COTTONCONNECT IMPACT REPORT 2023

COTTON CONNECT

REIMAGINING THE FUTURE FOR SUPPLY CHAINS

Contents

REEL Cotton Highlights

Full REEL Cotton Programme results are reported from page 14.

The results of the REEL Cotton Programme in 2022-23 show a reduction in inputs affecting soil health and the environment, compared with control farmers.

Reduced chemical pesticide use by

-17.1%

Reduced chemical fertiliser use by

-14.4%

Reduced water use by

-21.6%

The results show an improvement in programme farmers' income from cotton farming, compared with control farmers.

Increased yield by

+18.5%

Reduced input costs by

-15.0%

Increased profit by

+47.0%

Introduction from CEO

Photo by Prakash Philip

In this report, we're pleased to share the outcomes, impact, and learning from another year of CottonConnect's work advancing sustainable cotton production. We continue to take a holistic approach towards strengthening cotton supply chains and meeting the needs of the textile industry – by supporting producers to sustain and improve their livelihoods, reducing the impact on the environment and climate, and ensuring end-to-end traceability.

Doing less bad is no longer enough if we are to address the impact of climate change across supply chains. We continue to embed regenerative practices into our programmes.

Listening to our stakeholders is critical to ensure our continued relevance and we have again undertaken a materiality review which reflects the views of actors in the supply chain and farmers themselves. We also want to provide a voice to farming communities, with an emphasis on gender equality. As part of this we have published a report on the impact of climate change for female farmers.

We've been encouraged by seeing the ongoing positive impact arising from CottonConnect's programmes in India, Pakistan, Bangladesh, China, and reporting for the first time, Egypt. The REEL Cotton Programme continues to support farmers to reduce the use of water, chemical fertilisers and chemical pesticides, whilst increasing yields and profit.

This year we set goals for REEL Cotton in the areas of Environment and Climate, Traceability, and Social, setting ambitions in these areas to support brands' and manufacturers' ESG goals for cotton and textiles production.

We are broadening KPIs and impact measurement to include climate KPIs and are developing in-house capability to measure the impact of our programmes in reducing Greenhouse Gas (GHG) emissions, via an LCA calculator and using the Cool Farm Tool. With new legislative controls emerging, our verification frameworks will become increasingly critical to everyone involved in the cotton supply chain.

In our organic cotton programmes, as well as supporting farmers to transition to (and maintain) organic cotton practices, we work with our branded partners to help ensure the integrity of their organic cotton supply; this year exceeding their integrity score targets.

Our HSSE programme for gins, an often-overlooked link in the supply chain, has greatly increased health and safety standards for gin workers. Building on this we have launched the first Code of Conduct for the ginning sector and will further strengthen our work in this area with our ginning partners.

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

Our strength has always been in listening to farmers; by directly asking about their needs and priorities, we continue to ensure that our programmes robustly meet their requirements, now and in the future.

Alison Ward
Chief Executive Officer, CottonConnect

Executive Summary

CottonConnect delivers agricultural training programmes to improve the sustainability of cotton production and support farmers' livelihoods. In the cotton growing year 2022-23 CottonConnect trained over 523,516 farmers in sustainable agricultural programmes in India, Pakistan, Bangladesh, China, and Egypt, maintaining positive outcomes during expansion.

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 2022-23 170,250 MT cotton lint was traced through CottonConnect's traceability software tool TraceBale.

REEL COTTON

The results of the REEL Cotton Programme in 2022-23 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 17.1%**
- **Reduced chemical fertiliser use by 14.4%**
- **Reduced water use by 21.6%**
- **Increased yield by 18.5%**
- **Reduced input costs by 15.0%**
- **Increased profit by 47.0%**

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 three-year programme is farmer-led with criteria developed specifically for cotton farmers' needs.

In future impact reports, CottonConnect aims to include LCA results from an in-house LCA calculator supported by Sphera Solutions, Inc, following an in-depth LCA study in 2022 which demonstrated the benefits of the sustainable practices outlined by REEL Cotton Code of Conduct in reducing the negative impact of cotton cultivation on the environment.

REEL REGENERATIVE

In 2022-23 a regenerative cotton pilot was introduced in Gujarat, India, based on the REEL Regenerative Code.

The first year of comprehensive training sessions and demonstrations laid the groundwork for a change in agricultural practices. The preliminary assessment for the first-year highlights substantial progress. Moving to regenerative practices will need additional support for farmers and a longer timeframe to achieve impact.

- **74.7% of farmers embraced practices to enhance biodiversity**
- **10% of farmers changed to preparing and applying homemade bio-pesticides**
- **12% increase in farm animals receiving vaccinations compared to baseline assessments**
- **23% reduction in the use of chemical fertilisers by project farmers compared to control farmers**
- **23% lower carbon emissions per acre from the project farms compared to control farms**

ORGANIC COTTON

CottonConnect's Organic Cotton Farmer Training Programme supports farmers on a three to four year transition from conventional cotton growing to organic cotton practices.

In 2022-23 aggregated results of organic cotton programmes show:

- **100% of farmers adopted organic pest management and soil fertility management practices**
- **% of farmers who adopted intercropping increased from 86% to 97%**
- **% of farmers who adopted water efficiency practices increased from 57% to 98%**

In addition, CottonConnect supported brands in sourcing authentic organic cotton via careful forecasting, developing partnerships between brands and farm groups, testing for GM contamination and providing traceability via the TraceBale system. In 2022-23 CottonConnect connected 2,031 MT organic cotton lint into the market as traced through TraceBale, and exceeded its customers' target organic integrity scores, with an aggregated score across programmes of 96.2% organic cotton.

HSSE (HEALTH, SAFETY, SECURITY & ENVIRONMENT) 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.

Aggregated results from HSSE Gin programmes in India, Pakistan, Bangladesh, and China in 2022-23 show:

- **Compliance with safety aspects increased from 39% to 87%**
- **Adoption of precautionary measures increased from 63% to 79%**
- **Use of Personal Protective Equipment (PPE) by gin workers increased from 59% to 96%**
- **Hygiene, sanitation, and drinking water for gin workers increased from 55% to 91%**

FINDINGS

- REEL Cotton programmes achieved positive results in 2022-23, reducing the use of chemical pesticides, chemical fertilisers and water, while increasing farmers' yields and incomes. The efficacy of the programme continued through expansion in both size of projects and new regions.
- A preliminary first year assessment of the REEL Regenerative pilot shows significant progress in adoption of some regenerative agricultural practices, and measurable lower carbon emissions per acre, while some practices take time to adopt.
- Traceability of sustainably produced cotton has been maintained through expansion of projects with an increase in cotton lint being traced through TraceBale.
- The HSSE programme for gins is delivering significant improvements in health and safety practices for gin workers.
- Pilots supporting women in cotton farming in relation to climate change adaptation, entrepreneurship and women's rights show promising signs to expand further.
- Further LCA calculation and GHG emissions measurement is needed and planned to assess the environmental impact of the outcomes of programmes.

