ORGANIC COTTON SUSTAINABILITY ASSESSMENT

SUMMARY OF FINDINGS
CONTENTS

WELCOME 4
INTRODUCTION 5
FRAMEWORK 6
METHODOLOGY 8
AT A GLANCE 9
SUMMARY OF FINDINGS 10
PRODUCER GROUP PROFILES 12
RESULTS 14
KEY MESSAGES 31

PHOTO (COVER PAGE): Workers loading cotton for ginning - Asifabad, Andhra Pradesh, India
“After 25+ years as an organic cotton farmer I have seen a lot of positive impacts from what we do - using water wisely, increased bio-diversity and building life in the soil and community.

As well as these improvements in how we work individually, I’ve seen transformational changes in the way we come together and use the power of our collective knowledge - farmers organising themselves to improve the flow of information and production efficiency. So for me, organic farming is just as much about these social and cultural improvements as it is about caring for the environment.

I’m delighted to see that coming through so clearly in this Sustainability Assessment Tool.”

La Rhea Pepper, Managing Director, Textile Exchange
In 2014, Textile Exchange (TE) commissioned PE International to carry out a Life Cycle Assessment (LCA) on organic cotton, which for the first time provided us with quantified evidence of its key environmental benefits. We produced a summary report of the LCA findings to help you quickly access the results.

This new report introduces the findings of a project that builds on the LCA, looking at a broader range of benefits.

The Organic Cotton Sustainability Assessment Tool (OC-SAT) is an online tool that provides a framework for assessing the environmental, economic and social attributes associated with organic cotton production; the first comprehensive sustainability assessment on organic cotton of its kind.

The framework for the OC-SAT has been carefully developed in line with other major work going on in this field by leading organizations such as the Committee On Sustainability Assessment (COSA) and the Food & Agriculture Organization (FAO) of the United Nations.

TE worked with partners in fourteen countries to collect data for the tool at the organic cotton producer group level, providing a unique and detailed insight into the wider sustainability impacts of organic beyond those which are the focus of certification.

This first report covers the key findings for Phase One of the OC-SAT and covers eight countries. Phase Two will complete the global baseline bringing in the remaining producer countries.

The assessment will help to pave the way for Organic 3.0, which aims to grow organic by highlighting its broader benefits and ability to meet the sustainability challenges faced by modern society.

However, the results also reveal the challenges the sector face. For instance, the assessment clearly reveals the ongoing issue of risk versus reward for farmers; farmers need to be convinced about the business benefits of “going organic”. Productivity continues to be a challenge for many small-scale producers suffering from limited access to resources and knowledge acquisition. Accessing good-quality, non-genetically modified seed is potentially a barrier to growth in countries such as India and China, where genetically modified cotton is the norm. The risk of genetically modified organism (GMO) contamination adds a further burden on organic cotton farmers.

On a more encouraging note, farmers are doing well at diversifying their crops; not many of them are relying entirely on returns from the cotton. Farmers are organizing themselves, supporting women, and many appear to be well aware of the longer-term sustainability pay-offs of organic agriculture.

One of the advantages of our new OC-SAT is that you can investigate for yourself the impacts of organic cotton. So while we hope you enjoy reading our summary of the assessment—we encourage you to explore the Organic Cotton Sustainability Assessment Tool online—and come to your own conclusions.

We hope you will share your interpretations with us. On our side, we appreciate that sustainability impact is a new and growing area of work for practitioners and standard providers across many commodities. We are committed to building on our baseline study, refining our tool, and sharing our progress with you!

LIESL TRUSCOTT
EUROPEAN & FARM ENGAGEMENT DIRECTOR
TEXTILE EXCHANGE
INTRODUCTION

The Textile Exchange Organic Cotton Sustainability Assessment Tool (OC-SAT) provides a framework for assessing the environmental, economic and social attributes associated with organic cotton production. The OC-SAT provides insight into the sustainability status of farmers and producer groups certified to one or more of the internationally accepted organic agricultural (farm) standards. The reporting period was between 2011 and 2013. Data analysis was carried out in 2014.

OBJECTIVE

The key objective of this project was to build a better understanding of the range of sustainability attributes (environmental, economic, and social) associated with organic cotton production; attributes that go beyond the criteria of the organic farm standards and certification. In order to do this TE worked with partners in fourteen countries to collect data at the producer group (PG) level. Data was collected via survey and fed into TE’s benchmarking tool “Probench” for analysis.

MAPPING

While the OC-SAT has been developed for the organic cotton sector, it draws on the latest work in sustainability assessment in agriculture and commodities more generally. In its development, TE's assessment framework (page 7) was influenced by and mapped against leading agricultural and commodity sustainability assessment criteria, developed by:

- COSA (The Committee on Sustainability Assessment) – COSA Indicators
- ISEAL (the global membership association for sustainability standards) – Impacts Code
- FAO (Food and Agriculture Organization of the United Nations) – Sustainability Assessment of Food and Agriculture systems – SAFA
- Soil And More Foundation – Sustainability Flower

The OC-SAT’s environmental, economic, and social dimensions are aligned with the International Federation of Organic Agricultural Movements (IFOAM) Sustainable Organic Agriculture Action Network (SOAAN) Best Practice Guideline for Agriculture and Value Chains.

The OC-SAT provides a comprehensive overview of sustainability issues and activities, both employed or experienced by organic cotton farmers. The OC-SAT complements the first Life Cycle Assessment (LCA) of Organic Cotton commissioned by TE and carried out by PE International.

SCOPE

This report covers the key findings from Phase One of our assessment. Phase One represents approximately 95 percent of organic cotton production. It covers:

- Africa (Benin, Burkina Faso, Mali, Senegal, Tanzania)
- China
- India
- Turkey

Phase Two will complete the global picture to include:

- Central Asia (Kyrgyzstan, Tajikistan)
- Latin America (Brazil, Nicaragua, Peru, Paraguay)
- United States of America

In this report we introduce you to the OC-SAT and share key findings from our assessment but we encourage you to go online and experience the tool for yourself.

Website: http://farmhub.textileexchange.org/learning-zone/organic-cotton-sustainability-assessment-tool
The OC-SAT framework has been mapped against other sustainability assessment frameworks currently in use.

