Presentation Summary

1. Industry Overview
2. Ethanol
3. Biodiesel
4. Ag industry impacts and changes
5. The future
### Global Biofuels Market Potential

<table>
<thead>
<tr>
<th>Region</th>
<th>Biofuels</th>
<th>Current Production</th>
<th>Growth</th>
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</thead>
<tbody>
<tr>
<td>North America</td>
<td>30 B gals</td>
<td>&gt; 5.4 B gals</td>
<td>20 %</td>
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<tr>
<td>EU &amp; Eurasia</td>
<td>20 B gals</td>
<td>1.1 B gals</td>
<td>25 %</td>
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<tr>
<td>South &amp; Central America</td>
<td>7 B gals</td>
<td>4.0 B gals</td>
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<tr>
<td>Asia Pacific</td>
<td>30 B gals</td>
<td>1.7 B gals</td>
<td>25 %</td>
</tr>
</tbody>
</table>

**Biofuel Drivers:**
- Renewable supply / rural development
- Reduced greenhouse gases
- Energy security

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**WILMINGTON, Del., Apr. 10, 2006** - DuPont announced it has formed a new business unit, DuPont Biofuels, to accelerate commercialization of DuPont's biofuels technologies and pipeline candidates.

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### Back to the Future

“Gasoline is going – alcohol is coming. It is coming to stay, for it’s in unlimited supply. All the world is waiting for a substitute to gasoline. When that is gone, there will be no more gasoline. And long before that, it will be too expensive to burn as a motor fuel.”

- Henry Ford, 1916

*During the 1930s, more than 2,000 service stations in the Midwest sold ethanol made from corn*
Today, Oil Price Forecast – the driver

The single biggest factor for ethanol

Where from here?

Biofuels: The New Mega Market for Agriculture

U.S. Liquid Transportation Fuels
- 140 billion gallons of gasoline used in the U.S.
- Current ethanol production (06/07 crop) 6.1 billion gallons per year (4% of gasoline use)
- 50 billion gallons of diesel used
  - Current biodiesel capacity: 582 MM gallons per year
  - Capacity under construction: 1.4 B gallons per year

Issues:
- Protein surplus (DDG, Soy Meal)
- Starch and oil deficit
- Feed energy deficit
- Managing a short grain supply
Projected Ethanol Production Growth

- Wet and dry mill

Source: PRX

Ethanol Pricing Remains Strong

Weekly Ethanol Rack Prices

- 2003
- 2004
- 2005
- 2006
- 2007
### Ethanol Return on Investment – Cents per Gallon

<table>
<thead>
<tr>
<th>Ethanol Price</th>
<th>$1.25</th>
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<th>$1.75</th>
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<tbody>
<tr>
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<td>$0.44</td>
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<td>$0.95</td>
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<td>($0.04)</td>
<td>$0.21</td>
<td>$0.46</td>
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</tbody>
</table>

Crude oil pricing is the biggest driver of profitability

### The Ethanol Footprint is changing the face of cornbelt agriculture

Each plant represents 100,000 to 250,000 corn acres

Source: Renewable Fuels Association
December, 2006
Ethanol Plants

Northern

- Averill, Minnesota
- One Lake, Wisconsin
- Lake of the Woods, Minnesota
- Redwood City, California

- Green Lake Energy, Green Lake, Wisconsin
- Western Valles, Minnesota
- South Dakota
- North Dakota

- Glacial Lakes, Watertown, South Dakota
- Marquis Energy, Hennepin, Minnesota

- Inland Ingredients, Cresco, Iowa
- ADM, Decatur, Illinois
- Atwood Energy, Atwood, Illinois
- Peoria Energy, Peoria, Illinois
- ADM, Decatur, Illinois
- Pro-Corn, Preston, Minnesota
- Castle Rock Fuels, Necedah, Wisconsin

- Global Ethanol/Midwest Grain, Riga, North Dakota
- US BioEnergy Corp., Lake Odessa, Michigan
- Idora Energy, Bellefonte, Pennsylvania
- Center Ethanol Co., Sauget, Illinois