Overview of CottonConnect

PROGRAMMES

Programmes reporting 2022-23 results in this report: REEL Cotton; Women in Cotton; Organic Cotton Farmer Training Programme; REEL Regenerative Pilot; HSSE (Health and Safety) for Gins

Programmes underway but not reporting 2022-23 results in this report: REEL Linen

COUNTRIES

Location of programmes reporting 2022-23 results in this report: India, Pakistan, Bangladesh, China, Egypt

FARMERS

Number of farmers trained in 2022-23:

523,516

Total farmers

Traceable fibres TraceBale volume in 2022-23:

170,250

MT lint cotton

FOCUS AREAS

Environment

Climate

Livelihoods

Gender

Context

Global fibre production increased to a record 116 million tonnes in 2022, up from 112 million tonnes in 2021, after a slight decline in 2020 due to the COVID-19 pandemic. Global fibre production per person has also increased, from 8.3 kilograms per person in 1975 to 14.6 kilograms per person in 2022.[1]

CottonConnect defines sustainable cotton as cotton that has been produced using farming practices which minimise environmental impact, such as by reducing the use of water, chemical fertilisers and pesticides, and improve the livelihoods of the cotton farmers through increased income and social fairness.

To continue its practice of listening and learning from farm communities, in 2023 CottonConnect conducted a survey amongst farmers, implementing partners, ginners, and employees in India, Pakistan, Bangladesh, and China. The survey asked what they considered to be the most important environmental, social, and economic issue with regard to sustainable cotton and sustainable cotton supply chains.

- **Soil health has become the most important environmental factor for sustainable cotton, increasing from third place in a similar survey conducted in December 2020, overtaking climate change and chemical use.**
- **Health, hygiene and safety remains the most important social factor, with children's rights/labour rising to second place, from fifth place in 2020.**
- **Cotton market price remains the most important economic factor, with farmer debt rising to second place, from third place in 2020.**

When it comes to sustainable textiles, CottonConnect's assessment of brands' and manufacturers' ESG goals identified the top four goals: sourcing sustainable raw materials; climate action and emissions reduction; fair labour; and circularity.

This shows that in addition to sustainable and responsible raw material production, there is an increasing interest in the re-use of materials through circular use. Designers and manufacturers are considering how to incorporate recycled fibres and alternative fibres such hemp.

Several markets are affected by new and upcoming legislation and mandatory reporting standards affecting sustainably produced textiles. EU legislative initiatives, some which came into effect in 2023 and others being proposed, introduce restrictions on how companies and other market actors can make consumer-facing environmental or sustainability claims. These restrictions will have direct implications for how sustainability standards and codes approach the claims they allow in the EU marketplace.

Some of the new legislation contains requirements on human rights. As continuous improvement in this area, CottonConnect has conducted a Human Rights Due Diligence assessment for the countries in which it operates and has developed an enhanced framework and policy.

1. Materials Market Report, Textile Exchange, December 2023

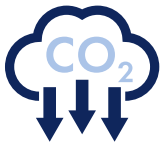
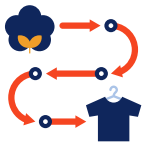
CottonConnect's goals for environment and climate, traceability, and social

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.

Using its model of connecting sustainable cotton directly into customers' supply chains, traced through its proprietary TraceBale software tool, CottonConnect is aiming for almost complete traceability of REEL Cotton by 2025. This will increase transparency of the cotton supply chain and support customers' claims of sustainably produced cotton, meeting relevant claims legislation.

Progress on the goals will be measured annually from the cotton production year 2023-24 onwards, and reported from the Impact Report 2024.

		GOAL
Environment and Climate		**GHG EMISSIONS** Reduce greenhouse gas emissions for REEL Cotton by 50% by 2030 (from the baseline year 2017)
		**BIODIVERSITY** More than 90% of REEL Cotton farmers are trained to adopt regenerative practices by 2030
		**SOIL HEALTH** 100% of REEL Cotton farmers improve soil health by 2030
Traceability		**TRACEABILITY** 100% of REEL Cotton is traceable by 2025
Social		**SMALLHOLDER LIVELIHOODS** Increase the net income and resilience in a sustainable manner for one million cotton farmers and workers by 2030
		**WOMEN'S EMPOWERMENT** 500,000 women taken part in Women in Cotton programmes by 2030

How farmer and industry needs inform CottonConnect's goals

EXTERNAL NEEDS → **INFORM** → **OPERATIONS** → **ACHIEVE** → **GOALS**

Farmers: Priorities from REEL Cotton stakeholder survey e.g. soil health, climate change

Brands: Brands' ESG goals e.g. raw material sourcing, GHG emissions

Regulators: Legislation on sustainable fibre production, claims, and HRDD

Industry: e.g. Textile Exchange Climate+ strategy

'Reimagining the future of supply chains' strategy including:

- Agricultural training programmes – REEL Cotton, REEL Linen, REEL Regenerative, Organic, BCI
- Responsible Gins Code and training programme
- TraceBale
- Supply chain mapping and services
- Innovation

GHG Emissions: Reduce greenhouse gas emissions for REEL Cotton by 50% by 2030

Biodiversity: More than 90% of REEL Cotton farmers trained to adopt regenerative practices by 2030

Soil Health: 100% of REEL Cotton farmers improve soil health by 2030

Traceability: 100% of REEL Cotton is traceable by 2025

Smallholder livelihoods: Increase net income and resilience for one million cotton farmers and workers by 2030

Women's empowerment: 500,000 women taken part in Women in Cotton programmes by 2030

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 profit due to higher yield and reduced input costs which can have a significant impact on profit means more income 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.

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.

Impact Results 2022-2023
(April 2022-March 2023)

REEL Cotton results

REEL Cotton results for 2022-23 aggregated for all REEL Cotton programmes in India, Pakistan, Bangladesh, China, and Egypt.

Increased yield by
+18.5%

Reduced input costs by
-15.0%

Increased profit by
+47.0%

Reduced chemical pesticide use by
-17.1%

Reduced chemical fertiliser use by
-14.4%

Reduced water use by
-21.6%

KPIs measurement units: 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.

How the impact results demonstrate the Theory of Change

Sustainable Land Management

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

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

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

Farmers benefitted from the replication of sustainable best practices

Environmental Stewardship

Sustainable and responsible use of water resources

Sustainable waste management practices

Preservation of ecosystems and biodiversity in the farmlands

Yield increased

+18.5%

Chemical fertiliser use reduced

-14.4%

Chemical pesticide use reduced

-17.1%

Water use reduced

-21.6%

Profit increased

+47.0%

Input costs reduced

-15.0%

See page 47 for the complete REEL Cotton Theory of Change

Analysis

YIELD
+18.5%

A learning from last year, stated in the Impact Report 2022, was: "*The data suggest that there is room to further improve the yield. Combined innovation and linkages to better and high yielding seed varieties may help farmers improve yield, income and profitability levels.*" In 2022-23 CottonConnect did use high yielding varieties with efficient use of water and other inputs. Also, this year favourable conditions prevailed with less pest attacks in comparison to previous years.

