Capacity building of small farmers: Improve yield & enhance traceability

ICAC
Brisbane
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Olam International
Global Fibre Demand Expanding
~108 MMT in 2022, Cotton unable to keep pace

Sources: ICAC, IWTO, USDA, and Fiber Economics Bureau.
Cotton losing share
68% (in 1960) to 27% (expected in 2022)

Sources: ICAC, IWTO, USDA, and Fiber Economics Bureau.
Challenges faced by Cotton Industry

Supply Volatility

Price Volatility

Labor intensive

Pesticides

Dyes & chemicals

DEC -11 SEP -12 JUN -13 MAR -14 DEC -15 SEP -16 JUN -17 DEC -18 SEP -18 JUN -19

pesticides
Supply: Potential constrained by production area and yield

<table>
<thead>
<tr>
<th>Production Area</th>
<th>Yield</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton global production area (‘000, ha)</td>
<td>CAGR CAGR</td>
</tr>
<tr>
<td></td>
<td>'13-'18 18-'24</td>
</tr>
<tr>
<td>2013</td>
<td>30,000</td>
</tr>
<tr>
<td>2014</td>
<td>30,000</td>
</tr>
<tr>
<td>2015</td>
<td>30,000</td>
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<tr>
<td>2016</td>
<td>30,000</td>
</tr>
<tr>
<td>2017</td>
<td>30,000</td>
</tr>
<tr>
<td>2018</td>
<td>30,000</td>
</tr>
<tr>
<td>2024(F)</td>
<td>32,400</td>
</tr>
</tbody>
</table>

Note: 2018 represents 2017/18 harvest year
Source: ICAC
Small Farmers: 58% Area, Produce 36%

Production: 26.5M tons, Area: 35M ha
Yield: Australia & Brazil among highest yield with African nations the lowest

Yield (2018, Kg/ha)

| Source: ICAC |
|-----------------|-----------------|
| Australia | 0.5 |
| Turkey | 0.84 |
| China | 6.04 |
| Brazil | 2.7 |
| Mexico | 0.38 |
| USA | 4.0 |
| Pakistan | 1.6 |
| India | 6.2 |
| Ivory Coast | 0.17 |
| Mali | 0.3 |
| Burkina Faso | 0.25 |
| Zimbabwe | 0.04 |
| Mozambique | 0.03 |
| Chad | 0.03 |

Mechanized & Irrigated
- Large farm, 1150 kg/ha
- World Average, 770 kg/ha

Manual & Rain-fed
- Small farm, 470 kg/ha
Small holder farmers - Challenges

- Access to good quality agriinputs
- Access to Bank/Micro Finance: limits capacity building through investments into mechanization
- Training in Good agricultural practices
- Access to Technology: unable to deploy modern technology due to small farm size
- Market access, fair price
- Functional literacy, access to medical amenities
Ecosystem required for success of small cotton farmer

West Africa example

**Role of government**: create a governance model to define roles of sector participants, enforce contractual performance, ensure balanced sector development

**Role of industry association**: Create platform for dialogue between stakeholders, develop market-based pricing model for seed cotton and create a support fund to maintain sector maintain financial attractiveness of the sector during low price regime

**Role of ginner**: Long term commitment to support growers and provide all the resources required for cotton production, yield improvement, capacity building.

**Role of NGO & DFIs**: Build farmer capacity through training in GAP, functional literacy, farmer field schools, functioning of cooperative, educating farmers on Child Labor policy, deforestation, sustainability programs
Olam’s experience in Integrated ginning in Côte D’Ivoire

Production Volume Drivers: Area × Yield
### Yield Growth Initiatives

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Value (kg/ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Yield - Base Case</td>
<td>450</td>
</tr>
<tr>
<td>R1 &amp; R2 Seed Generation</td>
<td>65</td>
</tr>
<tr>
<td>Input Application</td>
<td>65</td>
</tr>
<tr>
<td>Plant Population</td>
<td>55</td>
</tr>
<tr>
<td>Selective Mechanization</td>
<td>15</td>
</tr>
<tr>
<td>Soil Fertility</td>
<td>10</td>
</tr>
<tr>
<td>Expected Yield</td>
<td>660</td>
</tr>
<tr>
<td>Target Yield (kg/ha)</td>
<td>640</td>
</tr>
</tbody>
</table>

**Key for success**

To achieve differential yield requires **extensive farmer engagement, continuous follow up and frequent trainings** warranting different approach for Farm Extension Services through **embedding** this activity within Co-operatives.
Improving Yield – Back to Basics

5 fingers approach for achieving better yields

- Early Planting
- Optimal Plant population
- Timely weeding
- Timely Fertilization
- Effective Insect pest control
Improving Yield of Small Scale Farmers

Seed Multiplication Program

- Produce quality planting seeds for farmers

Farmer training program

- Increase crop productivity with Good Agricultural Practices (GAP)

Model demo farms

- Establish yield potential of a village by ensuring all GAP are deployed.

Cattle Agric. Equip support program

- To help small holding cotton farmers for increased cotton area & plant cotton early as monsoon sets in.

Zero Tillage Farming

- To help small holding cotton farmers for increased cotton area & plant cotton early.
Spyder: Tool for farmer engagement, farm extension services & crop tracking

- **Farm activities**: Track season activities from Farmer registration to Payment.
- **Farmer engagement, two way communication**: Track Extension Services activities of Field Staff.
- **Agri Inputs distribution & inventory control**: Online data entry & tracking of Agri Input distribution.
- **Farmer/Cooperatives Credit & payment track**: Reports on credit outstanding & Payments.
- **Database creation and data analysis**: Link to SOFIA & Building on Farmer / OPA Database.
Agriculture faces some of the biggest development, economic, and environmental challenges...
Consumers are becoming aware & demanding… But agricultural supply chains are complex

A lot of **re-imagination is required** to grow responsibly

**AtSource** is Olam’s **comprehensive sustainable sourcing solution** in the B2B marketplace

- **Customer** focused
- Driving **transparency** across our supply chains
- Showing sustainability **metrics** that matter
- Generating **action** on identified risks
- Helping our **customers** meet their sustainability commitments & targets
- Fully **aligned** with our Purpose to Reimagine Global Ag & Food Systems
- Delivered through a simple & clear **Digital Dashboard**
Conclusions

1. Cotton is a preferred textile fibre

2. Increasing supply will result in higher demand

3. Significant opportunities to increase production by small scale farmers in Africa
   a) Area increase from 4.5M ha to 6.0 M ha and yield increase from 350 kg/ha to 640 kg/ha.
   b) Current production of 1.5M tons can increase to 3.8M tons

4. Governments have to create an enabling ecosystem for Ginders to take a long term view and engage with farmers in improving farm productivity and increasing farmer capacity.

5. Ginder to play multi functional role – banker, seed company, agri inputs company, agronomic advice, logistics company, community projects

6. Production increase through yield increase will help increase financial returns for the farmer

7. Technology has a significant role in reducing supply chain costs and establish transparency & traceability.