

# **BIODIESEL SUSTAINABILITY FACT SHEET**

## **Sustainability Principles**

- The National Biodiesel Board has made sustainability in climate change mitigation, human rights, food security, and respect for all natural resources a top priority. That's why the industry has adopted and follows guiding principles that demonstrate our commitment to a full spectrum of sustainability tenets.
- Biodiesel producers are already providing a very sustainable fuel, and these principles are another way we're ensuring that as our industry grows it continues to improve quality of life, safeguard the environment, and strengthen economies.
- Biodiesel improves air quality; it's renewable and it's creating green-collar jobs in our communities. The NBB is committed to keeping biodiesel on the cutting-edge of sustainability.

## **Energy Balance**

- Biodiesel has a very high "energy balance." Newly published research from the University of Idaho and U.S. Department of Agriculture show that for every unit of fossil energy needed to produce biodiesel, the return is 4.5 units of energy. Biodiesel made from soybean oil has a high energy balance because the main energy source used to grow soybeans is solar.
- The "energy balance" takes into account the planting, harvesting, fuel production and fuel transportation to the end user. As a result of modern farming techniques and energy efficiencies, biodiesel's energy balance continues to improve.
- In contrast, regular fossil fuel biodiesel has a negative energy balance.

## **Water Conservation**

- Crops are not irrigated or planted solely to produce biodiesel. Conversion of these co-products and byproducts uses very little water -- the entire U.S. biodiesel industry used less processing water in 2008 than it took to irrigate two golf courses in the Sunbelt.
- A 1998 jointly produced U.S. Departments of Agriculture and Energy "cradle to grave" analysis of biodiesel's production found it reduces wastewater by 79% and reduces hazardous waste production by 96% compared to petroleum diesel.

## **Land Conservation**

- The USDA reports that U.S. acreage for crop production has not increased since 1959.
- Major land use changes in the United States that would endanger environmentally sensitive lands are not expected due to biofuels. In fact, there are very solid federal and state laws in place to help ensure these lands remain undisturbed.
- Crop production in the U.S. is trending significantly toward utilizing more conservation practices, and advances in agriculture are leading to higher yields and lower inputs with the same acreage.
- The United Nations Food and Agriculture Organization (FAO) has calculated that of the land that could be used for agriculture today, only 3.7 billion acres of the 10.4 billion acres are used, and of that, only 1% of that area is used for biofuels, which includes ethanol.

## **EPA's Proposed RFS Rule and Indirect Land Use Change**

- We recognize that statute requires the EPA to consider significant indirect emissions when calculating a renewable fuel's emission profile. This does not require the EPA to rely on faulty data and to fabricate unrealistic scenarios that punish the U.S. biodiesel industry for wholly unrelated land use decisions in South America.
- It defies logic and reality that the EPA is holding U.S. biodiesel responsible for hypothetical planting decisions made decades in the future in other parts of the world. Data show that land area used for soybean production in Brazil actually *decreased* between 2004 and 2009, while U.S. biodiesel production climbed to 700 million gallons a year.
- Soybean crops are not grown for the intent of biodiesel production. All over the world, soybeans are grown primarily for their protein meal, used in food and livestock feed. In processing the soybean meal, soybean oil is a co-product, and it is that oil that is used to make biodiesel.
- There is no credible science that gives credence to indirect land use change when it comes to biodiesel. The basis for EPA's methodology on indirect land use change is a "study" by lawyer Tim Searchinger. According to a review conducted by the Department of Energy, "The Searchinger study is "plagued by incorrect or unrealistic assumptions, and obsolete data."
- The fact is that applying EPA's modeling to biodiesel production, but not petroleum production, is dangerously discriminatory. How can one fairly compare

“indirect carbon emissions” from biodiesel production but not assign any indirect carbon emissions to oil production? If implemented, this rule would simply ensure America’s dependence on foreign oil for decades to come.

### **Food Supply Security**

- Biodiesel is not made by grinding up soybeans into fuel. Soybeans have two components – oil and protein meal. The meal represents the majority of the soybean, and is used in food and livestock feed. Biodiesel uses only the oil portion of the soybean.
- By creating a new market for the soybean oil that is coproduced, the overall value of the bean increases, and the meal portion becomes more cost competitive for protein markets. This has a net positive impact on the food supply.
- Biodiesel does not impact food prices like the big food companies would have you believe. For example, in the last quarter of 2008 biodiesel production was near an industry high at more than 60 million gallons per month, yet in that same time frame soybean commodities were selling at near record lows. And if that’s not enough, even as commodity prices fell, food prices barely budged.
- Biodiesel produced from America’s soybeans only uses approximately 3 percent of the nation’s soybean harvest annually.
- Biodiesel uses only the oil portion of the soybean, leaving all of the protein available to nourish livestock and humans.
- In 2008, biodiesel produced from soybeans co-produced enough soybean meal for the equivalent of 115 billion rations of protein for the hungry in developing countries.

### **Diversity**

- Biodiesel is the most diverse fuel on the planet. It is made from regionally available, renewable resources that are abundant in the U.S., including soybean oil, other plant oils, recycled restaurant grease and beef tallow and other fats.
- The increased demand for biodiesel is stimulating research and investment in developing new materials to make biodiesel, such as algae, camelina, jatropha, other arid land crops, and waste materials like trap grease. The result is that we will see additional feedstock volumes coming from fallow or low production lands and utilizing innovative technologies.

- According to a study by the National Renewable Energy Laboratory in Golden, Colorado, domestic feedstocks for biodiesel totaled 1.6 billion gallons (including greases, animal fats, and vegetable oils). NREL anticipates the natural growth and expansion of existing feedstocks (soy, canola, and sunflowers) will expand feedstock supplies for an additional 1.8 billion gallons by 2016.

### **Cleaner Air & Health Effects**

- DOE and USDA say biodiesel reduces life cycle carbon dioxide, a greenhouse gas, by 78 percent.<sup>1</sup> Biodiesel also significantly reduces EPA-regulated emissions with direct impact to human health.
- Biodiesel is the only alternative fuel to voluntarily complete EPA Tier I and Tier II testing to quantify emission characteristics and health effects.
- Breathing particulate has been shown to be a human health hazard. The exhaust emissions of particulate matter from biodiesel are about 47 percent lower than overall particulate matter emissions from diesel.<sup>1</sup>
- Biodiesel emissions show dramatically decreased levels of polycyclic aromatic hydrocarbons (75 to 85 percent) and nitrated polycyclic aromatic hydrocarbons (90 percent to trace levels), which have been identified as potential cancer causing compounds.
- As a result of the health benefits of biodiesel, some chapters of the American Lung Association have pledged their support for use of the alternative fuel.

<sup>1</sup> *In May of 1998, the US Department of Energy (DOE) and US Department of Agriculture (USDA) published the results of the Biodiesel Lifecycle Inventory Study. This 3.5-year study followed US Environmental Protection Agency (EPA) and private industry approved protocols for conducting this type of research.*