United States Future as Global Cotton Supplier

USDA Outlook Forum 2024

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Overview

United States Future as Global Cotton Supplier????

I. Opening Remarks
II. How are food/fuel and fiber acres evolving?
   a) Acres trends – Is cotton competing for acres?
   b) Geography of food and fiber production and consumption
   c) Productivity trends
III. Man made fiber vs cotton
IV. Longer term look at USA cotton production
   a) Cost of production
   b) Market Volatility
   c) Weather considerations
   d) Will the USA remain a competitive exporter?
Changes in Key Metrics:

<table>
<thead>
<tr>
<th>Year</th>
<th>World Population</th>
<th>World GDP</th>
<th>GDP Per Capita PPP</th>
<th>Food, Fiber, Fuel Harvested Acres</th>
<th>Area Harvested Per Capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td>6.2 Billion</td>
<td>33 Trillion</td>
<td>8,322</td>
<td>2.06 Billion</td>
<td>.331</td>
</tr>
<tr>
<td>2023</td>
<td>8.3 Billion</td>
<td>102 Trillion</td>
<td>20,693</td>
<td>2.4 Billion</td>
<td>.301</td>
</tr>
</tbody>
</table>

Source: World Bank and Bloomberg
Global Harvested Acres by Crop 2023/2024

Food Crops Considered
Wheat
Corn
Soybeans
Rice
Peanuts
Barley
Sorghum
Rye
Sunflower
Rapeseed
Oats
Millet

Source: USDA Production, Supply and Demand
Global Acres Harvested by Crop

% of World Acres Increase Since 2001

Source: USDA Production, Supply and Demand
• Prior to 2017 the Food Production surplus was more comfortable at an average of approx. 2%

• 2018 until present the surplus production has been closer to zero

Source: USDA Production, Supply and Demand
Global Food and Fuel Acres Harvested and Yield

Source: USDA Production, Supply and Demand; World Bank population
Global hunger did not change from 2021 to 2022 but remains far above pre-pandemic levels.
Between 691 and 783 million people faced hunger in 2022 – considering the midrange, about 122 million more people than in 2019, before the COVID-19 pandemic.

Last year stability in global hunger hides significant increases in some regions and subregions.
In 2022, hunger was still on the rise in Western Asia, the Caribbean and in all subregions of Africa, while declining in Latin America and Asia.

The pandemic caused a major setback in the fight to eradicate hunger. 2022 made it more difficult.
Almost 600 million people may still be facing hunger in 2030 – 119 million more than in a scenario in which the pandemic had not occurred. The events of 2022 alone will continue to have a longstanding impact, increasing by 23 million the number of undernourished people in 2030.

Nearly 2.4 billion people in the world lacked regular access to adequate food in 2022.
30 percent of people in the world were moderately or severely food insecure – more women than men, and more people living in rural areas than in urban areas.

Healthy diets are out of reach for more than 3.1 billion people.
78 percent of people in Africa were unable to afford a healthy diet in 2021, compared to 44 percent in Asia, 23 percent in Latin America and the Caribbean, and 3 percent in Oceania.

The world is not on track to achieve global nutrition targets.
Stunting in children under five years and exclusive breastfeeding have improved and some progress has been made on wasting, while low birthweight and overweight in children under five have not changed.
China Main Food Crop Production and Consumption

Source: USDA Production, Supply and Demand
China Oilseed, Soybean Production (Surplus/Deficit)

Source: USDA Production, Supply and Demand
China Acreage Change

Source: USDA Production, Supply and Demand
Surplus and Deficit Countries for Food and Fuel

<table>
<thead>
<tr>
<th>Top 10 by Volume</th>
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<tbody>
<tr>
<td><strong>Deficit</strong></td>
</tr>
<tr>
<td>1. China</td>
</tr>
<tr>
<td>2. Mexico</td>
</tr>
<tr>
<td>3. Japan</td>
</tr>
<tr>
<td>4. Egypt</td>
</tr>
<tr>
<td>5. Iran</td>
</tr>
<tr>
<td>6. Korea, South</td>
</tr>
<tr>
<td>7. Indonesia</td>
</tr>
<tr>
<td>8. Algeria</td>
</tr>
<tr>
<td>9. Saudi Arabia</td>
</tr>
<tr>
<td>10. European Union</td>
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</table>

