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Biofuels: Implications for Prices and Production

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Agricultural and Consumer Economics

Why Ethanol?

Convert relatively abundant domestic sources of energy into a substitute for imported petroleum

Energy Conversion

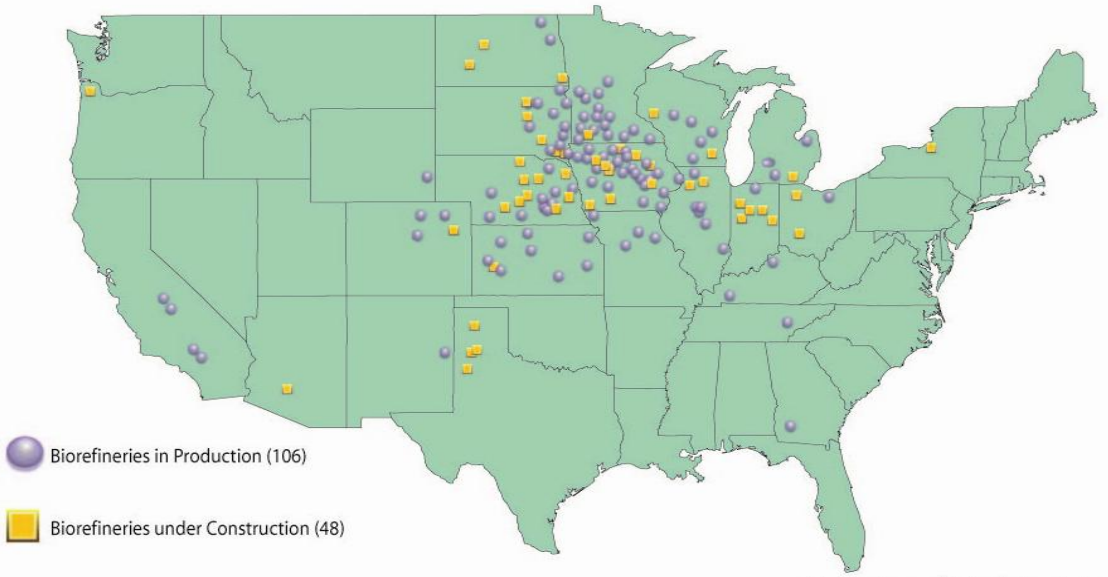
Natural Gas
Electricity
Petroleum
Coal
Methane
Sunlight

→ Ethanol
→ DDGs

Other Benefits

- Economic Development
- Reduce Greenhouse Emissions
- National Security
- Support Farm Income

