

# An Analysis of the Long-Run Impact of Ethanol Expansion on Agricultural Markets



Chad Hart

Center for Agricultural and Rural Development

Iowa State University

[chart@iastate.edu](mailto:chart@iastate.edu)

515-294-9911

Presentation for representatives from Nidera

Ames, Iowa

August 20, 2007

# Outline

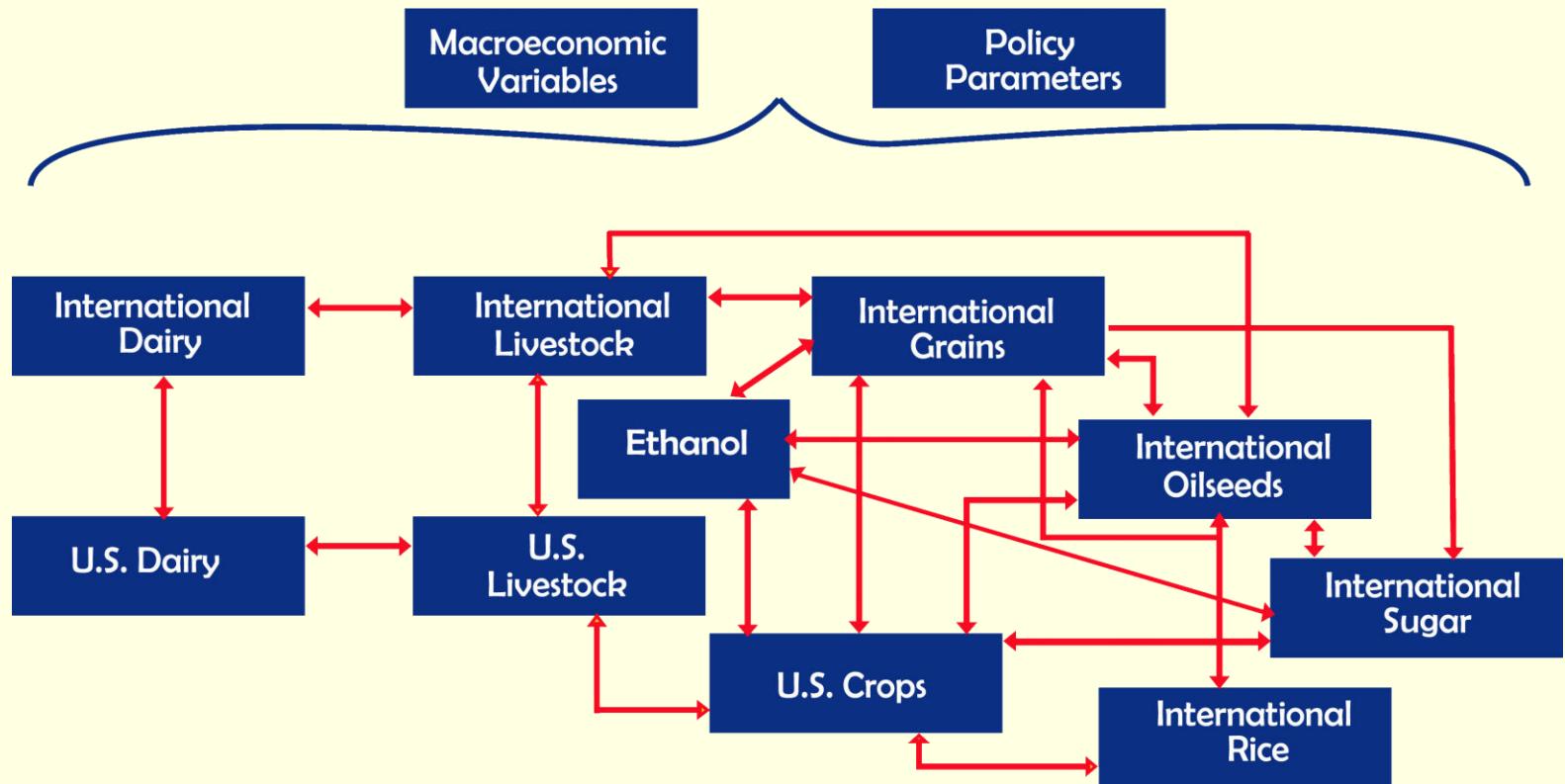
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- Based on the CARD study “Emerging Biofuels: Outlook of Effects on U.S. Grain, Oilseed, and Livestock Markets”  
<http://www.card.iastate.edu/publications/synopsis.aspx?id=1050>
- Updated with available 2006 and 2007 data
- The objective is to estimate:
  - how large the biofuels sector in the U.S. could become
  - the impact of the biofuels sector on crops markets, trade, and on livestock markets
  - the response of world agricultural markets

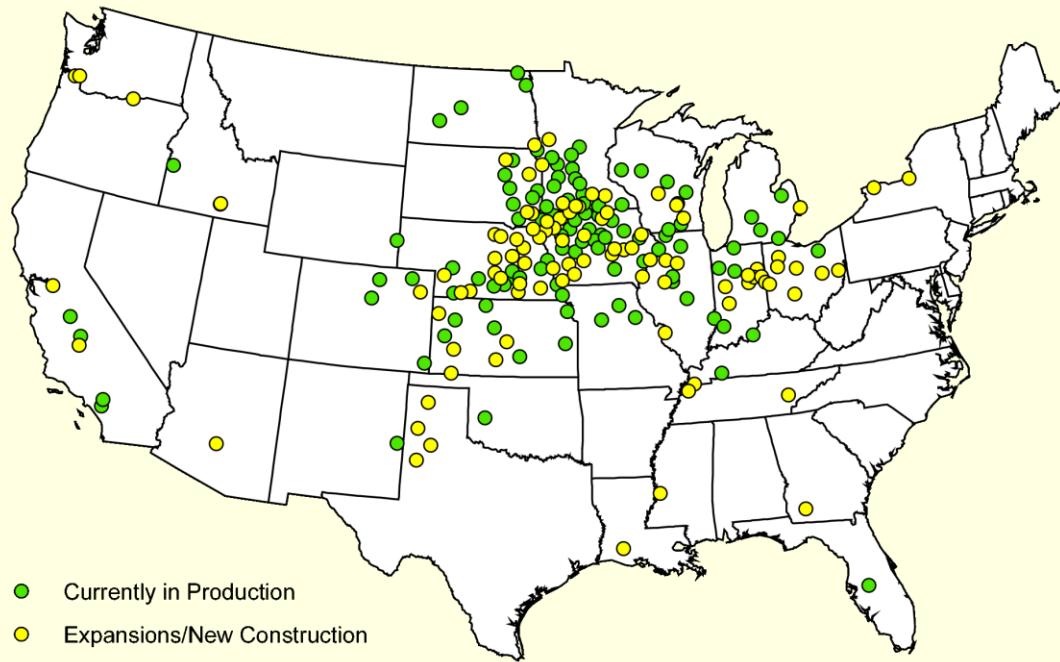
# Model Interactions

## Model Interactions

Trade, Prices, and Physical Flows



# U.S. Ethanol Industry



- Current ethanol capacity: 124 plants, 6.48 billion gallons/year
- Total capacity under construction and expansion: 6.4 billion gallons/year
- 76 new ethanol plants and 7 expansion projects underway
- 2.2 billion bushels of corn were used in producing fuel ethanol in 2006/2007 marketing year.
- 3.2-3.5 billion bushels of corn are expected to be used in producing fuel ethanol for 2007/2008 marketing year.

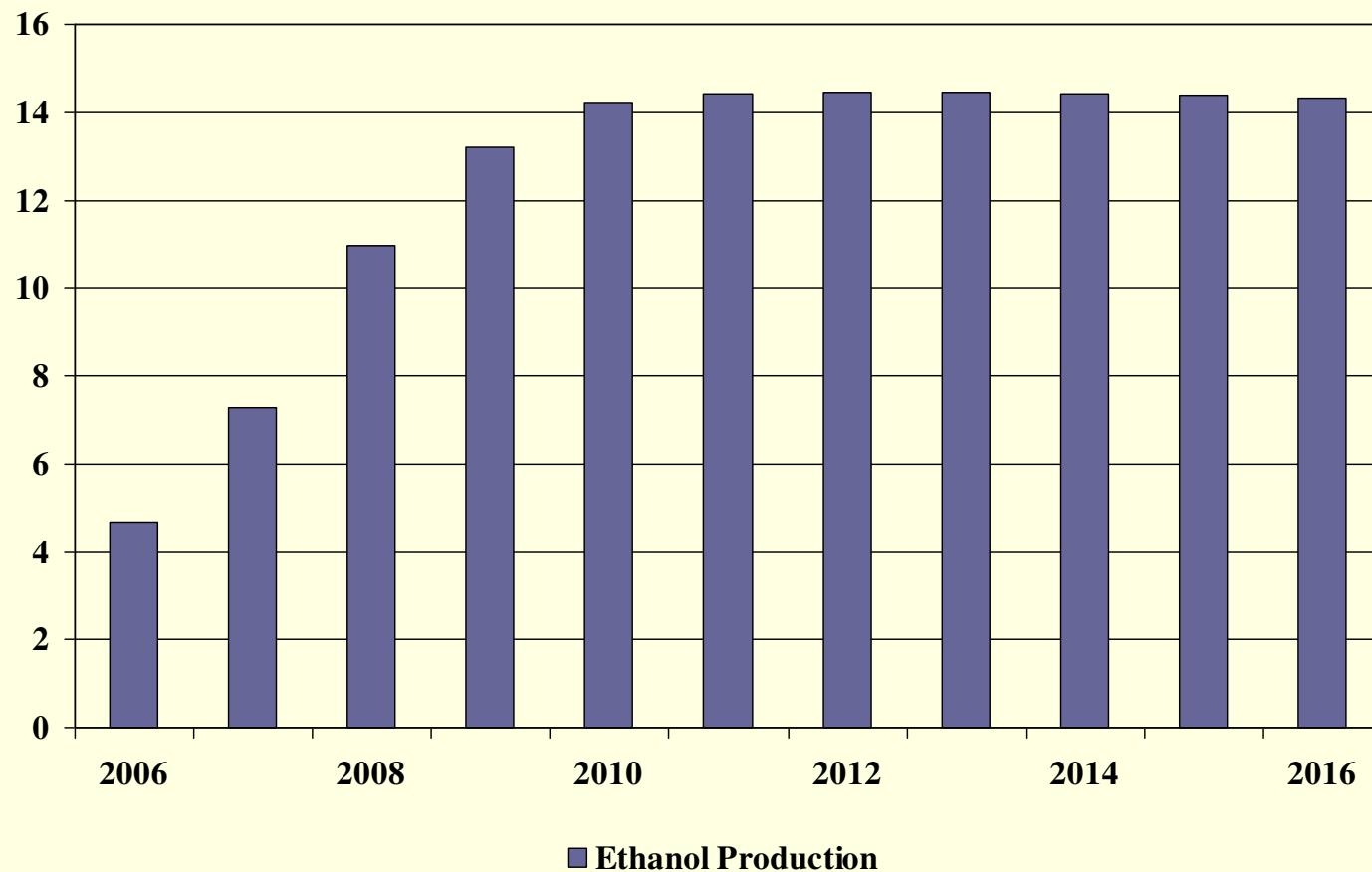
# Key Determinants of Impacts

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- Crude oil prices
  - Used NYMEX futures prices as a guide
- Policy incentives in the U.S.
  - \$0.51/gallon ethanol blenders credit
  - \$0.54/gallon import duty and 2.5% import tariff
- Demand for E-85 included