WATER
-21.6%

The results show an increase in the reduction of water use. This is due to the fact that some programmes have been able to decrease water use further, due to timely rainfall and promoting alternative furrow irrigation. However, other programmes in different locations are drought prone and demand more water.

CHEMICAL PESTICIDES
-17.1%

The results show a reduction in chemical pesticide use overall. In some programmes it was the first year of training and when the conditions are favourable, the first year always witnesses a rapid reduction. However, one region experienced medium to heavy rainfall from July to September and very little rain from September to April during the 2022-23 crop season. These unusual climatic conditions resulted in a severe infestation of sucking pests at various stages of the crop cycle, which compelled farmers in the surveyed region to increase their pesticide usage.

CHEMICAL FERTILISERS
-14.4%

The results show a reduction in the use of chemical fertilisers with some of the programmes exceeding their target on reducing fertilisers. However, some programmes are in their first year and it will take time for farmers to adopt the suggested practices.

INPUT COSTS
-15.0%

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
+47.0%

The aggregated figures show an increase in profit. Lower input costs coupled with higher yield greatly increased the profit for farmers in some regions.

Analysis continued

LIMITATIONS OF THE ANALYSIS

There are multiple methods available for the estimation of impact numbers. The globally accepted methods were followed in estimating the impact. If a different methodology is used to assess the impact, there could be slight variations in the impact numbers.

The results are provided at a global level. The specific interventions and relevant outcomes at regional levels are not specifically mentioned in the above results.

There is scope for assessing the impact under more KPIs. Additional indicators to measure impact are planned to be introduced.

In the Impact Report 2022, a simple average method was used to calculate aggregated impact numbers. This year, the weighted average method (based on the farmer numbers) was used to assess the programme impact. This weighted average method will be used in future years which will allow for year-on-year comparison.

HOW THE CONTEXT MAY AFFECT THE RESULTS

Despite using the same agricultural methods, the context may affect the yield of cotton grown. For example, favourable conditions resulted in higher yields in Bangladesh, while the ongoing recovery from the floods in Pakistan in 2022 resulted in lower yields.

Unseasonal rainfall impacted one region which experienced medium to heavy rainfall from July to September and very little rain from September to April during the 2022-23 crop season. These unusual climatic conditions resulted in a severe infestation of sucking pests such as thrips, whiteflies, and aphids and sooty mould (fungus) at various stages of the crop cycle, which compelled farmers in the surveyed region to increase their pesticide usage.

In another region, the labour cost for cotton picking was increased substantially and, as project farmers had higher yields, it resulted in higher input costs.

RECOMMENDATIONS

In 2022 CottonConnect commissioned a Life Cycle Assessment (LCA) study, available in the Impact Report 2022. The LCA study assessed the potential reduction in environmental impact of cotton farmed and ginned by smallholder farmers enrolled in the REEL Cotton Programme. The results of the study demonstrated the benefits of the sustainable practices outlined by REEL Cotton Code of Conduct 3.0 in reducing the negative impact of cotton cultivation on the environment. To fully understand the impact of the REEL Cotton Programme outcomes, it is recommended to regularly assess via an LCA study.

In future impact reports, CottonConnect aims to include LCA results from an in-house LCA calculator supported by Sphera Solutions, Inc.

NAME: **RAJESH KANTI PATEL**

LOCATION: **GUJARAT, INDIA**

DRIP IRRIGATION SAVES WATER AND REDUCES COSTS

Rajesh Kanti Patel cultivates REEL Cotton on 18.2 acres of land in a village in Vadodara District, Gujarat, India. Before joining the REEL Cotton Programme, Rajesh used flood irrigation to water his crops without understanding how much water was needed. The excessive use of water use caused soil erosion and salinity, affecting the crop production. Using flood irrigation after applying fertiliser also reduced the effectiveness of the fertiliser.

As part of the REEL Cotton Programme, Rajesh received training on sustainable agriculture practices and a demonstration of the drip irrigation method as a sustainable water use technique. He also took part in a farmer group meeting during a field visit.

Since the training, Rajesh is now using the drip irrigation system which is the most efficient way to irrigate the crop, saving water and electricity.

Using the drip irrigation method, Rajesh applies fertiliser with the drip irrigation so the crop receives regular water and nutrients directly into the root system. This increases the efficiency of the fertiliser, meaning less needs to be applied. He can also reduce the use of chemicals like herbicide as there are fewer weeds compared with flood irrigation.

This new method reduces input costs and labour costs, as there is less labour needed for weeding and spraying chemicals. Rajesh has benefitted from changing to drip irrigation by improved economic conditions and is well respected in the village for his farming methods.

" In Spring 2022, we embarked on a unique collaboration with CottonConnect's REEL programme to work alongside our Egyptian cotton farmers. This partnership is a first for Egypt and aims to train our cotton farmers on sustainable farming practices. Working with CottonConnect enables us to trace the REEL Cotton from farm to product, support the resilience of our cotton farmers, and to help preserve our precious planet."

CAT LEE, HEAD OF ETHICS AND SUSTAINABILITY, THE WHITE COMPANY

Methodology

DATA COLLECTION

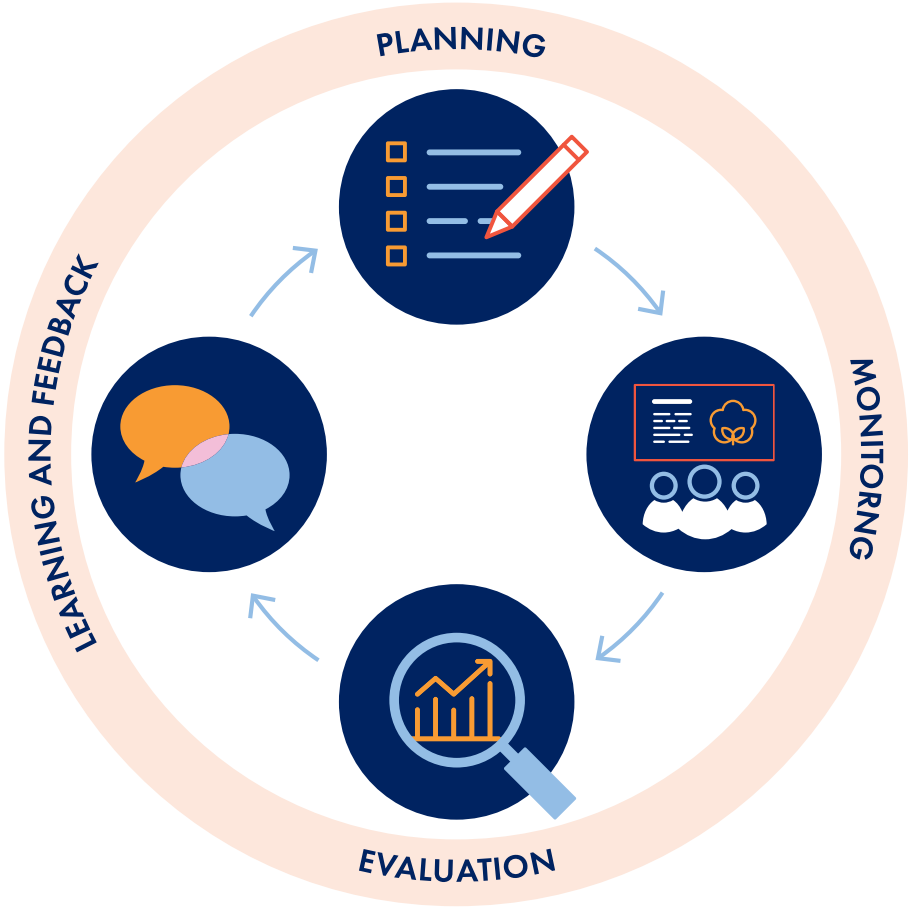
- **Baseline:** Basic information such as demographic, agronomic, and socio-economic details of the previous season is collected by the local implementing partner to analyse the need of the group of farmers. The baseline is conducted only once in the first year of the three-year programme.