U.S. Ethanol Biorefinery Locations

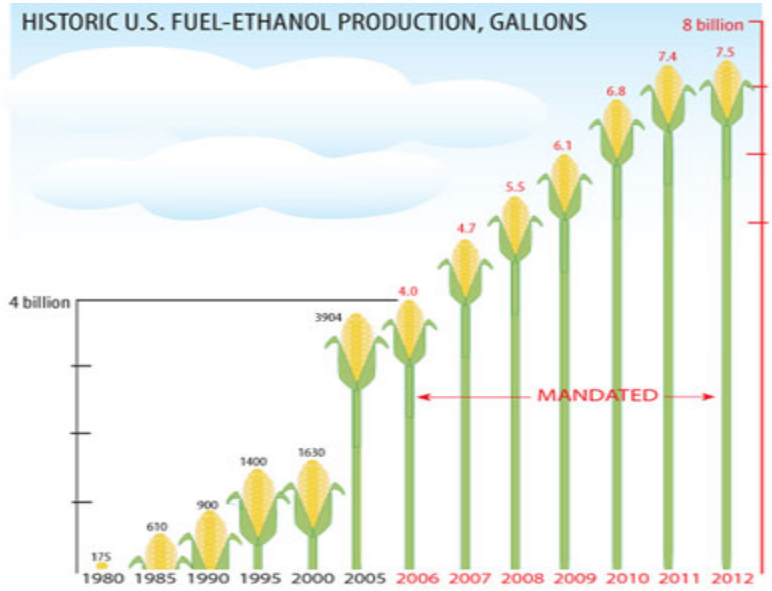


Source: Renewable Fuels Association

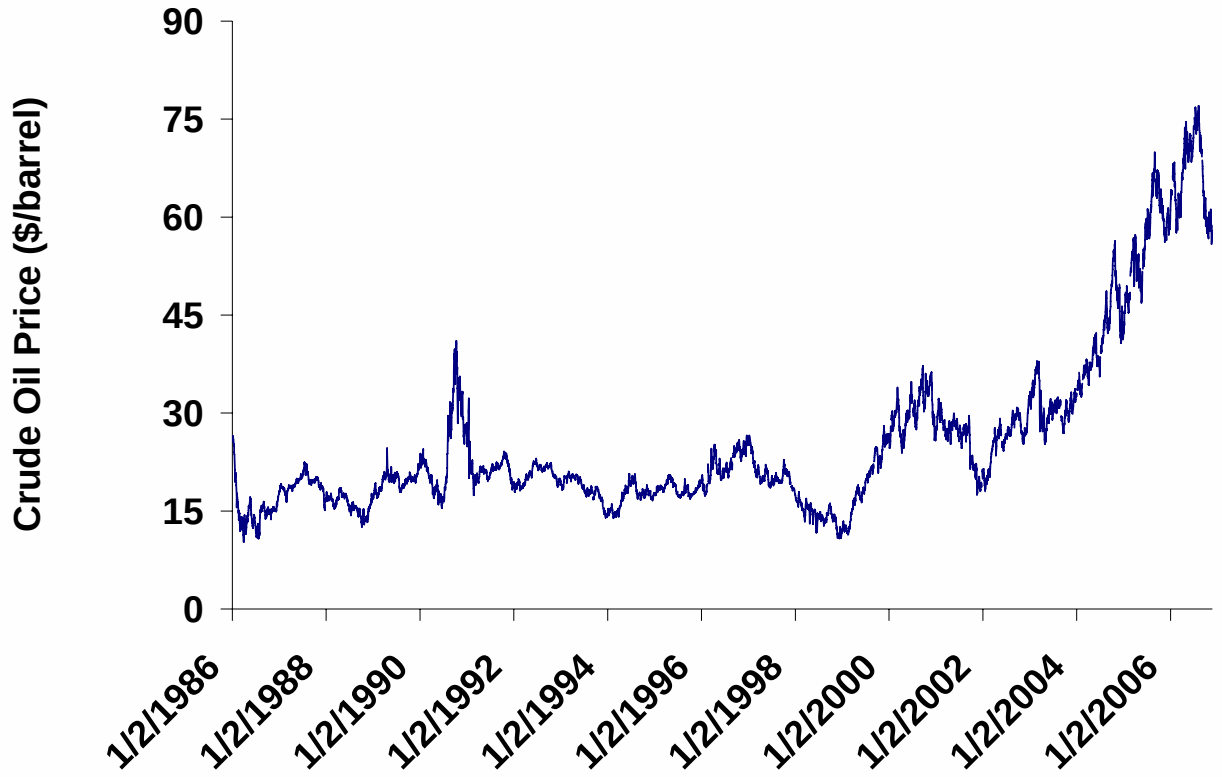
Economics of Ethanol

Currently economically feasible due to:

- $.51/gallon blender tax credit
- $.54/gallon import tariff
- High crude oil prices
- Mandates

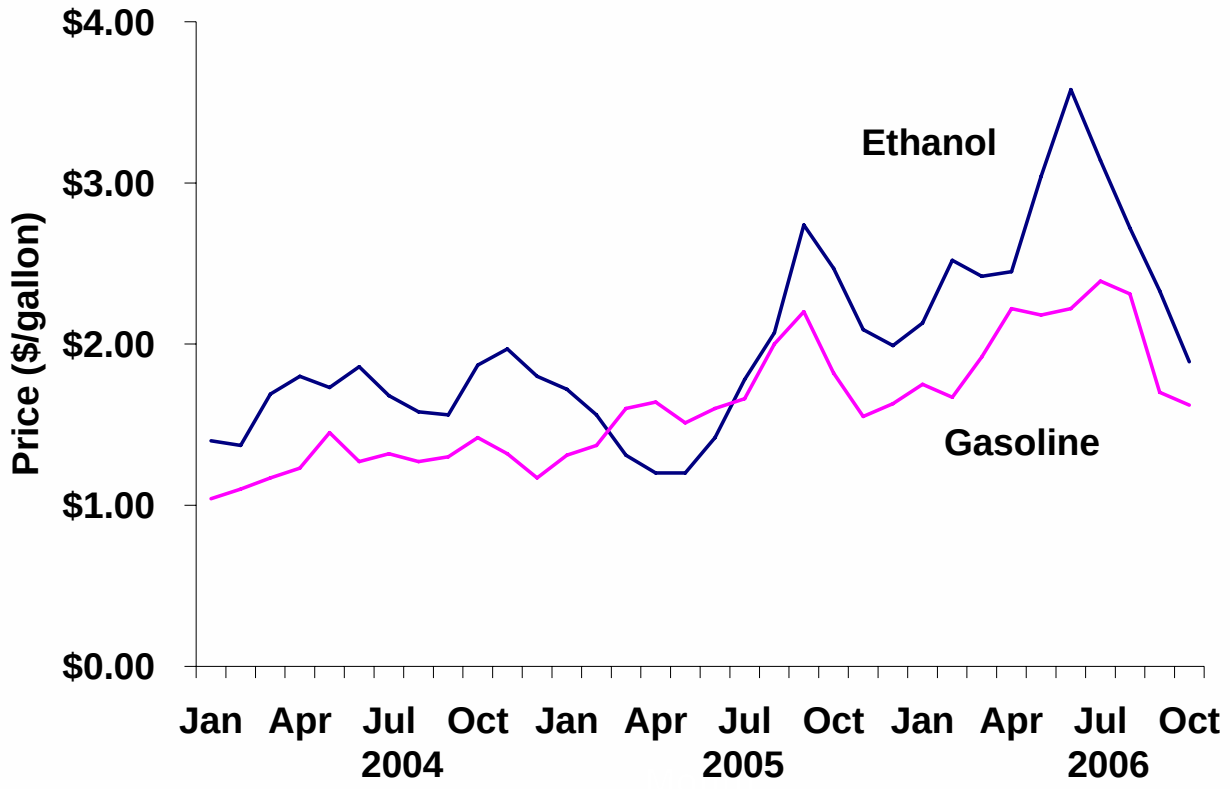


Crude Oil Prices, Cushing, OK WTI Spot Price, Jan. 2, 1986 – Nov. 21, 2006



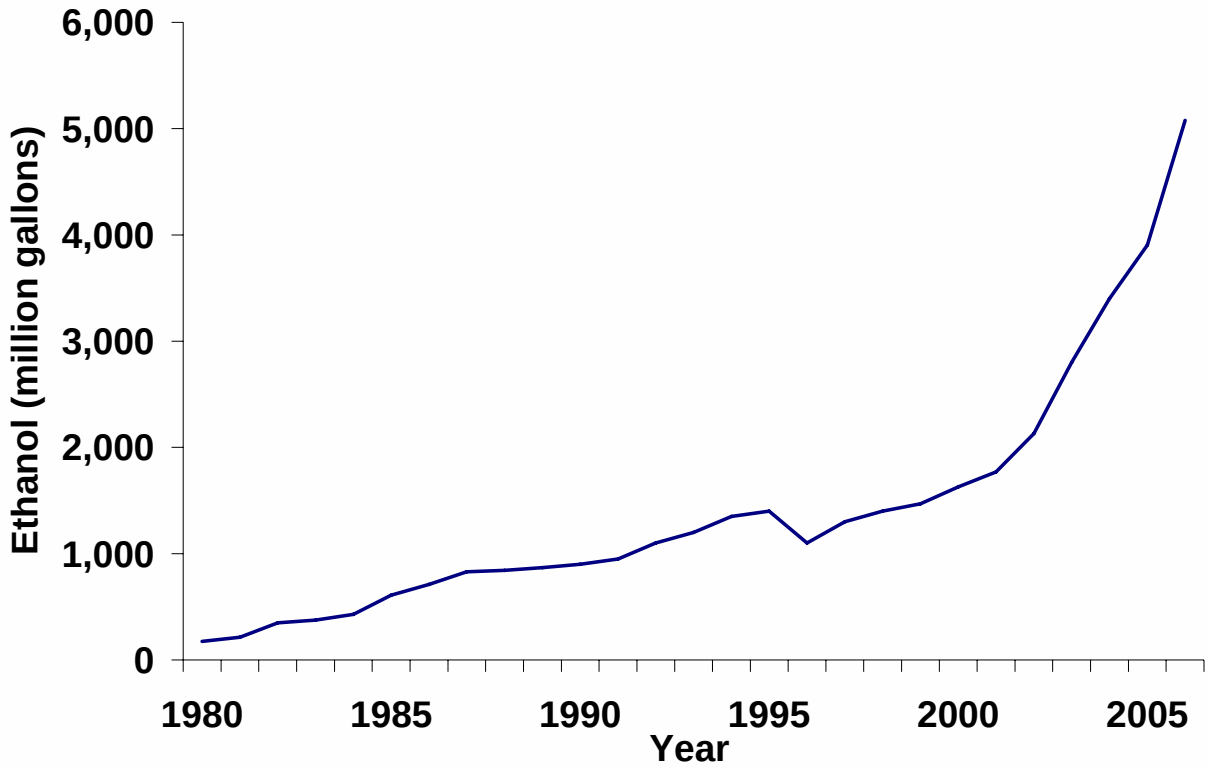
Source: U.S. Department of Energy, Energy Information Administration

