Sound Science in Livestock Production telling a Green Story!

- In 2008 and 2009, research at Cornell University, showed that due to improved feeding and animal care practices, dairy cows nowadays produce much more milk compared to cows in 1944. That in and by itself is no novelty to most. What is new however is that dairy farms produce that almost 40% more milk with 65% less cows: milk production per cow has quadrupled since 1944.

- Higher production requires more feed hence more enteric fermentation and consequently more greenhouse gasses emitted. This has been the argument we’ve heard from many on the environmental side. Animal scientists and nutritionists reasoned that argument was flawed because higher production with fewer animals means a higher level of efficiency, and a higher level of efficiency would result in less greenhouse gas emissions. Well, now we have the science to back up that common sense, intuitive reasoning, due to what is referred to as “dilution of maintenance”. The bottom line is that even though the carbon footprint of the average US Dairy Cow has doubled since 1944, the carbon footprint of a gallon of milk has been reduced by 2/3!

- Also in 2009 we learned from work at UC Davis that the controversial 2006 FAO report “Livestock’s Long Shadow” was incorrect in assessing the US Dairy Industry’s contribution of 18% to the world’s anthropogenic greenhouse gas (GHG) emissions, a number larger than the entire global transportation sector! This because the report lumped together the environmental impact of so called “slash and
"burn" agricultural practices in developing countries, with efficient modern farming practices in the US. According to the UC Davis report, livestock production in the US should be the model to rest of the world due to its efficiencies, and our issue is not efficiency of production (digestibility), but efficiency of dealing with manure (nutrient) management.


Even US EPA didn’t make that claim, yet the mainstream media jumped all over this as an argument to drink less milk or consume less meat and safe the world from global warming with non-meat meat and non-dairy dairy! According to US EPA the total US Agricultural Annual Greenhouse Gas output is 454.1 Teragrams or about 6% of the total US GHG emissions. Of these 6%, dairy is 11% and other cattle 22%, in other words less than 1% or less than 1.5% of the total US GHG emissions respectively. This reflects the production sector production alone and does not include the total Lifecycle from “cradle to grave” as products are currently being assessed.

And now (September, 2010), the “The Innovation Center for US Dairy” completed its long anticipated Carbon Footprint for Fluid Milk Study (“Cradle to Grave”) and confirmed previous LCA work mentioned above by validating that “U.S. dairy accounts for approximately 2% of total U.S. greenhouse gas emissions. This is far less than the often misused 18% which is the Food and Agriculture Organization’s estimate for global livestock.”

- Innovation Center for US Dairy (September, 2010);
  http://www.usdairy.com/Sustainability/Pages/Home.aspx

As discussed above, expressed per gallon of milk produced, the US Dairy Industry has improved its environmental impact significantly over the last century or so. Equally impressive are the impacts when expressed on the basis of nutrient density. Food & Nutrition Research (August, 2010) reports that milk has the highest index of nutrients over GHG emissions as compared to other beverages such as soft drinks, beer, wine, orange juice or soy drink. In other words milk is twice as good as any other comparing beverage in providing nutrients while protecting the environment, as compared to other drinks!

- Food & Nutrition Research (August, 2010);

Stanford Scientists in June 2010 reported in the Proceedings of the National Academy of Sciences, that without the improved yields obtained in agriculture over the last 150 years it is estimated that additional greenhouse-gas emissions from clearing land for farming would have been equal to as much as one-third of the world’s total output of greenhouse gases since the dawn of the Industrial Revolution in 1850. In other words: the total amount of greenhouse gas sent into the atmosphere over the past 155 years would have been between 18 and 34 percent greater than it has been!

- Additionally, these researchers calculated how much money was spent on research for each ton of avoided emissions by calculating the total amount of agricultural research funding related to yield improvements from 1961 through 2005. That produced a price of approximately $4 to $7.50 for each ton of carbon dioxide not emitted. Not too bad for a day’s work at the Carbon Exchange!

- Proceedings of the National Academy of Sciences (June, 2010);
  http://www.pnas.org/content/early/2010/06/14/0914216107.full.pdf+html?sid=90b524cd-5635-4d15-97cf-4d64b376f182
• In response many will refer to organic production as the panacea and criticizing organic agriculture often suggests antipathy for organic agriculture. The facts however are irrefutable and serve as a roadmap to put this production method in its legitimate scientific place. Because of lower efficiencies, organic production methods will utilize additional resources and have a larger environmental impact or footprint. Capper et al. in 2008 calculated that in order to reach current levels of production in the US utilizing organic production practices, the US dairy herd would have to grow an additional 25%, while 30% additional land resources would be needed. This is not to say that organic production doesn’t have a place at the table, and that the production methods don’t hold any merit.

• In conclusion, what does all this mean? Well, to put it plain and simple: in 1800, one family farm could only supply food for one other family on average, while in the US today, with its highly efficient agriculture, farmers make up only 2% of our population, but each farmer can feed, on average, 125 other people

  • Conkin, 2008; A Revolution Down on the Farm
  • Diamond, 2005; Collapse

• And the bottom line? These folks have just confirmed what many of our producers have been saying for years — that science and technology provide the efficiencies needed to feed a hungry world while minimizing the impact on our environment! Who said that sound science doesn’t pay!