When misinformation becomes 'fact'

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Characterizing a regional or nationwide industry based on knowledge of a single case is a common form of oversimplification that becomes public misinformation. Such misinformation, as it spreads through the media becomes "widely held fact," that molds public perceptions of an entire industry. Recent exaggerated estimates of the amount of water required to produce a pound of beef provides a case in point.

In an interview reported in the Water Education Foundation's January 1991 issue of *Western Water*, author Marc Reisner asked, "Why should I, a taxpayer, subsidize a guy who's raising cows when it takes 6,000 to 8,000 gallons of water to raise one pound of cow." In his books, *Cadillac Desert* and *Overtapped Oasis*, Reisner argues that water now being used to irrigate some crops can be used to meet environmental and urban demands. Reisner targets cotton, rice, alfalfa, and irrigated pasture as low value crops in relation to their water use. John Robbins, author of *Diet for a New America*, quotes a smaller figure of 2,500 gallons of water to produce a pound of meat.

Are Reisner and Robbins accurate when they say it takes 2,500 to 8,000 gallons of water to produce "one pound of cow?" The source of their opinions seems to be a casual estimate in a 1978 University of California Cooperative Extension newsletter in which it was reported that 2,607 gallons of water was needed to produce a pound of beef. This estimate assumed all beef produced for slaughter was produced on irrigated pasture at 500 pounds of beef annually per acre. Assuming dressed beef is 40 percent of the live weight, this becomes 6,500 gallons of water per pound of dressed beef.

The vast majority of this water-use occurs as evaporation from growing plants that produce feed for cattle yet these estimates grossly exaggerate the water requirements to produce a pound of beef. For these figures to be accurate in California or nationally, one must assume that all beef cattle are raised on irrigated pastures producing only 500 pounds of beef per acre. In reality, nationally and in California, very little beef is produced on irrigated pasture.

It is also incorrect to take only 500 pounds of beef per irrigated acre as an average production rate. In California, well managed valley or coastal irrigated pasture produces 700 to 1,000 pounds of beef per acre. If 700 or 1,000 pounds of beef is produced per acre, the water requirements to produce a pound, of live weight are only 1,860 or 1,304 gallons of water, respectively. Additionally, not all irrigated pastures require as much water as this example from the Sacramento Valley. Coastal and high elevation pastures require less irrigation because of lower evaporation and shorter growing seasons.

In reality, most beef is raised on nonirrigated rangeland or pasture and nonirrigated cropland and thus requires little developed water (irrigation), relying instead on forages that depend exclusively on rainfall.

Nationally, the feedlot phase of beef production is concentrated in the Corn Belt and Great Plains although some feeding also takes place in the western states. In the east, much of the feed comes from rainfed (nonirrigated) crop production but in the west, part of the feed grain and forage is produced under irrigation.

ANALYSIS

To illustrate how much the estimates of 2,500 to 8,000 gallons per pound depart from reality, University of California Agronomist Dr. Robert Loomis found that it would take only about 700 gallons of water to produce a pound of beef live weight if irrigated alfalfa was used as the only source of feed for the entire herd (bulls, cows and growing calves).

Dr. Loomis' calculations are based on field research demonstrations that only about 63 gallons of water are needed to produce a pound of alfalfa dry matter and that 14.2 pounds of such hay will produce a pound of beef live weight gain. The important point is that Loomis' calculations are based on actual crop water use by alfalfa and actual feeding trials.

According to Loomis, finishing calves in the feedlot with irrigated grains requires even less water—only 500 gallons of water per pound of live weight gain.

Dr. Gerald Ward, professor emeritus in Colorado State University's Animal Sciences Department, estimates that it takes as little as 200 gallons of developed water to produce a pound of beef. His estimate is based on the amount of irrigation and drinking water needed from conception to slaughter to produce an 1,100 pound beef animal.

The irrigation water is used to produce three major feed crops: alfalfa hay, corn and corn silage. The beef production system described by Ward uses much less water than Loomis' because much of the feed is produced by rangeland and other nonirrigated feed and forage sources. If one moves further east to Iowa, little or no developed water is used in beef production.

Although we do not have exact numbers, we do know that the amount of irrigated pasture used for beef production is very small. Because irrigated pasture never enters the marketplace, there is never an accurate accounting of production as there is with most other California crops.

There are about 700,000 acres of irrigated pasture in California that support the horse, sheep and dairy industries as well as beef production. Using predrought data, there were less than one million beef cows and one million stocker calves in California which use rangeland for about 70 percent of their feed and hay for about 10 percent of their feed. The remaining 20 percent comes from summer grazing in other states, various crop by-products and irrigated pasture.

Clearly, the water required to produce a pound of beef is less than that claimed by Reisner and Robbins. Unfortunately, they have turned this misinformation into a "widely held fact." Used by environmental, health and food safety advocates this misinformation focuses negative attention on an industry that is ill-equipped to correct misinformation. The public would be better served if advocates such as Reisner and Robbins had a better understanding of agricultural production processes before making broad generalizations based on a single atypical case.