BC-GIF pilot to test the inclusion of women co-farmers within BCI’s quality assurance programme

Pilot outcomes report and suggested roadmap

16th March, 2021
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Introduction to the pilot and key objectives
Strengthening the role of women cultivators on the cotton farm has been an evidence-led effort that started in 2018.

2018 - 2019

Sattva and IDH conducted a gender analysis to measure women cultivators’ economic contribution to cotton cultivation. Key findings:

- Women cultivators play a majority role in key cotton production activities.
- Women cultivators’ role on the farm directly impacts the quantity and quality of cotton produced.
- However, women have limited access to productive resources and information, which restricts their contribution.
- In spite of their proximity to the cultivation process, they are not involved in decision making. Social norms impact the way women cultivators engage with the agri-ecosystem.
- Solving for these gaps will potentially improve cotton production, increase HH income and empower women cultivators.

2019

Sattva & BCI built a model to project ROI from inclusion of women cultivators in BCI’s quality assurance program. Key findings:

Benefits of inclusion
Given that women undertake 70-90% operations in cotton cultivation, strengthening their farm practices can improve output and yield. This could translate to improved income for farming HHs. Greater participation of women in decision making can also positively impact cotton production.

Cost implications
The extension of these programs to women will mean overall increase in implementation costs for BCI, largely attributed to personnel and direct costs of building farmers capacity. These costs will depend on the number of co-farmers enrolled. However, desirable per farmer cost can be achieved in the long-term.

2020- 2021

BC-GIF along with Sattva and Lupin Foundation implemented a co-farmer pilot to test study findings on the ground. The pilot included:

Pilot blueprint
2000 women co-farmers would mobilize into 50 LGs across 2 PUs in Dhule, Maharashtra, to strengthen their agronomic knowledge & skills and life skills through training and demo plots; while male farmers would be provided gender sensitisation training to ensure sustainable inclusion of women on the farm.

Key objectives
The objective of the pilot was to test relevance and effectiveness of programme activities with co-farmers, measure impact emerging across BCI’s result indicators, and test cost efficacy of inclusion of women co-farmers in BCI smallholder programmes.

Sources:
The 2019 Sattva-IDH gender analysis study found that women cultivators play a prominent role in cotton cultivation; their role directly impacts cotton production. Specifically, women cultivators were found to play a majority role across the following production activities:

- **Sowing**: Low plant population can delay boll maturity, reduce lint yield and boll density; inaccuracies in sowing can delay germination.
- **Weeds**: Bad weeds can reduce lint yields between 10% and 40%; weeds can affect fiber length, uniformity, strength, or microns, and increase moisture in the bolls.
- **Fertilizer application**: Delayed application of fertilisers can reduce yield; inefficient fertiliser usage increases cost of production.
- **Picking**: Unscientific picking causes contamination (dirt, hair, plastic, etc.) and results in reduced quality of cotton and fiber loss; cotton with higher grade, staple and strength claims a better price.

Tasks undertaken by women cultivators directly impact the quantity and quality of cotton produced:

- **Sowing**: 89% done by women
- **Weeding**: 84% done by women
- **Fertilizer Application**: 74% done by women
- **Picking**: 94% done by women

**Sources:**

*Detailed break-down of roles and responsibilities has been given in Annexure-1*
Despite their role in cotton production, women cultivators have limited access to resources; their engagement with the agri-ecosystem is influenced by social norms.

**Agronomic training**
33% of the women cultivators surveyed attended any agronomic training in the last two years.

**Land ownership**
16% of the women cultivators surveyed had land in their name.

**SHG membership**
50% of the women cultivators surveyed were part of SHGs. FPO presence was low.

**Credit access**
28% of the women cultivators surveyed took credit from SHGs.

**Government schemes**
15% of the women cultivators surveyed accessed government support.

**Extension services**
11% had ever accessed extension services.

Moreover, social norms impact the way women cultivators engage with the agricultural ecosystem:

- **Gendered Farm Roles**
  - Women perform tasks that are drudgery-prone & time intensive
  - They are given limited access to tools or information that can enhance productivity

- **Dual Responsibilities**
  - Women perform time consuming household chores
  - They have limited disposable time to access extension services / training

- **Decision Making**
  - Women cultivators play a limited role in decision-making related to the farm

- **Unequal Access**
  - Women cultivators are less likely to participate in extension / training programmes
  - They also do not engage with markets

Solving for these gaps can enhance cotton productivity and benefit households.

Inclusion of women cultivators in agricultural programmes can impact both social and economic outcomes

<table>
<thead>
<tr>
<th>Economic outcomes</th>
<th>Social outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inclusion can strengthen agronomic capabilities within the household by ensuring that both male and female farmers have access to improved knowledge and skills.</td>
<td>Sensitizing male farmers and strengthening the skills of women can increase agency and participation of women cultivators in decision-making on the farm.</td>
</tr>
<tr>
<td>Strengthening capabilities can, in-turn, improve production volumes and quality of cotton.</td>
<td>This can positively influence household / community perceptions towards the economic role and contributions of women cultivators.</td>
</tr>
<tr>
<td>This can reduce cost of cultivation and improve income of cotton cultivating households.</td>
<td>Inclusion of women in decision-making will further benefit farm productivity (given their proximity to the crop).</td>
</tr>
</tbody>
</table>

The report found that driving inclusion of women cultivators will require the following input:

- Building knowledge and skills in agronomic practices
- Strengthening functional financial literacy, confidence / negotiation skills and providing knowledge of govt schemes
- Collectivizing women through Self- Help Groups or Learning Groups
- Sensitizing the community on the role of women cotton cultivators and positively influencing social norms

Sources:
The BC-GIC co-farmer pilot conducted in FY 2020-21 aims to validate the expected business and social outcomes on the ground.

**IDH** aims to strengthen the inclusion and role of women within the cotton value chain, with a focus on driving both social and business outcomes for farmers.

**BCI** wants to test the co-farmer model. The co-farmer concept will get the efficacy of men and women working together as equal farming partners, with a focus on driving BCI’s RIRs (social, economic and environmental indicators).

The following activities have been identified for the pilot intervention with women co-farmers:

1. **Agronomic and life skills training**
   Build knowledge and skills in agronomic practices, functional financial literacy, negotiation skills and knowledge of govt scheme.

2. **Gender sensitisation**
   Sensitise male farmers on the role of women cotton cultivators and the benefits of strengthening their involvement.

3. **Demonstration plots and LGs**
   Enable participation of women in learning groups (LGs) and demo plots to ensure continuous learning.

This will be complemented with on-going advisory support provided by field facilitators to the BCI co-farmers.
Evaluation framework adopted to measure pilot success
The objective of the pilot is to test relevance, effectiveness, impact and cost of inclusion of women cultivators in the Quality Assurance Programme.

**Definition of parameter**
- **Relevance**: Assess the extent to which the programme ensures suitability to the needs of women co-farmers, pertinence to the market conditions and maximization of impact as part of design and execution.
- **Effectiveness**: Assess the extent to which the objectives of the program have been achieved.
- **Impact**: Assess the extent and type of change produced as an outcome of the programme interventions, measured against key economic and social indicators.
- **Cost**: Assess the short term and long term cost implications of running the program in a given geographical area / at a desirable scale.

**Measurement of parameter**
- **Relevance**: Evidence built through primary research, feedback gathered from co-farmers, male farmers and field facilitators.
- **Effectiveness**: Measured through output indicators:
  - Increase in knowledge of good agronomic practices
  - Increase in functional financial literacy
  - Shift in knowledge of male farmers towards the role and contribution of women co-farmers.
- **Impact**: Measured through outcome indicators:
  - Adoption of good agronomic practices by co-farmers
  - Economic and social outcomes as per select BCI result indicators
  - Attitudinal shift of male farmers towards co-farmers and increased involvement of co-farmers in decision-making.
- **Cost**: Conducting cost analysis to understand proportionate scale up costs basis pilot costs, projecting per farmer costs to benchmark against BCI cost norms.
An M&E framework was designed to measure pilot effectiveness and impact

<table>
<thead>
<tr>
<th><strong>Input/Activity Indicators</strong></th>
<th><strong>Output Indicators</strong></th>
<th><strong>Outcome Indicators</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community mobilization and formation of Learning Groups (LGs)</strong></td>
<td><strong>Increase in Knowledge</strong></td>
<td><strong>Adoption of Agronomic Practices</strong></td>
</tr>
<tr>
<td>This indicator measures the inputs and activities undertaken to successfully mobilise 2000 co-farmers and form 50 LGs</td>
<td>This indicator aims to measure the increase in co-farmer’s knowledge occurred through agronomic and life skills training</td>
<td>This indicator aims to measure the increase in adoption of agronomic practices among co-farmers</td>
</tr>
<tr>
<td><strong>Agronomic, Life skills and Gender Sensitisation trainings</strong></td>
<td></td>
<td><strong>Economic Outcomes</strong></td>
</tr>
<tr>
<td>This indicator measures the number of co-farmers who have received agronomic and life skills training and the number of male farmers who have received gender training</td>
<td></td>
<td>This indicator aims to measure the overall economic benefits accrued by the households through the program activities</td>
</tr>
<tr>
<td><strong>Demonstration Plots</strong></td>
<td></td>
<td><strong>Environmental Outcomes</strong></td>
</tr>
<tr>
<td>This indicator measures the number of demonstrations undertaken</td>
<td></td>
<td>This indicator aims to measure the environmental benefits achieved through adoption of environmentally friendly practices</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Social Outcomes</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>This indicator aims to measure the gender upliftment that has happened in co-farmer households</td>
</tr>
</tbody>
</table>
Effectiveness indicators were mapped to shift in knowledge and practice while impact indicators were measured against BCI’s result indicators

