

Bigger than BSE

Public and private sectors
join to rid the Western
Hemisphere of FMD.

by Meghan Richey

For the last several years, it seems the biggest story in the global beef industry has been bovine spongiform encephalopathy (BSE). In less than one-quarter of a second, Google retrieves more than 37 million references for BSE and its slang moniker “mad cow disease.” Even more astounding may be the price tag this disease has earned in terms of surveillance costs and lost market access for affected countries.

The finances and other resources dedicated to BSE might lead you to believe it's the most serious threat facing the cattle industry. But, some leading minds in animal agriculture disagree.

The American Veterinary Medical Association (AVMA) names foot-and-mouth disease (FMD) “the most economically devastating disease in the world” and says it “represents a worst-case scenario for livestock diseases.” And the AVMA isn't alone in this assessment. (For more information on the disease, see “Stamping Out FMD” in the July 2006 *Angus Journal*.)

“BSE is not a threat — at least not as a disease agent,” says Glenn Slack, chief executive officer (CEO) of the National Institute for Animal Agriculture (NIAA). “BSE takes too much of our attention; FMD doesn't get enough attention.

“We have endemic pockets of FMD right here in our hemisphere and have for years,” he continues in an interview with www.cattlennetwork.com. “Yet, all the financial and intellectual resources are currently being spent on BSE.”

If you haven't heard much about FMD, it might be because the U.S. hasn't had a case since 1929. But that doesn't mean it doesn't present a substantial risk to our livestock industry — cattle in particular. Forty-seven percent of South America cannot claim FMD-free status, affecting one in four of the continent's cattle.

“South America is the likely source of reintroduction of this disease into the United States,” says Philip Bradshaw, chairman of the United Soybean Board's Animal Agriculture Initiative. “I ask all of you, at what point do we get involved if we don't help eradicate FMD from South America now?”

“Do we wait until even more cattle and more land are infected?” he asks. “Do we wait until the disease has spread to Mexico, and it's knocking on our border? No. It's time we take action now. We need to protect ourselves by assisting them.”

Thanks in part to the leadership of Slack, Bradshaw and a host of others, there is an internationally coordinated effort underway to eradicate FMD from the Western Hemisphere once and for all. Like all previously successful eradication efforts, it's a partnership between the public and private sectors.

Laying the groundwork

In March 2004, the U.S. Department of Agriculture (USDA) and the Pan-American Health Organization (PAHO) sponsored a conference in Houston, Texas, with 24 ministers of agriculture from the Western Hemisphere, national directors of animal health programs and representatives from the private sector.

The Houston Declaration, the result of the conference, created the Inter-American Group for the Eradication of Foot-and-Mouth Disease [Grupo Interamericano para la Erradicación de la Fiebre Aftosa (GIEFA)]. GIEFA was tasked with the development of a comprehensive plan to complete the eradication of FMD from the Western Hemisphere. The group included a public sector representative and a private sector representative from each of the six regions identified in the original Hemispheric Plan for the Eradication of Foot-and-Mouth Disease (PHEFA) that was approved in 1988.

Bradshaw, who serves as North America's private sector representative to GIEFA.

The plan intends to not only eradicate FMD from affected areas but also to assure that those areas that are FMD free, with or without vaccination, will be able to remain disease free.

If the plan is successful, the group will have eradicated FMD from the Western Hemisphere by 2010 — a mere four and a half years away. In turn, losses caused by the disease will vanish, costs associated with detection and control will diminish, veterinary services within the affected countries will be enhanced, and local infrastructure will be strengthened.



The original six regions were North America, Central America, Caribbean, Andean, Amazon and Brazil, and Southern Cone. “Since then, GIEFA has added private sector representatives from the four problem countries of Paraguay, Ecuador, Bolivia and Venezuela,” explains

Additionally, barriers to international trade of animals and animal products coming from the FMD-affected regions will be eliminated. And South America will pose less risk to the United States.

Why it's a problem

USDA calculates that if the U.S. cattle industry were hit with an outbreak of FMD, it would spread to 39 states and require the depopulation of up to 48 million animals, wrote Clint Peck in the February 2005 issue of *BEEF* magazine.

Despite the sky-high price tag associated with FMD losses, South America's battle with the disease continues. For the most part, the continent's cattle herd enjoys FMD-free status, both with and without vaccination. Yet stubborn pockets persist in Paraguay, Ecuador, Bolivia and Venezuela. The Chaco region is also of great concern.

Since 1998, the Chaco region — north of Argentina, south of Bolivia and west of Paraguay — has had permanent outbreaks, explains GIEFA Chairman Sebastião Costa Guedes.

Motivated by the possibility of increased export markets, the affected countries have taken an active role in the eradication efforts through their participation in GIEFA. While the U.S. may be helping to build a stronger faction of South American competitors by assisting in FMD's eradication, Slack says U.S. involvement fulfills a larger role in protecting animal agriculture.

