

# Faculty Disclosure

Dustin L. Pendell, PhD

Dr. Pendell has listed an affiliation with:

Grant/Research Support – *USDA–Economic Research Service*

however, no conflict of interest exists for this conference.

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# **Economic Effects of a Foot-and-Mouth Disease Outbreak in Livestock: What Does a FMD Outbreak Mean To Me?**

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Dustin L. Pendell

Department of Ag. & Resource Economics

Colorado State University



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# Outline

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- Background on FMD
  - Animal Health
  - Human & Public Health
- Nebraska
  - Nebraska Agriculture Statistics
  - Emergency Guidelines
- Impacts of a FMD Outbreak
  - Direct and Indirect
  - Economic
- Take home messages

# Animal Health

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- Highly contagious disease of cloven animals
  - Cattle, bison, swine, sheep, goats, and deer
- How it spreads
  - Direct and indirect contact, animate and inanimate vectors, and air
- Signs
  - Developed within 2-5 days, fever, blisters, depression, reluctance to move, abortions, low milk production, death (in newborns)

# Human Clinical Signs

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- Similar to livestock
  - Develops within 2-6 days, blisters 2 mm to 2 cm in diameter and will dry up in 2-3 days
- Recover within a week of last blister appearing

# Diagnosis and Treatment

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- Clinically FMD in humans resembles:
  - Coxsackie A group viruses, herpes simplex virus, vesicular stomatitis
- Virus isolation or antibody identification required for diagnosis
- Treatment is supportive care

# Public Health Significance

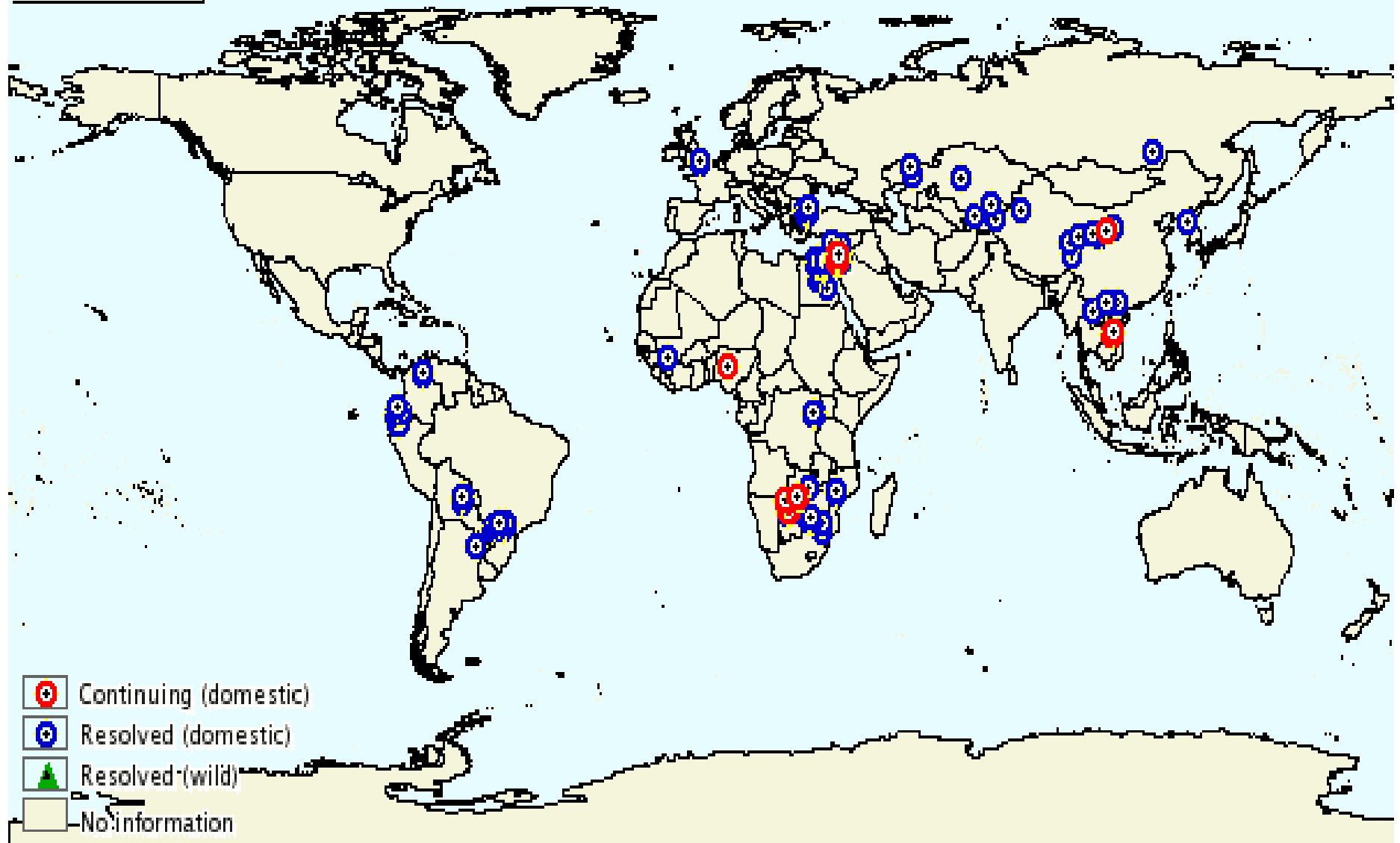
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- FMD in humans is not a public health concern
- 40 cases since 1921 documented in humans
  - Europe, Africa, South America

