Agricultural Utilization Research Institute (AURI)

Center for Producer-Owned Energy (CPOE)

Adding Value to Minnesota Agriculture

Wayne Hansen
Project Specialist/AIC

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

AURI Mission

Created to improve the economy of rural Minnesota based on agriculture through:

- New markets and expansion of existing
- Development of new uses or value improvements for agricultural commodities
- Focus on renewable energy from ag products and coproducts

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

AURI's Role

Development catalyst from "Idea to Market" providing assistance within AURI and vital network connections to others

- Applied Technology Services
  - *Technical feasibility and assistance*
  - *R & D for MN value-added agriculture*
- Product Development Services

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

AURI's Role

(continued)

- Possible matching funds – AURI & others
- Broad impact initiatives
  - *Focus on challenging Minnesota agriculture with current situations and forward-thinking trends*
  - *Potential for larger impact across broad sector*
  - *Public domain*

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

AURI Offices

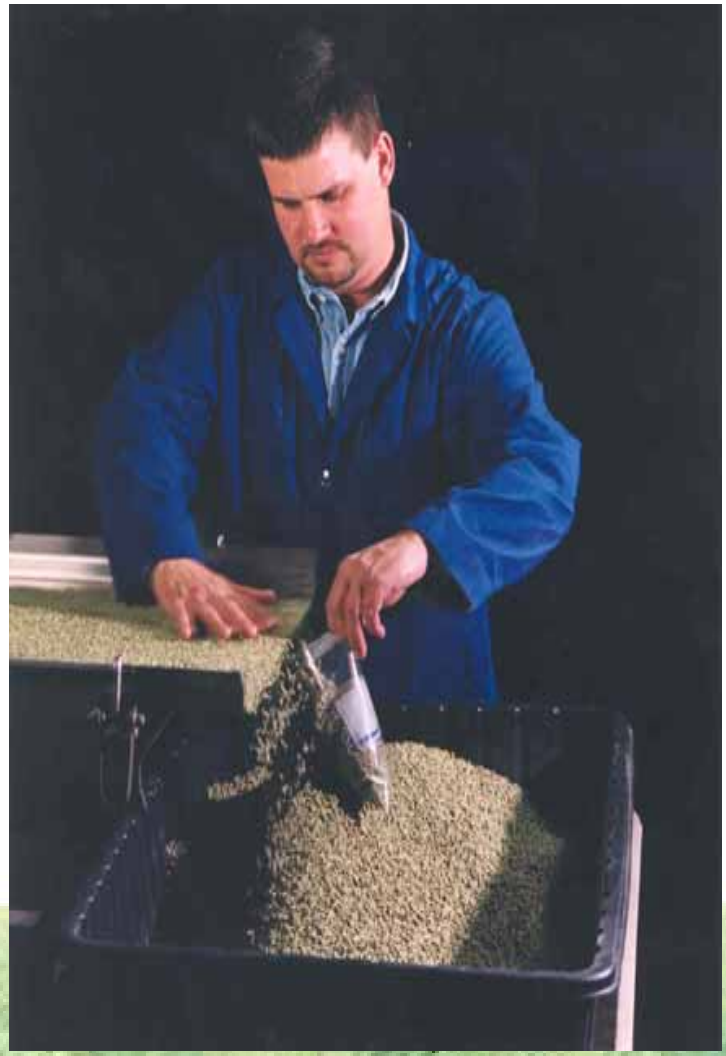
- Northern Office, Crookston
  (800) 279-5010 or (218) 281-7600
- Southwest Office, Marshall
  (507) 537-7440
- Southeast Office, Waseca
  (507) 835-8990

www.auri.org
www.mncpoe.org

AURI Facilities

Access to technologists and scientists

- Meat Lab, Marshall
- Fats & Oils Lab, Marshall
- Co-Product Utilization Lab, Waseca
- Product Development Kitchen, Crookston



AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Center for Producer-Owned Energy (CPOE)

- Awarded $1 million USDA Rural Development grant for Ag Innovation Center–expires June ‘06
- Provide assistance to energy-related projects
- Focus on biomass, biogas, coproducts, new technologies, liquid fuels, wind
- Supports farmer-owned renewable energy
- Role will be maintained as part of AURI