- **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.

FLOCERT
assuring fairness

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 the 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 interviews with local partner staff to assess the overall programme knowledge, and broader discussions with CottonConnect's local team.

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.

" Celebrating its 10th anniversary, the Primark Sustainable Cotton Programme is a partnership between Primark, CottonConnect and RUDI, part of the Self-Employed Women's Association, as well as other local partners REEDS, TMSS and MYRADA, and has evolved into the largest partnership of its kind for a single fashion retailer. The programme supports the livelihoods of the farmers involved by equipping them with the knowledge and skills to grow cotton using less chemical fertilisers and pesticides, and reduced reliance on water. I'm proud that we've now trained nearly 300,000 farmers across India, Bangladesh and Pakistan through this programme and look forward to our continued partnership with CottonConnect."

KERRY CONWAY, PRIMARK SUSTAINABLE COTTON PROGRAMME LEAD, PRIMARK

REEL Regenerative

CULTIVATING CHANGE: THE JOURNEY TOWARD REGENERATIVE AGRICULTURE

In 2021 CottonConnect introduced the REEL Regenerative Code, developing its flagship REEL Cotton Code to enhance agrobiodiversity, enrich soils, optimise water management, and develop ecosystems. In 2022-23 a regenerative cotton pilot was introduced across three villages in the Narmada district of Gujarat state, to train 354 farmers. The aim is to impart regenerative agronomic knowledge and empower farmers to cultivate cotton using economically viable, environmentally sustainable, and socially acceptable principles. This comprehensive training and awareness-generating initiative was delivered through a combination of methods through a dedicated team.

The first year of comprehensive training sessions and demonstrations laid the groundwork for a shift in agricultural practices. The preliminary assessment for the first year highlights substantial progress.

- **74.7% of farmers embraced practices to enhance biodiversity, including initiatives such as installing bird perches and identifying/preserving beneficial insects.**
- **10% of farmers shifted to preparing and applying homemade bio-pesticides, replacing traditional chemical alternatives.**
- **12% increase in farm animals receiving vaccinations compared to baseline assessments, supporting animal welfare.**
- **23% reduction in the use of chemical fertilisers by project farmers compared to control farmers.**

Employing the Cool Farm Tool, CottonConnect analysed the project's effectiveness in curbing GHG emissions. The assessment showed that carbon emissions per acre from the project farms were approximately 23% lower than those from the control farms. This signifies a substantial reduction in the environmental footprint of the regenerative agriculture initiative.

The second year of the pilot will focus on fostering increased adoption of regenerative practices within farming communities. CottonConnect is committed to empowering farmers with knowledge and resources in order to achieve a future where sustainable agriculture becomes the norm, benefiting the communities involved and contributing to a global shift towards regenerative practices. Regenerative agriculture involves implementing a new farming system which takes time to adopt.

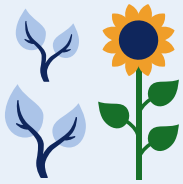
Organic Cotton

CottonConnect's Organic Cotton Farmer Training Programme supports farmers on a three to four year transition from conventional to organic cotton growing practices. The detailed farmer training modules cover all the aspects of organic cotton cultivation, the certification process, health and safety of the farmers, organic integrity and ICS (Internal Control System) documentation.

Preparing and using farm bio-inputs instead of chemical pesticides and fertilisers reduces expenditure and brings benefits for soil health and biodiversity.

In 2022-23, 100% of farmers in CottonConnect's organic cotton programmes adopted organic pest management and soil fertility management practices.

IMPORTANCE OF INTERCROPPING IN ORGANIC COTTON CULTIVATION



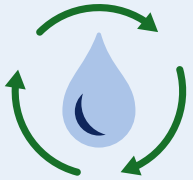
% of farmers who adopted intercropping increased from 86% to

97%

Intercropping is the practice of planting crops in between the main crop and is used as a preventative approach in organic cotton cultivation. The benefits include improving soil cover, maintaining the soil moisture, reducing soil erosion, which in turn helps in improving soil biodiversity and microbial activity in the soil, and reducing weeds. Intercrops like corn, mung bean, soybean and cowpea can effectively trap and reduce pest abundance on organic cotton.

The intercrops also act as an additional source of income for the farmer, cultivating fibre and food on the same land, and the risk of crop failure is divided. Intercrops like pigeon pea and other leguminous crops act as a source of nitrogenn for the soil, as well as increasing organic matter in the soil, improving soil structure and biodiversity.

IMPORTANCE OF WATER EFFICIENCY IN ORGANIC COTTON CULTIVATION



% of farmers who adopted water efficiency practices increased from 57% to

98%

Water efficiency practices reduce water wastage without compromising on the water requirement of the plants. CottonConnect encourages farmers to adopt improved irrigation techniques like drip irrigation and alternate furrow irrigation to avoid water waste and soil erosion. Drip irrigation also helps in reducing the weed growth in the farm. In the organic cotton programmes, most of the cotton area is under rainfed farming, so formal irrigation is given mainly during the dry spell. It is important to note that drip irrigation requires higher investment and hence depends on the willingness and circumstances of the farmer to invest.

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 involves 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 2022-23 CottonConnect exceeded its customers' target organic integrity scores, with an aggregated score across programmes of **96.2% organic cotton.**

NAME: **SANTUBAI KUWARSINGH**

LOCATION: **MADHYA PRADESH, INDIA**

GO ORGANIC – THE NEW MANTRA

Santubai Kuwarsingh comes from Dhar District in Madhya Pradesh, and owns two hectares of land where she and her family cultivate cotton on 1.5 hectares. Santubai was interested in adopting organic farming, and after enrolling in CottonConnect's Organic Cotton Farmer Training Programme she shared information and raised awareness of organic farming among her fellow farmers.