<table>
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<th>Input/Activity Indicators</th>
<th>Output Indicators</th>
<th>Outcome Indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Community mobilization and formation of Learning Groups (LGs)</strong></td>
<td>Increase in Knowledge</td>
<td>Adoption of Agronomic Practices</td>
</tr>
<tr>
<td>2 producer units and 5 FFs identified</td>
<td>• Increase in knowledge of good agronomic practices, as per BCI package of practices</td>
<td>• Number of co-farmers adopting practices related to improved sowing, storing and harvesting, as per BCI PoP</td>
</tr>
<tr>
<td>11 villages identified</td>
<td>• Increase in financial literacy and knowledge of Government schemes</td>
<td>• Number of co-farmers adopting practices related to improved fertilizer use, as per BCI PoP</td>
</tr>
<tr>
<td>2 Field meetings conducted in villages to share program details with potential co-farmers</td>
<td>• Shift in knowledge of male farmers towards the role of women co-farmers</td>
<td><strong>Economic Outcomes</strong></td>
</tr>
<tr>
<td>2000 women co-farmers selected</td>
<td></td>
<td>• Reduction in farming costs through optimized use of labour; fertilizers and pesticides (as per CICR guidelines)</td>
</tr>
<tr>
<td>50 co-farmer learning groups formed</td>
<td></td>
<td>• Increase in cotton yield and profitability, on the 10 demo plots</td>
</tr>
<tr>
<td><strong>Agronomic, Life skills and Gender Sensitisation trainings</strong></td>
<td></td>
<td><strong>Environmental Outcomes</strong>*</td>
</tr>
<tr>
<td>3 cycles of agronomic training provided to 2000 co-farmers</td>
<td></td>
<td>• Reduction in use of harmful pesticides and fertilizers</td>
</tr>
<tr>
<td>2 cycles of life skills training provided to 2000 co-farmers</td>
<td></td>
<td><strong>Social Outcomes</strong></td>
</tr>
<tr>
<td>Gender sensitization ToT to the Lupin team</td>
<td></td>
<td>• Increase in participation of women cotton cultivators in agricultural decision-making within the household</td>
</tr>
<tr>
<td>2 round of gender sensitization to 4000 male farmers (100 LGs)</td>
<td></td>
<td>• Change in perception of women co-farmers economic roles and capabilities, amongst the male farmers</td>
</tr>
<tr>
<td><strong>Demonstration Plots</strong></td>
<td></td>
<td>• Number of co-farmers experiencing a change in perception from male farmers</td>
</tr>
<tr>
<td>11 demo plots identified and mapped to 11 women co-farmers; demonstrations conducted as per identified practices</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Measurement of Environmental Outcomes was dropped given the limitations posed by COVID-19*
Co-farmer profile and key activities conducted during the pilot
On average, co-farmers are middle-aged women with 10+ years experience in cotton cultivation and no prior exposure to agri-training; majority are small-holders

Profile of co-farmers who participated in the pilot

70% of the co-farmers were between 30-50 years of age

70% of co-farmers have studied up to grade 10 and 18% have never gone to school

Majority of the co-farmer households have an average of 1.4 hectares of agricultural land

58% co-farmers rely solely on drip irrigation and 23% solely on open irrigation

64% co-farmers have worked in cotton cultivation for 10-20 years; 23% co-farmers have worked in cotton cultivation for <10 years

97% of the co-farmers received formal agronomic training for the first time through the pilot

Note: Male farmers enrolled in the pilot for gender sensitisation training include BCI farmers who are either: 1. from within the co-farmer household or 2. from with the pilot production units

Land holdings* across co-farmer households

- Marginal: 33%
- Small: 39%
- Semi-medium: 24%
- Medium: 24%

Source of irrigation used

- Drip Irrigation: 58%
- Open irrigation: 23%
- Rain-fed: 14%
- Open and Drip: 4%

*As per the Agricultural Census of India, marginal = less than 1 hectare, small = 1 to 2 hectares, semi-medium = 2 to 4 hectares, medium = 4 to 10 hectares, large = more than 10 hectares; 1 hectare = 2.4 acre
The pilot focuses on strengthening capabilities of co-farmers and male farmers across 2 production units in Dhule, Maharashtra.

### Planned Project Interventions

<table>
<thead>
<tr>
<th>Number</th>
<th>Intervention Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>50</td>
<td><strong>Learning Groups</strong></td>
<td>co-farmers from 2 PUs (Shirud and Boris)</td>
</tr>
<tr>
<td>2000</td>
<td><strong>Agronomic Training</strong></td>
<td>across 3 phases of training</td>
</tr>
<tr>
<td>2000</td>
<td><strong>Life Skills Training</strong></td>
<td>focused on functional financial literacy, negotiation skills and awareness of government schemes</td>
</tr>
<tr>
<td>10</td>
<td><strong>Demonstration Plots</strong></td>
<td>to demonstrate innovative farming practices (to be led by co-farmers)</td>
</tr>
<tr>
<td>4000</td>
<td><strong>Gender Sensitisation Training</strong></td>
<td>to bring about desired knowledge and attitudes of the community towards co-farmers</td>
</tr>
</tbody>
</table>

### Project Partners

<table>
<thead>
<tr>
<th>Partner Description</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Better Cotton Initiative</strong></td>
<td>co-funded the pilot to test efficacy of involvement of co-farmers in QAP</td>
</tr>
<tr>
<td><strong>IDH Sustainable Trade Initiative</strong></td>
<td>co-funded the project alongside BCI to test the findings and recommendations of the 2019 IDH-Sattva Report</td>
</tr>
<tr>
<td><strong>Lupin Foundation</strong></td>
<td>implemented the pilot on the ground with co-farmers and male farmers, including administering agri-training, life skills training, gender sensitisation training and demo plots management</td>
</tr>
<tr>
<td><strong>Sattva Consulting</strong></td>
<td>led pilot co-creation efforts, designed and delivered gender sensitisation modules, conducted the pilot M&amp;E, prepared the outcome report / roadmap and supported pilot governance</td>
</tr>
</tbody>
</table>
Agronomic training was held in 3 phases and included pre-season, mid-season and end-season modules.

**Components**

<table>
<thead>
<tr>
<th>Training</th>
<th>Duration</th>
<th>Total farmers trained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-season training</td>
<td>2 hours</td>
<td>479 co-farmers trained</td>
</tr>
<tr>
<td>Mid-season training</td>
<td>2 hours</td>
<td>1556 co-farmers trained</td>
</tr>
<tr>
<td>End-season training</td>
<td>2 hours</td>
<td>1790 co-farmers trained</td>
</tr>
</tbody>
</table>

**Training delivered by**

Female field facilitators with a farming background in cotton and qualifications of MSW / Agriculture Diploma.

**Training design**

The agronomic training was imparted following the same format as is followed in BCI smallholder programmes in India.

**What was the scope of the agronomic training?**

**Pre-season training**

- Better Cotton standard systems
- Introduction to IPM, use of bio / homemade pesticides and safety standards for spraying
- Soil testing
- Seed treatment, sowing, intercropping and managing plant population
- Sowing & plantation practices
- Introduction to decent work principles

**Mid-season training**

- Identification of pesticide by labels; phasing out of harmful pesticides
- Identification of pests, scouting and ETL
- Preparation of pesticide and safety standards for spraying
- Decent work principles (non-discriminatory and harassment free work environment for labour)
- Integrated Nutrient Management and fertilizer application

**End-season training**

- Water management
- Maintaining fibre quality (harvesting and storing practices)
- Considerations for selling (BCI ginner versus agents; good practices)
- Early clearance of field for next season
- Crop rotation

*The training was planned for 2000 co-farmers but due to the onset of COVID-19, the actual numbers were lower.*
The life-skills training was a 3-hour session which aimed to provide functional skills to co-farmers.

**Training delivered by**
Female field facilitators with relevant experience and qualifications of 12th pass / MSW / Agriculture Diploma.

**Training design**
Life skills training was designed to provide functional financial literacy and knowledge of govt schemes; delivered through a single session.

**Components**
- **Life skills training**
  - Duration: 3 hours
  - Total farmers trained: 1676 Co-farmers Trained

**What was the scope of the life-skills training?**
- **Financial literacy**
  - Concept of financial literacy
  - Need for financial literacy
  - Components of financial literacy
    - I. Financial management
    - II. Tracking family income-expenditure
    - III. Secured savings
    - IV. Avoid unnecessary spending
    - V. Income sources & finance
- **Government schemes**
  - Importance of social security schemes
  - Pradhan Mantri Jan Dhan Yojana
  - Prashan Mantri Jivan Jyoti Bima Yojana
  - Pradhan Mantri Suraksha Bima Yojana
  - Prashan Mantri Fasal Bima Yojana
  - Atal Pension Yojana
  - Janani Shishu Suraksha Programme
- **Personal Development**
  - Self-respect
  - Stress Management
  - Effective Communication
  - Problem solving
  - Decision Making

*The training was planned for 2000 co-farmers but due to the onset of COVID-19, the actual numbers were lower.*
Demonstration plots were selected to demonstrate the benefits of adoption of good agronomic practices and innovations.

**Intervention design**

The demo plot sought to demonstrate innovative farming practices and were led by the co-farmers.

**Components**

- **Pre-season activities**
  - 11 Demo Plots

- **Mid-season activities**
  - 11 Demo Plots

- **Post-season activities**
  - 11 Demo Plots

**What was done on the demo plots?**

<table>
<thead>
<tr>
<th>Pre-season activities</th>
<th>Mid-season activities</th>
<th>Post-season activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Seed treatment</td>
<td>• Bio Fertiliser application</td>
<td>• Cotton storage</td>
</tr>
<tr>
<td>• Inter-cropping</td>
<td>• Trap crops</td>
<td>• Display banner</td>
</tr>
<tr>
<td></td>
<td>• Installation of pheromone traps, and yellow and blue sticky traps</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Installation of light trap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Bio-pesticide spraying</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Food sprays</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Personal protective equipment use</td>
<td></td>
</tr>
</tbody>
</table>

*10 demo plots were planned but 11 were selected for actual implementation.*
The gender sensitisation training was delivered to male farmers across 2 sessions to provide conceptual and practical understanding of gender dynamics.