The OC-SAT is divided into three dimensions of sustainability: environmental, economic and social. Each dimension covers a number of themes and within each theme sit the specific indicators.

There are 50 indicators in the OC-SAT, falling under 15 themes. However sustainability is a holistic concept making it difficult to structure its elements into separate components. To reflect and demonstrate this reality the OC-SAT interconnects a number of indicators enabling the user to move online between themes and indicators.

The following descriptors of each sustainability dimension are taken from IFOAMs Sustainable Organic Agriculture Action Networks’ Best Practice Guideline for Agriculture and Value Chains.

**DIMENSION: ENVIRONMENTAL**

**DESCRIPTOR: COMMON RESOURCES ARE USED SUSTAINABLY**

Common resources are those resources that all peoples of the planet need and share for their survival. These include soil, water, air, animals, biodiversity, and mineral resources.

In a truly sustainable, regenerative system, “waste” does not exist. The implication is that everything is used, and, when that use is exhausted, the material components get transformed or absorbed into another part of the system in a beneficial way.

**DIMENSION: ECONOMIC**

**DESCRIPTOR: TRADING LEADS TO PROSPERITY**

Value chain actors are necessarily dependent upon each other and should therefore be responsible for co-creating value that benefits all persons involved. They should allow their respective enterprises to thrive without sacrificing their long-term viability, the health of the surrounding environment, or human rights.

**DIMENSION: SOCIAL**

**DESCRIPTOR: PEOPLE LIVE IN QUALITY AND EQUITY**

All persons are born with rights, deserving equal and mutual respect. These include the right to safety, freedom from discrimination, access to opportunities for learning, self-determination, and right livelihood.
### Vital Statistics
- Size of Household
- Size of Farms
- PG Organic Cultivation Split
- Cash Crops
- Food Crops

### Household Statistics
- PG Organic Cultivation Split
- Cash Crops
- Food Crops

### Farm Statistics
- PG Organic Cultivation Split
- Cash Crops
- Food Crops

### Cotton Characteristics
- Cotton Species
- Fiber Staple Length
- Ginning Outturn

### Background
- Water Source
- Use of Irrigation by Area
- Payment for Irrigation Water
- Water Management Approach
- Water Conservation Techniques
- Perception: Water Quality
- Perception: Water Availability
- Perception: Cost of Organic vs Conventional Farming

### Core Framework
- **Theme: Water Management**
  - Indicators:
    - Use of Irrigation by Area
    - Water Management Approach
    - Water Conservation Techniques
    - Perception: Water Availability
    - Perception: Water Quality

- **Theme: Soil Management**
  - Indicators:
    - Soil Management Approach
    - Soil Fertility & Conservation Techniques
    - Soil Fertility
    - Provided Data on SOM
    - Soil Organic Matter

- **Theme: Pest Management**
  - Indicators:
    - Pest Management Approach
    - Pest Management Techniques
    - Perception: Effectiveness of Organic vs Chemical Pest Control

- **Theme: Biodiversity**
  - Indicators:
    - Crop Diversity
    - Types of Crops (Own Use)
    - Types of Crops (Cash)
    - Perception: Biodiversity Levels on Organic Farms
    - Perception: Areas of Increased Biodiversity

- **Theme: Climate Change**
  - Indicators:
    - Use of Farm Animals
    - Types of Machinery
    - Types of Fuel
    - Carbon Emission Reduction
    - Alternative Energy Technology Used
    - Perception: Has Extreme Weather Affected Crops?
    - Perception: Types of Extreme Weather Affecting Crops

- **Theme: Livelihoods**
  - Indicators:
    - Land Use
    - Productivity
    - Organic Cotton Yield Trend
    - Production Costs
    - Income Sources
    - Perception: Cost of Organic vs Conventional Farming

- **Theme: Producer Organization**
  - Indicators:
    - Organizational Structure
    - Number of Farmers
    - Organizational Capacity Building
    - Timeliness of Payments
    - Trading Partners
    - Types of Contract
    - Long Term Contract
    - Benefits of Long Term Contract

- **Theme: Organizational Standards**
  - Indicators:
    - Voluntary Sustainability Standards
    - Certified Organic
    - Organic Standards
    - Certified Fairtrade
    - Fairtrade Standards
    - Further Processing Standards

- **Theme: Risk Management**
  - Indicators:
    - Cash Crops
    - Number of Cash Crops
    - Types of Crops
    - Markets for Crops
    - Livestock
    - Types

- **Theme: Community Benefits**
  - Indicators:
    - Types of Benefits
    - Investment Partnerships
    - Types of Partners

- **Theme: Gender Equality**
  - Indicators:
    - Women Farmers
    - PGs Employing Women Farmers
    - Encourage Female Participation
    - Support Women with Extra Assistance
    - Farmers Identified as Indigenous
    - PGs Employing Indigenous Farmers
    - Perception: Impact of Traditional Knowledge on Farm Practices

- **Theme: Rural Development**
  - Indicators:
    - Community Benefits
    - Types of Benefits
    - Investment Partnerships
    - Types of Partners

- **Theme: Business Investment**
  - Indicators:
    - Investment Priorities
    - Investment Over Last 2 Years
    - Perception: What Influences Farm Practice?

- **Theme: Seed Security**
  - Indicators:
    - Seed Requirements
    - Cultivars in Use
    - Seed Source
    - Changes Over Past 3 Years
    - Seed Breeding & Trials
    - Perception: Difficulty in Securing Seed
    - Perception: Degree of Difficulty

### Community Benefits
- Types of Benefits
- Investment Partnerships
- Types of Partners
METHODOLOGY

Data was collected at the PG level or within producer group geographical clusters, if the group was widespread. A producer group is defined as an organizational structure (cooperative, association, or contract) where farmers are organized for capacity building, economies of scale, and to market their products more effectively.

TE and country-level partners supported data collection. TE reviewed all data and supporting information. Surveys were completed over a time period from 2011 to 2013. Global farm and fiber data used as a benchmark in the OC-SAT is based on TE’s Farm & Fiber Report published in 2013.