At first, it was challenging to convince other farmers to give up their tried and tested methods of farming producing good yields, and adopt organic methods which would initially lead to a drop in yield, which would later increase. It took considerable time, effort and explanation to make them understand the value of this approach. Santubai eventually encouraged them to start with just half an acre of land to give organic farming a try.

One of the compelling reasons why Santubai strongly encourages organic farming is because she has seen the remarkable return of biodiversity, especially earthworms, in her fields. It has been a long time since earthworms had been seen, because the use of chemical fertilisers and pesticides had rendered the soil lifeless. Witnessing the resurgence of these earthworms brings her immense joy. As a child, she recalls seeing them in the fields, and now, thanks to organic farming, her fields are once again teeming with life.

Santubai believes that a farming method that encourages biodiversity must be good for the soil, and therefore must be good for all. This is why her mission is to educate everyone in the neighbouring villages to adopt organic farming.

Improving sustainability of cotton 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 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.

The Code is the result of six years of partnership with over 100 gins in India, Pakistan, and Bangladesh, working together to assess and address potential issues and develop a framework for improvement. CottonConnect has been working with its ginning partners on health and safety (HSSE) practices and improvement programmes, raising awareness among gin owners, supervisors, and workers about good practices and environmentally sustainable operations.

Ginning is a simple but critical mechanical process that links the textile supply chain between the farmer and the spinner. It is the process of separating the cotton boll from the seed and stalk using specialist machinery.

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, and China in 2022-23

Compliance with safety aspects **increased** from 39% to

87%

Adoption of precautionary measures **increased** from 63% to

79%

Use of Personal Protective Equipment (PPE) by gin workers **increased** from 59% to

96%

Hygiene, sanitation, and drinking water for gin workers **increased** from 55% to

91%

Baseline is aggregate of baseline measurements recorded from HSSE programmes in 2022-23. During 2022-23 as a result of programme expansion and changes, some gins were added or removed from the programme and hence the baseline and endline was recalculated.

Impact on environment and climate

CottonConnect's Women Climate Change Ambassadors Programme

Recognising the pivotal role of women in cotton farming and the pressing need to address climate change, this initiative, set up in 2022, aims to empower women farmers as change leaders in climate resilience. It focuses on capacity building in climate-smart agriculture practices, providing participants with knowledge and awareness of farming practices to adapt to the impacts of climate change.

Between September 2022 and March 2023, 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 content covers various aspects, including an introduction to climate change, its effects on agriculture and cotton productivity, the role of gender in climate change, and awareness of climate-smart agricultural practices.

A follow-up assessment showed that the programme's training greatly increased awareness of climate-related concepts among respondents. The overall awareness of the definitions of Global Warming, Weather Change, and Climate Change increased from 2% to 98% after training.

There was also a significant increase in awareness regarding the broad impacts and causes of climate change (1% to 73%) and sources of greenhouse gases (from 36% to 62%).

One of the key aspects of the programme is educating the women ambassadors on climate-smart, resilient farming practices. The post-training assessment shows that knowledge and awareness of these practices have risen from 46% to 70%. However, awareness of the impact of runoff and groundwater recharge, relatively new to the participants, remained low even in the post-training assessment.

With the model of the climate change ambassadors training more women, the pilot has great potential to continue as an ongoing programme.

Awareness of the definitions of Global Warming, Weather Change, and Climate Change **increased** from 2% to

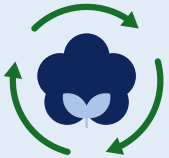
98%

Awareness regarding the broad impacts and causes of climate change **increased** from 1% to

73%

Awareness regarding sources of greenhouse gases **increased** from 36% to

62%



Knowledge of climate-smart/ resilient farming practices **increased** from 46% to

70%

Soil health

Good soil health, vital for the cultivation of cotton crops, has become the most important environmental factor in sustainable cotton production, overtaking climate change and chemical use, according to CottonConnect's 2023 stakeholder survey.

CottonConnect conducted a survey amongst farmers, implementing partners, ginners, and employees, in India, Pakistan, Bangladesh, and China, with a total of 106 respondents.

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 biofertilisers 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.

Mohamed Ramadan, a smallholder farmer in Egypt, has been cultivating cotton on one acre of land for over 30 years. Since joining the REEL Cotton Programme, he has started using biopesticides based on agro-ecosystem analysis on the recommendation of the agronomist. He has applied chemical pesticides only five times this season compared with eight times the previous season. This promotes the natural enemies of pests and increases biodiversity, as well as saving him money. Mohamed has reduced the use of chemical pesticides by about 850ml and is also expecting a higher yield this season, due to his timely use of inputs.

A FOCUS ON NUTRIENTS FOR SOIL AND CROPS INCREASES COTTON YIELD

Prior to enrolling in the REEL Cotton Programme, Gaurang Jayanti Mahant, a farmer in a small village in Vadodara District, Gujarat, had limited knowledge about the scientific requirements for cotton cultivation. He relied heavily on excessive chemical fertilisers which had a detrimental effect on his land, leading to a deterioration of the topsoil. It also caused a loss of fertility, reduced the population of micro-organisms, and increased the soil salinity and hardness. The use of highly toxic chemical pesticides further worsened the situation, deteriorating the cotton quality and production, whilst increasing input costs. The cotton yield during this period was 900-1,000 kg/acre.

Feeling disheartened and unsure of how to improve his land's condition, Gaurang sought help and guidance from the REEL Cotton Programme, having met the programme field team, who surveyed and personally reached out to farmers in selected villages.

After joining the programme, Gaurang received support from the project team through various farmer training programmes that focussed on integrating crop management techniques and sustainable agriculture practices. He also participated in demonstrations of management techniques to incorporate various nutrients like mixed micronutrients, zinc micronutrients and water-soluble fertiliser (19:19:19) in his field. Small farmer group meetings and interactions were conducted during field visits to help him understand the details of the practices.

Since understanding the importance of providing his crops with the appropriate nutrients, Gaurang has made a switch to organic fertilisers, which has not only improved the quality of his cotton but has also yielded a substantial cost saving of over 15%. His cotton yield has increased by more than 20%. These practices provided a notable turnaround for Gaurang, far greater than he imagined possible in a short period of time.

NAME: **GAURANG JAYANTI MAHANT**

LOCATION: **GUJARAT, INDIA**

Impact on livelihoods and gender

Women in Cotton

CottonConnect's Women in Cotton programme has identified ways to improve farmer well-being and livelihoods and to drive sustainable and efficient cotton production. The 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.

Through the programme, the women learn skills that improve their financial condition and living standards and give their children better opportunities, especially in education and health.