### Training delivered by
- Male field facilitators with a background in cotton and qualifications of 12th pass / MSW / Agriculture Diploma.

### Training design
- The gender sensitisation training was designed to be delivered in two sessions, to build both conceptual and practical understanding.

### Components

<table>
<thead>
<tr>
<th>Session 1: Introduction to ‘gender’, gender roles, &amp; gender division of labour</th>
<th>Session 2: Gender Relations, access to resources &amp; decision making</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Duration</strong></td>
<td>4 hours</td>
</tr>
<tr>
<td><strong>Total farmers trained</strong></td>
<td>1790 Male-farmers Trained</td>
</tr>
</tbody>
</table>

### What was the scope of the gender sensitisation training?

#### Session 1
- Introduction to the term 'gender'; Socialization across the lifecycle
  - Activity I: Gender vs sex
  - Activity II: Socialization across the lifecycle
  - Activity III: Gender norms
- Gender roles, Gender division of labour
  - Activity IV: Daily activity clock
  - Activity V: Activity profile

#### Session 2
- Gender Relations
  - Activity VI: Power walk exercise
- Access to resources, Decision making
  - Activity VII: Access to and control over resources
  - Activity VIII: Decision-making

*The training was planned for 2000 co-farmers but due to the onset of COVID-19, the actual numbers were lower.*
Pilot relevance to co-farmers and male farmers
Interviews with Field Facilitators, co-farmers and male farmers depict how the interventions of the BCI-IDH pilot are relevant at both economic and social level

<table>
<thead>
<tr>
<th>Social relevance</th>
<th>Economical relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>The agronomic training is the first step to instil the skills and knowledge among co-farmers which will enable them to participate in decision making.</td>
<td>While the 2019 study revealed that co-farmers undertake key tasks that impact the quality and quantity of cotton produced, the baseline highlights that co-farmers lack knowledge of seed quality, chemical use, cotton transportation, market prices and pest identification which are key to improve economic outputs.</td>
</tr>
<tr>
<td>Over and above building agronomic capabilities, women also reported a lack of confidence to voice their opinions given the rigid gender structure. Life Skills aimed to bridge this gap along with imparting knowledge of financial literacy and government scheme which would enable co-farmers to become independent.</td>
<td>The baseline study revealed that co-farmers lack the time to dedicate to critical farming activities which impact the quality and quantity of cotton. Saving time has allowed many co-farmers to become a more active participant in farm activities and decision making as revealed through case studies.</td>
</tr>
<tr>
<td>The 2019 IDH-sattva research study established the need for awareness creation in the community on the amount and value of work co-farmers do and the importance of involving co-farmers in decision making.</td>
<td>Social norms restrict co-farmers’ access to productive resources and information which limits their economic contribution. To improve economic outcomes, gender sensitisation becomes key to transform rigid gender roles and norms.</td>
</tr>
<tr>
<td>Demonstration plot aimed to demonstrate the impact of co-farmers co-leading farming alongside their husbands for the community to witness.</td>
<td>Demonstration plots results reveal the economic outcomes that co-farmers have been able to achieve through adaptation of new agronomic practices.</td>
</tr>
</tbody>
</table>
Bharthi from Vinchur Village is now actively involved in farm-related decision-making and has produced 20 additional quintals of high quality cotton this season.

“My name is Bharthi Suresh Borse. I live in a village called Vinchur in Dhule. When the Lupin team first approached me for setting up a demo plot, my husband was not very eager to participate. He was not confident that I can run the farm along with him even though I am fairly well educated. I convinced him to participate. We did all farm activities collaboratively on the demo plot. I attended the agronomic and life skills training and my husband and I attended the gender sensitisation training together. His perspective towards me slowly started changing after the gender sensitisation training and he has also gained more confidence on my skills.”

“I learnt about the importance of women participating in decision making and through life skills training, I acquired the confidence to make decisions related to the farm for the first time in my life. After the training, I felt like women can do anything, women’s role does not need to be restricted to the house. After the agronomic training, I ensured that my husband uses protective gear while spraying pesticides. My husband is very happy with my contributions, and his perception towards me has changed. He accepts that I also have all the requisite capability. I even accompany him to the market now, which has further built my knowledge of cotton selling. Lately we have been taking decisions together because he is starting to understand that there is benefit in taking decisions together.”

“Through the demo plot activities, we have been able to save money on seeds, pesticides, and fertilizers, saving nearly INR 5000. We also produced 20 additional quintals of high-quality cotton this year on our demo plot!”
Anita Patil has gained confidence to participate more actively on her farm, in spite of her struggles with domestic violence.

“*My name is Anita Mahesh Patil. I belong to a village named Sarvad. My life has changed a lot after I have started to participate in this programme. My husband never used to let me go out of the house unless it was for farming. My husband has a drinking problem and he never really contributed to farm activities himself. Whatever work was due on the farm, my children or I used to take it up. Over and above, he used to abuse me physically and verbally. I could never attend any training or even talk other women before. At first, my husband was hesitant to let me take up a demo plot in this programme but I managed to convince him. We also attended all other trainings in this last year.*

“I’ve observed some changes after the gender sensitisation training. My husband has become more open to me attending various trainings or group meetings. He also participates more in farm activities now. The trainings have completely changed the way we grow cotton. I used to feel helpless and depended upon my husband for the smallest of things. I feel more equipped now to manage my farm. In fact, I am confident that even if my husband cannot support our farm, I will be able to do it by myself for my household and children. I take all decisions on the farm now.”

“*Earlier we used to just put fertilizer and pesticide without putting much thought into it. Now we prepare our own bio-alternatives and apply them in a systematic manner. We used to spend INR 10,000 for 3 sprays on a 3-acre farm, but we have saved nearly INR 5000 per acre through adoption of bio pesticides. Our earning have increased by INR 10,000 per acre. This year, we intercropped cotton with Zhandu flowers, which also provided some additional income.*"
Chagan Amrutkar has realized the importance of women participating in decision making after co-running the demo plot with his wife.

“My name is Chagan Amrutkar. I live in a village named Chinchkheda. I was never helpful around the house and didn’t provide my wife much support. I used to wake up at 7 am to start planning farm-related tasks while my wife would wake up at 4 am and do all the household work. As men, we never used to think about the amount of work women do on a daily basis. I attended the gender sensitisation training and my wife attended the agronomic and life skills training. I was exposed to this kind of training for the first time.”

“The training has influenced the way I think. Now I wake up early and go to the well to fetch water and then help clean our house. I have started taking up a few of my wife’s household responsibilities. Women work for extended hours and I want to help. We have also started dividing some of her farm tasks between us. We do these tasks at the same time now. I have also made it a point to discuss farm purchases with her before they are made.”

“This year, we implemented the one-seed technique, intercropped pulses along with cotton, and put fly traps on the farms, all of which has helped increase our crop production. Earlier we used to be able to grow a maximum of 4-5 quintals per acre but now we grow 9 quintal per acre. We used to spend INR 50,000 and earn INR 70,000. But after all the training, we now spend only INR 30,000 instead. We have also started using cotton cloth bags to transport cotton instead of plastic, which retains the quality of cotton.”
Pilot effectiveness: Change in agronomic knowledge
Co-farmers saw an increase in agronomic knowledge; knowledge score increased from 2.63 at baseline to 3.19 at end-line, out of a total of 7

To evaluate outputs achieved through the co-farmer agronomic trainings, co-farmers were administered questions that tested change in agronomic knowledge before (at baseline) and after the training (at end-line). This included:

1. Focus on tasks that co-farmers are directly responsible for on the farm. For example, fertiliser application methods, sowing techniques etc.
2. Focus on tasks / activities that co-farmers could positively influence. For example, decent work practices or limiting purchase / usage banned pesticides.

Average knowledge scores across co-farmers increased by 0.56 points

<table>
<thead>
<tr>
<th>Score</th>
<th>Baseline</th>
<th>Endline</th>
<th>P-value &lt; 0.05</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-3 score</td>
<td>2.63</td>
<td>3.19</td>
<td></td>
</tr>
<tr>
<td>% co-farmers</td>
<td>77%</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>3-6 score</td>
<td>53%</td>
<td>47%</td>
<td></td>
</tr>
</tbody>
</table>

The p-value suggests that the change in knowledge is statistically significant i.e. the increase is not due to as-usual increase, but can be attributed to external factors (eg, the pilot).

At baseline, 23% farmers scored between 3-6 points on the ‘knowledge’ test; this increased to 47% co-farmers scoring between 3-6 points at end-line

There is a 24% rise in co-farmers scoring between 3-6 points

Average knowledge scores (ranges)

<table>
<thead>
<tr>
<th>Score</th>
<th>Baseline</th>
<th>Endline</th>
<th>P-value &lt; 0.05</th>
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<td>47%</td>
<td></td>
</tr>
</tbody>
</table>

Other than farmers with 21-30 years of experience, all farmers have seen a statistically significant gain in agricultural knowledge after the pilot

Farmers with relatively less cotton farming experience have gained the most in knowledge.

Source: Pilot baseline/end-line data; N=500

*One tailed t-test used to check statistical significance. Results were considered statistically significant if P-Value < 0.05.
This change in knowledge was observed across nearly all areas of enquiry.

A meaningful shift in knowledge was seen across:

- Benefits of soil testing
- Benefits of intercropping
- Identifying red labelled (banned) pesticides
- Decent work practices
- Beneficial insects

Here, ‘statistically significant’ means that the shift can be attributed to external factors, wherein the intervention could be one such factor.

Co-farmers did not see any significant increase in knowledge of the benefits of soil testing.

