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Factors Influencing Minnesota Agricultural Biomass Supplies

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In the last decade, the increasing costs of crude oil has spurred a great deal of interest in agricultural biomass as feedstock for production of heat, electricity, and liquid fuels in the United States. Several companies have indicated that they are interested in pursuing large-scale deployment of biomass technologies should their early testing prove successful. A key issue for successful development of this technology is a reliable supply of biomass feedstocks (Table 1). Therefore, there is a need to better understand the availability of feedstocks to fuel this new generation of biomass energy facilities.

Table 1. Criteria for Facilities Considering Biomass As Industrial Feedstock



Sustainable Quantities- Facilities must consider whether the amount of material collected is being harvested sustainably.

Consistent Quality- Quality can vary greatly depending on harvesting equipment, storage conditions, and processing.

Continuous Supply- Probably the most important concern for many biomass facilities is that biomass be available on an ongoing basis.

Early estimates of agricultural biomass availability appear overly optimistic because they have not addressed all considerations that influence the biomass collection. Table 2 lists some of the important factors used for fully assessing biomass availability. Before large, capital intense biomass energy production systems can be developed, more detail estimates of feedstock availability will be needed.

Work being done at the WCROC is designed to refine estimates of biomass in the state of Minnesota and identify locations best suited for developing biomass industries. The preliminary work has identified three areas that are critical for creating accurate estimates of Minnesota's biomass potential:

Sustainability- Data sets may need to be created for regional sustainable harvest estimates. Most available data focuses on conditions of individual fields or soil types.

Weather- There are significant concerns in Minnesota with rain or snow during harvests, which greatly affects quantity and quality of biomass harvested.

Table 2. Factors Determining Agricultural Biomass Supplies:

- *Crop Acreage-* The amount of land dedicated to biomass
- *Yields-* Corn Biomass is usually produced at a 1:1 ratio by weight to grain
- *Sustainable Removal Rates-* Amount of material that can be removed without negatively impacting soil
- *Component(s) of Residue Used-* Using all biomass or a portion, for example cobs or stalk.
- *Harvesting Technology-* How much of the material can the equipment collect from the field on a consistent basis
- *Weather Patterns-* Will producers be able to harvest material in a region prior to winter
- *Producer Participation-* Willingness of producers to harvest and sell material

Participation Rate- Anecdotal evidence suggests that a majority of farmers in Minnesota are not willing to participate in biomass harvesting and sales at this time.

By studying these topics, the estimates by WCROC will help reduce barriers to using biomass to enhance farm income and provide community development opportunities.

AgCountry Auditorium

Nov. 28—CNE Meeting
Dec. 1—AgCountry of Morris
Dec. 5—Cattle Feeders Day

Seminar Room

Nov. 28—Renewable Energy



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Engaging UMM Students in Rural Sustainability Issues

In 2010-2011 Bi-annual report that I'd prepared for the West Central Partnership, we focused attention on the value of engaging U of M Morris students in rural sustainability issues.

Students' work with community groups not only benefits the community in accomplishing a specific goal or project, but provides the student with real life experiences where they can apply their skills and knowledge and learn from the community. Over the years the West Central Partnership has contributed funding towards student expenses for various projects that were conducted in the region through U of M-Morris Center for Small Towns and U of M-Twin Cities campus Community Assistants Program (CAP). The board has also designated dollars for student assistants in collaboration with U of M-Morris Center for Small Towns called Connecting Students and Communities. In 2010 and 2011, over 20 students were hired through UMM Center for Small Towns and CAP serving communities and organizations across the region that supported project research, education and assistance.

Thanks to our partnership with U of M-Morris Center for Small Towns who not only recruited and helped supervise the students, but also leveraged additional funds from the AmeriCorps program and Bremer Foundation that enabled West Central Partnership to stretch funds to employ more students to work with communities. These community experiences have influenced the student's course work and future careers, including choosing rural Minnesota as a place to live and work. Case in point, Audrey Lesmeister, 2011 UMM graduate, started a locally grown foods business entitled Freshmeister Foods. Her work experience with Morris Healthy Eating and Pope County Fresh influenced her to start this business and to remain living in the area.

Populating the rural areas with young and energetic people will not only help the local economy, but also bring HOPE to our rural areas. And HOPE...is what West Central Partnership and our community and University partners strive to do by engaging faculty and students to work with communities to exchange knowledge and explore ways to develop a sustainable future together for the west central

MN region!

To learn more, check out the 2010-2011 Bi-Annual report at www.regionalpartnerships.umn.edu/westcentral.

2010-2011 Community Projects and Students:

- [Morris Healthy Eating—Farmers Market](#) – Audrey Lesmeister (2010) and Lizzie Gelderman (2011)
- [Land Stewardship Project—Big Stone County Food Assessment](#) – Clara Dux
- [Pope County Fresh](#) – Audrey Lesmeister
- [Lake Association Assessment](#) – Clay Fischer
- [Buy Fresh Buy Local Publicity/Multi-media](#) – Mariah LaQua (2010) and Lizzie Gelderman (2011)
- [Willmar Community Owned Grocery development](#) – Joel Einertson
- [Clean Up the River Environment \(CURE\) Friendship Tour](#) – Lyndsey Weber
- [Pope County SWCD Education Outreach](#) – Joseph Dunlavy
- [Upper Minnesota Watershed Data collecting & Mississippi Renaissance Project](#) – Ashley Lucht and Collin Lynch
- [Minnesota Waters Data base](#) – Jennifer Miller
- [Chippewa River Watershed Project water monitoring](#) – Joseph Hartman
- [Youth Energy Summit Evaluation data collection](#) - Anita Machayo
- [Greater Milan Initiative Sustainable Energy Utility energy base line collection](#) – Joseph Dunlavy
- [Prairie Woods Environmental Learning Center Energy Education/Virtual Tour](#) – Jennifer Miller
- [West Central Research/Outreach Center Raspberry High Tunnel Outreach](#) – Liz Vold and Rachel Harstad
- [Watershed Workers Training and Summer Assistance](#) – Heidi Eger and Mike Sorenson
- [WCP Public Relations & Research](#) – Joel Einertson, Angie Scheappacasse, Lizzie Gelderman, Kahsa Hyde
- [Ownership and Regional Economic Impact: The Case of Wind Development in Minnesota](#) - Dugan Flanders and Thompson Clifford, research assistance to UMM Prof. Arne Kildegaard
- [Clinton-Graceville-Beardsley School Green House design](#) – (CAP) Molly Egen, grad student with UM Center for Sustainable Building Research
- [Local Foods Institutional Market Study](#) – (CAP) Sarah Goodspeed, UM Humphrey Institute grad student