEXTILES INDUSTRY CONTEXT

In 2023, global fibre production increase to a record high (124 million tonnes).[1]

Polyester has replaced cotton as the most widely used fibre in the world since the mid to late 2000s.[2]

By 2030, global apparel consumption is projected to rise by 63% to 102 million tonnes. On this trajectory, by 2050 the apparel industry would represent more than one quarter of the world's carbon budget.[3]

It remains a necessity for the textiles industry to keep focused on decarbonisation despite the challenge of meeting targets and complexity of supply chains.[4]

Increased corporate due diligence reporting regulation requires a greater level of verified impact data and traceability.

1, 2 Materials Market Report, Textile Exchange, September 2024
3,4 The State of Fashion 2025, The Business of Fashion and McKinsey & Company, 2024

OVERVIEW OF COTTONCONNECT

Programmes

Programmes reporting 2023-24 results in this report:
REEL Cotton; REEL Regenerative; Organic Cotton Farmer Training Programme; Regenerative Organic Programme; Responsible Business for Gins

Programmes underway but not reporting 2023-24 results in this report: REEL Linen

CottonConnect is also an implementing partner of Better Cotton, which reports its Farmer Results and Impact Reports at bettercotton.org.

Countries

Location of programmes reporting 2023-24 results in this report:
India, Pakistan, Bangladesh, China, Egypt, Türkiye

Number of farmers trained in 2023-24:

452,321

Fibres traced through TraceBale in 2023-24:

193,468
MT lint cotton

Focus areas

Environment

Climate

Livelihoods

Gender

IMPACT RESULTS 2023-24

REEL COTTON THEORY OF CHANGE

The REEL Cotton Theory of Change illustrates how the interventions of the REEL Cotton Programme lead to positive impact, for example training farmers on the use of bio-pesticides leads to outcomes e.g. farmers using bio-pesticides in place of chemical pesticides, which in turn leads to impact e.g. soil health is preserved through the use of bio-pesticides and reduced use of chemical pesticides.

For each REEL Cotton Programme, specific key performance indicators (KPIs) are measured:

Yield
By increasing the amount of cotton harvested, farmers have more cotton to sell, thus increasing their income. This is especially important for smallholder farmers relying on growing cotton to make a living.

Input costs
Introducing sustainable agricultural methods which reduce the use of chemical pesticides and fertilisers reduces the expenditure on these inputs.

Profit
Increased income due to higher yields, combined with reduced input costs, means more profit is retained by the farmer.

Water usage
Growing cotton conventionally uses a lot of water, so sustainable agronomic training promotes water efficiency to preserve this natural resource. Farmers are encouraged to adopt measures to optimise water use for irrigation and recharge water resources.

Chemical pesticide usage
Chemical pesticides can be harmful to farmers during application and can have a negative impact on biodiversity. Farmers are taught to use non-chemical methods of pest control, as well as how to identify friendly and enemy insects, and apply pesticides accordingly.

Chemical fertiliser usage
Chemical fertilisers can have negative environmental impacts and can often be a costly input. Introducing composting and crop rotation can reduce the need for chemical fertilisers, reducing input costs and protecting soil health.

The REEL Regenerative Theory of Change has three impact areas:

Farmer resilience
Improve farming performance, supplement farm benefits, enhance social fairness, secure supply

Climate adaptation
Foster climate mitigation and adaptation

Biodiversity enhancement
Promote agro-ecology, and create and retain natural habitats on farms

Definitions from ISEAL Code of Good Practice "Assessing the Impacts of Social and Environmental Standards Systems":

Outcome The likely or achieved short-term and medium-term results from the implementation of a standards system's strategies. (Adapted from OECD Glossary, 2002).

Impacts Positive and negative long-term effects resulting from the implementation of a standards system, either directly or indirectly, intended or unintended. (Adapted from OECD Glossary, 2002).

For the full REEL Cotton Theory of Change diagram, see page 47.
For the full REEL Regenerative Code Theory of Change diagram, visit cottonconnect.org/sustainable-practices.

REEL COTTON RESULTS

REEL Cotton results for 2023-24 aggregated for all REEL Cotton programmes in India, Pakistan, Bangladesh, China, Egypt, and Türkiye.

Increased yield by
6.1%

Reduced input costs by
14.3%

Increased profit by
26.1%

Reduced chemical pesticide use by
21.4%

Reduced chemical fertiliser use by
17.5%

Reduced water use by
21.9%

KPIs measurements:
Yield (kg/acre), Water use (m3/acre), Pesticides (ml/acre), Fertiliser (kg/acre), Input cost (USD/acre), Profit (USD/Acre)

Sample size:
Approximately 50% sample of the farmers in REEL Cotton training programmes compared with conventional farmers as a control sample of 10% of the sample project farmers.

Verification:
Second-party verified by CottonConnect and third-party verified by FLOCERT.

REEL COTTON LCA RESULTS

The LCA study evaluated data for the REEL Cotton Programme from Pakistan, Bangladesh, India, and Egypt from the cultivation years 2020-21, 2021-22, and 2022-23, addressing both the agricultural production phase and ginning process, with the exception of Egypt, where data was collected exclusively for the 2022-23 season.

This study updates the previous LCA study reported in Impact Report 2022, incorporating new findings, refined methodologies, and a more comprehensive understanding of the subject matter.

The data demonstrates that the REEL Cotton Programme achieves higher yields, reduced water consumption, and improved nitrogen use efficiency. These enhancements are reflected in the impact results, which clearly indicate the benefits of implementing the REEL Cotton Programme in the studied regions. Across all impact categories, the REEL Cotton Programme exhibits significant improvements, with most potential savings exceeding 35% compared to the control results.

The full LCA study report, including limitations and conclusions, with quality assurance by Sphera Solutions, Inc., is available at cottonconnect.org.

Impact category	Climate change	Eutrophication
Main influencing factors	Field emissions, irrigation and use of fertiliser	Field emissions due to application of fertiliser
LCA study results	**35%** saving potential in **CO_2 eq.** ↓ Impact of the global average for the REEL Cotton Programme is 2.19 kg CO_2 eq. per kg of fibre, in comparison with 3.39 kg CO_2 eq. per kg of fibre for the control group. **This shows a saving potential of 1.20 kg CO_2 eq. or 35.39% per kg fibre.** CO_2 eq. is carbon dioxide equivalent	**44%** saving potential in **phosphate** ↓ Impact of the global average for the REEL Cotton Programme is 33.84g Phosphate (PO4) eq. per kg of fibre, in comparison with 60.44g Phosphate eq. per kg of fibre. **This shows a saving potential of 26.60g Phosphate eq. or 44.0% per kg of fibre.** Phosphate eq. = phosphate equivalent

Impact category	Acidification	Water consumption	Water use	Abiotic depletion potential, fossil	Ecotoxicity
Main influencing factors	Field emissions, irrigation and fertiliser application	Water use for irrigation on the field	Water use for irrigation on the field	Use of fossil-based resources in the provision of fertiliser, and irrigation.	Crop protection, provision of fertiliser
LCA study results	**25%** saving potential in **mol H+ eq.** ↓ Impact of the global average for the REEL Cotton Programme is 0.073 mol H+ eq. per kg of fibre, in comparison with 0.098 mol H+ eq. per kg of fibre. **This shows a saving potential of 0.025 mol H+ or 25.17% per kg of fibre.** mol H+ eq. = molecule's capacity to increase the hydrogen ion (H+) concentration in the presence of water	**36%** saving potential in **water consumption** ↓ Water consumption for the REEL Cotton Programme is 1,747.49 kg water per kg fibre, in comparison with 2,711.63 kg water per kg fibre for the control group. **This leads to a saving potential of 964.14 kg or 35.6% per kg cotton fibre.**	**35%** saving potential in **water use** ↓ Water use for the REEL Cotton Programme is 72.32 m^3 world eq. per kg fibre, in comparison with water use for global average control is 111.69 m^3 world eq. per kg fibre. **This leads to a saving potential of 39.38 m^3 or 35.25% per kg fibre.**	**36%** saving potential in **MJ** ↓ Impact of the global average for the REEL Cotton Programme is 18.90 MJ per kg of fibre, in comparison with 29.69 MJ per kg of fibre. **This shows a saving potential of 10.97 MJ or 36.44% per kg fibre.** MJ = megajoule	**42%** saving potential in **CTUe** ↓ Impact of the global average for the REEL Cotton Programme is 387.64 CTUe per kg of fibre, in comparison with 666.53 CTUe per kg of fibre. **This shows a saving potential of 278.89 CTUe or 41.84% per kg cotton fibre over Average Control.** CTUe = comparative toxic unit for aquatic ecotoxicity

HOW THE RESULTS DEMONSTRATE THE THEORY OF CHANGE

See page 47 for the complete REEL Cotton Theory of Change

Sustainable Land Management

Improved soil health, plant growth, and increased yields /profits

Yield **increased**
6.1%

Profit **increased**
26.1%

Soil fertility is safeguarded through reduced use of fertilisers and savings from reduced input costs

Chemical fertiliser use **reduced**
17.5%

Input costs **reduced**
14.3%

Climate change
35%
saving potential

Soil health is preserved through reduced use of pesticides and increased use of bio-pesticides

Chemical pesticide use **reduced**
21.4%

Farmers benefitted from the replication of sustainable best practices

Environmental Stewardship

Sustainable and responsible use of water resources

Water use **reduced**
21.9%

Water consumption
36%
saving potential

Water use
36%
saving potential

Eutrophication
44%
saving potential

Sustainable waste management practices

Preservation of ecosystems and biodiversity in the farmlands

Abiotic depletion
36%
saving potential

Acidification
25%
saving potential

Ecotoxicity
42%
saving potential

ANALYSIS

Yield
+6.1%

(+18.5% in 2022-23)

In 2022-23, unfavourable climatic conditions (erratic rainfall in parts of India and Bangladesh and heavy rainfall and floods in Pakistan) severely disrupted the crops of control farmers, while project farmers demonstrated resilience to these challenges resulting in comparatively higher yield differences between the two groups. However, during the 2023-24 season, climatic conditions were stable, with normal rainfall across regions, creating favourable farming conditions. This led to normal yields for both groups of farmers, resulting in relatively less difference between the two groups.

