Brazil's Response to Lower Commodity Prices

Will Infrastructure Improvements Support Further Expansion?

By

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Overview

- Brazil's position in the world of agriculture
- 2014/15 Brazilian Crop Estimates
- Infrastructure
- Brazil's future

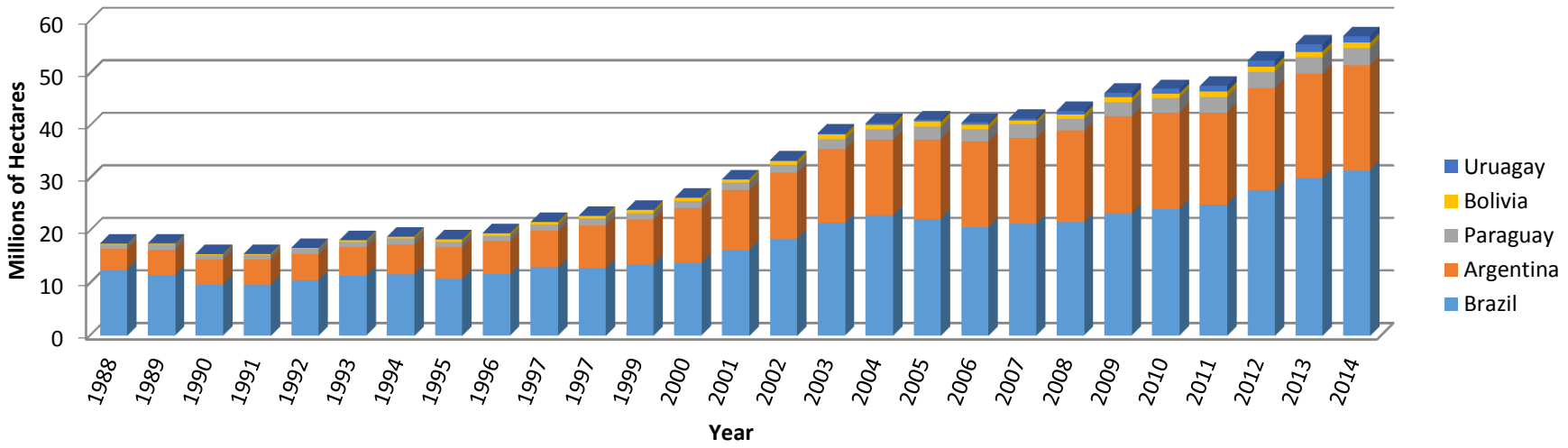
