Sustainability: What is it, what it means for beef producers, and where to from here?

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Resource use, waste output, and greenhouse gas (GHG) emissions from livestock production are currently under scrutiny from a variety of groups. The crucial factor that is often missed in these comparisons is that all foods have an environmental cost and that this is not restricted to foods of animal origin. Nonetheless, the supposition often occurs that global sustainability and food security could easily be achieved if a vegetarian or vegan diet was adopted worldwide.

Within the USA, the claims for a significant improvement in environmental impact through reduced meat consumption appear to be over-exaggerated. The US Environmental Protection Agency (EPA) cites meat production as contributing 2.1% of annual GHG emissions (US EPA, 2012). To take the simplistic view that a one-day per week reduction in meat consumption would cut animal production by one-seventh, if every one of the USA’s 316 million inhabitants adopted such a dietary change, the projected annual reduction in national GHG emissions would be equal to 0.30% (Capper, 2013b). It’s somewhat difficult to view a change that reduces national GHG emissions by less than one-third of one percent as having a meaningful environmental impact.

One often unspoken consequence of whole-scale conversion to vegetarianism or veganism is that in the event of livestock production being eliminated, agricultural animals would not exist. A large-scale reduction in meat consumption would therefore not only require the replacement of animal products with plant-based foods, but additional sources being required for the multifarious by-products from animal agriculture, including hides, fertilizer, tallow and pharmaceuticals. It is not yet clear what would be the global environmental impact of replacing leather with hydrocarbon-based synthetics, or manure with inorganic fertilizers.

Activist groups use consumer-friendly metrics to communicate effectively with the consumer, and to imply that consumption of meat and dairy products is inherently unsustainable. Water use within food production is particularly highlighted as, globally, agriculture accounts for between 70% and 92% of water withdrawals and is a potential source of water quality degradation (Gerbens-Leenes et al., 2013). Nonetheless, water use claims are often exaggerated, with flawed assumptions behind the models involved.

In an article in the National Geographic magazine (2010), data from the Water Footprint Network (http://www.waterfootprint.org) indicated that beef used 1,857 gal water/lb compared to pork (152 gal/lb), chicken (34 gal/lb) or apples (2.6 gal/lb). The methodology behind the calculations was comprehensive, accounting for all water use within the production process, including precipitation, consumed water and polluted water. Yet, the assumptions in the beef model for an “industrial production system” were based on a steer growing at 0.79 lb/d and taking 36 months to reach a slaughter weight of 948 lb – a sharp contrast to the US average of finishing an animal in 15 months at 1,338 lb slaughter weight (2.77 lb/d overall growth rate). The Water Footprint Network’s figure of 1,857 gallons of water used per lb boneless beef is considerably higher than the 441 gallons per lb reported by Beckett and Oltjen (1993), yet these data are commonly promoted to the consumer as being representative of US beef production.

Although it is tempting to respond to attacks upon the beef industry’s sustainability with scientific literature alone, it is crucial to both acknowledge consumer concerns (however misplaced they appear to be) and shared values (e.g. the importance of good animal welfare) and to put the facts into context, in metrics that are easy to understand. For example, although an 8 oz steak from an animal given implants will have greater total estrogen (5.1 ng) compared to the equivalent steak from an animal without implants (3.5 ng), the average woman would need to consume 3,431 lb of steak from implanted cattle each day to equal the amount of estrogen in a single birth-control pill. When expressed in those terms, the amount of estrogen in steak is both easier to comprehend, and, potentially, a lesser concern.

The extra beef on one steer given implants and beta-agonists, will provide seven schoolchildren with their beef-containing school meals for an entire year (Capper, 2013a). In a world where one in seven children does not have enough food, technologies that allow us to produce more food using fewer resources should be a positive selling point to all consumers. However, survey data shows that the majority of consumers have a rather skewed image of animal agriculture, believing that the majority of farms are large, corporate-owned “factory farms” and that agriculture is less than transparent. One of the biggest challenges facing the beef industry is to overcome these perceptions and share our story. Indeed, if we fail to maintain social acceptability for our product, we will soon lack one of the three pillars of sustainability and our future industry will be inherently non-sustainable.
References


