

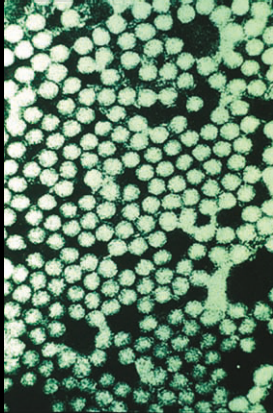
Introduction to mathematical modelling of foot-and-mouth disease in livestock

Julien Arino

April 2023

- ▶ In these slides, I consider foot-and-mouth disease (FMD) in livestock
- ▶ FMD was also called hoof-and-mouth disease (HMD) in the UK, although FMD tends to be used globally now
- ▶ I only consider single population aspects here, spatial spread is a later lecture

Foot-and-mouth disease



- ▶ Severe, highly communicable **viral** disease of cattle and swine
- ▶ Also affects sheep, goats, deer and other cloven-hoofed ruminants. Horses not affected
- ▶ Elephants, hedgehogs and some rodents also susceptible but do not develop clinical signs of the disease



- ▶ Fever and blister-like sores on the tongue and lips, in the mouth, on the teats and between the hooves
- ▶ Many affected animals recover, but the disease leaves them weakened and debilitated

2001 United Kingdom FMD outbreak

- ▶ 2,000 cases of the disease in farms across most of the British countryside
- ▶ Over 6 million cows and sheep were killed to control the disease
- ▶ Ministry of Agriculture, Fisheries and Food (MAFF) adopted a policy of “contiguous cull” - all sheep within 3,000 metres of known cases slaughtered

More about transmission

Conclusion