

Feature Research Project

Cattle vaccinations: Are there advantages to using needle-free injection devices on Manitoba cattle farms?

Traditionally, vaccines are administered with a needle and syringe. Already used in human medicine and in the swine industry, needle-free injection devices offer an alternative for delivering vaccinations, with many possible advantages. Needle-free injection devices (NFID) rely on pressure to deliver the vaccine through the skin to the desired tissue depth. With NFID, risks such as tissue damage, broken needles and improper needle disposal are eliminated. Other benefits of NFID include consistent vaccine delivery, lower vaccine volume requirement and greater vaccine dispersion. However, there remain some gaps in knowledge, including possible differences in immune response under different use scenarios.

A new study starting this spring will shed light on the effectiveness of NFID for vaccinating calves under Manitoba conditions. Partnering with Manitoba Beef Producers, a multidisciplinary group of researchers with the National Centre for Livestock and the Environment will evaluate the suitability of this technology for use on Manitoba cattle farms. Dr. Kim Ominski, cattle-forage production systems researcher, leads the study. "Our group was keen to help provide information on this front, so it didn't take long to establish the research team, which includes animal immunology researcher Dr. Juan Carlos Rodriguez-Lecompte and Masters student Michel Rey, along with a core of hands-on experts."

In order to be representative of standard industry practices, this study will take place on a cow-calf operation in Manitoba, following standard animal management practices related to feeding, watering and housing. Both spring and fall born calves will be included in the study in order to accurately compare NFID performance for vaccinations administered under warm versus cold temperatures.

"Another step we're taking to make this information relevant to Manitoba producers is to use respiratory and clostridial vaccines already being used by Manitoba beef producers," says Ominski. Drs. Rodriguez-Lecompte and Ominski will be monitoring for the presence of specific antibodies as an indication of the effectiveness of the vaccine delivery method. "The calves' immune responses will tell us how well NFID works compared with conventional needle and syringe injections," noted Rodriguez-Lecompte.

The research team is also looking to see if there's a difference in immune response depending on where the vaccine is injected. Specifically, they are measuring immune response to injections in the neck or caudal fold area. Repeating the study with fall-born calves will show if immune responses under cooler temperatures are similar to those measured in the spring trial.

Graduate student Michel Rey, who helps his parents run a 150 head cow-calf beef operation while attending university, sees a clear need for this information in Manitoba. "Being in the beef industry, I understand the importance of food safety and of consistently producing a high quality meat product. If in using NFID we can eliminate such issues as broken needles, while establishing a similar or greater immune response compared to conventional injections, I would anticipate seeing increased NFID use in both cow-calf operations as well as beef feedlot operations."

With this practical approach, the research team will also be able to show if NFID can substantially reduce the amount of time required to vaccinate the herd in any of these scenarios. The information generated from this study will help Manitoba producers determine if using needle-free injection devices for on-farm vaccinations is the right choice for their operation.



Cows and calves on the Rey farm.

Research Team: Dr. Kim Ominski, Dr. Juan Carlos Rodriguez-Lecompte, Dr. Karin Wittenberg, Michel Rey, Terri Garner, Michael Undi. *For more information on this and other cattle-forage research, contact Kim Ominski (phone: 474-9468 or by email: k_ominski@umanitoba.ca). Project funded under Growing Forward.*

Instant Update

University of Manitoba soil science professor Dr. David Lobb named research chair in watershed systems

With the support of \$1.25 million in provincial funding, Dr. Lobb will coordinate a range of multi-organization research activities concerning the Lake Winnipeg watershed. In a recent interview with University News, Dr. Lobb expressed his confidence in the capacity of this position to “help speed up efforts to improve water quality within Lake Winnipeg.”



NCLE researchers part of process to identify BMP needs for extensive cattle wintering systems

Workshop: Extensive Cattle Wintering Systems, Feb 8 & 9 in Saskatoon. This event united researchers, extension specialists, industry experts and leading-edge cattle producers from across Western Canada to share information and discuss strategies to improve the sustainability of extensive cattle wintering systems on the Canadian Prairies. The workshop is a partnership led by Agriculture and Agri-Food Canada.

Research Update

New Project:

PAMI working with MLMMI to lead evaluation of manure treatment technologies in Manitoba

The Prairie Agricultural Machinery Institute is working with the Manitoba Livestock Manure Management Initiative to provide industry with Manitoba-specific phosphorus removal efficiency and economic information. This evaluation will help livestock producers decide what technological options can be used to achieve manure phosphorus balance on their farms. NCLE’s complementary research will focus on environmental sustainability and agronomic suitability aspects of processed manure products. Trials begin spring 2011.

Feature Publications:

E. M. Jordaan, J. Ackerman and N. Cicek . 2010. *Phosphorus removal from anaerobically digested swine wastewater through struvite precipitation*. *Water Science and Technology* 61(12): 3228–3234

M. Tenuta, M. Mkhabela, D. Tremorin, L. Coppi, G. Phipps, D. Flaten and K. Ominski. 2010. *Nitrous oxide and methane emission from a coarse-textured grassland soil receiving hog slurry*. *Agriculture, Ecosystems & Environment* 138: 35-43. Visit <http://umanitoba.ca/afs/labroquerie> for more results and publication listings for the La Broquerie Study.

Resources:

2010 Weather data for NCLE Glenlea research site now available online

Access weather measurements from 2005 onward at <http://umanitoba.ca/afs/ncle/TGASMANWeather.html#weather>

Extension & Outreach Update

Tour: On February 13th, NCLE was pleased to host 85 delegates of the **Canadian Young Farmers Forum** on a tour showcasing the scope of NCLE research and outreach, from leading edge to practical solutions-oriented investigations, plus joint workshop initiatives aimed to develop and deliver BMPs to producers. The CYFF promotes idea exchange and fosters collaboration among young and future farmers of Canada.

Article: The NCLE feature article “*Cattle vaccinations: New University of Manitoba study compares needle-free and conventional injection systems*” appears in this month’s *Cattle Country* publication.



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