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West Central News

University of Minnesota
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New Energy Technologies Being Deployed in West Central Minnesota

Joel Tallaksen, Renewable Energy Scientist, WCROC

Earlier this month, the West Central Research and Outreach Center (WCROC) had the honor of hosting its biannual regional tour of renewable energy facilities. The tour is an opportunity for a diverse crowd of citizens, industry professionals, policy makers, and researchers to visit unique renewable energy systems being used by local businesses, government facilities, and researchers. In addition to getting a chance to see the systems in action, employees responsible for operating each system were on hand to discuss the challenges and benefits from the technologies being used.

Visitors examine one of the generators at Riverview Dairy's 1.5 MW anaerobic digestion system in Stevens County

Bruce Freske of the US Fish and Wildlife Service discusses the 20 KW solar electric system they are using at their Morris Office

Probably the most unique facility the tour visited was the wind powered ammonia production facility located at WCROC. The pilot plant uses air and water, along with electricity from the nearby wind turbine to make anhydrous ammonia. Ammonia is the most common fertilizer in Minnesota, but can also be used as a fuel in modified engines and as an industrial chemical. The ammonia pilot plant is the only facility in the world that is producing fertilizer with wind power. The tour coincided with the ammonia facilities' official dedication ceremony. Tour participants were able to learn about the development of the facility and challenges to examining this new technology from some of the people involved in planning and designing the plant.

An important take away message from the tours is that West Central Minnesota is very much at the forefront of evaluating renewable energy in our communities. Though the technologies are often invented in research labs, the early deployment of technologies in the field is a critical part of the research into how viable they will be in the long term. WCROC is glad to be a part of this work and hopes that more people get a chance to see how important these regional efforts are in developing new renewable energy systems.

Mike Reese (Director of Renewable Energy, WCROC) presents a certificate of appreciation to Jack Gust from the Toro Corporation for the donation of two experimental hydrogen powered vehicles to WCROC's Renewable Energy Programs.

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West Central Minnesota Forage Research Program

Doug Holen, Extension Educator, Crops

A team effort has been in place since 2004 in West Central Minnesota to conduct forage research. The participants include Extension Educators, campus forage specialists, state organizations, industry and cooperating producers. Efforts include genetic evaluations, fertility inputs, and production practices in an attempt to identify economic improvements to forage systems. All of our studies are and have been located "on farm" and set up as replicated small plot units around the Underwood, Ottertail and Campbell areas.

In 2013 we have eight forage related research projects. One of them is a corn silage hybrid evaluation set up in Ottertail and Elbow Lake measuring performance of 32 different entries. Measured and reported variables include wet and dry tonnage as well as a complete quality analysis. These efforts have been ongoing for 10 years. Another project that began in 2004 is the evaluation of alfalfa genetics. Every other year we seed a new set of varieties for documented performance in persistence over time and tonnage produced. Data is collected in establishment year and three production years thereafter. Inputs are added as needed and harvest schedule allows for four cuttings per year. Annual and multiple year performances are reported.

In addition to the above efforts, we have the ability to identify specific research that addresses current issues and needs as noted in the region and around the state. A couple of those efforts currently being evaluated are alfalfa/grass mixtures and economic fertilizer inputs to maximize alfalfa productivity. The alfalfa/grass study partially funded by the Midwest Forage Association is one of three located in the state evaluating the mixing of smooth bromegrass, meadow bromegrass, orchardgrass, tall fescue, and meadow fescue with two seeding rates of alfalfa. Tonnage and quality data is being collected and reported each of four years. The grasses selected was based on a previous study of many more species in which these proved best for this production system. Another study partnering with the MN Department of Agriculture is looking at economic fertility inputs to maximize alfalfa tonnage. We are in the final year of evaluating three rates of potassium (K), three rates of sulfur (S), and two rates of boron (B) applied in the spring or fall. This is a very large study in which annual fertilizer treatments are applied, soil tests taken, yields recorded, and economics evaluated.

We have another two studies in which we have partnered with private industry to look at specific products and management practices in order to identify sustainable and economic approaches to maximizing forage production systems. One project is working with a Canadian company and evaluating different formulations of sulfur fertility in an established alfalfa/grass field. Measured traits include tonnage produced as well as quality. The second study is looking at glyphosate alfalfa and a kitchen sink approach to maximizing tonnage produced. This includes treatments of fertility, insecticides, fungicides, and herbicides. This project is one of two in the state and cooperatively done with nine other states in which data can be reported individually as well as collectively. As is the case with most of what we do, economics invested will be compared to economics produced when results are posted.

An added advantage to the forage research efforts and the time committed to upkeep and data collection is that we see production problems timely and can quickly publicize to agronomists, consultants, and producers what the problems are and what can be done to correct. Recent examples include alfalfa weevil, leafhoppers, some diseases, and fertility problems seen in our research and surrounding fields that commonly represent the region.

All of these efforts have reports due each fall in which results can be found in multiple locations including the MN Variety Bulletin, Northwest Cropping Report, and MN Department of Ag's Greenbook. We use the data to present at summer field days as well as winter forage meetings. Oral and written presentations of these efforts have been done across Minnesota, and represented in conferences around the country.