



Optimizing the control of foot-and-mouth disease in Denmark by simulation Influence of livestock markets on spread of FMD

Boklund, Anette ; Hisham Beshara Halasa, Tariq; Christiansen, Lasse Engbo; Enøe, Claes

Publication date:
2012

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

[Link back to DTU Orbit](#)

Citation (APA):

Boklund, A. (Author), Hisham Beshara Halasa, T. (Author), Christiansen, L. E. (Author), & Enøe, C. (Author). (2012). Optimizing the control of foot-and-mouth disease in Denmark by simulation: Influence of livestock markets on spread of FMD. Sound/Visual production (digital)

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

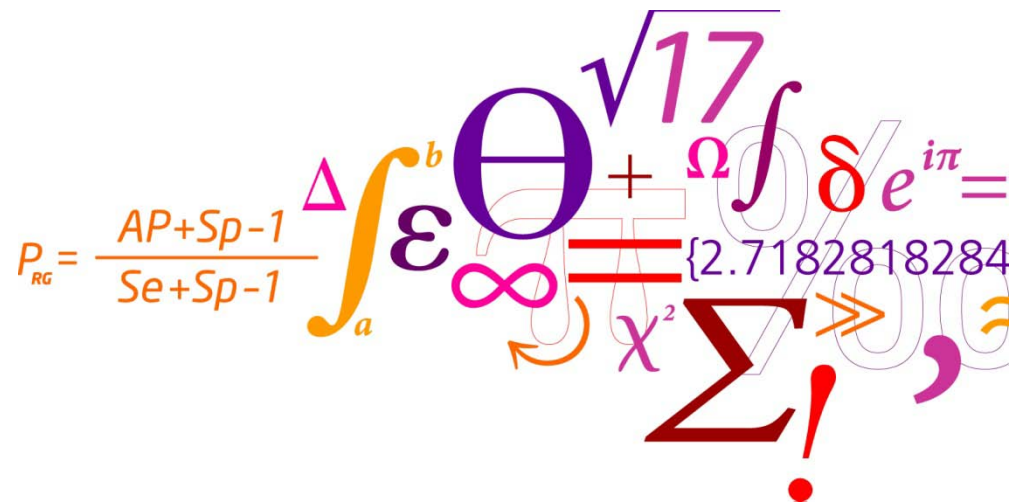
Influence of livestock markets on spread of FMD

Anette Boklund

Tariq Halasa

Lasse Engbo Christiansen

Claes Enøe



Materials and method

- Simulated in ISP, basic scenario
- Only start in **cattle** herds
- Extra
 - Movements to markets per herd (daily probability)
 - Receiving from markets (yes/no)
- Starting in 386 herds
 - highest prob. of moving to market
 - Each index run 100 times
- Same without markets



Copy-right: Brørup marked

Materials and method

- Extra contacts
 - 3.5
- Probability of transmission
 - normal distribution $\mu=0.415$, $sd=0.06$.
 - Purchased animals
 - Indirect contact from visitors
- Closed at first detection
 - HRP only = 21 days

Copy-right: Kirsten Tjørnehøj, VET-DTU, Lindholm



Epidemiologic results - Markets

Simulated scenario	Epidemic duration (days ¹)	Number of detected herds	Number of depopulated herds	Size of infected area (1000 km ²)
With markets	90 (9-262)	161 (4-631)	194 (5-754)	14.3 (0-37.5)
Without markets	87 (8-262)	144 (3-612)	173 (4-731)	9.8 (0-35.6)

Economics



Epidemiologic results - Markets

Simulated scenario median (5-95%)	Direct costs (10 ⁶ €)	Export losses (10 ⁶ €)	Total costs and losses (10 ⁶ €)
With markets	37.5 (6.8-126.7)	629.6 (375.7-1166.7)	670.9 (382.6-1284.5)
Without markets	33.9 (6.5-124.7)	613.8 (370.5-1161.8)	651.6 (377.4-1277.8)

Conclusions

- With markets
 - Longer, larger and more costly epidemics

- This is with a highly contagious disease
 - Less contagious diseases
 - Are not spread as quickly
 - BUT can spread silently in longer periods
 - Might not lead to closure of markets

Copy-right: Kirsten Tjørnehøj, VET-DTU, Lindholm



Thank you for your attention