SURVEY SIZE

The assessment spans 14 countries. 36 surveys were completed. The findings cover:

- 66,980 farmers (31 percent of the world’s certified organic cotton farmers)
- 82,016 ha (26 percent of land certified organic)
- 41,882 metric tons (30 percent of the global organic cotton fiber volumes)

SURVEY QUESTIONS

QUANTITATIVE: Wherever possible, the survey requested quantified data accompanied by auditable evidence to support the responses (such as Internal Control System records, copies of certification or soil analysis reports).

QUALITATIVE: The survey included a number of perception questions. According to COSA, the importance of perception, both as a reflection of behavior and also of overall wellbeing, should not be underestimated.

CONTEXT AND LIMITATIONS

The decision was made to collect data at the producer group level. In many cases, the results represent an average or generalized situation. Data at farm or household level would most certainly complement the results of this survey.

All efforts were made to check the accuracy of the survey responses and information fed into the OC-SAT. All efforts were made to ensure completeness of each survey and a common understanding of the questions. Repeat contacts were made on a number of occasions to fill gaps and seek clarification; however issues of “survey burden” also needed to be taken into account, which ultimately caused minor gaps in the data set.

While OC-SAT reflects our best attempt to define the sustainability characteristics of the organic cotton sector, changes will occur on a continuous basis as techniques evolve and the context changes.
AT A GLANCE

**ENVIRONMENTAL**
- 80% Land under organic cotton is rainfed
- 69% Producer groups harvest rainwater
- 77% Producer groups perceive biodiversity levels higher on organic cotton farms
- 62% Producer groups carry out crop selection
- 100% Producer groups carry out crop rotation
- 96% Producer groups carry out composting
- 85% Producer groups use trap crops
- 85% Producer groups reported that weather has affected crop production

**ECONOMIC**
- 64:36 Ratio of land use for cash (including cotton) vs own use crops
- 69% Farmers under contract
- 57% Farmer income comes from organic cotton
- 25% Farmer income comes secondary cash crops
- 27% Producer groups cited premium of >10% for organic cotton over conventional
- 31% Producer groups are paying the farmers before receiving payment
- 69% Producer groups cited problems with sourcing seeds
- 60% Production cost allocated to labor

**SOCIAL**
- 65% Producer groups encourage women participation
- 100% Producer groups grow additional crops (alongside organic cotton)
- 88% Producer groups grow crops for additional income
- 9 Average number of crops grown by producer groups for cash & own use
- 96% Producer groups grow crops for own use
- 23% Organic cotton farmers are women
- 97% Producer groups encourage women participation
- 84% Producer groups report community benefits with organic cotton production
SUMMARY OF FINDINGS

BENEFITS EXPERIENCED BY ORGANIC COTTON FARMERS

WATER – 80 percent of land under organic cotton is rainfed (dryland farming). Water is more likely to be derived from rainfall (green water) rather than surface or ground water irrigation (blue water). The employment of good organic agricultural practices also contributes to water use efficiency. Refer to page 14.

DECENT WORK – All of the PGs reported to be working in compliance with some sort of “decent work” policy (at or above legal requirements). 46 percent reported to be Fairtrade certified either fully or partially (note out of the four countries in this assessment only Africa and India are eligible for Fairtrade certification). Refer to page 28.

EQUALITY – While women help their menfolk on the farm, 23 percent of women identified as independently certified organic farmers. The majority of PGs (97 percent) are actively encouraging women to join by offering female-friendly terms and conditions such as additional training in farm management and maternity support. Refer to page 29.

FOOD SECURITY – All farmers grow additional crops (alongside organic cotton) as part of the organic farm system. 88 percent of PGs grow crops for additional cash income, which in turn contributes to their financial and food security. 96 percent of PGs grow crops for food or own use – accounting for over a third (36 percent) of the total farmland area. Refer to page 27.

BIODIVERSITY – 77 percent of PGs perceive biodiversity levels on organic cotton farms to be higher than on non-organic farms. Areas of perceived greater biodiversity include increased numbers of microbial/soil flora and fauna, flora (including indigenous plants), fauna including beneficial insects, birds and other natural predators. Refer to page 16.

PRODUCER ORGANIZATION – Farmers, particularly smallholders, tend to form “producer groups”. 69 percent of organic cotton farmers are under contract, 19 percent have formed independent farmer associations or cooperatives, and 12 percent are supported by an NGO. Refer to page 21.

INCOME DIVERSITY – Organic cotton farmers tend to diversify their sources of income by establishing secondary incomes from livestock and other cash crops grown in rotation or intercropped with the cotton. The average breakdown of income sources was 57 percent from the organic cotton, 25 percent secondary cash crops, and 18 percent from other sources. Refer to page 20.

FARM MANAGEMENT – Organic cotton farmers employ a wide range of techniques to conserve soils and water, improve soil fertility, and deter pests. Popular farm management techniques include rainwater harvesting (69 percent) and crop selection (62 percent) for water management, crop rotation (100 percent) and composting (96 percent) for soil fertility, and 85 percent use trap crops and botanicals for pest control. Refer to page 14.

The positive environmental impact of organically cultivated cotton is supported in the recent LCA.
CHALLENGES FACED BY ORGANIC COTTON FARMERS

PRICING – 96 percent of PGs reported that farmers received a price for their organic cotton above that of conventional. 38 percent of PGs reported a price premium of 5 percent or less. At the other end of the price spectrum, 27 percent of PGs reported that farmers received a premium between 11 and 30 percent. Refer to page 21.

TIMELINESS OF PAYMENTS – Delayed payments can lead to financial vulnerability for farmers. 81 percent of PGs pay farmers within 14 days but only 50 percent of buyers pay out to PGs within 14 days. This means 31 percent of PGs are absorbing the time lag between paying the farmers and receiving the payment for the cotton. However, payment lags vary significantly. Refer to page 22.

SEED SECURITY – Seed availability and seed quality are reported as key challenges for farmers in Africa, China and India. The seed situation is complex and issues vary between countries. Organic Standards do not permit the use of GMO seed. GMOs dominate a number of cotton-producing countries such as Burkina Faso, China and India. Issues of GMO contamination further exacerbate the seed issue. Refer to page 24.

CLIMATE CHANGE – 85 percent of PGs reported that unpredictable or extreme weather conditions have effected crop production. The most commonly reported weather event was prolonged or severe drought (82 percent), prolonged or severe rains/flooding (82 percent) and late or early rainy periods (68 percent). Refer to page 17.

