

## National Research Initiative

[www.csrees.usda.gov/funding/nri/nri.html](http://www.csrees.usda.gov/funding/nri/nri.html)

### • Biobased Products and Bioenergy Production Research

#### • USDA-DOE Plant Feedstock Genomics for Bioenergy

Dr. Chavonda Jacobs - Young [cjacobs@csrees.usda.gov](mailto:cjacobs@csrees.usda.gov)

## Small Business Innovation Research

[www.csrees.usda.gov/funding/sbir/sbir.html](http://www.csrees.usda.gov/funding/sbir/sbir.html)

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## Sustainable Agriculture Research and Education

[www.csrees.usda.gov/fo/sustainableagricultureresearcheducation.html](http://www.csrees.usda.gov/fo/sustainableagricultureresearcheducation.html)

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## Sustainable Biobased Economies

[www.csrees.usda.gov/about/offices/pdfs/ecs\\_factsheet.pdf](http://www.csrees.usda.gov/about/offices/pdfs/ecs_factsheet.pdf)

Dr. Patricia Hipple [phipple@csrees.usda.gov](mailto:phipple@csrees.usda.gov)

## Woody Biomass Utilization Group

[http://www.csrees.usda.gov/nea/nre/pdfs/woody\\_bio.pdf](http://www.csrees.usda.gov/nea/nre/pdfs/woody_bio.pdf)

Dr. Daniel Cassidy [dcassidy@csrees.usda.gov](mailto:dcassidy@csrees.usda.gov)

## Agricultural Materials

[www.csrees.usda.gov/fo/criticalagriculturalmaterials.cfm](http://www.csrees.usda.gov/fo/criticalagriculturalmaterials.cfm)

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## The Current Research Information System (CRIS)

<http://cris.csrees.usda.gov>

CRIS is the U.S. Department of Agriculture's documentation and reporting system for ongoing and recently completed research, education, and extension projects in agriculture, food and nutrition, and forestry. Projects are conducted or sponsored by USDA research agencies, state agricultural experiment stations, land-grant universities, other cooperating state institutions and participants in CSREES-administered grant programs. CRIS provides a link to over 175 on-going and completed projects in renewable energy and biobased products.



United States  
Department of  
Agriculture

Cooperative State  
Research, Education,  
and Extension Service

# RENEWABLE ENERGY AND BIOBASED PRODUCTS

The Cooperative State Research, Education, and Extension Service (CSREES) is USDA's principal link to academia and participates in a nationwide agricultural research planning and coordination system that includes state land-grant universities, agricultural industry, and other cooperators. As the federal partner in a cooperative system, CSREES provides leadership and participates in national and regional networks and workgroups, multi-state projects, and grant programs to advance research, extension, and higher education in the food and agricultural sciences, as well as related environmental and nutrition sciences.



Scientists and industry are striving to find sustainable alternative sources of energy for the Nation. In an effort to address this national need, CSREES promotes research,

education, and extension projects that focus on bioenergy and biobased industrial products. Scientists and industry have responded with over 175 energy projects that range from the development of sustainable oil seed crops to creating highly efficient technology for more effective conversion of animal fat and spent cooking oil into fuel.

## NATIONAL RESEARCH INITIATIVE (NRI)

NRI competitively funds research and integrated projects focused on solving problems of national and regional importance. Energy issues are addressed primarily by two programs:

- Biobased Products and Bioenergy Production Research
- USDA-DOE Plant Feedstock Genomics for Bioenergy\*

\*Program funded jointly with U.S. Department of Energy, Office of Biological and Environmental Research (OBER)

### *Genetic Engineering of Yeast for Co-Fermenting all Five Cellulosic Sugars to Ethanol*

Ethanol is recognized as one of the most desired renewable fuels to replace gasoline for transportation. The genetically modified *Saccharomyces* yeast, also known as baker's yeast, has proven to be the most effective microorganism for the fermentation of glucose and xylose to ethanol. For example, *Saccharomyces* improved ethanol production from wheat straw by 30-40 percent. The technology is currently being used by a Canadian biotech company for large-scale ethanol production.



## SUSTAINABLE AGRICULTURE RESEARCH AND EDUCATION (SARE)

SARE competitively funds projects that advance farming systems promoting profitable and environmentally sound practices benefitting communities through a nationwide research and education grants program. Grants are offered through four regions -- North Central, Northeast, South, and West.

SARE has a long-standing interest in both energy conservation and renewable energy.

### *Pilot Production of Biodiesel from Canola in New England*



A pilot study set in New England provides the first step in evaluating the potential of producing biodiesel from agricultural oil seed crops. The study evaluated the cost of producing biodiesel from planting canola,

an oilseed crop, to processing the oil into biodiesel. The pilot study focused on economically evaluating small scale biodiesel production using readily available methods. The findings from this study estimated the cost of biodiesel to the consumer using this method to be \$3.07 per gallon.

## SMALL BUSINESS INNOVATION RESEARCH (SBIR)

SBIR competitively funds small U.S.-owned businesses developing products, processes, and services for the full-range of communities served by USDA. The SBIR program funds energy-related projects through five programs.

- Biofuels and Biobased Products
- Forests and Related Resources
- Animal Manure Management
- Rural and Community Development
- Small and Mid-sized Farms

### *Resodyn Corporation Alternative Fuels Reactor*

The company received funding to develop a process to convert animal fat and recycled cooking oil into biodiesel. The process is cost competitive with traditional diesel fuel, making wide-scale commercial production of a fuel alternative a reality. This plant has the lowest biofuel production costs in the industry. In addition, the plant can



produce high-quality biodiesel and glycerin by-products in a more environmentally friendly manner by eliminating the water wash step.

## AGRICULTURE MATERIALS PROGRAM

Agricultural Materials provide funding for new crop development to encourage crop diversity and for new uses of conventional agricultural materials to stimulate market expansion.

Formula funds and special research grants are awarded to land-grant universities to support basic and applied research topics, including plant breeding and genetics, crop production, materials processing, and product development.

### *Plant Alternatives to Petroleum Products*

Lesquerella is a native plant that grows wild in the southwestern United States. This plant belongs to the mustard family and produces seeds containing a hydroxy fatty acid vegetable oil. The United States imports about \$100 million worth of hydroxy fatty acid supplies every year. A company that produces industrial lubricants will use the oil from lesquerella in new product formulations. Use of lesquerella offers a savings in energy and an increase in yield without unwanted by-products.

