



9 Common Questions About Biofuels

(For detailed information, please see www.nebiofuels.org)

Food vs. Fuel

- For every dollar spent on food, 81 cents goes to non-food related expenses—processing, packaging, transport, etc; all of which depend much more heavily on petroleum prices than grain prices.
- The increased price of food is directly related to the increased price of energy, particularly oil. A 33% increase in oil prices (about \$1.00 per gallon—the current situation), increases the consumer price index of food by up to .9%. Increased corn prices have a fraction of that impact.
- US corn exports to the top ten countries with the highest percentage of undernourished people equaled .01%, while Japan alone received 33% of US corn exports in 2005. The breakdown of US corn usage is: 50% animal feed; 19% exports; 18% ethanol; 12% food.
- Even with ethanol, US corn supply this year is expected to exceed demand by about 987 million bushels. USDA's 10-Year Baseline Outlook projects corn production will outpace ethanol demand and allow corn prices to ease.

Energy Balance

- Strong consensus among scientists: energy output from burning ethanol as a fuel source exceeds the energy input required for ethanol production. UC-Berkeley recently reached same conclusion.
- Energy balance for oil is negative (DOE). And the petroleum energy balance number is getting worse, as reserves become less plentiful.
- Today's ethanol plants produce 15% more ethanol from a bushel of corn—and use 20 percent less energy in the process—than those of 5 years ago.

Subsidies

- In 2006, the federal government spent \$2.5 billion on ethanol tax credits, and received over \$9 billion in returns and savings (b/c of ethanol's positive effect on corn prices, federal farm payments are projected to fall by about \$6 billion - or nearly 75% - between 2006-07)
- Oil companies pay an effective corporate income tax of 11%, compared to non-oil industry average of 18%, and receive about 86% of the federal tax breaks offered to the energy industry.
- In 2006, ethanol industry operations and construction added a total of \$5 billion to state and federal tax revenues. Ethanol production also contributed \$41.1 billion to US GDP.

Air Quality

- With dozens of major cities (including Boston, NYC, LA) making the switch from MTBE to ethanol since 2005, there have been no air quality issues.
- Critics of ethanol based on air quality grounds have not been able to show actual ozone (smog) impacts from ethanol blending, but do not generally take issue with the fact that ethanol reduces emissions of toxics (Hazardous Air Pollutants), carbon monoxide, and most likely particulate matter as well.

Greenhouse Gas (GHG) Emissions

- On average, today's corn ethanol reduces GHG emissions by 21.8% over gasoline (pure gallon to gallon comparison).
- Tomorrow's cellulosic ethanol can reduce GHG emissions by 90.9% over gasoline.
- Biodiesel reduces GHG emissions by 67.7%.
- There are corn ethanol plants *today* reducing GHGs by closer to 40%.
- Coal-fired, corn ethanol plants do not improve GHG emissions over gasoline, which underscores the importance of regulating carbon.
- Operative model for measuring this is U.S. DOE's GREET model.

Sustainability

- Given that there is no mechanism yet to regulate sustainability, UC-Berkeley recommends the following sustainability metric for the initial stages of the Low Carbon Fuel Standard:
 - Biofuels produced from feedstocks cultivated on "protected lands" should not be allowed to gain credit under any standard; and, there should be a reporting requirement for biofuels use, with an upstream component.
 - UC-Berkeley recommends *against* additional controls at this point.
- Sustainability effort must not act as a barrier-to-entry for alternative fuels, or the outcome will be greater petroleum use; competitive neutrality is a critical element.

Water Use

- One gallon of ethanol production requires 3 gallons of water at the biorefinery.
- Conoco Phillips recently reported that water usage for refining requires eight gallons of water for every gallon of unleaded gasoline.
- In the last ten years, the ethanol industry has reduced water usage by nearly 50 percent, through direct improvements in production efficiencies and water recycling technologies.
- Must look at water use the same way as GHG emissions: today's biofuels industry is a step in the right direction, but could be better as advanced biofuels emerge.

Fertilizer

- While corn ethanol production has increased 30 times (1980-2006), the number of corn farming acres held steady—mainly because corn yield per acre has steadily increased.
- Emergence of advanced biofuels will reduce pressure on traditional crops.

Jobs & Economic Impact

- National Picture: 234,000 jobs, increase household income by \$40 billion, domestic spending by \$70 billion, and reduced capital outflow to oil producing countries by \$64 billion.
- Petroleum import's share of trade deficit jumped from \$160 billion in 2004 to \$233 billion in 2005; almost one-third of the entire deficit.
- A single biorefinery can provide up to \$140 million one time boost for plant construction, 40 full-time jobs, 800 indirect jobs in all sectors, \$46 million in annual expenditures, \$30 million is local household income, \$115 million annual increase on Gross State Output; less if feedstocks grown elsewhere.