

# Report Out Day I: Corn Wet and Dry Mills

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**Steve Schnurrer**  
**George Sterzinger**  
**Gary Welch**  
**And Friends**

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A Scenario for Supplying 30% of 2004  
Motor Gasoline with Biofuels by 2030

**Biomass**

## Corn Wet and Dry Mills: Volume Target

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- 2012: 10 to 12 billion gallons
- 2020: 15+ billion gallons
- 2030: 15 to 25 billion gallons

Note: From corn kernels  
(volume is expected to plateau out)

## Corn Wet and Dry Mills: Limiting Factors

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### I. What Can You Build (Resources)

- » Material/labor to build facilities
- » Ethanol-capable contractors
- » Financing
- » Pace of plant construction
- » Accommodate for system impact – change in one step will impact other processes in the sys  
(short-term focus, may be till 2012)

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## Corn Wet and Dry Mills: Limiting Factors

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### 2. Farm Economy

- Corn price in 2008-2009 (ROI for farmers)
- Acreage usage (why corn and not soybean?; profitability of ethanol)
- Price of natural gas, especially for fertilizer and drying
- Losing acreage to development

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## Corn Wet and Dry Mills: Limiting Factors

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### 3. Production Economy (Net Corn Cost)

- » Use of DDGS to make high-value products
- » Price competitiveness with gasoline price, natural gas, coal to liquid
- » Competitiveness with cellulosic ethanol
- » Amt. of vertical integration (adjacent livestock farms with corn farms to reduce btu use)
- » Availability and recycling of water
- » Waste disposal

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## Corn Wet and Dry Mills: Limiting Factors

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### 4. Policy

- » RFS
- » Skilled workforce at mid- and upper-levels needed, specially further down in the future
- » Global warming (carbon credits etc.)
- » GMO acceptance
- » Subsidy on corn prices (new Farm Bill?)
- » Protection from competition with coal to liquid sector
- » Permits
- » Infrastructure (transportation to market, etc.)
- » Cost-share for initial plants
- » R&D tax credit
- » Natural gas standard for use in fertilizer (diff. from electricity)

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## Corn Wet and Dry Mills: Limiting Factors

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### 5. Other Feedstocks

- » Other starch

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## Corn Wet and Dry Mills: R&D Priorities

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- Organisms for more productive fermentation (animal-food-approved)\*
- More high-value products from C5/C6 sugars and economic recovery
- New fractionation technologies (oil extraction)
- Utilization of Carbon dioxide
- Energy-efficient distillation/separations
- Alternative pretreatment of entire kernel

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## **Corn Wet and Dry Mills: Bottomline**

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Government metric consistent with policy  
Industrial-relevant economic metric