Overall, there is a general increase in the percentage of co-farmers who identified the benefits of soil testing correctly at end-line. There is also a decrease in the percentage of co-farmers who have responded with “I do not know” at end-line.

However, 77% of co-farmers surveyed in the end-line believe that understanding the soil type is also a benefit of soil testing, which is incorrect.

This means that greater emphasis will have to be laid on clarifying misconceptions during agronomic trainings.

\*One tailed t-test used to check statistical significance. Results were considered statistically significant if P-Value < 0.05.

Source: Pilot baseline/end-line data; N=500
There is a drop in the number of co-farmers who cite ‘lack of knowledge’ as a primary agricultural challenge (at end-line there is emphasis on drudgery-related challenges).

At baseline, lack of knowledge on seed quality and on sowing techniques were cited as key challenges.

At end-line, women co-farmers emphasized drudgery-related challenges.

This could be owing to interventions made in the former and not the latter.

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**Pre-season challenges**

- **Body aches and pains**
  - Baseline: 66%
  - Endline: 87%
- **Physically exhausting**
  - Baseline: 39%
  - Endline: 72%
- **Lack of time to complete work**
  - Baseline: 55%
  - Endline: 59%
- **Carrying heavy loads**
  - Baseline: 32%
  - Endline: 39%
- **Lack knowledge on seed quality**
  - Baseline: 30%
  - Endline: 69%
- **Lack knowledge on sowing seeds**
  - Baseline: 15%
  - Endline: 35%
- **I do not know**
  - Baseline: 4%
  - Endline: 0%

**Top 3 challenges at baseline**: Lack knowledge on seed quality, Body aches and pains, Lack of time to complete all work

**Top 3 challenges at end-line**: Body aches and pains, Physical exhaustion, Lack of time to complete all work

---

**Mid-season challenges**

- **Lack knowledge on use of chemicals**
  - Baseline: 62%
  - Endline: 65%
- **Body aches and pains**
  - Baseline: 38%
  - Endline: 58%
- **Physically exhausting**
  - Baseline: 24%
  - Endline: 47%
- **Lack knowledge to choose chemicals**
  - Baseline: 36%
  - Endline: 46%
- **Can’t identify pests at right time**
  - Baseline: 28%
  - Endline: 45%
- **Lack knowledge on cotton-picking**
  - Baseline: 17%
  - Endline: 81%
- **Carrying heavy load**
  - Baseline: 11%
  - Endline: 13%
- **Lack time to complete work**
  - Baseline: 10%
  - Endline: 11%
- **I do not know**
  - Baseline: 0%
  - Endline: 3%

**Top 3 challenges at baseline**: Can’t identify pests at right time, Lack knowledge on chemical* use, Lack knowledge on cotton-picking

**Top 3 challenges at end-line**: Lack knowledge on chemical* use, Body aches and pains, Physical Exhaustion

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* Chemicals: Pesticides and fertilisers

Source: Pilot baseline/end-line data; N=500
At end-season, knowledge-related challenges have reduced and there is greater emphasis on challenges related to accessing cotton markets, cotton prices, and so on. Challenges cited by the co-farmers suggest that there has been improvements in knowledge possessed by them. At end-line, co-farmers were less likely to cite knowledge-related challenges, especially when compared to baseline. This has been further validated through the statistically significant increase in knowledge seen at end-line. However, 1-time agronomic trainings may not bring about a desirable shift in knowledge that can be sustained. To do this, refresher training and handholding support is critical.

Specifically, co-farmers continue to require support with:

- Usage of safe chemical pesticides and fertilisers
- Accessing markets and market information
- Negotiation skills
- Tools and techniques that can reduce drudgery and physical strain

There is scope to abet these challenges through refresher agronomic training, including components on effective market access, gaining appropriate market information and negotiating appropriate selling price for cotton.

Key learnings / reflections based on challenges faced by co-farmers across cotton cultivation seasons

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Source: Pilot baseline/end-line data; N=500
Pilot effectiveness: Change in financial literacy
Knowledge of creating farm budgets has improved amongst co-farmers; need for greater clarity around how to account for personal / household expenses

The pilot sought to provide co-farmers with functional financial literacy. This included building their understanding of how to compute a basic farm budget, including understanding the various components that a budget must include. To test this, during the baseline and end-line co-farmers were asked what cost items should be considered when budgeting for the farm.

What components need to be included as part of the farm budget?

- More than 80% co-farmers are now aware of the key components that are required to prepare a farm budget, including cost heads such as tools / machinery and pesticides / fertilisers (at baseline, farmers were unable to identify all the components).
- At end-line 81% co-farmers report needing to plan for loan repayments while planning the farm budget, as opposed to 46% co-farmers at baseline.

Key learning / reflection from the data
- Co-farmers require greater clarity around how to account for personal / household expenses when planning the farm budget.
- Functional financial literacy can be integrated into the agronomic training to enable co-farmers to form a clear link between farm activities and related financial planning.

Source: Pilot baseline/end-line data; N=500
An increasing percentage of women co-farmers are aware of the social benefits and government schemes that they are eligible for

Through the pilot, co-farmers were provided knowledge of relevant government schemes and types of insurance. To test the transfer of knowledge, co-farmers were asked what social benefits and government schemes they were aware of, both at baseline and end-line.

![Change in awareness of social benefits, schemes and insurance](image)

- The end-line saw a significant increase in awareness of schemes such as PMKSN, PMVSY, PMJJY and crop insurance schemes.
- Additionally, knowledge of livestock and house insurance also saw an increase.

**Key learning / reflection from the data**

Greater emphasis to be provided on schemes that saw a low shift in awareness:

- Financial schemes: Pradhan Mantri Kisan Samman Nidhi (PMKSN); drip irrigation scheme
- Agricultural schemes: Pradhan Mantri Matru Vandana Yojana(PMMYY);
- Women-relevant schemes: One Stop Centre against domestic violence

Source: Pilot baseline/end-line data; N=500
Pilot effectiveness: Adoption of agronomic practices
Adoption of good agronomic practices increased; ‘adoption of agronomic practices’ score increased from 2.60 at baseline to 5.01 at end-line, out of a total score of 9

At baseline and end-line, co-farmers were asked about specific agronomic practices that they were implementing on the ground. The questions focus on tasks / activities that co-farmers are responsible for implementing. This included, fertiliser application methods utilised, adoption of biofertilisers, cotton picking methods adopted, and cotton storage practices, amongst several other questions. Co-farmer responses were measured to test alignment with BCI-promoted practices or CICR guidelines.

At baseline, 1% co-farmers had a score that was above 4 points. At end-line, 57% scored between 4-6 points and 6% scored 6+ points, showing substantial movement.

There is a 56% rise in co-farmers scoring between 4-6 points on adoption of good agronomic practices.

Improvements in adoption of agronomic practices have been reported across co-farmers, regardless of their years of experience in farming.

The shift in adoption of practices has been most significant for co-farmers who have zero years of experience in cotton farming. However, across all ranges, the shift in adoption denotes statistical significance (that is, it can to some degree be attributed to the interventions).

Source: Pilot baseline/end-line data; N=500
At end-line, co-farmers report better adoption of various BCI / CICR-recommended cultivation practices

The end-line analysis suggests that co-farmers have begun to adopt BCI / CICR recommended agronomic practices after the pilot:

- 42% co-farmers report applying pesticides only when it is needed, something almost no co-farmers were doing before the pilot
- 80% co-farmers report following correct plant spacing of 3x1.5 ft and 4x2 ft. (in case they use drip irrigation) as against 42% co-farmers at baseline
- 50% co-farmers as against none at baseline are packing cotton in cotton bags; 64% co-farmers as against none at baseline are storing cotton in a dry, designated area

This corroborates with the findings from the IDH-Sattva 2019 gender analysis report which suggested that inclusion of women in cotton programmes will improve cultivation practices.

Additionally, the increase in the agronomic practices is statistically significant i.e. this increase is not just by chance alone, but can be attributed to external factors (in this, the intervention being one such external factor). Regular agronomic trainings in the pilot and exposure to demo plots within the vicinity have contributed to significant changes in how cotton is sowed, tended to, harvested and processed.

Source: Pilot baseline/end-line data; N=500
Pilot impact: Change in economic indicators
At end-line, co-farmers have also reported an increase in the yield per acre on their farms, while 24% farms saw a decrease in yield and 23% farms experienced no change in yield.

Of the 53% of all farms reporting an increase in yield, their average output increased by 175 kg per hectare.

Of the 24% of all farms reporting a decrease in yield, their output on average decreased by 208 kg per hectare.

There is a statistically significant increase in the yield per acre from an average of 260 kg/hectare to average of 501 kg/hectare, i.e. this increase is not random and is caused due to an external factor.

While the increase in yield has been caused by an external factor, in order to isolate whether this change has been due to the pilot intervention, comparison has to be made between farms that participated in the pilot and those that did not.

Source: Pilot baseline/end-line data; N=500
However, this increase in yield was observed across all households, including non-co-farmer households; thus, the increase cannot be attributed to the pilot programme.

Apart from studying the change in economic indicators between baseline and end-line data, Sattva also conducted a difference-in-difference analysis of BCI data collected from co-farmer households. This analysis was done on data collected from two groups, namely the treatment group which included co-farmer households and a control group, which included non-co-farmer households. The analysis was primarily done on ‘change in yield of farmers’ across treatment and comparison groups.

- Overall it was found that yield has increased from 2019-20 to 2020-21 for all farmers.
- Additionally, there is no statistically significant change in yield seen by either treatment or comparison households.
- This denotes that the change in yield is likely due to factors other than the pilot intervention. For example, improved seed quality, increase in rainfall etc.

Key learning / reflection from the pilot: Economic outcomes may take longer to change
- This change cannot be observed over one season and will require a longer-term intervention.

