

WOMEN IN COTTON: ADDRESSING THE IMPACT OF CLIMATE CHANGE THROUGH CLIMATE-FRIENDLY PRACTICES



CottonConnect reports on its research study into how climate change is affecting women cotton farmers and the impact of interventions designed to mitigate climate change, based on interviews with over 100 women farmers and programme partners in India, Pakistan, and Bangladesh in June 2023.



Climate Change and Women in Agriculture

At CottonConnect, our experience of working with farmers – both men and women – has helped shape our understanding of the impact of climate change on farmers, particularly women.

The Food and Agriculture Organisation (FAO) estimates that women comprise 45% of the agricultural workforce in developing nations, which goes up to 60% in Africa and Asia.¹ About 40 percent of our programme farmers are women. Despite the significant contributions they make in planting and harvesting, which directly impact the quantity, quality, and long-term sustainability of cotton farming, their essential roles often go unrecognised. This lack of recognition also means that they are often overlooked of being considered as the primary target group for training, awareness and resources that are crucial for building climate resilience in their communities.

CottonConnect conducted interviews with over 100 women farmers and programme partners in India, Pakistan, and Bangladesh in June 2023. The research followed a scoping exercise in 2020 which involved interviews and focus group discussions to explore and understand the impact of climate change on women cotton farmers in our programmes in India and Pakistan.

The resulting report '[Women in Cotton: Listening to Women's Voices on the Effects of Climate Change](#)' showed that climate change affects several significant areas of women's lives – on the farm, caring for livestock, and in the home. In turn, this profoundly impacts their income, time, and health. The findings and recommendations from this study were used to identify areas for future research and action at CottonConnect.

Three years since that report, we now work with a much higher number of farmers and in more geographies, and we have seen that climate change-related issues continue to affect crops and farmers, especially women farmers.

In June 2023, we carried out the same exercise in India, Pakistan, and Bangladesh in order to update our findings and understand changes and document activities implemented by women cotton farmers in our programme areas. The research included women farmers from different CottonConnect agronomic programmes in the three countries and two pilot programmes, namely Women Climate Change Ambassadors' Programme and the Women Entrepreneurship Development programme.

The methods used to interview farmers included

- **Focus Group Discussions (FGDs)** – A total of eight FGDs were conducted – four in India and two each in Bangladesh and Pakistan respectively. Each FGD had the participation of eight to ten women.
- **In-depth farmer interviews (IDIs)** – 21 women farmers were interviewed, three from each FGD location were interviewed separately to further understand the impact and the issues they faced.
- **Key Informant Interviews (KIIs)** – The research also involved conducting 11 KIIs. These were conducted to complement the information collected from FGDs and IDIs, providing a comprehensive understanding of the challenges, and specific issues faced by women farmers in India, Pakistan, and Bangladesh. The key informants included chief functionaries of local partners and some topic expert programme consultants.

For billions of women worldwide, agriculture serves as a fundamental life-support system, offering sustenance, resources, and employment opportunities.² Women make crucial contributions to agriculture and rural enterprises in all developing country regions, as farmers, workers and entrepreneurs. Their roles vary across regions but, everywhere, women face gender-specific constraints that reduce their productivity and limit their contributions to agricultural production, economic growth and the well-being of their families, communities and countries.³

"The findings from our recent study reaffirm that the problems related to climate change continue to adversely affect the lives of women farmers in all regions. When women are trained and armed with awareness and understanding – they can play a crucial role in adapting and reducing vulnerability to climate change – they know what solutions are required beyond the farm. Empowering women in the cotton value chain can have positive effects beyond farm productivity, leading to improved living standards and food security."

Alison Ward, CEO, CottonConnect

1. [Women hold the key to building a world free from hunger and poverty](#), FAO, 2016

2. [Climate Change and Women in Agriculture](#), UN Women

3. [The role of women in agriculture](#), FAO, 2011

Women Farmers' Perspectives: Impact of Climate Change

Findings from the study:



INCREASED UNDERSTANDING OF CLIMATE CHANGE CAUSE AND EFFECT

Since the 2020 study, CottonConnect has been focusing on training and preparing women farmers to combat climate change through various programmes and activities. While the challenges posed by climate change persist, our recent research found that awareness of climate change among women farmers has significantly increased. It's important that farmers understand what climate change is, how it is caused, and the effect of their own practices, thereby bringing more acceptance of the change in practices that are required to address the problem.