Ethanol and Unleaded Gasoline Prices, F.O.B. Omaha, Nebraska, January 2004 - October 2006



Source: Nebraska Ethanol Board; Nebraska Energy Office

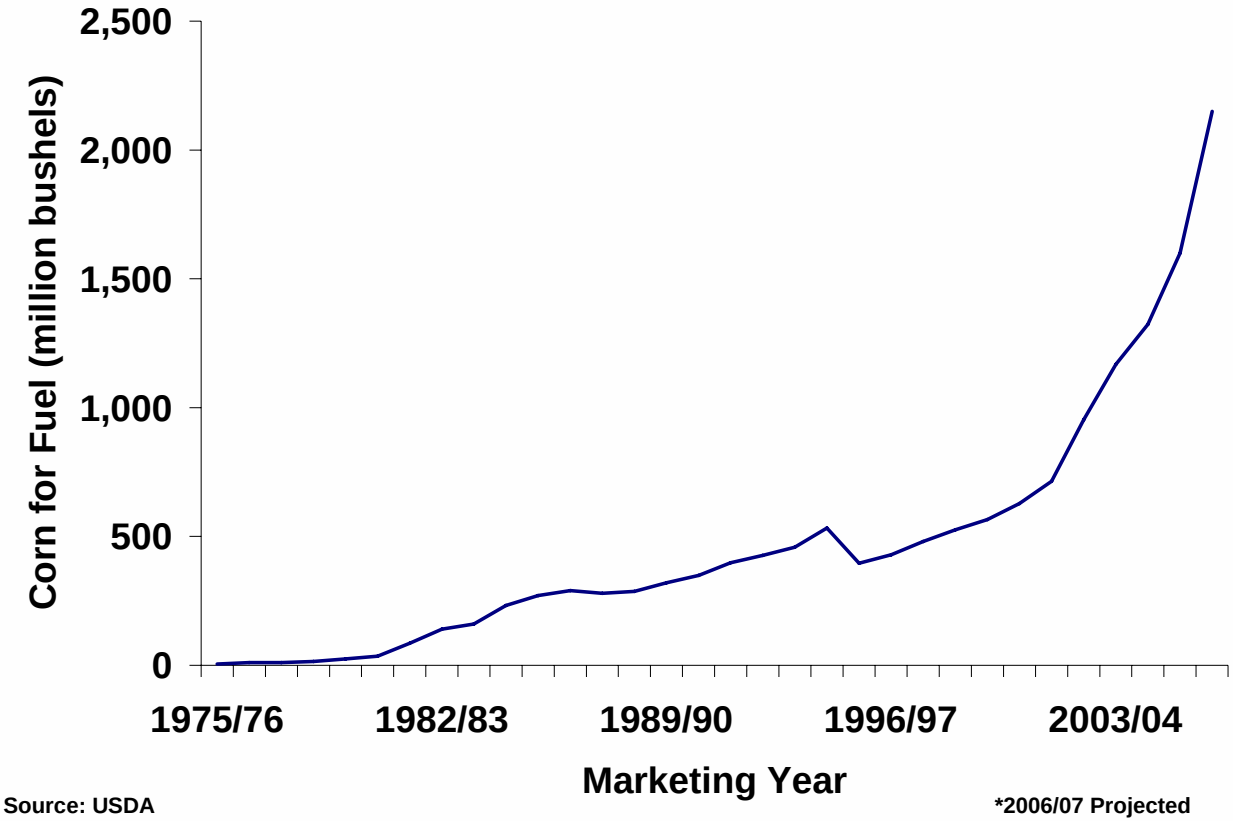
U.S. Ethanol Production, 1980-2006



Source: Renewable Fuels Association and Original Calculations

*2006 Projected

U.S. Corn for Fuel Use, 1975/76-2006/07



Source: USDA

*2006/07 Projected

Implications

Prices a new higher plateau?

impact on other users?

impact on land values/rents?

Supply will corn acreage increase?

