Infectious Disease Epidemiology

MAS thesis market 2026

Bart van den Borne (IDE, BEC)



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Introduction IDE

Who are we?

- Prof. dr. Quirine ten Bosch
- Prof. dr. Ynte Schukken
- Prof. dr. Wim van der Poel
- 8 teaching and research staff
- 3 postdocs
- 14 PhDs







What is (infectious) disease epidemiology?

The study of the population dynamics of infectious diseases and how to manage them

- Aim: to reduce the burden of animal diseases
  - Animal health
  - Economics
  - Human health
  - Animal welfare
  - Environmental health (GHG emissions)
  - Satisfaction of animal owner

What do we do?

- Generate and disseminate knowledge on the epidemiology of infectious diseases in (production) animals (and humans)
  - Transmission of infectious diseases within and between groups of animals (incl. humans)
  - Factors influencing that transmission
  - Effect of interventions



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How do we do that?

- Statistically investigate occurrence, causes and distribution of diseases in populations
- Quantifying risk factors for disease, infection, or transmission to identify preventive measures
- Modelling dynamics of infections
- Transmission experiments

Some examples

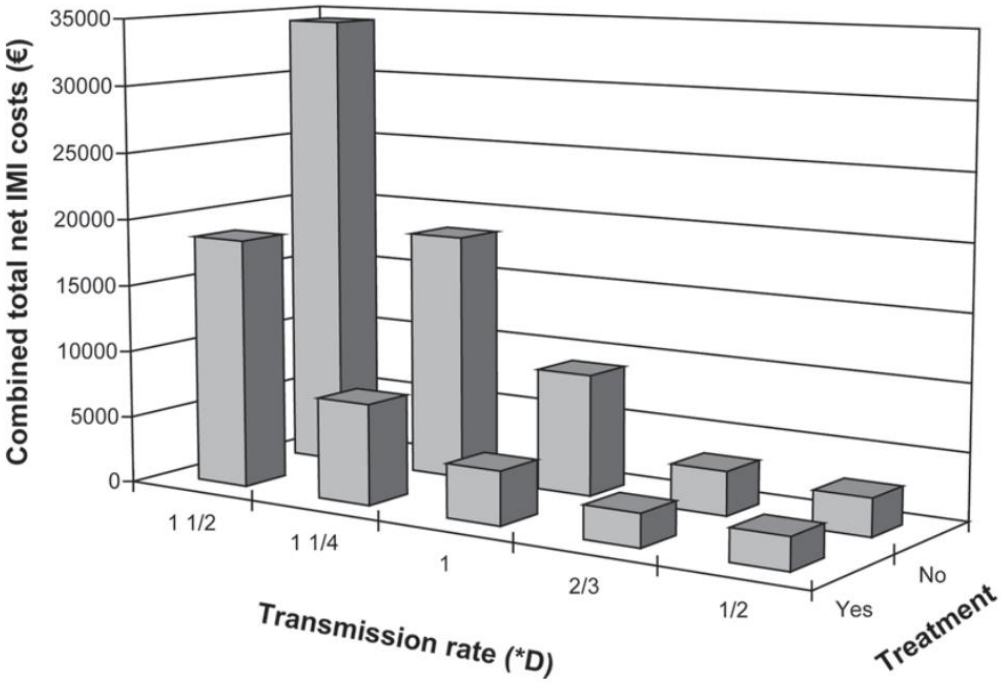
Bovine Tuberculosis in Ireland

- Badgers are a reservoir for bTB (=zoonosis)
- Culling is unethical + illegal
- Vaccination trial in badgers
- Reduction in badger-to-badger transmission
- Modelling: vaccination of badgers cannot eradicate bTB in the current cattle-badger system
- Currently: evaluating Irish control program, including badger and cow vaccination



Mastitis in dairy cows

- Treatment of subclinical mastitis → cure of *Staph. aureus*
  - 1st high SCC: 65%
  - 2nd high SCC: 43%





SARS-CoV-2

- Developed a tool for restaurant owners to limit spread of infection, together with TU Delft and Erasmus MC
- Experiments and evaluation of field data to estimate transmission in cats



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MSc education

Specialisations Animal Sciences

- Genetics and Biodiversity
- Nutrition and Metabolism
- Global and Sustainable Production
- Adaptation, Health and Behaviour
- Molecule, Cell and Organ Functioning
- Animal Ecology

Internship and MSc thesis

- Internship (24-39 ects; mostly 24)
  - Should contain a research component
  - Research Practice can be an alternative (exception)
- MSc thesis (24-39 ects: mostly 36)



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Some recent MSc thesis examples

- Genetic selection of cattle
  - TB Ireland
  - Digital dermatitis NL
  - ParaTB NL
- FMD outbreak Indonesia
- IBR outbreak NL
- Avian influenza incursion in Ireland
- Current Bluetongue outbreak NL
- Horse health in Oostvaardersplassen
- Rabies in Indonesia

Prerequisites

- One (depending on subject) of the following MSc courses:
  - Quantitative Veterinary Epidemiology (P5, QVE-30306)
  - Modelling Infectious Diseases in Animal Populations (P6-2nd half, QVE-30806)
  - Disease Ecology (P6-1st half, WEC-33306)

Planning

- Contact study advisor for approval of MSc study program
- Intake: 3-6 months before start with Bart van den Borne



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MSc thesis: what can you do?

- Experiment (transmission/challenge)
- Questionnaire
- Field work
- Statistically analyse dataset
    - Risk factors
    - Disease dynamics
- Simulation modelling
    - Disease dynamics
    - Economic impact
- Combination

Choosing a topic

- Methodology: risk factors, modelling, lab work
- Applied or more fundamental
- Type of work: experiment, questionnaire, field work, statistically analyse data, simulation modelling, combination, ...
- NL or abroad
- Supervisor / particular disease



Location

- Internal:
  - Zodiac / Radix
  - Combination with other chair group (eg, ABG)
- External:
  - Royal GD (Deventer)
  - RIVM (Bilthoven)
  - WBVR (Lelystad)
  - Fac Vet Med (Utrecht)
  - Industry (VION, MSD)
- Abroad

Species

- Cattle
- Pigs
- