Brazil
The Future of Cotton Exports

Lidiane Eichelt
A Bit of History

XVIII Century
Commercial Production in NE Region
Colony of Portugal
Textile Industry in England

1930
SE Region as Main Producer
1929 Coffee Crisis

1960-1980
Small Properties
Low Level of Mechanization and Technology
Hand Picked Harvesting
Family Farming Model

1980
Record Area
4.1 mi ha
Yield 144 kg/ha of Lint

1980-1990
Cotton Boll Weevil
Local Textile Stimulus
Focus on Imports

1993 - 1997
Brazil Record Imports
500kmt
A Bit of History

1997

Cotton Production Collapses
Lowest Production 306k mt

2000’s

The New Start
Changing in Production Model
Expansion to CW (Cerrado)

2000’s

Re-Organization of the Agribusiness Chain
Focus R&D (EMBRAPA and Foundations
Growers Associations (ABRAPA)

2000’s

Large Areas – Flat Technology (Soil is not Naturally Fertile)
Mechanization
Crop Rotation with Soybean

2000’s

Growers Owns the Cotton Gins
Quality Improvement
Higher Yields
Historical Pattern

Trend Change

CAGR 10 years = 2.6%
CAGR 10 years = 1.5%

Source: CONAB 2023
Main Producing States

<table>
<thead>
<tr>
<th>MT</th>
<th>BA</th>
<th>MATOPI</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd Crop Advantages</td>
<td>Competition with Soybean/Corn</td>
<td>New Frontier</td>
</tr>
</tbody>
</table>

92% Rainfed

8% Irrigated

Source: CONAB 2023
How Cotton is Grown

Very Concentrated Production

- **28%** of the Area 472k ha
- **45%** of the Area 744k ha
- **72%** of the Area 1,202k ha

**250 to 300** Growers Actively Planting

- **6,500 ha** Average Size
- **1,750 kg/ha** Avg Yield (Lint)
- **100%** Machine Picked

Growers Sell **2 Years** in Advance

**Own the Assets**

- Gins / Harvesters

**Up To Date**

- New Technologies
- Management Techniques

Olam Agri
## Cost of Production

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>%</th>
<th>2021</th>
<th>%</th>
<th>2022</th>
<th>%</th>
<th>2023</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crop Protection</td>
<td>983</td>
<td>39%</td>
<td>873</td>
<td>46%</td>
<td>958</td>
<td>32%</td>
<td>1,055</td>
<td>31%</td>
</tr>
<tr>
<td>Fertilizer</td>
<td>503</td>
<td>20%</td>
<td>494</td>
<td>26%</td>
<td>1,037</td>
<td>35%</td>
<td>755</td>
<td>22%</td>
</tr>
<tr>
<td>Seeds</td>
<td>237</td>
<td>9%</td>
<td>196</td>
<td>10%</td>
<td>263</td>
<td>9%</td>
<td>325</td>
<td>10%</td>
</tr>
<tr>
<td>Ginning</td>
<td>211</td>
<td>8%</td>
<td>161</td>
<td>8%</td>
<td>207</td>
<td>7%</td>
<td>251</td>
<td>7%</td>
</tr>
<tr>
<td>Depreciation/Land</td>
<td>369</td>
<td>15%</td>
<td>256</td>
<td>14%</td>
<td>472</td>
<td>16%</td>
<td>746</td>
<td>22%</td>
</tr>
<tr>
<td>Operations</td>
<td>148</td>
<td>6%</td>
<td>122</td>
<td>6%</td>
<td>212</td>
<td>7%</td>
<td>246</td>
<td>7%</td>
</tr>
<tr>
<td>Interest/Adm Expenses</td>
<td>136</td>
<td>5%</td>
<td>87</td>
<td>5%</td>
<td>198</td>
<td>7%</td>
<td>262</td>
<td>8%</td>
</tr>
<tr>
<td>Others</td>
<td>166</td>
<td>7%</td>
<td>159</td>
<td>8%</td>
<td>208</td>
<td>7%</td>
<td>203</td>
<td>6%</td>
</tr>
<tr>
<td>Revenue Ginning</td>
<td>-253</td>
<td>-10%</td>
<td>-453</td>
<td>-24%</td>
<td>-555</td>
<td>-19%</td>
<td>-468</td>
<td>-14%</td>
</tr>
<tr>
<td><strong>Total Cost / ha (BRL)</strong></td>
<td>9,864</td>
<td></td>
<td>9,803</td>
<td></td>
<td>16,199</td>
<td></td>
<td>17,422</td>
<td></td>
</tr>
<tr>
<td><strong>Total Cost / ha</strong></td>
<td>2,500</td>
<td></td>
<td>1,895</td>
<td></td>
<td>3,000</td>
<td></td>
<td>3,375</td>
<td></td>
</tr>
<tr>
<td><strong>Total Cost / acre</strong></td>
<td>1,012</td>
<td></td>
<td>767</td>
<td></td>
<td>1,214</td>
<td></td>
<td>1,366</td>
<td></td>
</tr>
</tbody>
</table>
# Second Crop Calendar