Women in all three programme countries were familiar with the term climate change. They demonstrated a good level of awareness regarding climate change and its fundamental implications. Almost all women described climate change as a visible change in the weather patterns and overall climatic conditions within their respective communities and villages.

They were also aware that climate change is being felt worldwide, and that it is a pervasive phenomenon, not limited to their community or country. They owed this knowledge to their interactions during programme training and their exposure to news sources.

However, women's understanding of the underlying causes of climate change remained somewhat limited across the three countries. The majority attributed it to factors such as poor planning, deforestation, and exploitative use of natural resources.

"Our actions have caused the climate to change – cutting down trees, and excessive use of natural resources, using chemicals have caused an imbalance in nature. We never know what to expect anymore. Last year, floods hit us hard, and this year, who knows what will happen."
Shamshad Bibi, cotton farmer, Punjab, Pakistan



INCREASED AWARENESS OF SHIFTING SEASONS, RISING TEMPERATURES, AND WATER CHALLENGES

Women in all three programme locations observed significant changes around them due to climate change. The most observed changes related to climate change were rising temperatures, shorter but harsher winters, and changes in the monsoon cycle.

Rising temperatures have been a notable concern, particularly in India and Bangladesh, where women shared that summers have become intensely hot, leading to near-drought conditions. Women also reported that winters have become shorter more severe, causing a greater sense of coldness compared to previous years.

Changes in the monsoon cycle were observed across all three countries, affecting cotton sowing and resulting in crop yield challenges. While, in India, farmers observed a shift in the timing of cotton sowing due to delayed and reduced rainfall, in Pakistan, women shared their experiences of the destructive floods that occurred last year.

The impact of climate change on water resources was another major concern raised by women farmers. They expressed worries about decreasing water availability, citing dried-up ponds, wells, and handpumps in their communities. While some attributed this to decreasing water levels, most linked it to heat and reduced rainfall.

"Earlier, Bangladesh was known as a country with six seasons. Now it is a country with two seasons. This shift is a stark reminder of the profound impact of climate change on our nation."
Afroza Khatun, farmer, Khulna, Bangladesh.



REDUCED CROP YIELDS AND LOSS OF BIODIVERSITY

The effects of climate change on farming were evident through the loss of biodiversity and reduced crop yields. Women noted the disappearance or less frequent sighting of birds and insects on their fields, attributing it to changes in nesting places due to the shift from mud houses to cement houses and the decrease in tree population.

Crop failures and reduced yields were also reported, with unpredictable weather, increased pest attacks, and delayed or lower germination affecting overall productivity. Furthermore, women highlighted the impact of climate change on plant health, such as smaller-sized and scorched fruits due to increased temperatures.

While climate change has increased farming expenses, women have managed to mitigate some costs by adopting integrated pest and nutrient management practices, using biopesticides and insecticides, and implementing techniques like intercropping and border cropping. However, the reliance on irrigation due to decreased rainfall has led to increased input costs, including the need for deeper tube wells and motor pumps.

“This year, our mango crop took a hit, with frequent droughts and water scarcity. The water we do have is of poor quality, affecting our yields. To add to the challenges, storms have increased. It’s a tough fight against nature, pushing us to adopt sustainable solutions and cope with these changing times.”

Dr Safdar Bashir, Associate Professor, Ghazi University, Dera Ghazi Khan, Punjab, Pakistan.



INCREASED IMPACT ON PHYSICAL AND MENTAL HEALTH AND WELL-BEING

Mental health – During discussions, it emerged that women experience heightened stress and often feel a lack of support or understanding. Women shared that factors, such as concerns about family expenses, low incomes, crop failures and the occurrence of events like floods add to their stress. These stressors contribute to an overall increased burden on women’s mental health. The increased stress experienced by women due to climate change also affects their family dynamics. The strain and emotional burden can have ripple effects on the overall well-being and relationships within the family, potentially leading to difficulties and challenges within the family.

