

# Opportunities for the Hog Industry in Canada: Industry Perspective

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## ■ Introduction

Environmentalism and new policies are creating new challenges and opportunities for agriculture. The opportunity for the Pork Sector as it relates to greenhouse gas (“GHG”) emission reduction credits primarily looks at the ability to verify and then sell these credits as a commodity to generate a new revenue stream due to changes in management practices. GHG is a common term that is used loosely by several government, industry and public-sector organizations to describe the negative impact the release of Carbon Dioxide (CO<sub>2</sub>), Methane (CH<sub>4</sub>) and Nitrous Oxide (N<sub>2</sub>O) have on the natural climate. Often also referred to as Climate Change, one finds that there are few standards and even fewer qualified experts to provide some insight into how this whole opportunity will unfold. This has led to an overwhelming frustration about how industries, like the hog sector, could possibly extract some financial benefit from the GHG opportunity.

This presentation focuses on the background and basics of what the Kyoto Accord means to the hog sector, where the industry is moving and how cash-flow might be generated from GHG someday. A general perspective is provided about the technical matters related to the changes in management practices needed to generate a valuable GHG credit. Further, the overall philosophical boundaries and impacts of national (federal government) negotiations that are causing the GHG industry to adapt and change over time.

A specific case study of an existing hog manure management system to generate saleable GHG will also be presented in the conference presentation with a general analysis and opportunity for questions.

## ■ What are GHG's and credits?

The general consensus in Canada is that GHG's are those gases released from industrial human activity that would not normally have been as prevalent if people were not manipulating things to their advantage. CO<sub>2</sub> is the most abundant and well-known GHG and all other GHG's are always related back to the relative comparative damage that CO<sub>2</sub> can have. For example, CH<sub>4</sub> has an impact twenty-one (21) times as negative as CO<sub>2</sub> while N<sub>2</sub>O has an impact that is three-hundred and ten (310) times as negative. The common term is CO<sub>2</sub>-equivalent or CO<sub>2</sub>e.

When GHG emissions are generated, they are normally the result of some industrial practice related to the burning of fossil fuels. Additionally, the release of GHG emissions from natural processes can occur. In agriculture, most familiarity is with the GHG emissions that are a result of manure production, which include CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O. The opportunity for agriculture is that the GHG emissions from agriculture are not likely to be regulated under the Kyoto Protocol policies that Canada will adopt. In other words, farms will not be required to reduce GHG, but if they do, others who are required to may be interested in buying that reduction to offset their own GHG's. This has been the genesis of the GHG credit sales concept.

For the Canadian Pork Industry, any changes in management that may reduce GHG could possibly be sold on some kind of domestic GHG trading or sales system. This is currently being developed by the Federal Government with some glacial speed. However, some transactions have taken place on speculation that regulations will be developed. In particular, a hog manure management project based in Chile has been one of the first successful high-value transactions related to GHG. The GHG sales were able to pay for a considerable part of the capital cost associated with the construction of anaerobic digestion technology to capture methane from the manure storages. This precedent-setting transaction is a basis for credibility in Canada's hog sector.

In summary, GHG represents an intangible asset that is likened to a hedge transaction. In the hog industry, one can buy the right to purchase feed or other inputs such as natural gas well in advance of the date of delivery. One can then sell that right, which is often referred to as a 'futures contract'. GHG is very similar except that the transaction may be retroactive in some cases. The hog sector has the opportunity to generate GHG credits and sell them as a means to generate cash-flow.

## ■ The Technical Perspective

To generate GHG credits, one must present the technical verification (technical audit) that shows irrefutable evidence that the GHG credits are quantifiable and measurable reductions of the tonnes of actual gases over time. For example, if one implemented a cover over an earthen manure storage, the release of methane would be reduced. Measurements and calculations would have to be documented to defend the quantities that would be sold in a given transaction. There are a variety of technologies and methods to reduce GHG in the hog sector. All methods are very specific to the exact conditions of a given farm. The variables to determine methods of GHG reduction includes; type of hog production (sows, finishers, etc), the size of the facility, manure management system (EMS, spreading vs. injection, concrete storage, annual or semi-annual application, cover vs. no cover), location in Canada, reasons for implementing technology and the ability to change or improve.

The technologies used to reduce GHG relate mostly to the manure management systems. Such technologies as EMS covers, anaerobic digesters, increased land base for application of manure, injection of manure instead of spreading, treatment of manure and in some cases the offset of fossil fuels using energy produced from manure. These technologies vary in cost and often increase in expense to have a greater reduction of GHG.

Clear-Green Environmental has specific experience with anaerobic digestion and post-treatment approaches to reduce GHG. Some small GHG transactions have taken place in Canada related to the offset of natural gas with methane generated from the technology. However, very significant volumes of GHG are a result from the capture of CH<sub>4</sub> and N<sub>2</sub>O when comparing the post-technology case to the conventional EMS and land spreading (injection) system. Clear-Green intends to sell these large volumes to private sector buyers such as utilities and other large emitters.

The technology selected to reduce GHG must be able to result in measured reductions of CO<sub>2</sub>, CH<sub>4</sub> or N<sub>2</sub>O. Any new equipment that is put in place must be able to reduce GHG above and beyond those created by implementing the technology or the downstream impacts it may have. EMS covers or additives to reduce methane production may have short-term reductions, but if the manure is irrigated or surface applied, the CH<sub>4</sub> and N<sub>2</sub>O emissions may be greater than in other scenarios, so any impact may be negated through those downstream impacts. All chemicals present in manure must be managed and accounted for in order to claim that GHG is truly being reduced.

## ■ **Conclusions – How is Cash-Flow Possible?**

While this may seem an overwhelming challenge to assemble a viable project that can generate a return on investment, there are possible scenarios that, in the short term, could be very lucrative to the hog sector. The greatest unknown is the timeframe for the federal government to implement regulations and a framework for GHG transactions to take place. This may be within the next year or beyond, depending on the lobby pressure from other sectors. However, based on some of the transactions that are taking place in developing countries, the opportunity could be sooner rather than later for Canadian hog producers.

The transactions that will take place are going to begin with the larger opportunities. The economies of scale for completing larger projects encourages the buyers and sellers to engage these first. A typical project may require a minimum of 50,000 tonnes of CO<sub>2</sub>e per year which would result in a three to five year transaction. Smaller projects may be able to aggregate or join forces, but scientific reporting on each site would still be required. Again, the market forces will dictate how this will evolve.

Some concepts that are also being evaluated involve the Federal Government establishing a fund to buy and sell credits until a private system can be developed that is more stable. The advantage of this system would be less work by the individual producer and more liability shifted to the government. The prices per tonne of CO<sub>2</sub>e under either system have been proposed from \$3.00 to \$15.00, but varies considerably depending on the expert making such speculation.