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Saudi Minnesota

AURI
AG INNOVATIONS
Agricultural Utilization Research Institute

Center for Producer-Owned Energy

- 14 established and developing projects
- Includes ethanol, biodiesel, biomass, biogas, wind and more
- Over 50 collaborating partners

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Biodiesel Wind Generation

- Evaluating feasibility of using generators powered by biodiesel as a backup power source to guarantee peaking capacity and/or continuous supply

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Community-Owned Wind

- Facilitate the development of a "Community Wind Development Handbook”
- Outline the 25 steps for successful wind project development.
- Reduce cost and facilitate easier and quicker feasibility studies

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

West River Dairy - City of Morris

- Feasibility of utilization of agricultural resources in Stevens County
- Energy sources analyzed
  - *Manure digestion (biogas)-pipeline methane to Morris industrial park*
  - *Stover combustion (electricity)*
  - *Stover gasification (biogas)*

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Small Methane Digester - Kandiyohi Co

- Feasibility of producing methane at small dairies (<300 cows) and transporting to local user with minimal cleanup and minimal cost

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Northern Excellence Growers

- Over 40 grass seed growers in NW Minnesota
- Testing screenings currently landfilled as biomass fuel for gasification

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Biodiesel in Towboats

- Center for Diesel Research
- One of first evaluations of biodiesel in large, slow-RPM engines
- Potential market for B20-B50 blends

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Biodiesel ATV

- Arctic Cat testing biodiesel in ATVs
- One of first evaluations of biodiesel in small engines
- B20 blend

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Global Ag Biomass Study

- Assess both domestic and international energy feed stocks, availability, quantity, price and performance
- Selection of domestic energy feed stocks that reduce dependence on foreign crude oil

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Rural Energy Marketing

- Conversion of stover to ethanol using Biogas Fischer-Tropsch biorefinery
- Proposed 20 M Gal Ethanol Coop Luverne, MN
- Assessing proprietary technology

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Little Falls Ethanol Plant

- Feasibility of utilizing excess heat and excess syngas production from burning wood and crop biomass for the city of Little Falls

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Ottertail Ag LLC

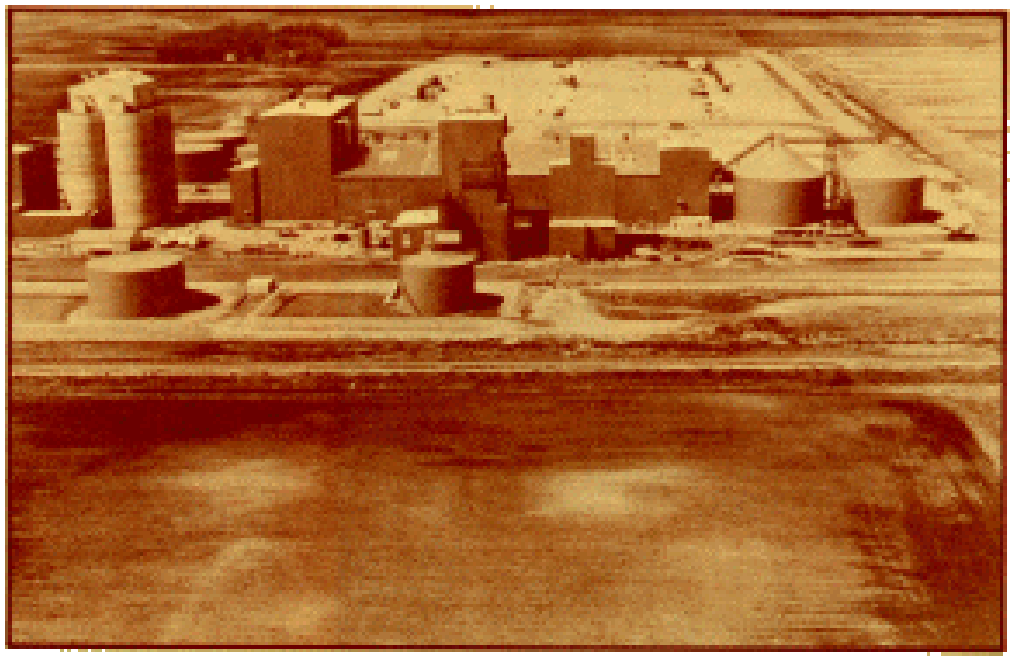
- Feasibility of building an ethanol plant in Fergus Falls area

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

So. MN Sugar Beet Coop

- Enhancement of production of ethanol using beet sugar



Southern Minnesota Beet Sugar Cooperative at Renville, Minnesota.