Brazil's Current Position

- **Number one producer of:**
  - Sugar
  - Coffee
  - Orange juice

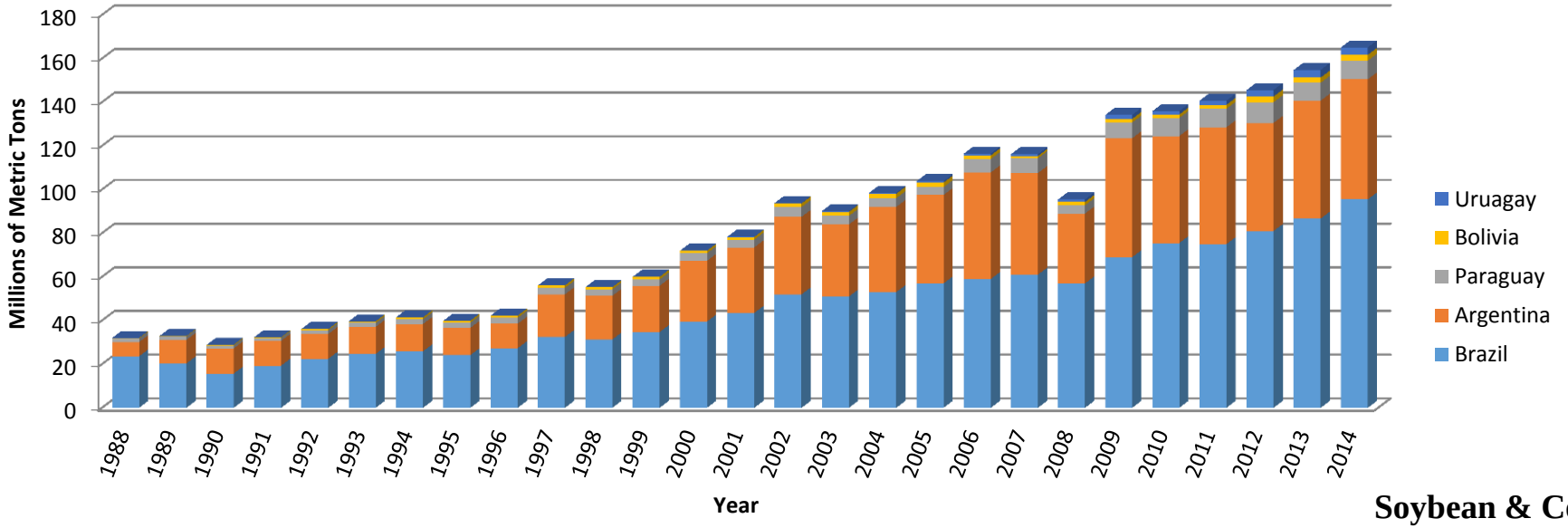
- **One of the top producers of:**

Soybeans	Pork
Corn	Poultry
Cotton	Fruits
Ethanol	Tobacco
Beef	Forestry products

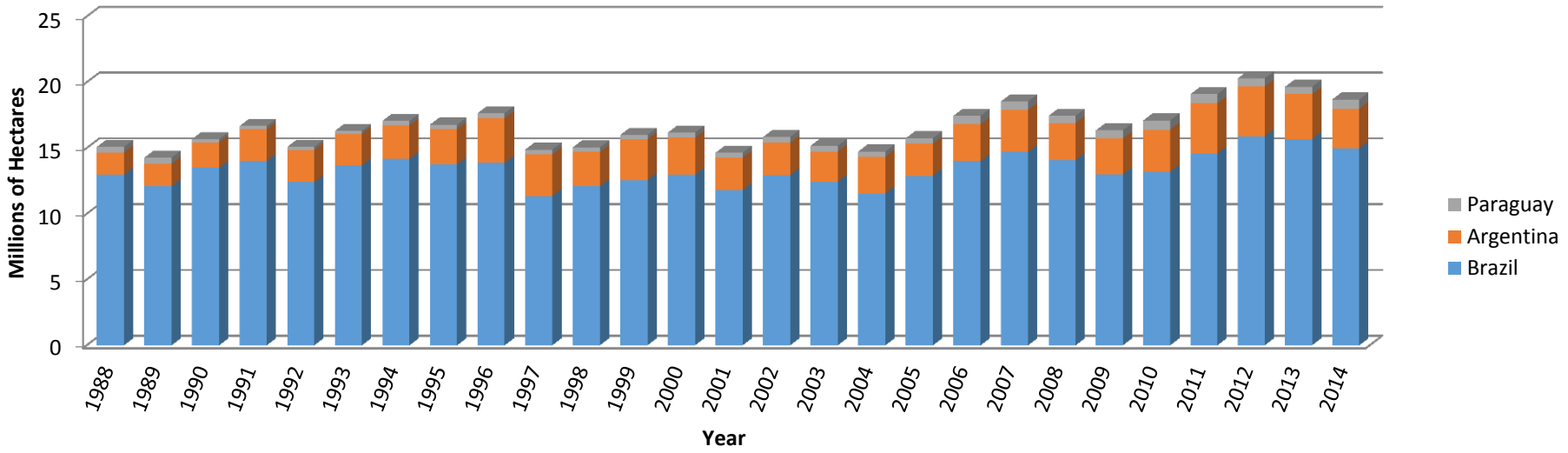
South American Soybean Acreage