<table>
<thead>
<tr>
<th>Surplus</th>
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<tbody>
<tr>
<td>1. Brazil</td>
</tr>
<tr>
<td>2. United States</td>
</tr>
<tr>
<td>3. Argentina</td>
</tr>
<tr>
<td>4. Russia</td>
</tr>
<tr>
<td>5. Ukraine</td>
</tr>
<tr>
<td>6. Canada</td>
</tr>
<tr>
<td>7. Australia</td>
</tr>
<tr>
<td>8. India</td>
</tr>
<tr>
<td>9. Paraguay</td>
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<tr>
<td>10. Kazakhstan</td>
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Global Acres Change by Crop

Percentage of Global Acreage Increase
2001 to 2015

- Brazil, 10.74%
- United States, 7.23%
- Australia, 0.27%
- China, 25.42%
- Ukraine, 4.57%
- India, 8.09%
- Argentina, 5.20%
- Russia, 3.67%

Percentage of Global Acreage Increase
2016 to 2024

- China, 26.39%
- Brazil, 25.68%
- India, 13.64%
- Russia, 8.82%
- Argentina, 8.82%
- United States, 2.95%
- Ukraine, 0.26%
Global Food Production and Consumption, without Increase in Brazil
2016 to 2024

World Production
World Consumption
% Surplus

Current Level of Surplus
China’s cotton output increased in Xinjiang and decreased in other regions from 1990–2021

Metric tons (in millions)

In the future, corn will compete with cotton.
# USA and Brazil Comparison Metrics

<table>
<thead>
<tr>
<th>Metric</th>
<th>USA</th>
<th>Brazil</th>
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<tbody>
<tr>
<td>Harvested Cotton Acres (Million, 2023)</td>
<td>7.06</td>
<td>4.1</td>
</tr>
<tr>
<td>Average Yield (5 yr)</td>
<td>860</td>
<td>1561</td>
</tr>
<tr>
<td>Cost of Production (est.)</td>
<td>$.80 - $.85</td>
<td>$.72 - $.75</td>
</tr>
<tr>
<td>Picker Cost (approx.)</td>
<td>$1.06m</td>
<td>$1.8m</td>
</tr>
<tr>
<td>Acres per Machine (approx.)</td>
<td>1500</td>
<td>3200</td>
</tr>
<tr>
<td>Average Acres Per Farm (est.)</td>
<td>650</td>
<td>50,000</td>
</tr>
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</table>
NOAA Climate Extreme Index (USA)

1912 to 2010 = 18.57 Avg

2011 to Present = 32.45 Avg
NOAA Climate Extreme Index (SE USA)

1912 to 2010 = 18.39 Avg

2011 to Present = 35.15 Avg
Export Scoreboard

USA  Brazil

Bales in Millions

2023-08-01  2023-09-01  2023-10-01  2023-11-01  2023-12-01  2024-01-01  2024-02-01
**Conclusions**

- Demand for cotton will be relatively consistent with production, outside of recession periods.

- Brazil has made tremendous progress expanding acres and increasing production.
  - The world should be thankful for the additional production from Brazil if population continues to expand, more will be needed.

- Significant further increase in cotton production will largely be dependent on increased yields.

- Volatility will become more extreme with expanded commodity investment and weather impacts.

- USA cotton production will be highly dependent on Texas weather.

- Brazil cotton production will be more dependent on profitability of corn/beans vs cotton.

- There is room for both the USA and Brazil productions in the textile supply chain.
  - Because of the dislocation between production and consumption geography, ability to move product to market will be increasingly important.

- USA's competitiveness in the export market will be directly correlated to Texas production, the more Texas produces, the more the USA will export.
  - There will likely be a year in the near future when Brazil exports more cotton than the USA.