# Projected U.S. Ethanol Production

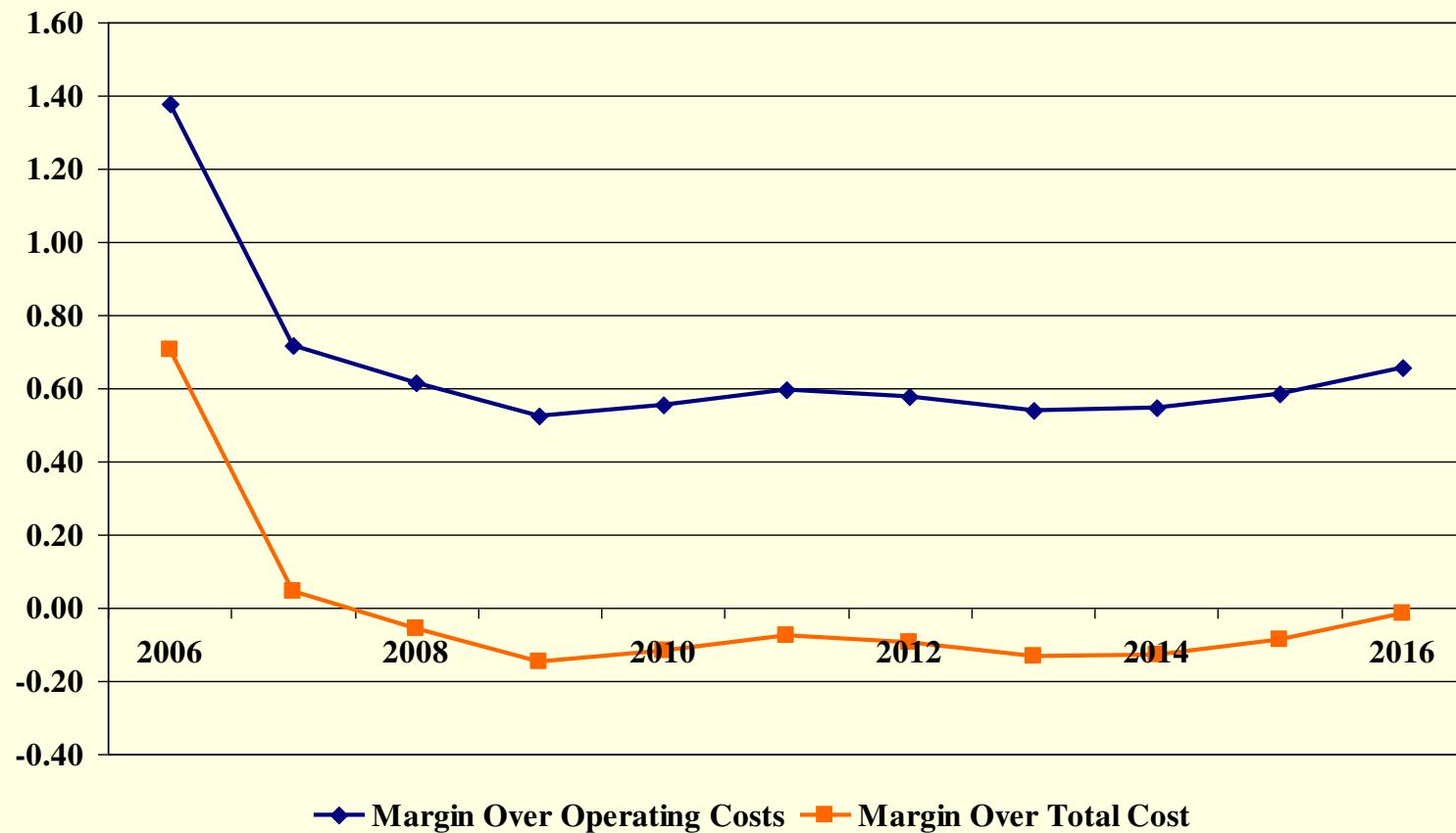
billion gallons



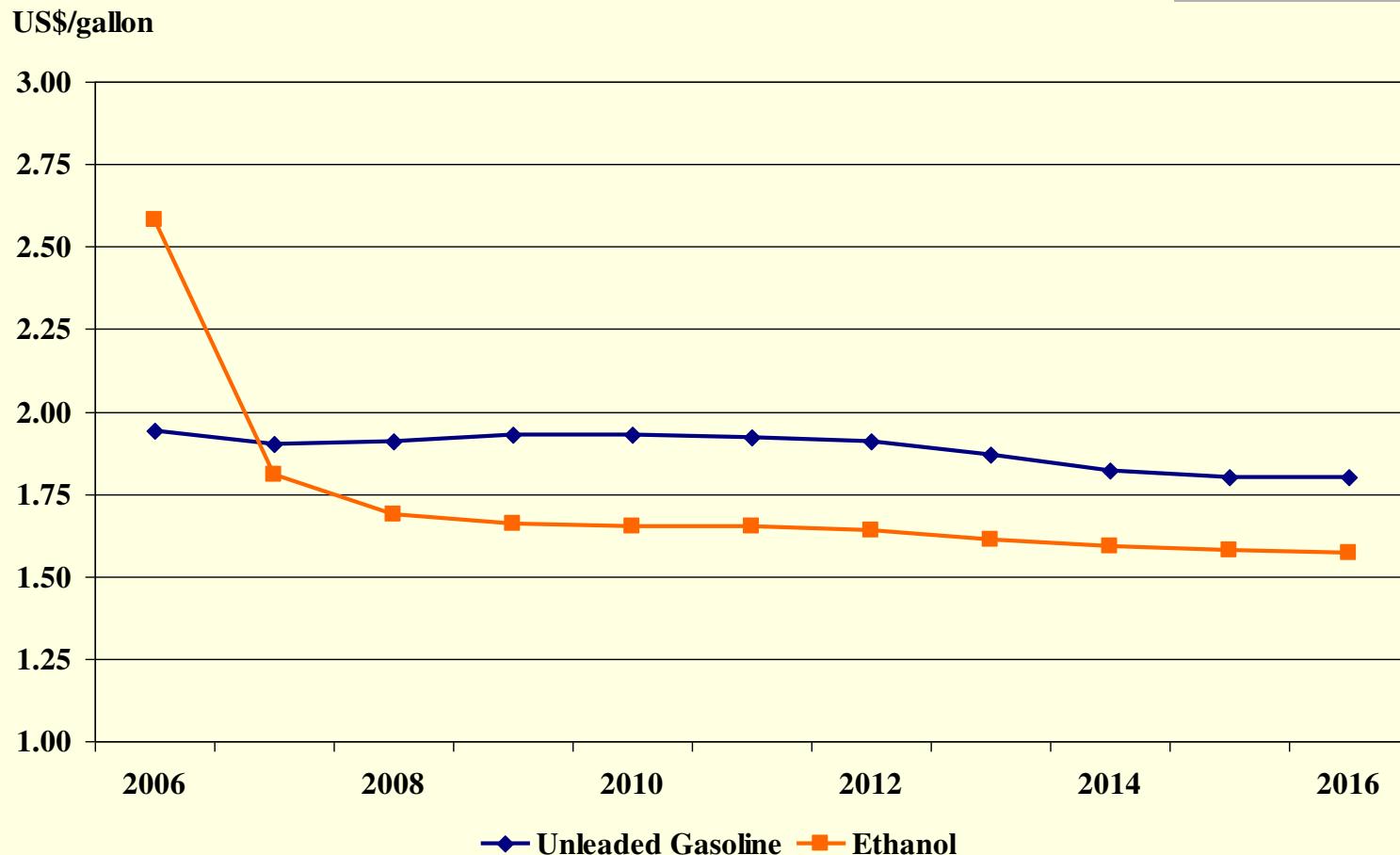
■ Ethanol Production

# Projected U.S. Dry Mill Margins

US\$/bushel

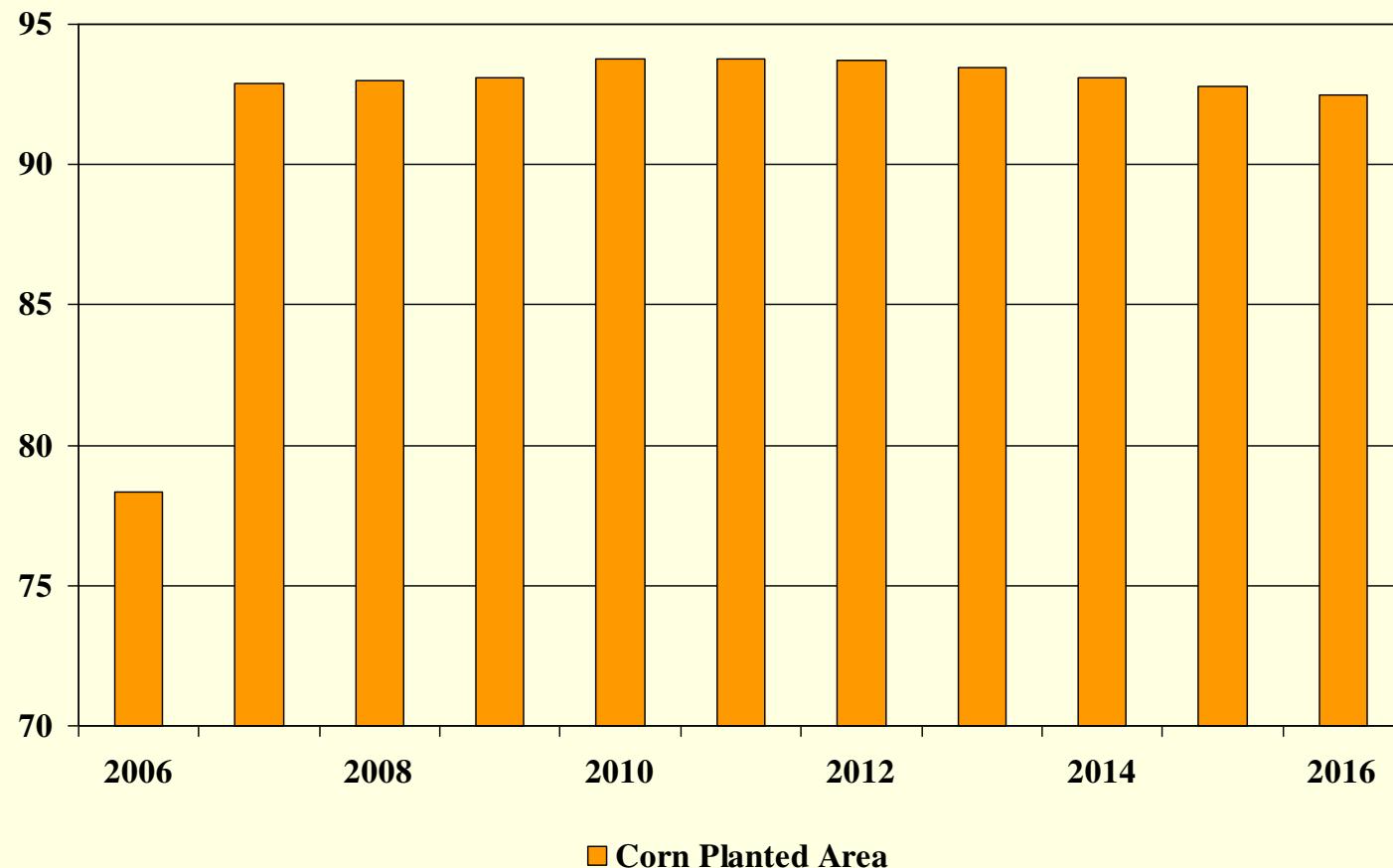


# Wholesale Gasoline and Ethanol Prices



# Projected U.S. Corn Planted Area

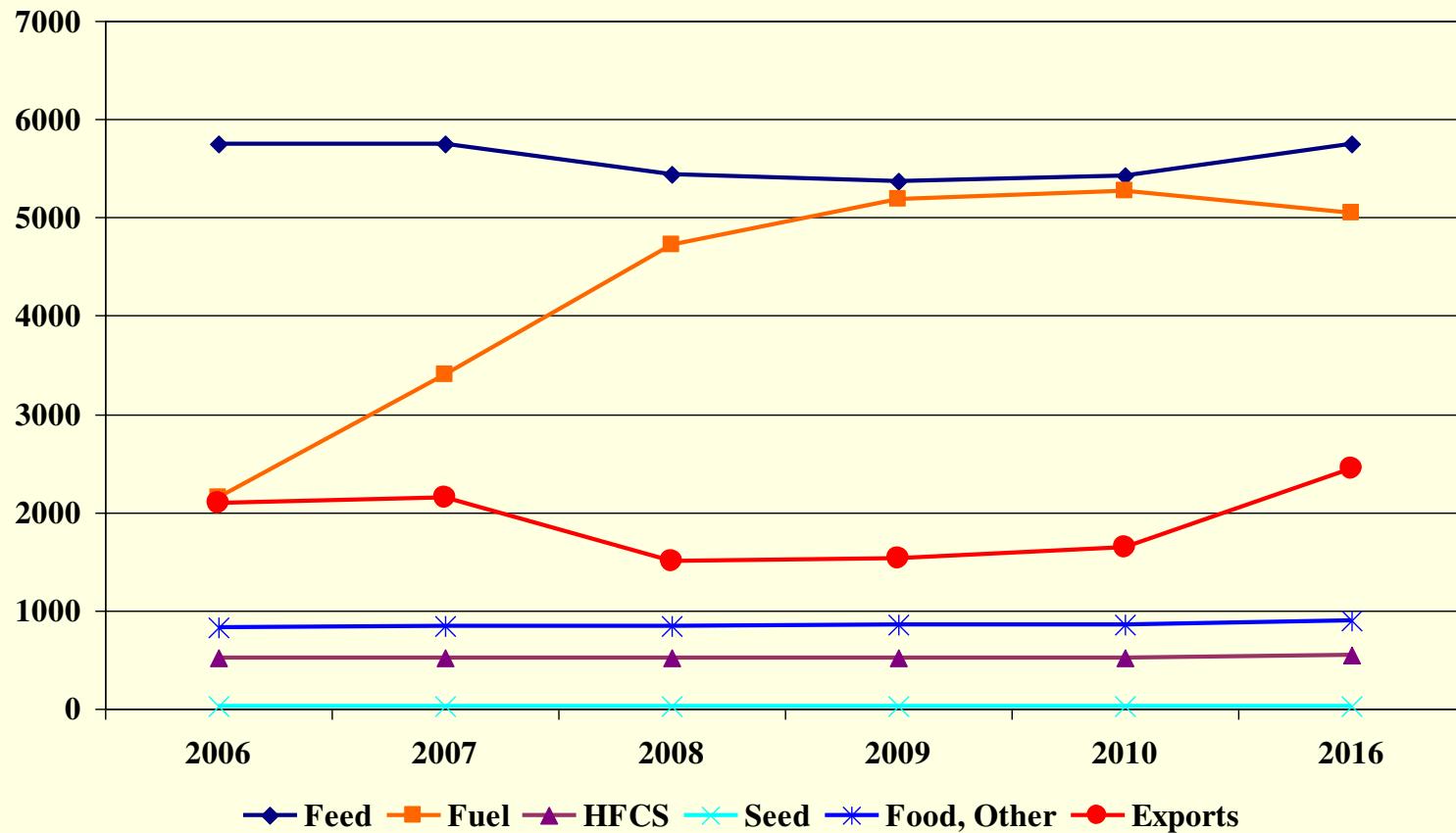
million acres



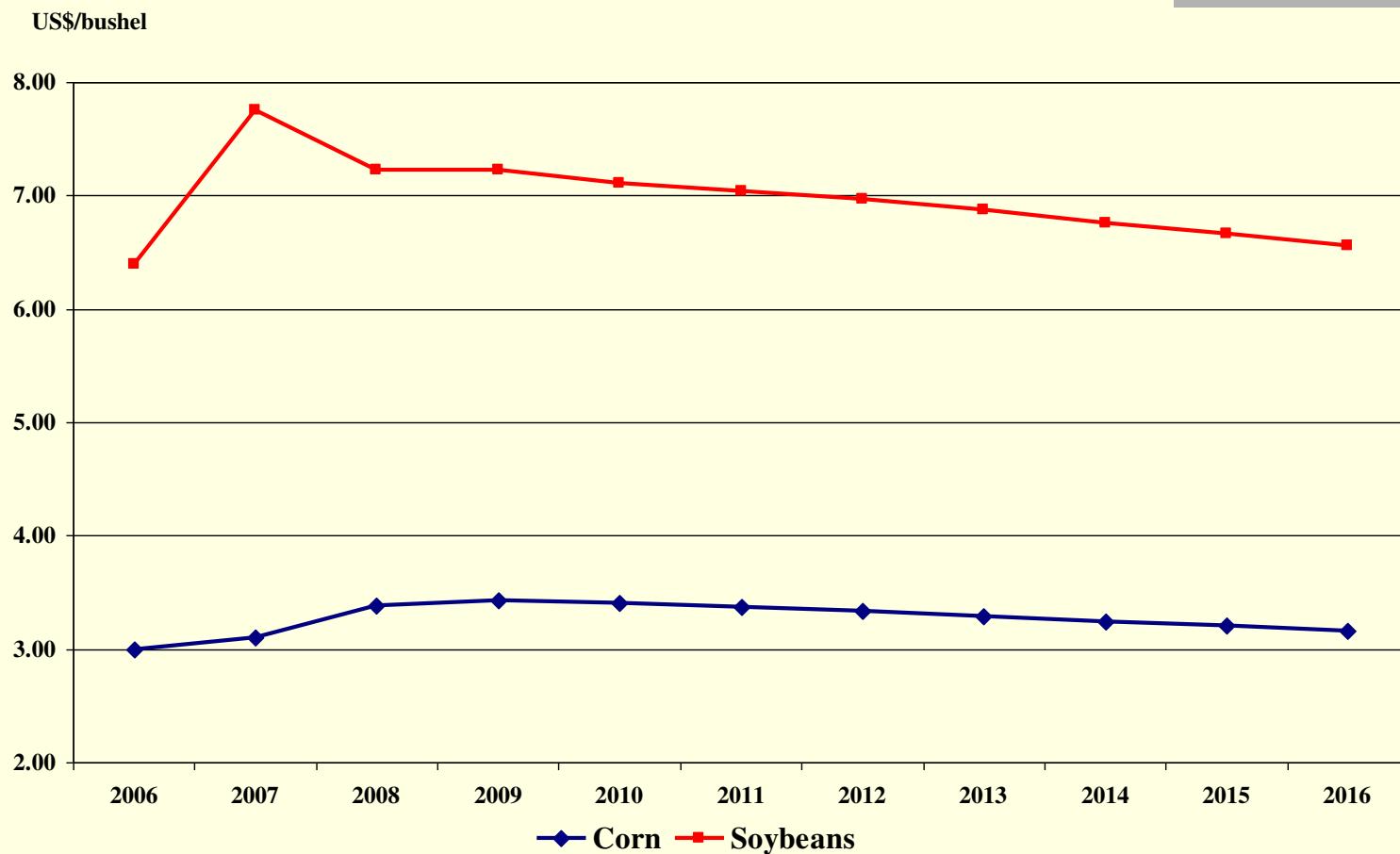
■ Corn Planted Area

# Projected Utilization of U.S. Corn

million bushels

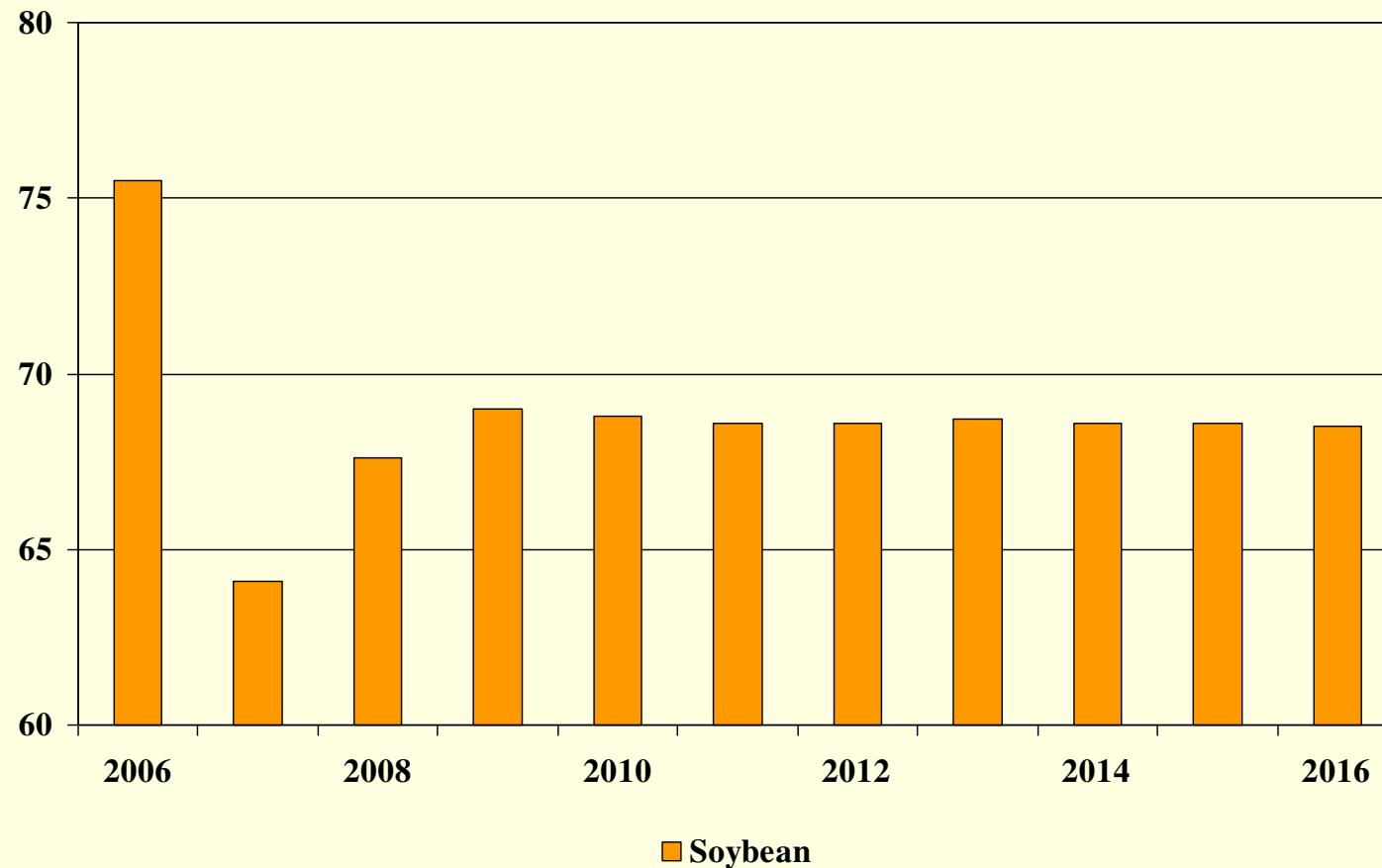


# Projected U.S. Corn and Soybean Prices



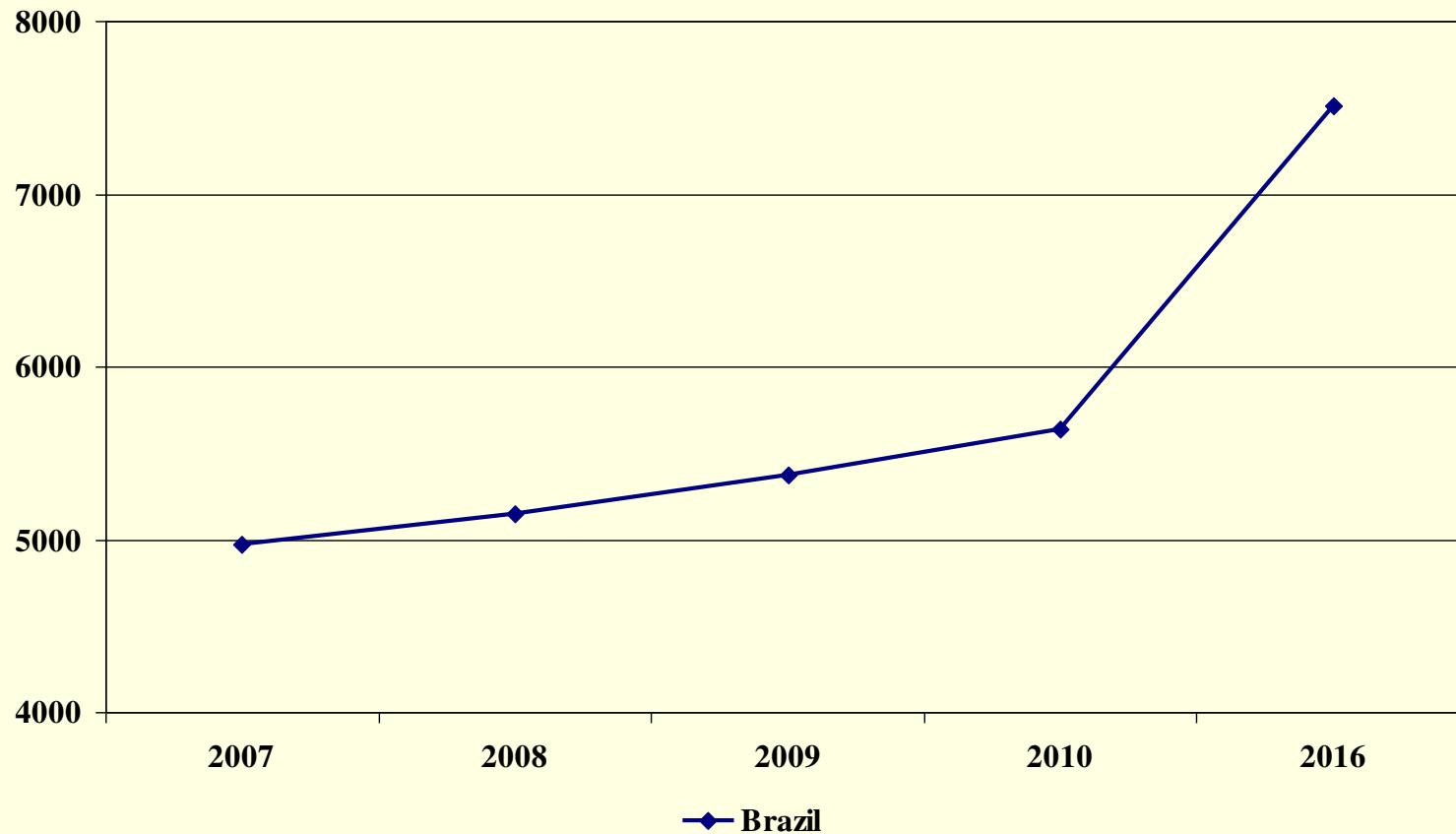