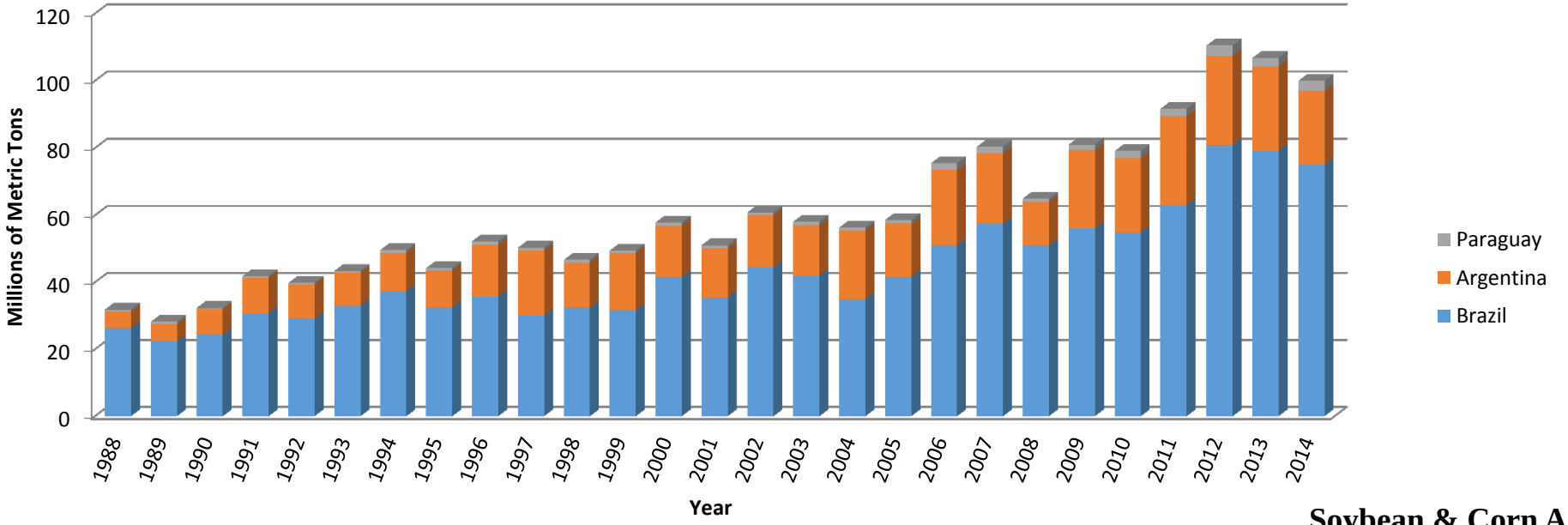
South America Soybean Production



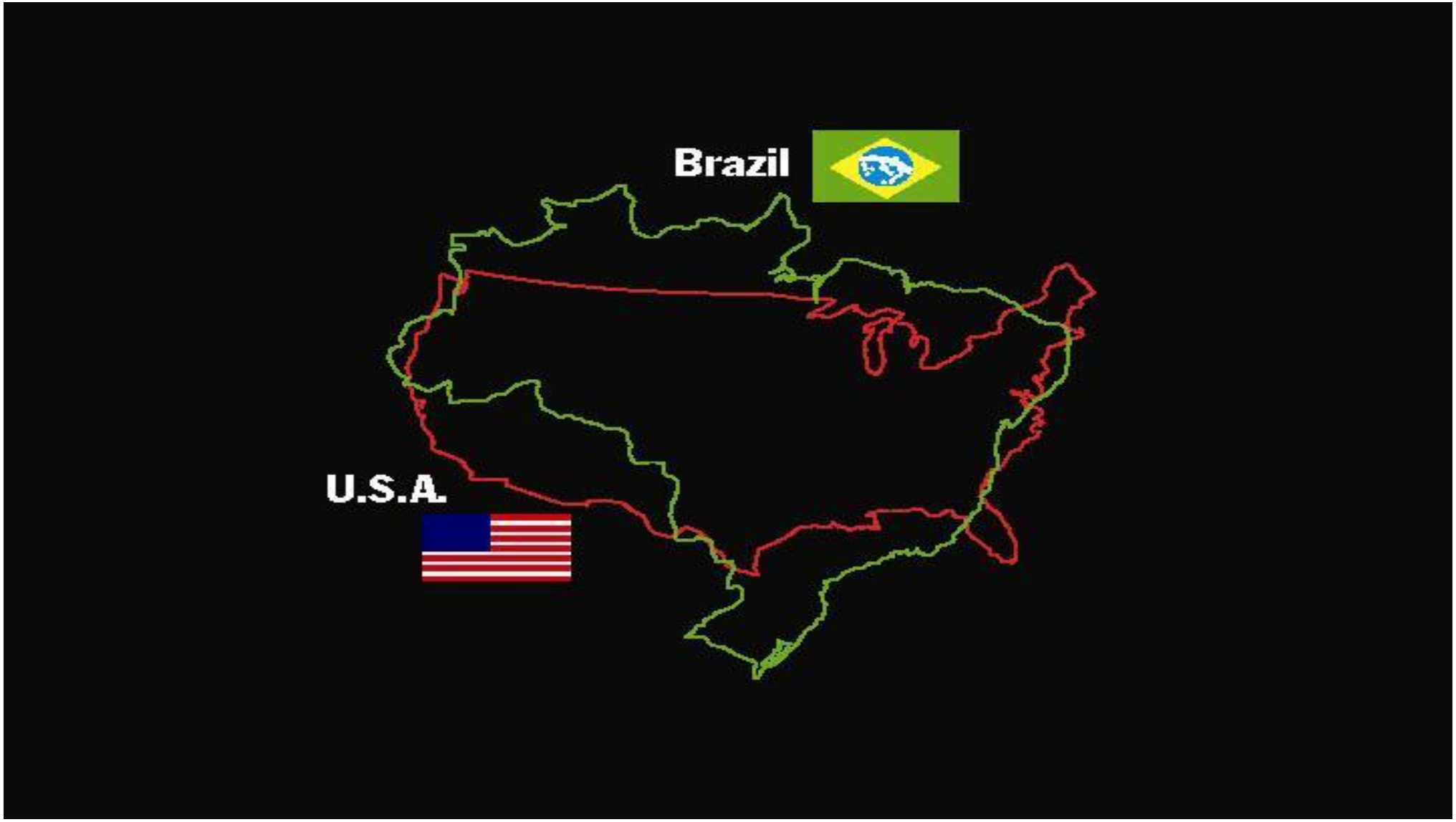
South American Corn Acreage



South American Corn Production



Size Comparison Brazil vs. United States



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Mato Grosso – Leading Soybean Producing State