Water
-21.9%

(-21.3% in 2022-23)

The results record the continued reduction of water use, maintained through the REEL Cotton programme's training on water management techniques, such as drip irrigation. The LCA study confirms this, with the 36% water consumption saving potential and 35% water use saving potential being derived almost entirely from irrigation.

Chemical pesticides
-21.4%

(-17.1% in 2022-23)

The farmer training in sustainable pest management techniques resulted in a reduction in chemical pesticide use. This reduces the potential harm to human health and biodiversity. Pesticide use can be influenced by heavy rainfall followed by little rainfall causing conditions leading to pest infestation, prompting farmers to use more pesticides. The reduction in pesticide use was the greatest contributing factor for the 42% ecotoxicity saving potential in the LCA study, referring to reducing toxic emissions which are directly harmful to the health of the environment.

Chemical Fertilisers
-17.5%

(-14.4% in 2022-23)

The results show a reduction in the use of chemical fertilisers due to practices such as producing and using bio-inputs. Field emissions contributing to climate change potential primarily stem from fertiliser application, which contributes to the release of potent greenhouse gases such as NO and, particularly with urea, CO_2. The REEL Cotton Programme farms utilise less nitrogen fertiliser or maintain a more favourable nitrogen balance overall, resulting in lower field emissions compared to the control group, reducing the impact on climate change potential.

Input costs
-14.3%

(-15.0% in 2022-23)

The reduction in using chemical pesticides and chemical fertilisers led to a reduction in input costs overall. The adoption of best practices in soil health, nutrient management, and pest management, coupled with proper feedback and timely interventions throughout the season helped in reducing the input costs.

Profit
+26.1%

(+47.0% in 2022-23)

Increased yields combined with lower input costs result in increased profit for farmers. The aggregated figures show an increase in profits for farmers. Since profit is related to yield, the reduced yield margins this year between project and control farmers have also reduced the profit margins. In addition, the normalisation of yields across regions resulted in stabilised cotton prices, which further diminished the profit advantage of project farmers compared to control farmers.

Limitations of the analysis

The results are provided at a global level. The specific interventions and relevant outcomes at regional levels are not specifically mentioned in the results. The globally accepted methods were followed in estimating the outcomes. If a different methodology is used to assess the outcomes, there could be slight variations in the numbers.

The LCA study results indicate a clear enhancement across all impact categories. With Pakistan and India contributing the majority of the total REEL Cotton production, the average values for both the project and control are significantly influenced by the inventory data from these countries. Data consistency was strong, as it was collected and averaged over a three-year timeframe. However, limitations in data collection and availability still exist in these countries, as well as in Egypt and Bangladesh, which necessitates careful interpretation of the results.

How the context may affect the results

The context may affect the yield of cotton grown. For example, less favourable conditions in some regions may results in lower yields, contributing to a lower yield increase overall.

The context of the LCA study in 2024 has several key differences that prevent direct comparisons with the 2022 study. The 2024 study includes a larger number of farmers, which broadens the data set and provides a more comprehensive view of the agricultural landscape. The regional composition has also changed, including new regions, and the geographical distribution of the sample has shifted. In comparison with the 2022 study, the 2024 study does not include China. The climatic conditions were also notably different from those experienced in the earlier research.

Due to these differences in sample size, regional distribution, and climatic factors, the 2024 LCA study should not be interpreted as a progress report but rather as a separate analysis.

Recommendations

In this report, CottonConnect meets its recommendation from Impact Report 2023 to conduct another LCA study of the REEL Cotton Programme, following the initial study in 2022.

With regard to strengthening future LCA studies, enhancing the availability and consistency of data collection would significantly improve the environmental profile of cotton produced under the REEL Cotton Programme. Implementing statistical tests to assess the significance of key inventory data parameters, such as yield, fertiliser use, and irrigation, based on disaggregated farmer data, would further strengthen the reliability of the study findings.

To assess the long-term impact of the specific interventions designed to improve soil health, it is recommended to conduct baseline and endline soil health testing with farmers over the three-year programme.

Photo by Wenxiang Liu

Transforming Agriculture: A farmer's journey with drip irrigation

An experienced farmer in Gujarat, India, found that trying a new water management method had the dual benefit of saving water and increasing his cotton yield.

With 46.7 acres of land, Chandrakantbhai Vittalbhai Patel's journey began like many others, rooted in the traditions of flood irrigation passed down through generations. However, as the years unfolded, flood irrigation proved inefficient, leading to excessive water wastage, soil erosion, and erratic moisture levels in the soil. Additionally, weed growth increased, resulting in higher expenses for weedicide and labour.

When Chandrakantbhai joined the REEL Cotton Programme he learned the benefits of drip irrigation techniques versus traditional flood irrigation. He chose to install drip irrigation on one acre of his farm in the year 2022-23, and found that water consumption was significantly reduced in this area.

Delivering water directly to the root zone of plants minimised evaporation and run-off. Consistent moisture levels and precise nutrient delivery promoted healthier plant growth, reduced disease incidence, and improved overall crop quality and yield. Now he is applying fertiliser with drip irrigation using the fertigation method only, so the efficiency of fertiliser is also increased while saving on input cost. The use of drip irrigation has reduced water use by 25-30% and increased yield by 30%.

"I am thankful to CottonConnect for bringing this programme to our area, which guides the farmers for better farming practices," he said.

Photo by Amit Patel

"By adopting drip irrigation, my production costs reduced, soil erosion minimised, and I achieved better production with good quality

Chandrakantbhai Vittalbhai Patel
Gujarat, India

Our Primark Cotton Project, now in its 11th year, continues to train and support cotton farmers in agricultural methods which aim to increase the amount of cotton grown, reduce their input costs and therefore boost farmers profits. This year, we continued our focus to increase uptake of more regenerative farming within the Primark Cotton Project by 2030. We remain mindful of the growing challenges cotton farmers face due to climate change and aim to protect and support them where we can. We look forward to continuing our partnership with CottonConnect as we adapt and grow the Primark Cotton Project towards 2030.

Kerry Conway,
Primark Cotton Project Lead, Primark

METHODOLOGY

Data collection

Baseline: Basic information such as demographic, agronomic, and socio-economic details of the previous season is collected by the local implementing partner to analyse the need of the group of farmers. The baseline is conducted only once in the first year of the three-year programme.

Farmer Field Book: Farm-level data is collected throughout the season in Farmer Field Books (on farm inputs, cotton production and income) to supplement the year-end impact assessment and claims. The data is collected by field executives of the local partners at the respective stages of cotton production – land preparation, fertiliser and pesticide application, irrigation, harvesting and selling. The data is reviewed, validated and digitised by the supervisors and shared with the CottonConnect team.

Data analysis

Analysis: The digitised dataset is checked and validated by CottonConnect, liaising with the local partner with any queries. The dataset is then analysed against the KPIs. Based on the KPIs, the data tables are developed. Historical data analyses are conducted for the completed farmer batches as well as for the ongoing farmer batches based on the results obtained.

Insights: Field-level insights and secondary literature is incorporated to give a 360-degree understanding of the results obtained. The results are compared at various levels including control farmers, previous year results as well as secondary data from government sources. This gives a deeper understanding of the scenario.

VERIFICATION

The verification process ensures adherence of programme activities to all the REEL Code criteria as defined in the Code of Conduct (CoC). The process is carried out by internal teams and external experts.

Internal Verification System – First-Party and Second-Party Verification

The first-party verification, also known as self-assessment, is conducted by the local partner where they audit a process or set of processes in the quality management and implementation of the programme to ensure it meets the requirements of the REEL CoC. The ME&L team of CottonConnect does the second-party verification to ensure the programme meets the REEL CoC requirements. The assessment covers the implementation body, including CottonConnect's farm team and the local partner, farmers being trained under the programme, and ginners participating in the programme.

External Verification – Third-Party Verification

CottonConnect works with FLOCERT for the third-party verification of the REEL Cotton Programme. FLOCERT conducts the verification in the second year of a three-year programme. FLOCERT conducts the third-party verification where it cross-checks implementation, documentation, and system via data collected by auditors in correlation to REEL Cotton CoC.

The verification by FLOCERT is completed at two levels:

- **Type A: relevant verification at the implementation body level (local partner and CottonConnect)**
- **Type B: relevant verification of farmers and gins.**

Under the verification of implementing body, validation of documents related to the internal management system (agreements, etc.), training materials, registers and other documentation required under REEL CoC are cross-verified through the interviews of local partner staff to assess the overall programme knowledge and broader discussions with CottonConnect's local team.