# Projected U.S. Soybean Planted Area

million acres



# Projected Brazilian Ethanol Production

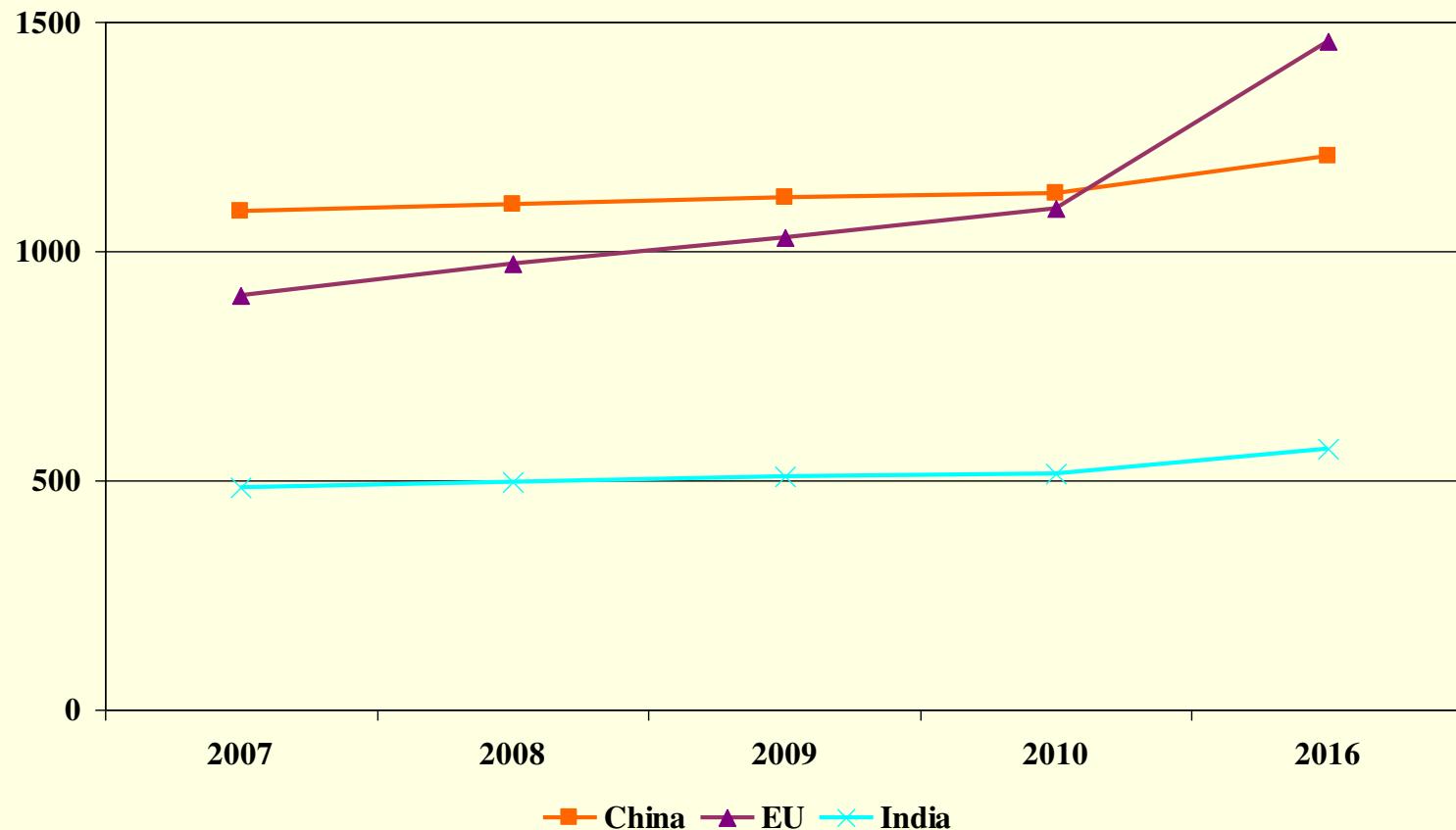
million gallons



—♦— Brazil

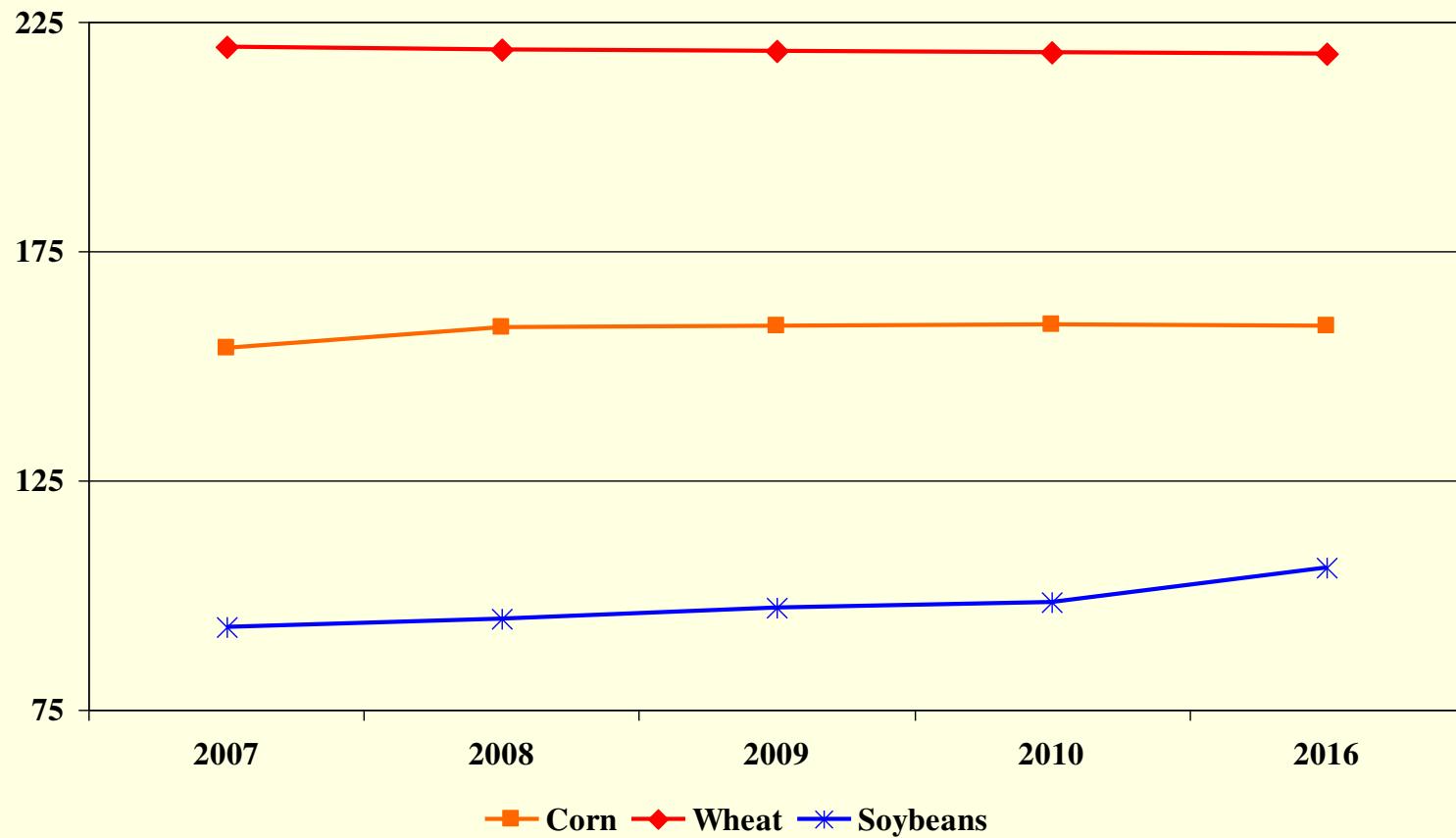
# Projected Ethanol Production

million gallons



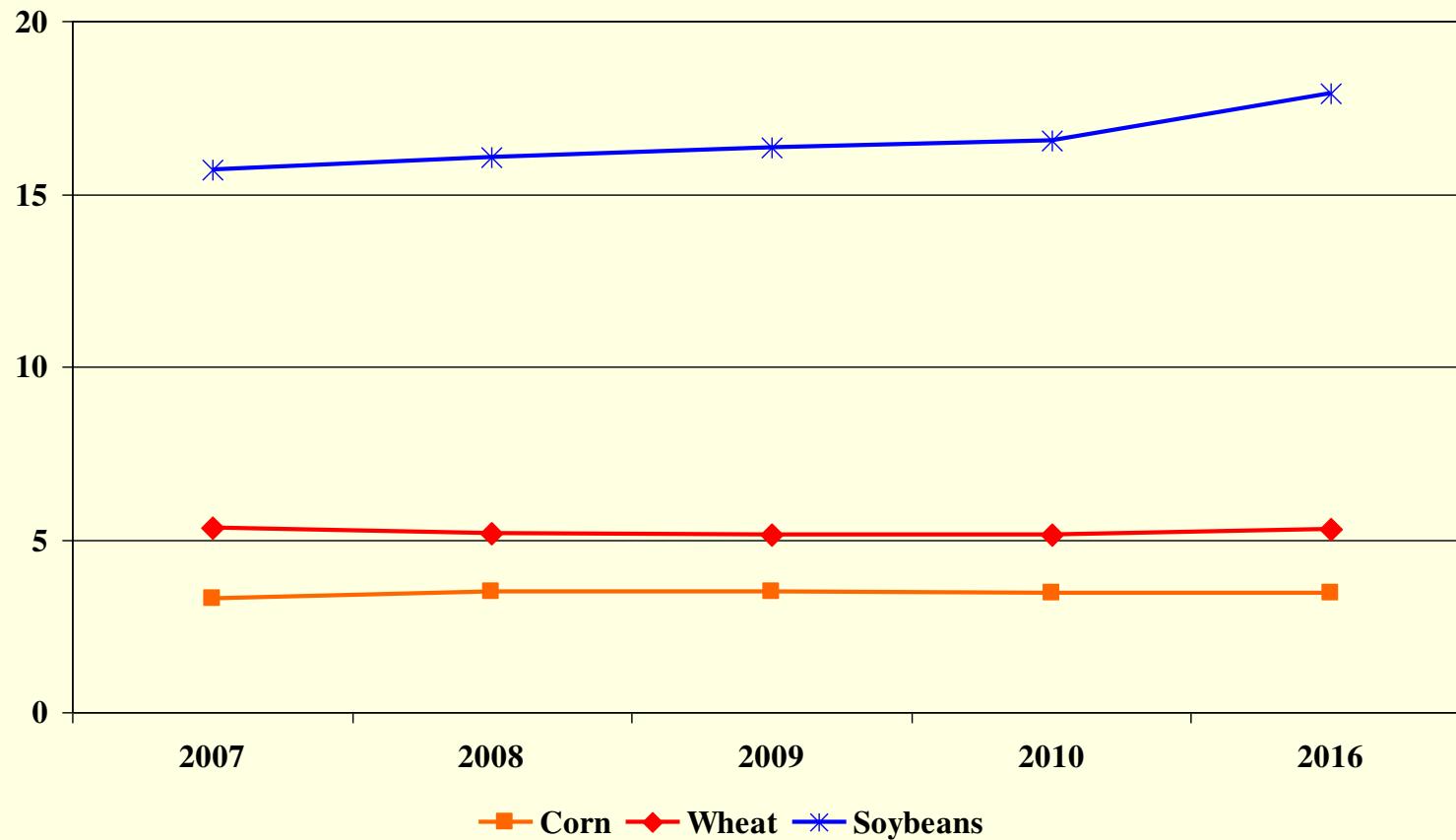
# Projected World Area Harvested

million hectares

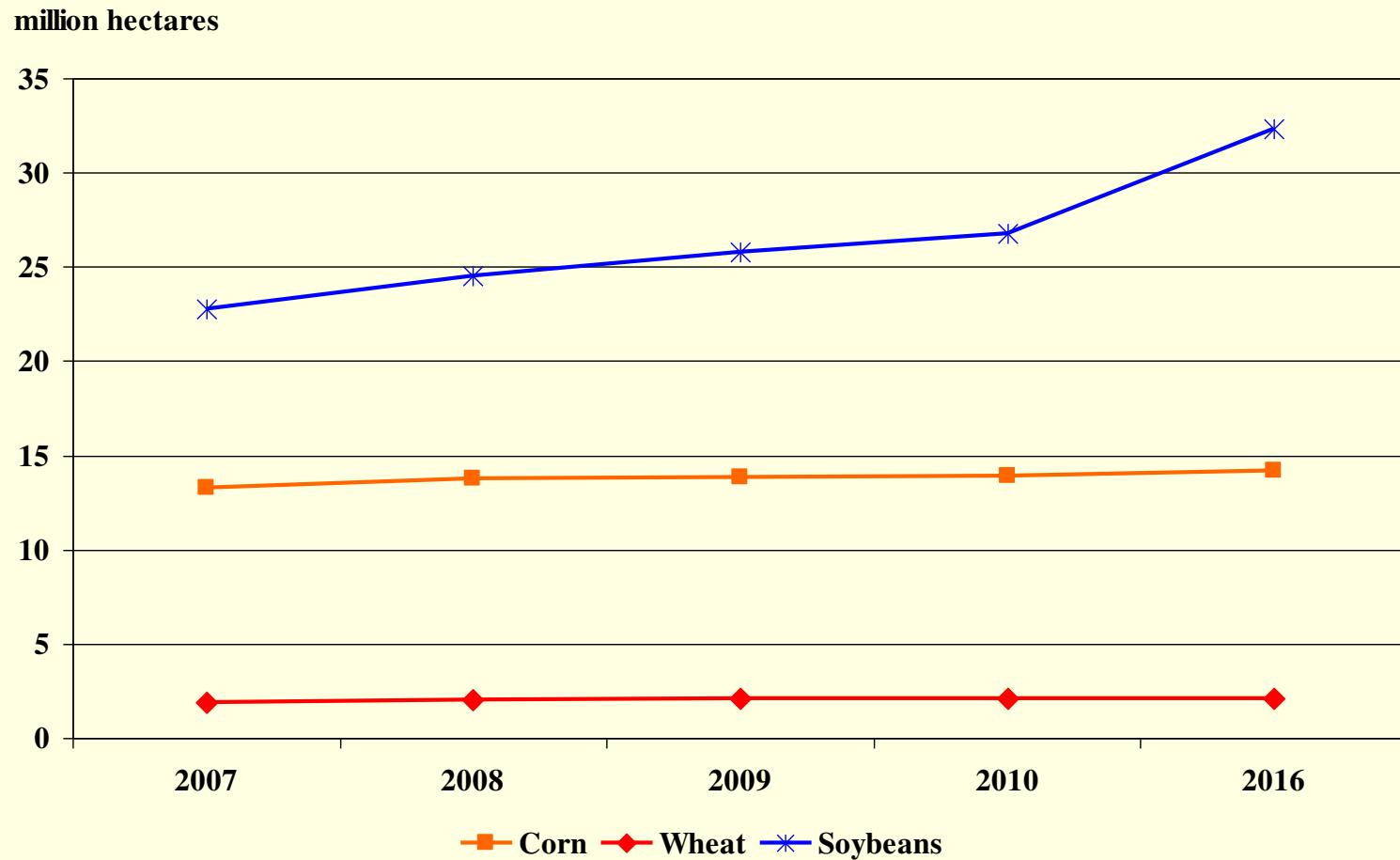


# Projected Argentine Area Harvested

million hectares

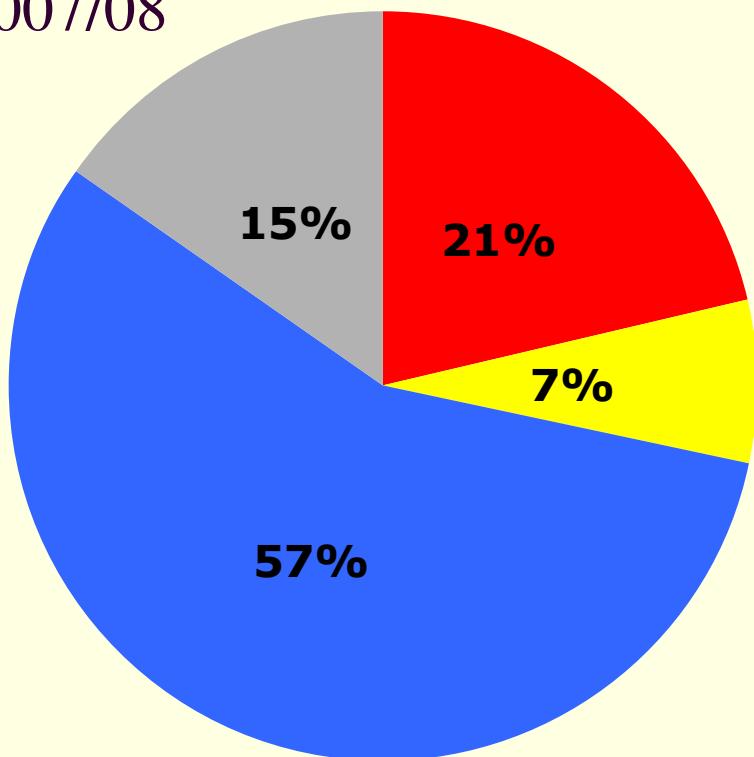


# Projected Brazilian Area Harvested

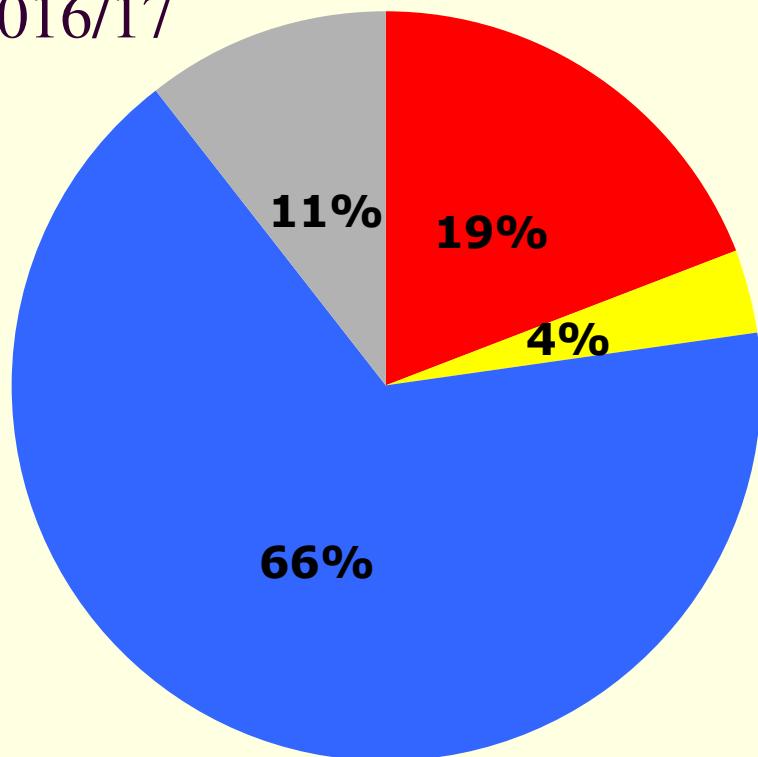


# Projected World Corn Net Exports

2007/08