- Lincolnland, Palestine, Illinois
- DCS:Keller, Iowa
- ADM, Decatur, Illinois
- ADM, Decatur, Illinois

- Illinois Ethanol, North Carolina

- Under Construction (19)

Ethanol Plants

- Operational Dry (34)
- Operational Wet (1)
- Under Construction (19)

Ethanol Plants

Eastern

- Actavis, Lavae
- New Energy, Rochester
- Ethanol Renewable Fuels, Antioch
- Minnesota Energy, Hemmingford
- ADM, Peoria
- Aronetrics Renewable, Peoria
- ASI Alliance Biofuels, Under
- Aventine Renewable, Peoria
- ADM, Decatur
- Center Ethanol Co., Saugeen
- ASI Alliance Biofuels, Rocky Mounting

- Indiana Bio Energy, Buffton
- Central Illinois Ethanol, Minion
- Premo Energy, Rockford
- Central Illinois Ethanol, Havana

- Under Construction (14)

- Operational Dry (6)
- Operational Wet (1)
Questions so far?

Biodiesel growth is gaining momentum

- 86 Existing Plants
- 78 Plants in construction or expansion phase
- 2 Billion gallons of capacity expected by mid 2008
- Not all capacity will be in production, if food oil market prices are more attractive
Biodiesel economics are more challenging than ethanol

MAXIMUM SOYOIL PRICE FOR BIODIESEL BREAK EVEN
at GIVEN WORLD CRUDE OIL PRICE

<table>
<thead>
<tr>
<th>Soybean Oil Price</th>
<th>$30.00</th>
<th>$35.00</th>
<th>$40.00</th>
<th>$45.00</th>
<th>$50.00</th>
<th>$55.00</th>
<th>$60.00</th>
<th>$65.00</th>
<th>$70.00</th>
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<tbody>
<tr>
<td>Crude Oil Price, $/bbl</td>
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<tr>
<td>$30.00</td>
<td>$0.19</td>
<td>($0.10)</td>
<td>$0.02</td>
<td>$0.14</td>
<td>$0.25</td>
<td>$0.37</td>
<td>$0.49</td>
<td>$0.61</td>
<td>$0.73</td>
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<tr>
<td>$35.00</td>
<td>$0.20</td>
<td>($0.18)</td>
<td>$0.06</td>
<td>$0.18</td>
<td>$0.30</td>
<td>$0.42</td>
<td>$0.54</td>
<td>$0.66</td>
<td>$0.78</td>
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<tr>
<td>$40.00</td>
<td>$0.21</td>
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<td>$0.13</td>
<td>($0.01)</td>
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<td>$0.27</td>
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<tr>
<td>$50.00</td>
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<td>$0.05</td>
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<tr>
<td>$65.00</td>
<td>$0.26</td>
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<td>($0.38)</td>
<td>($0.26)</td>
<td>($0.14)</td>
<td>($0.02)</td>
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<tr>
<td>$70.00</td>
<td>$0.27</td>
<td>($0.69)</td>
<td>($0.57)</td>
<td>($0.45)</td>
<td>($0.33)</td>
<td>($0.21)</td>
<td>($0.09)</td>
<td>$0.03</td>
<td>$0.15</td>
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</tbody>
</table>

Profitability of Biodiesel at given crude oil and soyoil prices, %$/lb

Ethanol and Biodiesel Economics

<table>
<thead>
<tr>
<th>Corn price $/bu.</th>
<th>Cost/gallon of ethanol*</th>
<th>Veg. oil price $/lb.</th>
<th>Cost/gallon of biodiesel**</th>
</tr>
</thead>
<tbody>
<tr>
<td>$2.00/bu.</td>
<td>$0.72</td>
<td>$0.20/lb.</td>
<td>$1.54</td>
</tr>
<tr>
<td>$2.50/bu.</td>
<td>$0.90</td>
<td>$0.25/lb.</td>
<td>$1.93</td>
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<tr>
<td>$3.00/bu.</td>
<td>$1.08</td>
<td>$0.30/lb.</td>
<td>$2.31</td>
</tr>
</tbody>
</table>

*Biodiesel is more challenged in the US
- Access to vegetable oil feedstocks – direct competition with the food market
- Attractive opportunities with canola production
Biodiesel Questions?