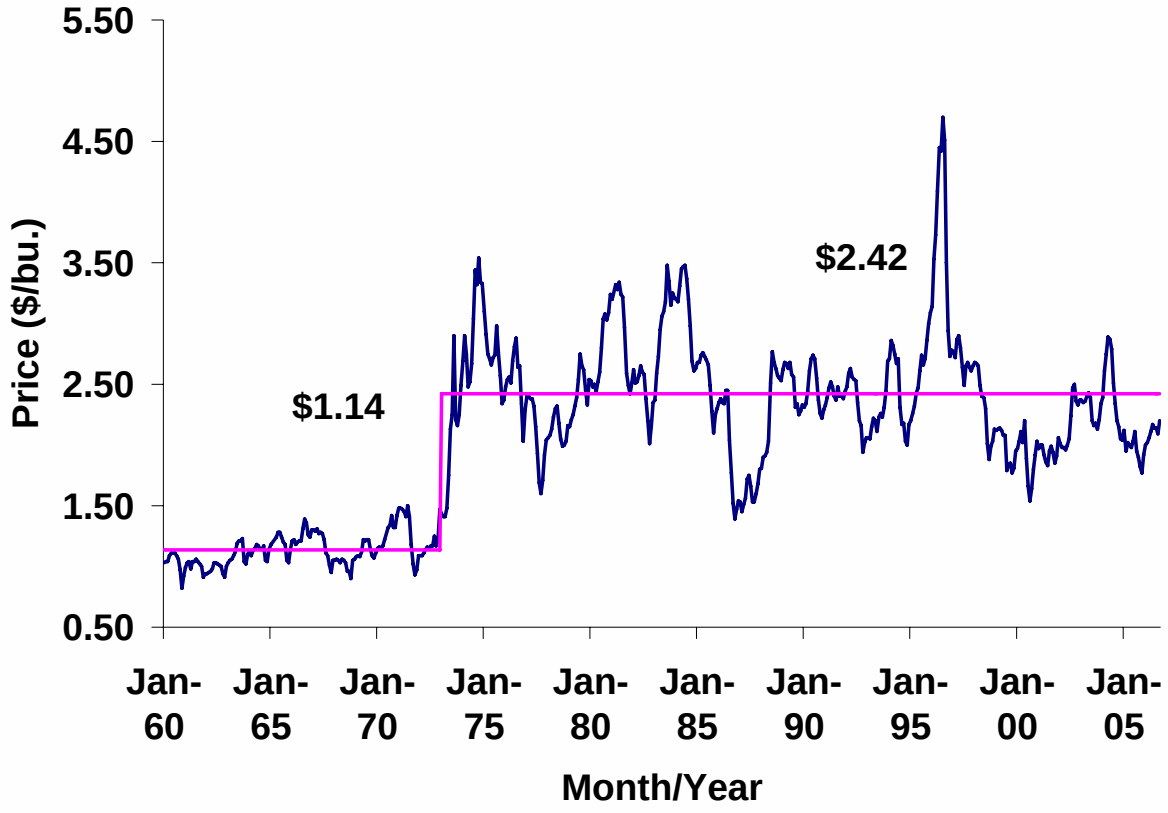
will yields continue to increase?

Stocks will a reserve be required?

Policy income supports, trade, conservation

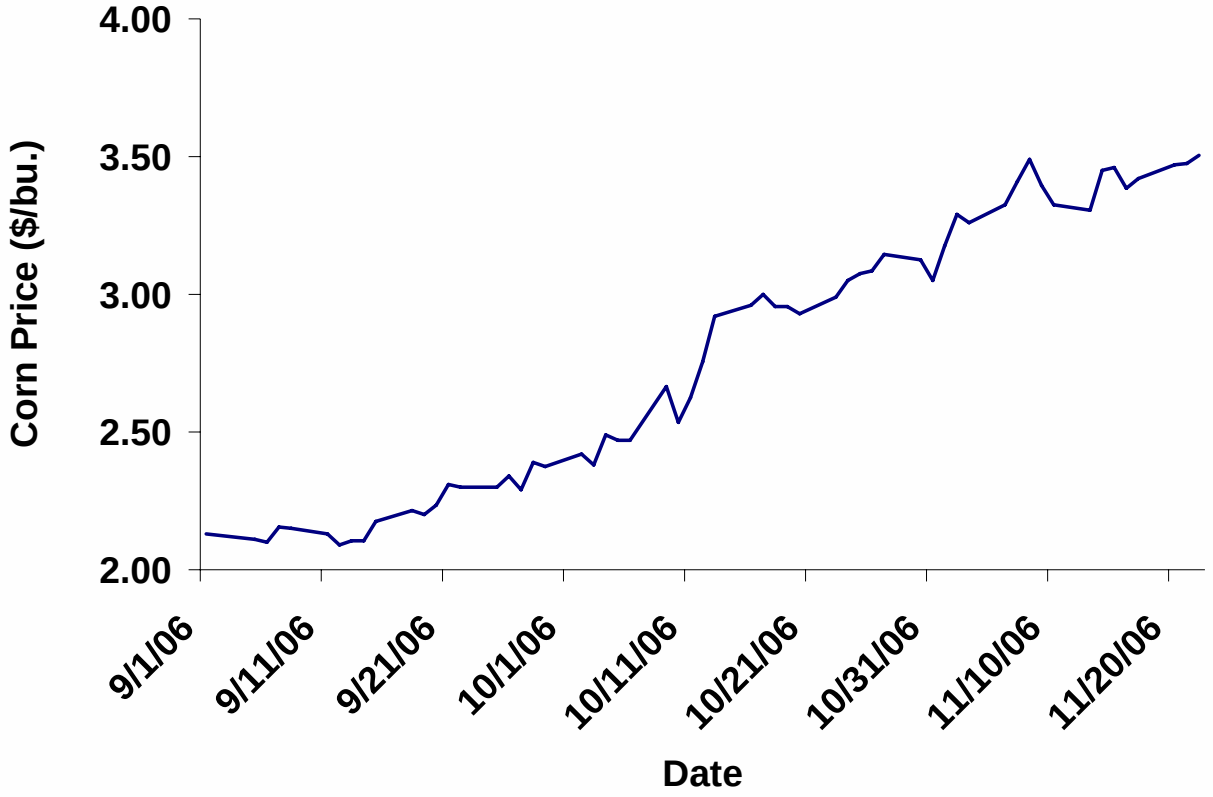
Fuel Supply a significant contribution?

