Downloaded from orbit.dtu.dk on: Jan 17, 2025

DTU Library

Optimizing the control of foot-and-mouth disease in Denmark by simulation – the project outline

Enøe, Claes

Published in:
Optimizing the control of foot-and-mouth disease in Denmark by simulation

Publication date:
2012

Document Version
Publisher's PDF, also known as Version of record

Link back to DTU Orbit

Citation (APA):
Enøe, C. (2012). Optimizing the control of foot-and-mouth disease in Denmark by simulation – the project outline. In *Optimizing the control of foot-and-mouth disease in Denmark by simulation: Final report* (pp. 7-8). Technical University of Denmark.
http://www.vet.dtu.dk/upload/institutter/vet/forskning/fmd%20sim/final%20report%202012-11-28.pdf

General rights
Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Optimizing the control of foot-and-mouth disease in Denmark by simulation – the project outline

Claes Enøe
Section for Epidemiology, National Veterinary Institute, Technical University of Denmark

The primary objective of this project was to generate scientifically based methods for improving the control and eradication of foot-and-mouth disease (FMD). This was achieved by using and optimizing existing stochastic simulation models. These include the: 1) InterSpread Plus model from Massey University, New Zealand; 2) Davis Animal Disease Simulation (DADS) model from University of California, Davis; and 3) North American Animal Disease Spread Model (NAADSM), co-developed by the Centers for Epidemiology and Animal Health (CEAH), which is a part of the United States Department of Agriculture (USDA).

In the model simulations we used available data (Danish, whenever possible) to parameterize the models, including livestock premises locations, animal movement data, herd type and size. Through simulations we assess the effect of different control and eradication strategies on the spread of FMD. These control options included different options for emergency vaccination, zoning and culling. Optimal control/eradication strategies was evaluated based on costs, number of culled animals, epidemic duration and time to lift of restrictions on animal movements and trade.

An important part of the project was to examine the effect of predicted structural changes in livestock populations over the coming years, including fewer but larger herds.

The project consisted of 3 work packages:

- WP 1: Networking, gap analysis and modelling scenarios.
- WP 2: Adaptation, development and optimization of existing disease spread models to Danish data, including assessing the effect of control and eradication strategies, such as emergency vaccination.
- WP 3: Predicting the effect of the structural development in Denmark.

The partners in the project were:

- The National Veterinary Institute, Technical University of Denmark
- Informatics and Mathematical Modelling, Technical University of Denmark
- The Institute of Food and Resource Economics, Copenhagen University
- The Danish Veterinary and Food Administration
- Center for Animal Disease Modeling and Surveillance (CADMS), University of California, Davis
- Centers for Epidemiology and Animal Health (CEAH), USDA, Fort Collins, Colorado
- The livestock industries for pigs and cattle, Danish Agricultural Food Council

The project was applied and innovative - aimed at implementing and optimizing existing models so they make the best and most effective use of existing knowledge and data from the Danish populations of pigs and ruminants in establishing realistic alternative control strategies for the Danish veterinary authorities to apply in any future emergency situation and for preparing and testing the necessary contingency plans.