

## **Presentation to the Manitoba Clean Environment Commission “Hog Production Industry Review”**

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Good afternoon ladies and gentlemen, and my thanks to Keith Thornton for his presentation and to the CEC for funding it.

AnimalWatch Manitoba looks forward to a day when people no longer kill animals for food, except for survival, and the burden of being at the same time lovers and protectors of other animals and tormentors and killers of them has been lifted from our hearts. Until that day, animal farming must at the very least become much more humane and sustainable. Keith has pointed the way for our province to do this at a time when consumers are finally starting to see through the shrink wrap to the ugly realities beneath.

An objective, scientific approach to sustainability requires us not only to ask what is sustainable hog production but whether other means of feeding ourselves and the world would be significantly more sustainable, as broadly defined by the province's Sustainable Development Act which includes not only preservation of the physical environment but of human health.

National food guides accurately tell us that pork's primary role in the human diet is as a source of protein – excess protein, unfortunately, for most North Americans who eat well beyond their protein needs, promoting kidney failure in old age. Pork is also very often a source of excess calories, feeding the epidemic of obesity and obesity-related illnesses. High quality epidemiologic studies also suggest that the more pork, particularly cured pork, people eat, the higher is their risk for several cancers, including the usually terminal pancreatic cancer (see, for example, <http://jnci.oxfordjournals.org/cgi/content/full/97/19/1458>, <http://jnci.oxfordjournals.org/cgi/content/abstract/98/15/1078>). In contrast, the staple proteins of a plant-based diet – especially beans and nuts, but also grains (especially whole grains) – are all associated in long-term human studies with less chronic degenerative disease and greater longevity (see, for example, [www.ajcn.org/cgi/content/full/78/3/544S](http://www.ajcn.org/cgi/content/full/78/3/544S); [www.msnbc.msn.com/id/15145789/](http://www.msnbc.msn.com/id/15145789/)). Manitoba has no problem growing beans and grains and even the nutritionally exceptional nut of the hemp plant. Our geography doesn't compel us to become the pork basket of the world. And yet Manitoba produces and exports more pork and pigs than any other province – well over 90% of what we produce – and this in a country that is a leading exporter of edible pig products, the #1 exporter of pork itself (UN Food and Agriculture Organization: [www.fao.org/es/ess/toptrade/trade.asp?disp=countrybycomm&dir=exp&resource=1038&year=2004](http://www.fao.org/es/ess/toptrade/trade.asp?disp=countrybycomm&dir=exp&resource=1038&year=2004)).

A paper published in 2003 in the *American Journal of Clinical Nutrition* can help us grasp the extreme environmental inefficiencies of producing pork as a source of protein. The authors of this paper, titled “Quantification of the environmental impact of different dietary protein choices” ([www.ajcn.org/cgi/reprint/78/3/664S](http://www.ajcn.org/cgi/reprint/78/3/664S)), are Lucas Reijnders, Ph.D., an environmental scientist and professor at the University of Amsterdam, and Sam Soret, Ph.D., Chair of the Department of Environmental & Occupational Health at Loma Linda University, School of Public Health. These are well-credentialed scientists writing in a peer-reviewed scientific journal that is to nutrition what the *Journal of the American Medical Association* is to medicine.

According to Reijnders and Soret, the protein conversion efficiency of pork is about 9%. That means producers have to feed 11 pounds of vegetable protein to pigs to produce just *one* pound of pork protein. This is a spectacularly inefficient way to feed a world where nearly one billion people go hungry every day. *Why is a would-be green and socially responsible province like Manitoba exporting a recipe for even more world hunger?*

What about climate change? Reijnders and Soret write: “Depending on the relative intensities of agricultural practices [by intensity they mean the spectrum from organic through to intensive] ... the efficiency of fossil fuel use may be a factor 2.5–50 better for vegetable proteins, if compared with animal husbandry (23, 24, 26–28).” In other words, the greenhouse gas impact of animal agriculture is at least two and a half times- and as much as 50 times greater than the impact of growing protein-rich crops for human consumption.

The impact of pork production is so high because the greenhouse gas emissions from the hog barns themselves – the CO<sub>2</sub> and methane from the pigs, the nitrous oxide from the manure – are only part of the story. There also is all that feed. Whatever it costs in greenhouse gas emissions to produce the corn, the barley, the soy or other feed grains, multiply that by 10 or so to get the same amount of pork protein.

What about the efficiency of turning calories of fossil fuel into calories of food? According to a peer-reviewed study by geophysicists Gidon Eshel and Pamela Martin of the University of Chicago, it takes 27 calories of fossil fuel to produce one calorie of pork. In contrast, it only takes one calorie of fossil fuel to produce over 4 calories of soy, 2.5 calories of corn, 1.2 calories of potatoes and even a little over 1 calorie of apples (<http://geosci.uchicago.edu/~gidon/papers/nutri/nutriEL.pdf>; based on Table 2).