Over 240,000 women have already participated in Women in Cotton programmes, contributing towards achieving the goal to train 500,000 women by 2030.

- **Women trained in Women in Cotton programmes: 2022-23: 241,753**
- **Women trained in Women in Cotton programmes 2021-22: approximately 144,000**
- **In 2022-23 about 98,000 additional women were enrolled in the Women in Cotton programme due to the expansion of programmes in India and Bangladesh.**

In 2023 CottonConnect conducted a research study, interviewing over 100 women programme farmers, programme partners, and experts across India, Pakistan, and Bangladesh. This research aimed to understand how climate change affects women cotton farmers and assess the effectiveness of interventions in mitigating its impact.

Key findings show that extreme weather exacerbated by climate change negatively affects biodiversity, crop yield and pest control; and that women's health and well-being is adversely affected but that they still shoulder more of the burden for the farm and the home, regardless of their own health issues or time limitations. It also shows that empowering female farmers through training in sustainable agriculture and climate change awareness is helping to create positive change.

The full report is available to download at cottonconnect.org/resources.

FROM STRUGGLING ARTISAN TO SUCCESSFUL ENTREPRENEUR

Bharawan Bibi lives in Bahawalpur in the Punjab province in Pakistan, and is enrolled in CottonConnect's Women in Cotton programme. As well as being involved in cotton production, Bharawan is a skilled artisan using traditional basketry and weaving skills to create delicate handicrafts like breadben, baskets, and fans.

Bharawan wished to sell her handicrafts to generate additional income for her family but faced a number of challenges. The isolation of her village coupled with limited access to resources made it difficult for her to reach a broader market. The fluctuating prices of raw materials and the lack of financial support added to her struggles.

The Women in Cotton programme supports women like Bharawan who have the talent but lack the means to scale up their businesses. As part of the Rural Women Economic Empowerment project, Bharawan was provided with a grant of 20,000 PKR (56 GBP) to scale up her business. She invested the funds wisely, procuring high-quality materials to enhance the durability of her handicrafts. The programme's training also increased her knowledge about market trends, product diversification, and even basic financial management.

Bharawan's business now generates profit of 7,000 to 10,000 PKR (20-28 GBP) per month, enabling her to meet her children's domestic and educational needs, contribute to the household's income and become involved in household decision-making. With better market linkages to attract customers from nearby villages and even urban centres, her thriving business has not only improved her family's living conditions but also had a ripple effect, benefiting the entire community.

NAME: **BHARAWAN BIBI**

LOCATION: **PUNJAB, PAKISTAN**

Training women in income generating activities and income diversification

In 2022 CottonConnect launched a pilot programme in Bangladesh called Women Entrepreneurship Development Programme (WEDev). The programme 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.

The programme trained 50 aspiring women entrepreneurs in Chuadanga, Kushtia, and Meherpur in Bangladesh, assisting them in improving the technical knowledge of enterprise development, developing market opportunities, building leadership, and as well as a variety of topics related to gender equality. To identify potential business opportunities for women's entrepreneurship development a scoping exercise was conducted, and based on the results, the following five trades were selected:

Seedling and Sapling

12 women entrepreneurs

Soil Testing

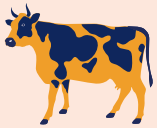
7 women entrepreneurs

Input Shops

12 women entrepreneurs

Vermi-compost

6 women entrepreneurs



Cattle Rearing

13 women entrepreneurs

In order to support the women establish their small enterprises, they were given some initial funds according to their individual needs and business plan, which they each developed under close supervision of project staff. Regular networking gatherings and partnerships have also been established with local government representatives, community leaders, business figures, input suppliers, cotton farmers, gin operators, retailers, NGOs, and corporate entities.

At the end of the first year, there was a transformative shift brought about by the WEDev project in the lives of the 50 women. Each of the beneficiaries had acquired the self-assurance to invest in and expand their respective enterprises. These opportunities have instilled a strong sense of purpose and determination in these women. Almost all of the 50 women who participated in the WEDev project have grown into empowered, confident entrepreneurs, running their businesses almost entirely on their own.

"My whole life, I had dreamt of being educated and independent, but my parents married me off at an early age, which stood in the way of fulfilling that dream. Thanks to the WEDev project, I received training in vermicompost production, business development, and even gender awareness. At the same time, with the support of the WEDev project, I gained the confidence to build and further expand my vermicompost production. And now I earn 8,500 BDT (GBP 61) per month."
Beauty Khatun, Chuadanga, Bangladesh

Gender-based violence

The proportion of women working in the agricultural labour force is growing fast. Despite their invaluable contribution, too many women in the cotton farming industry face exploitation and abuse. A combination of gender inequality, poor job security, power imbalances and low wages leaves thousands of women vulnerable to labour abuse, modern slavery, and gender-based violence.

In 2022 CottonConnect implemented six-month pilot programmes focusing on empowering women cotton farmers and developing their agency against gender-based violence.

The programmes were delivered to women farmers in selected districts across the three countries:

- **604 women in Chuadanga, Kushtia, and Mehepur in Bangladesh**
- **601 women in the Patan district of Gujarat state in India**
- **602 women in the Rajanpur district of the Punjab province in Pakistan**

Through awareness campaigns, training sessions, individual and family counselling, and group sessions and public meetings, the programme provided knowledge in the areas of:

- **Awareness of violence against women and girls**
- **Intimate partner violence**
- **Gender-based violence outside the family**
- **Gender-based violence prevention and redressal mechanisms**

A baseline and endline assessment was conducted, with the endline findings showing that across all three countries, for most of the indicators, women showed increased awareness of violence against women and girls, depicting an improved understanding of the forms of violence, its various approaches and categories. There was a sharp improvement from baseline to endline across all the sections including understanding violence against women and girls and intimate partner violence.

However, for some of the indicators, there is a decline from baseline to endline for India and Pakistan. The system of patriarchy has been in practice for generations in these countries, and this remains entrenched in the culture. Increased awareness levels for most of the indicators from baseline to endline are evidence of the fact that the process of change has begun.

As trusted members of the community, CottonConnect is well-placed to have some of these more difficult conversations in the community.

In the first phase, the focus was on creating awareness of forms of violence including intimate partner violence and redressal mechanisms. However, despite improvements from the baseline, there is still scope for further improvements in awareness levels among women, especially on community redressal mechanisms.

The next phase should focus on increasing women's confidence so that they are willing to talk about the difficulties they are facing and know how to seek, and find support.

Embedding human rights

Human Rights Due Diligence (HRDD) 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. HRDD 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.

In line with its 'Reimagining the future for supply chains' strategy, CottonConnect is working with cotton farming communities to embed respect for human rights across the countries that it operates in, both within its own operations and the wider value chain.

