



Faculty of Agricultural and Nutritional Science

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Christian-Albrechts-University
Kiel
Institute of Animal Breeding and
Husbandry

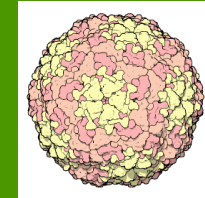
Prev. Culling and Emergency Vaccination

a simulation study about
foot and mouth disease

Imke Traulsen¹, Jürgen Teuffert² and
Joachim Krieter¹

¹Institute of Animal Breeding and Husbandry,
Christian-Albrechts-University, Kiel

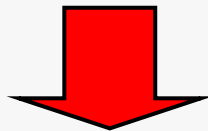
²Friedrich-Loeffler Institute, Wusterhausen





Aim of the study

- FMD highly contagious animal disease
- 2001, 2007 outbreaks in Europe → high economical losses
- control strategy: preventive culling
 - effective strategy but culling of healthy animals
 - vaccinate animals



Is an emergency vaccination an alternative?



Study design

Control strategy

Basic

Culling of infected farms
Protection zone (0-3 km)
Surveillance zone (3-10 km)
Contact tracing

Preventive culling

1 km around all infected farms

Emergency vaccination

1, 5 or 10 km around the first or all infected farms

additional influence factors

Airborne spread

Farm density

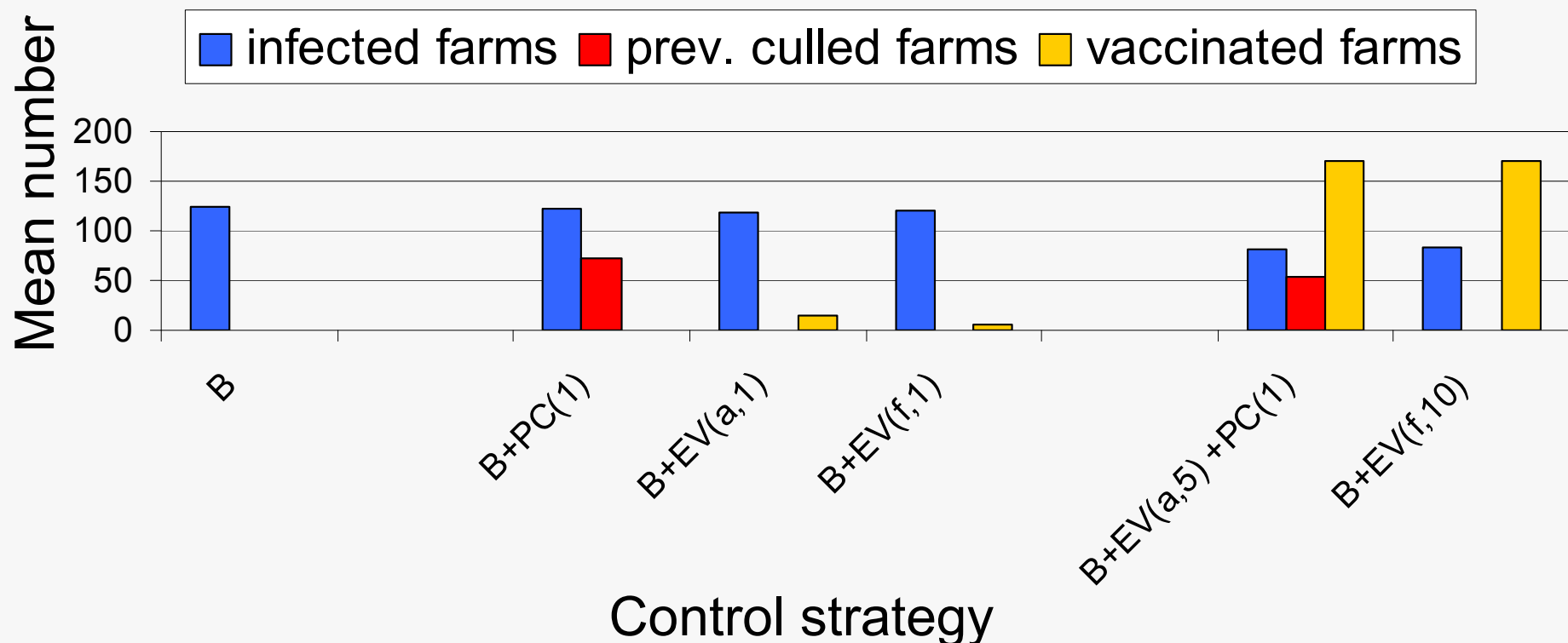
Farm type of index case

Delay start control strategy



Results

Mean number of infected, preventively culled and vaccinated farms, depending on the control strategy



B: Basic (protection and surveillance zone, contact tracing)

PC(1): preventive culling within 1 km around all infected farms

EV(a,1), EV(a,5): emergency vaccination within 1/ 5 km around all infected farms

EV(f,1), EV(f,10): emergency vaccination within 1/ 10 km around the first infected farm



Conclusion

- Emergency vaccination is an alternative control strategy to preventive culling.
- Wide-range emergency vaccination around first infected farm more efficient than combination of preventive culling and emergency vaccination around each infected farm.