Source: BCI data collected by Lupin; N = 1768 for treatment group and N = 7738 for comparison group
No significant change seen in earnings or costs incurred

71% of farms experienced increase in earnings within INR 0-50,000 per acre. However, only the earnings of marginal and small farms saw a statistically significant increase after the pilot.

<table>
<thead>
<tr>
<th>Change in per acre earnings after pilot</th>
<th>Average gain in per acre earnings</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decrease in earnings (0-50,000)</td>
<td>27%</td>
<td>0.47</td>
</tr>
<tr>
<td>Small increase in earnings (0-50,000)</td>
<td>71%</td>
<td>0.11</td>
</tr>
<tr>
<td>High increase in earnings (Above 50,000)</td>
<td>2%</td>
<td>0.05</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earnings in INR</th>
<th>Percentage of cofarmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>250.04</td>
<td>medium</td>
</tr>
<tr>
<td>1,580.04</td>
<td>semi-medium</td>
</tr>
<tr>
<td>5,909.59</td>
<td>small</td>
</tr>
<tr>
<td>18,749.84</td>
<td>marginal</td>
</tr>
</tbody>
</table>

There is no statistically significant difference in costs before and after the pilot i.e. no external factor has contributed to a large change and any change observed is what would be expected under normal circumstances.

Key learning / reflection from the pilot: Economic outcomes may take longer to change

- The monetary effects of adoption of good agronomic practices would be visible only over a period of time and cannot be observed over one season.
- Similarly, behavioral changes that lead to reduced costs take longer to adapt and to result in substantial outcomes.

Source: Pilot baseline/end-line data; N=500
Pilot impact: Change in social indicators (as reported by co-farmers)
After the pilot, a higher percentage of co-farmers are participating in taking decisions:

- An increasing percentage of co-farmers reported participating in all types of decisions on their farms.
- This is expected to be because of the combination of agronomic training, life skills training and gender sensitisation training.

Source: Pilot baseline/end-line data; N=500
Co-farmers have grown increasingly confident in taking decisions on the farm; this are still nervous in doing market negotiations

<table>
<thead>
<tr>
<th>Decision Area</th>
<th>Baseline (N=500)</th>
<th>Endline (N=500)</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selecting cotton seeds</td>
<td>27%</td>
<td>41%</td>
<td>14%</td>
</tr>
<tr>
<td>Hiring and managing labour</td>
<td>45%</td>
<td>29%</td>
<td>-16%</td>
</tr>
<tr>
<td>Choosing pesticides</td>
<td>15%</td>
<td>0%</td>
<td>-15%</td>
</tr>
<tr>
<td>Choosing fertilizers</td>
<td>4%</td>
<td>27%</td>
<td>23%</td>
</tr>
<tr>
<td>Choosing time to harvest</td>
<td>18%</td>
<td>57%</td>
<td>39%</td>
</tr>
<tr>
<td>Negotiating</td>
<td>33%</td>
<td>43%</td>
<td>10%</td>
</tr>
</tbody>
</table>

29% co-farmers in baseline as against only 5% in endline are confident in choosing cotton seeds, but 41% co-farmers still feel nervous in doing so.

57% co-farmers are comfortable hiring and managing labour. No co-farmer surveyed after pilot is scared of managing labour.

Large shift observed in farmers from being scared to becoming confident in choosing which pesticides to use on the farm.

Large shift observed in farmers from being scared to somewhat confident in choosing the correct fertilizers for the farm.

An increasing number of farmers are becoming comfortable, with more than half being confident about harvest decisions.

While a large number of farmers are no longer scared of negotiations, 66% farmers still need to build confidence in negotiating in the market.

Source: Pilot baseline/end-line data; N=500
Pilot impact: Change in social indicators (as reported by male farmers)
The average test score for male farmers increased from 4.5 points at pre-test to 8.9 points at post-test (out of a total score of 15 points), suggesting a considerable shift in knowledge through the training.

- Overall, the training demonstrated a shift in knowledge with the average score increasing from 4.5 at pre-test to 8.9 at post-test.
- Additionally, the lowest pre-test score was 0 which moved up to 2.5 in the post-test while highest pre-test score was 11, which moved up to 14 in the post-test.

- While majority farmers scored less than 5 points during the pre-test, there was a significant shift to 6+ points during the post-test.
- Farmers scoring 11-15 points increased by 20%+. 

Average test scores across pre-test and post-test

<table>
<thead>
<tr>
<th>Score range</th>
<th>Pre-test (% of total farmers falling in the score range)</th>
<th>Post-test (% of total farmers falling in the score range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>59.0%</td>
<td>8.7%</td>
</tr>
<tr>
<td>6-10</td>
<td>30.2%</td>
<td>68.1%</td>
</tr>
<tr>
<td>11-15</td>
<td>0.2%</td>
<td>21.8%</td>
</tr>
</tbody>
</table>
There was an average ~25% increase in male farmers who recognise that roles of men and women can be interchanged, including traditionally male roles such as visiting the market and managing income.

- Male farmers were tested to gauge their understanding of the interchangeability of gender roles. There was emphasis on roles that have traditionally been associated with either men or women, both within the household and on the farm.
- The test results found that an increasing number of participants were able to identify the interchangeability between the roles that are typically taken on by either men or women.
- The modules hypothesize that bringing about this change in knowledge is a key step towards driving gender equity on the cotton farm.
An additional 25% male farmers understand that decision making abilities are not gender dependant.

- Male farmers were tested to evaluate whether they believed that decision-making abilities are ascribed.
- Farmers who understand that decision making abilities are not ascribed increased from 47% at pre-test to 72% at post-test.
- Feedback from the trainers revealed that participants had various queries regarding whether men and women have equal capabilities to work on the farm. Greater emphasis must be paid to resolving such doubts that arise during the training.
An additional 21% farmers were cognizant of women’s contribution to increasing cotton production, an additional 15% recognised women’s contribution to income generation, and an additional ~17% farmers found women’s involvement in key decisions on the farm to be valuable.

- At pre-test, farmers primarily associated women with ‘manual labour’. However, this trend shifted to farmers recognizing women’s contribution across income generation, knowledge addition, cost savings, increased production and decision making, denoting a shift in perspective towards the contributions of women farmers.
- Number of farmers who believe co-farmers contribute to ‘nothing’ decreased from 20% to 0%.

- On average, an additional ~17% farmers see value in involving co-farmers in various decisions such as seed selection, time of sowing, fertilizer purchase, and selling price of cotton.
- Number of farmers who believe co-farmers involvement is not valuable in any decision decreased from 17% to 0%.
There is a positive shift amongst male farmers recognising the benefits of formal training for women; although average increase in number of farmers who see formal training beneficial for ‘self’ is 29% while beneficial for the ‘farm’ is only 6%.

**Overall, there was a positive shift in farmers acknowledging the benefits of training for women farmers. However, even at post-test, male farmers were most likely to identify ‘increase in confidence’ as a key benefit of training. There was a relatively lower increase in farmers recognizing increase in agricultural knowledge, increase in cotton production and increase in savings as benefits of training.**

**Going forward, there is a need to lay greater emphasis on the economic benefits of training for women farmers.**
75% male farmers now believe women farmers should have an equal say in decision making and 53% additional male farmers, on average, intend on including co-farmers in various decisions.

- Number of male farmers who believe ‘men and women should have an equal say in decision making’ increased from 18% to 75%.
- Number of male farmers who believe ‘men should have the final say in decision making’ decreased from 52% to 1.2%.

On an average 53% additional farmers believe women’s participation in various household and farm decisions will be valuable.

- Highest positive increase was observed in household decisions, particularly ‘deciding how the household income is managed’ (84% increase) followed by ‘deciding who the children will get married to’ (63%). However, even farm-related decisions saw a positive increase.
Way forward
4 potential pathways for scale have been identified

The previous sections of the report demonstrate positive movement across indicators (except economic indicators). Given this, Sattva recommends a success-based model for scale up. Potential scale up pathways have been given below:

**Pathways* for scaling-up (non-exclusive)**
Sourced from IFAD framework that provides high level policy and operational guidance in scaling up, relevant to agronomic programmes

1. **Sustaining outcomes in the existing geography**
   BCI and IDH sustain the impact in the Dhule District with the same number of households

2. **Horizontal**
   BCI and IDH replicate the pilot program in other cotton producing geographies

3. **Vertical**
   BCI and IDH move to a nation-wide expansion involving policy changes at the organization level for gender inclusivity

4. **Functional**
   BCI and IDH can iteratively tweak program design and implementation to adapt to the needs of geography and cotton farming ecosystem

Scaling up is an iterative process and requires taking stock within small intervals to strengthen programme design

A framework to take decisions on scaling-up based on evidence of how outputs and outcomes perform is recommended. This helps define what is desirable for the program over different stages and the ideal pathways based on how the program fares.

Evidence based decisions:
Setting programmatic goals and year on year targets can provide a precise picture of how the program is performing and what can be done next.

Non-linear pathway:
Different pathways to scale-up can be simultaneously taken. For e.g. If the programmatic target is achieved in 80% of geographies where the program is being implemented, vertical and horizontal scale-up can be done simultaneously.

Evaluate different scenarios:
Depending on achievement of goals and targets at every stage of program implementation, different scenarios to scale the pilot can be evaluated.

Solutions not force fitted
Although gender disparity is pervasive, its manifestations will differ across different geographies and contexts. Adapting the program by tracking targets and performance i.e. functional scaling ensures that the program is effective at scale.
Decision on scale up should be taken based on achievement of defined targets and goals.

- Set yearly targets for the subsequent program.
  - Targets unachieved:
    - Tweak pilot design
    - Improve Implementation
    - Cancel pilot
  - Targets achieved:
    - Choose a scale-up pathway

Program piloted with 2000 farmers in two PUs of Dhule District.

Pilot implementation in subsequent years.

