

The Saskatchewan Hog Industry and Environmental Implications

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Saskatchewan agriculture is in the midst of change. How many of you would have imagined the Soils and Crops Workshop featuring a morning's session on manure management, hogs and livestock related environmental implications. Given Saskatchewan's previous focus on grain production, I think that simple observation tells you something about the speed of change in rural Saskatchewan. Hog manure management now seems to be the topic of conversations in churches, town hall meetings and local coffee shops all over western Canada and indeed in many parts of North America.

My purpose here today is to give you a very brief overview of what is happening in Saskatchewan's hog industry, Heartland's hog initiative and how the industry is addressing environmental issues. My comments will be mostly applicable to Heartland Livestock's hog initiative and may or may not be common to other hog developers in the province.

Saskatchewan's Hog Industry; an overview

As most of you are aware Saskatchewan hog production is undergoing rapid change and expansion. Hog barns are getting larger. Small producers are exiting the business and a number of larger producers are expanding. Heartland Livestock, a subsidiary of Saskatchewan and Manitoba Pools, has also expanded into primary hog production and intends to build approximately twenty-six 2,400-sow hog production projects within the next 5 years. Since entering the hog business in Dec 1977, Heartland has two projects presently in production and plans are *underway to construct six projects in 1998.

Heartland's hog initiative is based upon partnering with communities in the building and ownership of the hog projects. The plan is to build 2,400 sow, three-phase production projects. Each project costs approximately \$12 to \$14 million. Selling \$3 million worth of units/shares to local investors, a matching equity contribution of \$3 million by Heartland and debt financing the balance finances each. The projects are regional in nature in order to obtain the required local investment. To date, we have found communities very receptive to the partnering concept and have letters of intent signed to partner in a hog project with 26 committed communities.

A question asked in many circles is: "Why the interest in Hogs"? The answer to that question is relatively simple. Western Canada and especially Saskatchewan have a number of economic, environmental and competitive advantages relative to other parts of Canada and indeed the world. A few of the most significant advantages include:

- Feed costs: Due to the change in the Western Grain Transportation Act (loss of the crow rate for grain transportation) Saskatchewan now has relatively cheaper feed grains. Since the variable costs of producing a hog are approximately 66% feed, we now have a competitive advantage in cost over other parts of the world. In terms of demand, pork is the dominant meat protein consumed worldwide, and accounts for almost 45% of world consumption.

World consumption has increased 1% to 5% annually from 1992 to 1997. Net imports of pork are expected to grow by 3% to 6% per year over the next five years.

- Land area for expansion: Saskatchewan has significant advantages over other parts of the world where production is facing severe constraints due to population and environmental pressures. Present hog population is just under 1 million animals dispersed throughout approximately 66 million acres of agricultural land. Couple this with a sparse rural human population and the problems faced in other areas of the world is relatively minor. Environmental constraints are mostly related to a small land base where there is a insufficient amount of land for appropriate manure application, a problem Saskatchewan is very unlikely to encounter.
- Management Expertise: Equally important to note is the presence of a professional infrastructure to provide research and professional support for the industry. Examples are the Prairie Swine center, University of Sask., Veterinary Medicine College, PAMI and a number of professional consultants.
- Climate is also a significant advantage as it is easier to heat a hog than it is to cool it, resulting in better production efficiencies. Diseases are also less adaptable to cool climates. From an environmental perspective, our cool, dry climate reduces the probability of water contamination.

Heartland's Hog Model

Each of the projects consists of a 2,400-sow operation, which will produce approximately 55,000 finished hogs per year. The production units are based on a three-site production model, which was chosen for health, production and cost efficiency reasons. Each of the projects will have a minimum of four different locations, depending on the size of the finisher barns. Each project includes:

- **Site 1:** A 2,400 sow farrowing and gestation barn.
- **Site 2:** An 8,800 weanling /nursery barn.
- **Site 3 and 4:** At least two **8,000** animal finisher barns will be located on separate locations.

Community benefits related to each of the projects include:

- The development of a domestic market for feed grains: 13,000 tonnes per project.
- Job creation: 18 full time positions per project.
- 50 person-years of employment during construction.
- An investment opportunity. Through investment could potentially have 600 local investors per project (\$3 million local investment divided by \$5,000 per minimum share).
- Fertilizer benefit: Approximately 2,700 acres of cultivated land will be fertilizer each year from the manure effluent.

