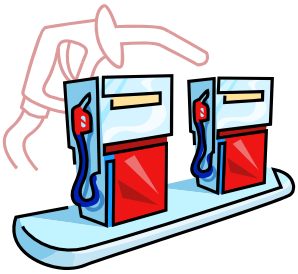

NEWS ARTICLE ANALYSIS

Read:

Researchers Identify Energy Gains and Environmental Impacts Of Corn Ethanol and Soybean Biodiesel

ScienceDaily (July 12, 2006)

http://www.sciencedaily.com/releases/2006/07/060710180310.htm

QUESTIONS

1. Who was involved in this study? Do you think it was a reliable and unbiased study?
2. What did the researchers study?
3. What did the study show about the amount of energy produced as apposed to the energy needed to grow each crop?
4. What do they mean by the phrase ‘life cycle of a fuel’?
5. Why is it important to look at the lifecycle of a fuel and not simply how much energy it can produce when used?
6. Compare the environmental benefits of the two types of Bio-Diesel? Which do you think offers more benefits?
7. Visit the *ScienceDaily* Website at http://www.sciencedaily.com/about.htm and determine whether or not it is a reliable source of information. Explain your reasons.

EXTENSION

Use the internet to find a second news article about Bio-Fuel. Compare and contrast the information and views expressed in the article with the one you just read. (Do they share the same views? Did their study show the same thing or was it different? Do they seem biased or unbiased? etc). 300 word summary.

Researchers Identify Energy Gains And Environmental Impacts Of Corn Ethanol And Soybean Biodiesel

ScienceDaily (July 12, 2006) —

The first comprehensive analysis of the full life cycles of soybean biodiesel and corn grain ethanol shows that biodiesel has much less of an impact on the environment and a much higher net energy benefit than corn ethanol, but that neither can do much to meet U.S. energy demand.

The study, which was funded in part by the University of Minnesota's Initiative for Renewable Energy and the Environment, was conducted by researchers in the university's College of Biological Sciences and College of Food, Agricultural and Natural Resource Sciences. The study will be published in the July 11 Proceedings of the National Academy of Sciences.

The researchers tracked all the energy used for growing corn and soybeans and converting the crops into biofuels. They also looked at how much fertilizer and pesticide corn and soybeans required and how much greenhouse gases and nitrogen, phosphorus, and pesticide pollutants each released into the environment.

"Quantifying the benefits and costs of biofuels throughout their life cycles allows us not only to make sound choices today but also to identify better biofuels for the future," said Jason Hill, a postdoctoral researcher in the department of ecology, evolution, and behavior and the department of applied economics and lead author of the study.

The study showed that both corn grain ethanol and soybean biodiesel produce more energy than is needed to grow the crops and convert them into biofuels. This finding refutes other studies claiming that these biofuels require more energy to produce than they provide. The amount of energy each returns differs greatly, however. Soybean biodiesel returns 93 percent more energy than is used to produce it, while corn grain ethanol currently provides only 25 percent more energy.

Still, the researchers caution that neither biofuel can come close to meeting the growing demand for alternatives to petroleum. Dedicating all current U.S. corn and soybean production to biofuels would meet only 12 percent of gasoline demand and 6 percent of diesel demand. Meanwhile, global population growth and increasingly affluent societies will increase demand for corn and soybeans for food.

The authors showed that the environmental impacts of the two biofuels also differ. Soybean biodiesel produces 41 percent less greenhouse gas emissions than diesel fuel whereas corn grain ethanol produces 12 percent less greenhouse gas emissions than gasoline. Soybeans have another environmental advantage over corn because they require much less nitrogen fertilizer and pesticides, which get into groundwater, streams, rivers and oceans. These agricultural chemicals pollute drinking water, and nitrogen decreases biodiversity in global ecosystems. Nitrogen fertilizer, mainly from corn, causes the 'dead zone' in the Gulf of Mexico.

"We did this study to learn from ethanol and biodiesel," says David Tilman, Regents Professor of Ecology and a co-author of the study. "Producing biofuel for transportation is a fledgling industry. Corn ethanol and soybean biodiesel are successful first generation biofuels. The next step is a biofuel crop that requires low chemical and energy inputs and can give us much greater energy and environmental returns. Prairie grasses have great potential."

Biofuels such as switchgrass, mixed prairie grasses and woody plants produced on marginally productive agricultural land or biofuels produced from agricultural or forestry waste have the potential to provide much larger biofuel supplies with greater environmental benefits than corn ethanol and soybean biodiesel.

According to Douglas Tiffany, research fellow, department of applied economics and another co-author of the study, ethanol and biodiesel plants are early biorefineries that in the future will be capable of using different kinds of biomass and conversion technologies to produce a variety of biofuels and other products, depending upon market demands.

Hill adds that both ethanol and biodiesel have a long-term value as additives because they oxygenate fossil fuels, which allows them to burn cleaner. Biodiesel also protects engine parts when blended with diesel.

"There is plenty of demand for ethanol as an additive," Hill says. "The ethanol industry was built on using ethanol as an additive rather than a fuel. Using it as a biofuel such as E85 is a recent and currently unsustainable development. As is, there is barely enough corn grown to meet demand for ethanol as a 10 percent additive."