2016/17



■ Argentina

■ Brazil

■ U. S.

■ Rest of World

■ Argentina

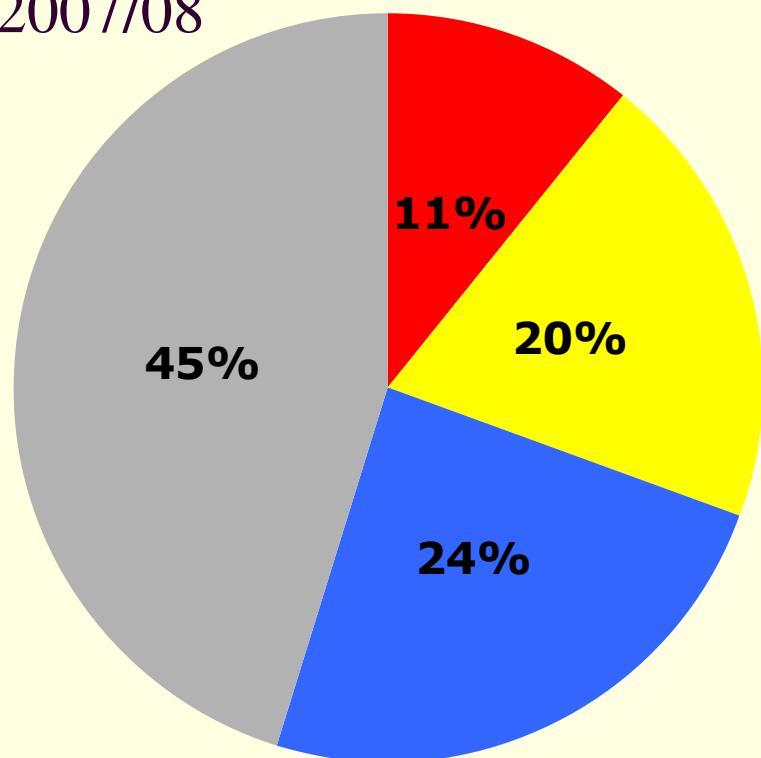
■ Brazil

■ U. S.

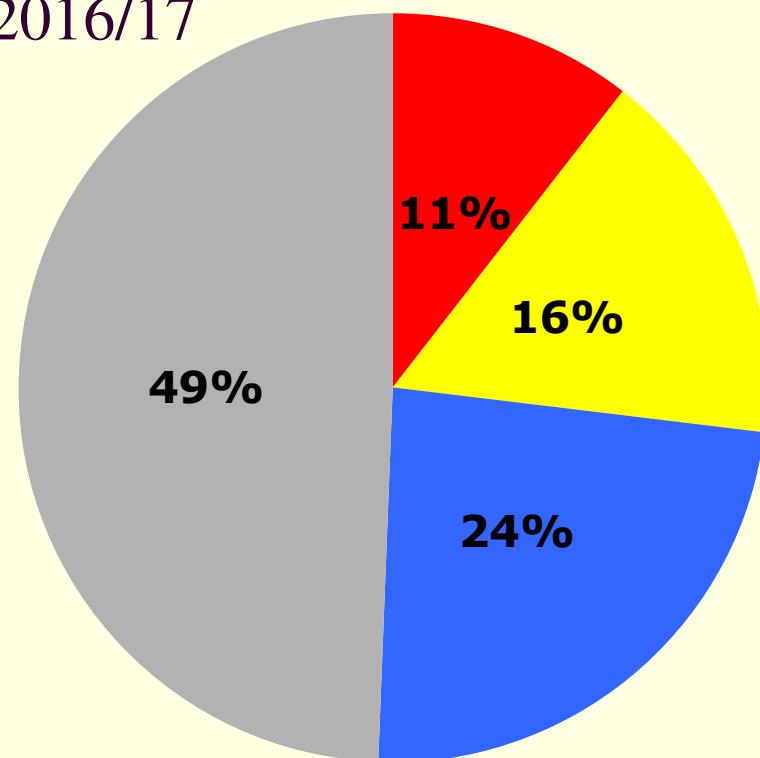
■ Rest of World

# Projected World Wheat Net Exports

2007/08



2016/17



■ Argentina

■ Canada

■ U. S.

■ Rest of World

■ Argentina

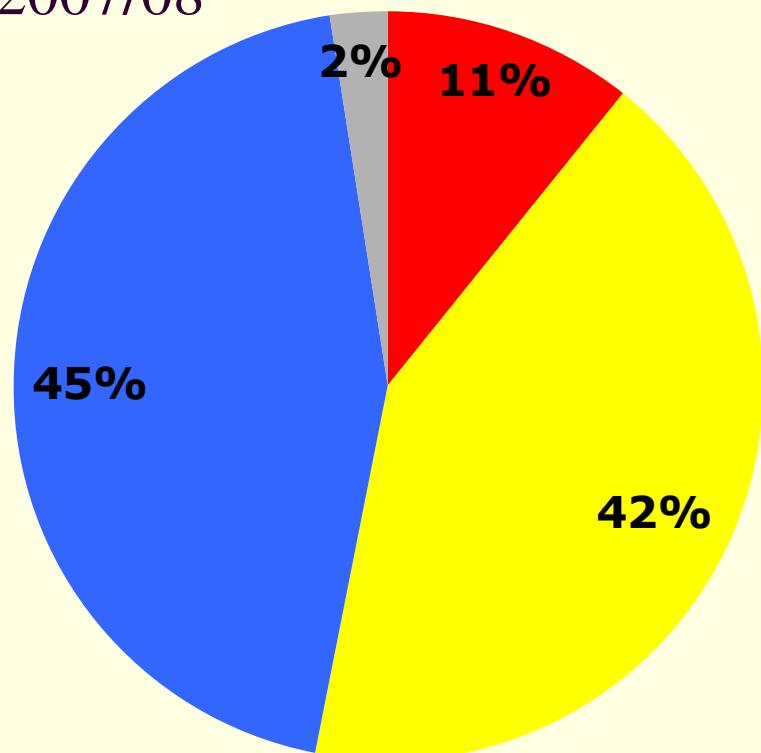
■ Canada

■ U. S.

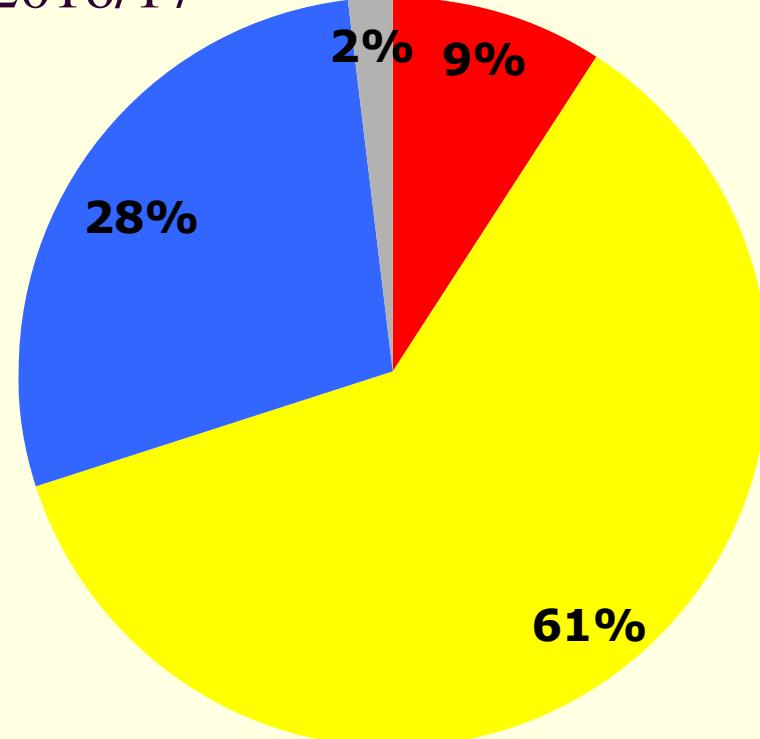
■ Rest of World

# Projected World Soybean Net Exports

2007/08



2016/17



■ Argentina

■ U. S.

■ Brazil

■ Rest of World

■ Argentina

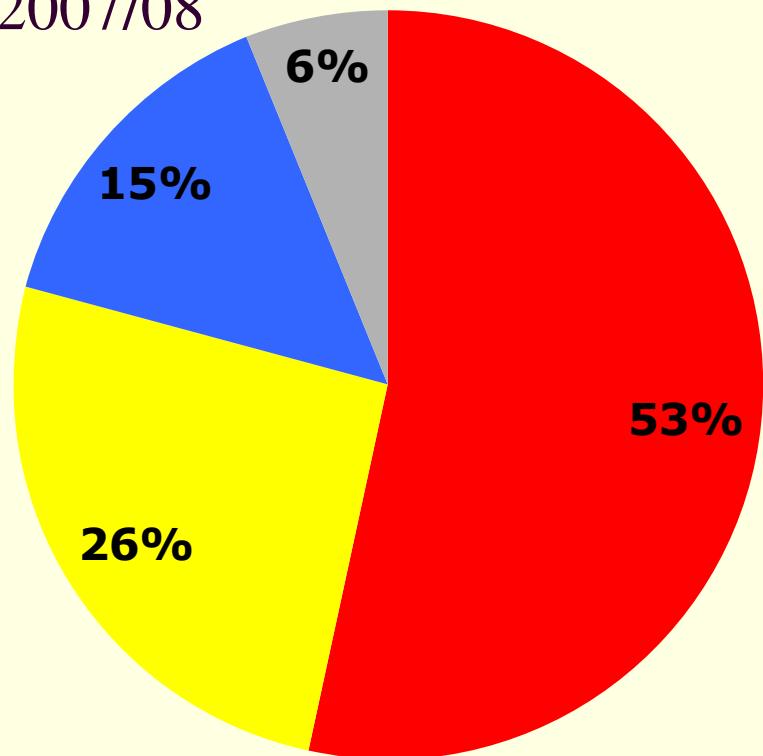
■ U. S.