"It's up to the industry if we succeed in this effort. Step up and realize you (the U.S. livestock industry) have a larger role to play," Slack says. "The U.S. can and should supply intellectual capital to the affected region. We need to share expertise, experiences and strategies in eradicating this disease."

Eradication economics

A group of seven U.S. ag industry leaders traveled to South America in January to visit with public and private animal-health representatives in Brazil, Paraguay, Ecuador and Bolivia about FMD eradication efforts.

The U.S. delegation met with agricultural ministers and industry leaders to urge their adoption of the GIEFA plan, which identifies actions for each of the risk areas. Examples include increasing levels of immunity in affected populations by the use of safe and epidemiologically correct vaccines; increasing outreach communication and education about sanitation; and improving prevention strategies as well as rapid diagnostic procedures and surveillance capabilities (see "Rapid diagnostic test developed").

Eradication will take about \$48.5 million during the course of five years, says chairman Guedes, who is also the president of Brazil's

National Beef Cattle Council. The private sector generates and manages the eradication funds.

"If you give money to a government, you cannot be sure that the money is going to the target that you intended," Guedes explains. "Now we are working in strict relationships with the private sector in the countries where we have problems."

Bradshaw explains that the eradication funds generated by the ag industry go only to the private sector foundations or organizations that are privately managed and have international supervision.

"We believe that the U.S. should not assist in raising funds or funding programs in a country unless the country agrees to do certain things," he explains. "We've all heard about money that got away that was allocated to some organization for some specific purpose. That's why it's so important the organizations receiving money from the international community have international supervision."

Aside from accountability, the private sector also offers a more stable dedication of funds than the public sector, Bradshaw says.

"Political whims come and go. Political organizations build strength and lose strength. But a common enemy is a common enemy regardless of what your political views are," he explains.

Checkoff programs are one way the private sector is raising funds for the eradication of its common enemy — FMD. Colombia has a checkoff program for commercially processed beef and milk. A similar program is being considered in Ecuador, where a surcharge on the FMD vaccine currently funds eradication efforts.

Encouraging thoughts

"This is a huge task, but it's not insurmountable. We know from past eradication efforts here in the U.S. that the last remaining vestiges of an endemic disease are the hardest to get rid of," Slack says. "But, we also know from past eradication efforts that collaboration by the public and private sectors can accomplish the goal. The GIEFA action plan instills that required collaboration."



Rapid diagnostic test developed

Validated test results diagnosing foot-and-mouth disease (FMD) historically take several days to receive — not exactly rapid, considering the speed at which this highly communicable disease spreads. The challenge comes from six other look-alike diseases that are clinically indistinguishable from FMD, meaning you can't tell them apart by looking at their symptoms. Waiting even a few days to diagnose these seven diseases can come at a high price.

Now scientists at Lawrence Livermore National Laboratory (LLNL) in Livermore, Calif., may have a solution. A new rapid diagnostic test, which is still undergoing validation, simultaneously checks for FMD and its look-alikes. Diagnostic results are available in a matter of hours, not days.

"The test provides a tool that could be used for surveillance, which would significantly enhance the nation's capacity for early detection of foot-and-mouth disease," says Pam Hullinger, LLNL veterinarian. "Finding the first case of FMD as soon as possible is critical to minimizing the scope and impact of an outbreak."

One estimate indicates that the United States would lose up to \$3 million in direct costs for each hour's delay in diagnosing FMD, an LLNL release says. With that estimate, diagnoses delayed by just a week could cost upwards of a half-billion dollars in direct expenses, not to mention indirect costs.

Naturally, the rapid diagnostic test is expected to dramatically reduce the potential for direct costs incurred by delayed detection. Once approved, the test is projected to produce validated results for FMD and its six look-alikes in just five hours.

The U.S. Department of Homeland Security (DHS) provided the funds to develop high-throughput multiplexed assays for early detection of foreign animal diseases (FADs), such as FMD. LLNL is conducting this collaborative project in partnership with the DHS Plum Island Animal Disease Center, U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS), the National Animal Health Laboratory Network (NAHLN), and the University of California, Davis.

The concept for an assay that could test for multiple livestock diseases grew out of the 2001 outbreak of FMD in the United Kingdom. That outbreak caused about \$5 billion in direct losses to the food and agriculture sector.

An important advancement in this project was integration with USDA's information technology system for tracking animal samples. The goal is for veterinarians or animal health officials to be able to take a sample and track it from the animal to the laboratory to the diagnostic test through the transmission of the results.

With this capability, Barbara Martin, NAHLN coordinator for USDA, says that the sample could be rapidly traced back to the herd of origin and the affected animal, thus minimizing the risk of the disease's spread.