Monthly Farm Price of Corn in Illinois, January 1960-September 2006



Source: USDA

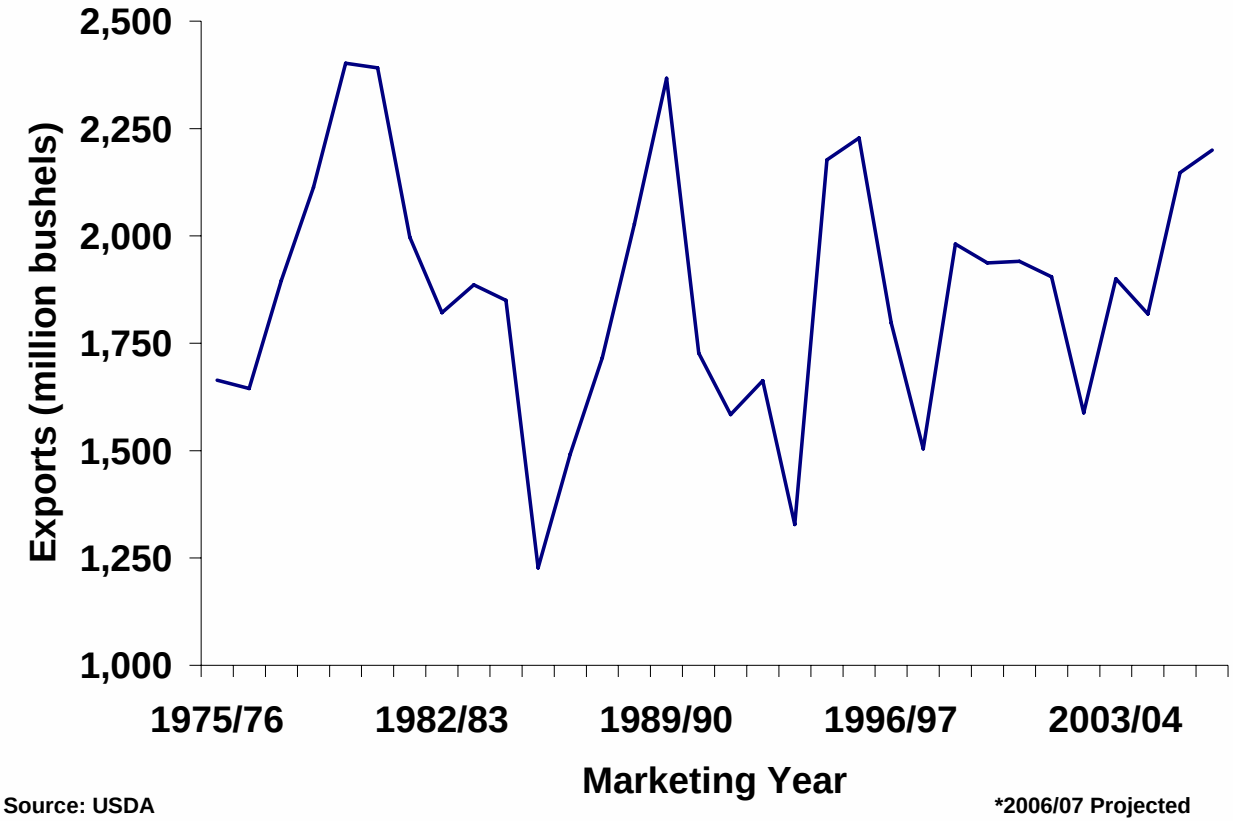
Central Illinois Corn Price, September 1-November 22, 2006



Function of Prices

- Make sure all acres are planted
- Bring CRP back into production?
- Shift acres to corn in the US
- Encourage foreign production
- Limit expansion of non-fuel uses of crops

