

Study simulates effects of foot-and-mouth disease outbreak in Mexico

16 February 2012

In a worst-case scenario simulation of a foot-and-mouth disease outbreak in Mexico, researchers found that establishing a good surveillance system and raising a more resilient breed of cattle could lessen the blow to the Mexican cattle industry should an outbreak of foot-and-mouth disease (FMD) or other infectious disease occur.

"For diseases that spread very quickly, such as foot-and-mouth, the best way to minimize [economic losses](#) is to have a very good [surveillance system](#)," said University of Illinois [agricultural economist](#) Lia Nogueira. "You can identify the [herds](#) that are sick right away and contain or slaughter them so the disease doesn't continue to spread throughout the country."

Nogueira said that when FMD ravaged the Mexican cattle industry in the 1940s, things were very different. Ranches were more isolated.

"If there was an [outbreak](#) in a certain region, it would have been contained to that region," she said. "Today we're seeing a lot more feedlot finishing in Mexico like in the United States. There are more cattle traveling all over the country to finishing centers. Once the cattle start traveling, the disease can begin to spread all over and then you get into real trouble."

Nogueira's study simulated several scenarios that incorporated different levels of surveillance, which involves traceability and checkpoints so every cow's origin and movement can be documented.

"In the scenario in which surveillance was very efficient and infected cows were identified quickly, the losses would not be very great," she said. "A mid-range scenario of traceability would be probably the most feasible for Mexican [ranchers](#). It would involve a 60 to 70 percent depopulation rate, and losses to society as a whole would be \$9.6 to \$16 billion. Producers sustain obvious losses, but consumers can also be affected through market

responses, and tourism can suffer because of traveling restrictions."

The 1940s outbreak of FMD in Mexico lasted for seven years and resulted in large losses in inventory with costs estimated over \$250 million. More recently, an FMD outbreak in the United Kingdom in 2001 caused losses of between \$3.6 and \$11.6 billion with around 4 million animals slaughtered. Nogueira said the estimated costs for an outbreak today are much higher because it includes government costs of cleanup, producer costs, and consumer costs.

The study also recommended that Mexican cattle ranchers consider raising a heartier breed of cattle so that if an outbreak should occur, the herd could be repopulated more quickly.

"One of the characteristics of the cattle industry in Mexico is that birth rates and death rates of the young cattle are much higher than they are in the United States," Nogueira said. "A different breed of cattle could decrease those rates, but to do that would take a lot of education, extension and outreach activities to convince ranchers to switch from the type of cattle that they've been raising all of their lives."

Nogueira explained that FMD is not transmitted to humans when they eat the meat or are in contact with an infected cow. This makes the disease very different from mad-cow disease, but of course it is still devastating to cattle ranchers.

"It's a virus, so it spreads kind of like the flu to other cattle," Nogueira said. "To contain the virus, you have to either completely quarantine or slaughter the cattle."

[Cattle](#) exports are a very small percentage of Mexican total exports and primarily calves that are produced in the northern Mexican states exported to the United States. Because the percentage of

calves exported to the [United States](#) is so small, it would likely not have much of an implication on the U.S. industry.

"Analyzing Mexico for the FMD outbreak was interesting because most of the countries that have been analyzed are much more dependent upon export," Nogueira said. "In those countries, if you declare that you have FMD, the borders are closed and surrounding countries will not import anything."

More information: Nogueira's research was part of a larger study for the USDA about infectious diseases. Foot-and-mouth disease and the Mexican cattle industry was published in *Agricultural Economics*. Coauthors are Thomas L. Marsh, Peter R. Tozer, and Derrell Peel.

Provided by University of Illinois at Urbana-Champaign

APA citation: Study simulates effects of foot-and-mouth disease outbreak in Mexico (2012, February 16) retrieved 20 November 2019 from <https://medicalxpress.com/news/2012-02-simulates-effects-foot-and-mouth-disease-outbreak.html>

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