When it comes to climate change, diet is the new transportation. Meat production – especially intensive, nonorganic production – is a global warming machine. Last year, the United Nations Food and Agriculture Organization, in a 390-page monograph entitled *Livestock's Long Shadow* ([www.virtualcentre.org/en/library/key\\_pub/longshad/A0701E00.htm](http://www.virtualcentre.org/en/library/key_pub/longshad/A0701E00.htm)), calculated that nothing we humans do, not even transportation, is fuelling global warming more than global livestock production.

*Why is Manitoba peddling an SUV diet in the global marketplace?*

I'm not here to argue that everyone must become a vegan or a vegetarian or that Manitoba must get out of the livestock business. I know that's an argument I can't win – today. But just as we all accept that we must use less fossil fuel in transportation, heating and so on, if we are objective we must also recognize the need to trim the greenhouse gas flab from our diets and agriculture, and that means eating – and producing – more beans and grains and less bacon and eggs.

How big is the payoff? Eshel and Martin calculated that the average American diet – which derives 28% of its calories from animal foods – is responsible for approximately one and a half more tonnes of greenhouse gasses – as CO<sub>2</sub> equivalents – per person, per year than a fully plant-based, or vegan, diet. Cut your consumption of animal foods by a third and you cut your greenhouse gas footprint by half a tonne. Cut it by two thirds and, according to Eshel and Martin's calculations, you've just done the equivalent of trading in your Toyota Camry for a Prius. *As a province, should we not be doing the same with our agriculture?*

Last year, an Italian study ([www.nature.com/ejcn/journal/v61/n2/abs/1602522a.html](http://www.nature.com/ejcn/journal/v61/n2/abs/1602522a.html); full paper attached) published in the *European Journal of Clinical Nutrition* used standardized ISO 14040 “Life Cycle Assessment” methodology to model the sum total of adverse environmental and public health impacts of vegan, vegetarian and omnivorous diets, both conventionally and organically produced. “The assessment,” the scientists explained, “includes the whole life cycle of the process or activity, from the extraction and processing of raw materials to the production, transportation, distribution, use, reuse, recycling and final disposal.” In other words, Luciana Baroni and her associates applied state-of-the-art science to compare the total farm-to-plate-to-sewer-to-lake-to-atmosphere sustainability of nutritionally adequate diets that differed significantly only with respect to their balance of animal and plant foods. As a real world reference they also threw in the average Italian diet, which is omnivorous and conventionally produced.

The complex methodology of this study passed peer review in a major nutrition journal published by *Nature*, one of the world's top scientific journals. Baroni and her associates ran their data through three different “perspectives” reflecting the range of scientific uncertainty about environmental and health impacts. In every one of these “perspectives,” the vegan diets, especially the organic vegan diet, had a dramatically smaller adverse footprint than the omnivorous diets, especially the *conventionally* produced omnivorous diets. When the perspectives were combined and averaged, the adverse impact scores were as follows, in order of increasing adverse impact (based on Baroni et al., Figure 1):

- The vegan organic diet scored 0.57
- The conventionally produced vegan diet scored 0.81
- The vegetarian organic diet scored 0.96
- The omnivorous organic diet scored 1.26
- The conventionally produced vegetarian diet scored 1.38
- The conventionally produced omnivorous diet scored 2.14
- And the average Italian diet – omnivorous and conventionally produced – scored 5.41.

In other words the adverse impact of the conventional omnivorous diet – the kind most Manitobans still eat – was nearly four times as great as the adverse impact of the vegan organic diet and nearly twice as great as the adverse impact of the omnivorous but *organic* diet.

Baroni and her associates wrote:

“If animals are considered as ‘food production machines’, these machines turn out to be extremely polluting, to have a very high consumption and to be very inefficient. When vegetables are transformed into animal proteins, most of the proteins and energy contained in the vegetables are wasted; the vegetables consumed as feed are used by the animals for their metabolic processes, as well as to build non-edible tissue like bones, cartilage, offal and faeces (Moriconi, 2001)....

“A shift in eating habits towards the increase of the direct consumption of plant foods seems to be a desirable objective in this perspective. Owing to their lighter impact, confirmed also by our study, vegetarian and vegan diets could play an important role in preserving environmental resources and in reducing hunger and malnutrition in poorer nations (Gussow, 1994; Fox, 1999).”

So what are we to conclude? I would like the panel to very carefully consider the proposition that intensive meat production – including pork – is inherently incompatible with environmental

sustainability and that intensive meat production on a mass scale, such as we have in Manitoba's pork industry, is *massively* incompatible. I would like you to very carefully consider the scientific case for recommending to the government of Manitoba that it adopt policies to de-intensify and scale down the pork industry while cultivating agricultural opportunities that will help us solve the challenge of local and global sustainability, not exacerbate it.

Thank you.