

Feature Research Project

On farm nutrient balance on dairy farms for herd health and environmental sustainability

Tracking and managing the flow of nutrients into, within and out of the farm can be a daunting process, but when the alternatives are possibly jeopardizing the health of your animals or exceeding regulatory limits, it's worth the effort. High potassium in the diets of dairy cows causes problems with the metabolism of calcium and magnesium, and may cause udder edema. For dry cows, elevated dietary potassium increases the risk of milk fever. Phosphorus supplementation in dairy diets is vital for good health, fertility as well as high rates of milk production. However, excess supplementation of phosphorus in diets could catch some dairy farmers off guard with the phosphorus-based manure management regulations that will be implemented province-wide by 2013. After years of applying manure on a nitrogen basis, there may be a build-up of excess phosphorus and potassium in some soils. For example, on farms where manure is recycled back onto crop land that produces dairy forages and other feeds used on-farm to feed dairy cattle, this creates a continual feedback loop where potassium and phosphorus content can build up over time.

A new study at National Centre for Livestock and the Environment aims to make whole farm nutrient balancing easier for dairy farmers, and the general principles will also apply to other livestock operations. Dairy researcher Kees Plaizier heads up the multi-disciplinary team on this project. "The goal is to develop targeted practical and sustainable management practices that producers can use to reduce surplus build up of phosphorus and potassium on their farm", says Kees.

The recent two day workshop "Achieving Manure Phosphorus Balance in Manitoba" in Winnipeg drove home the importance of managing phosphorus, specifically. "No matter what soil test phosphorus level the manure P regulations stipulate, the key to sustainable phosphorus management is to balance what P goes into the soil with what P is taken out," noted Don Flaten, co-chair of the workshop, and a co-researcher on this project.

Plaizier points out the strength of these management practices or tools coming out of the study rest on how well the participating dairy farms represent the full spectrum of import, cycling and export scenarios practiced on Manitoba dairy farms. "We are working with the Dairy Farmers of Manitoba and directly with dairy producers to identify a variety of suitable farms. We're looking for variety in terms of farms that produce all their own feed, import all their feed or are somewhere in between. We're looking for farms that export nutrients with cash crops, or that import synthetic fertilizers. Nutrients are everywhere – in the feed, in the animals, in dairy products, in manure, in crops and in the soil. Once we know the flow of nutrients, we can develop specific practices that help trim surpluses accumulating on the farm."

"There is likely room for improved feed management, more closely matching supply with dietary requirements for both phosphorus and potassium" says Kees, referring to a 2002 survey he and his colleagues performed. "But we don't know how much room, as our survey pre-dates P-based manure management regulations, and we don't know what other opportunities there are to reduce P and K surpluses on Manitoba dairy farms." The project will also assess the suitability for utilizing pig manure on dairy farm crop and forage land, which could provide new opportunities for the management of pig manure in areas of the province where dairy and pig operations exist in close proximity. This study is scheduled to start in spring 2010.

The Research Team: Kees Plaizier, Kim Ominski, Don Flaten and Luciano González. Funding provided in part by Dairy Farmers of Manitoba. For more information on this project or the dairy research program, contact Kees Plaizier (plaizier@ms.umanitoba.ca).



Instant Update

NCLE and partners MLMMI, MAFRI and the Manitoba Manure Management Advisory Committee host "Achieving Manure P Balance in Manitoba - Technical Workshop"

On November 30th and December 1st, government, industry and research leaders came together to share current information on available feed, crop/land and manure management options for balancing P and to identify research and extension priorities and develop strategically-minded, objectives-oriented action plans that will help Manitoba livestock producers manage manure phosphorus for balance. Look for a special newsletter feature issue on "Achieving Manure P Balance in Manitoba – Strategic Action Plan for Research and Extension" in the new year. NCLE Chair **Don Flaten**, Soil Science, **Nazim Cicek**, Biosystems Engineering, and **Christine Rawluk**, NCLE, provided technical updates at the workshop. UM/NCLE researchers **Kees Plaizier**, **Martin Nyachoti**, **Derek Brewin**, **Chad Lawley**, **Charles Grant**, **Mario Tenuta** and **Wole Akinremi** also participated in the discussions and planning process.

NCLE and Animal Science dairy research showcased at the 4th Annual Manitoba Dairy Conference

Kees Plaizer, dairy researcher, highlighted some of the dairy research taking place at the Glenlea Research Station as well as some current and upcoming multi-disciplinary NCLE projects during an invited presentation. The University of Manitoba/NCLE research display at the conference provided a good opportunity for **Kees** and **Christine Rawluk**, NCLE Research Development Coordinator, to also have one-on-one conversations with conference participants.

Manitoba Cattle Producers Association members visit Glenlea Research Station

On October 6th, NCLE hosted members of the Manitoba Cattle Producers Association at the Glenlea Research Station. During the visit, researchers described recent forage-beef research projects, emphasizing the value of multidisciplinary research and partnerships in benefiting the sustainability of Manitoba's cattle industry. NCLE/UM researchers **Kim Ominski**, **Karin Wittenberg**, **Don Flaten**, **Laurie Connor**, **Denis Krause**, **Mario Tenuta**, **Gary Crow**, **Derek Brewin** and **Julieta Frank**, ruminant technician **Terri Garner**, and NCLE Research Coordinator **Christine Rawluk** hosted.



Attention focused on sow stalls for the Centre for Professional and Applied Ethics October lecture series

The topic "Sow Stalls: Ethics, Perceptions and Animal Welfare" was the focus of discussion on October 15th at the Faculty of Agricultural and Food Sciences lecture theatre. **Laurie Connor**, Department Head, Dept. Animal Science, and **Dr. Wayne Lees**, Chief Veterinary Officer, Government of Manitoba, gave their perspective on animal welfare and ethics surrounding the use of sow stalls. Paul Shapiro, Humane Society of the United States, Dana Medoro, Department of English, Film and Theatre, and Twyla Francois, Head of Investigation, Canadians for the Ethical Treatment of Food Animals (CETFA) shared their views from the perspective of public concern. The interest in this topic was high - close to 200 people from a variety of backgrounds attended. View the recorded session at <http://umanitoba.ca/afs/seminars/>

Research Update

NCLE part of a new research network on Environmental Policy research

NCLE, along with economists **Gary Johnson** and **Chad Lawley**, Agribusiness and Agricultural Economics, **Don Flaten**, Soil Science, and **Esther Salvano**, MAFRI, represent Manitoba on this new federally-funded cross-Canada Agriculture - Environmental Policy Research Network (ERCA). To get their feet wet, Gary and Chad are attending the first ERCA Network gathering at the Wetlands Management, Economics and Policy Workshop in Victoria, British Columbia, January 13-15, 2010. Stay tuned for new ERCA projects.

Visit our **website** <http://www.umanitoba.ca/afs/ncle/> to learn more about these and other **NCLE research projects**.