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Exploring the connection between animal diseases and consumers

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The consumer's relationship to a product consumed, or the service employed, varies based on perceived need and availability. The need for the product or use of the service may range from being essential for life, to discretionary for enjoyment. Similarly, the availability of the product or service may vary from dear to abundant.

The relationship of the consumer to the product/service will fall within these continuums, and the consumer's evaluation of the product/service will vary based on where the product/service falls – Is it readily available or scarce? Is it essential to life? Or is it a luxury?

Having access to food is one of the fundamental biologic needs, and it greatly influences human behavior. While an individual's need for food is the same across the globe, its availability is varied. One of the major reasons is the diseases that affect livestock and poultry.

To consumers of food, the impact and response they have to animal diseases will be quite varied. A disease event to livestock owned by a subsistence farmer (a consumer of what they can raise) will be starkly different than that of a food buyer in a marketplace with choices and alternatives (a consumer of what they can afford). In either case, animal disease will matter.

The global consumer

One of the most significant predictors of consumer behavior is income, and there is a wide disparity in global income. According to the World Health Organization, gross per capita national income of high income countries, including the U.S., Canada, and Western Europe, was $31,000 in 2004. In contrast, gross national income in sub-Saharan Africa and Southern Asia, which are home to many of the poorest people, was approximately $2,000.

Income is highly correlated to how people make their day-to-day living. Table 1 illustrates the percent of total workforce involved in agriculture in various regions of the world. Globally, residents of North America are least likely to be involved in agriculture (1.9 percent), whereas more than 60 percent of the workforce of sub-Saharan Africa (and in some countries in the region more than 90 percent) is involved.

It is reasonable to assume that countries and regions with significant portions of the population directly involved in agriculture are more familiar with, and because of income are dependent more upon animal agriculture with which they are directly involved, and thus have a more direct visceral involvement with the health of animals and their food supply.

In these areas agriculture tends to be subsistence, and generates modest if any income. However, the health of animals is vital to providing sufficient food for the family and are the primary source of its wealth. Animal disease is part of daily life, and endemic disease can be a constant challenge to putting food on the table.

Tables 2 and 3 illustrate the discrepancy of animal product production and consumption in different regions of the world. Oceana (Australia and New Zealand) and North America top the lists, and sub Saharan Africa is at the bottom. The differences mirror the discrepancy in income; there is nearly a 10-fold difference between production and consumption between the high and low regions. There are many explanations for the differences, which include seasonal drought, available fertile land, and efficient crop production, but animal diseases (many not found in North America), such as tick-borne and viral diseases, detrimentally impact animal health and productivity.

But the existence of these diseases also creates a tension for the consumer and producer. How should the consumer react to diseases that affect productivity, but may not result in animal death or even overt signs of disease? How should the producer react to these diseases, or to infections that may affect food quality, but have no impact on animal health? Will responses be different for the consumer who is a producer, versus the consumer who is not a producer?

A global perspective on consumer response to a transboundary Disease: Foot and Mouth Disease.

We all know about Foot and Mouth Disease. It is a highly contagious transboundary, reportable disease that affects cattle, sheep, goats, and pigs as well as all non-domestic ruminants, that has been absent from the U.S. since 1929. Infection is generally not fatal. Animals recover over a two-week period, but it can have life-long effects on productivity. If FMD were to enter this country it would be a devastating hit to dairy productivity.

What would be our response to the occurrence of FMD in the U.S.? The official U.S. position is that USDA's first response would be to impose animal movement restrictions and immediately eradicate the disease. This could look very much like the response that occurred when FMD was discovered in England in 2001. The disease spread through the country, with 2,030 cases, 6 million animals that were culled, and in the end cost the government and agriculture more than $5 billion. Producers were devastated at the time, but the government was able to provide some economic

Table 1: Agriculture labor force as a percent of total labor force (2004).

region	pct. of population involved in ag
world	43.1%
sub-Saharan Africa	60.5%
Asia	55.4%
Middle East	30.3%
Central America	21.8%
Oceania	19.4%
South America	16.0%
Europe	7.5%
North America	1.9%

(From Earth Trends based on data from international Labor Organization and Food and Agriculture Organization of the United Nations)

Table 2: Calorie supply per capita from animal products (2002).

region	kCal per day
world	468.3
sub-Saharan Africa	148.9
Asia	384.0
Middle East	309.1
Central America	493.6
Oceania	1,062.5
South America	603.5
Europe	922.5
North America	1,038.3

(From Earth Trends based on data from Food and Agriculture Organization of the United Nations)

Table 3: Commercial and home meat production per capita (2006).

region	Kg/person/year
world	41.39
sub-Saharan Africa	11.81
Asia	30.11
Middle East	22.30
Central America	40.67
Oceania	173.68
South America	84.66
Europe	70.12
North America	135.82

(From Earth Trends based on data from Food and Agriculture Organization of the United Nations)

Animal diseases . . .