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Sugar Beet Pulp as Fuel

- Assess feasibility of utililizing beet pulp in gasification process for heat and energy at **American Crystal Sugar**

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

Soybean Processing Co-Products as Fuel – MN Soybean Proc

- Assess feasibility of producing syngas as a substitute for Natural Gas from the co-products of soybean processing:
- Soybean Hulls
- Soapstock
- De-gummed oil

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy

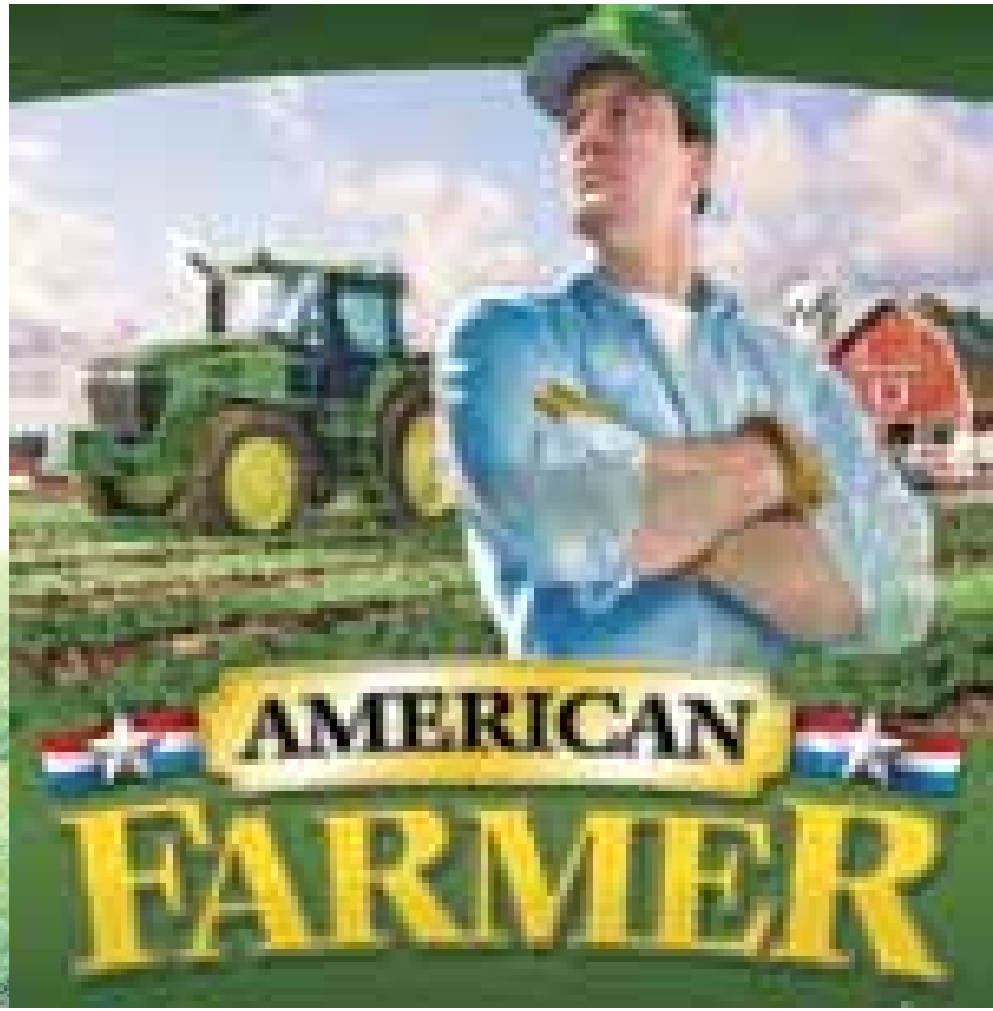
Center for Producer-Owned Energy Observations

- Renewable fuels – tomorrow's fuel
- Technological advances making it possible
- Becoming more economically viable as petroleum prices rise and technology improves
- Reliability, availability, security -- positives

AURI AG INNOVATIONS
Agricultural Utilization Research Institute

center for producer owned energy


PHOTOGRAPHY BY RONALD CODRAI & JUSTIN CODRAI


AMERICAN
FARMER