

For more information, please contact:

Bill Belden bbelden@cvrcd.org
(641) 437-4376

Dora Guffey dora.guffey@ia.usda.gov
(641) 437-4376

Or visit www.cvr.cd.org

Chariton Valley Biomass Project



Planting and harvesting of biomass, such as switchgrass, will provide local environmental benefits and income while creating a local renewable source for energy and bio-products.

Other Team Members Include:

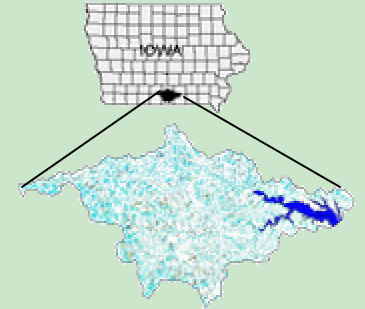
- Antares Group
- Bradford, Conrad, Crow Engineering
- Counties of Appanoose, Lucas, Monroe, and Wayne
- Elsam Engineering
- Iowa Department of Agriculture and Land Stewardship, Division of Soil Conservation
- Iowa Department of Natural Resources
- Iowa Energy Center
- Iowa Farm Bureau Federation
- Iowa State University & Extension
- John Deere Works
- Kelderman Manufacturing
- Leopold Center for Sustainable Agriculture
- National Renewable Energy Laboratory
- Oak Ridge National Laboratory
- Soil and Water Conservation Districts of Appanoose, Lucas, Monroe, and Wayne Counties
- TR Miles Technical Consultants
- University of Iowa
- Vermeer Manufacturing Company

Project Partners Include:

- United States Dept. of Energy
- United States Dept. of Agriculture
- Chariton Valley RC&D
- Alliant Energy
- Prairie Lands Biomass LLC



Driven by the desire to create new farm income and improve local air, water, and soil quality, the Chariton Valley Biomass Project envisions a market for native warm and cool season grasses.



Rathbun Lake Watershed

Why Switchgrass?

- Switchgrass is native to Iowa and high yields are achievable
- When compared to row cropping, switchgrass can have:
 - 95% less soil erosion
 - 55% less sediment yield
 - >30% less sediment-bound herbicides and fertilizers
- Switchgrass can be planted on the 100,000+ acres of highly erodible cropland in the Rathbun Lake Watershed



Switchgrass height by August



Advancing biomass feedstock production and delivery for emerging markets.

Brochure text and design by Antares Group
Printed by Iowa Farm Bureau

Yield and Fertilization Trials

Iowa State University researchers are leading efforts to characterize and optimize yields and management practices for switchgrass in the Chariton Valley area. This research has accomplished the following:

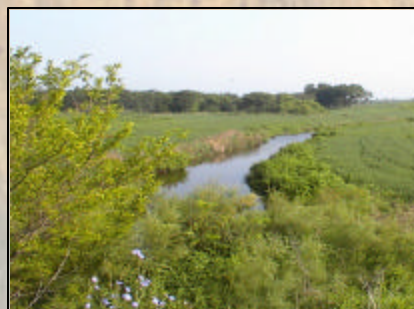
- Identified the best varieties of switchgrass for the project region
- Characterized effects of Nitrogen fertilization rates
- Doubled yields in 5 yr period with stand management
- Developed site-specific management practices
- Developed rapid, low-cost method for predicting biomass productivity
- Determined the yield benefits through selective breeding and stand management



Environmental Benefits

The environmental benefits of a large-scale commercial switchgrass project will be distributed across the land, air and water of Southern Iowa. The full range of environmental benefits the project will provide, include:

- Improved soil stability and reduced soil erosion
- Reduced sediment and chemical run-off into surface lakes and streams
- Improved wildlife and avian habitat
- Improved carbon sequestration in farm soils
- Reduced sulfur, particulate, and net greenhouse gas emissions from host power plant



Harvesting Research and Development

Since harvesting and handling costs are the largest component of the total production cost, a self-propelled baler (below) was developed to lower the production cost. The self propelled baler has operated 1,000+ hours and baled 30,000+ bales and has these advantages over the pull-type balers:

- Four wheel drive makes baling possible on difficult terrain of the CRP land
- More fuel efficient
- Lower maintenance
- Bale uniformity
- Longer baler life
- Able to bale other herbaceous feedstocks
- Higher annual baling capacity



Storage and Delivery

Project partners have evaluated a wide range of storage and delivery options for a large-scale commercial biomass project. To optimize the economics and product quality, a commercial project will:

- Use 3' x 4' x 8' bales to maximize payload on a legal trailer
- Use 53' trailers to maximize delivery payload and minimize cost
- Use combination of on-farm and centralized storage facilities to allow year-round delivery of high quality product
- Seek to employ multiple feedstocks (warm and cool season grasses) to extend harvest season and minimize storage requirements and costs
- Use innovative loading equipment to minimize loading and unloading time

