



Bion response to: "Can a 72,000 Cow CAFO Be Sustainable?"

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"Can a 72,000 cow CAFO be sustainable?" That is the question about Bion's proposed large scale, integrated beef cattle and biofuels project for upstate New York asked by Tara Lohan in a thoughtful article posted on "Sustainable Food" on January 30, 2010. It is a fair question to pose, one that requires a closer look at the very meaning of agricultural sustainability with an eye towards separating what is truly sustainable from the numerous perspectives and agendas that have attached themselves to the term. A scientific approach to the subject in fact leads to conclusions that may well surprise many.

And Ms. Lohan correctly points out that CAFO's *"are not the poster child for sustainable agriculture."* Numerous studies have identified a litany of issues across the broad spectrum of "animal welfare abuse to gross environmental violations". One such report, an in depth study on large-scale animal production issued in April 2008 after 2 1/2 years of assessment by the Pew Charitable Trust (www.ncifap.org) documents the Commission's concerns for unintended risks from large-scale animal production across four broad areas: public health, the environment, animal welfare and the quality of rural life. Their response however is not to call for the elimination of CAFO's in part because of the resulting impact to the cost of consumer food products and in part because of the economic reliance of rural communities on viable agricultural operations.

Instead, the Pew Commission in its report on "Industrial Farm Animal Production" prescribes a number of key recommendations to directly address the historic abuses they have identified. The project proposed by Bion for upstate New York will employ its patented comprehensive waste management / renewable energy technology consistent with the key recommendations of the Pew Commission report. Bion has developed and demonstrated a comprehensive environmental treatment technology for livestock waste that significantly reduces nutrient concentrations in discharged effluent which, in sufficient concentrations, pollute soil and water. A complete report entitled "Technology Report (DeVries data)" on Bion's third-party reviewed demonstration project, including protocols and methods, data, analysis and conclusions can be accessed at: www.biontech.com.

The waste management system simultaneously reduces odor and air emissions, including ammonia (a cross media – air to soil/water – pollution issue). The Pew report identified ammonia as a significant contributor to many of the environmental and public health issues related to livestock waste. Bion's demonstrated ability to significantly reduce air emissions from livestock manure, including ammonia, hydrogen sulfide, VOC's and greenhouse gases, directly addresses public health and animal welfare issues correctly identified in the Pew report and elsewhere. It is worth noting that the Bion System's

animal housing and multiple daily collections of manure for treatment eliminates the need for non-therapeutic use of antimicrobials by dramatically reducing vector transport pressures, just one aspect of the spectrum of animal welfare benefits resulting from the Bion housing and waste management approach.

In addition to the attributes of waste management and animal welfare, Bion's technology platform extracts and processes the cellulose / fiber portion of the livestock manure stream to produce renewable energy. Based on the interdependent relationship of economic activities in Bion's integrated system, net usable renewable energy generated will be more than twice that of anaerobic digestion on a per head basis for both dairy and beef cattle.

But let's return to the subject of sustainable agriculture. Certainly everyone will agree that a rigorous environmental component is a requirement, i.e. decreasing environmental impacts from the production of food must occur --although there is not general agreement in how those impacts should be measured, nor is there generally a good understanding of what those impacts actually include for different systems of food production. At the same time, every farmer, producer or grower in the nation would correctly insist that true sustainability requires economic viability while accomplishing the required environmental goals. It is this very imperative (economic viability in concert with environmental sustainability) that requires scale --anathema to some-- that is needed to achieve operational efficiencies to cover the cost of state of the art waste treatment technologies and livestock housing such as Bion will utilize.

A recent paper entitled "Demystifying the Environmental Sustainability of Food Production" published by scientists at Washington State University, Elanco Animal Health and Cornell University astutely points out the fundamental problem in addressing sustainability:

http://wsu.academia.edu/documents/0046/7264/2009_Cornell_Nutrition_Conference_Capper_et_al.pdf

" The global population is predicted to increase to 9.5 billion people in the year 2050 (U.S. Census Bureau, 2008). Total food requirements will increase by 100% (Tilman et al., 2002) as a function of both the 50% increase in population and the additional global demand for animal protein as people in developing countries become more affluent (Keyzer et al., 2005). The resources available for agricultural production are likely to decrease concurrently with population growth due to competition for land and water and depletion of fossil fuel reserves. Livestock industries therefore face the challenge of producing sufficient safe, affordable animal protein to meet consumer demand, using a finite resource base – a challenge which is exacerbated by political and social concerns relating to the environment.

All food production has an environmental impact..."

The authors point out that "it is essential to use a standardized assessment tool" when measuring environmental impact, one that reflects impact per functional unit of food, i.e. units of environmental impact per pound of meat or gallon of milk, recognizing that in the end, purpose of agricultural activity is to produce food for consumption and it must meet the volume needs of the marketplace. A direct result of utilizing their standardized assessment tool underscores the reality that productivity is a critical

determinant of sustainability: by their measure, a dairy cow producing 40 pounds of milk per day for example will result in greater environmental impacts than one producing 80 pounds per day, assuming that their inputs are not doubled.

Citing the specific example of organic vs. conventional production of milk, the authors point out that "Productivity is demonstrably lower under organic management with a reduction in milk yield per cow ranging from 15-27% (Nauta et al., 2006; Sato et al., 2005; USDA, 2007; Zwald et al., 2004). When differences in productivity are accounted for, organic dairy production requires considerably more resources (feed, land, water etc) per unit of milk produced and has a greater environmental impact (Capper et al., 2008)."

