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Submission to  
Manitoba Clean Environment Commission

Hearings on  
The Hog Production Industry Review

March 14, 2007

## **Farm Background**

Our hog operation was started in 1994. We chose a straw-based shelter grower/finisher system because of the lower capital cost required for this type of housing. Earlier research by the University of Manitoba and other investigators demonstrated that finishing hogs on straw was advantageous in terms of capital investment and operating costs; flexibility which did not confine shelter use to continual hog production; lower odour production both on-site and during land application; natural ventilation and open-air environment which promotes health of the stockperson as well as the pigs; and a more natural environment for the pigs with accompanying welfare benefits. Since 1994 we have expanded the operation from 8 shelters to 20 shelters (4500 pig places). We sell approximately 13,500 market hogs per year. The operation has been Canadian Quality Assurance (CQA) validated since 2001.

## **Environmental Planning and Monitoring**

Manure management plans were developed and an environmental permit obtained in compliance with current provincial regulations. Our farm has also participated in the Environmental Farm Planning (EFP) Program. We have completed 2 farm plans; firstly, to implement the development of an engineered manure composting site in 2005 where on-going manure composting research is being conducted, and secondly, to develop a dead stock composting system, which is currently in the design phase and will be completed this year. The composting pad, which is 40,000 ft<sup>2</sup> is designed to store runoff in lined catchment basins to prevent groundwater contamination. In order to comply with the conditions of the permit we have installed 6 monitoring wells to monitor any nitrate leaching from hog shelters or composting site. The results of annual water analysis are sent to Manitoba Conservation.

## **Manure Handling and Composting**

The manure/straw bedding mixture is transported from the shelters to the composting pad located in near proximity to the shelter. The manure is placed in 6 ft high windrows on the composting pad and a specialized compost turner is used to process the manure into an organic amendment. Depending on climatic conditions, 3 to 5 turnings are required to process the manure. A curing process of several months follows the active composting phase. The whole process takes 90-120 days to completion. Analysis of the compost indicates that more than 90% of the nitrogen is in an organic form.

We have been working with Dr. Katherine Buckley learning best how to compost the manure/bedding mixture from these shelters. Dr. Buckley has been conducting research on manure composting and agronomic use of manure at the Brandon Research Station since 1998. She encourages the use of compost to enhance soil organic matter and improve nutrient cycling in intensively cropped soils.

## **Compost Use, Potato Production and Soil Management**

The potato company (WM Ventures) buys the compost from the hog company. The potato company pays the cost of composting the manure, hauling the compost to the field & spreading the compost. These variable costs are determining factors in the price paid for the compost. In spite of these costs, the potato company realizes a \$30-\$50/ac cost advantage using compost versus commercial fertilizer.

The finished compost is transported to potato fields, where it is spread just prior to seeding potatoes. The rates of compost application are established by determining the compost nutrient content and residual soil nutrient levels in the targeted fields prior to fertilizing according to the nutrient requirements of the potatoes. Soil and compost sampling is done by a professional agronomist (Crop Care Consulting). The compost is applied using an applicator mounted with a Global Positioning System and load cells to apply a precise amount of compost and distribute it evenly over the fields. The compost is applied in combination with commercial fertilizer to assure that sufficient nitrogen is applied to properly utilize applied phosphorus. The potatoes are irrigated which also improves nutrient uptake by the crop. Additional nitrogen can be applied through the irrigation system, which was done in the summer of 2006. All nutrients are applied under the supervision of a crop consultant.

The crop rotation commonly used in potato production is "wheat-potato-oil seed or legume" with potatoes being seeded one year in three. Following the wheat crop the straw residue is incorporated into the soil. The potato harvesters have choppers that chop the potato vines and spread them evenly over the fields, however, wheat is the only crop grown in the rotation that has a significant amount of organic residue. It is well understood that it is beneficial to add additional organic matter back to the soil in the form of compost. The addition of compost also builds soil fertility and, due to the slow nutrient release, crops seeded in subsequent years will benefit from not only major nutrients like nitrogen, phosphorus and potassium but the trace nutrients as well. Potato yield and quality tests done in collaboration with the Brandon Research Centre indicate that there is a consistent yield improvement with no detrimental effects on potato quality in compost amended soil. Furthermore, there has been a visible improvement in consistency of production of other crops in the rotation.

As part of the land management strategy to prevent wind erosion and loss of soil bound nutrients, the lighter land is not tilled until just prior to spring seeding the rotational crop which could be cereal, canola or beans. Fields with heavier soils may be worked in the fall to be ready earlier in the spring, but this would only happen if the risk of erosion was low.

This integration of livestock and crop production should be sustainable over time, both environmentally and financially, which is necessary for any farming operation to be successful.

Thank-you for allowing me to present my perspective as a producer and I will be glad to answer your questions.