<table>
<thead>
<tr>
<th>Crop</th>
<th>Aug</th>
<th>Sep</th>
<th>Oct</th>
<th>Nov</th>
<th>Dec</th>
<th>Jan</th>
<th>Feb</th>
<th>Mar</th>
<th>Apr</th>
<th>May</th>
<th>Jun</th>
<th>Jul</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton 1&lt;sup&gt;st&lt;/sup&gt; Crop</td>
<td><img src="tree_icon.png" alt="Planting" /></td>
<td><img src="tree_icon.png" alt="Planting" /></td>
<td><img src="harvest_icon.png" alt="Cotton Harvest" /></td>
<td><img src="harvest_icon.png" alt="Soybean Harvest" /></td>
<td><img src="harvest_icon.png" alt="Cotton Harvest" /></td>
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<td><img src="harvest_icon.png" alt="Cotton Harvest" /></td>
</tr>
<tr>
<td>Cotton 2&lt;sup&gt;nd&lt;/sup&gt; Crop</td>
<td><img src="tree_icon.png" alt="Planting" /></td>
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</tbody>
</table>
**Second Crop Calendar**

Rain Pattern  Mato Grosso  Avg Last 15 Years

Temperature Mato Grosso Avg Last 15 Years

1650mm to 1900mm annually
Second Crop

24 2nd Crop / 1,02 mi ha / 85%
1st Crop / 185 k ha / 15%

23 2nd Crop / 1,02 mi ha / 87%
1st Crop / 153 k ha / 13%

22 2nd Crop / 819 k ha / 85%
1st Crop / 143 k ha / 15%

21 2nd Crop / 990 k ha / 87%
1st Crop / 141 k ha / 13%

Source: IMEA and CONAB 2023
Second Crop

1st Crop

2nd Crop

Area

990k ha

1.666 mi ha

2nd Crop

819k ha

21/22

1.371 mi ha

2nd Crop

1.0mi ha

22/23

1.600 mi ha

2nd Crop

1.0mi ha

23/24

1.664 mi ha

Source: IMEA and CONAB 2023
Historical Production

**Planted Area**
(1,000 hectares)

<table>
<thead>
<tr>
<th>Year</th>
<th>19/20</th>
<th>20/21</th>
<th>21/22</th>
<th>22/23</th>
<th>23/24</th>
<th>24/25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area</td>
<td>1.618</td>
<td>1.666</td>
<td>1.371</td>
<td>1.600</td>
<td>1.664</td>
<td>1.877</td>
</tr>
</tbody>
</table>

**Yield**
(kg/ hectare)

<table>
<thead>
<tr>
<th>Year</th>
<th>19/20</th>
<th>20/21</th>
<th>21/22</th>
<th>22/23</th>
<th>23/24</th>
<th>24/25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yield</td>
<td>1.717</td>
<td>1.802</td>
<td>1.721</td>
<td>1.596</td>
<td>1.907</td>
<td>1.752</td>
</tr>
</tbody>
</table>

**Production**
(1,000 tonnes)

<table>
<thead>
<tr>
<th>Year</th>
<th>19/20</th>
<th>20/21</th>
<th>21/22</th>
<th>22/23</th>
<th>23/24</th>
<th>24/25</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>2.779</td>
<td>3.002</td>
<td>2.359</td>
<td>2.554</td>
<td>3.173</td>
<td>3.288</td>
</tr>
</tbody>
</table>

Source: CONAB 2023
2023/24 Crop

Production

<table>
<thead>
<tr>
<th>Region</th>
<th>Production (mt)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATO GROSSO</td>
<td>2,252</td>
<td>71.1%</td>
</tr>
<tr>
<td>BAHIA</td>
<td>626</td>
<td>19.7%</td>
</tr>
<tr>
<td>OTHERS</td>
<td>296</td>
<td>9.2%</td>
</tr>
</tbody>
</table>