Environmental Issues and Heartland's Commitment

The key environmental issues are related to odour, the potential for soil and water contamination and the potential for diseases from dead animals. Each of these issues is dealt with by Heartland's environmental management commitment.

Environmental Protocol

At the initial stages of Heartland's initiative into hog production, management of the project spent a considerable amount of time developing an environmental protocol to use as a template for all Heartland affiliated hog projects. Heartland's Environmental Management Commitment key elements include: an extensive site selection process, the use of the latest research and best practical means to reduce and prevent odours, a commitment to an open and ongoing consultative community relations program, a commitment to meet or exceed all regulatory requirements and a commitment for an ongoing environmental monitoring program.

The process for the development of each hog project includes:

Site Selection Criteria

Basic criteria for site selection include: Isolation from immediate neighbors and consent from people living within two miles; isolation from major aquifers, waterways, and alternative land uses such as parks; availability of suitable soil and water conditions for building needs and lagoon construction; availability of suitable amounts of arable land for manure application; and access to roads and infrastructure such as power, telephone and natural gas.

Selecting suitable sites involves the following steps:

- The local hog committee suggests a number of sites based on the established criteria and their knowledge of the area.
- All neighboring residences within three miles are personally contacted and notified of the proposed hog barn location.
- Prospective sites undergo an initial review for soil and water suitability at the site and potential availability of surrounding lands for manure application. This review is done by the Soil Survey Department at the University of Saskatchewan.
- A Phase I Environmental Site Assessment is conducted to determine the likelihood of past environmental concerns and/or to identify concerns or potential issues of importance to the use of the property for a hog site.
- A Geotechnical evaluation of the site is conducted to determine the site's suitability for earthen manure storage and building design.
- Water exploration wells are dug to determine water quality and quantity.

- An evaluation of the soil, geology and groundwater conditions is conducted to determine the potential environmental concerns, which may occur as the result of a hog operation in the area.

Only those sites meeting all acceptability criteria will continue to be considered as potential hog production locations. Prospective sites may be culled at any step in this process if they are deemed to be unsuitable.

Community Liaison

Community acceptance is extremely important for all Heartland hog projects. Community meetings are held to inform local residents about projects, and people are invited to express any concern they may have, in order for the project to resolve the concern or to consider the selection of other sites. Heartland believes an open consultative relationship with the community is extremely important to the long-term success of the entire project.

Odour Control

In order to minimize odour concerns Heartland has committed to use the best practical means to prevent and reduce odour. In addition to abiding by preferred isolation distances, sites are selected which try to reduce odour to neighboring residences by taking into account natural topography and wind direction. All barn locations will cover earthen manure storages with straw, and manure will all be deep injected into soil. In addition, shelterbelts will be planted around the barns and earthen storage sites.

Regulatory Requirements

Meeting regulatory requirements is seen to be a minimum environmental standard for Heartland facilities. As a first step in exceeding the regulatory requirements the Heartland facilities will be covering all earthen manure storages with straw, and deep injecting all manure directly into soil.

Ongoing Monitoring

While the sites selected for hog barn locations undergo a careful evaluation to meet Heartland's environmental standards as well as regulatory requirements, Heartland views the operational management and monitoring of the facility after it is in operation to be as important to the long term environmental performance of the facility as the initial site selection. Heartland will develop a standard set of operational practices with respect to the earthen manure storage area, manure application, odour and pest control. In addition, an annual audit of the facility will be undertaken to ensure compliance with the standard operating procedures, and an ongoing monitoring program will be conducted, at the project's expense, to record and document soil and water conditions for manure application areas and the barn site.

Future Challenges

Change is often controversial. We are all aware of the public debate surrounding the expansion of the hog industry in Saskatchewan. Some are concerned about odour, some about potential water contamination; others are against the hog expansion models. While the public hears about those concerned with the hog expansion, it is important to understand there is also a great deal of support for the development of the hog industry in Saskatchewan. The organizations presently leading the development of the hog industry are cognizant of the environmental concerns and have taken proactive steps to ensure the hog projects are located and operated in an environmentally friendly manner.

The challenges ahead are many. It seems the more we understand and learn, the more questions there are. In order to maintain a long term, viable, sustainable industry we need to constantly improve. From my perspective, many of those improvements are attainable through the research community. The industry needs more research on manure management, odour control, environmental implications, nutrition, production, disease, manure storage alternatives, application technology, the list goes on.