■ Brazil

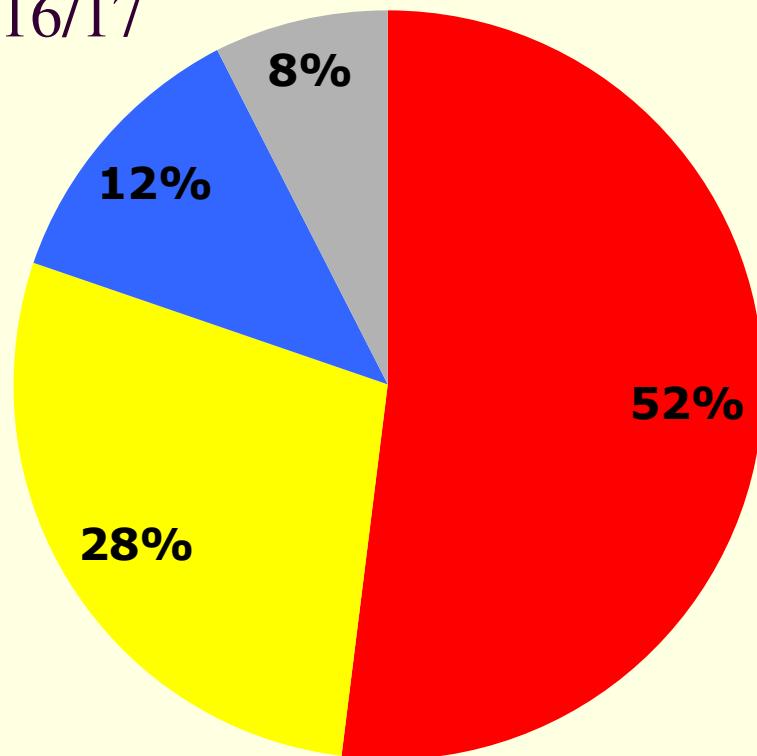
■ Rest of World

# Projected World Soybean Meal Net Exports

2007/08



2016/17



■ Argentina

■ Brazil

■ U. S.

■ Rest of World

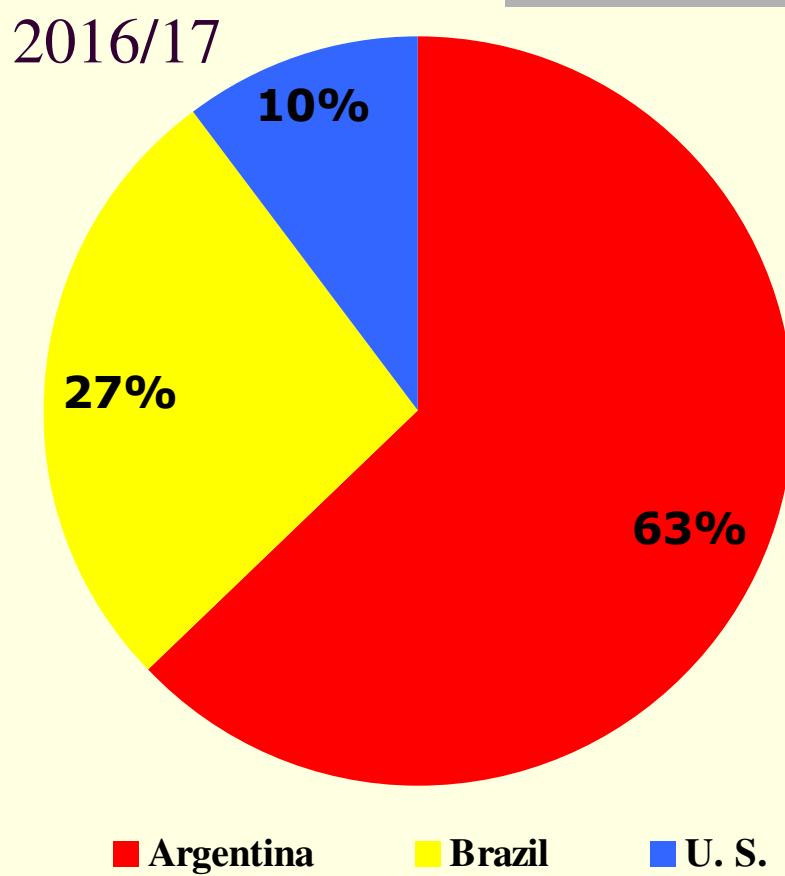
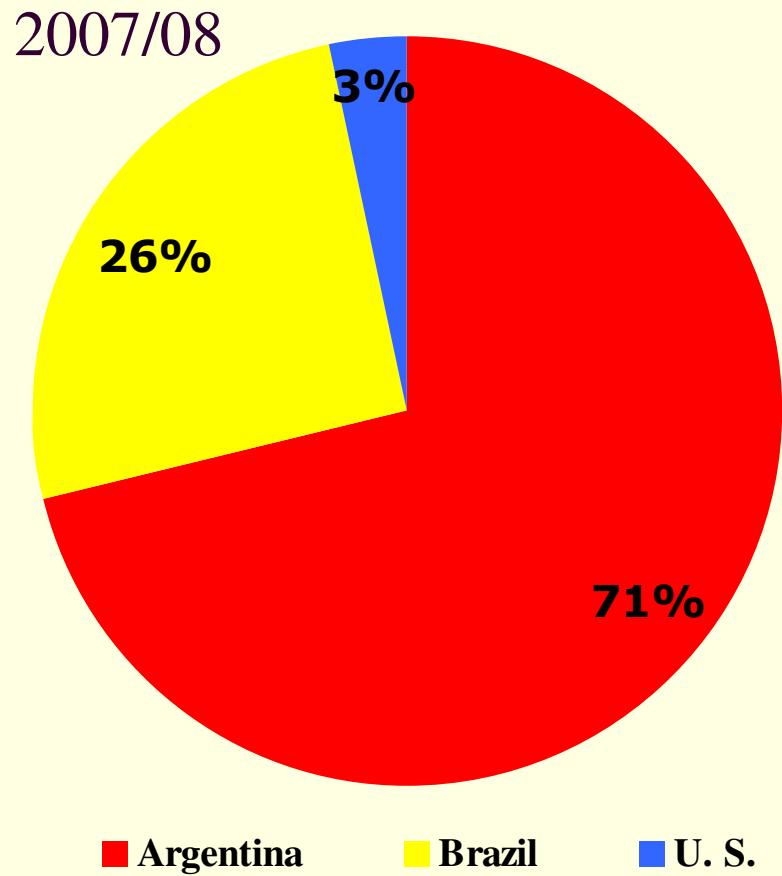
■ Argentina

■ Brazil

■ U. S.

■ Rest of World

# Projected World Soybean Oil Net Exports



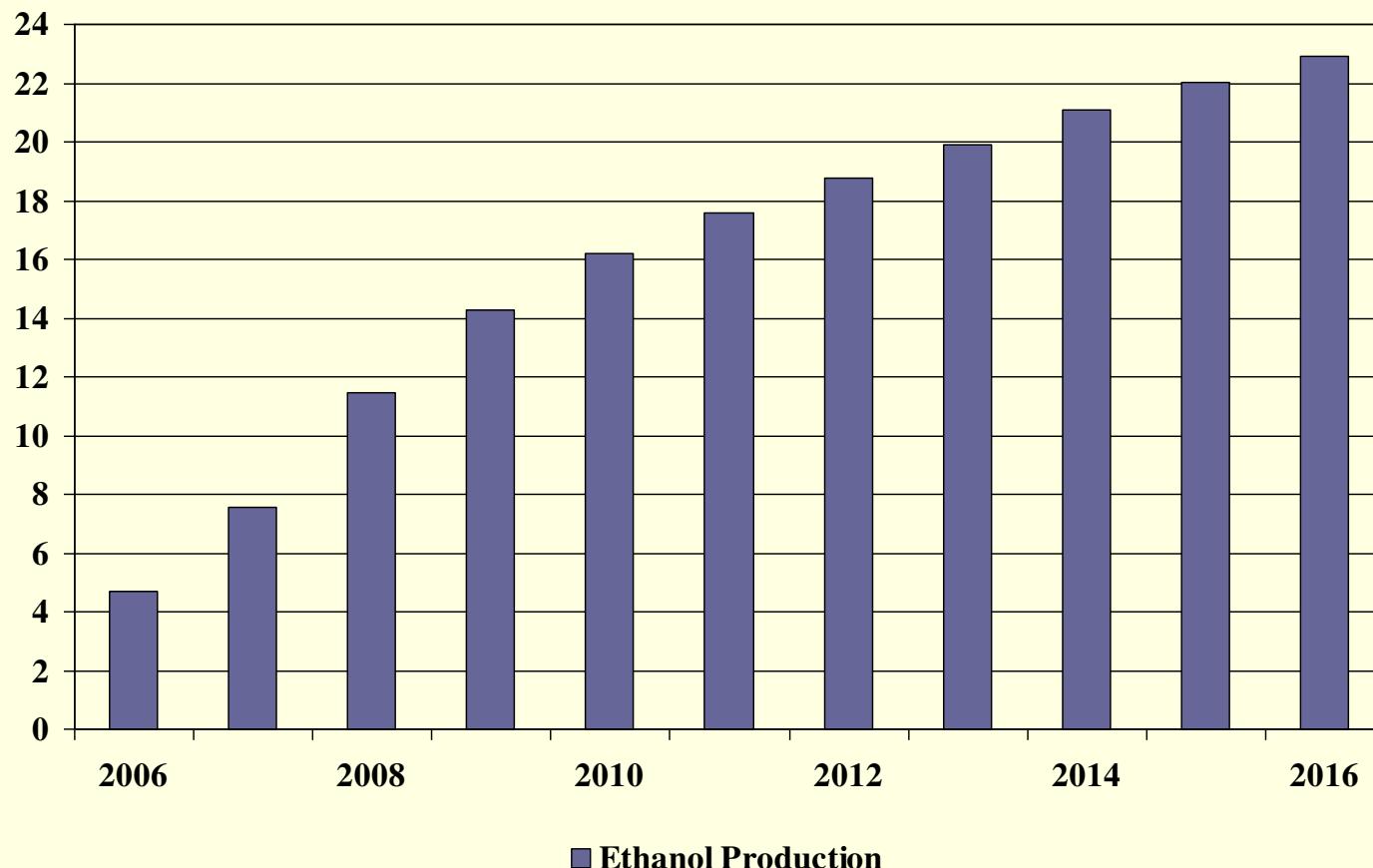
# Impact of Higher Crude Oil Price

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- Increased crude oil price by \$10/barrel over the projection
- Margins on ethanol plants increase
- New incentive to invest in added capacity for ethanol production
- Eventually, a new equilibrium reached where there is no incentive to invest in or exit the ethanol industry
- Will demand for ethanol be enough?
  - E-10 market will saturate around 15 billion gallons
  - Drop in ethanol price will eventually encourage increase in demand for the flex-fuel cars

