Smoke Signals Catastrophe

Europe's foot-and-mouth disease outbreak sends shock waves around the world.

BY ERIC GRANT

The fires burned this spring across England's countryside, belching black smoke into the air and casting an orange glow across the nighttime sky.

At last count, nearly 2.5 million head of livestock — the pride of Britain's stockmen — had been slaughtered as a result of foot-and-mouth disease (FMD). At last count, more than 100,000 animals still awaited slaughter, and 60,000 carcasses needed disposal.

When British authorities deemed burning carcasses an ineffective practice (there simply were too many of them), they switched to mass burials. In nearly a dozen locations across the country, some of the facilities have the capacity for a half-million carcasses, a precursor of more to come.

Describing his job as an "apocalyptic task," Brig. Alex Birtwistle, the commander of 42 (North West) Brigade, ordered the construction of the largest of the burial trenches in late March. Capable of holding a half-million carcasses, his "slaughtermen and vets" worked in teams of four from dawn until dusk, disposing of 120,000 sheep in a single go-around.

No one expected this to happen. Not here, not now, not after 10 years of reeling from the effects of bovine spongiform encephalopathy (BSE). One British farmer, following the outbreak of FMD earlier this year, referred to England as the world's "leper colony." There seemed to be no end to the country's troubles.

The disease quickly spread to other European countries. And news coverage of the mass slaughters spread across the airwaves like flames. Consumers balked from beef and pork purchases. Countries questioned how long it would be before a similar infection would take place within their own borders.

No one is sure how the virus erupted in such a way in a country where the disease has been absent for many decades. Some suspect banned imports of fresh meat products that harbored the virus came across the country's borders illegally. Others point out that a vial containing the virus came up missing from a research laboratory about the time the first outbreaks occurred.

One thing is certain: England's FMD outbreak will continue to have a devastating effect on Europe's beef business, and it's the last thing U.S. producers want here, where the industry is enjoying strong cattle prices for the first time in many years.

The problem

First documented in the mid-1600s, FMD is a highly contagious virus that affects cattle, swine, sheep, goats and deer. The United States has not had a case of the disease since 1929, and that occurrence was contained and eradicated quickly, the National Cattlemen's Beef Association (NCBA) says.

FMD's incubation period generally takes three to eight days, but it can take up to two weeks in some cases. Nearly 100% of exposed animals ultimately become infected. The disease rarely is fatal, but it can kill very young animals. Those that survive often are debilitated and experience severe loss in milk or meat production.

There are some documented cases in which FMD affected humans, although it's not considered a serious human health threat. Cooking kills the virus.

Signs of infection among animals include lameness, excessive slobbering and going off feed. Affected animals may have a sudden rise in temperature, followed by blisters in the mouth or on other areas of tender skin,

CONTINUED ON PAGE 84

such as the udders, nostrils and feet — particularly near the hooves.

Soft tissues under the hoof often are inflamed, and the animal can become lame and even shed its hooves. Eating becomes painful. In some cases, affected animals can suffer from sterility, chronic lameness, aborted pregnancies and chronic mastitis.

Movement of infected animals, movement of contaminated vehicles, and contaminated facilities used to hold animals spread FMD. It also can spread via contaminated feedstuffs or water sources.

People who come in contact with the virus can spread it to animals through clothing, footwear or other materials. The virus can harbor in human nasal passages for as long as 28 hours. Wind also can spread it.

Reports from Britain demonstrate the disease's ability to leapfrog many miles. Scientists are unclear if this was caused by the virus taking to the winds or if it was spread by people, livestock or infected wildlife.

The solution

The U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) has in place a four-tiered system to prevent FMD from entering the country, says Alphonso Torres, APHIS deputy administrator.

First, "we have a network around the world that provides us with information on where the disease is prevalent and where it's not," he says. "The network allows us to know where the disease is and allows us to take precautionary steps to prevent its spread to the United States."

Second, the USDA has in place a system of comprehensive exclusion controls, which includes inspections at ports of entry, such as international airports. At these points, the government prohibits travelers from carrying into this country any agricultural products, particularly animal products that could spread FMD.

Passengers are required to identify any farm contact to U.S. Customs Service and USDA officials. All of their baggage is subject to inspection.

"The goal of all the federal agencies at the ports of entry is to be sure that all passengers are evaluated," Torres says.

Both the USDA and the Customs Service came under pressure this spring to beef up staffing at international airports. At many airports, staffing levels have been doubled to handle the increased workload, says APHIS inspector Patrick McPherren, who leads USDA's airport inspection efforts in Denver, Colo.

"You can't touch every person," Torres concedes. "There are a lot of people who are saying we're doing too much. They don't like waiting in lines, but we appreciate their patience."

