

## Project Update: Chariton Valley



Farmers in Southern Iowa are developing the best methods for harvesting switchgrass for cofiring with coal to produce electricity in a local utility power plant.

**THIS PROJECT  
DEMONSTRATES COFIRING  
ENERGY CROPS WITH COAL  
FOR RENEWABLE  
POWER PRODUCTION ON  
THE GREAT PLAINS.**

*Switchgrass, a native grasses on the U.S. Great Plains, may soon become an important cash crop for producing energy. In late 1996, the U.S. Department of Energy entered into a cooperative agreement with the Chariton Valley Resource Conservation and Development (RC&D), Inc., in Centerville, Iowa to establish markets for energy crops (an effort begun by Southern Iowa farmers in the winter of 1995). The Chariton Valley RC&D is a rural development organization representing a diverse consortium of public and private partners (see the list of project partners on back page). This organization will transform switchgrass, now used primarily for erosion control, into a cash energy crop with a value of up to \$200 per acre.*

### **Long-Term Goals**

Chariton Valley RC&D proposes producing enough switchgrass to generate 35 MW of power by cofiring with coal at the Alliant Power Company's Ottumwa Generating Station. This represents 5% of the total capacity for the power plant, rated at 650 MW, and will require

200,000 tons of biomass harvested from 40,000 to 50,000 acres of switchgrass. Eventually, as many as 500 local farmers will have the opportunity to raise and sell the energy crop for power production.

The main highlights of this project are:

- Development of 35 megawatts (MW) of generating capacity from biomass by cofiring switchgrass with coal at the Ottumwa Generating Station

- Investigation of switchgrass gasification for long-term efficiency and use in fuel cells
- Erosion control and minimizing pesticide applications in the Rathbun Watershed in Southern Iowa, which supplies water to 13 counties and 21 cities by growing switchgrass on 40,000-50,000 acres on Conservation Reserve Program (CRP) lands. CRP is run by the U.S. Department of Agriculture to reduce soil erosion.

## Recent Accomplishments

Substantial progress has been made in this project in 1997 and 1998, including the establishment of a growers' cooperative and the commitment of 4,000 acres of CRP lands to grow switchgrass.

## Near-Term Plans

In 1999, project participants will:

- Quantify the value and extent of environmental benefits by raising switchgrass as an energy crop, such as the improvement of water quality—less fertilizers are needed for switchgrass and it can filter some contaminants out of surface runoff
- Measure the amount of decreased emissions of CO<sub>2</sub>, a climate change gas
- Develop methods to maximize the yield and conversion of switchgrass to renewable energy
- Develop switchgrass gasification processes at the Iowa State University with the Energy Research Corporation
- Complete detailed design and site plans for boiler modifications and switchgrass handling facilities at the Ottumwa Generating Station. On-site modifications to accommodate cofiring are scheduled for late 1999 through early 2000
- Carry out 100-hour test of cofiring switchgrass with coal at the Ottumwa Station at a level of 5% switchgrass by energy content
- Investigate using gas produced from switchgrass to power fuel cells.

## Project Partners

- Chariton Valley RC&D, Inc., *Centerville, Iowa*
- Alliant Power Company, *Cedar Rapids, Iowa*
- ABB Combustion Engineering, *Windsor, Connecticut*
- R.W. Beck, *Madison, Wisconsin*
- John Deere Company, *Moline, Illinois*
- Energy Research Corporation, *Washington, D.C.*
- Iowa Department of Natural Resources, *Des Moines, Iowa*
- Iowa Division of Soil Conservation, *Des Moines, Iowa*
- Iowa Energy Center, *Ames, Iowa*
- Iowa Farm Bureau Federation, *Des Moines, Iowa*
- Iowa State University, *Ames, Iowa*
- Leopold Center for Sustainable Agriculture
- Local Farmers and Landowners
- National Renewable Energy Laboratory, *Golden, Colorado*
- Oak Ridge National Laboratory, *Oak Ridge, Tennessee*
- Prairie Lands Bio-Products, *Lucas, Wayne, Monroe, and Appanoose Counties, Iowa*
- Soil and Water Conservation Districts, *Lucas, Wayne, Monroe, and Appanoose Counties, Iowa*
- U.S. Department of Agriculture, *Washington, D.C.*
- U.S. Department of Energy, *Washington, D.C.*



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