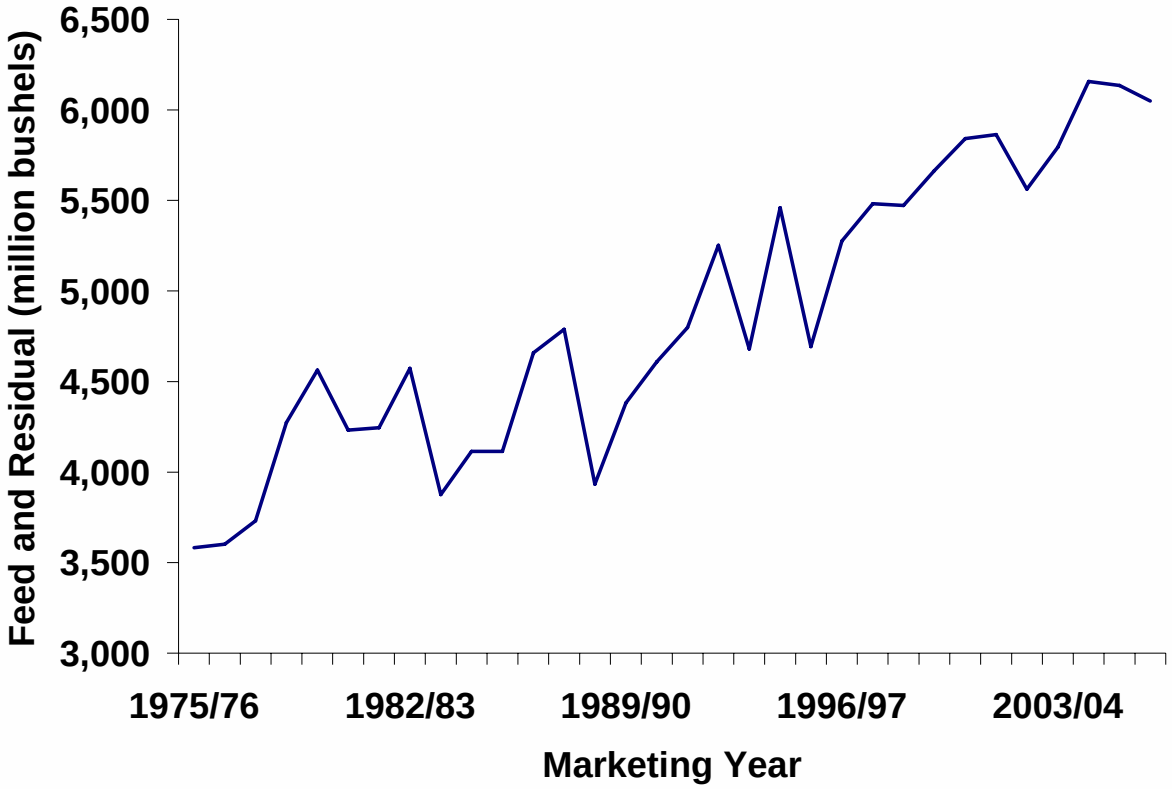
U.S. Corn Exports, 1975/76-2006/07



Source: USDA

*2006/07 Projected

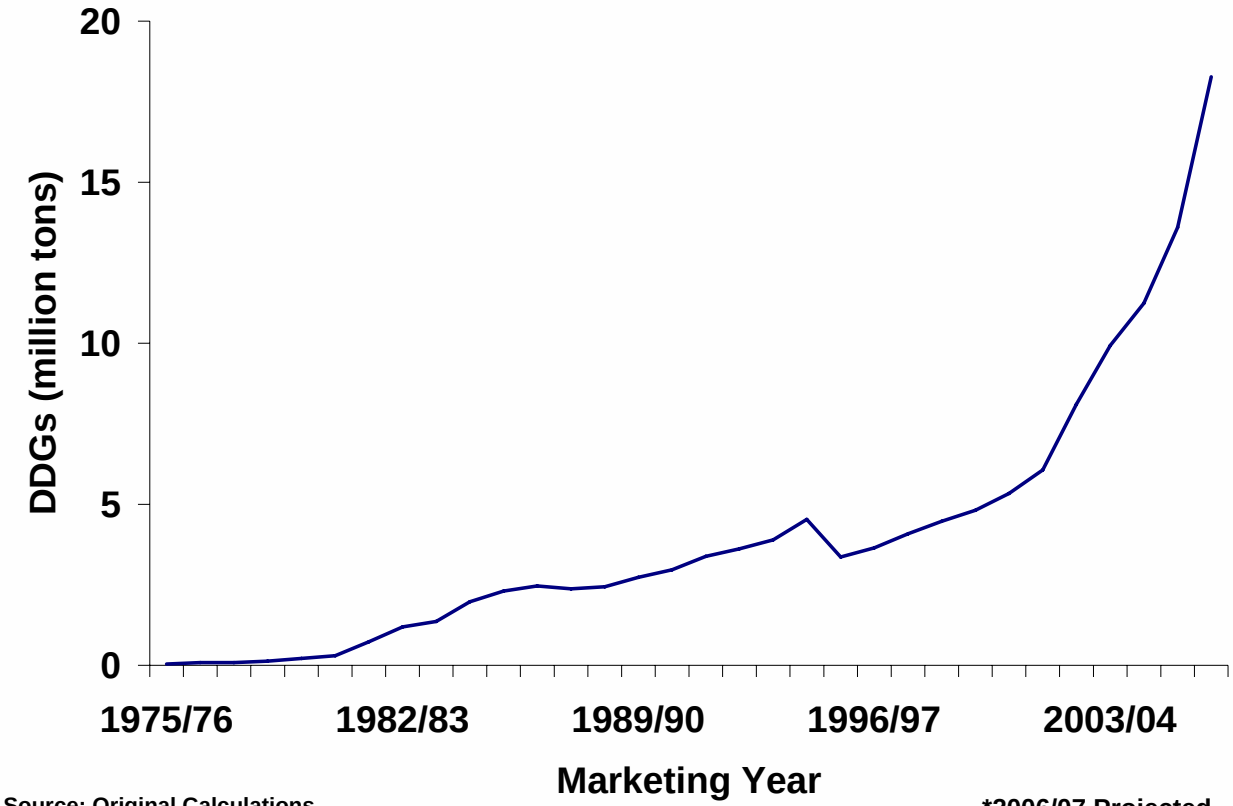
U.S. Corn Feed and Residual Use, 1975/76-2006/07



Source: USDA

*2006/07 Projected

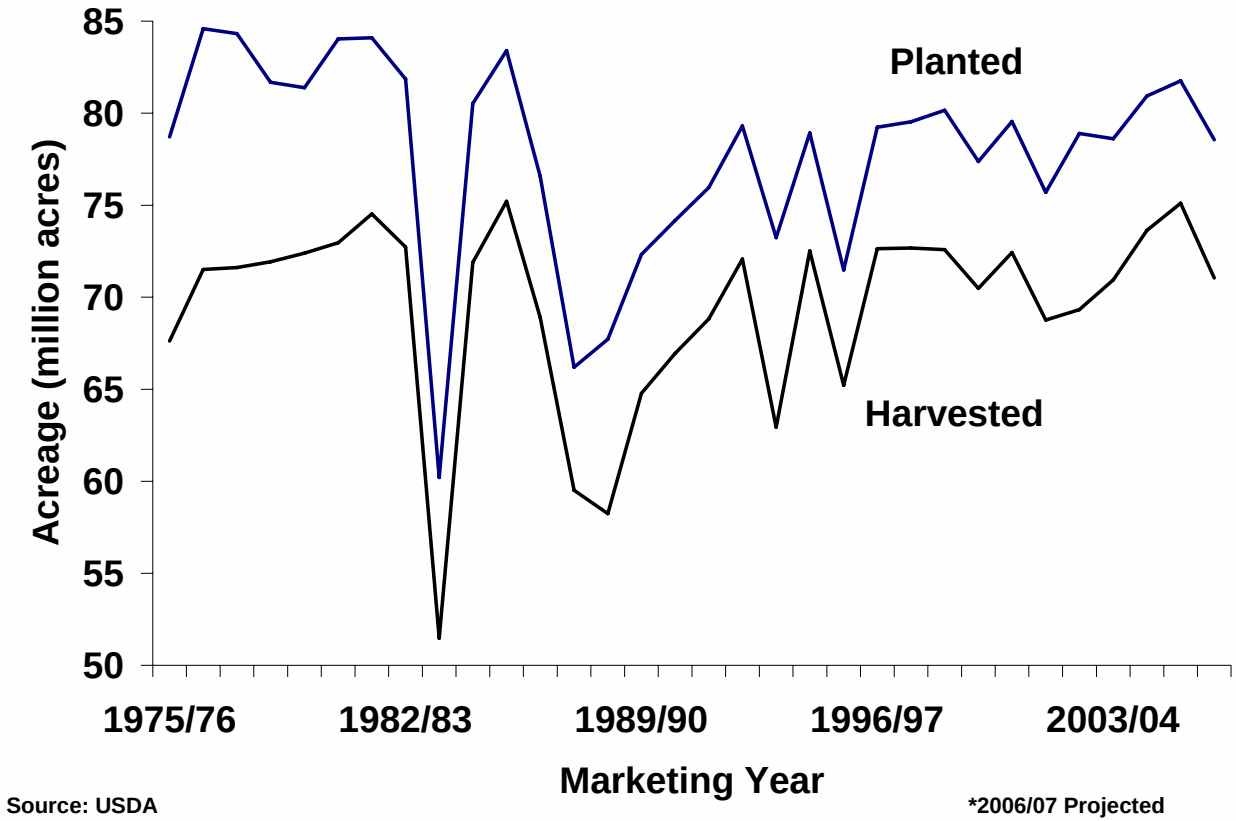
U.S. Dried Distillers Grain (DDG) Production, 1975/76-2006/07