Pathway to scale-up.
Depending on the type of yearly targets achieved, the mostly suitable scale-up pathway can be determined (1/2)

### Yearly Targets

BCI and IDH can set yearly targets for the program to achieve. This defines a clear and measurable picture of what success looks like over different stages of scale-up.

- **Pilot in 2020-21**
  - X% increase in ‘Knowledge’
  - X% increase in ‘adoption of agronomic practices’
  - X% increase in ‘Financial Literacy’

- **Year 2 onward**
  - Additional Y% increase from Year-1 targets
  - X% increase in ‘Economic Outcomes’
  - X% increase in ‘Environmental outcomes’
  - X% increase in participation in decision making

### Scenario Analysis

The decision to scale-up and pathway choice would depend on achievement of targets along with other factors like budget, availability of implementation partners, socio-economic context.

- **Target Achieved:** Make the change sustainable
  - Replicate in similar cotton producing geographies

- **Target not achieved:**
  1. Process analysis (what went wrong, what went well) and rework program design and implementation
  2. Cancel scale-up

### Scale-up Pathway

The scale-up would either sustain outcomes, improve them or spread them to more BCI farms.

- **Sustaining outcomes by expanding to all BCI farms in Dhule district**
- **Functional Improvement in program design and delivery**
- **Horizontal Scale-Up to new PUs in Maharashtra and other states**
- **Functional Contextualization in program design and delivery**

---

Depending on the type of yearly targets achieved, the mostly suitable scale-up pathway can be determined (2/2)

**Yearly Targets and Programmatic goals**

BCI and IDH can set an ambitious goal for the program, and its achievement can inform policy level changes and enhancement of BCI and cotton trade standards

- X% increase in Knowledge, adoption, financial literacy outputs in new states
- Additional Y% increase in Year 2 targets in old geography
- Achievement of programmatic goal in Dhule district

**Scenario Analysis**

The decision to scale-up and pathway choice would depend on achievement of the goal-targets along with financial and policy considerations

- **Target Achieved:** Replicate the program to all BCI farms
- **Target not achieved:**
  1. Process analysis and rework program design and implementation
  2. No Change

**Scale-up Pathway**

The scale-up would either sustain outcomes, improve them or spread them to more BCI farms

- **Horizontal Scale-Up**
  - to all BCI farms
- **Functional Contextualization in program design and delivery**

- **Vertical Scale-Up**
  - Gender inclusion and agronomic trainings for co-farmers become BCI standards
  - Sustaining outcomes in the existing geography

**Year 3 to Year 5**

X% increase in Knowledge, adoption, financial literacy outputs in new states

- Additional Y% increase in Year 2 targets in old geography
- Achievement of programmatic goal in Dhule district

**Year 6 to Year 10**

Achievement of Programmatic goal

- Target Achieved: Integrate program outcomes to BCI and cotton trade standards
- Target not achieved:
  1. Invest another year to Sustain the short and midterm options
  2. Cancel scale-up
In the near-term, Sattva recommends scaling the pilot to all co-farmers in the two present PUs in Dhule district; If successful, replicate to new PUs in Maharashtra and eventually scale to other states.

Scale pilot to all farmers of Dhule district, where the pilot was implemented
• With the additional cost of hiring the field facilitators and coordinators the pilot can be scaled to all BCI farms in Dhule district of Maharashtra
• The program can be leaner with low-touch life skills training offered through the demo plots and agronomic trainings

If the program in the two PUs shows improvements in gender, economic and environmental outcomes the pilot can be scaled to more PUs in Maharashtra and other states
• A diagnostic of different geographies would inform how the program can be adapted to the new Pus
• Capacity building of implementation partners can be done through a training of trainers model where capabilities of the existing implementation partner can be leveraged
• An independent, but lean M&E can ensure reliable and consistent measure of how outputs and outcomes of the program are performing
Sattva also recommends keeping the program lean to ensure its adaptability to ecosystems and geographies

The pilot was designed to build capabilities of co-farmers and gender sensitivity in male farmers to make cotton farming inclusive. Based on learnings from the pilot, the following can be considered non-negotiable programme activities for co-farmers:

<table>
<thead>
<tr>
<th>Agronomic Training and LGs</th>
<th>Demo Plot</th>
<th>Gender Sensitisation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Year I:</strong></td>
<td><strong>Year I:</strong></td>
<td><strong>Year I:</strong></td>
</tr>
<tr>
<td>o Provide basic skills and knowledge of BCI standard agronomic practices</td>
<td>o Demonstrate recommended standard BCI practices in intercropping, integrated pest management, fertilizer and pesticide use, sowing, harvesting and processing of cotton.</td>
<td>o Gender sensitization training of male farmers.</td>
</tr>
<tr>
<td>o Train co-farmers on negotiation skills, financial literacy, time management</td>
<td>o Provide resources to access market information.</td>
<td>o Involvement of co-farmers in demo-plots.</td>
</tr>
<tr>
<td><strong>Year II onward:</strong></td>
<td><strong>Year II onward</strong></td>
<td><strong>Year II onward:</strong></td>
</tr>
<tr>
<td>o Strengthen and reinforce skills</td>
<td>o Make demo plots a hub for community learning activities and space to innovate</td>
<td>o Refresher trainings for male farmers</td>
</tr>
<tr>
<td>o Identify positive deviants* and provide other farms the knowhow to replicate them.</td>
<td></td>
<td>o Learning groups of male farmers used as a forum to discussion inclusion of women and guided interactions between them.</td>
</tr>
</tbody>
</table>

*Positive deviants are those cases in a community who perform much better than other households in outcomes with the same socio-economic-cultural capital
Following factors will need to be evaluated before scaling up

**Organisation strategy**
Internal organisations decisions by BCI and IDH

**Fiscal/financial space**
Do BCI and IDH have the required budget to go ahead with the scale up plan?

**Policy space**
Does the BCI and IDH’s organisational policy support the scale up plan? This factor gains most importance during vertical scale up

**Socio-cultural-economic context**
Context studies such as IDH Maharashtra 2018 should be conducted before entering a new geography

**Socio/economic/cultural ecosystem**
Is the new expansion area culturally similar to the geography we have worked in till now?

**Capacity and Capability**
Implementation Partner assessment must be conducted and continued monitoring and evaluation for build the ‘learning space’

**Partnership space**
Are there Implementation Partners with the relevant experience and capability who can be mobilized to join in the effort of scaling up?

**Learning space**
Do we have the knowledge about what works and doesn’t work in scaling up?

Source: Adapted from Hartmann and Linn (2008)
Near-term scale up can be achieved in desirable per farmer costs

Per-farmer costs at larger scale reduce at scale as economies of scale can be leveraged. However, additional resources are needed to iterate the program and support capacity in implementation partners.

<table>
<thead>
<tr>
<th>Costs</th>
<th>Per-farmer costs (INR)</th>
<th>Total cost (INR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost heads</td>
<td>1 PU</td>
<td>1 District</td>
</tr>
<tr>
<td>Project iteration and management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personnel</td>
<td>330</td>
<td>265</td>
</tr>
<tr>
<td>Capacity Building</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information &amp; Education material</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Training of trainers</td>
<td>66</td>
<td>13</td>
</tr>
<tr>
<td>Program Implementation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishing Demo Plots</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Gender Sensitization Training</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Organization of LG trainings on BCI/CICR guidelines</td>
<td>49</td>
<td>48</td>
</tr>
<tr>
<td>Independent M&amp;E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Setting (one-time cost)</td>
<td></td>
<td>2,35,000</td>
</tr>
<tr>
<td>Data collection and reporting</td>
<td>125</td>
<td>37</td>
</tr>
<tr>
<td>Total costs</td>
<td>640</td>
<td>433</td>
</tr>
</tbody>
</table>
Near-term scale up can be achieved in desirable per farmer costs

Per-farmer costs at larger scale reduce at scale as economies of scale can be leveraged. However, additional resources are needed to iterate the program and support capacity in implementation partners.

<table>
<thead>
<tr>
<th>Costs</th>
<th>1 PU</th>
<th>1 District</th>
<th>1 PU (5000 farmers)</th>
<th>1 District (40000 farmers)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost heads</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project iteration and management</td>
<td>Personnel</td>
<td>3.8</td>
<td>3.1</td>
<td>19,186</td>
</tr>
<tr>
<td>Capacity Building</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information &amp; Education material</td>
<td>0.0</td>
<td>0.0</td>
<td>233</td>
<td>1,860</td>
</tr>
<tr>
<td>Training of trainers</td>
<td>0.8</td>
<td>0.2</td>
<td>3,837</td>
<td>6,047</td>
</tr>
<tr>
<td>Program Implementation</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Establishing Demo Plots</td>
<td>0.5</td>
<td>0.5</td>
<td>2,616</td>
<td>20,930</td>
</tr>
<tr>
<td>Gender Sensitization Training</td>
<td>0.2</td>
<td>0.2</td>
<td>1,221</td>
<td>9,767</td>
</tr>
<tr>
<td>Organization of LG trainings on BCI/CICR guidelines</td>
<td>0.6</td>
<td>0.6</td>
<td>2,849</td>
<td>22,326</td>
</tr>
<tr>
<td>Independent M&amp;E</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Target Setting (one-time cost)</td>
<td></td>
<td></td>
<td>2,733</td>
<td></td>
</tr>
<tr>
<td>Data collection and reporting</td>
<td>1.5</td>
<td>0.4</td>
<td>5,814</td>
<td>17,442</td>
</tr>
<tr>
<td>Total costs</td>
<td>7</td>
<td>5</td>
<td>35,756</td>
<td>201,628</td>
</tr>
</tbody>
</table>

1 EUR = INR 86
Annexure
Annexure 1 – Evidence generated on the need of the pilot
The Sattva-IDH gender analysis study (2019) found that pre-production tasks in cotton cultivation are dominated by men, with women playing prominent roles in stubble picking and sowing.