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compensation for lost animals, and the dairy industry has not significantly changed as a direct consequence of FMD.

How did consumers respond? The short answer is poorly. Because of the large number of animals that were killed and disposed of by burning, there was outrage over the cost to the environment and belief that animals were disposed of unnecessarily. The government's policy of eradicating the disease by killing infected and exposed animals was questioned as irrational when vaccination was perceived as a way to spare their lives. The credibility of the government to handle a crisis was greatly diminished in the eyes of both the livestock industries and the public.

From an industry and government perspective, the decision to eliminate the disease rather than vaccinate was an economic decision to retain access to markets that would have disappeared if the country had vaccinated, but to the consumer (not connected to the business of animal agriculture) the decision was questionable.

In the rest of the world, FMD is an endemic disease. More than 100 countries and regions are believed to have some level of infection, ranging from sporadic (observed occasionally during a 5-year period) to endemic (outbreaks occurring often during any year). The map of FMD occurrence looks much like the map of national per capita income: North America, Western Europe, and Oceania are FMD-free, and the highest levels of prevalence are in sub-Saharan Africa and Southern Asia.

If FMD is so devastating, why is it still so prevalent? Although there is a health aspect for the animal, for many indigenous livestock systems in developing countries and regions there is little impact from infection. The significance of freedom from FMD is dependent on the relative advantage that a producer has for livestock production, the potential for participating in markets (internal and external), the importance of livestock to livelihood, and the importance of FMD relative to other diseases.

In the case where the consumer is a producer (keeps livestock for subsistence) and has little access to export markets, FMD is not significant, and any response that includes destruction of animals or addition of new inputs (i.e. vaccination) would be an extraordinary hardship on their life.

The lessons to be learned from varying global consumer response to FMD are important for U.S. producers. FMD in high income countries is an economic threat on a country level, because freedom from FMD is one requirement for open access for our animals and animal products to the global marketplace. Freedom from FMD ensures that the highly efficient animals in our systems are protected from a disease that causes substantial production losses.

In essence, the risk of FMD entering an infection-free country with an efficient and concentrated agricultural economy carries significant economic risks for the producer and the country. While this may make the government's response to the FMD outbreak in the UK appear reasonable, consumers in the UK (and in many other developed countries) did not agree, and (based on a book title) was viewed by some as a "Manufactured Plague".

Because there is little involvement of the general population in high income countries in food animal production, the population is a consumer in the common meaning of the word – users of product and goods, i.e. they purchase products derived from animals in the marketplace. Animal disease is not a direct and daily consumer concern. If there is an impact, it is on availability and price, which is felt directly at the cash register. In these regions (as in all regions) epidemic disease is a devastating event for the producer,who carries nearly all the burden of the outcome. But for the general population the burden is shared, and may only represent a reallocation of national or regional resources, may not result in a change of services provided to society, and even the lost productivity may be made up by imports or other alternatives.

Just as important, the means used by the producer or government to manage an outbreak, or even endemic disease, can be viewed by the consumer as undesirable. This is seen clearly in the debates over production practices (the industrial farm), the use of antimicrobials, use of DNA recombinant technologies, and the focus on food safety pathogens that have no animal disease significance.

Consumers in least developed countries (the majority of the global population) are more engaged in food animal production, and the vast majority are producers or are likely to directly know a producer. Livestock and poultry are important family assets. They serve as food, may assist in farming, serve as transportation, and often are a significant element in family wealth. Disease and death are significant events to the family and possibly have only value as food. The issues that engage this consumer are distinctly different than those that engage consumers in high income countries.

Understanding these differences in how consumers respond to animal disease is important for our producers and the strategies they will need to be successful in the future. Our consumers have choices in the marketplace, and part of those choices revolve around beliefs they have about how the animals and their products are managed. Even though they are far removed from day-to-day involvement in food animal production, their voices will be heard. As we make those changes it is also important to bear in mind that for most of the remaining global consumers, these same changes may seem wasteful and imprudent.

This article is excerpted from a presentation made at the 2009 Western Dairy Management Conference in Reno, Nevada; (http://www.wdmc.org/proceed.htm)

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