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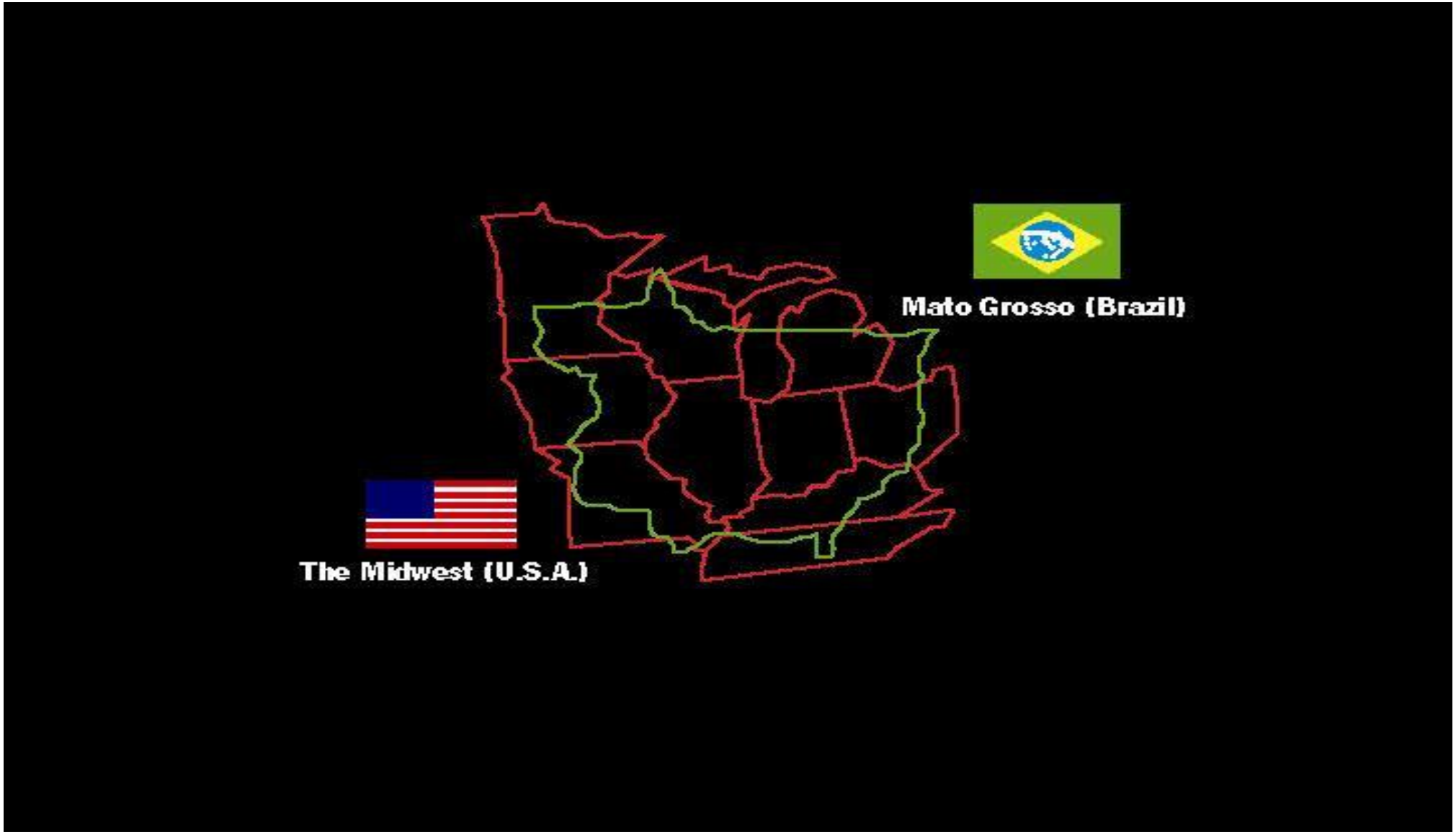
Size Comparison Mato Grosso - Midwest