“There’s a lot of mental stress. Uncertain crop outcomes due to climate change bring a lot of uncertainty in farmers’ lives, causing conflicts, stress and anxiety. Unfortunately, in some cases, pressures arising from crop failures, yield loss, loss of income and the need for financial resources to sustain households, escalate to domestic violence, with women becoming victims of abuse within their families.” Arpit Khandewal, Director, The Shree Ram Fibres, India

Physical health – Rising temperatures due to climate change can cause physical exhaustion, especially for women who engage in farming activities. Women also shared that they face heat-related illnesses.

These insights shed light on the diverse health impacts that women and their families face due to climate change. It highlights the need for support systems and interventions to address the psychological well-being, family dynamics, and healthcare needs of women during climate-related challenges.



CARE RESPONSIBILITIES AND OTHER STRUGGLES

Women carry out more than 75 percent of unpaid care work, or 3.2 times more than men⁴. Women shared their experiences of having to take care of their families regardless of their own well-being. They expressed feeling overlooked even when they are sick, as household and caregiving duties still need to be attended to. From looking after the family and livestock to ensuring water availability, timely meals, and caring for the elderly and sick, women shoulder immense responsibilities. Extreme weather conditions and resultant calamities and illnesses add to their stress and difficulties, leaving little time for rest and recovery.

Women's disproportionate responsibility of unpaid care work traps them in 'time poverty'. They do not have the time to participate in agricultural development initiatives and other social, economic and political activities, which deprives them of the full enjoyment of their economic and social rights.⁵

"Regardless of whether we feel well or not, we must take care of everyone in the family – husband, children, in-laws and even the livestock. No one takes care of us when we are sick. As women, it is expected that we look after everyone regardless. The situation has worsened due to extreme weather conditions and resulting disasters, which have further increased our caregiving responsibilities."

Woman cotton farmer, Madhya Pradesh, India

In all three programme countries, women shared that they wake up earlier than usual during summer to begin their tasks on the farms before the sun becomes too intense. However, they also mentioned that the extreme heat limits their time spent working on the farm compared to before. Unfortunately, this does not equate to more time for rest, as there are other chores they must attend to at home.

"My day starts at 4:00 am. I begin by collecting water and gathering fodder for the livestock, then I cook for the family, and ensure a steady supply of water for household use, especially during summers when the supply of water is limited. I then join my husband on the farm to work. During the hot summers, I prepare each meal promptly to prevent food from spoiling quickly. In the evenings, if there are social events like weddings, pujas, or community gatherings, it is expected of me to attend and participate. Where is the time to rest?"

Woman cotton farmer, Madhya Pradesh, India



INCREASED ACCESS TO ESSENTIAL RESOURCES: WATER AND COOKING GAS

A notable contrast from our previous report is the improved access and availability of basic resources such as water and cooking fuel for women.

During the discussions, most women reported that they no longer have to travel to fetch water for domestic use. Women shared that they have pipelines in their homes now, while others shared that additional handpumps and personal tube wells have improved access. This positive change has relieved them from the physically demanding task of making multiple trips to fetch water, which used to cause joint pains, backaches, and persistent physical and mental fatigue, particularly under the searing heat.

However, climate change has soured the joy of having better access to water. Women mentioned a decrease in the frequency of water supply in recent years, necessitating careful management of available water for both their families and livestock. They also mentioned instances where wells and handpumps have dried up due to the increased heat. Despite the improved access, the challenges associated with water scarcity persist, requiring women to adapt and find their own solutions to ensure sufficient water supply for their households.

Another significant point that women highlighted is access to cooking gas. Women in the programme areas discussed that earlier, they would spend a considerable amount of their time gathering firewood. With the availability of cooking gas, their daily routines have been positively impacted, saving them valuable time and energy.

"We've witnessed drastic climate changes disrupting our lives and farming. As a result, our women farmers, take a hit with irregular rains and scorching heat. In Rann of Kutch, for example, temperatures rise to 51%. Recently, the cyclones wreaked havoc, demanding immense recovery efforts. Water remains a challenge. Drinking water is accessible, there are pipelines also, but bore wells now reach 700-800 feet. Power scarcity affects daytime farming, pushing farmers to irrigate at night. In this struggle, a resilient spirit surfaces. We adapt, rebuild, and stand together, shaping a future amid evolving climates."