At the start of 2023, CottonConnect conducted a full review of its human rights programme including the salient risks, policies and procedures, and published a Global Human Rights Policy. The CottonConnect Human Rights Due Diligence framework is based on the UN Guiding Principles on Business and Human Rights and the OECD Guidelines for Multinational Enterprises.

The most salient risks were identified as child labour, gender discrimination, decent wages/living wages, health and safety, climate change, water management, water, and sanitation and forced labour. Working with external advisors, CottonConnect is continuing to deliver against its HRDD roadmap, develop its grievance mechanisms and internal governance procedures and embed its HRDD approach in the countries that it operates in.

Impact on responsible supply chains

Impact on responsible supply chains

INCREASING THE TEXTILE INDUSTRY'S USE OF SUSTAINABLY PRODUCED COTTON

In September 2023 Textile Exchange updated the Preferred Fiber and Material Matrix (PFMM), an interactive tool to help brands to make informed material sourcing decisions. The PFMM includes the REEL Cotton Code and REEL Regenerative Code. CottonConnect contributed to this resource by providing evidence of requirements and impact data for REEL Cotton production for the PFMM's six impact areas: climate and greenhouse gases, soil health and land management, chemicals and toxicity, water use and pollution, human rights, waste, and animal welfare.

CottonConnect has also contributed to collaborative industry efforts to determine the relevant indicators to measure for sustainable cotton, as part of the Sustainable Apparel Coalition's MSI Methodology Cotton Expert Team.

ADVANCING DIGITAL AND PHYSICAL TRACEABILITY THROUGH TRACEBALE AND HAELIXA PARTNERSHIP

During the year 2022-23 CottonConnect developed partnerships to explore the use of new technologies in the areas of traceability and climate change mitigation. Announced in 2023, these partnerships will contribute to the knowledge base for improving traceability and information systems, benefitting the whole cotton industry.

CottonConnect and Haelixa joined forces to deliver comprehensive traceability around cotton for the first time, starting with yarn from their pilot project in Rajasthan and Punjab, India. Using CottonConnect's digital traceability platform TraceBale and Haelixa's DNA marker, it will allow cotton fibres to be fully traced using digital and physical traceability solutions. This will help ensure that the marked material is used to manufacture the finished product and is traceable in the supply chain.

During the project, the DNA marker is applied at the ginning stage; when the cotton fibre is separated from the seed, the lint cotton is sprayed with the DNA marker. Once the marker adheres to the fibre, all the material manufactured from that cotton can be tested at any point in the supply chain, proving that the same DNA-marked fibre was used to manufacture specific garments. It can then be digitally traced through CottonConnect's proprietary software tool, TraceBale, which based on its 'bottom-up' data gathering approach, provides visibility to the cotton journey from the farm group to the finished product. The project aims to prove that traceability will create transparency in the value chain, support circularity, and validate any sustainability claims.

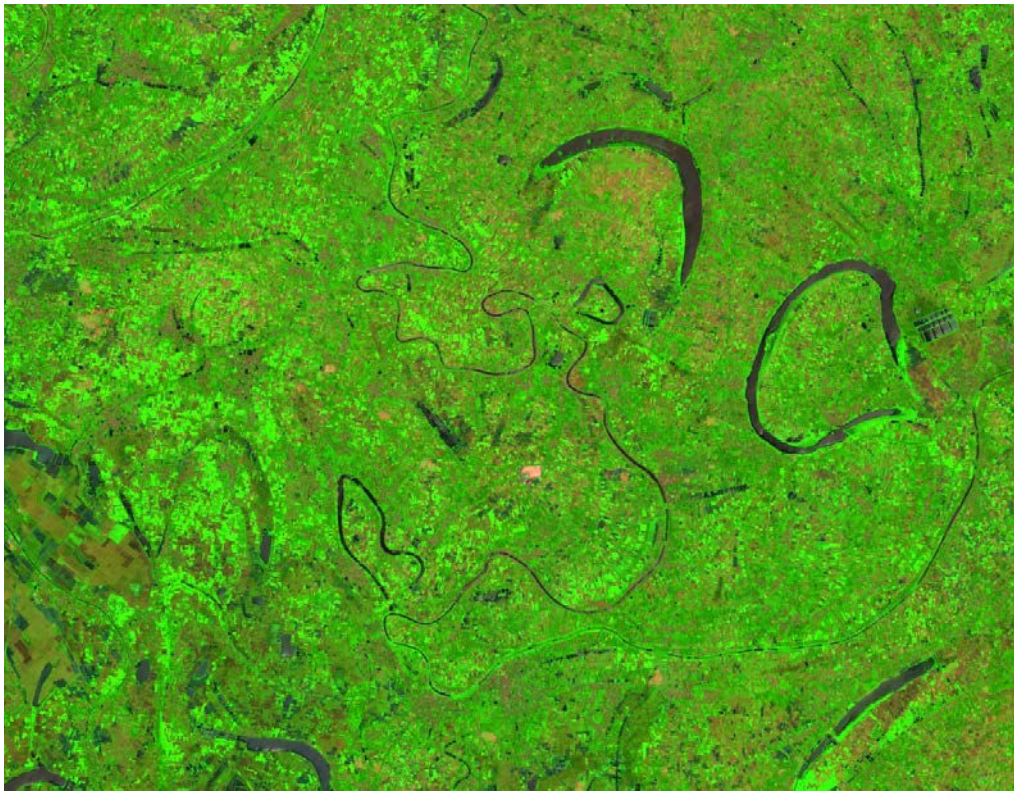
COMBAT AGAINST CLIMATE CHANGE ON COTTON COMMUNITIES WITH ASSIMILA PARTNERSHIP

CottonConnect and Assimila, under the guidance of the European Space Agency, have set up Combat Against Climate Change on Cotton Communities, known as C5, a climate advisory system, linking earth observations, analysis, and forecasts, to support farmer decision-making at key stages in the cotton production cycle.

Uniquely, C5 is designed to help farmers to mitigate threats to their health, in addition to their crops, and is the first system of its kind to focus on the lived experience of cotton farmers and pickers. It comprises two main elements: a health stress index that will be useful for identifying where health risks are increasing, in order to plan and manage farming activities; and an alert system providing extreme weather warnings, alerts, and actionable information at key milestones during the cotton calendar.

C5 information is disseminated to farmers through text messages, radio broadcasts, and outreach groups, and aims to limit worker exposure to harmful heat, avoid major risks such as flooding, and improve related activities such as crop production and livestock rearing that are also threatened by climate change. The C5 prototype is initially being developed for users in Bangladesh with a view to rollout to other major cotton producing nations.

Images taken by a Sentinel-2 satellite of the Chuadanga District, Khulna Division, Bangladesh, on 3 June 2023. The true colour Sentinel-2 images (top right) use bands which roughly correspond to red, green, and blue on the colour spectrum, and the result looks like the world as humans see it. The false-colour images (bottom right) allow humans to visualise wavelengths that the eye cannot see and are particularly useful to identify crops such as cotton and assess their current state. In this, healthy dense vegetation appears in bright green and bare soil in dark brown.