PRODUCTIVITY – Organic cotton yields (kg fiber/ha land) varied widely between producers, growing areas, and between countries - African (6 countries surveyed) yields averaged 175kg/ha, China 2,181kg/ha, India 530kg/ha and Turkey 1,432 kg/ha. Limiting factors include: water availability, soil fertility, finances, suitable seed for low-input agriculture, farmer knowledge and access to good extension services specializing in organic agriculture. Refer to page 19.

COST OF PRODUCTION – While the cost of farm inputs (seed, soil fertility, pest control ingredients, etc.) are said to be generally lower than the price of chemical inputs, the cost of labor is of growing significance. All PGs reported labor, including the hiring of seasonal worker, as the most expensive component to organic production, accounting for between 50 to 66 percent of production input costs. Refer to page 20.

Note, while this assessment did not compare costs with non-organic production PGs were asked for their views on the cost of organic versus conventional cotton farming. Responses show that 73 percent think that organic cotton costs less to produce than conventional, 12 percent about the same, and 12 percent said it costs more.
In the growing season 2011-12 organic cotton was grown in 18 countries. Over 95 percent of the world’s organic cotton was produced in four countries: India, Turkey, China, and Tanzania.

The OC-SAT covers 31 percent of certified organic cotton farmers, 26 percent of land certified organic, 30 percent of the global organic cotton fiber volumes. The profiles of the PGs surveyed are summarized below.

**PRODUCER GROUP PROFILES**

**CHINA**

The majority of organic cotton is grown in Xinjiang Province in northwest China. Whilst the surveyed PG is located in Kashi, not Hefeng (the biggest organic cotton producing region in China) it is still considered representative of the Chinese farmers due to its size and experience.

**INDIA**

The majority of organic cotton is grown in Madhya Pradesh, Maharashtra, and Odisha. Share of actual organic cotton fiber production by region is: 49.8 percent Madhya Pradesh, 28.9 percent Maharashtra, 10.9 percent Rajasthan, 6.5 percent Odisha and 3.9 percent Tamil Nadu, Andhra Pradesh, Gujarat and others. Whilst the assessment does not map exactly to the ratio of this breakdown, all organic cotton-producing states are covered.

**AFRICA**

In Africa the share of fiber production is: Tanzania 77.2 percent, Mali 9.6 percent, Uganda 5.1 percent, Burkina Faso 4.2 percent, Benin 3.7 percent and Senegal 0.2 percent. In Tanzania, the majority of organic cotton is grown in the districts of Shinyanga and Singida. With the exception of Uganda, which is not covered by the OC-SAT, this assessment maps closely to the ratio of African organic fiber production.

**TURKEY**

The majority of organic cotton is grown in the Aegean region and Southeast Anatolia. Both regions are covered in this assessment.

**PHASE TWO REGIONS**

These countries will be covered in the subsequent phase:

- Central Asia (Kyrgyzstan, Tajikistan)
- Latin America (Brazil, Nicaragua, Peru, Paraguay)
- United States of America
### Summary of PG Profiles

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>China</th>
<th>India</th>
<th>Turkey</th>
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<tbody>
<tr>
<td>Number of Farmers (Average)</td>
<td>3,300</td>
<td>80</td>
<td>2,924</td>
<td>161</td>
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<tr>
<td>Number of Farmers per PG (Range)</td>
<td>192 - 9,931</td>
<td>80</td>
<td>79 - 8,800</td>
<td>90 - 231</td>
</tr>
<tr>
<td>Women Farmers (Average %)</td>
<td>23%</td>
<td>30%</td>
<td>26%</td>
<td>5%</td>
</tr>
<tr>
<td>Women Farmers (Range %)</td>
<td>4 - 41%</td>
<td>30%</td>
<td>0 – 64%</td>
<td>4 – 6%</td>
</tr>
<tr>
<td>Household Size (Average)</td>
<td>7</td>
<td>10</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>Household Size (Range)</td>
<td>5 - 10</td>
<td>10</td>
<td>4 - 10</td>
<td>5 - 10</td>
</tr>
<tr>
<td>Farm Size, ha (Average)</td>
<td>8</td>
<td>13</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Farm Size, ha (Range)</td>
<td>0.65 - 32</td>
<td>13.3</td>
<td>1 – 4</td>
<td>10 - 50</td>
</tr>
<tr>
<td>Number of Crops Grown (Average)</td>
<td>9</td>
<td>3</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Number of Crops Grown (Range)</td>
<td>0 - 14</td>
<td>3</td>
<td>5 - 16</td>
<td>8 - 12</td>
</tr>
</tbody>
</table>

**PHOTO:** Returning from the cotton fields – Tanzania, Africa

**PHOTO:** Harvesting organic cotton – Xinjiang Province, China

**PHOTO:** Noting growth patterns in cotton trial varieties – Andhra Pradesh, India

**PHOTO:** Harvesting organic cotton – Izmir, Turkey
RESULTS

This section provides details of the key findings. To keep the report concise we have focused on a subset of the most significant indicators. Unless otherwise stated all percentages refer to the percentage of producer groups (PGs).

ENVIRONMENTAL DIMENSION

Organic agriculture relies on ecological processes, biodiversity and cycles adapted to local conditions. Organic Standards ban the use of synthetic fertilizers, toxic and persistent agrichemicals, and genetically modified seeds.

Assessment showed that organic cotton farmers employ a range of techniques to improve soil fertility, conserve soil and water, reduce soil erosion, and deter pests. Many of these practices or techniques are multi-functional. Techniques used by organic cotton farmers are shown in the chart below.

INDICATOR: WATER CONSERVATION TECHNIQUES

WE ADOPTED AN INTEGRATED WATERSHED APPROACH COMBINED WITH CATCHMENT MANAGEMENT WITH DIFFERENT SOIL AND WATER CONSERVATION MEASURES. EFFICIENT RAINWATER MANAGEMENT ACTS AS INSURANCE FOR THE CROP DURING THE RAINFALL DEFICIT PERIODS.