Heena Dave, Senior Coordinator, Self Employed Women's Association (SEWA)

4. What does gender equality have to do with climate change? UNDP, 2023

5. The gender gap in agriculture and its implications on the context of climate change, FAO, 2017



INCREASED PRESSURE ON INCOME AND THE NEED TO DIVERSIFY CROPS

Climate change has had a significant negative impact on the income of women farmers. Income from livestock has decreased, a situation they attribute to low livestock productivity due to lack of green fodder. Deforestation and the degradation of soil has made it challenging for women to find green fodder for their livestock. They often rely on dry grass or purchase fodder from the market, which may not be as nutritious. Which indicates that alongside the reduced income, the expenses associated with livestock have also increased.

Women also revealed that their expenses have gone up considerably. In India, women owed this to increased access to facilities. They now spend on cooking gas, rely on electric fans due to rising temperatures, and use stronger motor pumps for irrigation resulting in increased electricity consumption. The combined effect of decreased farming income and higher expenses underscores the economic challenges women farmers face due to climate change.

To compensate for income losses caused by crop failures and lower income from livestock, women have had to diversify their income sources and engage in alternative livelihood activities such as embroidery, tailoring, setting up small daily needs' shops, and establishing organic input centres.



TIME CONSTRAINTS AND PRODUCTIVITY CONCERNS

Women continue to contribute significantly to cotton farming, taking on crucial activities such as sowing, weeding, picking, and harvesting. However, their time spent on the farms has decreased, especially during the challenging summer season when working in the heat becomes difficult. Most women shared that working on farms is especially challenging during the summers. This reduction in farm hours has led to lower productivity for women. In certain program locations, women have had to hire additional labourers during the picking season due to the extreme heat, resulting in increased expenses.

BARRIERS TO WOMEN IN OVERCOMING CHALLENGES FROM CLIMATE CHANGE

Women feel gender inequalities arising from traditional gender roles which limit their decision-making power, access to education, training, credit facilities etc., present significant barriers to overcoming challenges posed by climate change. These gender-specific inequalities compound the difficulties faced by women in farming, making it harder for them to adapt and build resilience in the face of a changing climate.

WHO IS AFFECTED MORE – MEN OR WOMEN?

Women believed both men and women are impacted due to climate change, but in different ways. Men are physically more impacted due to their outdoor, labour-intensive work, which exposes them to higher risks of heat-related illnesses, such as heat exhaustion and heatstroke. Women emphasised that climate change affects them not only physically but also emotionally and mentally. Moreover, the gender-specific roles and expectations imposed on them exacerbate their challenges.

“Women face challenges both on the farm as well as at home, and climate change only exacerbates these. They confront not only the physical drudgery of farming but also bear the brunt of their husbands’ frustrations, as climate change disrupts crop yields and livelihoods.” Rajendra Maruti Zagde, SIED, India

“Men and women are equally impacted by climate change. But due to additional responsibilities, women get less time to rest and take care of themselves, and hence the impact is more on women.” Woman farmer, Gujarat, India.



Empowering Women Farmers to Combat Climate Change

Women hold crucial roles as farmers, wage earners, and entrepreneurs as well as shoulder the responsibility for their family’s care and well-being. However, low levels of literacy, knowledge of health, and rights reduce productivity and undermine family well-being.

CottonConnect’s research reveals that specialised training significantly enhances women’s farming roles, particularly in income generation and decision-making⁶. Our goal has been to provide comprehensive insights and help farmers understand how to foster sustainable practices that not only improve productivity but also contribute to mitigating the impacts of climate change. This comprehensive approach not only benefits the farmers themselves but also helps build climate resilience in the agricultural sector and the communities they serve.



