Clouds on the Ethanol Horizon

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Bio-fuel Frenzy

- Tax credits, tariffs, blend mandate
  - Payback, < 3 years
  - $3 billion capital flow to ag. (WSJ)
  - Farmer investment, 47 to 12 percent
  - Loss of rural jobs (ISU)
- RFS sunsets in 2010
  - Food/feed prices, quality, environment, water
  - Ag. sector now tied to energy market
Fuel Ethanol Terminal Market Price - 18-Month History

What an Average Ethanol Plant Can Pay for Corn...

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<th>Ethanol Price</th>
<th>And cover variable costs</th>
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Source: Keith Collins, USDA
Bio-fuel Frenzy

- Use of contracts will impact farmers
  - Staying power of plants
  - Access to DDG’s
- Railcar shortage
- Nimble response to new technology
  - Field peas
  - Biomass
Questions?
Some Energy Statistics

- In 2005, the U.S.
  - consumed 139.9 billion gallons of gasoline
  - produced 3.9 billion gallons of ethanol
  - consumed 43.2 billion gallons of diesel
  - produced 75 million gallons of biodiesel
  - imported 65 percent of all petroleum
U.S. Ethanol Biorefinery Locations

Source: Renewable Fuels Association
**Ethanol Plant Ownership**

- **Current Plants**
  - 47 percent of plants are farmer owned
  - 39 percent of production from farmer owned

- **Plants under Construction**
  - 12 percent of plants are farmer owned
  - 11 percent of production farmer owned
  - (25 percent loss of ownership => 29 jobs)
Why Frenzy?

- Large Payoffs (< 3 years)
- Shortage of Ethanol to meet RFS
Corn used for Ethanol – U.S.

- 2005 – 11 percent of corn production used for ethanol
- 2007 – 25 percent of corn production used for ethanol
- by 2008 – N.D. plants will use 90 percent of 2006 production
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How is Agriculture Affected?

- Plan for $3.75 corn
- Shift from corn to DDGS
- Corn basis affect modest
- Volatility of oil will impact agriculture
- Tax credits are not certain
- Rail car shortage
  - Other commodity prices lower
- Biomass is the future
  - Fractionation, fewer DDGS
  - New Enzymes, 5 years
  - $40/ton
  - 100 m/gal = 60 trucks, 4 loads, 50 mile radius
  - Less impact on Environment (fert, chem)
  - Energy balance 4x-6x
New Biomass Plants

Spain, Commercial Plant
Denmark, Commercial Plant
California, Rice Straw Plant
Minnesota, Straw test run

Abengoa Energy, Chesterfield, MO - $76m - corn, wheat, milo
ALICO, LaBelle, FL - $33m - yard, wood, energycane
BlueFire Ethanol, Irvine, CA - $40m - green/wood waste
Broin, Sioux Falls, SD - $80m - corn fiber
Iogen, Shelley, ID - $80m - wheat, barley straw
Range Fuels, Soperton, CA - $76m - wood
Questions?