– PG, ANDHRA PRADESH

“PLOWING ACROSS SLOPE, CONSTRUCTING FARM BUNDS, GROWING TREES ALONG FARM BUNDS ARE SOME FARM TECHNIQUES THAT OUR FARMERS USE TO STOP RUNOFF OF RAINWATER AND MAKE IT PERCOLATE THROUGH THE SOIL.

– PG, RAJASTHAN
INDICATOR: SOIL FERTILITY & CONSERVATION TECHNIQUES

SOIL FERTILITY IS ENHANCED BY FARMERS ADDING COW DUNG AND URINE TO A COMPOST OF BIOMASS (CASSIA AND GLYRICIDIA AND SUNHEMP) TO HASTEN DECOMPOSITION, AND IMPROVE SOIL BIOLOGY THAT PROTECTS CROPS FROM DISEASES ALSO.

– PG, ODISHA

ANIMAL MANURE IS USED AS AN ORGANIC FERTILIZER. FARMERS BUY MANURE FROM HERDSMAN. YOU KNOW, IN XINJIANG PROVINCE, THERE ARE LOT OF PEOPLE GRAZING ANIMALS, THEY HAVE A LARGE NUMBER OF BARNYARD MANURE, IT'S VERY GOOD FOR ORGANIC COTTON PLANTING.

– PG, XINJIANG PROVINCE, CHINA

INDICATOR: PEST MANAGEMENT TECHNIQUES

ORGANIC ALTERNATIVES ARE NOT AS EFFECTIVE AS CHEMICAL BUT IN THE LONG TERM THESE ALTERNATIVES ARE GIVING BETTER RESULTS. FIRST OF ALL, THESE ALTERNATIVES ARE CHEAPER THAN CHEMICAL ONES AND DEMAND OF THESE ORGANIC ALTERNATIVES DECREASES YEAR BY YEAR DUE TO ITS SUSTAINABLE AND LONG TERM EFFECT.

– PG, GUJARAT
The majority (80 percent) of land under organic cotton is rainfed and the remaining 20 percent is under either partial or full irrigation. 35 percent of PGs reported to be fully rainfed and half of the PGs reported to be less than 50 percent irrigated. 38 percent of PGs employing irrigation indicated that they use the more efficient “drip” irrigation system.

In Africa, India, and Southeastern Turkey, farms are more likely to be rain-fed. Chinese and the Aegean farmers in Turkey are more likely to connect to irrigation systems. The Chinese producer group reported the use of drip irrigation and a reduced water use from around 12,000 m³ to 150 m³ per ha (a saving of 79 percent).

When asked about biodiversity levels PGs in Africa and India were more likely to notice increased biodiversity. In Africa, from the subset that noticed increased levels of biodiversity, 60 percent reported increased number of plant species (flora) and animals (fauna).

"WE HAVE DISTRIBUTED NEARLY 20,000 GLYRCIDEA PLANTS TO OUR FARMERS. ALL OUR ORGANIC FARMERS INTERCROP, USE TRAP CROPS, AND ROTATE THEIR CROPS EVERY YEAR. DENSITY OF TREES PER SQUARE KM IS VERY HIGH IN THE ORGANIC POCKET COMPARED TO THE CONVENTIONAL."

– PG, MADHYA PRADESH
73 percent of PGs reported to have made adaptations to climate change. 74 percent of PGs said to have changed their pest management practices. While PGs were not asked for observations of increase/decrease in number or types of pests, responses indicate that a change is occurring in reaction to a change in climatic conditions which may be creating more favorable conditions for certain pests (and less favorable for others).

“FARMERS USE EARLY CROP VARIETY. – PG, MALI

IF MONSOON IS DELAYED THEN FARMER GO FOR SHORT DURATION CROPS OF EARLY VARIETIES FOR THE SAME CROP. – PG, MADHYA PRADESH
DIMENSION: ECONOMIC

THEMES: LIVELIHOODS

INDICATOR : LAND USE

Alongside the use of crop rotation and intercropping for soil fertility, farmers grow other crops for market (cash crops) and for their own use (food security).

On average, the percentage of land dedicated to cash crops (including organic cotton) was 64 percent and for household use was 36 percent. The assessment showed that farmers in Africa and India have more land dedicated to food security/own use (57 percent and 34 percent respectively), than farmers in China and Turkey, where farmers dedicated more of their land to cash crops (100 percent and 85 percent). Some farmers keep a small number of livestock. More information on livestock is given on page 24.

INDICATOR : PRODUCTIVITY

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>China</th>
<th>India</th>
<th>Turkey</th>
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</thead>
<tbody>
<tr>
<td>OC-SAT Average Organic Cotton Yield (kg/ha)</td>
<td>475</td>
<td>2181</td>
<td>530</td>
<td>1432</td>
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<tr>
<td>OC-SAT Range of Organic Cotton Yield (kg/ha)</td>
<td>118-229</td>
<td>2181</td>
<td>155-1289</td>
<td>1415-1600</td>
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<tr>
<td>Farm &amp; Fiber Average Organic Cotton Yield (kg/ha)</td>
<td>560</td>
<td>1921</td>
<td>407</td>
<td>1303</td>
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<tr>
<td>Mundi Index Average Conventional Cotton Yield (kg/ha)</td>
<td>359</td>
<td>1477</td>
<td>493</td>
<td>1595</td>
</tr>
</tbody>
</table>

Cotton productivity (amount of fiber per area of land) varied widely between farmers, producer groups, growing areas, and between countries. The table above gives an indication only. The Mundi Index average is included to provide further context setting. Within India alone, productivity can range from 155 kg fiber/ha to 1,289 kg/ha. Variables affecting productivity include: geography, soil fertility, water availability, pest pressure, seed varieties, financial resources, knowledge and experience in organic farming. It is important to note that the average yield reported in the OC-SAT varies from the actual yield in the Farm and Fiber report due to the sampling difference of the subset of PGs in this assessment. The variation is most significant in Africa since a high yielding PG (with a yield of 599 kg/ha) was not included in the OC-SAT sample.
The highest costs for producers in all countries were associated with labor (Africa 64 percent, China 50 percent, India 61 percent, and Turkey 66 percent). Farmers need to hire help at various times of the year (sowing, weeding, harvest, etc.). Costs of inputs such as seed, bio-fertilizer and pest control ingredients were lower by comparison (Africa 24 percent, China 35 percent, India 25 percent and Turkey 10 percent).