Third, APHIS actively surveys the United States for potential FMD outbreaks, which has been common practice for many years. Currently, all of North America, including Canada and Mexico, are FMD-free, as well as Central America and the Caribbean. FMD is endemic in (native to) several South American countries, however.

On an annual basis, APHIS conducts 50-100 investigations for diseases similar to FMD. "So far this year, we're getting an increase in samples," Torres says. "That's good news because we know vets and farmers are looking for the disease. It's very welcome activity."

Fourth, USDA scientists have been studying FMD at its Plum Island Animal Disease Center, located off the New York coast, for nearly five decades. There, government researchers have developed a comprehensive knowledge of the disease, how it spreads and how to prevent its infection. Scientists also diagnose samples taken from suspected cases. And they are developing new and more-effective vaccines than those currently available.

Finally, APHIS has in place an active response team that would determine, in the event of an outbreak, a course of action to keep it from spreading to other parts of the country. "The key is early detection and control," Torres says.

Vaccination quandry

In the event of a disease outbreak, APHIS most likely would quarantine the infected area, dispose of suspect animals and vaccinate animals in surrounding areas to prevent the infection from spreading.

"In 1982 we established the North American Vaccine Bank," Torres explains. "If vaccine is needed, raw materials for producing it would be sent to a manufacturer in a frozen, concentrated form."

Torres says USDA would have a production capacity of about 1 million to 3 million doses/week. "We do have a reserve and have the potential for obtaining more product for the longer term," he adds.

Vaccinating cattle for FMD is highly controversial because it's often difficult to distinguish infected animals from vaccinated ones. They both carry the FMD titer, Torres says. And if animals in this country test positive for the disease — whether infected or not — international markets no longer will accept imports of U.S. live animals or fresh beef.

Complicating the vaccine situation is the

What can U.S. beef producers do to help prevent FMD?

While there has not been a case of foot-and-mouth disease (FMD) in the United States since 1929, there are several steps producers can take to help prevent the virus from spreading if it ever does show up in this country.

- Know who is on your property at all times. If people from countries with confirmed cases of FMD are scheduled to visit your operation, make sure they wear freshly cleaned clothing and footwear.
- Make sure people wash their clothes and footwear before traveling to another property.
- Immediately contact your state veterinarian, state or federal animal-disease-control centers, or your country Extension agricultural agent if you suspect the presence of FMD in your herd.

fact that there are seven known FMD serotypes and, of those, there are 60 subtypes. For this reason, there is no universal vaccine for the disease. Instead, each vaccine must be tailored for each country or continent where outbreaks occur.

"A vaccine for South America would be different than that used in the United Kingdom," Torres notes.

USDA currently is developing a new, "titerless" vaccine that could be available in three to five years, says Marvin Grubman, an FMD researcher at Plum Island. "With the new vaccine under development at Plum Island, there would be no problem in distinguishing between an infected animal and a vaccinated one," he says.

Needless to say, the stakes are high, and a diagnosis must be accurate before decisions to vaccinate are made. "A false positive would result in a severe economic impact, so we need to be very thorough in our evaluation," says USDA's Peter Mason, an Agricultural Research Service (ARS) microbiologist.

Last year alone, the United States exported nearly $49 million of dairy semen and $2.2 million in beef semen (about 27% of which was black Angus), according to the National Association of Animal Breeders (NAAB).

The U.S. beef industry also exported $3.65 billion of product in 2000. That's expected to increase in 2001, partly because the United States will make up for the beef shortfall caused by Europe's FMD problems and subsequent bans on exports of their product.

Much of this would be lost with a single outbreak.

Consumer confusion

Particularly worrisome, too, is that many U.S. consumers fail to distinguish between BSE and FMD. A recent survey conducted by Porter Novelli, a leading public-relations agency, showed that nearly 14% of food shoppers have changed their eating habits based on reports they'd seen or heard about BSE and FMD.

When asked what actions they would take if BSE or FMD were found in the United States, responses were similar. Even though FMD does not affect humans, 71% indicated they would eliminate or reduce ground beef from their diets if it were found here; 80% indicated the same if BSE were found.

In addition, 19% responded that they thought FMD and BSE were the same, 27% thought the diseases were linked, and 46% thought that cattle with FMD could infect humans.

"American consumers are very confused," says Dan Snyder of Porter Novelli, adding that there is great need for a national campaign to help clear up the confusion. The NCBA is developing educational materials for both consumers and producers. An eight-page insert is provided in this issue.

In the meantime, the continuous barrage of England's fires and mass burials will continue to rattle consumers. If it happens here, many industry experts believe, it will take many years to restore the public's confidence in beef, no matter how safe it is. Consumer perceptions — even when based on false premises — often are difficult to overcome.

"FMD is something I'm very confident won't happen here," Torres adds, "but we must be diligent in our efforts."

AJ