Area

<table>
<thead>
<tr>
<th>Region</th>
<th>Area (ha)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATO GROSSO</td>
<td>1,190</td>
<td>71.5%</td>
</tr>
<tr>
<td>BAHIA</td>
<td>313</td>
<td>18.8%</td>
</tr>
<tr>
<td>OTHERS</td>
<td>162</td>
<td>9.7%</td>
</tr>
</tbody>
</table>

Source: CONAB 2023
Brazil Exports

2022/23 Destinations

- Others
- Indonesia
- Turkey
- Pakistan
- Vietnam
- Bangladesh
- China

2023/24 Destinations

- Others
- Pakistan
- Indonesia
- Turkey
- Bangladesh
- Vietnam
- China

Source: ComexStat 2023
Market Share and S&D

Exports

(mi mt)

<table>
<thead>
<tr>
<th></th>
<th>18/19</th>
<th>19/20</th>
<th>20/21</th>
<th>21/22</th>
<th>22/23</th>
<th>23/24</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>5</td>
<td>6</td>
<td>8</td>
<td>10</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Mkt Share</td>
<td>30%</td>
<td>25%</td>
<td>20%</td>
<td>15%</td>
<td>10%</td>
<td>5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2020/21</th>
<th>2021/22</th>
<th>2022/23</th>
<th>2023</th>
</tr>
</thead>
<tbody>
<tr>
<td>Production</td>
<td>3,000</td>
<td>2,356</td>
<td>2,552</td>
<td>3,170</td>
</tr>
<tr>
<td>Import</td>
<td>3</td>
<td>5</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Consumption</td>
<td>675</td>
<td>718</td>
<td>697</td>
<td>718</td>
</tr>
<tr>
<td>Export</td>
<td>2,398</td>
<td>1,682</td>
<td>1,449</td>
<td>2,439*</td>
</tr>
</tbody>
</table>

Source: USDA, ComexStat 2023
Logistics 2023/24

Port

<table>
<thead>
<tr>
<th>Location</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Santos</td>
<td>92.3%</td>
</tr>
<tr>
<td>Salvador</td>
<td>3.3%</td>
</tr>
<tr>
<td>Paranagua</td>
<td>4.3%</td>
</tr>
</tbody>
</table>

Internal Logistic

<table>
<thead>
<tr>
<th>Mode</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railroad</td>
<td>10%</td>
</tr>
<tr>
<td>Trucks</td>
<td>90%</td>
</tr>
</tbody>
</table>

Wet season Challenge

Containers stuffed at the port

5 days min from origin to unload at the port

900km – 560 mi

1600km – 995mi

2000km – 1240mi

Source: Datamar 2023
Area Expansion

<table>
<thead>
<tr>
<th>Region</th>
<th>Soybean ha</th>
<th>Corn 2nd ha</th>
</tr>
</thead>
<tbody>
<tr>
<td>MT</td>
<td>12.1 M</td>
<td>6.7 M</td>
</tr>
<tr>
<td>MATOPIBA</td>
<td>5.7 M</td>
<td>0.8 M</td>
</tr>
</tbody>
</table>

Source: Embrapa, ABRAPA, CONAB
Growth Perspective

CAGR 10 years = 2.7%

Stable at 730k mt

2023/24* 2,901mi mt*

2024/25

2025/26

2026/27

2027/28

2028/29

2029/30

2030/31

2031/32

2032/33

2033/34

3,680mi mt

Source: MAPA 2023

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Enablers for Expansion

01 Area Expansion
Following Soybean
2nd Crop Corn

02 Genetical Enhancement
Seed Development
New Traits

03 Better Agronomic Practices
Increase the Use of Biological

04 New Technologies
Internet
Drones
Harvesters

05 Precision Agriculture

06 MATOPI
## Challenges for Expansion

### Logistics
- Dependence of one main Port (WH)
- Inland Freight Costs
- Competition with Growing Grains Crop

### CoP
- Fertilizer Cost
- Crop Protection Cost
- High Inflation
- Salaries
- Fuel
- Interest

### Capacity
- Gins
- Harvesters

### Carry
- Cost of Money

### Infrastructure
- Roads
- Energy
- Railroad
Cotton x Synthetic Fibers

Source: ICAC 2023

Share of Cotton

<table>
<thead>
<tr>
<th>Year</th>
<th>Cotton</th>
<th>Wool</th>
<th>Chemical Fibres</th>
</tr>
</thead>
<tbody>
<tr>
<td>1962</td>
<td>65%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>53%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1982</td>
<td>49%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1992</td>
<td>48%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>28%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2022</td>
<td>23%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

CAGR 20 years = 5.3%
CAGR 20 years = 1.1%