In all cases organic cotton was the primary source of income for farmers. In Africa, India, and Turkey income from organic cotton was 40 to 59 percent of total farm income. Many farmers had established secondary incomes from other crops and livestock (Africa 42 percent, India 32 percent and Turkey 60 percent). Farmers in China revealed more dependency on organic cotton as a percentage of their overall income (95 percent).

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“FINGER MILLET FORMS AN IMPORTANT AND TRADITIONAL FOOD SOURCE FOR THE FARMERS OF THE REGION. THIS IS THE SECOND MOST IMPORTANT SOURCE OF INCOME. – PG, TAMIL NADU
Price differentiations between organic and non-organic cotton varied widely between the countries involved. Prices for organic (often dual certified FT-Organic) in Africa were the highest; price differentials ranging between 11-30 percent. In India 47 percent of PGs received a premium of less than 5 percent and 41 percent received a premium of between 5 to 10 percent. In Turkey farmers in the Aegean received a 10 percent premium and in Southeastern Anatolia, Turkey it was less than 5 percent. Premiums on Chinese organic cotton were reported to be less than 5 percent.

WE GIVE FARMERS A FIVE-YEAR GUARANTEE TO PURCHASE 80 PERCENT OF THEIR HARVEST. WE MAKE THE PAYMENT ON THE SPOT AT THE PURCHASE CENTER FOR THE AVERAGE PURCHASE PRICE OF THE DAY AND AN ADDITIONAL 15 PERCENT PREMIUM FOR EVERY KILO PURCHASED.

– PG, TANZANIA

While a number of PGs believed conventional production to be the same or more cost effective than organic, 73 percent reported organic to be the more cost-effective of the two systems. Note there was no differentiation made between conventional production with or without the use of GMOs, or compared to other sustainability standards.

THE COST OF CULTIVATION PER ACRE OF ORGANIC IS LESS, BUT AT THE SAME TIME THE YIELD WHICH COME OUT OF ORGANIC FARMING IS LESS AS COMPARED TO CONVENTIONAL. SO, ON AVERAGE, THE NET RETURNS PER ACRE ARE ALMOST THE SAME. THE ORGANIC FARM, HOWEVER, IS ABLE TO MAINTAIN SOIL FERTILITY FOR A LONGER PERIOD.

– PG, MADHYA PRADESH
The assessment showed 69 percent of PGs grew cotton under contract (often to spinning mills or textile processors), 15 percent were set up as independent PGs, 4 percent as cooperatives and 12 percent as cooperatives supported by NGOs. Farmers, particularly in Africa and India, tend to work collectively, while in Turkey they tend to work independently and come together only to market their cotton. 50 percent of PGs in Africa are NGO-supported.

"WE HAVE REGISTERED CONTRACT FARMERS IN 15 VILLAGES. WE HAVE OFFICES IN EACH OF THESE VILLAGES, SUPERVISORS AND FIELD EXTENSION STAFF AVAILABLE TO PROVIDE THEIR TECHNICAL KNOW-HOW TO THESE FARMERS. FARMERS ARE REGULARLY MONITORED, TRAINED AND ASSISTED. WE PROVIDE OTHER FINANCIAL SUPPORT SUCH AS PRE-FINANCING, PRICE PREMIUMS, CROP INSURANCE ETC." – PG, TANZANIA


"WE USE A FARMERS’ FIELD SCHOOL APPROACH WHICH IS A VERY POWERFUL METHOD FOR TECHNOLOGY DIFFUSION.’ – PG, BENIN
The time it takes for farmers to get paid can sometimes be as important as the premium received. When transactions are fixed the chances of timely payments are increased. However, the survey revealed considerable variation in payment times between both PG to farmer and supply chain buyer/trader to PG. Payments in China were within two weeks. In India payments were sometimes delayed up to a month while in Africa some transactions were reported to take up to 2-3 months. On the whole, most farmers (81 percent) are paid within 14 days. However, where the PG is aggregating the cotton 85 percent receive payments from the purchaser within 30 days. The cost of this payment lag, it appears, is currently being absorbed by the PGs.

"WE ARE STILL VULNERABLE IN TERM OF BUSINESS RELATIONSHIPS. WE NEED MORE SECURE CONTRACTS FOR LONG TERM PLANNING." – PG, MALI

"NORMALLY FARMERS ARE CALCULATING NUMBER OF DAYS FROM SAUDA (BARGAIN) AND WE PAY WITHIN 7 DAYS FROM THE SAUDA." – PG, GUJARAT

"THE PURCHASED COTTON LEAVES THE FARM GATE AND REACHES US IN A DAYS TIME. AFTER QUALITY CHECKING OF COTTON AT THE GIN, WE RELEASE OUR PAYMENTS WITHIN 3 DAYS TIME" – PG, TAMIL NADU

**THEMES: RISK MANAGEMENT**

**INDICATOR : CASH CROPS (EXCLUDING COTTON)**

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>China</th>
<th>India</th>
<th>Turkey</th>
<th>AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGs Growing Cash Crops</td>
<td>100%</td>
<td>100%</td>
<td>82%</td>
<td>100%</td>
<td>88%</td>
</tr>
<tr>
<td>Average Number of Cash Crops</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Range of Cash Crops Grown</td>
<td>2-4</td>
<td>3</td>
<td>0-9</td>
<td>1-5</td>
<td>0-9</td>
</tr>
</tbody>
</table>
88 percent of all PGs grew cash crops. On average each PG produced 3 types of cash crops but this can range from 0 to 9 between PGs. Higher valued crops such as nuts and oil seeds were by far (70 percent) the preferred cash crops, followed by staple produce such as legumes and pulses (39 percent) and cereals/grains (35 percent).

Outside of China, all farmers kept small numbers of livestock. Types of livestock ranged from buffalo and cows for traction, transportation, fertilizer and dairy products, through to goats and chickens mainly for food and fertilizer. Livestock such as cows (84 percent), goats (68 percent), oxen (64 percent) and buffalos (60 percent) that are multi-functional (for traction, transportation, fertilizer and food) are the top few livestock kept. It is interesting to note that aside from farm work and transportation, some animals such as cows and oxen are also kept for social status.