FLOCERT
assuring fairness

Farmers are verified by onsite farm and demo plot visits, farmer interviews, Farmer Field Book data cross-verification and documents maintained at the farmer group level. Verification of gins is carried out via onsite visit to the ginning units, interaction with the ginner and managers/supervisors for overall programme knowledge assessment, relevant documentation checks related to traceability and HSSE, general observations, and interaction with the workers.

FLOCERT shares the verified data with remarks against each criteria of the REEL CoC, a narrative summary of observations and critical findings and an overall score of the programme.

This multi-level methodology monitors the programme against the sustainability criteria of the REEL CoC. The verification process is further explained in the Monitoring and Evaluation Processes and Verification Mechanisms document.

REEL REGENERATIVE

CottonConnect introduced its REEL Regenerative Code in 2021, and trained over 250,000 farmers on more regenerative agriculture practices in 2023-24. Regenerative practices include those that restore the soil health and ecosystems needed to support cotton cultivation, thereby increasing resilience for cotton farming communities.

The REEL Regenerative Centre of Excellence was established in 2022-23, to test and evaluate the results of regenerative cotton farming. The second year of a programme training 305 farmers across three villages in the Narmada district of Gujarat, India, demonstrated a notable increase in adoption of the regenerative practices.

Increased yield by **4.8%**

Reduced input costs by **9.8%**

Reduced water use by **14%**

compared with control farmers

Natural inputs: 87% of farmers used all natural inputs in the field, increased from 4.3% in the first year.

Crop rotation: 23% of farmers practice crop rotation, increased from 1.8% in the first year.

Bio-pesticides: 87% of farmers used bio-pesticides in the second year, increased from 11% in the first year.

Natural fertiliser: 100% of farmers used natural fertiliser in the field.

Farm manure: 92% of farmers used farm manure in the farms.

Carbon reduction: 41% less GHG emissions compared with control farms

Regenerative agriculture also helps farms adapt to changing climate conditions, ensuring long-term viability. Practices like no-till farming and cover cropping reduce greenhouse gas emissions from agricultural activities.

By the second year, the programme farmers had transformed into practitioners of regenerative agricultural practices. Having experienced the benefits of biodiversity, agroforestry, and the reduced cost of inputs due to reduced chemical fertilisers and pesticides, they plan to continue into the third year of the programme.

All the programme farmers intend to sell their cotton in the recommended ginning mills, benefitting from the supply chain linkages of the programme. In addition, training to support recognition of the important role of women in cotton farming has led to increased decision-making by women in both agricultural and household matters.

REEL GRADUATE FARMER PROGRAMME

The REEL Graduate Farmer programme was designed to further support farmers who have completed the three-year REEL Cotton training.

The REEL Graduate Farmer programme aimed to refresh the awareness of the farmers who benefitted from the previous programmes, and covered the following topics:

Module 1:
Pre-sowing activities covering ploughing, weed management, sowing, seed selection, HSSE, and social aspects

Module 2:
Crop management activities covering integrated pest and disease management, integrated nutrient management, integrated weed and water management aspects

Module 3:
Safe and contamination-free harvesting

The REEL Graduate Farmer programme began in 2022-23 with 277 cotton-growing farmers enrolled in the programme, with 29 control farmers, in Gujarat, India.

In 2023-24, the second year of the programme, an assessment of the programme farmers in comparison with the control farmers showed encouraging results across all indicators, from additional yield to a significant profit increase.

The training refreshed the farmers' knowledge on sustainable agronomic practices, storage facilities, HSSE, and best practices for packing and storing raw cotton.

Reduced chemical pesticide use by 9.1%

Reduced chemical fertiliser use by 18.4%

Reduced water use by 18.2%

Increased yield by 41.1%

Reduced input costs by 19.4%

Increased profit by 115.3%

The project also incorporated digital communication to share information directly with the farmers. It was observed that about 70% of the farmers had smartphones and were familiar with using WhatsApp for personal use. CottonConnect then introduced the farmers to its digital learning app. After the training, 21% of the project farmers were using the learning app. Information was shared regularly, and troubleshooting of their field-related problems, such as pest outbreaks, was offered immediately by an experienced agronomist.

The pilot demonstrated that including training on regenerative practices adds additional benefits to organic cotton cultivation, including measures to improve soil health, and increased profits from additional crops.

ASSESSING THE BENEFITS OF ORGANIC COTTON FARMING IN PAKISTAN

Organic farming practices can bring benefits for soil health, water protection, and biodiversity, while reducing input costs and producing good quality cotton. In the early years of converting to organic farming practices without chemical pesticides and fertilisers, farmers can experience a reduction in yield. However, the reduced input costs often mean that the farmers still make a profit.

CottonConnect's Organic Cotton Farmer Training Programme in Pakistan helped to confirm this in practice. In 2021-22, 25 farmers in the Punjab and Sindh districts joined the programme for three years, with a further 137 farmers enrolling in 2023-24.

Despite a lower yield throughout the programme compared with conventional farmers, the organic farmers profited 12% in 2022-23 and 15% in 2023-24 due to a 63% reduction in input cost. The farmers also received 6% higher cotton prices than conventional farmers.

The 137 farmers joining the programme in 2023-24 had lower yields than conventional farmers in their first year of organic farming. However, they incurred 39% less input costs, made a slight profit of 1%, and received 2% higher cotton prices than conventional farmers. This trend is expected to increase in the second year.

The findings confirm that farmers converting to organic farming practices are gradually able to make profits by reducing input costs and improving yields, while protecting the environment and ecosystem.

Ghulam Murtaza
Punjab, Pakistan

Ghulam Murtaza, a dedicated Lead Farmer in the CottonConnect Pakistan Organic Cotton Programme, took a bold step in the 2023-24 season by establishing an acre organic cotton demonstration plot focusing on bio-pesticides. While control farmers used chemical pesticides like Nitenpyram and Buprofezin, costing around PKR 18,000 (50 GBP) Ghulam used yellow sticky traps and biopesticides derived from Neem and Bitter Melon extracts at a much lower cost of PKR 3,000 (8 GBP).

Ghulam achieved an **83% reduction in input costs** for insect-pest control, resulting in a **20% increase in profit** compared to control farmers, underscoring the programme's effectiveness in boosting profitability through sustainable practices.

Photo by Lall Babar

REGENERATIVE AGRICULTURE BRINGS BENEFITS TO ORGANIC COTTON FARMERS

CottonConnect has been working with farmers in India to understand the impact of introducing more regenerative agriculture practices to organic cotton production. The regenerative practices, which in some cases are a return to ancestral farming practices, include agroforestry, crop rotation, and measures to improve biodiversity, soil health, and animal welfare.

The Regenerative Organic Cotton programme in 2023-24 trained 391 farmers in the Aurangabad district of Maharashtra, India.

Highlights from the key indicators include:

Improving soil health

The number of farmers practicing crop cover to maintain soil health increased from 52% to 100%. Awareness also increased about soil mulching and minimum tilling of the top layer of soil. Using regenerative agriculture practices, the regenerative farmers avoided using 221kg per acre of chemical fertilisers and 605ml per acre of chemical pesticides, compared with control farmers.

Inclusion of agroforestry

The number of farmers adopting agroforestry increased from 53% to 100%, with 80% of farmers planting fruit trees and shrubs on the farm boundary.

Crop rotation and intercropping

Farmers practicing crop rotation increased from 91% to 100%, rotating the crops with maize, bengal gram, wheat ginger, mustard, sugarcane, sunflower, onion, soybean, sorghum, pigeon peas, and mille, and achieving additional profits by selling the crops.

Protecting biodiversity

Prior to the training, 91% of farmers said they were unaware if the trees they cut were endangered species. At the endline assessment, only 0.5% of farmers reported cutting endangered trees. Awareness of endangered animal species in the country also increased from 1% to 100%.

Overall, the regenerative farmers received **4.9% more profit** than the control farmers due to **35% less input cost,** even though they achieved 7% less yield than the conventional control farmers.

The pilot demonstrated that including training on regenerative practices adds additional benefits to organic cotton cultivation, including measures to improve soil health, and increased profits from additional crops.

ORGANIC INTEGRITY

Organic integrity is the core of any organic programme. CottonConnect has developed a number of systems and critical control points working closely with all parties in the supply chain. This provides brands with confidence in the organic supply chain, while giving farmers and ginners access to market and premiums.

CottonConnect's approach towards organic cotton goes through a rigorous process which starts even before sowing, where non-Bt seeds are carefully sourced from the suppliers. Regular GMO and pesticide residue tests are conducted throughout the season, covering at least five stages of the crop. CottonConnect also collects and validates the scope certificates and appropriate training is given to ensure that the cotton is grown and harvested according to relevant organic certification standards.