Source: Original Calculations

*2006/07 Projected

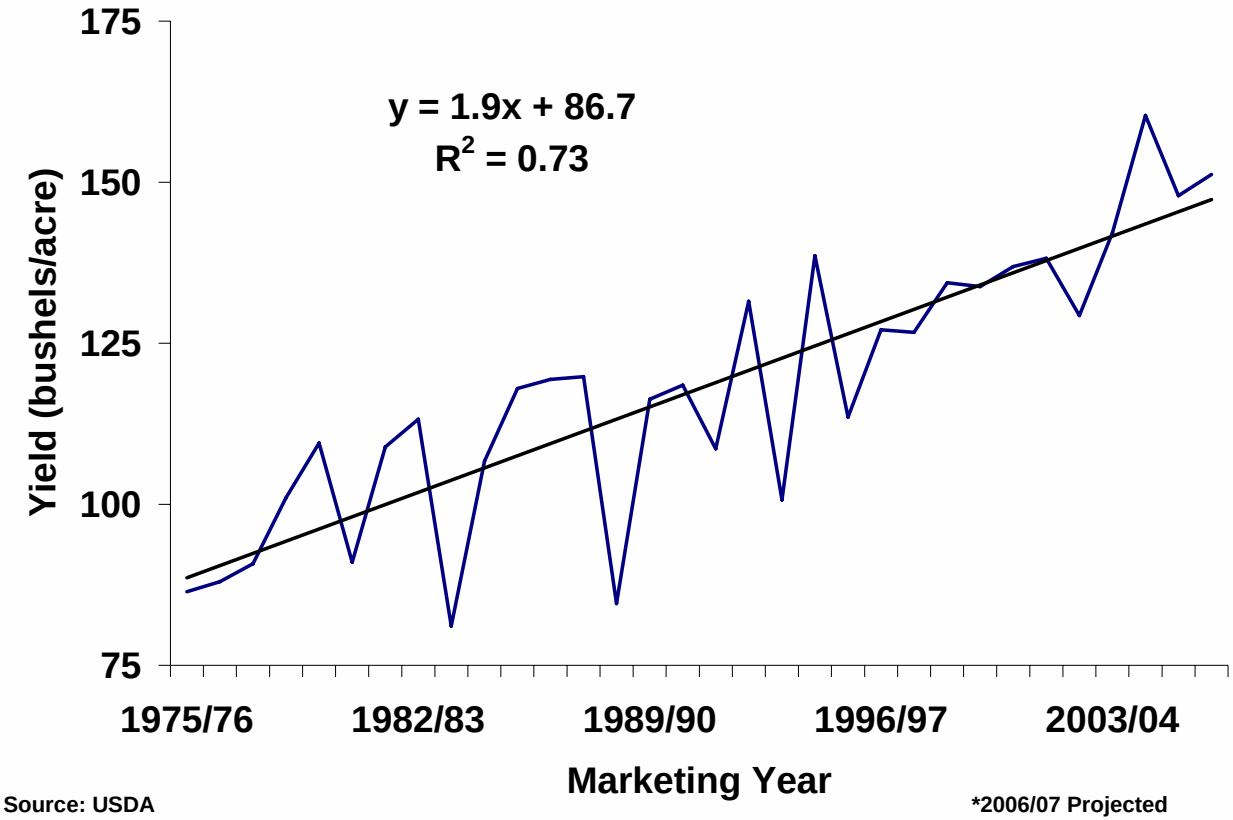
U.S. Corn Acreage, 1975/76-2006/07



Source: USDA

*2006/07 Projected

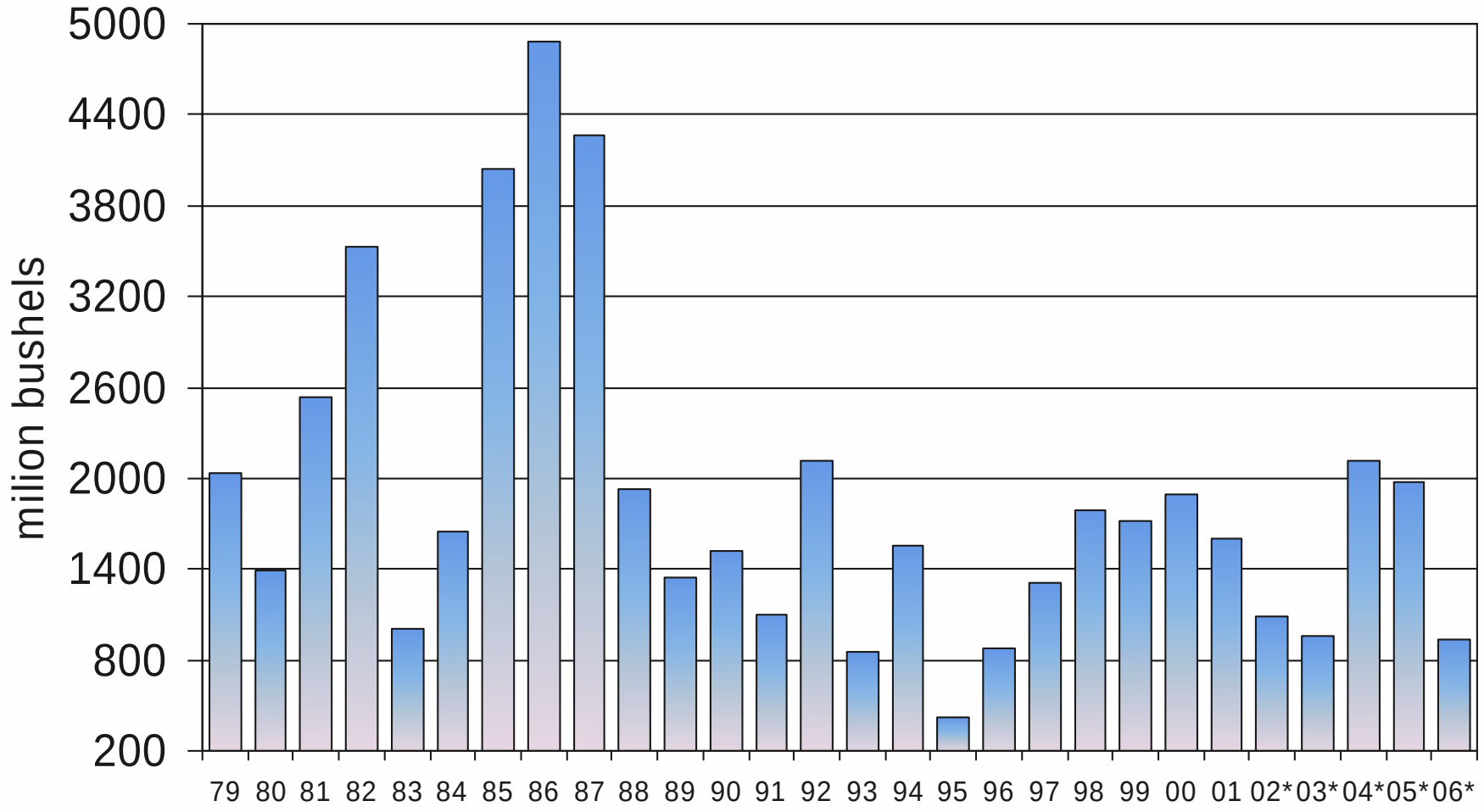
U.S. Corn Yields, 1975/76-2006/07



Source: USDA

*2006/07 Projected

Ending Stocks of Corn



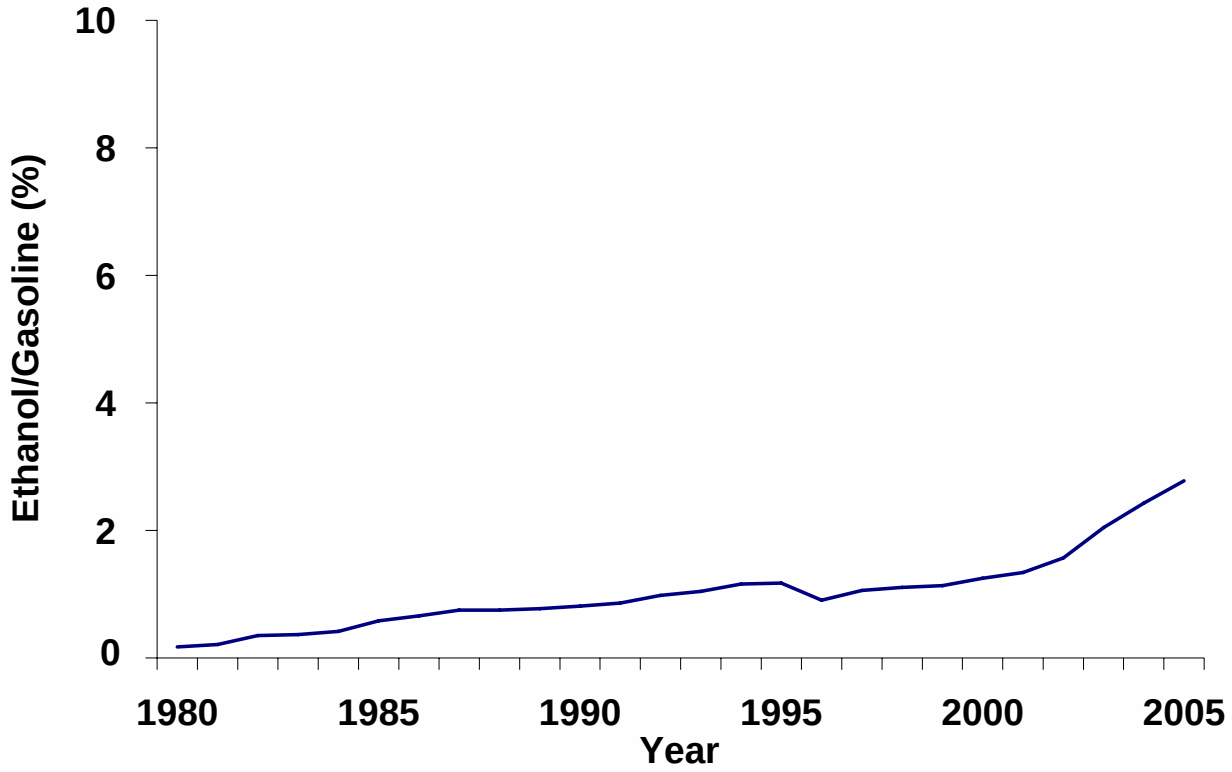
Policy Implications

- Income supports not needed?
- Alter CRP contracts?
- Allow more ethanol/sugar imports?
- Soil and water conservation?
- Mandated rationing plans?
- Re-think biofuel subsidies?

Contribution to Fuel Supply

- 6 billion gallons of ethanol requiring about 2.2 billion bushels of corn
- US consumes 140 billion gallons of unleaded/yr
- Ethanol = 2/3 BTUs of unleaded gasoline
- 6 billion gallons of ethanol = 4.02 billion gallons of unleaded, or approximately 3 percent of gasoline supply

U.S. Ethanol Production Relative to Unleaded Gasoline Use, 1980-2005



Source: Renewable Fuels Association; U.S. Department of Energy, Energy Information Administration

Is the Energy Balance Improving?

USDA- Dry Milling	1996	2001
- Net energy w/o co-product	+11%	+10%
- Net energy with co-products	+37%	+77%

* Difference is in the magnitude of energy credit for co-products

*50% energy balance, means ethanol's net contribution to fuel supply is smaller than gross contribution (3%)