Cows are desi [local] varieties used as drought animals and for generating compost. In the tribal communities, these cows forms part of the asset base of the family.

— PG, ANDHRA PRADESH
The seed situation is complex and varies greatly between countries. For example, in Africa where seed research and development (R&D) tends to be controlled by the government, PGs reported that their seed has not changed over the past three years. African PGs reported issues with seed quality but in general were not facing difficulties in sourcing seed.

In contrast, India’s seed suppliers, sources of seed (breeding institutions, private companies) and types of seed (open-pollinated, hybrids, GMOs) tended to change more often. Almost 60 percent of Indian PGs have changed their seed over the past three years. Note: organic farmers cannot use GMO seed (and face issues of contamination). Furthermore many hybrids are not ideal for growing cotton under organic conditions requiring high levels of nitrogen and water for optimum performance. Alongside seed availability (64 percent), fiber characteristics that give rise to technical qualities (36 percent) are a strong consideration when selecting seed.

Both Indian (94 percent) and Chinese (100 percent) PGs perceive a problem with sourcing seed (and are facing a seed industry dominated by GMOs). The situation in India is acute with 69 percent of PGs citing seed sourcing as either very or extremely difficult. PGs in Africa and Turkey are not experiencing the same sourcing issues although African farmers are concerned about the quality of seed. Farmers in Turkey appear to be the most seed secure. Turkey has banned the introduction of GMOs.
PHOTO: One of the many uses of livestock – Benin, Africa

PHOTO: Workers sorting baby corn – Shivpur, Maharashtra, India

PHOTO: Seed saving for food security – Andhra Pradesh, India

PHOTO: Drying bengal gram for sale and own use — Shivpur, Maharashtra, India

PHOTO: One of the many uses of livestock – Benin, Africa
**DIMENSION: SOCIAL**

**THEMES: FOOD SECURITY**

**INDICATOR : GROW FOOD FOR OWN USE**

<table>
<thead>
<tr>
<th></th>
<th>Africa</th>
<th>China</th>
<th>India</th>
<th>Turkey</th>
<th>AA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGs Growing Crops for Food or Own Use</td>
<td>100%</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
<td>96%</td>
</tr>
<tr>
<td>Average Number of Food Crops for Own Use</td>
<td>8</td>
<td>0</td>
<td>7</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>Range of Food Crops for Own use</td>
<td>3-11</td>
<td>0</td>
<td>2-16</td>
<td>4-12</td>
<td></td>
</tr>
</tbody>
</table>

**INDICATOR : TYPES OF FOOD CROPS**

Organic cotton farmers derive food security in two ways: the crops they grow for cash and the crops they grow for their own-use. Farmers grew an average of 9 crops in addition to the cotton (up to 16). On average 7 crops were grown for “own use” (including food security) and an average of 3 grown for additional cash income. The assessment revealed that organic cotton farmers in India and Africa were more likely to grow crops for their own food security than farmers in China or Turkey.

The most popular crop varieties were cereals and grains (96 percent) which are staples in many countries, followed by legumes and pulses (84 percent); crops that provide soil fertility as well as a source of carbohydrate, oil, and protein to households. There were hundreds of varieties of crops falling into the categories in the chart above.

"The majority of our farmers are resource poor. Most of them raise food crops for household consumption and sell the excess only. Cotton is an important income generator for them. – PG, Tamil Nadu

Farmers don’t specifically grow food for food security, but some of them grow crops such as tomatoes, peppers, aubergine and okra for their own use. – PG, Aegean, Turkey"
All PGs reported to have developed, or to be working in compliance with, some sort of labor policy. 46 percent of PGs were Fairtrade certified (note out of the four countries in this assessment only Africa and India are eligible for Fairtrade certification). The remaining 54 percent had either established formal labor standards and policies (36 percent) or adhere to their own informal labor standards (64 percent). In all, 65 percent either had Fairtrade certification or had developed formal labor policies.

Of the PGs with formal labor policies, all of them covered pertinent issues such as no forced labor, no child labor, freedom to associate/bargain collectively, and no discrimination. Most (80 percent) covered issues such as agreed price, safe and hygienic working conditions and fair treatment of workers.

In Turkey farmers tended to own larger areas of land and were self-employed; working independently and coming together to market their products which explains the more informal nature of their labor policies. They do, however, hire seasonal labor at heavy work periods such as weeding and harvesting.

"WE HAVE NOT DEVELOPED POLICY IN WRITING, BUT FOLLOW SOCIALY AMICABLE PROCEDURES AS FOLLOWS: FARMERS ARE FREE TO ASSOCIATE AND BARGAIN COLLECTIVELY, LABORIOUS WORK NOT MORE THAN 7-8 HOURS A DAY, NO FORCED LABOR. NO EMPLOYING CHILD AND PREGNANT WOMEN IN FIELD. WORK WITH PROTECTIVE CLOTHING. MANURE AND BOTANICAL PESTICIDE APPLICATIONS TO BE DONE BY HEALTHY MEN. WAGES AS PER LOCAL STANDARDS."

– PG, RAJASTHAN

"FARMERS EMPLOY DAILY WORKERS FROM NEARBY VILLAGES WHEN NECESSARY AND ALL OF THEM KNOW EACH OTHER FOR MANY YEARS."

– PG, AEGEAN, TURKEY
The percentage of women formally registered as organic farmers was 23 percent. In many cases women are working alongside their husbands. The majority (97 percent) of PGs were actively encouraging women to join. Policies for gender equality were either formal (35 percent) or informal (62 percent).

**WE FACILITATE ACCESS TO CREDIT FOR WOMEN; QUOTA OF 30 PERCENT OF WOMEN SHOULD PARTICIPATE TO ALL TRADING PROGRAMS. PROMOTION OF WOMEN-SPECIFIC CROPS LIKE SESAME AND SHEA NUT. – PG, MALI**

**WE ENCOURAGE WOMEN FARMERS TO BECOME MEMBERS OF THE FARMER GROUPS AND COOPERATIVES. WE ALSO SUPPORT WOMEN’S SELF HELP GROUPS TO FOCUS ON SPECIFIC AREAS SUCH AS FOOD AND NUTRITION SECURITY, SEED RELATED ISSUES, ETC. – PG, ANDHRA PRADESH**

Most (84 percent) of PGs reported that their local community benefited from the adoption of organic cotton. Some linked community benefits to their Fairtrade premium. The most commonly reported benefits were local employment (50 percent), education (41 percent), health services (36 percent) and access to clean drinking water (32 percent).