In 2023-24, CottonConnect exceeded its customers' target organic integrity scores, with an aggregated score across programmes of **99% organic cotton.**

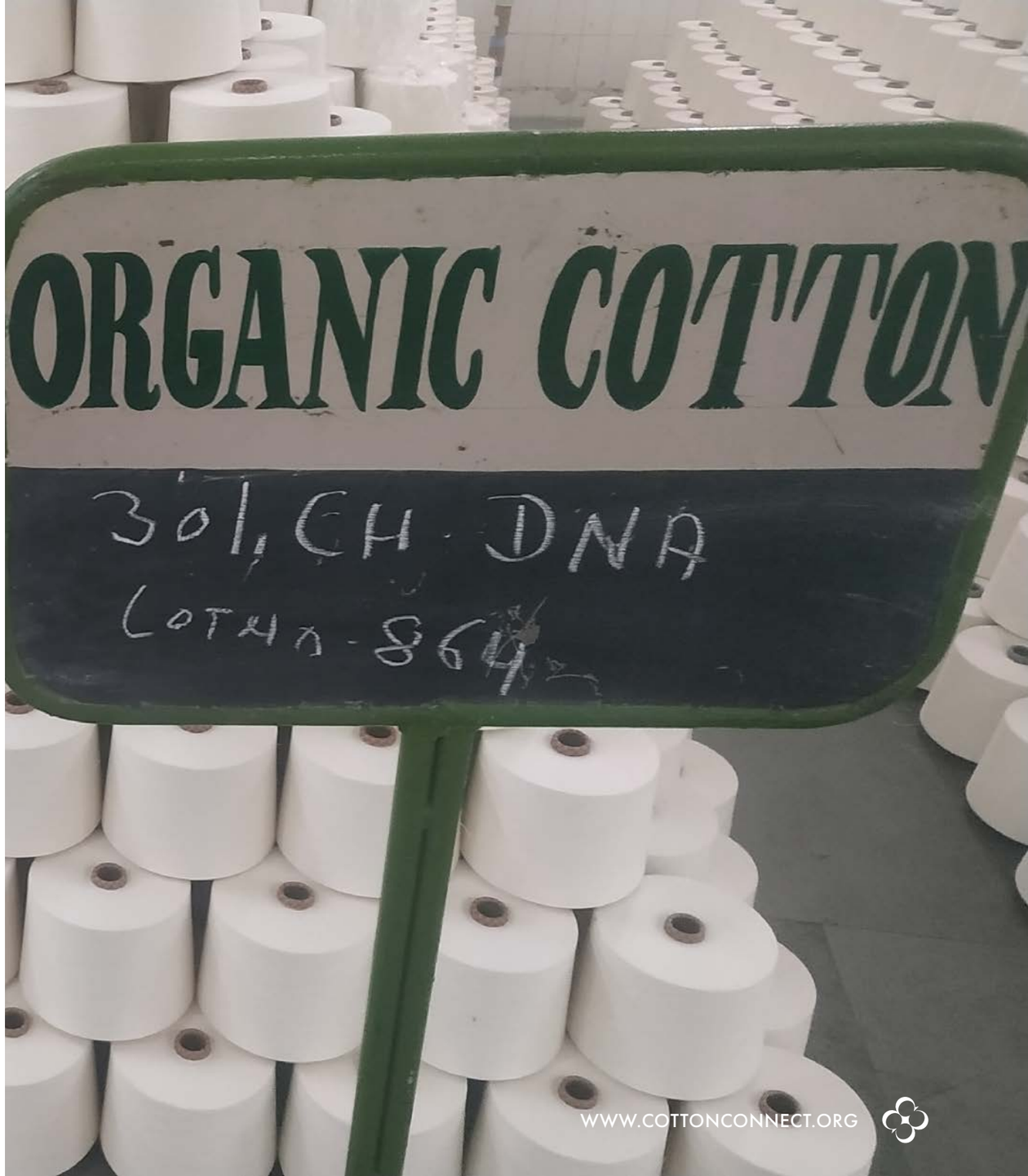


Photo by Pramod Sonune

RESPONSIBLE BUSINESS FOR GINS

Supporting its ginning partners to improve health, safety, security, and environment (HSSE) practices and environmental sustainability continues to be a priority for CottonConnect. During 2023-24, this included strengthening second-party verification at gin level and expanding the Responsible Business for Gins programme to additional gins. The programme raises awareness among gin owners, supervisors, and workers about good practices and environmentally sustainable operations.

In 2023, CottonConnect published the first-ever Responsible Business for Gins Code of Conduct, designed to raise the standards in the crucial process of ginning in the cotton supply chain. The Code of Conduct was developed in consultation with multiple industry stakeholders and independent verification bodies, and helps gins assess processes and raise standards to align with best practices in the sector.

Implementing the Code supports gins' adoption of the best standards and policies relevant to the sector, including providing a hygienic working environment and promoting statutory rights for gin workers. Compliance also helps to close the awareness gap regarding industry standards amongst the gin owners, supervisors and workers.

Improving standards at gins is a part of supporting retailers to have more transparent and ethical supply chains. It will also help brands comply with new regulations governing claims about green credentials. Implementation of the new Code, and compliance with its framework, will be independently verified.

HSSE PROGRAMME RESULTS

Aggregated results from HSSE Gin programmes in India, Pakistan, Bangladesh, China, and Türkiye in 2023-24.

Compliance with safety aspects **increased** from 42% to

87%

Adoption of precautionary measures **increased** from 70% to

91%

Use of Personal Protective Equipment (PPE) by gin workers **increased** from 56% to

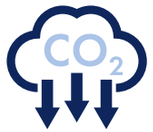
97%

COTTONCONNECT GOALS AND PROGRESS

GOALS AND PROGRESS

In 2023, CottonConnect set goals for REEL Cotton in the areas of Environment and Climate, Traceability, and Social. These areas were chosen to address the pressing environmental issues in cotton production, as well as to quantify CottonConnect's long-held priority of enhancing farmers' livelihoods.

The goals are in line with brands' and manufacturers' goals for cotton and textiles production, and industry goals, for example Textile Exchange's Climate+ strategy to reduce GHG emissions from fibre and raw materials production by 45% by 2030.

	CottonConnect's Goals	CottonConnect's progress so far
Environment and Climate	 **GHG Emissions** Reduce greenhouse gas emissions for REEL Cotton by 50% by 2030 (from the baseline year 2017)	 **On track** GHG emissions are tracked on an annual basis through farm level and programme level assessments Life Cycle Assessment conducted for REEL programmes for the period of 2020-21, 2021-22, and 2022-23
	 **Biodiversity** More than 90% of REEL Cotton farmers are trained to adopt regenerative practices by 2030	 **On track** More than 90% of the REEL programme farmers are currently being trained on regenerative practices.
	 **Soil Health** 100% of REEL Cotton farmers improve soil health by 2030	 **In measurement** On-site soil testing programme is being initiated to track regular progress.
Traceability	 **Traceability** 100% of REEL Cotton is traceable by 2025	 **Achieved** Cotton procurement and processing of all REEL and REEL Regenerative programmes are traced through TraceBale.
Social	 **Smallholder livelihoods** Increase the net income and resilience in a sustainable manner for one million cotton farmers and workers by 2030	 **On track** Over 800,000 farmers have participated in CottonConnect programmes up to and including 2023-24.
	 **Women's empowerment** 500,000 women taken part in Women in Cotton programmes by 2030	 **On track** About 270,863 women participated in Women in Cotton programmes in 2023-24.

HOW COTTONCONNECT WORKS TOWARDS ITS CLIMATE GOAL

The release of greenhouse gases (GHG), such as CO_2 and methane, results in greater absorption of radiation emitted by the Earth, intensifying the natural greenhouse effect. This in turn adversely affects humans and the environment.

CottonConnect tracks GHG emissions on an annual basis through farm level and programme level assessments. It uses tools such as the Cool Farm Tool and LCA studies to calculate CO_2 and GHG emissions. For example, employing the Cool Farm Tool, in 2023-24 CottonConnect analysed the REEL Regenerative programme's effectiveness in reducing GHG emissions. The assessment showed that carbon emissions per acre from the project farms were approximately 41% lower than those from the control farms. The programme is in its second year, and the reduction is achieved through reduced chemical pesticides and fertiliser use, water management, and soil management including reduced tillage.

In the REEL Cotton Programme LCA study, it was identified that climate change potential is primarily influenced by field emissions (emissions from agricultural soil related to fertiliser application, crop residues and soil erosion), with substantial contributions from irrigation practices and fertiliser production.

The REEL Cotton and REEL Regenerative Code promote agricultural practices which reduce GHG emissions, including reduced use of chemical fertiliser and enhanced irrigation methods.

Field emissions primarily stem from fertiliser application, which contributes to the release of potent greenhouse gases such as N_2O and, particularly with urea, CO_2. The REEL Cotton Programme farms use less nitrogen fertiliser or maintain a more favourable nitrogen balance overall, resulting in lower field emissions compared to the control group. The REEL Cotton Programme also achieves superior yields, which effectively reduces emissions on a per kilogram basis.

Water management methods such as drip irrigation are used to reduce water use. A reduction in water consumption also directly correlates with decreased energy usage, further reducing emissions.

Photo by Kabeer Lal

Photo by Mr. Zhang Zhanqi

Reducing chemical pesticides and fertilisers benefits yield and climate

Excessive use of chemical fertilisers is a key factor in climate change potential. The production of nitrogen fertiliser causes CO_2 emissions and the use of nitrogen fertiliser causes N_2O emissions, both greenhouse gases. The REEL Cotton Programme promotes sustainable growing techniques using less chemical fertiliser in order to reduce the impact on the environment and climate.

Liu Lanhuan, a farmer in Hebei Province, China, was using a heavy dose of cocktail pesticides every six to eight days to clear all the pests in her two-acre farm. She was also using a compound nitrogen, phosphorus, and potassium fertiliser. At first, she was relieved to see no pests in the fields. However, over time Liu realised that her profits were narrowing and she could barely make ends meet.