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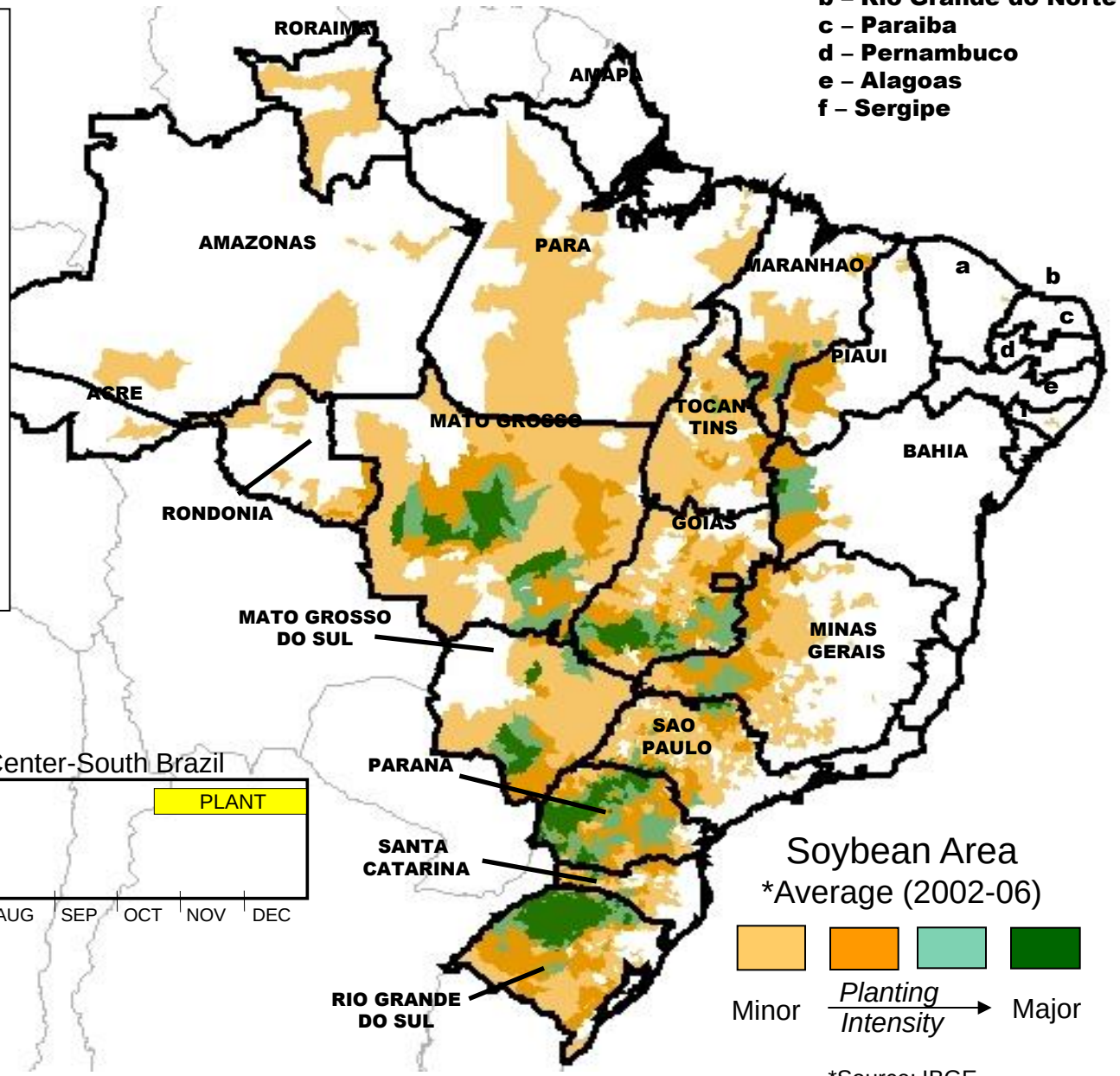
Brazil Soybeans

* State-Level Production (as % of total)	
Mato Grosso	29
Parana	20
Goias	12
Rio Grande do Sul	12
Mato Grosso do Sul	8
Minas Gerais	5
Bahia	4
Sao Paulo	3
Tocantins	2
Other	~5

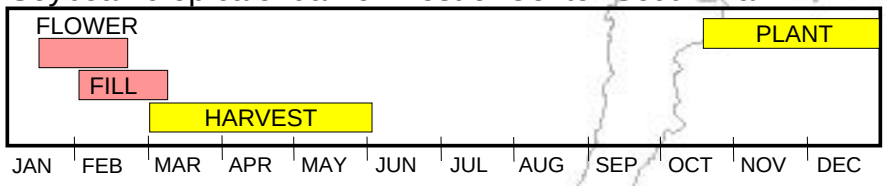
* 2001/02 to 2005/06 Average

Source: IBGE Brazil

a – Ceara
b – Rio Grande do Norte
c – Paraiba
d – Pernambuco
e – Alagoas
f – Sergipe



Soybean crop calendar for most of Center-South Brazil



Soybean Area
*Average (2002-06)

Minor — *Planting Intensity* → Major

*Source: IBGE

World Agricultural Outlook Board

Cerrado Areas of Brazil

Native *Cerrado* Vegetation in Brazil

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Native *Cerrado* Vegetation in Brazil

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Brazilian *Cerrado*

203 million hectares – 24% of Brazil

- **55% of Brazil's beef production**
- **Important grain production**

Degraded Pastures

- **Low fertility**
- **Low carrying capacity**
- **Higher rates of erosion**
- **32 million hectares of pastures considered degraded**
- **80% in Mato Grosso, Mato Grosso do Sul, Goias, Minas Gerais**
- **Embrapa – triple row crop production, double cattle production using degraded pastures**

Brazil's Response to Low Commodity Prices

2014/15 Growing Season

- More first-crop soybeans – soybean acreage up 4.4%
  - Switching first-crop corn to soybeans
  - Conversion of degraded pastures to row crops
  - Clearing new land

- Monocrop soybeans
  - Virtually all of Mato Grosso's first-crop is soybeans – 8.9 million hectares of soybeans and only 61,000 hectares of corn (145 times more soybeans)
  - 90% of Parana's first-crop is soybeans