# Why Do We Care About FMD?

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- Highly contagious & morbidity
  - Most important livestock disease in terms of economic impacts
- World travel and globalization
- Bioterrorism
- Occurrence throughout the world



## Foot-and-Mouth Disease Outbreak Map, 2006-2008

Source: OIE: [http://www.oie.int/wahis/public.php?page=disease\\_outbreak\\_map&disease\\_type=Terrestrial&disease\\_id=1&empty=999999](http://www.oie.int/wahis/public.php?page=disease_outbreak_map&disease_type=Terrestrial&disease_id=1&empty=999999)

# Nebraska Agricultural Statistics

Rank	Commodity (Date)	Number (Unit)	% of U.S. Total
1	Commercial red meat production (2007)	7.22 billion lbs	14.8
2	Commercial cattle slaughter (2007)	9.26 billion lbs	21.3
2	All cattle on feed (1/2008)	2.70 million hd	18.9
2	Cash receipts from cattle/calves	\$7.14 billion	14.4
3	All cattle and calves (1/2008)	6.55 million hd	6.8
3	Total value of all cattle and calves (1/2008)	\$6.16 billion	6.5
3	Fed cattle marketed (2007)	4.83 million hd	21.5
4	Beef cows and heifers that have calved (1/2008)	1.88 head	5.8
4	Land in farms and ranches (2007)	45.6 million ac	4.9

# Nebraska Agricultural Statistics

Rank	Commodity (Date)	Number (Unit)	% of U.S. Total
6	Commercial hog slaughter (2007)	2.00 billion lbs	6.8
6	Pig crop (2007)	7.06 head	6.3
6	Value of all hogs and pigs on farms (12/2007)	\$256.75 million	5.2
8	Net farm income (2006)	\$2.30 billion	3.9
13	All chickens (12/2007)	12.26 million hd	2.7
13	Cash receipts from chicken eggs (2007)	\$185.09 million	2.8
18	Number of farms (2007)	47,300 farms	2.3
19	Value of wool production (2007)	\$216,000	0.7
20	All sheep and lambs (1/2008)	85,000 hd	1.4

# Nebraska Emergency Guidelines

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- NDA and USDA-APHIS form a unified command with responsibility and authority for animal health and animal disease
- Many other agencies involved
  - Ex: Nebraska Health and Human Services, Nebraska Department of Environmental Quality, etc.
- Specifics
  - Quarantine, animal movement, cleaning & disinfecting, depopulation, vaccination, burial, etc.
  - Case-by-case basis

# Direct & Indirect Impacts

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- Quarantine zones
  - Roads closed
  - Schools &/or communities
- Loss of jobs
  - Income/taxes
- Health issues
- Community disruption
- Tourism

# Economic Impacts

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## ■ Costs

- Appraisal, cleaning and disinfecting, euthanasia, vaccination, indemnification, disposal, trade, consumer fear, etc.

## ■ Studies:

- Thompson et al. (2002)
  - \$4.6 billion in agriculture
    - \$525 million to producers (market prices, export losses)
    - \$251 million to food industry (auction markets, abattoirs)
    - \$3,824 million to public sector (welfare, indemnity, etc.)
  - \$4.7 billion to tourism

# Economic Impacts

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- Pendell et al. (2007)
  - Regional impacts of FMD outbreak in SWKS
  - Five largest feedlots, one medium-sized feedlot, and one cow-calf operation
    - Five large feedlot scenario ~ \$1.3 billion loss
    - One medium feedlot scenario ~ \$276 million loss
    - One cow-calf scenario ~ \$51 million loss

# Economic Impacts

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- Paarlberg et al. (2008)
  - Midwest, heavily populated swine area
  - Small operations, garbage feeding scenario
    - Total losses to capital and management over 16 quarters between \$2,773 million and \$4,062 million.
    - Because prices fall due to export embargoes, consumers benefit.
    - Seven quarters required for recovery to the point where both domestic consumption and trade return to pre-disease levels.

# Take Home Message(s)

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*Thank You*