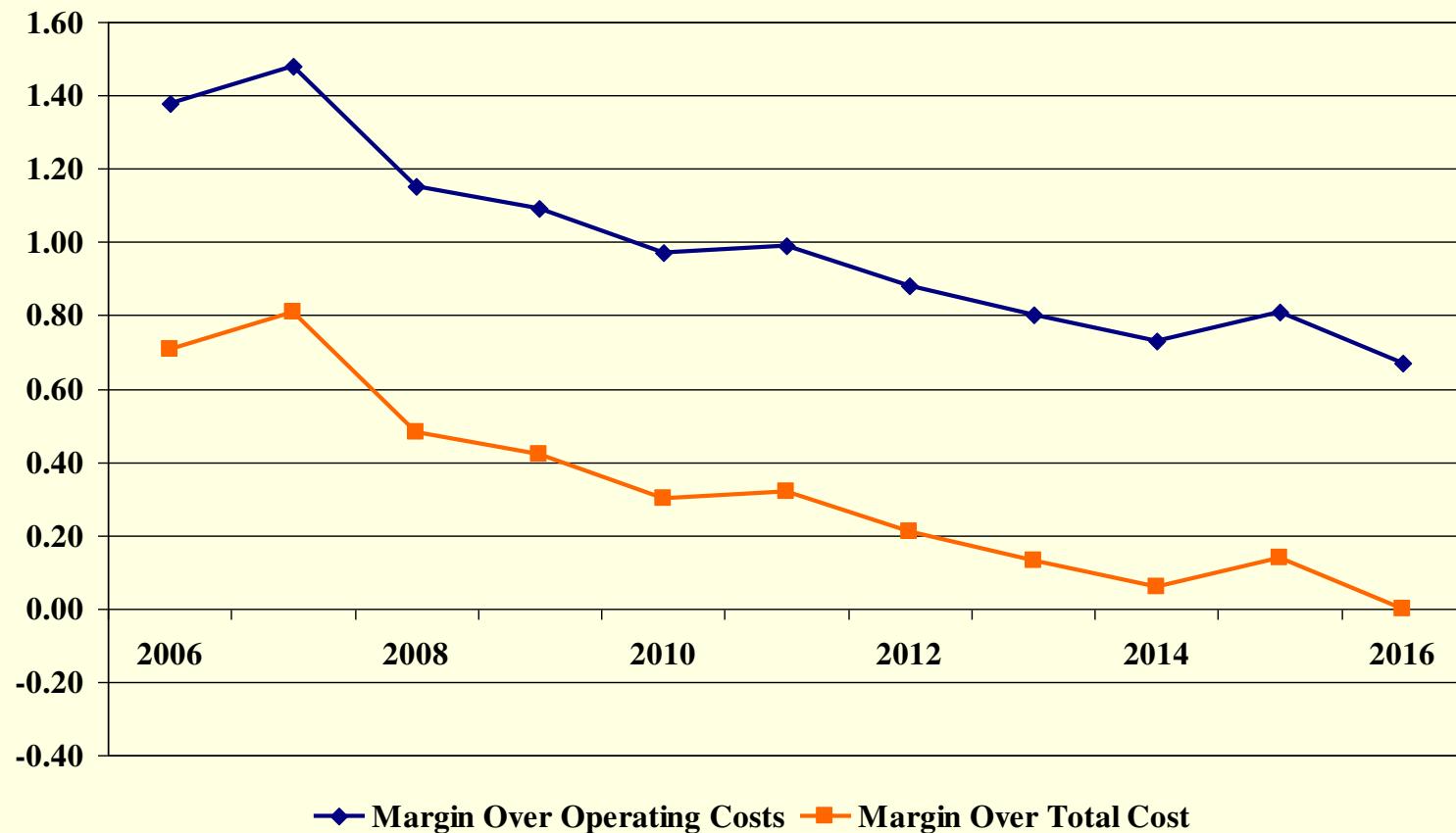
# Projected U.S. Ethanol Production

billion gallons

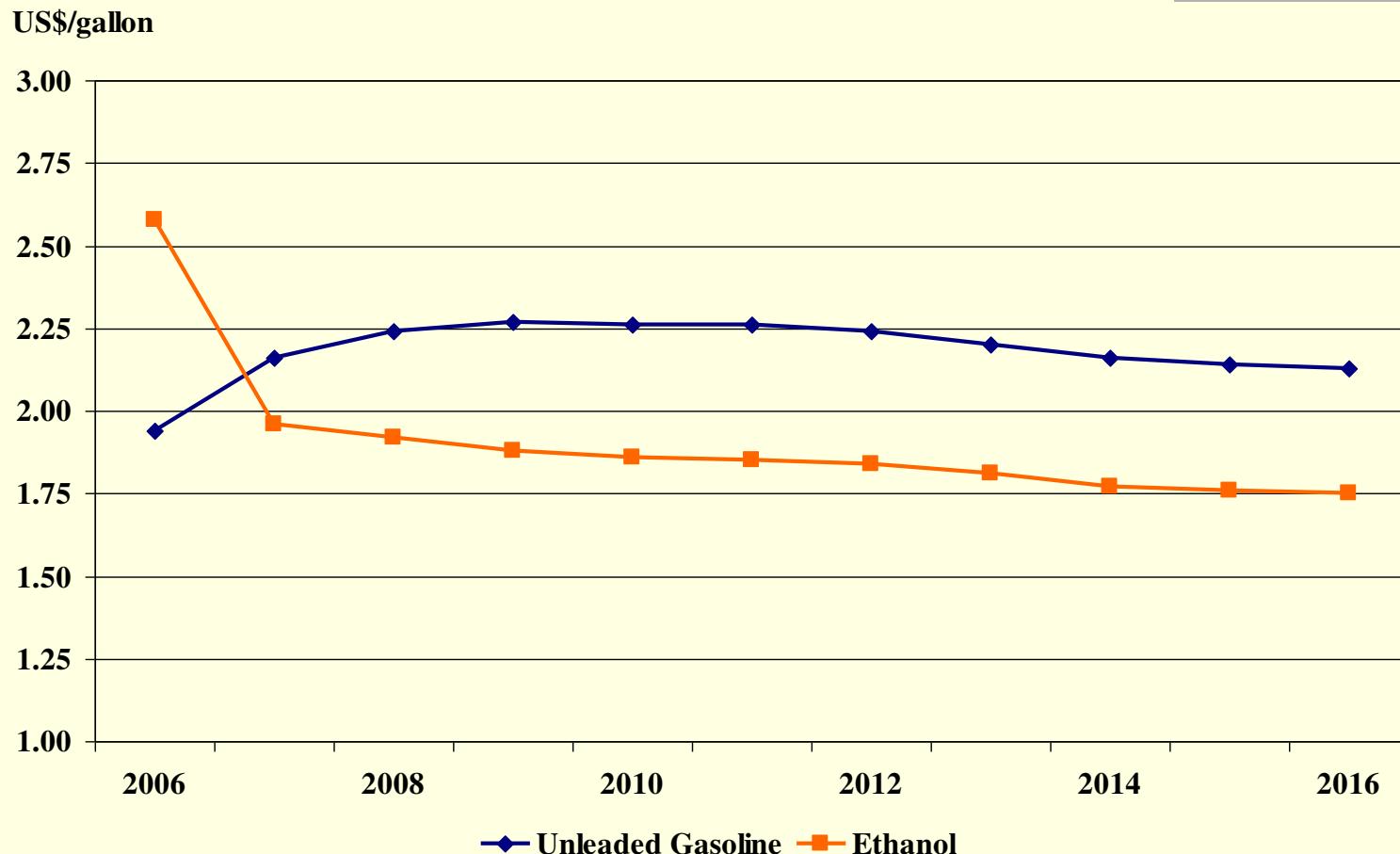


# Projected U.S. Dry Mill Margins

US\$/bushel

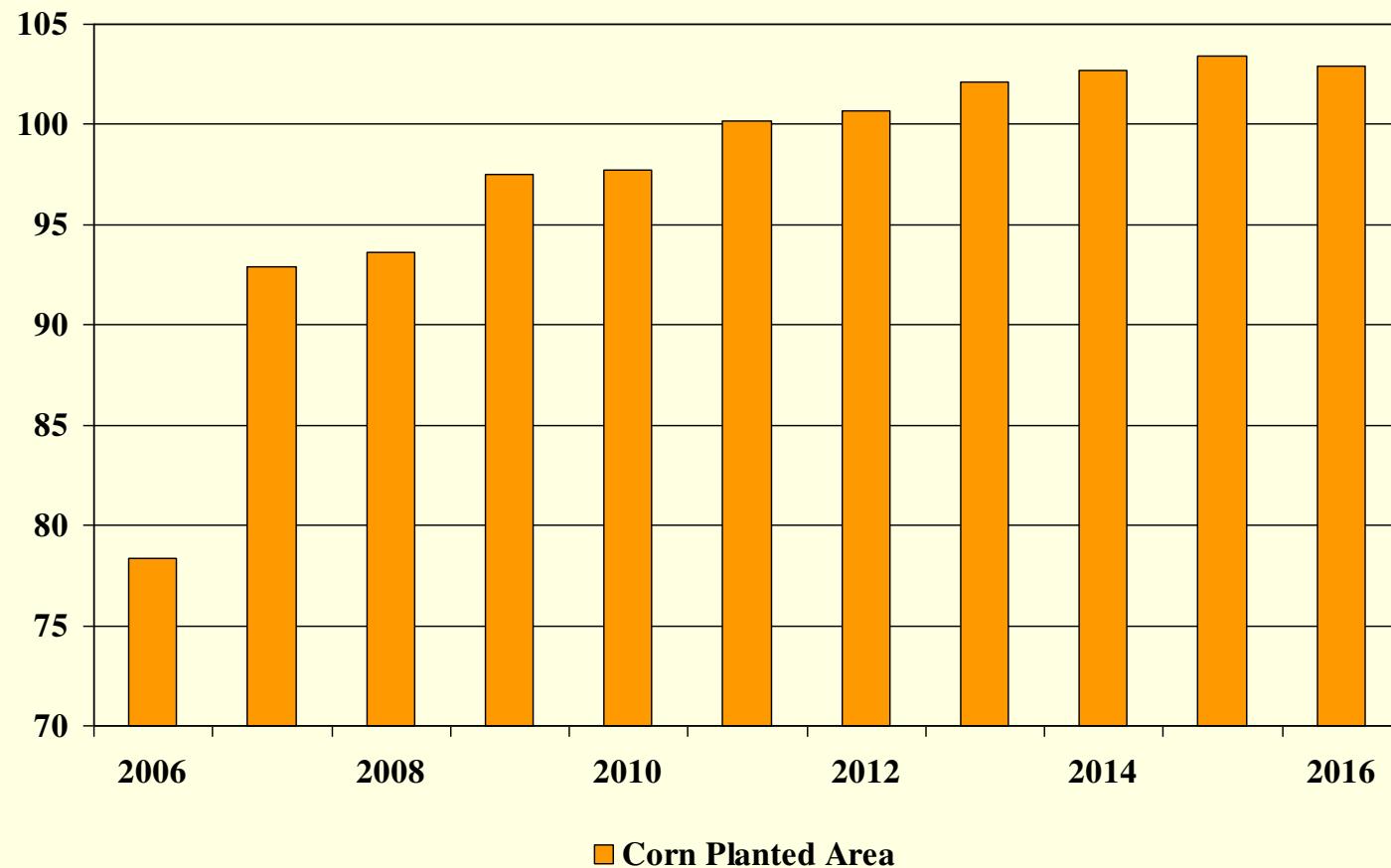


# Wholesale Gasoline and Ethanol Prices



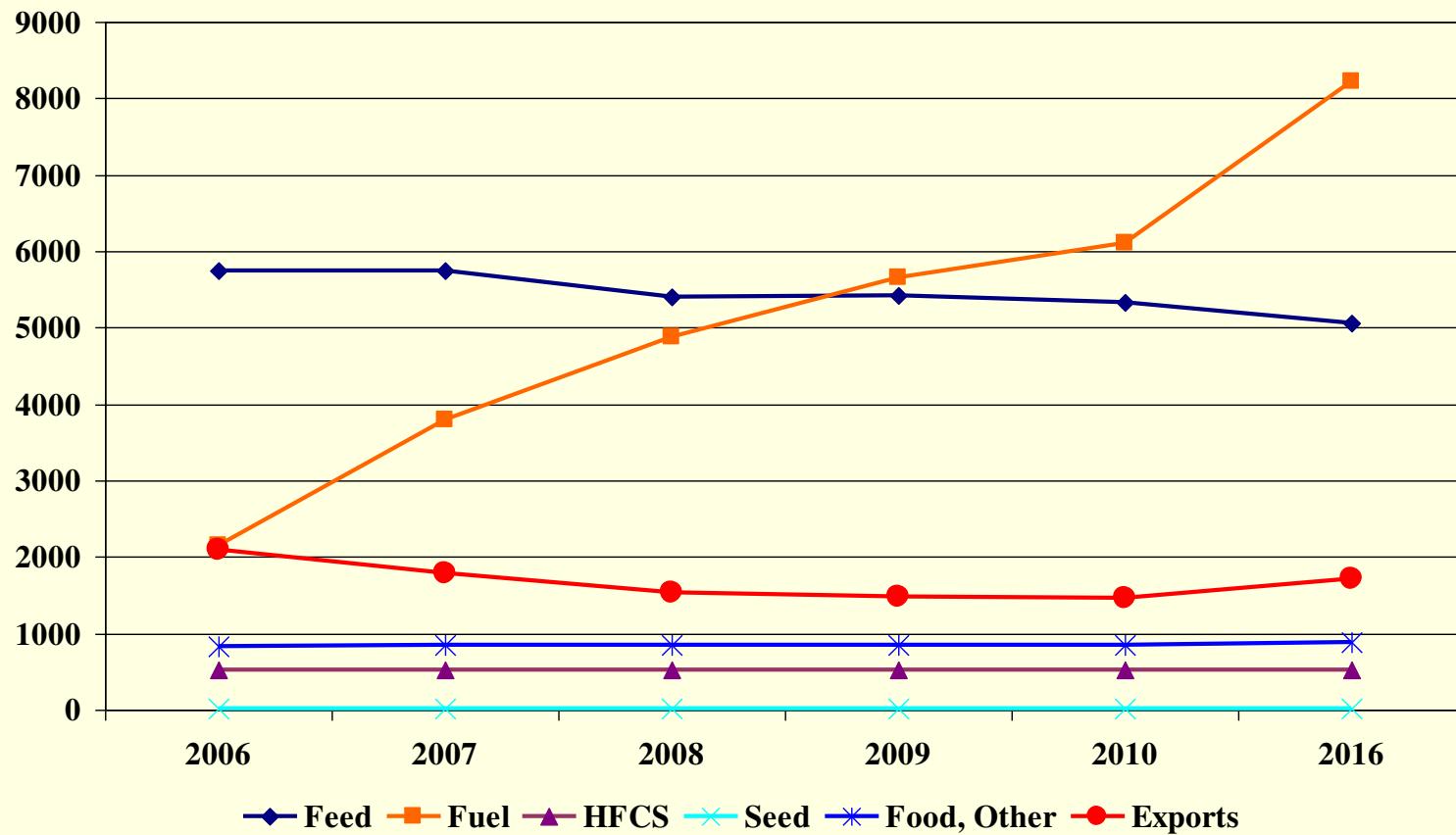
# Projected U.S. Corn Planted Area

million acres

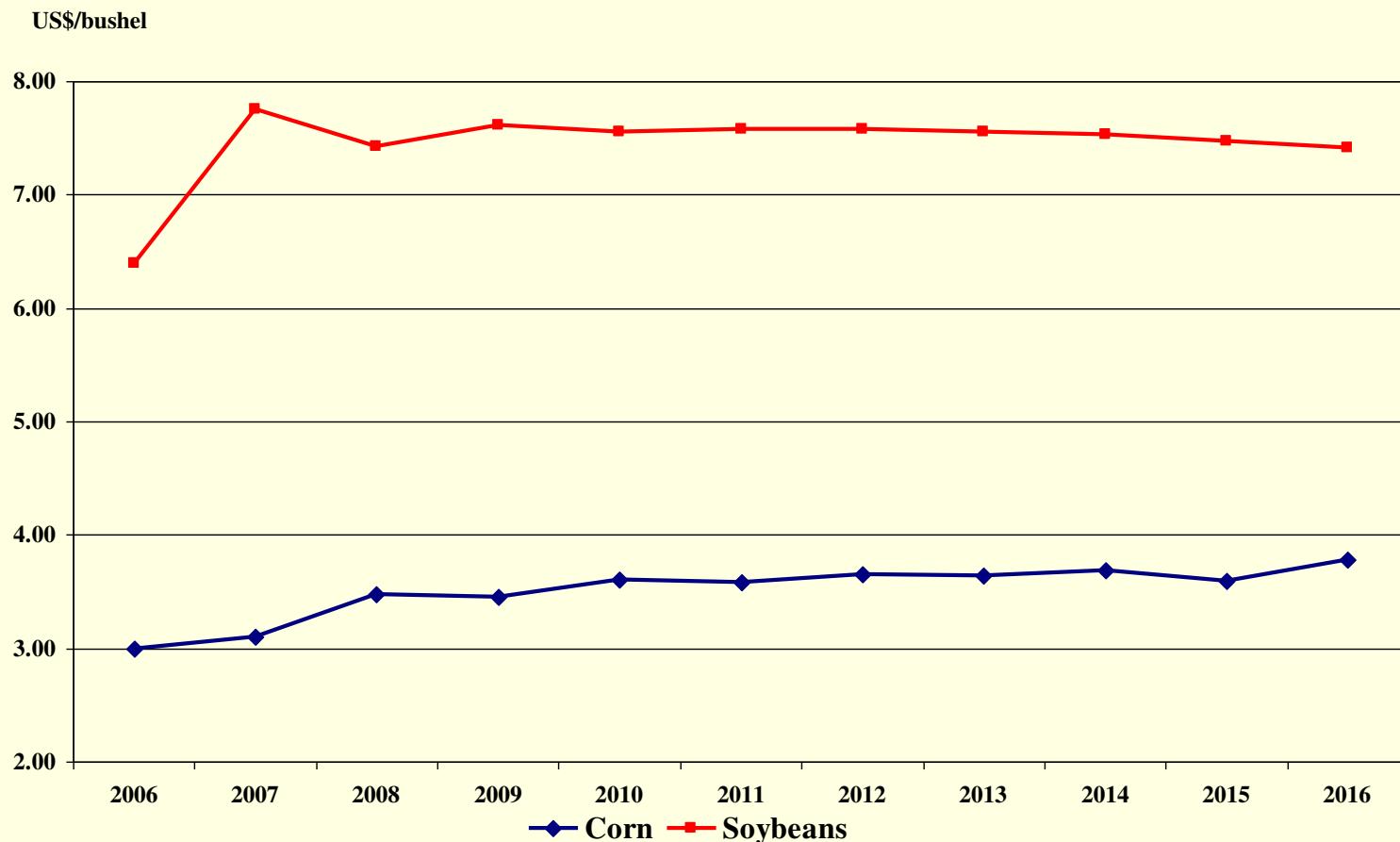


# Projected Utilization of U.S. Corn

million bushels

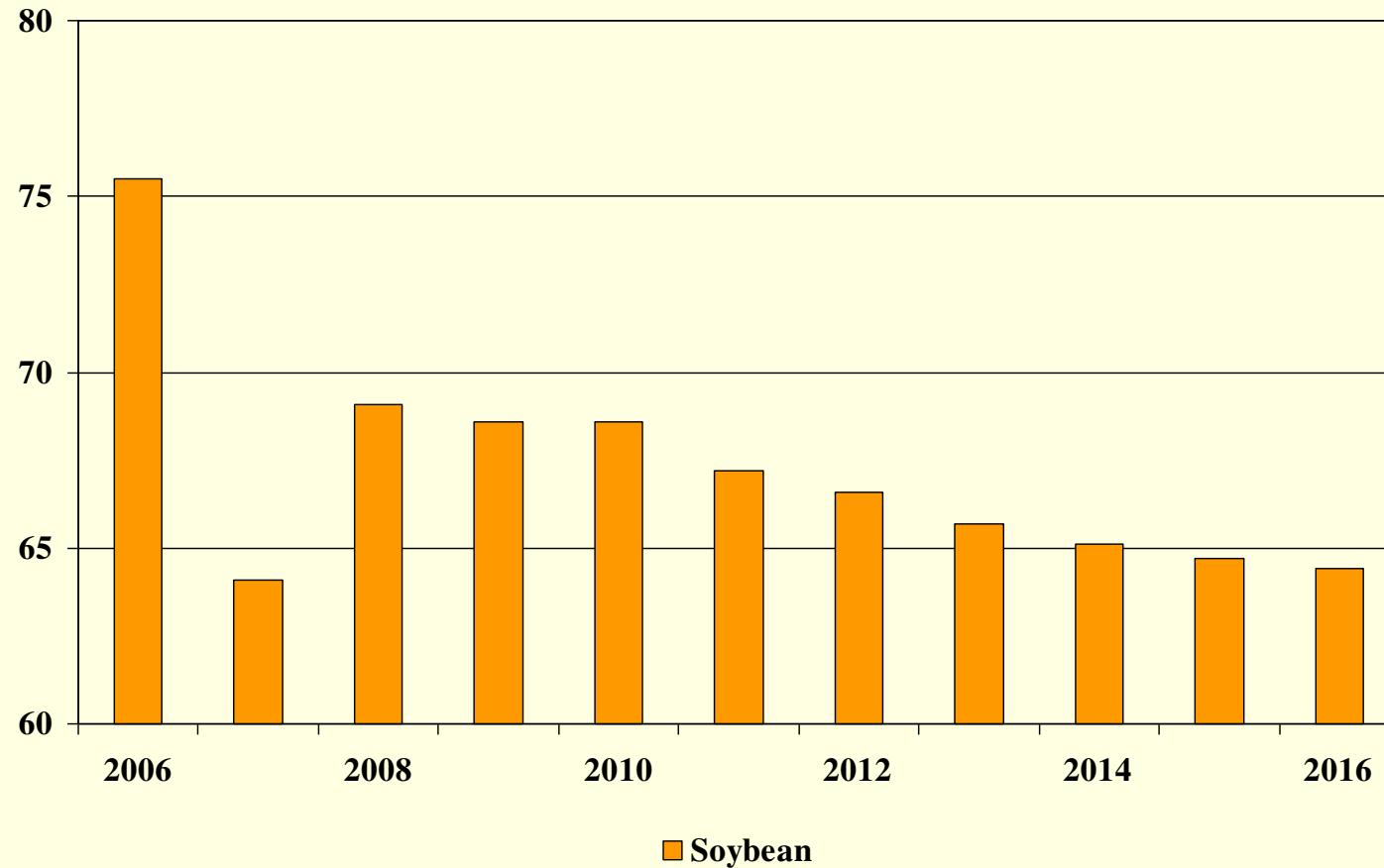


# Projected U.S. Corn and Soybean Prices



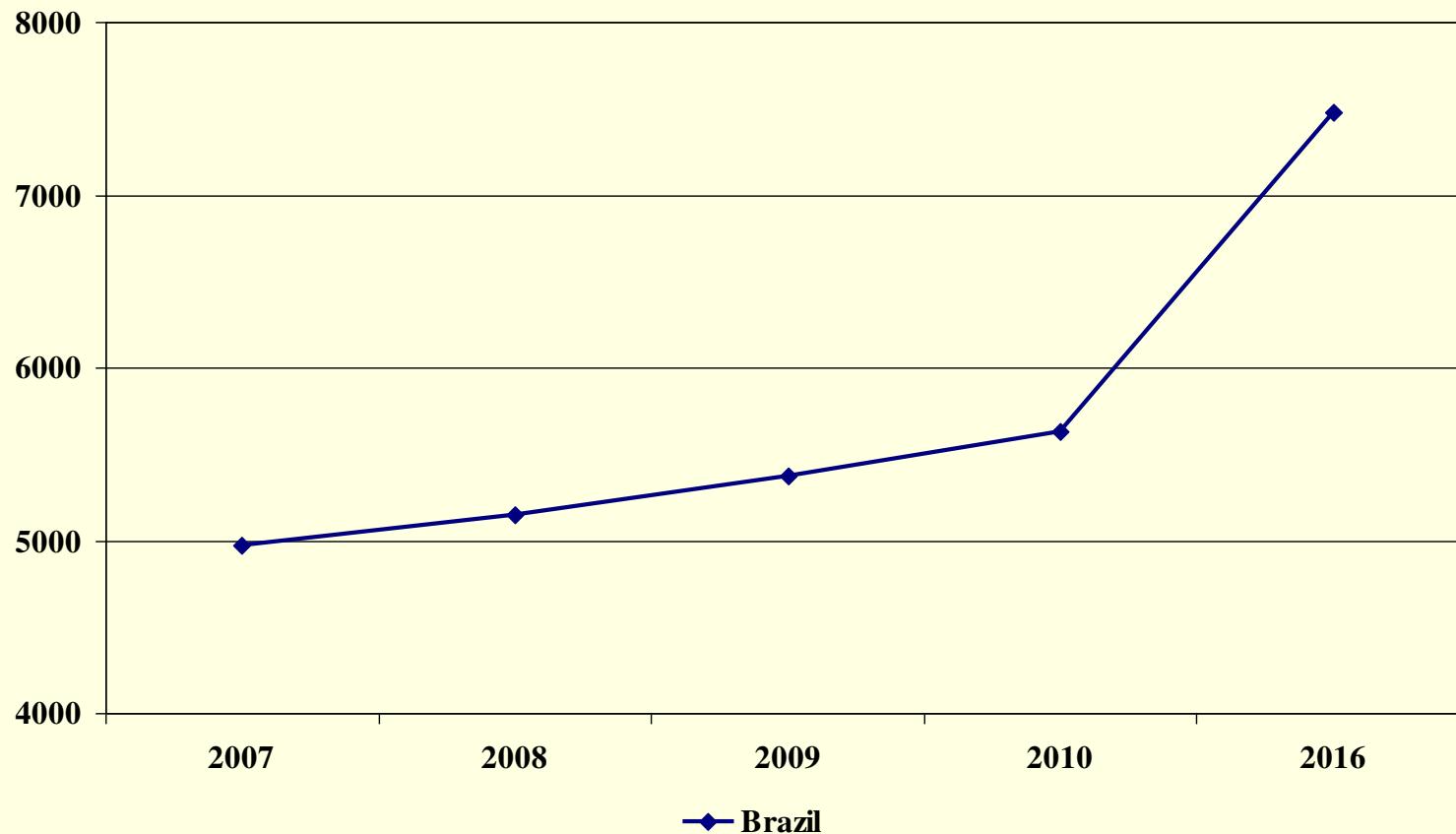
# Projected U.S. Soybean Planted Area

million acres



# Projected Brazilian Ethanol Production

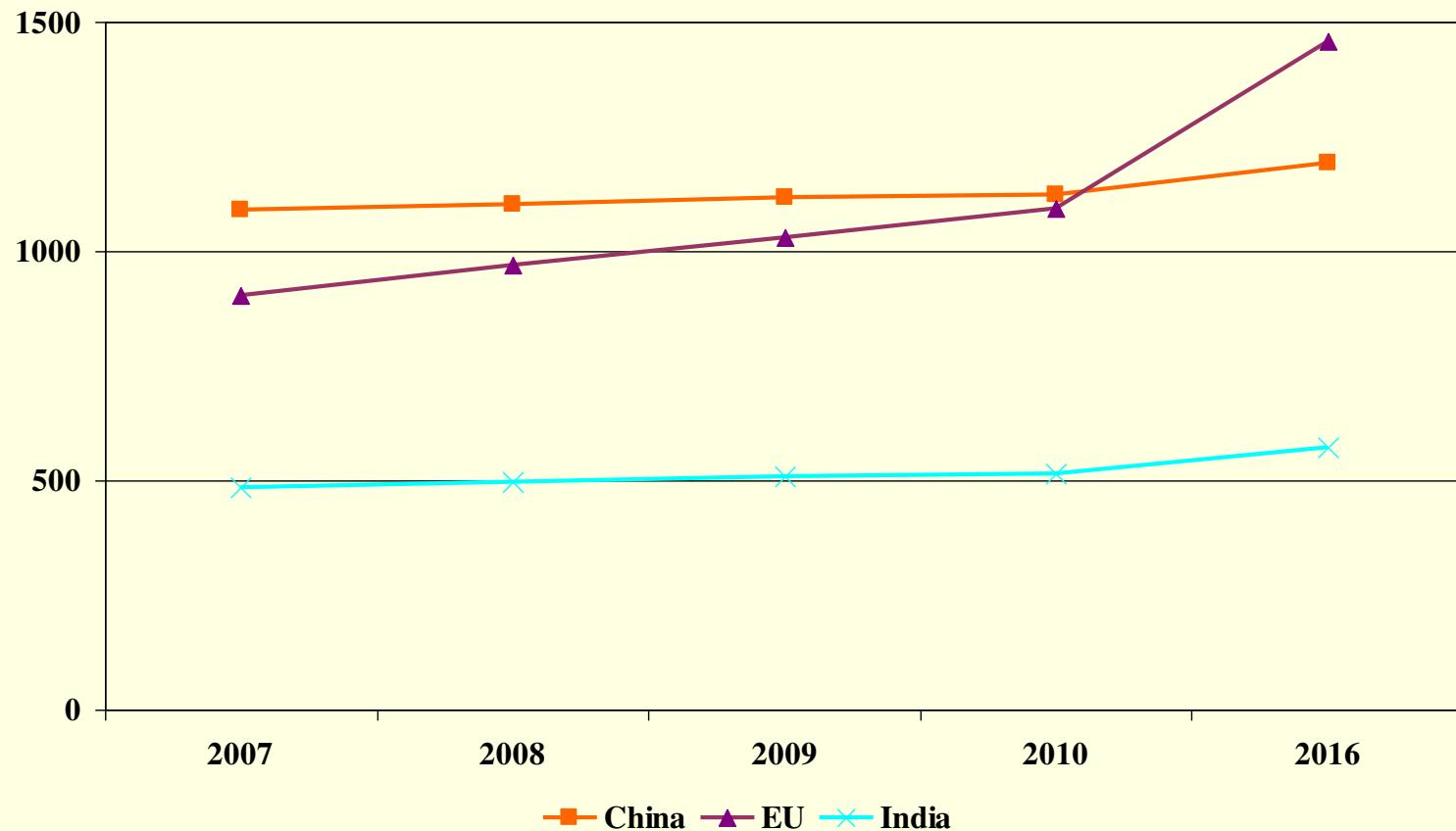