The traditional picture of sustainable cattle finishing and dairy farming involves a small number of cows grazing on pasture with a red barn in the background --a traditional low-input system. Unfortunately, assuming stocking levels for commercial production of beef or milk, more than just a few cows are required to meet the needs of the consumer marketplace and remain economically viable. And despite inputs being low for the traditional farm scenario, the environmental impacts are exceedingly high when measured as suggested by the above cited authors on a per unit of food basis!

The American Society of Agricultural Engineers (ASAE), generally considered to be the definitive source for information on production livestock manure characteristics, volume and content, published a document entitled "Manure Production and Characteristics" in March 2005. According to ASAE data, a lactating dairy cow will produce close to 20 lb of manure solids per day, containing 0.99 lb of nitrogen and 0.17 lb per day of phosphorus. On that basis, each dairy cow, whether in a barn or on pasture will void about 360 lb of nitrogen and about 60 lb of phosphorus per year. For the cow on pasture, that entire load is released to the environment, with more than 50% of the nitrogen emitted to air in the form of ammonia and then redeposited into the downwind environment. According to ASAE, a finished steer will void about 15 lb per day of solids including 0.42 lb per day of nitrogen and 0.097 lb per day of phosphorus (over 100 lb per year of nitrogen and 25 lb per year of phosphorus) for cattle on feed! Again for the animal on pasture, these releases reflect direct inputs to the environment, despite the appearance of sustainability because of "low-inputs" to the farm operation!

With regard to "grass-fed" beef production, the paper "Demystifying the Environmental Sustainability of Food Production" points out that: " 'grass-fed' or 'grass-finished' beef is often touted as a more environmentally-friendly option for the consumer than conventional (corn-finished) beef. If a superficial view is taken, considering only the comparative energy inputs required to produce and harvest corn in conventional systems, compared to the animals 'harvesting' the pasture through grazing, the suggestion that grass-fed beef has a lower environmental impact appears to be correct (Pimentel and Pimentel, 2007)." However the authors go on to point out that this suggestion relies on three erroneous assumptions relative to animals in the two systems: first, that they have equal energy requirements; second that they take the same time to finish and third, that they produce the same quantities of environmental pollutants. They do not. In fact, the authors of the paper conclude: "The increases in resource use per unit of output associated with 'traditional' dairy and beef production systems

demonstrate that the popular perception of low-input sustainable systems does not align with true sustainability when trying to meet a static or increasing demand for food."

Bion believes that our society has spoken and that the market is seeking livestock products that are friendly to the environment. Existing practices of production livestock agricultural, as documented in the Pew Commission report and correctly highlighted by Ms. Lohan, represent a failure to respond to society's demand for change. Food products generated from a Bion installation will benefit from a dramatically reduced environmental footprint as compared to existing operations of any size on a per head (or per unit of food) basis along with a traceability program that allows for quality tracking and accountability of the food products produced.

Bion has established a website dedicated to providing information about the project proposed for Oswego County at www.bionoswegoproject.com. The site is designed to provide the stakeholder community of Oswego County --residents, government officials, members of environmental and other public interest groups, academics and interested parties-- an opportunity to learn about Bion's waste management technology and its proposed project directly from Bion as well as to pose questions and air views on the proposed project for all to see.

Below excerpt taken from:

[http://food.change.org/blog/view/can a 72000 cow cafo be sustainable](http://food.change.org/blog/view/can-a-72000-cow-cafo-be-sustainable)

Can a 72,000 Cow CAFO Be Sustainable?

by [Tara Lohan](#)

categories: [Dairy](#), [Industrial Farming](#), [Meat](#)

Published *January 30, 2010 @ 08:02AM PT*

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[**Update:** For a response from the company, go to the bottom of the post.]

[Concentrated Animal Feeding Operations](#) are not the poster child for sustainable agriculture. They've been cited for everything from [animal welfare abuse](#) issues to gross [environmental violations](#). Housing tens of thousands of animals in confinement in a system that creates massive waste and is propped up only by the use of food subsidies, cheap fuel, massive amounts of pharmaceuticals and the externalization of environmental costs, is not the ideal model of raising animals.

So what to make of a new proposal for a [72,000-cow CAFO](#) in New York State — a facility that would be the largest CAFO east of the Mississippi — which is calling itself 'sustainable'?

This is precisely what Ulla Kjarval wondered in a [recent blog post on Civil Eats](#). Her family operates a grass-fed beef and lamb farm in upstate New York.

As for the sustainability question, here's how the CAFO is supposed to work. Kjarval writes that it is designed to function as a closed-loop ethanol plant, with corn being shipped across Lake Ontario and into Oswego. Corn will be turned into ethanol at a plant and the waste will be fed to cattle. The cattle's manure will in turn help generate energy for the ethanol plant.

Even with a closed-loop system, ethanol still has some serious environmental problems, especially when it comes to [water use](#) and pesticides. So the 'sustainable' imprimatur on this plant, in my opinion, is questionable at best. And of course figuring out what to do with cow poop is only one part of the many problems that plague CAFOs.

But as Kjarval points out, many people in the community are split on the issue and it really brings up much larger questions about "what real food means to us" and how that affects rural communities. This isn't simply a matter of big farmers versus small farmers, but a system of government that favors corn and ethanol, she adds.

Anyone want to take a red pen to the Farm Bill?

***UPDATE:** I received a response from Jeff Kappell, Bion's VP for Project Development and Renewables. I'm including excerpts from that response below. The project also has a [website](#).*

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"'Grass-fed' or 'grass-finished' beef is [also] often touted as a more environmentally-friendly option for the consumer than conventional (corn-finished) beef. [But] the authors of the paper conclude: "The increases in resource use per unit of output associated with 'traditional' dairy and beef production systems demonstrate that the popular perception of low-input sustainable systems does not align with true sustainability when trying to meet a static or increasing demand for food."

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