Liu joined the REEL Cotton Programme and began regularly attending the training sessions. Guided by experts from CottonConnect, Liu planted flowering plants to provide a habitat for beneficial insects near her cotton farm, and has set up bollworm traps to reduce the usage of chemical pesticides. She wears protective clothing while spraying pesticides and feels healthier.

Liu enjoyed a 20% yield increase of more than 1,800 kg/acre from an initial 1,500 kg/acre, while the chemical fertiliser use was reduced by 40% to 270 kg/acre from 450 kg/acre.

> **Thanks to the technical training organised by CottonConnect, I have been able to benefit with bumper harvests over the past few years**

Liu Lanhuan
Hebei Province, China

HOW COTTONCONNECT IS WORKING TOWARDS ITS REGENERATIVE AGRICULTURE GOAL

Regenerative agriculture is a holistic, outcome-based farming approach. It focuses on practices that help to improve soil health, encourage biodiversity, promote water efficiency, and reduce greenhouse gas emissions whilst also supporting farmers to diversify their incomes and become more resilient to climate change.

The REEL Regenerative Code launched in 2021 introduces more regenerative practices, as well as a dedicated chapter on social fairness, and animal welfare, ensuring there is a strong focus around restoring nature and enhancing functional biodiversity on cotton farms.

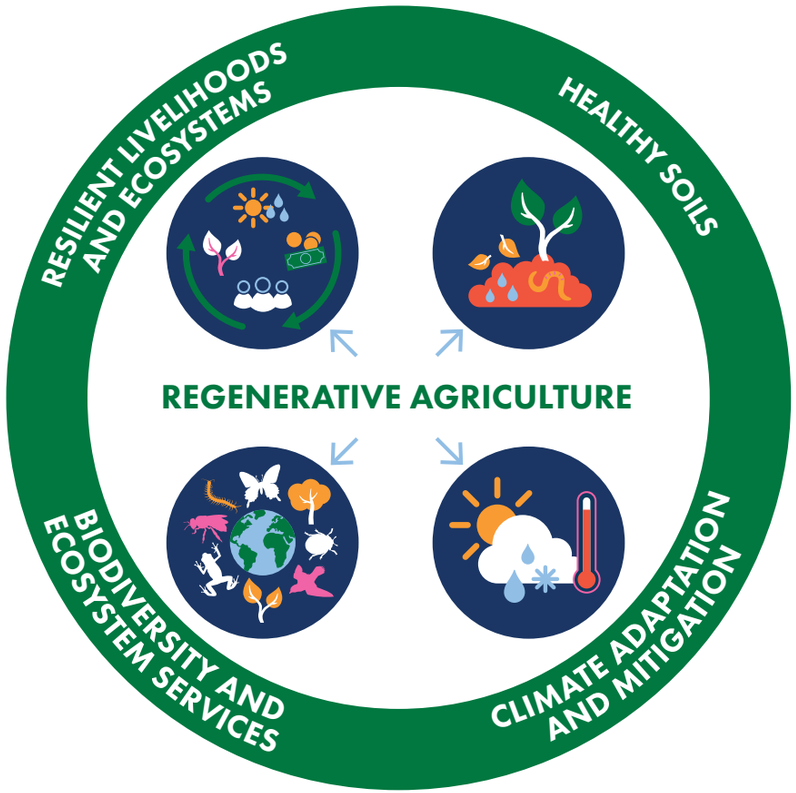
CottonConnect trained over 250,000 farmers on more regenerative agriculture practices in 2023-24. Regenerative practices include those that restore the soil health and ecosystems needed to support cotton cultivation, thereby increasing resilience for cotton farming communities.

In 2023-24, revisions were made to the REEL Regenerative Code, in order to align with evolving policies and legislations, resulting in the publication of REEL Regenerative Code of Conduct 1.1, following stakeholder consultation.

CottonConnect offers a three-year REEL Regenerative training programme for smallholder cotton farmers.

Key areas of CottonConnect's REEL Regenerative Offer

- **Increased economic welfare and reduced farming costs**
- **Enhanced ecosystem services**
- **Animal welfare**
- **Agri-input production centres**



- **Improved soil carbon levels**
- **Increased soil organic matter**
- **Better water holding capacity**
- **Enhance biofertiliser use and reduce chemical fertilisers**

- **Enhanced agrobiodiversity**
- **Diversified incomes**
- **Conservation of biodiversity components and species**

- **Sustainable water management**
- **Reduced use of chemical pesticides**
- **Agroforestry practices**
- **Improved soil-carbon sequestration**

Photo by Rahul Rathwa

"I have benefited a lot from joining this programme. My cotton production has also increased and I know how to cultivate and take care of my farm. I am very happy to have come to this programme.

Amarsinghbhai Rayjibhai Tadvi
Gujarat, India

Nature-based farming brings cotton farmer many benefits

Amarsinghbhai Rayjibhai Tadvi had been cultivating cotton, along with animal husbandry, for many years on four acres of land in his village in Narmada District, Gujarat, India. He followed traditional farming methods which included using a large amount of chemical fertilisers and pesticides.

After joining the REEL Regenerative Programme in 2022, Amarsinghbhai learned how to cultivate cotton using sustainable agriculture practices.

Regenerative practices were introduced to increase biodiversity which supports pollination and thus increases the yield. This included planting fruit crops at the border of the cotton crop, which also provides an additional source of income.

Amarsinghbhai has seen a difference in his cotton production in just two years. His yield has increased from 450-500 kg/acre cotton to 650-700 kg/acre cotton. The use of jivamrit and vermicompost as fertiliser and home-made bio-pesticides dasaparni and panchaparni for pest control has increased production and reduced cost.

Amarsinghbhai experimented with a demo plot in one acre of land with different sustainable agriculture practices like intercrop, cover crop, border crop, yellow sticky, pheromone trap, and agro forestry. He realised that nature-based farming has brought many benefits and he has also seen his land become more fertile.

HOW COTTONCONNECT IS WORKING TOWARDS ITS SOIL HEALTH GOAL

Healthy soil with organic nutrients is needed to maintain the quality and yield of cotton cultivated. The deterioration of soil health due to climate change and excessive chemicals threatens the long-term production of cotton.

CottonConnect includes agricultural practices that support soil health, either directly or indirectly, as part of its sustainable cotton farmer training. These include:

1. **Agroforestry:** Agroforestry improves biodiversity, sequesters carbon, protects the plants from extreme weather, and improves water retention. It also improves soil health and reduces dependency of chemical fertiliser and subsequently reduces GHG emissions.
2. **Biochar production:** Used as a soil input, biochar improves soil productivity. Producing biochar from plant bio-mass also permanently captures carbon rather than returning it to the atmosphere, therefore reducing carbon emissions.
3. **Compost or vermicompost for soil management:** Using organic manures like compost or vermicompost reduces the use of excessive chemical fertiliser which can cause deterioration of soil health.
4. **Intercropping:** Intercropping cotton crops with some leafy vegetables can provide extra nutrients for the soil, which can be used as bio-fertilisers to replenish the nitrogen level.
5. **Bio decomposition using rotavator and cotton shredder:** Biomass decomposition by mixing and shredding residual stalks of cotton, maize, wheat, sugarcane etc., helps to improve soil health by improving soil organic matter to reduce soil erosion.

CottonConnect uses the Bhu-Parikshak rapid soil-testing device which is capable of detecting soil health in just 90 seconds through an embedded mobile application. The device is based on Near Infrared Spectroscopy technology that provides real-time soil analysis reports on smartphones with the Bhu-Parikshak app.

Photo by Kabeer Lal

Improving soil health with self-made bio-inputs

Making his own bio-inputs has helped Brijeshbhai Pravinbhai Patel improve the soil health and fertility on his farm, as well as reduce input costs.

Brijeshbhai grows cotton and castor crops, and has been farming his 31 acres of land in Vadodara District, Gujarat, India, for the last 12 years.

The high cost of chemical pesticides and fertilisers had been affecting his ability to meet household expenses. On joining the REEL Cotton Programme, Brijeshbhai realised that the excessive use of chemical fertilisers and pesticides had also degraded his farm land and reduced biodiversity.

Following a series of training sessions, meetings, and hands-on demonstrations, one of the first changes he made was to transition from chemical fertilisers and pesticides to homemade bio-pesticides and reduce his reliance on synthetic inputs while promoting soil health and fertility.

A bio-input centre was established at his farm and he started producing and using bio-products such as jivamrut, dashparni ark, and nimark. This promoted the presence of beneficial microbes and increased organic matter. Brijeshbhai shared that he now sees many more earthworms in the fields than before, indicating the good health of the soil. The use of these products helped the soil to loosen and soften, improving his yield by 7% after joining the programme.

Photo by Parth Patel

“By gradually adopting bio-fertilisers and pesticides, my income has increased as the cost of cultivation has decreased. I strongly recommend the REEL Cotton Programme to others as well, as it protects the environment, and we can eat healthy food.”

Brijeshbhai Pravinbhai Patel
Gujarat, India

HOW COTTONCONNECT IS WORKING TOWARDS ITS TRACEABILITY GOAL

CottonConnect achieves traceability of REEL Cotton through recording cotton transactions along the supply chain in its own TraceBale software tool.