- "Normal" crop rotations no longer viable

Brazil's Response to Low Commodity Prices

2014/15 Brazilian growing season - soybeans

- Dry weather in October delayed soybean planting 2-3 weeks
- Normal rainfall in November and December, dryer than normal in January
- Central Brazil received 40-60% normal January rainfall
- Brazil soybean estimate 93.0 million tons
  - New record production
  - Over 7 million tons more than last year's record of 86.7 million tons
- Soybean harvest started quickly, but now behind average pace
- Soybean exports slow to ramp up
  - U.S. exporters have several more weeks of potential exports

Soybean Production in Mato Grosso

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Maturing Soybeans in Mato Grosso

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Harvesting Soybeans in Mato Grosso do Sul

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Soybean Harvesting North Mato Grosso

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Soybean Harvesting Central Mato Grosso

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Brazil's Response to Low Commodity Prices

2014/15 Brazilian growing season - corn

- Less first-crop corn – acreage down 6.5%
- Shifting corn production to safrinha
- More than 60% of Brazil's corn now safrinha production
- Mato Grosso number one corn producer followed by Parana
- Safrinha corn goes primarily to export market
- Safrinha corn production is risky proposition
  - Plant too late – dry weather in Mato Grosso cold weather in Parana
  - Ideal planting window in Mato Grosso closes February 20 mid-March in Parana
  - Last three years rainy season has been extended resulting in excellent safrinha corn production
  - Average yield last three years was 79.9 bu/ac, three years prior was 57.5 bu/ac

Brazil's Response to Low Commodity Prices

2014/15 Brazilian growing season – corn

- **First-crop corn in Parana and Rio Grande do Sul developed normally**
- **First-crop corn in Minas Gerais (16% of Brazil's first-crop corn acreage) impacted by dryer than normal weather**
  - **First –crop corn production down 6.4% to 30.1 million tons**
- **Safrinha corn planted later than normal**
  - **2-3 week delay for safrinha corn planting in Mato Grosso**
  - **1-2 week delay in northern Parana**
- **Total safrinha corn acreage down 5-10%?**
- **Total safrinha corn production down 10-15%?**
- **2014/15 Brazilian corn estimate 74.0 million tons**
  - **30 million tons first crop, 44 million tons safrinha crop**

Planting *Safrinha* Corn in Brazil

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Safrinha Corn Production - Mato Grosso

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Safrinha Corn in Brazil – Rain Forest

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Safrinha Corn Production in Brazil

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Safrinha Corn Production in Mato Grosso

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Will Infrastructure Improvements Support Further Expansion?

Needed infrastructure improvements

- Highways
- Railroads
- Barging
- Ports

Infrastructure Improvements Needed to Support Further Expansion

Current Situation

- 58% of Brazil's grain moved by truck over long distances
- 25% of Brazil's grain moved by rail
- 13% of Brazil's grain moved by barge

The distance from Sorriso, Mato Grosso to the Port of Paranagua equal to the distance from Minneapolis, MN to Orlando, FL

Loss of US$ 70 per ton due to truck transport

Cost of rail transport slightly less than truck transport – lack of competition

Brazil invests 0.65% of GDP in infrastructure (2004-11), China 7.3%

Infrastructure Improvements Needed to Support Further Expansion

Highways

BR-163 - the "Soybean Highway" in Mato Grosso

- **"Spine" of the infrastructure in the center-west region**
- **Currently being asphalted from Mato Grosso to Amazon River port city of Santarem**
- **Lack 300 kilometers of asphalt and numerous bridges**
- **Complete sometime in 2016**
- **800 kilometers within Mato Grosso expanding from 2-lanes to 4-lanes**
- **Major highways being converted into toll roads**

Waiting to Transport Soybeans

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BR-163 Mato Grosso

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BR-163 Mato Grosso

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Traffic on BR-163 in Mato Grosso

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Traffic on BR-163 in Mato Grosso

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Infrastructure Improvements Needed to Support Further Expansion

Railroads

- Ferronorte Railroad connects Mato Grosso to Port of Santos
  - Extend railroad further into Mato Grosso
  - Three existing grain terminals
  - Intermodal grain terminal at Rondonopolis largest in Latin America
  - Usage increasing annually

- North South Railroad
  - North-South route through center of Brazil
  - Northern sections haul iron ore to export facilities in NE Brazil
  - Generally underutilized
  - Go slow zones due to inadequate construction

Ferronorte Railroad in Mato Grosso

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Itiquira Grain Terminal – *Ferronorte* Railroad

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Ferronorte Railroad in Mato Grosso

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Intermodal Grain Complex – Rondonopolis, MT

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Intermodal Grain Complex – Rondonopolis, MT