Ag industry impacts and changes

Other Issues / Implications to Consider

- A 70% increase in needed truck and rail transportation capacity
- Dramatic increases in storage infrastructure as more grain “stays home” and as we shift to more higher volume commodity production (corn vs. beans)
- Changed cropping practices as rotations change. Corn after corn management, including choosing seed genetics with greater fungal resistance and strong emergence characteristics
- Access to large volumes of quality corn
- New economics change all the rules
**Corn Utilization United States: 2011/12**

<table>
<thead>
<tr>
<th>U.S. Corn Use 2011/12</th>
<th>Million Bushels</th>
</tr>
</thead>
<tbody>
<tr>
<td>TOTAL USE 12,755</td>
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</tr>
<tr>
<td>Domestic Use 11,037</td>
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</tr>
<tr>
<td>Feed and Residual 3,866</td>
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<tr>
<td>Seed 1,456</td>
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<tr>
<td>Pork 1,579</td>
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<tr>
<td>Poultry 2,319</td>
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<tr>
<td>Broilers 1,464</td>
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<tr>
<td>Layers 386</td>
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<tr>
<td>Turkeys 297</td>
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<tr>
<td>Dairy 500</td>
<td></td>
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<tr>
<td>Other 111</td>
<td></td>
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<tr>
<td>Food, Seed, and Industrial 5,177</td>
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<tr>
<td>Fuel Alcohol 3,771</td>
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<tr>
<td>HFCS 533</td>
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<tr>
<td>Food and Other 873</td>
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</tr>
<tr>
<td>Exports 1,718</td>
<td></td>
</tr>
</tbody>
</table>

Source: Pioneer Global Marketing - MREADS

**Iowa Corn Processing and Ethanol Plants, Current and Planned 10/26/06 – the Iowa Example**

63 Planned + current in Iowa
11 Just across the borders

Bob Wisner, ISU Extension

1,056 B Bushels Short
Iowa State University Study

Implications of Emerging Energy Market

- A lot more corn acres will be needed
- Corn prices: increasingly volatile & weather-sensitive
- Basis variability—much greater than in past
- More storage, handling capacity needed
- Risk-management critical for livestock producers, agribusinesses, grain producers, farm & agribusiness lenders
- Farm Program payments to decline
- Rent & land-value implications
- Transportation impacts

Michigan Corn Grain Use

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>Future</th>
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<tbody>
<tr>
<td>Production</td>
<td>289</td>
<td>?</td>
</tr>
<tr>
<td>Ethanol</td>
<td>small</td>
<td>156</td>
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<tr>
<td>Feed</td>
<td>74</td>
<td>60</td>
</tr>
<tr>
<td>Ontario</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Rest of US</td>
<td>150</td>
<td>?</td>
</tr>
<tr>
<td>Total</td>
<td>284</td>
<td>276</td>
</tr>
</tbody>
</table>
New biotechnology tools will accelerate the rate of yield gain

![Graph showing yield gain over time.](image)

- The rate of genetic gain is expected to accelerate, perhaps double in coming years.
- Actual: 151 Bu / A – 2006
- Trend: 442 bu/ acre – current commercial record

Grain Quality is Increasingly Important
Insect protection traits can help

**Herculex® I – The Better Bt**

*Because Herculex I has a broader spectrum of insect protection, it can be more effective in helping to prevent kernel damage and the possibility of mycotoxin presence.*

Without Trait
Western Bean Cutworm Damage

With Trait
Western Bean Cutworm Damage
Pioneer has a well developed pipeline of traits targeting the ethanol industry

Pioneer Corn Output Traits for Biofuels

- Increased functionality through optimization of genetic variation
- Increase total starch and its fermentation properties, higher oil
- Higher oil, improved oil, better digestibility, higher starch
- Targets both feed and processing utility
- Higher oil, improved oil, higher starch, better digestibility, fermentation transgenes and balanced amino acids

• Increase ethanol yield through elevated total starch
• Increase feed energy value through germ oil concentration increase
• Reduce unwanted / low value kernel components such as fiber
• Minimize DDG co-product amount but maximize protein quality
• Accommodate new processing technologies such as fractionation

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**Back to the Future**

**Projected Ethanol Production Growth**

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*Source: PRX*
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Weekly Ethanol Rack Prices

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Crude oil pricing is the biggest driver of profitability
Questions so far?