million gallons



—♦— Brazil

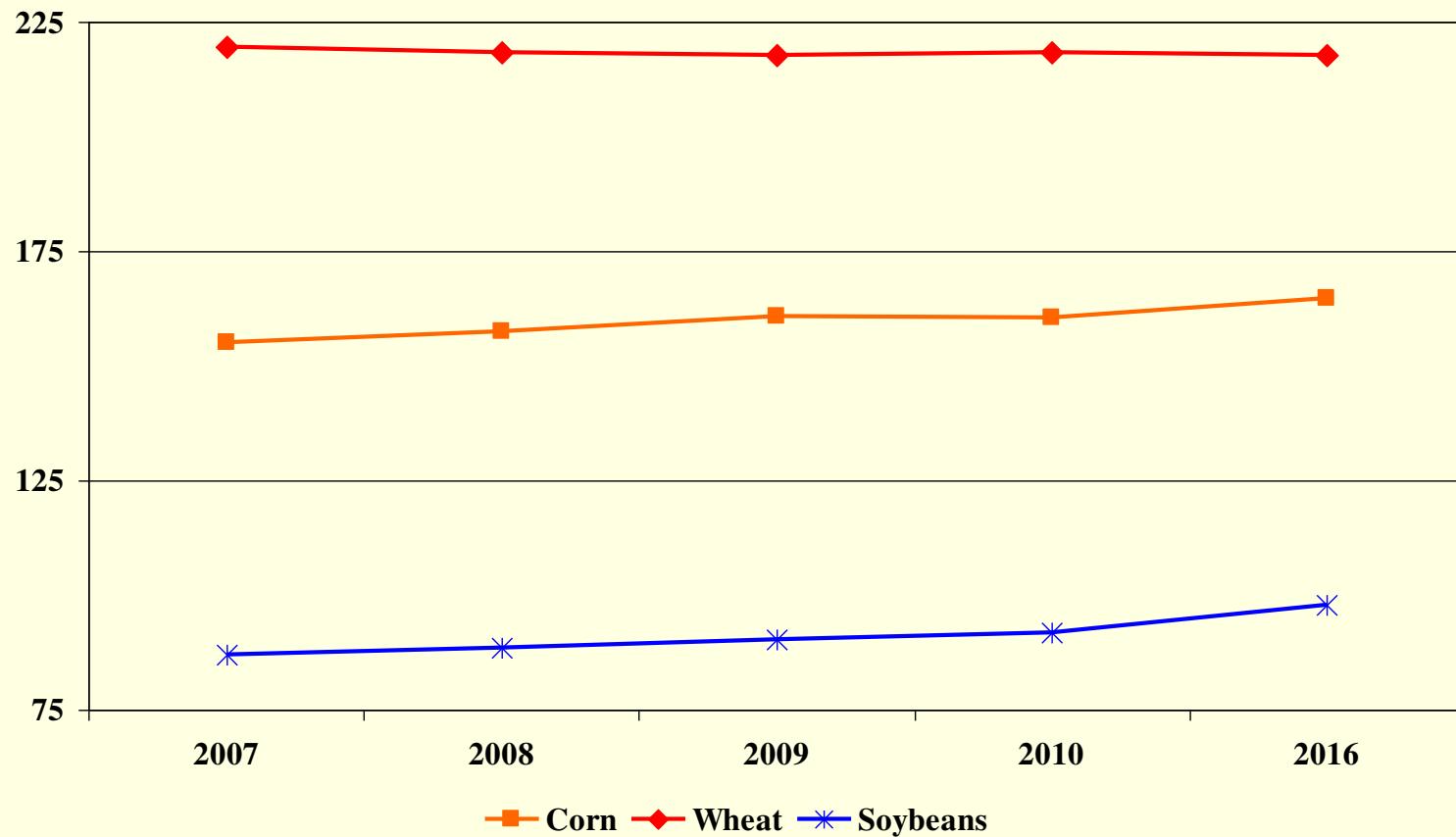
# Projected Ethanol Production

million gallons



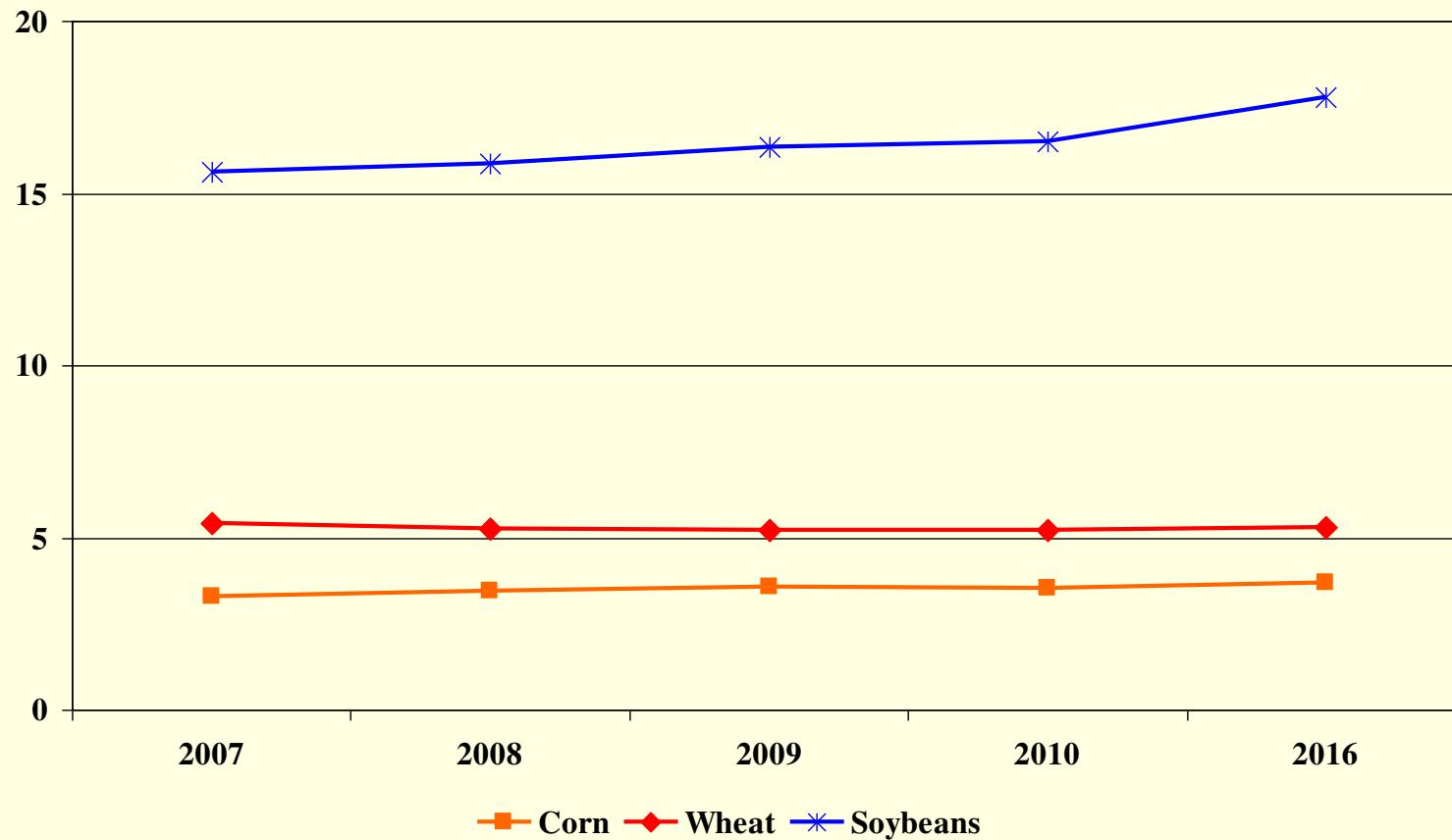
# Projected World Area Harvested

million hectares



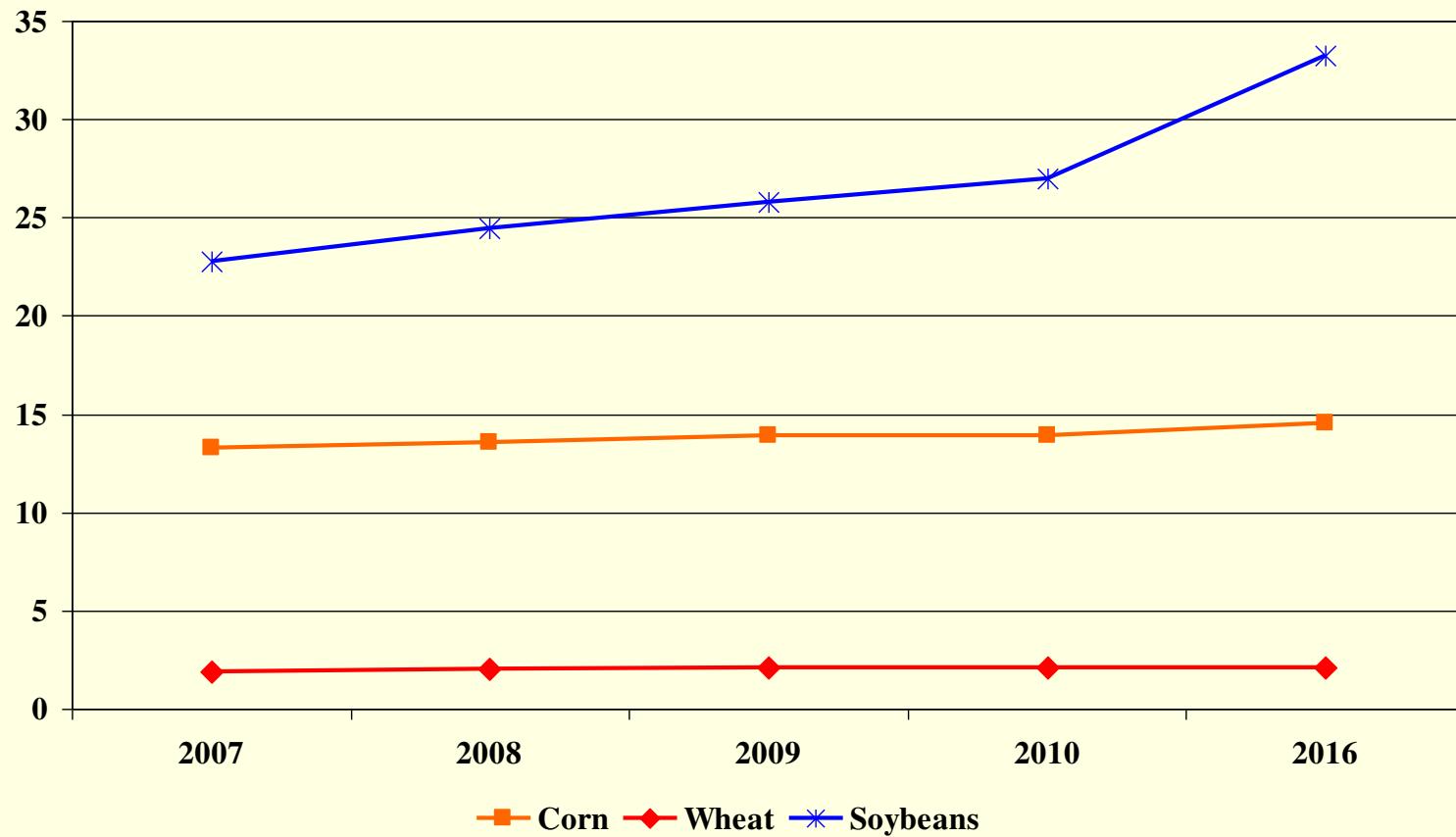
# Projected Argentine Area Harvested

million hectares



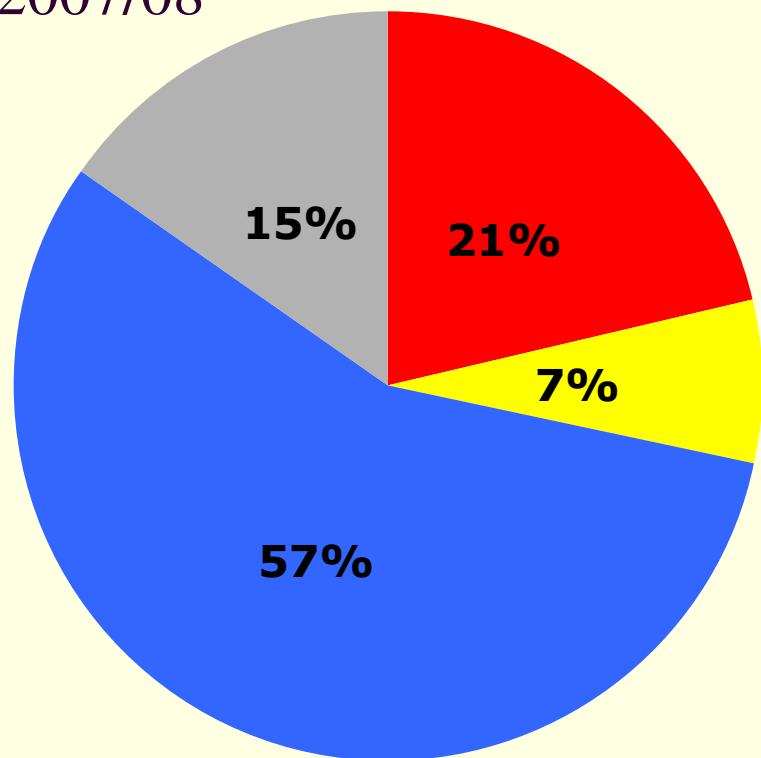
# Projected Brazilian Area Harvested

million hectares

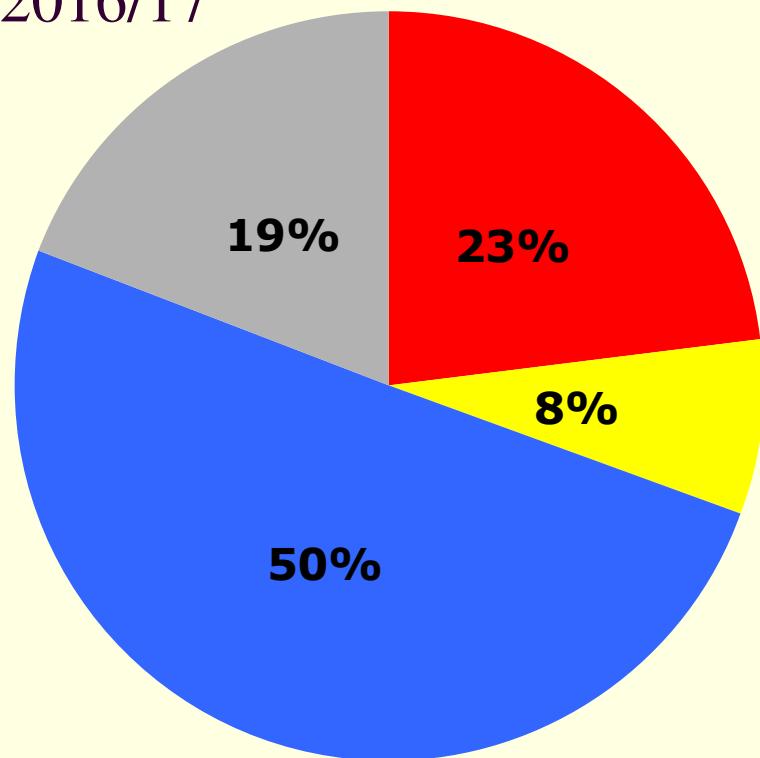


# Projected World Corn Net Exports

2007/08



2016/17



■ Argentina

■ U. S.

■ Brazil

■ Rest of World

■ Argentina

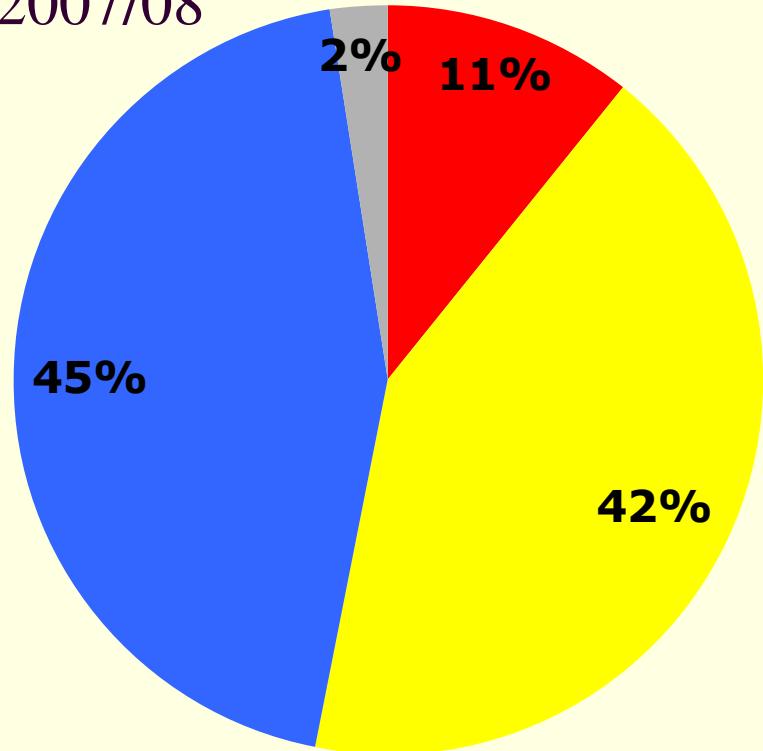
■ U. S.

■ Brazil

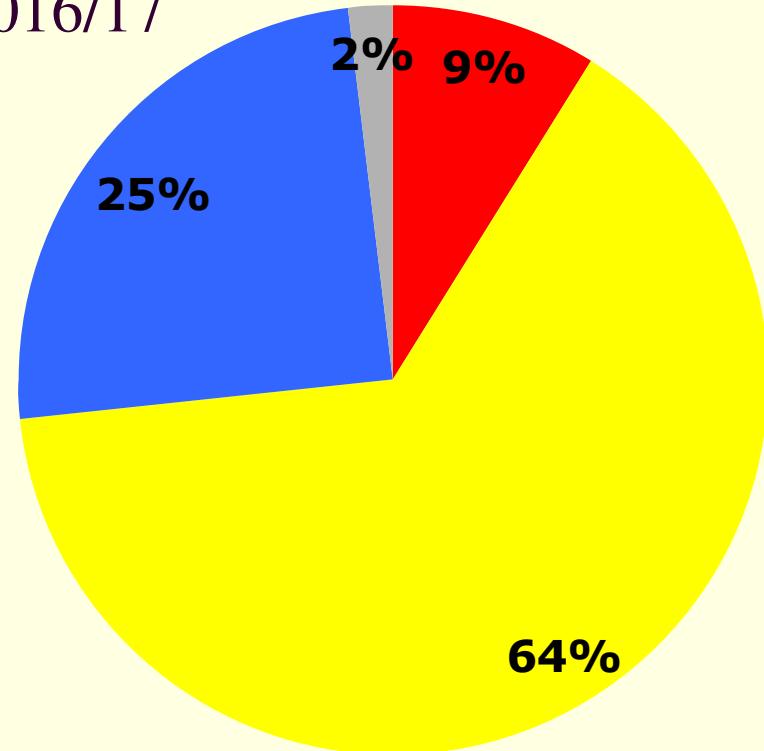