ACTIONS TO MITIGATE CLIMATE CHANGE CAUSE AND EFFECTS



Empowering female farmers through sustainable agriculture and climate change awareness



Building on the existing knowledge and awareness of climate-resilient agriculture practices



Input production centres for sustainable farming and establishing agricultural self-sufficiency



Training women in income generating activities and income diversification

6. Women in Cotton: Listening to Women’s Voices on the Effects of Climate Change, CottonConnect, 2020

Empowering female farmers through sustainable agriculture and climate change awareness

COTTONCONNECT'S WOMEN CLIMATE CHANGE AMBASSADORS' PROGRAMME

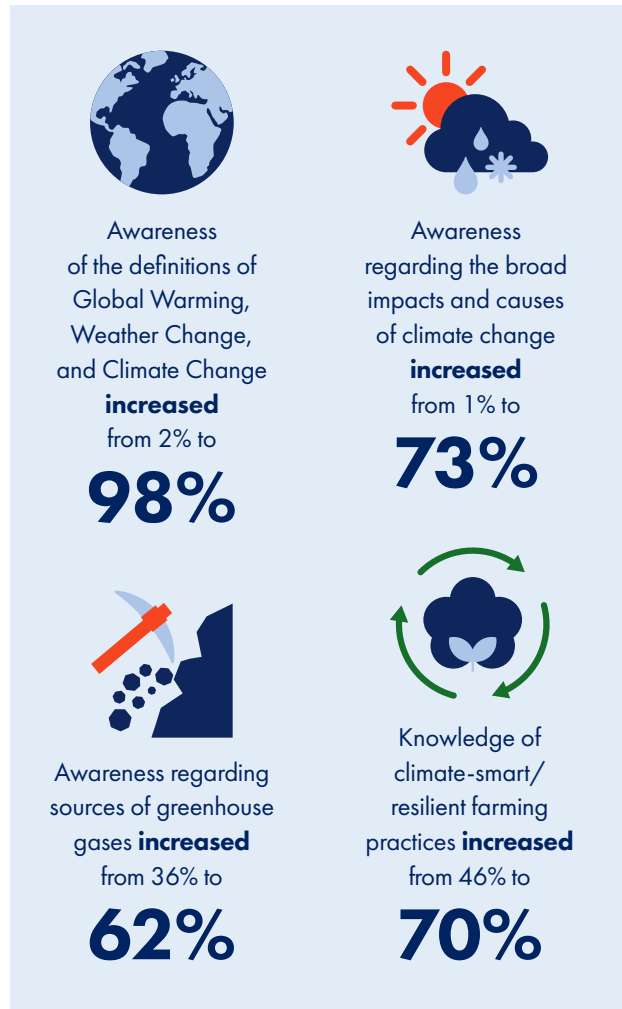
Recognising the pivotal role of women in cotton farming and the pressing need to address climate change, this initiative, set up in 2022, aims to empower women farmers as change leaders in climate resilience. It focuses on capacity building in climate-smart agriculture practices, providing participants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

Follow-up assessment showed that the programme's training had a remarkable impact in raising 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 was educating these 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.

Here is the story of Vilashben Dineshbhai Tadavi, one of the climate change ambassadors from Tilakwada, Narmada district in Gujarat, India, who leads by setting an example in her own field.



VILASHBEN TADAVI'S JOURNEY FROM AWARENESS TO ACTION

Vilashben Dineshbhai Tadavi works on her two-acre farm in Tilakwada, Narmada district in Gujarat in India. Until last year she was caught in the cycle of excessive chemical fertiliser and pesticide usage without fully understanding its impact on her crops and the environment. The overuse of these inputs led to soil deterioration, reduced fertility, and the loss of biodiversity. Additionally, her heavy reliance on market-bought inputs increased production costs, creating a financial crunch.

However, everything changed when Vilashben became part of the Women Climate Change Ambassadors Programme. She became acutely aware of her farming practices' impact on climate change. Vilashben connected the excessive use of fertilisers and pesticides to the declining biodiversity on her farm, reduced bird sightings, diminished friendly pest populations etc. She learnt that the uncontrolled overuse of fertilisers and pesticides releases greenhouse gases, exacerbating climate change.

Through the training, she gained a deep understanding of the importance of integrated nutrient management and other sustainable farming practices. With this knowledge and enthusiasm, Vilashben implemented these practices on her farm. She prepared homemade natural agricultural inputs, such as jivamrut, vermicompost, and concoctions made from a mix of 10 leaves easily found in and around the farms. These inputs offered a natural and organic alternative to the chemical-heavy approach she had previously employed.