TraceBale is an application that can be fed with data from farmers, ginners, spinners, and other processors in the supply chain. It records farmers' demographic and agronomic data, e.g. how much water or fertiliser has been used, inputs and procurement information, and other transactions in the supply chain.

Once the data has been captured it can be accessed with a web interface. This gives brands a clear, consistent, and near-real-time overview of all stages of their supply chain. Through TraceBale, the cotton grown is directly traceable through supply chain linkages into brands' supply chains.

In 2023-24, 193,468 MT lint cotton was traced through TraceBale.

"At Mark's, we continue to take steps to improve visibility into our apparel supply chain. We were proud to be an early adopter of TraceBale, the innovative traceability platform from our long-time partner CottonConnect. TraceBale provides end-to-end product traceability, helping us track the fibre from our sustainable cotton programmes directly into our finished products. This level of visibility enables us to demonstrate our ongoing commitment to improving the environmental and social impacts within our supply chain." Iain Summers, VP – Purchasing, Product Innovation and Product Development, Mark's

FARMER QR CODE:
CottonConnect has successfully introduced a QR code system to speed up the process of capturing seed cotton procurement in TraceBale. The innovative solution reduces the delays associated with manual verification processes and ensures accurate reporting of seed cotton procurement.

How it works:
Each farmer linked to the supply chain is provided with a unique QR code, which the ginner representative, agent or sub-agent scans during procurement. This QR code contains all the necessary information and validations, including personal details and estimated quantities, ensuring accurate data capture through the TraceBale procurement application. The data is then automatically uploaded to TraceBale in real-time.

Photo by Shubham Gandhi

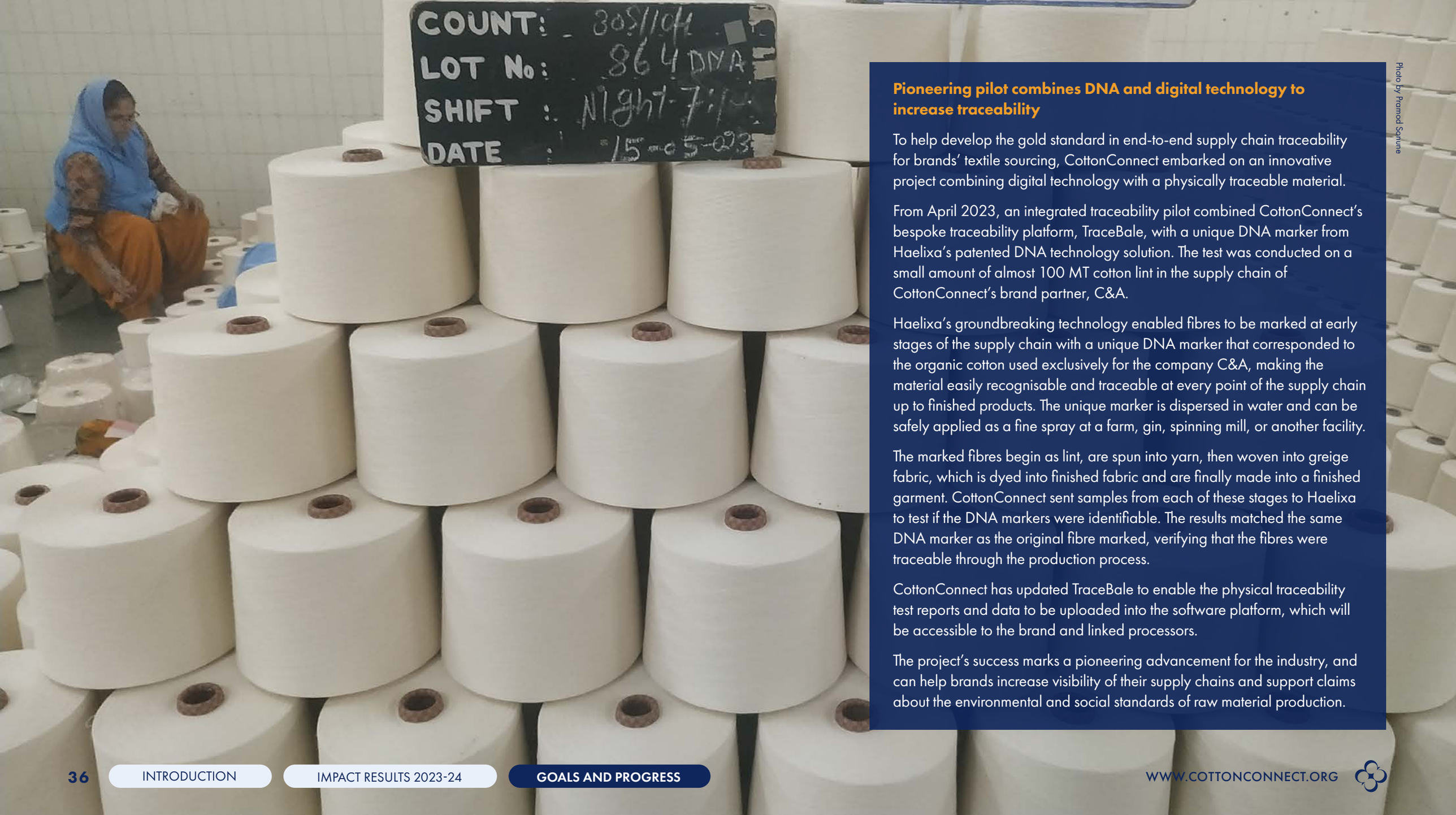


Photo by Pramod Sanune

Pioneering pilot combines DNA and digital technology to increase traceability

To help develop the gold standard in end-to-end supply chain traceability for brands' textile sourcing, CottonConnect embarked on an innovative project combining digital technology with a physically traceable material.

From April 2023, an integrated traceability pilot combined CottonConnect's bespoke traceability platform, TraceBale, with a unique DNA marker from Haelixa's patented DNA technology solution. The test was conducted on a small amount of almost 100 MT cotton lint in the supply chain of CottonConnect's brand partner, C&A.

Haelixa's groundbreaking technology enabled fibres to be marked at early stages of the supply chain with a unique DNA marker that corresponded to the organic cotton used exclusively for the company C&A, making the material easily recognisable and traceable at every point of the supply chain up to finished products. The unique marker is dispersed in water and can be safely applied as a fine spray at a farm, gin, spinning mill, or another facility.

The marked fibres begin as lint, are spun into yarn, then woven into greige fabric, which is dyed into finished fabric and are finally made into a finished garment. CottonConnect sent samples from each of these stages to Haelixa to test if the DNA markers were identifiable. The results matched the same DNA marker as the original fibre marked, verifying that the fibres were traceable through the production process.

CottonConnect has updated TraceBale to enable the physical traceability test reports and data to be uploaded into the software platform, which will be accessible to the brand and linked processors.

The project's success marks a pioneering advancement for the industry, and can help brands increase visibility of their supply chains and support claims about the environmental and social standards of raw material production.

HOW COTTONCONNECT IS WORKING TOWARDS ITS INCOME AND RESILIENCE GOAL

Over 800,000 farmers have participated in CottonConnect programmes up to and including 2023-24.

The results from the REEL Cotton Programme demonstrate the programme farmers achieve increased yield, profit, and income compared with control farmers. This is essential to support viable livelihoods of smallholder farmers and their communities that rely on growing cotton to make a living.

Yield: By increasing the amount of cotton harvested, farmers have more cotton to sell, thus increasing their income. This is especially important for smallholder farmers relying on growing cotton to make a living.

Input costs: Introducing sustainable agricultural methods which reduce the use of chemical pesticides and fertilisers reduces the expenditure on these inputs.

Profit: Increased income due to higher yields, combined with reduced input costs, means more profit is retained by the farmer.

CottonConnect also support farmers to diversify income sources, such as generating income from the sale of border fruit crops. The Women Entrepreneurship Development Programme (WEDev) in Bangladesh was designed to equip women with skills to diversify their incomes, thus providing a buffer against potential agricultural losses caused by climate-related disasters and unforeseen circumstances.

Moheb Mohamed
Egypt

Moheb Mohamed, a farmer in Egypt, has used the learnings from the REEL Cotton Programme to increase his income and invest in the future of his farm.

Through collective action and strategic planning, he not only bolstered his own productivity but also that of his family and colleagues. By leveraging cooperative harvesting methods and reducing reliance on hired labour, Moheb achieved significant savings, reducing pesticide and harvesting costs by 10%.

With a total yield of 13.35 quintals from his 1.5-acre plot, Moheb received a lucrative auction price of EGP 18,000 (354 GBP) for his produce. Wisely reinvesting his earnings, he purchased an irrigation machine and a backpack sprayer. He also plans to invest in three high-yielding dairy cows renowned for superior milk production.

Photo by Mr. Hany El Hady

It makes me very proud that I am able to help other women feel independent. I have always believed that when we women are financially independent, everyone benefits – especially fellow women and family, children – we leave no one behind

Beauty Khatun
Khulna District, Bangladesh

Entrepreneurial vermicompost business provide family income and resilience

Beauty Khatun is a resilient woman from a rural community in the western Khulna division of Bangladesh. In March 2022, she heard about the Women's Entrepreneurship Development Programme being piloted by CottonConnect. "The opportunity to participate in the programme proved to be my turning point. I received comprehensive training in vermicompost production, business planning, financial management, and market linkage. The training also provided the materials I needed to set up my compost centre," Beauty said.

