PREPARING FOR A FOOT-AND-MOUTH DISEASE OUTBREAK AMONG LIVESTOCK POPULATIONS IN COLORADO

COLORADO STATE UNIVERSITY EXTENSION

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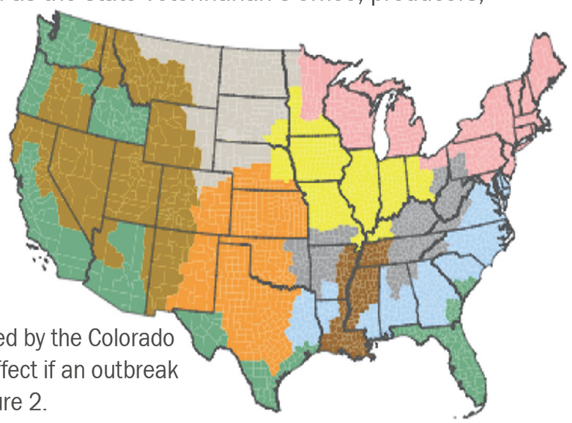
PROJECT INTRODUCTION

- Foreign animal diseases (FAD) are a persistent threat to the United States agricultural industry.
- A Foot-and-Mouth Disease introduction into the United States could cost the U.S. agricultural industry upwards of $200 billion.[1]
- Foot-and-Mouth Disease (FMD) is caused by a highly contagious virus that infects bi-hooved animals such as cattle, sheep, and pigs – all of which are large commodities in Colorado.
- Preparing for a FMD disease outbreak requires collaboration between key stakeholders such as the state veterinarian's office, producers, and researchers



U.S. regions color coded by the Colorado counties they would affect if an outbreak were to occur. See figure 2.

INTERNSHIP GOALS

1. Interns obtain experience interacting with stakeholders and other professionals in their respective fields of Veterinary Medicine and Infectious Disease Ecology.
2. Interns participate in data collection, cleaning, and model development.

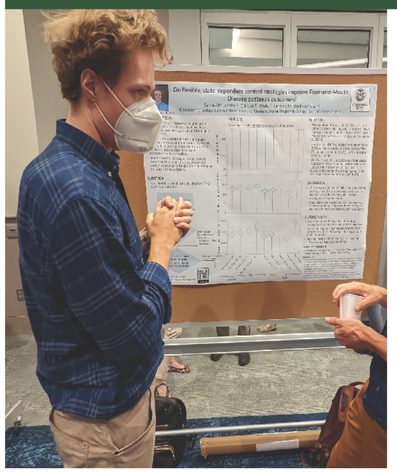
HOW DOES THIS APPLY TO YOUR EDUCATION

- As a veterinary student and a graduate student studying foreign animal diseases, this internship provided professional experience interacting with stakeholders and engaging in applied research.

WHAT YOU DID

- Sam attended the Ecology and Evolution of Infectious Diseases conference where he presented work about FMD control strategies.
- Hayden attended Colorado Cattleman's Convention where she relayed goals behind this project to Colorado producers and discussed their role in preparing and responding to a FMD outbreak.
- Hayden led efforts to collect Colorado-specific data that will be used to inform ongoing modeling studies aiding FMD preparedness efforts.
- Internship team engaged with high school students, producers, and veterinarians, including Colorado state veterinarian Dr. Maggie Baldwin and assistant Colorado state veterinarian Dr. Morgan McCarty.
- Sam developed new code in the current national-scale FMD model to output necessary information.
- Internship team worked with Travis Taylor and other Colorado Extension agents during 4-H State Conference Quiz Bowl and livestock judging competition
- Hayden attended both Kit Carson and Yuma County Fairs to learn why biosecurity measures are necessary at fairs and what would happen if an outbreak were to occur during a fair.

Figure 1. Sam presenting work and Hayden as a Vet!



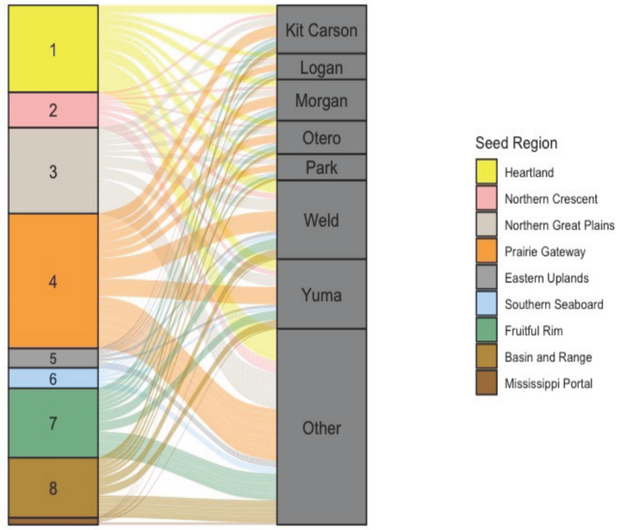
Literature cited

[1]Animal Health Inspection Service, (APHIS), "Foot-and-Mouth Disease Vaccination Policy in the United States," Washington, DC: United States Department of Agriculture (2020).

WHAT YOU LEARNED

- Gained insight into the research steps needed to model a foreign animal disease outbreak, including data collection, data cleaning, and coding.
- Learned how this model can assist the state veterinarian in making decisions in real time concerning FMD vaccination and culling protocols in the event of an outbreak
- Developed professional communication skills focusing on virtual communication such as e-mail.
- We were able to experience the culture surrounding livestock production in Northeastern Colorado.
- We were able to observe the development of a new research program and got participate in discussions surrounding grant development.

Figure 2. U.S. regional contributions to FMD spread in Colorado counties



NEXT STEPS

- Integrate clean data livestock shipment data into a Colorado-specific FMD model.
- Collaborate with state veterinarian and producers to ensure disease preparedness is undertaken in the event of a FMD outbreak

Special thanks to Lindsay M Beck-Johnson, Lauren Smith, Travis Taylor, and the Colorado State Veterinarian's Office for their guidance and support this summer.