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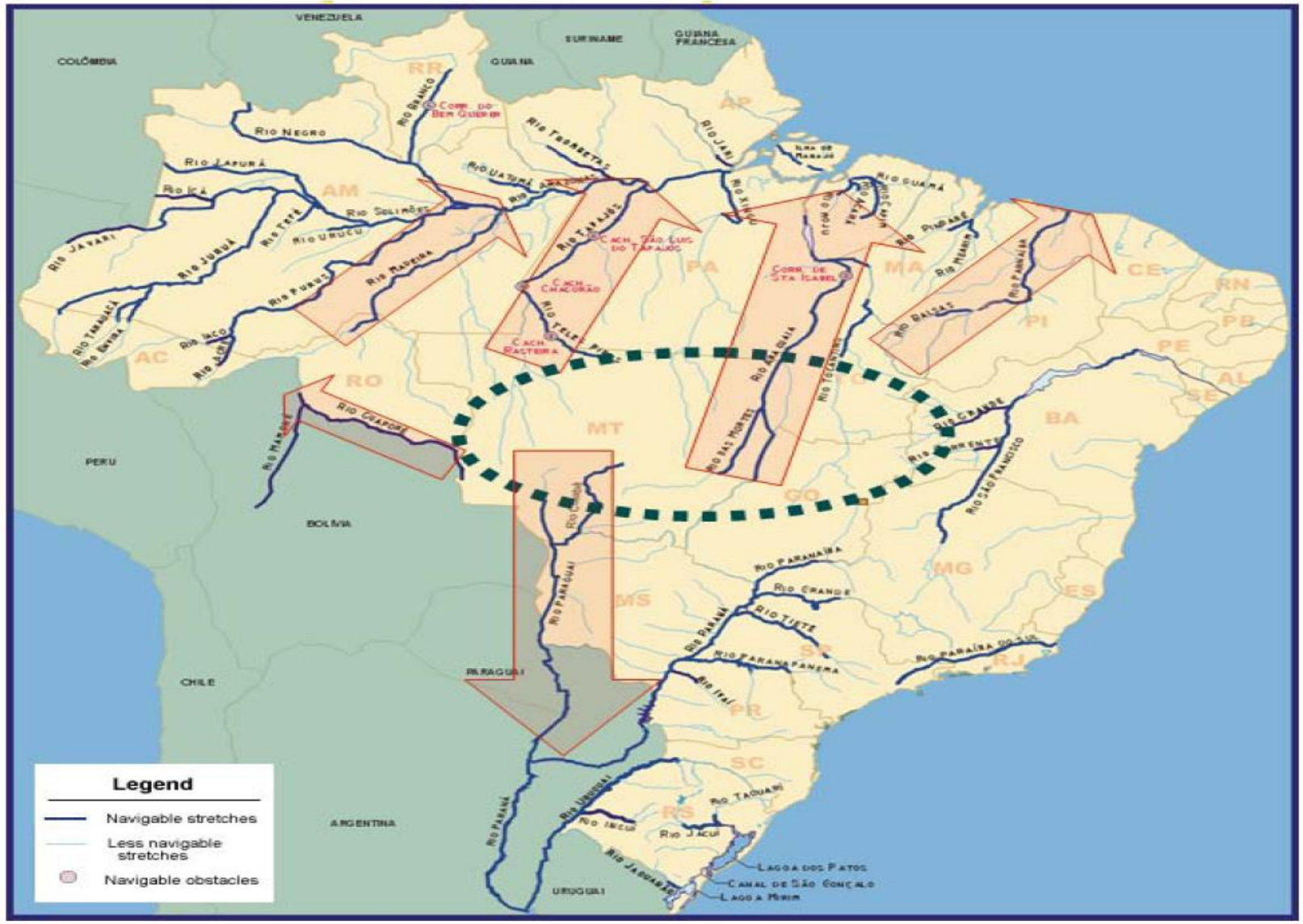
Infrastructure Improvements Needed to Support Further Expansion

Barging - Move grain north to ports on Amazon River

- Madeira River – Porto Velho, Rondonia to Amazon River
  - Western Brazil
  - Transport soybeans from western Mato Grosso
  - Building a second port
- Tapajos River – Miritituba, Para to Barcarena, Para (mouth of Amazon)
  - Central Brazil
  - Seven grain companies currently construction barging facilities,
  - Alongside of BR-163
- Tocantins River – planning stage
  - Eastern Brazil
- Legislation requiring locks with new dam construction

Brazilian River Export Routes



Source: USDA/AMS

Barging Operations on the Madeira River

3.3 million tons - 2013

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Tocantins River

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Araguaia River

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Infrastructure Improvements Needed to Support Further Expansion

Ports

- Port of Santos
  - Increased capacity
  - New scheduling system
- Port of Paranagua
  - 4 new shiploaders – 30% more capacity
  - "Express line" for vessels
- "Northern Arc"
  - Future of grain exports from Brazil
  - Itacoatiara – central Amazon, operational
  - Santarem – east-central Amazon, operational and expanding
  - Vila do Conde – eastern Amazon, operational and expanding
  - Sao Luis ocean port in northern Brazil, operational and expanding

