

Water and Wastewater Technical Mission to the Netherlands

From November 3 to 8, 2013, 32 Manitobans traveled to the Netherlands where they met with major industry and business representatives. The delegates learned about their host's best practices and expertise in water management and wastewater treatment. Organized by the partnership of the Manitoba Environmental Industries Association (MEIA) and the World Trade Centre (WTC) Winnipeg, this mission was a chance for Manitoba businesses to witness new and successful practices that could lead to some promising developments for Manitobans.

Van Doan, Livestock Environment Engineer, represented Manitoba Agriculture, Food and Rural Development on this mission. Her primary focus was to support the pig industry and look at different strategies to help it comply with the Livestock Manure and Mortalities Management Regulation. Alongside the pork-producing company *Hyllife* she assessed various manure treatment technologies.

Background

Manitoba	The Netherlands	In comparison, The Netherlands has
650,000 sq km	40,000 sq km	16.25 x less sq km
1.3 million people	17 million people	13 x more people
1.2 million cattle	4 million cattle	3.3 x more cattle
2.6 million pigs	12 million pigs	4.6 x more pigs
8 million poultry	100 million poultry	12.5 x more poultry

Most livestock farms in the Netherlands produce more manure than what is allowed to be applied on their own land. Based on annual manure production, a farm with 200 head dairy or 2,000 finishing pigs require approximately 250 acres. Unfortunately, most farms do not have enough land and farmers must process, export (or do both) their manure. Transporting surplus manure ranges from five to 20 €/ton. Most of the manure from the Netherlands is transported to France and Germany. For cross-border transportation, all manure must be pasteurized (heated for minimum 70°C for one hour). Over 500 trucks transport manure to agricultural lands in the Netherlands, France and Germany.

Restrictions

- Animal manure can only contribute to 170 kg N/ha/y of the total allow N application limit of 350 kg/ha/y. The exception is 250 kg N/ha/y for cattle farms with grassland. Synthetic fertilizers make up the remainder of the N-limit.
- The phosphate application standard is dependent of soil phosphate conditions, 55-100 P₂O₅/ha/y.
- All manure storages must be covered.
- No manure application during fall/winter; seven month manure storage capacity required
- No broadcasting of manure is allowed. Low emission manure application such as injection is permitted.

Manure Treatment

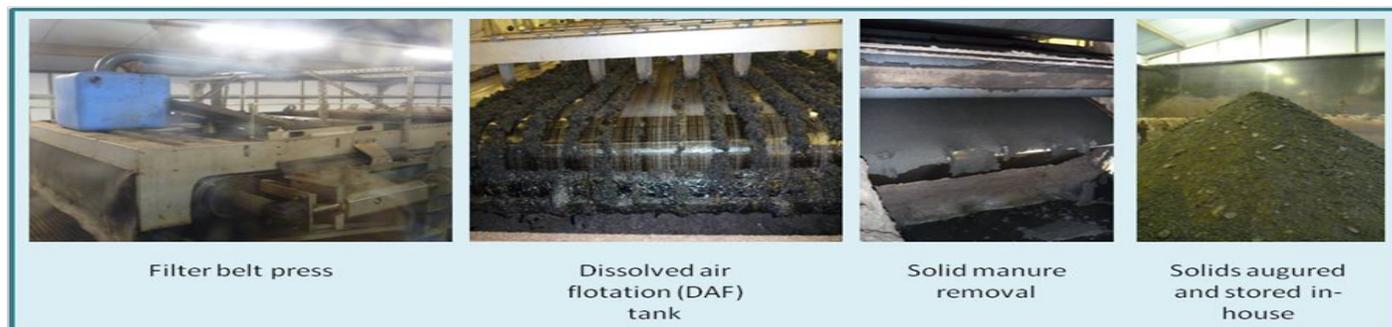
There were many manure treatment options in the Netherlands from centrifuges and screw presses to more advanced treatment that included belt filter presses with dissolved air flotation and reverse osmosis. Looking at the Manitoba situation, the Dutch suggested purchasing trucks and hauling the manure. If treatment was necessary, investing in a belt filter press was recommended.

Advanced Manure Treatment at the Kumac Treatment Plant

- Pig slurry from a group of 43 farmers.
- 80 per cent of manure is transported within three to four km away.
- 50 per cent farmer owned CO-OP; 50 per cent owned by Kuunders family
- Treat 70,000 tons of pig manure/year with a capacity of 100,000 tons/year
- Treatment process:
 - Separation by belt filter press into a solid and liquid fraction; a flocculant is added. Solids portion is transported off-site to a biogas plant.
 - Dissolved air flotation (DAF) of the liquid fraction after adding a small amount of flocculant
 - Reverse osmosis (RO) of liquid into (1) permeate (water) which is discharged into surface water and (2) concentrate which is used as a mineral fertilizer.
 - 90-95 per cent phosphorus (P) removal

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KUMAC solids removal process



Conservation Auction—A New Concept in Watershed Programming

A conservation auction is a unique event in which participating landowners place bids on the cost they will charge to provide ecological goods and services (EG&S). Like a conventional auction, people place bids on the price they are willing to accept to sell their goods and services for. The bids are then ranked based on the environmental benefit provided for the price of the bid. The goal is to get the maximum environmental benefits with the available budget.

The Turtle Mountain Conservation District (TMCD) initiated the Whitewater Lake Sub-Watershed Conservation Auction Incentive Program in the winter (December 2013 to March 2014). The program builds on the Dennis Lake Conservation Auction Pilot Project in the Interlake region (February 2012 to March 2013). The goal of this program is to conserve land surrounding Whitewater Lake and increase EG&S in the area through the purchase or easement of private lands and the implementation of Beneficial Management Practices (BMPs).

Environmental benefits from the auction will include water purification and quantity management, increased habitat for waterfowl and wildlife, biodiversity and carbon sequestration. Expanding human activity around the fluctuating perimeter of Whitewater Lake has resulted in the loss or reduction of EG&S and negatively affected local agriculture.

Landowners within the Whitewater Lake Sub-Watershed took part in the voluntary auction by submitting bids for these types of incentives:

1. purchase of land (titles held by TMCD)
2. conservation agreements (made in perpetuity between the landowner, the Manitoba Habitat Heritage Corporation and TMCD)
3. implementation of BMPs (10-year agreements between landowner and TMCD), including

construction of water storage, construction of salinity barriers, restoration of natural cover and forage establishment in sensitive areas

The Whitewater Lake Sub-Watershed Conservation Auction received funding support through the Growing Assurance Program - Ecological Goods and Services under *Growing Forward 2*, a federal-provincial-territorial initiative. A total of \$176,118 was awarded to landowners for bids submitted for EG&S incentives. Three conservation agreements and two land purchases were approved for lowland areas surrounding the lake.

A total of five beneficial management practices projects were also approved:

- one wetland enhancement and restoration of natural cover
- one water storage and restoration of natural cover
- three water storage projects in the uplands of the Turtle Mountain area

The Turtle Mountain Conservation District Board is pleased with the success of the auction and the benefits it provides to the sub-watershed. The board is now looking for additional funding to continue the program and promotion of EG&S within the Whitewater Lake sub-watershed.

Important Dates and Notices

July 3	4R Field Day at Kelburn
July 8-17	Crop Diagnostic School
July 18	Organic Crop Diagnostic School
July 31	Horticulture Diagnostic School
August 8	U of M Field Day at Glenlea