

Pioneering Energy Crops in the Midwest

Project Update: Chariton Valley



Switchgrass, a native grass 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 Chariton Valley Resource Conservation and Development (RC&D), Inc., in Centerville, Iowa, to establish markets for energy crops. This effort was started by Southern Iowa farmers in the winter of 1995. The Chariton Valley RC&D is a rural development organization that represents a diverse consortium of public and private partners (listed on the reverse side). The Chariton Valley Biomass Project will transform switchgrass, now grown primarily for erosion control, into an energy cash crop with a value as high as \$200 per acre.

Project Goals

The Chariton Valley Biomass Project intends to harvest enough switchgrass to generate 35 megawatts (MW) of power by cofiring with coal at the Alliant Energy Ottumwa Generating Station. This represents 5% of the power plant's capacity of 650 MW, and will require that 200,000 tons of biomass be 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 highlights of this project are:

- Develop 35 MW of generating capacity from biomass by cofiring switchgrass with coal at the Ottumwa Generating Station.



Tom Satchwell / PIXO6530

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 A PROCESS
CALLED COFIRING THAT
BURNS ENERGY
CROPS WITH COAL FOR
RENEWABLE POWER
PRODUCTION ON THE
GREAT PLAINS.

- Research and demonstrate switchgrass gasification for cofiring applications and use in fuel cells.
- Protect water quality in Rathbun Lake in southern Iowa, the source of drinking water for 18 counties and 21 cities, by growing switchgrass on land in the lake's watershed.

Project Accomplishments

Substantial progress was made in this project through 1999, including establishing a growers' cooperative and committing 4,000 acres of Conservation Reserve Program (CRP) land to grow switchgrass. CRP is administered by the U.S. Department of Agriculture to reduce soil erosion, protect water quality, and improve wildlife habitat.

- The grower's organization coordinates the management and harvest of switchgrass biomass on 4,000 acres of CRP land.
- Modifications began in 2000 at the Ottumwa Generating Station to allow the cofiring of switchgrass with coal.

What Lies Ahead

In 2000, participants working on the Chariton Valley Biomass Project will:

- Conduct the first in a series of cofiring test campaigns at the Ottumwa Generating Station with 4,000 tons of switchgrass.
- Design permanent cofiring test facilities based on the results of the 4,000-ton campaign.
- Develop and apply agronomic practices that will optimize the yield and fuel quality of switchgrass grown for biomass fuel.

- Help cooperating producers establish and manage switchgrass for biomass.
- Measure the environmental benefits (water quality protection, soil erosion control, wildlife habitat protection, and carbon sequestration to help mitigate global warming) of growing and using switchgrass for biomass.
- Research and develop switchgrass gasification processes with Iowa State University and the Iowa Energy Center.
- Inform and educate the public about the benefits of producing and using switchgrass biomass as a source of renewable energy.

Project Partners

- Chariton Valley RC&D, Inc., Centerville, Iowa
- Alliant Energy, Cedar Rapids, Iowa
- ABB Combustion Engineering, Windsor, Connecticut
- R.W. Beck, Madison, Wisconsin
- Energy Research Corporation, Washington, D.C.
- John Deere Company, Moline, Illinois
- Foster Wheeler Corporation, Clinton, New Jersey
- 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, Ames, Iowa
- 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
- T. R. Miles Technical Consultants, Incorporated, Portland, Oregon
- U.S. Department of Agriculture, Washington, D.C.
- U.S. Department of Energy, Washington, D.C.
- Vermeer Manufacturing, Pella, Iowa
- E. L. Woolsey and Associates, Prole, Iowa



Alliant Energy's Ottumwa, Iowa, Generating Station

For More Information

Visit the Biopower Web Site:

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

For copies of print documents on renewable energy, call DOE's Energy Efficiency and Renewable Energy Clearinghouse (EREC) 1-800-DOE-EREC (1-800-363-3732)

Visit the Chariton Valley Biomass Project Web Site:

<http://www.cvr.cd.org>

