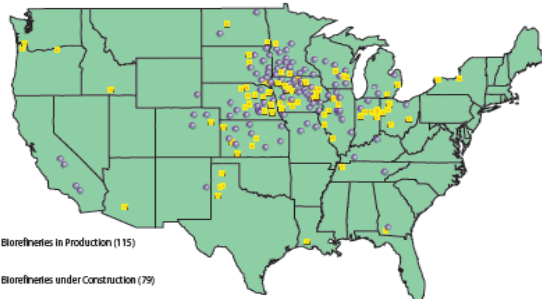


Bioenergy Financial Risk Management

Cole R. Gustafson, NDSU

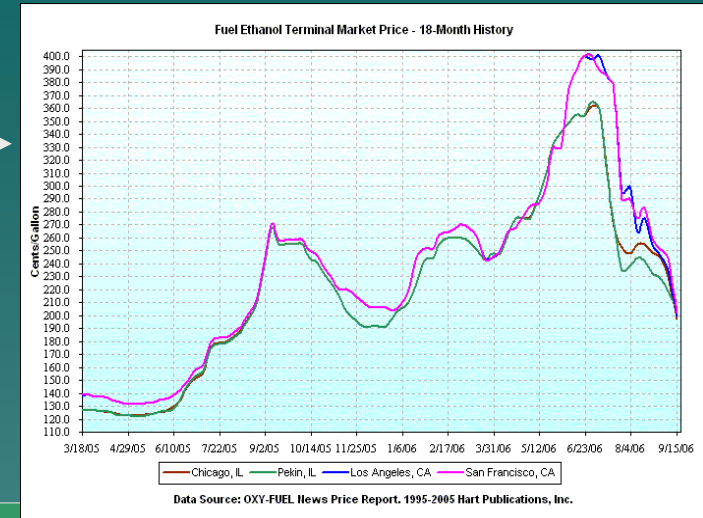
Biomass and
Bioproducts
Initiative

U.S. Ethanol Biorefinery Locations



Investment Climate Has Cooled

- Rising price and uncertain supply of corn
- Tax credits not certain
- New concerns about environmental impact, resource demands (water) and product quality
- Rapid increase in construction costs
- Investment portfolios of lenders becoming saturated
- Federal loan programs do not align with scale of new plants
- New biomass technology may make existing corn plant technologies less profitable



Rapid Historical Investment

Renewable Fuel Standard motivated industry expansion

- Tax credits, import tariffs, blend mandate and favorable gasoline:corn price ratio provided high returns on investment
- High investment returns enable plants to pay high prices for corn
- \$3 billion of investment capital flowed into agriculture sector
- External investment has rural development implications

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, energy cane
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

Ethanol Plant Ownership

Current plants

- 47 percent of plants are farmer-owned
- 39 percent of production from farmer-owned plants

Plants under construction

- 12 percent of plants are farmer-owned
- 11 percent of production farmer-owned
- (25 percent loss of ownership = > 29 fewer local jobs)

What an Average Ethanol Plant Can Pay for Corn

Ethanol Price	And cover variable costs	And cover variable costs plus int., dep. & taxes
\$1.85/gal. DDG* prices stable	\$4.50	\$3.55
\$1.85/gal. DDG* prices rise	\$5.50	\$4.15
\$2.35/gal. DDG* prices rise	\$7.50	\$6.10

*Dried distillers grain

Farm Risk Management Issues Being Researched

- Crop insurance expansion into new regions of corn production
- Insure crop quality characteristics (e.g., starch in corn) in addition to yield
- Insure new crops with limited production history (availability of AGR-Lite policy)

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