



The Regional Biomass Energy Program (RBEP) promotes increased production and use of bioenergy resources, and helps advance the use of renewable biomass feedstocks and technologies. Historically, the RBEP leverages two nonfederal dollars for every federal dollar it administers.

Benefits of Converted Agricultural Waste

- **Turns an environmental hazard into a valuable energy resource**
- **Eliminates problems associated with disposal of animal waste**
- **Reduces dependence on imported oil**
- **Creates new farm-based profit centers**

“The amount of agricultural waste biomass that has potential for conversion into fuel is staggering. Conversion can provide new and significant renewable fuels, eliminate potential environmental hazards, and create new profit centers on the farm.”

Richard Russell, Ph.D.
Associate Professor
Davis College of Agriculture,
Forestry, & Consumer Sciences
West Virginia University
Morgantown, WV



**U.S. Department
of Energy
Regional Biomass
Energy Program**

www.ott.doe.gov/rbep

ANOTHER RBEP SUCCESS: Transforming agricultural waste into liquid biodiesel fuel

CHALLENGE

Live animal agricultural operations produce massive quantities of waste that are difficult to dispose of and limit community acceptance of larger-scale live animal farming. The southeastern region of the U.S. is one of the nation's largest producers of poultry and pork, generating more than twenty million tons of animal manure dry matter each year. As biomass, this harvestable by-product can to be converted to highly usable biodiesel fuel using the right technology.

RBEP SOLUTION

The U.S. Department of Energy's Regional Biomass Energy Program helped fund a demonstration project to develop technology that can convert poultry litter into bio-fuel. West Virginia University has discovered a relatively simple chemical process for converting agricultural waste into liquid fuel. Testing showed that this prototype biodiesel fuel compares favorably in all respects with commercial diesel fuel. The university hopes to commercialize this technology within the next decade and provide educational support for on-farm conversion of agricultural wastes.

With RBEP funding, the university is building a demonstration reactor facility capable of converting 1-2 tons of poultry litter into fuel per day. Equipment purchases include a bomb calorimeter to measure energy content of the fuel produced, a Karl Fischer titrator to measure moisture content of the fuel, a mass spectrometer gas analyzer to measure the composition of gas produced as fuel is generated, and an elemental analyzer to measure the carbon, hydrogen, nitrogen, sulfur, and oxygen content of the fuel.



Photo: Warren Gretz

(Courtesy of the U.S. Department of Energy,
National Renewable Energy Laboratory)

Partners

U.S. Department of Energy
Regional Biomass Energy Program
West Virginia Development Office
West Virginia University,
Morgantown, WV

RESULTS

West Virginia's fuel conversion process boosts the energy value of biomass fuel higher than had been achieved using other methods, to a level viable for commercial use. Successful transfer of this technology to the U.S. marketplace could result in domestic production of more than 3 billion gallons of biodiesel fuel annually (roughly 10% of our nation's annual energy budget) from waste that otherwise would be plowed under or buried in landfills. The new fuel could potentially reduce the carbon dioxide (CO₂) produced by burning fossil fuels by over 1 billion tons annually.

Web-based Biomass Information Sources

U.S. Department of Energy's National Biofuels Development Program

<http://www.ott.doe.gov/biofuels>

U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (EREN)

<http://www.eren.doe.gov>

Bioenergy Information Network

<http://bioenergy.ornl.gov>

Biomass Resource Information Clearinghouse

<http://rredc.nrel.gov/biomass>

Biomass Research and Development Initiative

<http://www.bioproducts-bioenergy.gov>

American Bioenergy Association

<http://www.biomass.org>

BENEFITS

The disposal of agricultural waste from live animal farming creates a potential environmental hazard. Converting this waste into valuable, clean-burning biodiesel fuel can reduce the nation's dependence on imported oil and benefit communities, the environment, and the national farm economy.



Laboratory-scale reactor equipment used to convert poultry litter into fuel

(Courtesy of West Virginia University, Morgantown, WV)

For more information:

Kathryn Baskin
Southern States Energy Board
6325 Amherst Court
Norcross GA 30092
Phone: (770) 242-7711
Fax: (770) 242-9956
E-mail: baskin@sseb.org

This document highlights work sponsored by agencies of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.