During the cotton season of 2022-23, Vilashben successfully applied these inputs to her fields. The results were remarkable. Not only did she reduce her external input costs by approximately 20%, but the cotton production also improved significantly. Embracing this change, Vilashben has now regularised the practice of producing bio-inputs. She is aware that by doing so, she is not only benefiting her own farm but also contributing to combating climate change. Using natural inputs gradually enhances the presence of useful microorganisms in her soil, improving its fertility and all of this will slowly improve the biodiversity on her farm.

As a climate change ambassador, she is also passing on her newfound knowledge to other women in her community, thereby creating a ripple effect of the programme. Vilashben's training has already influenced 29 women in her community, and five of them have made the switch to using natural agricultural inputs and have started preparing them on their farms.

"The trainings helped me realise that every element in and around the farm – the pests, birds, bees, my crops, soil, water and air, and even my family were adversely affected by the overuse of chemicals. That it was increasing the toxic load and contributing to climate change. Now I am a conscious farmer," said Vilashben Dineshbhai Tadav.



Building on existing knowledge and awareness of climate-resilient agriculture practices

Farmers, both men and women, have inherited generations of farming knowledge and often blend traditional methods with hearsay information. All of this is driven with the hope of increased and improved yield, profit and improving their overall quality of life. Each of our agronomic programmes focus on building on farmers' existing knowledge and know-how. This helps them 'connect the dots' and understand the cause and effect of their activities and how to optimise practices for the best results on their farms and surroundings.



WOMEN FARMER GROUP LEADING CLIMATE-RESILIENT FARMING

In Golegaon villages of Khultabad District, Aurangabad, India, conventional farming relies heavily on chemical pesticides and fertilisers, leading to unsatisfactory returns. A female farmer group with an aim to reduce the dependence on chemical pesticides and fertilisers and improve soil health and fertility collaborated to prepare natural inputs like dashparni⁷ and neem ark⁸ collectively.

The group prepared 2,000 litres of dashparni, 800 litres of neem ark, and 550 yellow sticky traps⁹ on reusable tin sheets. The group grew cotton on 24 acres of land, used bio-inputs (dashparni and neem ark), and adopted other sustainable farming practices. This shift brought down the spraying expenses by INR 55,200 (GBP 527), which with chemical fertiliser spraying, would have costed INR 92,232 (GBP 880).

The women's group also shared the bio-rational pesticide with 180 other farmers, supporting them also to reduce the spraying expenses and minimising the hazardous effects of chemical pesticides. This shift to natural inputs is one practice recommended by CottonConnect's farmer programme in order to contribute change mitigation by promoting biodiversity.

Their efforts earned them the state-level second prize in Paani Foundation's Farmer's Cup competition. They were especially appreciated for adopting sustainable cotton practices, which would have long-term impacts on soil, water, improve quality and contribute towards climate change mitigation.

7. Dashparni ark - It is a natural pesticide made from 10 types of plant/tree leaves mixed in water along with cow dung and urine.
 8. Neem ark - This is a natural pesticide formulation based on neem oil and extracts.
 9. Yellow sticky traps are a common method for monitoring many pests, including aphids, and whiteflies.
 Tin sheets are painted bright yellow and coated with glue. The colour attracts certain insects and lures them towards the trap.

HOW INTERCROPPING HELPED RESTORE NATURE'S BALANCE ON SHAHUL'S FARM

For years, Shahul, a cotton farmer, and her family in Pakistan had been tilling the land, relying solely on cotton as their primary crop. However, challenges with soil fertility and pest management threatened the sustainability of their farm.

Shahul participated in the CottonConnect training programme on Resilient Agriculture and, inspired by newfound knowledge, embarked on a journey to find a sustainable solution to the soil and pest management problems on her farm. She introduced legumes into her cotton farming system. She strategically chose soybean for its proven ability to enrich the soil. She introduced soyabean as an intercrop, alternating rows of soybean and cotton, each playing it vital role on the field. The result was impressive. The soybean plants, with its nitrogen-fixing bacteria, gave new life to the soil. This natural nitrogen fixation enriched the earth, providing much-needed nourishment to the cotton crop and reducing the need for harmful synthetic fertilisers.