Ports of Brazil

Port of Santos

Port of Santos

Port of Paranagua

Shiploaders at Port of Paranagua

Port of Itacoatiara on the Amazon River

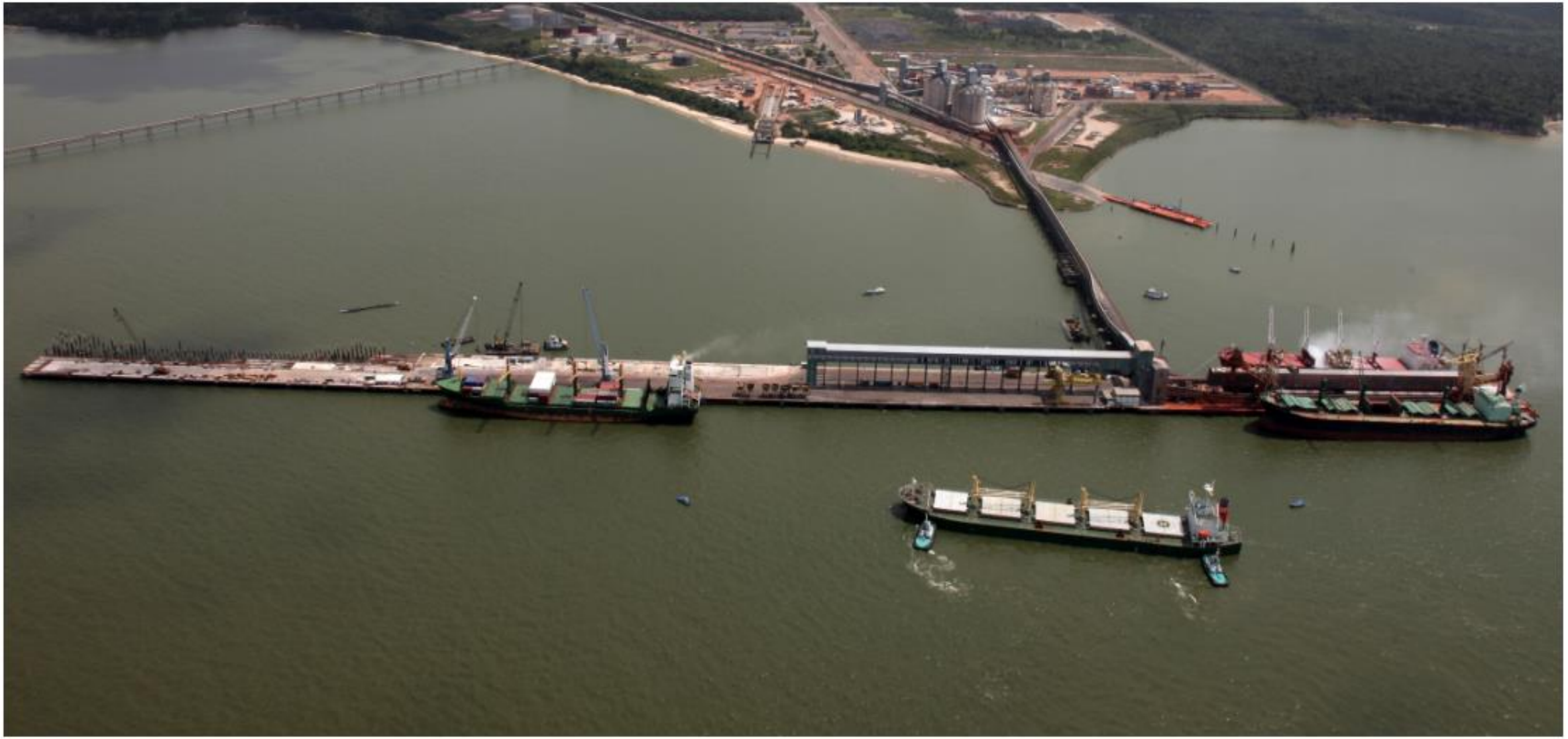
1.8 million ton capacity - 2013

Port of Santarem on the Amazon River

1.5 million ton capacity - 2013

Port of Vila do Conde on the Amazon River

1.0 million ton capacity - 2014



Ocean Port of Itaqui, Sao Luis, Maranhao

5 million ton capacity –first phase

Infrastructure Improvements Needed to Support Further Expansion

- First concerted effort to improve Brazil's infrastructure
- Highways, railroads, barges, ports
- "Northern Arc" of ports most significant development
- Four ports currently handle 77% of Brazil's soybean exports – Santos, Paranagua, Rio Grande, and Sao Francisco
- That is about to change
- In the future half of Brazil's soybean exports may head north instead of south

Will Infrastructure Improvements Support Further Expansion?

- Answer – a qualified yes
- Cost savings sending soybeans north
- Previous soybean expansion - needed US$ 10.50 to 11.50 per bushel on the Chicago Board of Trade
- Future soybean expansion – may need US$ 9.50 to 10.50 per bushel on the Chicago Board of Trade
- Rate of expansion will depend on commodity prices and general economic health of Brazil
- Long way to go, but Brazil might be turning the corner on infrastructure development

Brazil's Potential

- **Brazil has: available land, climate, experience, research, knowhow, and production capability to become number one commodity exporter in the world.**

- **Brazil has the potential to become number one food exporter as well.**

BR-163 Before Asphalt

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BR-163 Fifteen Years After Asphalt

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