Two years later, Beauty's vermicompost business now earns 35,000 BDT (233 GBP) each month. "As the business flourished, I have diversified my offerings and even ventured into earthworm sales. Some months I have difficulty meeting the demand so I am considering increasing my production capacity," she explained.

Beauty's vermicompost business plays a vital role in increasing her family's income, and she credits her husband's care and support in its success. She has diligently saved money in her bank account to build assets, including purchasing land with earnings from the farm to increase the family's resilience.

Beauty is determined to put her earnings to good use and has been helping other women. "Some women have joined my centre and assist with sales management for a modest salary," she explained proudly.

Photo by Aniud Zuber

HOW COTTONCONNECT IS WORKING TOWARDS ITS WOMEN'S EMPOWERMENT GOAL

CottonConnect's Women in Cotton programme builds knowledge, strengthens livelihoods, and connects markets. It provides the background in literacy, numeracy, rights, and health to enable women to take advantage of increased livelihood opportunities, both within cotton and through supplemental income running their own enterprises.

About 270,863 women participated in Women in Cotton programmes in 2023-24, contributing towards achieving the goal to train 500,000 women by 2030.

Women in Cotton pilot in Egypt

Starting in November 2023, CottonConnect conducted training for 25 women working in rural cotton fields in Egypt. The training programme aimed to empower women farmers by providing basic knowledge in microfinance, business management, and advanced farming techniques to cultivate and market premium cotton.

In a short period of time, the women learned knowledge and skills to improve their livelihoods, including:

- **Increased awareness of the cotton trading system in Egypt (from 12% to 100% awareness after training)**
- **Increased ability to participate in the cotton selling and buying market (from 24% to 100% after training)**
- **Ability to identify the symptoms of micro-deficiency in the cotton crop (96% after training)**
- **Confidence to start an alternative income project**

Women Climate Change Ambassadors

The Women Climate Change Ambassadors programme was set up in 2022 to empower women farmers as change leaders in climate resilience. It focuses on capacity building in climate-smart agriculture practices, and providing participants with knowledge of farming practices to adapt to the impacts of climate change.

The pilot programme trained 42 women farmers from programme districts in Gujarat, India, to become climate change ambassadors. These change leaders have since trained 30 farmers each, imparting the knowledge to over 1,200 women, expanding the programme's reach and impact.

The training continued in 2023-24 and helped the women climate change leaders to understand the impact of climate change on cotton yields and introduce strategies to combat climate change for better cotton yield production.

The pilot identified challenges with assessing the participants' understanding of new topics by using traditional endline assessments. However, practical adoption of practices in communities reflected learning had occurred and had increased the women's capacity to train other women farmers.

Women taking the lead in teaching climate change mitigation techniques

Nitaben Vijaybhai Tadavi is one of CottonConnect's Climate Change Ambassadors in Narmada district, Gujarat, India.

Nitaben took part in the intensive Climate Change Ambassadors training programme which trains women farmers in sustainable agriculture techniques chosen specifically to mitigate against further climate change. The in-depth learning includes demonstration activity on the production of vermicompost, biopesticides, and agro-forestry (fruit crop) plantation.

The Women Climate Change Ambassadors are encouraged to each train 30 women farmers in their villages on what they have learned during the training programme. Nitaben has so far trained and motivated 29 other women farmers to adopt better sustainable agriculture practices.

Prior to the training, Nitaben was applying chemical fertiliser and pesticides, which negatively impacted soil health and fertility and reduced biodiversity.

During the training, Nitaben learned how to produce homemade natural agri-input like jivamrit and vermicompost, plant fruit crops on the field boundary, and intercrop the cotton crop with pigeon pea. Using bio-inputs Nitaben has reduced external input costs and seen increased production of cotton. During the cotton season 2023-24, she anticipated seed cotton production of 1,000 kg/acre, increased from 700 kg/acre the previous year.

It is expected that using natural agri-input will generate a gradual increase in useful microorganisms in the soil and thereby increase the soil fertility. The planting of a border fruit crop will improve biodiversity and provide an alternate source of income.

Nitaben now regularly produces and uses homemade natural agri-input. Three of the women farmers trained by Nitaben have also started producing homemade natural agri-input.

RESPONSIBLE BUSINESS CONDUCT

Responsible Business Conduct is vitally important to safeguard workers. It is also necessary for companies to be able to report their corporate sustainability due diligence in order to meet new legislative requirements.

Responsible Business Conduct is an important part of cotton production as it supports all those who are involved in the production of cotton, especially the most vulnerable in the value chain, by ensuring their human rights are respected and protected. Human rights issues can occur at any point in the complex cotton value chain, from the farm or factory to transportation or in-store. Responsible Business Conduct enables CottonConnect and its clients to identify and respond to issues such as labour rights, traceability, transparency, and respond to changing legislation in support of people and the planet.

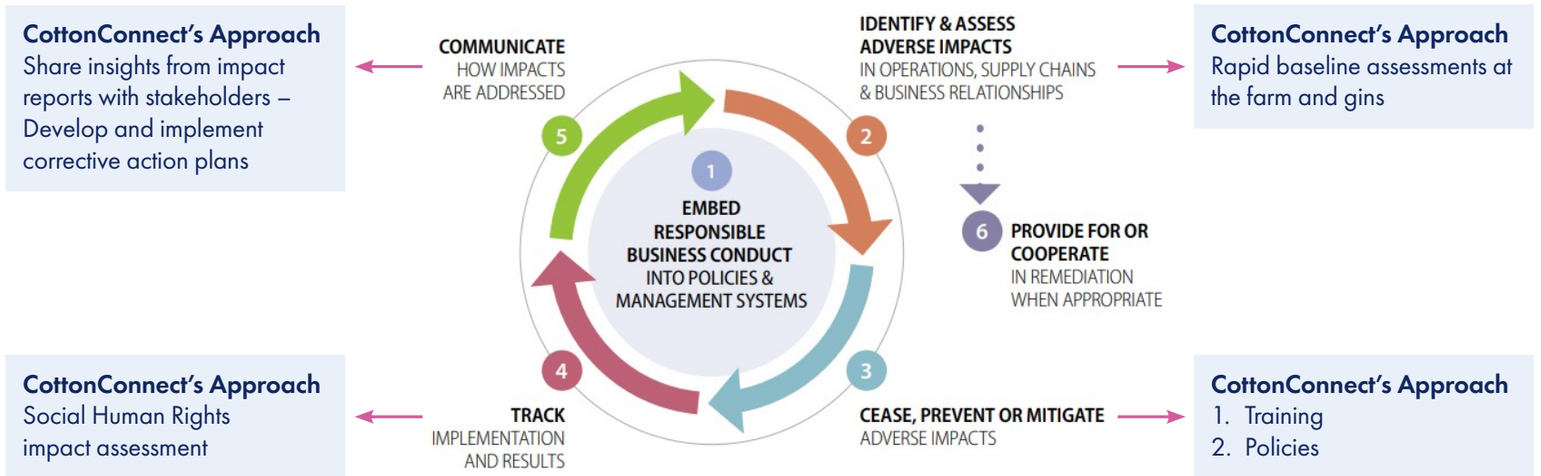
CottonConnect supports brands to meet their corporate sustainability due diligence reporting requirements by ensuring programmes are aligned with legislation and sufficient data is available to clients for reporting about their supply chain due diligence.

It does this by collecting and communicating programme specific data on the on the necessary environmental and social requirements, and providing verifiable results that can support sustainability claims. In 2023-24, CottonConnect continued to deliver against its Responsible Business Conduct roadmap, developed its grievance mechanisms and internal governance procedures, and embedded its approach in the countries that it operates in.

Responsible Business Conduct process

Following the recommendations in the UN Guiding Principles on Business and Human Rights and in the ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy, CottonConnect has created its Responsible Business Conduct process.

FIGURE 1. DUE DILIGENCE PROCESS & SUPPORTING MEASURES



Source: The OECD Guidelines for Multinational Enterprises on Responsible Business Conduct

CONTRIBUTION TO UN SDGS

CottonConnect's programmes increase income and profit from cotton growing for smallholder farmers. (see pages 11 and 37)

The Women in Cotton programme teaches women how to improve livelihoods including running their own microenterprises. (see page 39)

The REEL Cotton Code specifically requires equal pay for work of equal value. It prohibits forced and child labour, and supports enrolling of children into schools. (REEL Cotton Code v3.0) (see page 41)

The Responsible Business for Gins Code of Conduct improves health and safety practices in gins. (see page 26)

CottonConnect's programmes support income growth of low-income smallholder farmers and workers through increased profit and yield. (see page 11 and 37)

The REEL Cotton Code criteria stipulate no discrimination on sex, disability, race, ethnicity, origin, religion or economic or other status. (REEL Cotton Code v3.0)

CottonConnect teaches smallholder farmers about the sustainable management and efficient use of natural resources, e.g. water. (see page 10)

Providing supply chain visibility for brands and retailers to help consumers make informed choices to choose cotton more sustainably grown. (see page 35)

The REEL Cotton Programme reduces field emissions and chemical fertilisers, which contribute to GHG emissions and climate change potential. (see page 29)

Addressing the effects of climate change on cotton cultivation through climate change mitigation pilots, including training women climate ambassadors. (see page 39)

CHALLENGES IN MEASURING IMPACT

Environmental, social, and economic indicators can be used to evaluate the impact of adopting and maintaining sustainable agricultural practices. It is worth noting that some challenges remain for organisations seeking to monitor and evaluate the impact of their sustainability programmes.