Contribution to UN Sustainable Development Goals (SDGs)

CottonConnect's programmes increase income and profit from cotton growing for smallholder farmers (see page 15)

The Women in Cotton programme teaches women how to generate an income from microenterprises (see page 34)

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 38)

The Responsible Business Gins Code of Conduct improves health and safety practices in gins. (see page 28)

CottonConnect's programmes support income growth of low-income smallholder farmers and workers through increased profit and yield (see page 15)

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 19)

Providing information on cotton production to brands and retailers helps consumers make informed choices to choose cotton more sustainably grown. (see page 40)

Addressing the effects of climate change on cotton cultivation through climate change mitigation pilots, including training women climate ambassadors (see page 30)

The REEL Regenerative Code is designed to increase capacity in climate mitigation practices, and reduce carbon emissions. (see page 24)

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. **Commonly recognised indicators of sustainably produced cotton** – Sustainability standards and codes may measure different indicators, meaning the impact results are not comparable. CottonConnect contributes to collaborative industry efforts to determine the relevant indicators to measure sustainably produced cotton, including the Delta Framework Sustainability Indicators and the work of Sustainable Apparel Coalition's MSI Methodology Cotton Expert Team.

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

Pakistan
Rural Education and Economic Development Society (REEDS)
Indus Development Program
Society for Sustainable Agriculture and Friendly Environment (SAFE)

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
Agricultural Research Center

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 2022-23 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 (2021-22) 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 2022-23.

Alliance for Water Stewardship

SAN Sustainable Agriculture Network

Cool Farm™

Sustainable Apparel Coalition

Cotton 2040

Forum for the Future

Textile Exchange

Textiles 2030

2025 Sustainable Cotton Challenge

ISEAL Community Member

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.

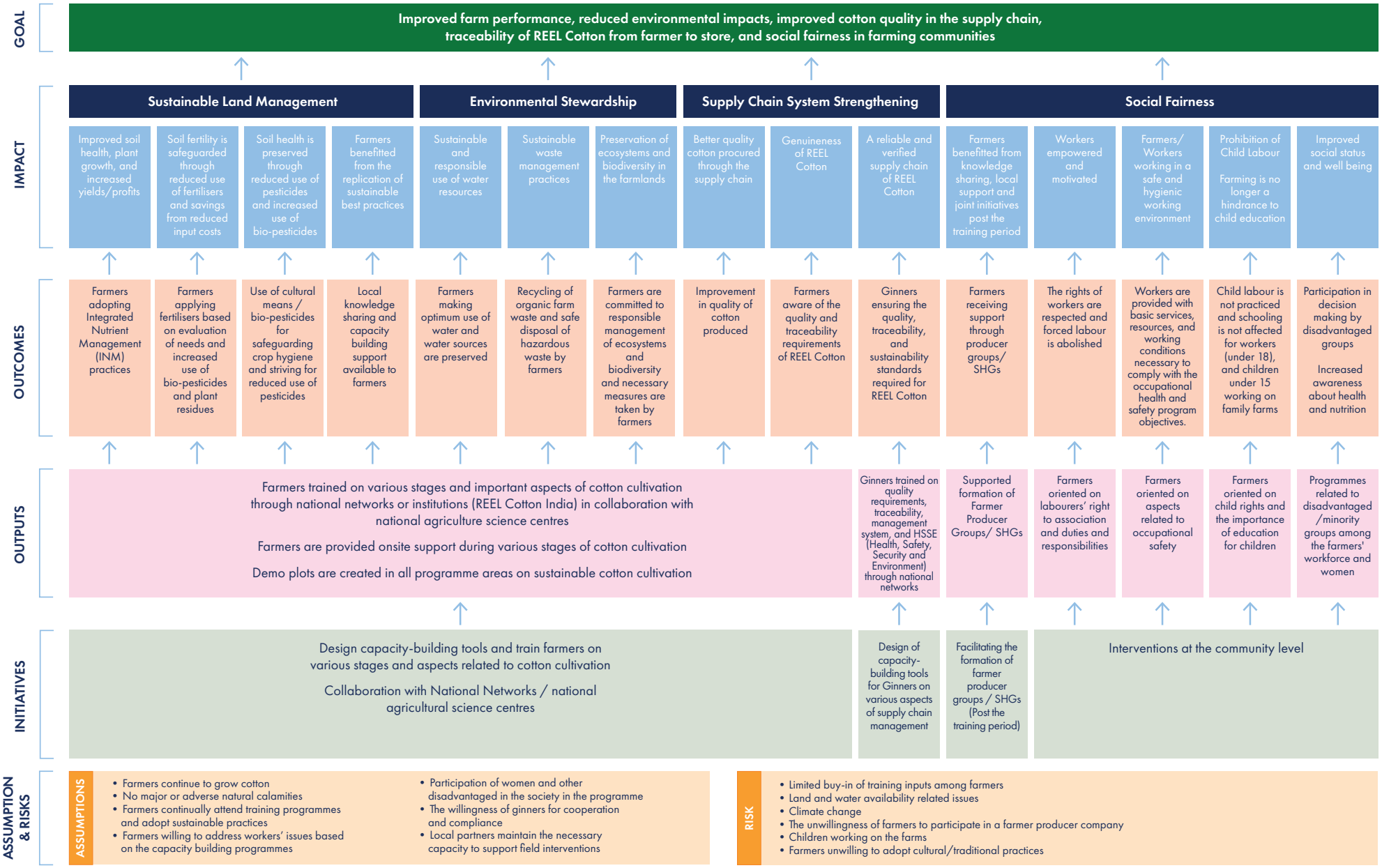
CottonConnect works with external advisers twentyfifty on its human rights due diligence programme.

CottonConnect won Small and Medium Enterprise (SME) of the Year at the edie Awards in London in March 2023.

Conclusion

- REEL Cotton programmes achieved positive results in 2022-23, reducing the use of chemical pesticides, chemical fertilisers and water, while increasing farmers' yields and incomes. The efficacy of the programme continued through expansion in both size of projects and new regions.
- A preliminary first year assessment of the REEL Regenerative pilot shows significant progress in adoption of some regenerative agricultural practices, and measurable lower carbon emissions per acre, while some practices take time to adopt.
- Traceability of sustainably produced cotton has been maintained through expansion of projects, with an increase in cotton lint being traced through TraceBale.
- The HSSE programme for gins is delivering significant improvements in health and safety practices for gin workers.
- Pilots supporting women in cotton farming in relation to climate change adaptation, entrepreneurship, and women's rights show promising signs to expand further.
- Further LCA calculation and GHG emissions measurement is needed and planned to assess the environmental impact of the outcomes of programmes.

Appendix – REEL Cotton Theory of Change



COTTON CONNECT
REIMAGINING THE FUTURE FOR SUPPLY CHAINS

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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