Intercropping helped Shahul's farm thrive. Her yield from cotton increased to about 810 kg/acre, resulting in a substantial increase in income from cotton alone PKR 152,575 (GBP 395) from PKR 136,787 (GBP 354). She harvested about 155 Kg/acre of soybeans, which earned her an additional income of PKR 20,150 (GBP 52), further enhancing profitability.

Moreover, the legumes, which stood tall and dense, suppressed the weeds. The cotton plants flourished without the need for excessive herbicides. The legumes disrupted cotton pests, minimising chemical insecticide use. Shahul's farm thrived without chemical insecticides or weedicides, as nature's balance prevailed. Pest management became a partnership between crops and land, showing nature's resilience.

Her farm flourished with increased cotton yields and extra income from legume crops. Sharing her experiences with neighbouring farmers, she became an inspiring advocate for intercropping practices. Her success served as a catalyst and has inspired more farmers to embrace this climate-resilient approach.

"Intercropping has revolutionised my farming. By planting complementary crops together, I maximise land use, enhance soil nutrients, and witness higher yields. It's a win-win for both my farm and the environment." said Shahul



Input production centres for sustainable farming and establishing agricultural self-sufficiency

CottonConnect has been promoting the setting up of farmer input centres in its programme areas to help make available high-quality organic inputs at the village level. By having these centres near farmers' fields, farmers can easily buy reliable and affordable organic inputs (pesticides, insecticides, and fertilisers), which are essential for promoting sustainable and climate-friendly agricultural practices.

Farmers are encouraged to see that, by reducing the dependency on synthetic chemicals, they can create a more balanced and resilient agroecosystem, contributing to the conservation of biodiversity and ecosystem health.

Moreover, these input centres serve as income-generation hubs for farmers involved in their establishment and management. As farmers produce and sell organic inputs to their fellow farmers, they boost their economic stability and promotes knowledge-sharing and cooperation within the community.





ARUNA'S JOURNEY FROM FARMER TO ENTREPRENEUR

Aruna Gajanan Chowdhary, from Sakhi village in Yavatmal district, Maharashtra, India, along with her husband, has been practising cotton farming on their three-acre, rain-fed land for seven years. In 2022, faced with increased expenses, diminishing returns, and concerns about water scarcity, high input costs, and soil fertility depletion, Aruna joined one of the sustainable farming programmes implemented by CottonConnect.

During the training, she learned about natural input centres—an innovative enterprise producing natural fertilisers and composts such as neem ark, dashparni ark and vermicompost. This lit an entrepreneurial spark within Aruna. With knowledge and technical support from the CottonConnect team in September 2022, Aruna established her own natural input centre.

In 2022-23, Aruna's efforts bore fruit. She prepared 800 litres of dashparni ark, 250 liters of jivammrut, and 901 kg of vermicompost. She earned a benefit profit of

INR 25,800 (GBP 246) using the inputs on her cotton field, minimising input costs and making a positive impact on the environment. Inspired by Aruna's success, 92 fellow farmers bought natural inputs from her centre, while 52 others received training on natural input production. Satisfied with the results, these farmers requested more products for the upcoming season, fuelling Aruna's determination to meet the growing demand. By adopting sustainable practices and providing natural alternatives to chemical inputs, Aruna contributes to the restoration and preservation of the environment.

"I am happy I could reduce my farming expenses and increase net returns through natural inputs while protecting and restoring our environment. In the upcoming season 2023-24, I plan to multiply Trichoderma and Beauveria fungicide at my centre, fostering even greater sustainability."
said Aruna Gajanan Chowdhary

Training women in income generating activities and income diversification

In 2022, CottonConnect launched a pilot programme in Bangladesh called Women Entrepreneurship 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. As women play an important role in growing cotton, this initiative addresses the profound influence that gender equality can have on cotton farming communities. With women ready to embrace entrepreneurial roles, the programme pushes for positive transformations within the communities.

