

Examining Ag Fertilizers and Energy Solutions Around the World

Joel Tallaksen, Biomass Gasification Project Coordinator

This past week, Mike Reese and I had the opportunity to visit with our international research partners at their universities in Sweden. Though a large part of the discussions was on the renewable nitrogen project that we are jointly working on, we had the chance to see a broad range of Swedish research projects and discuss how the different countries are looking for new solutions for agricultural, forestry, and energy issues.

The first visit was to the Swedish Agricultural University in Uppsala, Sweden, where Professor Serina Ahlgren arranged tours of the



Lövesta research farm anaerobic digester- capable of 500 kw of electrical production and a significant portion of building heating.

campus's agricultural and agro-forestry facilities. A highlight of the regional visits was the stop at the Lövesta research farm. Much like the WCROC research farm, this facility was working to integrate their animal and cropping systems with their energy and fertilizer needs. The facility housed a large grain dryer that was capable of using hay to dry grain. In addition, an anaerobic digester was used to produce both 500 Kw of electricity and a significant amount of heat energy for the entire farm. The final digested material was spread on the fields as nutrients and to increase soil carbon.



Straw for heat- Straw bales being conveyed into a combustion heating system for a 26 building farm estate

At Lund University in Lund, Sweden we visited with Professor Christian Hulteberg and Ph.D student Frederic Bauer. They work in the department of chemical engineering and are interested in conversion of biomass (straws, wood, and waste products) into useful chemicals. Visiting with researchers there, we had the chance to talk to biomass cropping scientists, along with

researchers examining new concepts in nutrient recovery. One of the most interesting visits was the tour of a farm in Southern Sweden. The large farming estate dated back to the 1300's and was once home to 800 workers. The owner and manager of the 3500 acre estate was Otto von Arnold, whose family had run the estate for many generations. To meet the challenges posed by more expensive energy and tight profit margins, the farm had expanded into rural community based renewable energy. Three wind turbines were installed, a straw burning central hot water heating system heated the roughly 26 buildings on the estate, and construction had started on a cooperative biogas facility that would use material from roughly 65 area farmers to produce pipeline quality methane gas.

The main concept that agriculture should examine its energy use and possible production of energy to maintain its ability to thrive going forward can be seen in both countries. However, a big difference was the values fueling the innovations in the different countries. In terms of both energy and environmental costs associated with the projects we saw, the Swedes placed a higher value on the resources and their environment. Therefore, the economics were very different than would be common in the US. For example, the higher costs of electricity and the requirement that renewable producers be paid 'fairly' for the energy they produce meant a biomass to energy facility could be break even in Sweden, but would not likely be viable in the United States. This also meant that recapture of nutrients, such as nitrogen, in waste streams was discussed much more heavily because the environmental costs of nitrogen in the Baltic sea have been very pronounced and have required Sweden to be more active in reducing nitrogen leaching and release.

These exchanges of information are important to help Minnesota and other Midwestern states locate the best systems for advancing agricultural productivity. By working with our counterparts worldwide, we can find new options for the regions' farmers and learn from the mistakes of others.





What is I CAN Prevent Diabetes?

Connie Burns, Extension Educator, Health & Nutrition

The Individuals and Communities Acting Now to Prevent Diabetes[®] (I CAN Prevent Diabetes or ICPD) program is centered on an evidence-based curriculum that helps participants make lifestyle changes. These changes include improving food choices and increasing physical activity. Participants support each other as they work toward two goals through these lifestyle changes:

- Increase physical activity to 150 minutes per week
- Lose 5% to 7% of their body weight

These lifestyle changes reduce the risk of developing type 2 diabetes in individuals at high risk for diabetes.

Extension's trained Community Nutrition Educators coach participants on choosing nutritious food, eating the right portion sizes, reading food labels, and adding physical activity.

Starting February 2013, participants have been meeting in groups of 11 to 15 weekly for up to 1½ hours. Over the course of a year, they will meet weekly for sixteen core sessions, and then monthly for eight post-core session. For the pilot project (below), a number of the post-core sessions will be done using distance education methods.

Western Minnesota I CAN Prevent Diabetes Pilot Project

Individuals and Communities Acting Now to Prevent Diabetes[®] (ICPD) is a community-based, lifestyle change program designed for people with prediabetes or at risk for diabetes. This program teaches participants strategies for incorporating physical activity into daily life and eating healthy.

Pilot Project in Western Minnesota

The University of Minnesota Extension was awarded a very competitive grant from United

States Department of Agriculture's National Institute of Food & Agriculture to study the impact of the National Diabetes Program in rural Western Minnesota. (ICPD is based on the National Diabetes Prevention Program.)

The goals of the pilot project are threefold:

- 1) Assess the usefulness and effectiveness of implementing ICPD in rural communities.
- 2) Improve participants' knowledge, skills, and self-efficacy for making lifestyle changes.
- 3) Determine and pilot the preferences of participants regarding distance learning methods.

Extension hopes to continue offering the ICPD program after this pilot project has ended.

Where is ICPD?

Four University of Minnesota Extension Community Nutrition Educators have partnered with local agencies in Pelican Rapids, Frazee, Ortonville, and Dawson.

For more information about ICPD in Western Minnesota, contact Connie Burns at burns391@umn.edu

To find out if there is an ICPD program near you, visit www.icanpreventdiabetes.org/groups.html

AgCountry Auditorium

April 18—Horticulture Advisory Meeting
April 19—Chippewa 10%
April 22—Ambassadors Training
April 24—WCROC Faculty Meeting
April 25—Farmers Market
April 27—Horticulture Society Meeting
April 30—WC Master Gardeners Meeting

Seminar Room

April 19—Horticulture Meeting