



What is the Carbon Footprint of your Pork?

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One of the hot topics in our society relates to global warming, greenhouse gas (GHG) emissions, carbon footprint, climate change, and the like. There are many people on both sides of the issue. A large group of scientists, activists, and policy makers are concerned about global climate change and how to stop potentially damaging human activities. However, there are other groups that do not believe global warming is a real phenomenon and there is no need to intervene. Regardless of who is correct, there are efforts underway to determine the influence of human activities on global warming by understanding our carbon footprint and the quantity of GHG emissions generated by human activities.

This global warming discussion is now focusing on many different aspects of our society including the carbon footprint of agriculture and food production. Within the last year, researchers at the University of Arkansas embarked on a project to estimate the carbon footprint of milk production in the U.S. Some of the motivation for this project came from a large food retailer, WalMart. Evidently, WalMart wants to be able to tell its customers how the milk they buy will influence global climate change. Presumably, other food retailers and possibly food service establishments will want this information as well in the future. European researchers have been working to document emissions of GHG and the carbon footprint of various food production systems. Typically, social issues that come to the forefront in Europe migrate across the Atlantic to North America. The issue of loose housing for sows is a classic example.

The carbon footprint is measured by quantifying the GHG that are emitted. In the U.S., the carbon footprint of agriculture focuses on emissions of carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) which are all GHG. Carbon dioxide has the least potential to contribute to global warming while methane is 21 and nitrous oxide is 310 times more efficient at trapping heat in the atmosphere thus contributing to global warming. To assess the overall contribution of these three GHG, all GHG are reported as CO₂ equivalents. So, a given quantity of nitrous oxide would contribute 310 more CO₂ equivalents than the same quantity of carbon dioxide.

An obvious question is: "How do I calculate the carbon footprint of my operation?" Estimating the carbon footprint of an operation is a very complex process. In very simple terms, one calculates the carbon footprint by determining how much carbon, measured as CO₂ equivalents, is released as a result of your operation's activities. There are many potential contributors to

your farm's GHG emissions. Some of the potential sources of GHG emissions include: type of feed, quantity of feed used, manure quantity and type, manure storage structures, manure application procedures, transportation of inputs and outputs, heating fuel for buildings, the pigs, and others.

Unfortunately, there is no widely accepted approach to measuring the carbon footprint of an operation. For instance, should the operation consider emissions resulting from feed and feeding practices after the feed arrives at the farm gate or should one consider the GHG emission that resulted from growing the corn, drying it, and transporting it to the swine operation? In the operation of a finishing unit, should transportation emissions resulting from hauling pigs from the sow unit to the finishing unit be added to the emissions that occur after the pigs arrive at the farm? Should the emissions created from workers traveling to the farm be considered in the carbon footprint of the operation? What about the emissions generated from harvest and processing of the hogs produced? At this time, there is no standard procedure or policy for determining what is and is not considered in the footprint of an operation. So, any carbon footprint should be accompanied by the boundaries used to calculate that footprint. Once the boundaries are set, how does one determine the CO₂ equivalents generated from each factor in the operation? These estimations are currently being evaluated. Much of the leadership for these estimations is being provided by the U.S. Environmental Protection Agency working with researchers around the world. More information on EPA's work in this area can be found at: <http://www.epa.gov/climatechange/>.

Recently, I attended a meeting sponsored by the National Pork Board (NPB) to plan future activities of the NPB. One of the important topics discussed focused on the carbon footprint of pork production. The NPB is beginning an effort to assess the carbon footprint of U.S. pork. A longer term objective of this project is to learn how pork producers can shrink their carbon footprint and potentially generate financial profits from those improvements. Researchers, producers, and government officials are trying to learn more about the carbon footprint of livestock production. In an effort to learn more about this subject, we will have Dr. Shawn Archibeque from Colorado State University speak on "Calculating the Carbon Footprint of Livestock Production" at 7:00 p.m. on September 16, 2008 as part of the 69th annual Minnesota Nutrition Conference. Dr. Archibeque has worked with EPA on the U.S. inventory of GHG as it relates to livestock production. The conference will be held at the Holiday Inn in Owatonna, MN. The public is welcome to attend the dinner and speaker without registering for the conference. Visit the conference website (<http://www.ansci.umn.edu/mnc.html>) for more information.

The whole issue of carbon footprint for pork production is very fuzzy right now. But, stay tuned. I am sure that it will become clearer in the months and years to come as our consumers continue to ask questions about how we produce food and demand diminished environmental impacts of food production.