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:



In order to support the women establish their small enterprises, they were given some initial funds, according to their individual needs and business plans they each developed in close supervision of our 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. The project has successfully brought together all relevant stakeholders, who recognise and support the women entrepreneurs.

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 has 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



RESHMA KHATUN'S JOURNEY TO CLIMATE RESILIENCE ADVOCATE

Reshma Khatun, from Babupur village in Meherpur district, Bangladesh, embarked on her entrepreneurship journey as part of our WEDev programme in 2022. She set up the Mahid Dairy and had been successfully managing it.

However, Reshma encountered some challenges due to the adverse effects of climate change, which affected her livestock production. Extreme heat led to a decline in livestock output, tragically resulting in the death of cows due to heatstroke. Moreover, a shortage of fodder exacerbated the situation. It became evident that immediate action was imperative to ensure the well-being of the livestock.

Reshma constructed a climate-resilient shelter that offered her cattle protection from intense heat and installed fans in the cow shed to regulate temperatures. Recognising the pivotal role of trees in ecological balance, Reshma planted numerous trees around her property and the livestock shelter. Trees provided shade for the cattle and also played a vital role in combating climate change by absorbing carbon dioxide and emitting oxygen.

Reshma's dedication to protecting her livestock and the environment was not limited to her own farm. She shared her knowledge and experiences with other women in her community. She encouraged them to adopt similar climate resilience measures, to combat the challenges posed by climate change on their businesses.

She organized workshops and training sessions where she discussed the benefits of climate-resilient sheds, tree plantation, and other sustainable practices. Reshma advocated using water from nearby canals for grass production instead of relying on water pumping and other resource-intensive methods.

This approach not only conserved water resources but also contributed to restoring the natural environment. The tree plantation efforts and sustainable water usage contributed to the revival of the local ecosystem. Through knowledge sharing, Reshma empowered other women entrepreneurs to take charge of their businesses and adapt to the changing climate.

Conclusion

Climate change impacts everyone, but its impact on women is more pronounced. The impacts of climate change perpetuate and magnify structural inequalities, such as those between women and men.¹⁰ This is especially due to the unequal sharing of power between women and men, and the gender gap in access to education, training, resources, and employment opportunities.

CottonConnect identifies this gap and has been working towards bridging it through its various programmes. Central to our agronomic programmes is training and building on farmers' existing knowledge and know-how, helping them understand the cause and effect of their activities on the farm and surroundings. Additionally, our programmes, such as the Women Climate Change Ambassadors' Programme and the Women Entrepreneurship Development Programme demonstrate the power of training not only to improve farming and mitigate climate-induced change but to enable the shift from victimhood to action, where women are part of – and even able to lead and inspire – the shift to sustainability.

The research findings reaffirm that women in our programme areas continue to face significant challenges due to climate change. One of the key learnings from our gender-specific interventions is that when women are recipients of targeted training, they are able to make considerable change and improvements for themselves, their families, their farms, and their communities.

As we leverage insights from our pilots and practices to develop scalable, replicable models, our ultimate aim is to have a broad-reaching impact and create climate-resilient farming communities. Empowering women farmers and promoting climate-resilient practices are crucial steps to achieve this vision.



10. Why does gender equality matter when it comes to climate action?, UNDP, 2023

Recommendations

With climate mitigation strategies demonstrating effectiveness, the focus should now shift towards replicating and expanding successful approaches. This collaborative effort necessitates developing transformative partnerships across the supply chain, encompassing retailers and farmers.

Some steps that can help organisations across the supply chain working with farmers to move closer to this goal include:

- **Amplify women's voices:** Ensure women farmers' perspectives are acknowledged.
- **Learn from their lived experiences:** Engage more with women farmers to gain insights from their firsthand experiences.
- **Accelerate proven actions:** Scale actions and pilots that we know mitigate the climate crisis
- **Ensure women are involved as leaders and innovators**
- **Develop transformative supply chain partnerships with brands that are good for women and good for business**

Get in touch with CottonConnect to find out more about joint programmes with proven impact on female farmers.

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CottonConnect's purpose is to reimagine cotton supply chains in order to help textile producers and farmers enjoy better livelihoods.

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