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# NEWS

## FOR IMMEDIATE RELEASE

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### **National Biodiesel Board, DOE, USDA Officials Dispute Biofuels Study**

*Pimentel/Patzak study deeply flawed, researchers say*

**JEFFERSON CITY, Mo.** – The National Biodiesel Board (NBB) today condemned a recent study that claims biodiesel takes more energy to produce than it yields, citing instead more thoroughly conducted, peer-reviewed studies that show biodiesel actually yields more than three times the amount of energy it takes to produce. The study that says biodiesel has a negative energy balance was conducted by David Pimentel, an insect specialist at Cornell, and Tad Patzek, a former oil company employee who is now director of the University of California Oil Consortium.

The U.S. Department of Energy (DOE) and the U.S. Department of Agriculture (USDA) in 1998 performed the prevailing life cycle study of the energy balance of biodiesel. This is the most comprehensive, credible and thoroughly peer-reviewed study available on biodiesel produced from soybeans. It found that for every one unit of fossil energy used in this entire biodiesel production cycle, 3.2 unit of energy are gained when the fuel is burned, or a positive energy balance of 320 percent.

“As a researcher with more than 10 years of experience in this area, I find the Pimentel/Patzak paper unconvincing,” said Jim Duffield, USDA senior agricultural economist and one of the original authors of the DOE/USDA study. “It lacks depth and clarity compared to previous studies published on this topic that clearly show biodiesel has a positive energy balance.”

Duffield said the report offers no explanation for many unorthodox assumptions. “Including calories as energy inputs is highly unusual. Even though the calories consumed by farmers can be converted to energy equivalents, most researchers do not treat the calories as fossil energy,” he said.

Leading academics also discredited the work of Pimentel and Patzek. “There is an internationally accepted standard method of doing such life cycle studies. Drs. Pimentel and Patzek don’t come close to meeting the standards,” said Bruce Dale, professor of chemical engineering at Michigan State University. “Their studies don’t meet the International Standards Organization test of transparency—they don’t clearly state where their data comes from nor do they clearly state their assumptions. They cite themselves rather than independent sources for important data all the time. And they don’t submit their work for verification in recognized, peer-reviewed life cycle journals.”

According to researchers, other flaws with the Pimentel/Patzek study's assumptions include:

- While soybeans are approximately 80% protein meal and 20% oil, the Pimentel study allocates 79% of the energy inputs for growing soybeans to the oil.
- It does not give biodiesel credit for the valuable production of glycerin, a co-product to biodiesel.
- The study uses energy data for growing soybeans from 15 years ago when 2002 data is readily available. For example, the researchers' assumption regarding the use of lime is greatly overestimated for current farming practices.
- It includes the energy used to manufacture construction materials for biodiesel plants and farm equipment. While most researchers recognize that there is energy embodied in these materials, the amount is generally not included in such studies.

Pimentel has used similar faulty data for ethanol for years, also assigning it a negative energy balance when the majority of current research shows it is now positive.

“Pimentel also erroneously reports that our USDA/DOE study concluded that the net energy balance of biodiesel was negative,” Duffield said. “The authors misrepresented our study, which actually concluded that biodiesel made from soybean oil resulted in an energy savings of over 3 to 1. It is the prevailing study cited for biodiesel's positive energy balance, so it is difficult to understand how it could be misrepresented.”

Duffield pointed out that the USDA/DOE analysis of biodiesel's life cycle is 286 pages, versus a page and a half of analysis done by Pimentel. The DOE/USDA biodiesel study started with bare soil and took into account all the energy inputs associated with growing and harvesting soybeans, transporting and processing the soybeans into oil and meal, producing the soybean oil into biodiesel, and transportation of the biodiesel to the end user.

Dr. Robert McCormick of DOE's National Renewable Energy Laboratory said “the Pimentel/Patzek study uses outdated information on agricultural practices as well as unrealistic and unsubstantiated assumptions regarding energy inputs. At least eight other peer-reviewed studies that have been conducted over the past 12 years find exactly the opposite, that biodiesel has a highly positive energy balance. This new study is not convincing and does not represent a significant contribution or advance in this area of energy research.”

The International Energy Agency recently conducted a review of several biofuel life cycle studies. The results of these studies all indicate that biodiesel has a high fuel process energy efficiency rating. A 1994 study conducted by the Institute for Local Self-Reliance also found soy biodiesel to have a positive energy balance.

More than 500 major fleets use biodiesel nationwide. Biodiesel is nontoxic, biodegradable and essentially free of sulfur and aromatics. Biodiesel offers similar performance to petroleum diesel while providing superior lubricity. It significantly reduces emissions.

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*To see the DOE/USDA study and a more detailed response on the study, visit [www.biodiesel.org](http://www.biodiesel.org).*