Biodiesel economics are more challenging than ethanol

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<th>Crude Oil Price, $/bbl</th>
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<td>$0.19</td>
<td>$30.00 $35.00 $40.00 $45.00 $50.00 $55.00 $60.00 $65.00 $70.00</td>
</tr>
<tr>
<td>($)</td>
<td>$0.10 ($0.02 $0.14 $0.25 $0.37 $0.49 $0.61 $0.73 $0.85</td>
</tr>
<tr>
<td>$0.20</td>
<td>$0.06 $0.18 $0.30 $0.42 $0.54 $0.66 $0.78</td>
</tr>
<tr>
<td>($)</td>
<td>$0.13 ($0.01 $0.11 $0.23 $0.35 $0.47 $0.58 $0.70</td>
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<tbody>
<tr>
<td>Without Trait</td>
</tr>
<tr>
<td>With Trait</td>
</tr>
</tbody>
</table>

---

**Pioneer Impact in Origination Areas**

**Ashton, IA 40-Radius**

- PHI Sales Reps

- **4,033 PHI Corn Acres**
- **52,843,079 HTF Bushels (150 bu/acre)**
- **61,650,259 HTF Bushels (175 bu/acre)**
- **70,457,439 HTF Bushels (200 bu/acre)**

**Top HTF Hybrids:**
- 35Y67
- 38H64
- 34A16
- 34N42
- 34A18
- 38H69
- 35Y61
- 35A30
- 35Y62
- 34N45
- 38H65
- 36W67
- 37A92
- 37F74
- 37F73

**Insert appropriate Maps for local areas**
Pioneer is a leader in developing technology to provide Grain Quality Feedback to Farmers

Dear John,

This report summarizes ethanol yield (EY) potential of the corn grain that you delivered to Delivery Location between 09/01/06 and 10/31/06. Ethanol yield is expressed as gallons of absolute ethanol/bushel at 15% moisture basis and is related to the Total Fermentable characteristics of corn hybrids. This report supplements information you received on your scale receipts when you delivered each shipment and summarizes the EY information of your corn deliveries during this period.

Total number of shipments delivered: 79

Weighted Average EY: 2.729 gal/bu 85% dry basis

EY Percentile ranking versus all vendors: 96

Figure 1 below illustrates the EY distribution characteristics of all grain delivered to Delivery Loc during this period. The grand average EY for all corn delivered to Delivery Location during the period was 2.676. The dotted vertical line on figure 1 indicates the average EY of your deliveries compared to all grain delivered to us during the period. Figure 2 is a load detail summary for your deliveries. The horizontal dotted line is the Delivery Location location EY average. Points above the top solid horizontal line are in the upper 25th percentile of EY, points below the bottom solid line are in the bottom 25th percentile for EY. Figure 2 provides insight into the variation in EY concentration that occurred in your deliveries relative to key benchmarks.

Pioneer Biodiesel Actions

Maximize oil output per soybean acre
- Pioneer has characterized all soybean varieties for oil and protein content to help growers make better choices with seed selection
- Pioneer continues to increase grain yield per acre

Enhance meal traits in soybeans
- Improved amino acid balance for better protein value
- Improved energy digestibility

Improve canola products
- Expanded geographic adaptability with more drought tolerant hybrids
- Leading Pioneer canola oil hybrids have higher oil content

Processor Relationships
- Working with processors to initiate pay for value systems to reward high oil content

Pioneer is implementing a system to provide growers with ethanol yield prediction data generated through the NIR

Information provided on scale tickets
Twice a year, growers receive a summary to show where their corn quality ranks vs. total supply
Provides the opportunity to improve grain quality and create more value in the supply chain
Win / win proposition for the processor and the grower
Industry Questions?