**WE ARE ACTIVE IN SUPPORTING SOCIAL DEVELOPMENT WITHIN THE COMMUNITY. IN COLLABORATION WITH OUR FOUNDATION, RECENT ACTIVITIES INCLUDE: PROVIDING SEWING MACHINES AND WORKSHOPS FOR WOMEN IN VILLAGES WHERE WE WORK; WATER WELLS BUILT OR RENOVATED; HOUSES BUILT FOR TEACHERS AT THE PRIMARY SCHOOL; BUILDING SMOKELESS STOVES (CO₂ PROJECT); WATER TANK AT PRIMARY SCHOOL. – PG, TANZANIA**
PHOTO: Farmers sifting wheat from the chaff – Odisha, India

PHOTO: Cleaning and sorting out crops – China

PHOTO: Women farmers sowing seeds – Adilabad, Telangana, India

PHOTO: Hand weaving is part of local textile processing – Tamil Nadu, India

PHOTO: Building and equipping schools in rural locations – Tanzania, Africa

PHOTO: Cleaning and sorting out crops – China
KEY MESSAGES

Here are our top three conclusions out of the many that can be drawn from the findings in the report.

BUSINESS SECURITY FOR FARMERS IS CRITICAL TO SECTOR STABILITY

• Despite the many benefits associated with organic cotton farming systems, “going organic” is still a risk for farmers, and in many cases reward for effort is uncertain.

• Organic cotton “sustainability” and sector stability cannot be achieved without incentivizing farmers and improving business security; e.g. building in rewarding terms and conditions of trade for good production practices.

• Risks and reward need to be fairly shared between all members of the value chain for farmers to stay in organic and for the organic cotton sector to thrive.

ORGANIZATION ENCOURAGES DECENT WORK

• Organic farmers benefit from being organized into production groups especially in smallholder situations.

• Farmer organization delivers more than production and certification efficiencies; it provides a structure for improving working conditions such as gender equality, excluding child labor, and promoting leadership.

• Producer Group organization contributes to better understanding of the challenges farmers face and enables knowledge sharing, peer-to-peer observation/scrutiny, and helps identify areas of weakness as well as need for support.

“DIVERSITY” IS KEY TO SUSTAINABLE DEVELOPMENT

• Optimizing organic agricultural systems requires on-farm diversification.

• Diversification of crops, sources of income and social diversity is key to the autonomy and empowerment of farmers – particularly for small-scale farmers and increasingly a tool for mitigating the impact of climate change.

• To help mitigate the effects of climate change, Producer Group leaders and supporting organizations (ginners, spinners, NGOs, extension providers) should encourage and support further on-farm diversification.

NEXT STEPS

The OC-SAT can be considered a baseline for benchmarking the impact of organic cotton.

Next steps could involve the development of:

• An agreed set of core indicators to extend to a wider group of producers and/or to be traced through supply chains.

• A simplified approach to data collection at the farm gate so that alongside sector reporting, partners within specific value chains could track impact.

• A technology solution to streamline the data collection and KPI tracking; potentially using real-time data, tracked with bale ID or transaction certificates.

• Regular monitoring and evaluation. Impacts are best understood when measured over time because indicators of environmental and social change (such as livelihood improvements) can be slow to come through.

Our ambition is that this work contributes to the overall understanding of sustainability assessment. Going forward, the OC-SAT could provide both an approach to ongoing sustainability assessment reporting, and also a pragmatic tool for supply chains to share information, make decisions for action, and for Business-to-Business or even Business-to-Customer communication.
TO ACHIEVE SUSTAINABILITY IN OUR VALUE CHAIN IT IS PARAMOUNT TO THINK DEEPLY ABOUT SUSTAINABLE COTTON GROWING AND SOURCING.

WE BELIEVE THAT AS LARGE CONSUMERS OF COTTON WE HAVE THE OPPORTUNITY TO PROMOTE AGRARIAN SYSTEMS THAT ARE ENVIRONMENTALLY AND SOCIALLY SUSTAINABLE. WE PUT IN EFFORTS TO SUPPORT SMALL AND MARGINAL FARMERS FROM THE RAIN-FED REGIONS IN MAHARASHTRA. WE BELIEVE THAT THIS ORGANIC COTTON PROJECT HAS CONTRIBUTED TOWARD ECONOMIC AND SOCIAL DEVELOPMENT IN THE VIDHARBHA REGION AND IS KEY TO IMPROVING LIVELIHOOD OPPORTUNITIES AS WELL AS DELIVERING CRITICAL NEEDS AND SERVICES TO COMMUNITIES.

THERE ARE ALSO IMPORTANT BUSINESS CONSIDERATIONS FOR WORKING TOWARDS SUSTAINABLE COTTON GROWING. FOR OUR BUSINESS, ASSURANCE OF A REGULAR SUPPLY OF QUALITY COTTON AND REDUCTION OF SUPPLY UNPREDICTABILITY RESULTS IN BETTER OUTPUT QUALITY. GOOD TRACEABILITY DURING THE ENTIRE CULTIVATION PROCESS RESULTS IN BETTER QUALITY MONITORING AND ULTIMATELY INCREASED CUSTOMER CONFIDENCE IN OUR PRODUCTS.”

– PG PROJECT IMPLEMENTER, MAHARASHTRA
Thank you to our sponsors and funders for making this possible:

Textile Exchange would like to acknowledge the following organizations for their role in data collection, methodology and overall development of this assessment tool:

Vashuda Javik Krishak Samit.

TE would also like to thank all the organizations that have shared their photo collections with us and especially those whose photos were used in this report.

Special thanks to photographers:

Christine Altenbuchner, University of Natural Resources and Life Sciences, Vienna; Dr Davo Simplice Vodouhe, OBEPAB, Benin; Vipul Kulkarni and Sidharth Tripathy, Chetna Organic, India; K Jairam, Adilabad Watershed Development Team, India; Tong Yeung, Mecilla, China; and the Textile Exchange team.
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