### Gendered Division of Tasks as per Sattva Study

<table>
<thead>
<tr>
<th>Task</th>
<th>Gender Distribution</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uprooting Old Plants</td>
<td>87% Done by men</td>
<td>87%</td>
</tr>
<tr>
<td>Stubble Picking</td>
<td>88% Done by women</td>
<td>88%</td>
</tr>
<tr>
<td>Application of Manure</td>
<td>79% Done by men</td>
<td>79%</td>
</tr>
<tr>
<td>Ploughing</td>
<td>99% Done by men</td>
<td>99%</td>
</tr>
<tr>
<td>Row Making</td>
<td>99% Done by men</td>
<td>99%</td>
</tr>
<tr>
<td>Sowing</td>
<td>89% Done by women</td>
<td>89%</td>
</tr>
</tbody>
</table>

### Decision Making

<table>
<thead>
<tr>
<th>Decision Making</th>
<th>Respondents said that decision making is done by men</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Respondents said that decision making is done by both</td>
<td></td>
</tr>
<tr>
<td>70%</td>
<td>50%</td>
<td>61%</td>
</tr>
<tr>
<td>85%</td>
<td></td>
<td>85%</td>
</tr>
<tr>
<td>77%</td>
<td></td>
<td>77%</td>
</tr>
<tr>
<td>55%</td>
<td></td>
<td>55%</td>
</tr>
</tbody>
</table>

Sources: Sattva-IDH Study (2018)
Women cultivators had greater participation in production and picking activities, particularly from an execution standpoint.

Gendered Division of Tasks as per Sattva Study:

- **Weeding**: 84% Done by women
- **Fertilizer Application**: 74% Done by women
- **Fetching Water**: 57% Done by women
- **Pesticide Application**: 97% Done by men
- **Picking**: 94% Done by women

Decision Making:

- **52%** Respondents said that decision making is done by both
- **46%** Respondents said that decision making is done by both
- **85%** Respondents said that decision making is done by men
- **85%** Respondents said that decision making is done by men
- **60%** Respondents said that decision making is done by both

Sources: Sattva-IDH Study (2018)
Women cultivators undertake tasks that directly impact the quantity and quality of cotton produced

- **Sowing**
  - Low plant population can delay boll maturity and reduce lint yield and boll density
  - Inaccuracies in depth of sowing can cause delay in germination

- **Weeding**
  - Bad weeds can reduce lint yields between 10% and 40%
  - Weeds can affect fiber length, uniformity, strength, or microns, and increase moisture in the bolls

- **Fertilizer Application**
  - Delayed application of fertilizers can reduce yield by 10%-40%
  - Inefficient fertilizer usage increases cost of production

- **Picking and Storing**
  - Unscientific picking causes contamination (dirt, hair, plastic, etc.) and results in reduced quality of cotton and fiber loss
  - Cotton with higher grade, staple and strength claims a better price

Sources: Sattva-IDH Study (2018)
Despite their role in cotton production, women cultivators have limited access to resources

<table>
<thead>
<tr>
<th>Training</th>
<th>Collectives</th>
<th>Schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>33%</td>
<td>50%</td>
<td>15%</td>
</tr>
<tr>
<td>of the women cultivators attended any agronomic training in the last two years.</td>
<td>of the women cultivators were part of SHGs. FPO presence was low.</td>
<td>of the women cultivators accessed government support.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Land</th>
<th>Finance</th>
<th>Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>16%</td>
<td>28%</td>
<td>11%</td>
</tr>
<tr>
<td>of the women cultivators had land in their name.</td>
<td>of the women cultivators took credit from SHGs.</td>
<td>had ever accessed extension services.</td>
</tr>
</tbody>
</table>

Sources: Sattva-IDH Study (2018)
Moreover social norms impact the way women cultivators engage with the agricultural ecosystem

<table>
<thead>
<tr>
<th>Gendered Farm Roles</th>
<th>Income Disparity</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Tasks done by women are perceived to be ‘lighter’ work</td>
<td>• Women cultivators receive lower wages than men</td>
</tr>
<tr>
<td>• These tasks are drudgery-prone &amp; time intensive</td>
<td>• Women also have reduced control over income earned</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dual Responsibilities</th>
<th>Unequal Access</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Women perform time consuming household chores</td>
<td>• Safety, lack of information and opportunity, and time constraints limit access to markets and productive resources</td>
</tr>
<tr>
<td>• The economic value of farm duties goes unmeasured</td>
<td></td>
</tr>
</tbody>
</table>
Annexure 2 – Process / formula used for scoring analysis
Testing the hypothesis: Increase in knowledge score for all areas of enquiry

Null Hypothesis: There is no change in mean scores
Alternate Hypothesis: Endline mean scores have increased

Methodology to test hypotheses: One-tailed t-test for dependent samples
Decision rule: if $t > p$-value: Reject Null hypothesis
i.e. if $t > 1.6449$, there is a statistical significant increase in average knowledge score

<table>
<thead>
<tr>
<th>Knowledge area</th>
<th>$t = \frac{\text{Mean Difference in knowledge score}}{\text{std.deviation of difference in score}} \sqrt{\frac{1}{N=499}}$</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits of intercropping</td>
<td>$t_{\text{intercropping benefits}} = 3.299$</td>
<td>There is a statistically significant increase in knowledge on benefits of intercropping in cofarmers from baseline to endline</td>
</tr>
<tr>
<td>Benefits of soil health testing</td>
<td>$t_{\text{soil testing}} = 0.599$</td>
<td>There is no statistically significant change in knowledge on benefits of soil health testing from baseline to endline</td>
</tr>
<tr>
<td>Identification of red labelled pesticides like Monocrotophos and Carbendazim</td>
<td>$t_{\text{identifying harmful pesticides}} = 9.647$</td>
<td>There is a statistically significant increase in the knowledge of red-labelled pesticides in cofarmers from baseline to endline</td>
</tr>
<tr>
<td>Decent Work Practices, such as not hiring child labour &amp; equal wages for men and women</td>
<td>$t_{\text{decent work practices}} = 1.998$</td>
<td>There is a statistically significant increase in the knowledge of decent work practices in cofarmers from baseline to endline</td>
</tr>
<tr>
<td>Identification of beneficial insects, such as ladybird beetle, Trichograma, Chrysoperla, Ground beetle</td>
<td>$t_{\text{beneficial insects}} = 20.921$</td>
<td>There is statistically significant increase in the knowledge of beneficial insects in cofarmers from baseline to endline</td>
</tr>
</tbody>
</table>
Testing the hypothesis: Increase in practices score for all areas of enquiry

<table>
<thead>
<tr>
<th>Practice area</th>
<th>t = Mean Difference in practice score / std.deviation of difference in score</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Timing of application of fertilizers</strong></td>
<td>$t_{\text{timing of fertilizer application}} = -0.577$&lt;br&gt;$t_{\text{timing of fertilizer application}} &lt; 1.6449$</td>
<td>There is no statistically significant change in the adoption of the practice of applying fertilizer at the time of sowing in cofarmers</td>
</tr>
<tr>
<td><strong>Timing of application of pesticides</strong></td>
<td>$t_{\text{timing of pesticide application}} = 18.867$&lt;br&gt;$t_{\text{timing of pesticide application}} &gt; 1.6449$</td>
<td>There is a statistically significant increase in farmers applying of pesticides only on need basis from baseline to endline</td>
</tr>
<tr>
<td><strong>Practices of picking cotton for harvest</strong></td>
<td>$t_{\text{cotton picking practice}} = 7.495$&lt;br&gt;$t_{\text{cotton picking practice}} &gt; 1.6449$</td>
<td>There is a statistically significant increase in the good practice of picking cotton top-down from baseline to endline</td>
</tr>
<tr>
<td><strong>Packaging of harvested cotton</strong></td>
<td>$t_{\text{packaging material practice}} = 20.971$&lt;br&gt;$t_{\text{packaging material practice}} &gt; 1.6449$</td>
<td>There is a statistically significant increase in the good practice of packing cotton in cotton bags from baseline to endline</td>
</tr>
<tr>
<td><strong>Storage of cotton</strong></td>
<td>$t_{\text{storage of cotton}} = 29.837$&lt;br&gt;$t_{\text{storage of cotton}} &gt; 1.6449$</td>
<td>There is statistically significant increase in the practice of storing cotton in a dry designated area from baseline to endline</td>
</tr>
</tbody>
</table>
Null Hypothesis: There is no change in mean scores  
Alternate Hypothesis: Endline mean scores have increased  
Methodology to test hypotheses: One-tailed t-test for dependent samples  
Decision rule: if t > p-value: Reject Null hypothesis 

\[ \alpha = 0.05 \]  
\[ \text{degrees of freedom} = N = 499 \]  
i.e. if \( t > 1.6449 \), there is a statistical significant increase in average practice score  

<table>
<thead>
<tr>
<th>Practice area</th>
<th>( t )</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety equipment for pesticide spray</td>
<td>( t_{\text{equipment for pesticide spray}} ) = 20.153</td>
<td>There is a statistically significant increase in use of safety equipments while spraying pesticides from baseline to endline</td>
</tr>
<tr>
<td></td>
<td>( t_{\text{equipment for pesticide spray}} &gt; 1.6449 )</td>
<td></td>
</tr>
<tr>
<td>Spacing between plants</td>
<td>( t_{\text{plant spacing}} ) = 12.986</td>
<td>There is a statistically significant increase in maintaining correct space between cotton plants from baseline to endline</td>
</tr>
<tr>
<td></td>
<td>( t_{\text{plant spacing}} &gt; 1.6449 )</td>
<td></td>
</tr>
<tr>
<td>Fertilizer application method</td>
<td>( t_{\text{fertilizer application method}} ) = -10.390</td>
<td>There is no statistically significant change in adoption of practice to apply fertilizer in circles around the root from baseline to endline</td>
</tr>
<tr>
<td></td>
<td>( t_{\text{fertilizer application method}} &lt; 1.6449 )</td>
<td></td>
</tr>
<tr>
<td>Use of correct biofertilizers</td>
<td>( t_{\text{biofertilizers used}} ) = 3.024</td>
<td>There is a statistically significant increase in the practice of using correct biofertilizers from baseline to endline</td>
</tr>
<tr>
<td></td>
<td>( t_{\text{biofertilizers used}} &gt; 1.6449 )</td>
<td></td>
</tr>
</tbody>
</table>
There is a statistically significant increase in cotton yield per acre after the pilot.