■ Rest of World

# Projected World Soybean Net Exports

2007/08



2016/17



■ Argentina

■ U. S.

■ Brazil

■ Rest of World

■ Argentina

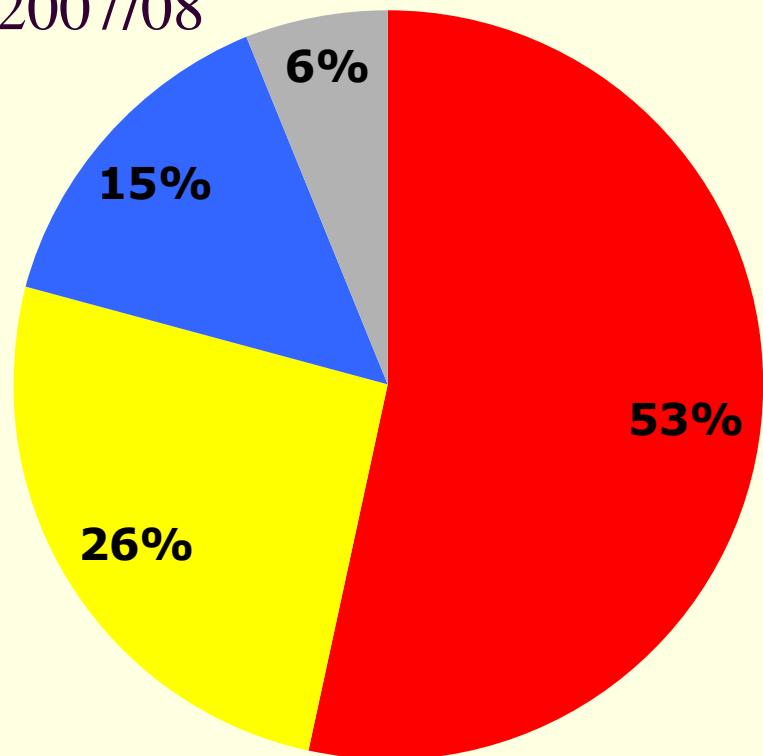
■ U. S.

■ Brazil

■ Rest of World

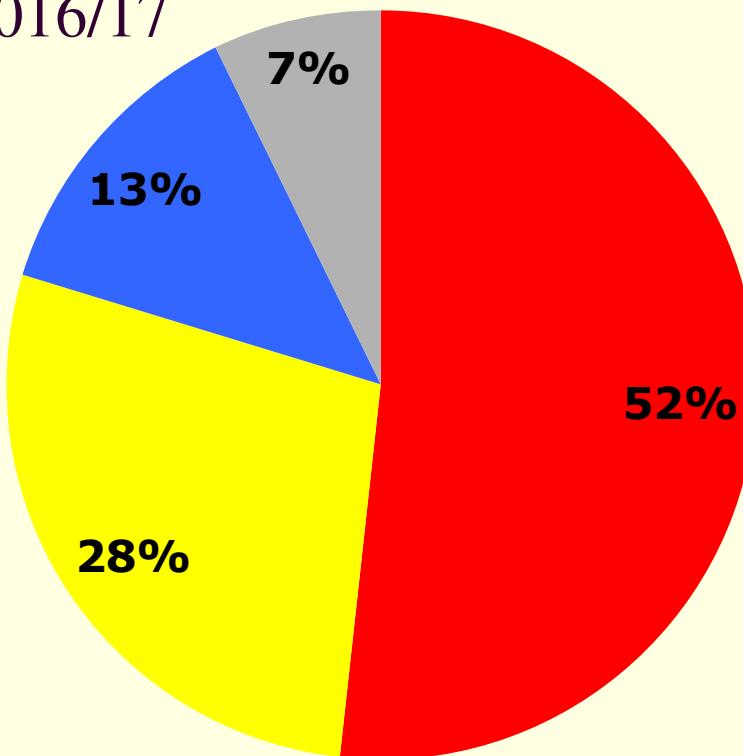
# Projected World Soybean Meal Net Exports

2007/08



■ Argentina  
■ U. S.  
■ Rest of World

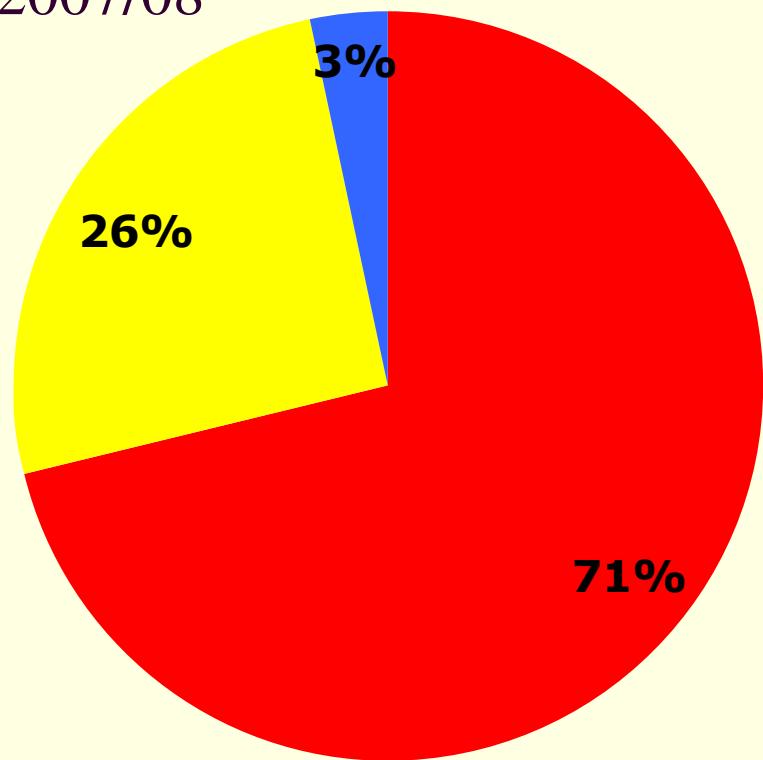
2016/17



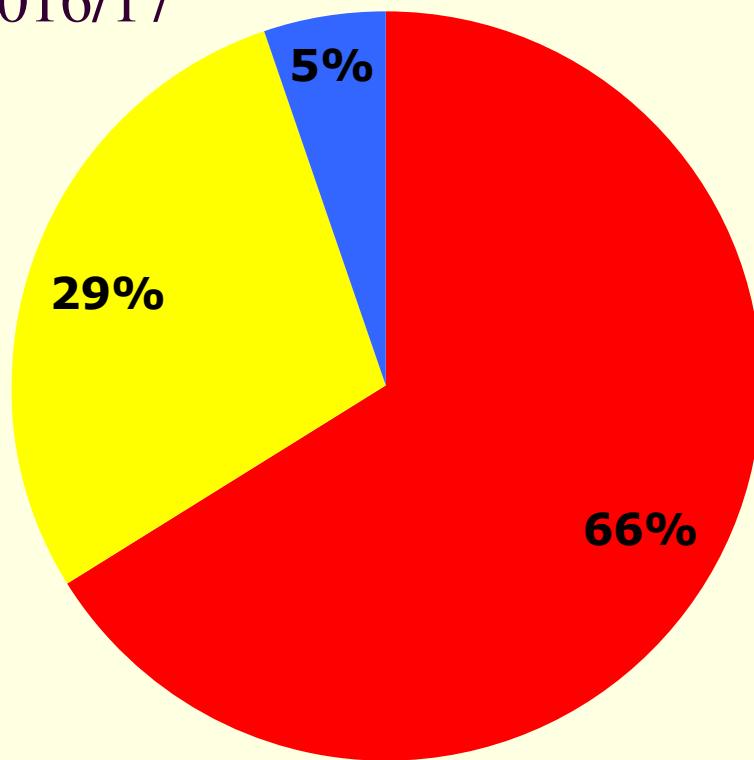
■ Argentina  
■ U. S.  
■ Rest of World

# Projected World Soybean Oil Net Exports

2007/08



2016/17



■ Argentina

■ Brazil

■ U. S.

■ Argentina

■ Brazil

■ U. S.

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# Thank You