1. **Varied results due to weather or climate change**
   Cotton farming is especially vulnerable to extreme weather events such as monsoons and floods or pest attacks which can decimate a crop. Even with the successful adoption of sustainable agricultural practices, other factors can negatively affect the cotton crop, resulting in varying results from year to year.

2. **Data collection**
   Collecting data can be challenging due to the scale of a large programme or the literacy levels of some farmers enrolled in the programme. To achieve accurate data collection in the REEL Cotton Programme, an appropriate amount of farm-level data is collected throughout the season in Farmer Field Books by field executives of the local implementing partners to supplement the year-end impact assessment. The data is then second and third-party verified.

3. **Assessing impact from outcomes**
   While the outcome or short-term result of adopting a certain practice can be measured, there is sometimes a challenge in correlating an outcome to an impact or long-term effect. Assessments such as LCA studies can help with this, for example by calculating how a reduction in fertiliser use can result in reducing acidification potential and climate change potential.

4. **LCA study**
   The inventory data used in the LCA study is considered to be reliable. CottonConnect partnered with a second party to gather sample data from farmers and ginners, which was then verified internally by experts and further validated by a third party. However, the absence of statistical testing to evaluate the significance of differences in inventory data between project and control farms leaves some "uncertainty about the uncertainty."

This powerful image was captured by Sandip Mali, a remarkable colleague who is no longer with us. His passion, kindness, and dedication left a lasting impact on all of us. Though he is deeply missed, his contributions and memories will always remain a part of our journey.

Photo by Sandip Mali

PARTNERSHIPS

Implementing Partners

CottonConnect would like to thank its valuable implementing partners:

India

Self Employed Women's Association (SEWA)

Shree Ram Fibres India Pvt Ltd Hariraj Charitable Trust

Hariraj Charitable Trust

Myrada (CIDORS)

Vasundhara Foundation

Gramin Samassya Mukti Trust

Inter Rural Development Institute (IRDI)

Pakistan

Rural Education and Economic Development Society (REEDS)

Bangladesh

TMSS

CottonConnect also thanks the Cotton Development Board in Bangladesh for its assistance with farmer training in the REEL Cotton Programme in Bangladesh.

Egypt

Elekhlas Cotton

Cotton Research Institute

Farmers

Smallholder farmers are at the heart of CottonConnect's sustainable cotton programmes, and a trusted partnership has developed over the years working with local implementing partners known to the cotton farming communities.

The REEL Cotton Programme was specifically developed with input from farmers and farmer groups in India, and farmers and implementing partners in several countries continue to be consulted in the revision of the REEL Cotton Code.

As part of continuous feedback with farmers, the 2023-24 impact results in this report will be shared with programme farmers through the implementing partners. CottonConnect first piloted a farmer feedback method in 2022, with programme farmers in Madhya Pradesh, India, and Khulna, Bangladesh. Across both locations, the programme farmers found the impact results helpful, identifying areas where they can perform better than conventional farmers and which areas to focus on for better profits, cost savings and yield. The results from last year's impact report (2022-23) were shared with farmers as part of this farmer feedback method.

Clients

CottonConnect is pleased to partner with a number of leading brands and companies from across fashion, retail and manufacturing.

Collaborative platforms

CottonConnect is proud to have been a member of these organisations during 2023-24.

2025 Sustainable Cotton Challenge

Indian Chamber of Commerce

ISEAL Community Member

AMERICAN APPAREL & FOOTWEAR ASSOCIATION

// MEMBER //

SAN Sustainable Agriculture Network

Cascale

Textile Exchange Member

ALLIANCE FOR WATER STEWARDSHIP™

Cool Farm™

Textiles 2030

The REEL Cotton Code is approved as a sustainable standard system for sustainable cotton by the Partnership for Sustainable Textiles. CottonConnect is not a member of the Partnership for Sustainable Textiles.

CottonConnect won the Partnership and Collaboration of the Year: Education and Empowerment Award at the 2024 edie Awards.

CottonConnect won the Small-Medium Enterprise of the Year Award at the 2024 Reuters Sustainability Awards.

CONCLUSION

- REEL Cotton programmes achieved positive results in 2023-24, reducing the use of chemical pesticides, chemical fertilisers, and water, while increasing farmers' yields and incomes. With increased profits, farmers can invest in their farms, enhancing long-term resilience.
- Positive benefits from regenerative agriculture practices are recorded in REEL Regenerative and organic regenerative programmes.
- A LCA study demonstrated the benefits of the sustainable practices outlined by the REEL Cotton Code of Conduct in reducing the negative impact of cotton cultivation on the environment across all impact categories, with a climate change saving potential of 35%.
- Cotton procurement and processing of all REEL Cotton and REEL Regenerative programmes are traced through TraceBale, with an increase in cotton lint being traced in 2023-24.
- Women Climate Change Ambassadors have each trained 30 farmers each, imparting climate change mitigation knowledge to over 1,200 women, confirming the pilot's training model.
- Organic cotton programmes demonstrate the potential for farmers converting to organic farming practices to make profits by reducing input costs and gradually improving yields.
- Regular on-site soil testing is needed to measure the impact of sustainable agriculture practices on improving soil health.

Photo by Kabeer Lal

REEL COTTON THEORY OF CHANGE DIAGRAM

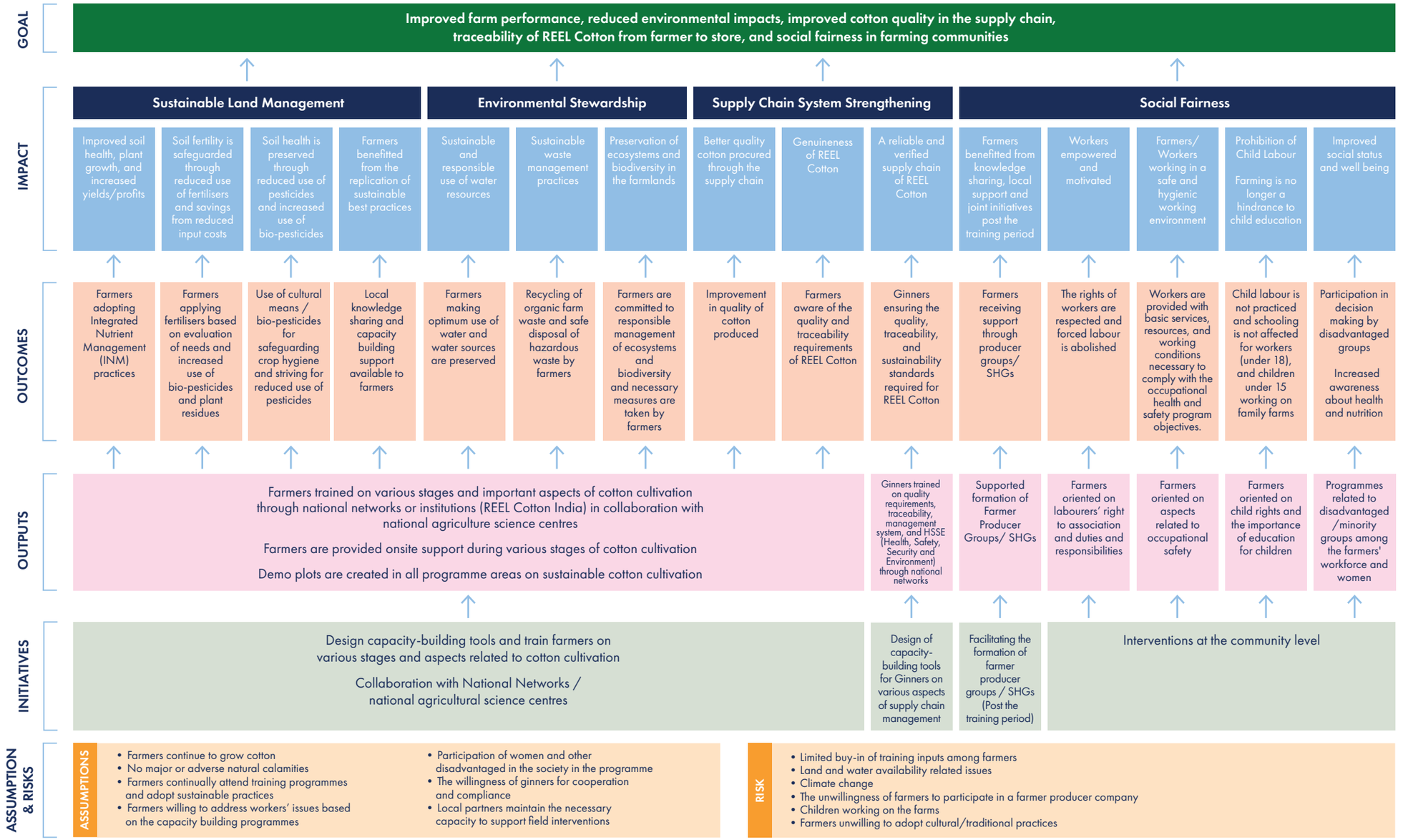


Photo by Kabeer Lal

COTTON CONNECT

CottonConnect is a company with a social purpose to reimagine the cotton supply chains and help textile producers and farmers enjoy better livelihoods.

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