The future

Biofuels and the Acre

1 acre of corn (150 bu) = 435 gallons
1 acre of corn stover (50% removal) = 155 gallons of ethanol
1 acre of sugar beets (23 tons) = 552 gallons of ethanol
1 acre of Brazil sugar cane = 600 gallons of ethanol
1 acre of soybeans (43 bu) = 60 gallons of biodiesel
1 acre of canola (1557#) = 77 gallons of biodiesel

A bag of Pioneer Seed Corn ……
*Produces ≈ 1,200 gals of fuel ethanol or 12,000 gals of E10 gasoline*

A bag of Pioneer Soybean Seed ……
*Produces ≈ 50 gals of pure biodiesel or 1,000 gals of B5*

This year, Pioneer seed will produce nearly 2 billion gallons of ethanol
Corn has Significant Potential for Biofuels

Corn grain is king for a long time to come!

Ethanol Productivity Potential

Endosperm → 435 Gal/Acre
@ 150 bu/ac grain yield

Pericarp → 18 Gal/Acre (2010)

Stover → 100 Gal/Acre (2010)

Over 1,000 gallons / acre by 2020?

Corn grain is king for a long time to come!

DuPont Bio-Based Products – Combining Crop Science with Fermentation Science

Biomass Feedstocks → Fermentation Processes → Products

Biomass Feedstocks

Fermentation Processes

Products

• Bio-PDO™
• Peptides
• Glycolic Acid

• Gasoline
• Diesel

Biomass Feedstocks

Fermentation Processes

Products

Biomass Feedstocks

Fermentation Processes

Products

Biomass Feedstocks

Fermentation Processes

Products
**DuPont / Pioneer are working to expand the uses for corn through industrial biotechnology – fermentation microbe modification**

- DuPont and Tate and Lyle have partnered to create the first facility to produce Bio-PDO™, the key ingredient to make the Sorona® polymer.
- Sorona® will be used in carpets, fabrics, films, filaments and engineering components.
- Sorona® fabrics have unique properties, such as softness, stretch/recovery, stain resistance and color retention.
- 100 million pounds per year will be produced at the Louden facility.

**DuPont’s technology to modify fermentation microbes is enabling development of a new biofuel - Biobutanol**

**BioButanol: a 4 carbon alcohol molecule made from corn in existing ethanol facilities**

<table>
<thead>
<tr>
<th>Ethanol</th>
<th>Biobutanol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited blend flexibility</td>
<td>0-100% flexibility</td>
</tr>
<tr>
<td>Vehicle modification issues</td>
<td>No modification needed</td>
</tr>
<tr>
<td>High vapor pressure</td>
<td>Comparable to gasoline</td>
</tr>
<tr>
<td>Water absorption tendencies</td>
<td>No Water absorption issues</td>
</tr>
<tr>
<td>No pipeline transport</td>
<td>Pipeline transport possible</td>
</tr>
<tr>
<td>Reduced fuel mileage</td>
<td>Comparable to gasoline</td>
</tr>
<tr>
<td>- 77,000 BTUs/gallon</td>
<td>- 110,000 BTUs/gallon</td>
</tr>
</tbody>
</table>
Multiple Feedstocks are in our future

- Wood chips
- Switch grass
- Corn stover
- Cottonwoods
- Corn
- Sugarcane

Grasses / Stover Per Acre:
- 75 G of ethanol per ton of dry matter
- Stover: 48 #DM/bu, @50% = 135 G
- Native Grasses: 5 Tons/A = 375
- Miscanthus: 10 – 15 tons = 750 – 1125 G
- Corn Grain: 2.9 G/Bu, at 150B = 435 G

Economically converting cellulosic materials to ethanol will be essential to reach growth targets

Moving beyond corn grain

12 Billion Bu of corn would produce ~34 Billion gallons of ethanol
DuPont is a Leader in Developing Cellulosic Processing Technology

DuPont is working with the Department of Energy and a number of industry partners to develop efficient cellulose conversion technology.

Thanks
I’d take this one out and talk through the points on the next slide. I inserted the “Aggressive R&D” slide from the investor presentations, which I think does a nice job of talking about the research focus and approach.

Your call, though!
Pioneer Hi-Bred, 9/7/2006