**Null Hypothesis**: No change in average yield per acre  
**Alternate hypothesis**: Increase in average yield per acre  
\[ \alpha = 0.05 \quad \text{degrees of freedom} = N = 499 \]

Decision rule: if \( t > \text{p-value} \): Reject Null hypothesis

\[ t_{\text{cotton yield per acre}} = 5.862 \quad > \quad 1.6449 \]
\[ \therefore \text{Null hypothesis not accepted} \]

i.e. There is a statistically significant increase in the per acre cotton yield after the pilot.

73% of the farms had a per acre increase in cotton yield after the pilot.

Marginal landholders experienced the most gain in average per acre earnings at Rs. 18749.84.

51% of the farms had a per acre increase in cotton yield.
Difference in differences: Pilot had no impact on increased yield

- P-value of the difference in yield caused by pilot intervention is 0.174, not statistically significant.
- There are limited number of independent variables affecting the yield. So a low value of R², while not ideal, is not surprising.
- This is also apparent when you look at the actual regression and the estimate value of the (Intercept). The intercept is basically the value of your error term in the regression. It's not really an error, but it gives the magnitude of variation in the data that the regression model currently does not capture. In our regression, it is many times higher than the actual observed impact estimate from the treatment terms.
There is no statistically significant change in the cost of farming cotton

<table>
<thead>
<tr>
<th>Practice area</th>
<th>t = \frac{Mean\ Difference\ in\ practice\ score}{\text{std. deviation of difference in score}} / \sqrt{N=499}</th>
<th>Conclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cost of cultivating and harvesting cotton</td>
<td>t_{total\ cost} = -2.678, t_{timing\ of\ fertilizer\ application} &lt; 1.6449</td>
<td>There is no statistically significant change in the total cost of harvesting and cultivating cotton</td>
</tr>
<tr>
<td>Fertilizer costs</td>
<td>t_{timing\ of\ pesticide\ application} = 0.535, t_{timing\ of\ pesticide\ application} &lt; 1.6449</td>
<td>There is no statistically significant change in fertilizer costs borne by farmers from baseline to endline</td>
</tr>
<tr>
<td>Pesticide costs</td>
<td>t_{cotton\ picking\ practice} = -5.489, t_{cotton\ picking\ practice} &lt; 1.6449</td>
<td>There is no statistically significant change in pesticide costs borne by farmers from baseline to endline</td>
</tr>
<tr>
<td>Labour costs</td>
<td>t_{packaging\ material\ pracice} = -2.278, t_{packaging\ material\ pracice} &lt; 1.6449</td>
<td>There is no statistically significant change in labour costs borne by farmers from baseline to endline</td>
</tr>
<tr>
<td>Cotton seeds cost</td>
<td>t_{storage\ of\ cotton} = -1.244, t_{storage\ of\ cotton} &lt; 1.6449</td>
<td>There is no statistically significant change in cotton seeds’ costs borne by farmers from baseline to endline</td>
</tr>
</tbody>
</table>
Annexure 3 – Gender sensitisation training overview
The gender sensitisation training sought to enable male farmers to better understand the economic and social contributions of women farmers and to reduce gender discrimination on the farm.

**Why gender sensitisation?**

- Solving for the challenges faced by women farmers, can lead to business and social outcomes. These are improvements in quality and quantity of cotton produced, increase in incomes, and empowerment of women farmers.
- To achieve these outcomes, there is a need for awareness-raising to sensitize farming communities about the societal value and benefits of increasing the participation of women. This is also key to ensuring the sustainability of interventions with women farmers. (IDH, 2019)

**What did the training consist of?**

Male farmers where administered a 2-day training (of 3 hours each). The training covered 4 modules, namely:
- Introduction to the term ‘gender’; Socialization across the lifecycle
- Gender roles; Gender division of labour and its impact on cotton farming
- Gender relations and its impact on cotton farming
- Access to resources and decision making; Strengthening inclusion of women farmers in decision making

**What were farmers evaluated on?**

A 13-question pre-test and post-test tool was administered to assess knowledge and attitude changes influenced by the training. This included:
- Ability to understand gender & sex
- Ability to understand interchangeability of gender roles
- Cognizance of women farmers’ contribution on the farm
- Impact of access to resources & training by women co-farmers
- Value of women farmers’ involvement in decision making

**Training Overview**

- **25+** Field facilitators trained through 20+ hours of Training of Trainers (ToT)
- **2000+** Male farmers trained, across 100 Learning Groups (LGs)
- **6** Hours of training delivered to each male farmer
- **473** Farmers evaluated using the pre-test and post-test tool

An evaluation framework was developed for measuring outcomes from the sensitisation training; this was developed in alignment with the overall M&E framework used in the BC-GIF co-farmer pilot.

This gender sensitisation outcome report was created by analysing pre-test and post-test results, from testing 473 male farmers (~25% of total farmers trained) before and after the training. The test tool used for evaluating the training was developed on the basis of the output and outcome indicators outlined below. The ‘Key Output and Outcome Indicators’ are the broad objectives envisioned for the gender sensitisation exercise while ‘Metrics for Measurement’ are the measurable parameters used for the evaluation.

**Key Output and Outcome Indicators**

- Develop an understanding of gender and sex
- Develop an understanding of how the roles and responsibilities of women and men are determined on the farm and in the household
- Develop an understanding of gender identities

**Metric for Measurement**

- Increase in number of farmers who understand the concept of gender
- Increase in number of farmers who can differentiate between sex and gender
- Increase in number of farmers who understand that gender roles are interchangeable
- Increase in number of male farmers who recognise that gender identities are defined by society and can change

- Change in male farmers’ perception of women farmers’ economic roles and capabilities
- Positive affirmation towards greater access of resources by women farmers
- Positive affirmation towards women's involvement in decision making and control over resources

- Increase in number of farmers cognizant of women farmers’ contribution on the farm
- Increase in number of farmers who acknowledge that women farmers require equal access to formal sources of knowledge and formal training
- Increase in number of farmers who acknowledge the social and economic benefit of including women farmers in farm-related decisions
5 out of 6 key output and outcome indicators saw positive movement through the gender sensitization training (1/2)

The table below maps the key metrics that were identified to measure achievement of the output and outcome indicators. Additionally, the third column summarizes results against each metric. An output or outcome is considered 'achieved' when the related metrics have seen positive movement.

<table>
<thead>
<tr>
<th>Key Output and Outcome Indicators</th>
<th>Key Metric</th>
<th>Key Results</th>
<th>Objectives Achieved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop a conceptual understanding of the terms 'sex' and 'gender'</td>
<td>Increase in the number of farmers who can associate 'biological roles' as those that are determined by one's sex</td>
<td>• Farmers who associate ‘biological roles’ as those that are determined by one's sex increased by an average of 31%</td>
<td>Yes</td>
</tr>
<tr>
<td>Develop an understanding of gender identities</td>
<td>Increase in the number of male farmers who recognise that gender identities are not permanent and are interchangeable</td>
<td>• Farmers continued to associate men and women with traditional gender identities. For example, farmers continued to associate ‘men’ with words such as ‘rational’, ‘loud’, and ‘aggressive’</td>
<td>No significant progress</td>
</tr>
<tr>
<td>Develop an understanding of the gendered nature of roles and responsibilities on the farm and within the household</td>
<td>Increase in the number of male farmers who understand that gender roles are not permanent and are interchangeable</td>
<td>• There was an average ~25% increase in male farmers who could recognise that roles of men and women can be interchanged, including traditionally male roles such as visiting the market and managing income • Farmers who understand that ability of decision making is not ascribed increased from 47% at pre-test to 72% at post-test.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
5 out of the 6 key output and outcome indicators were achieved through the gender sensitization training (2/2)

<table>
<thead>
<tr>
<th>Key Outputs and Outcome Indicators</th>
<th>Key Metrics</th>
<th>Key Results</th>
<th>Objectives Achieved?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in male farmers’ perception of women farmers’ economic roles and capabilities</td>
<td>• Increase in the number of male farmers cognizant of women's contribution on the farm and in decision making</td>
<td>• An additional 21% farmers were cognizant of women’s contribution to increasing cotton production, an additional 15% recognised women’s contribution to income generation, and an additional ~17% farmers found women’s involvement in key decisions on the farm to be valuable</td>
<td>Yes</td>
</tr>
<tr>
<td>Positive affirmation towards greater access of resources by women farmers</td>
<td>• Increase in the number of male farmers who acknowledge that women farmers require equal access to formal sources of knowledge and training</td>
<td>• Male farmers displayed an enhanced understanding of factors that limit women’s contribution on the farm; an additional 23% farmers recognise lack of formal training as a limiting factor while an additional 28% recognise the lack of access by women to markets and extension workers</td>
<td>Yes</td>
</tr>
<tr>
<td>Positive affirmation towards women farmers’ involvement in decision making</td>
<td>• Increase in number of farmers who recognise the importance of formal agri-training for women farmers</td>
<td>• There is a positive shift amongst male farmers recognising the benefits of formal training for women; although average increase in number of farmers who see formal training beneficial for ‘self’ is 29% while beneficial for the ‘farm’ is only 6%</td>
<td>Yes</td>
</tr>
</tbody>
</table>

• 75% male farmers now believe women farmers should have an equal say in decision making
• 53% additional male farmers, on average, want to include women farmers in various decisions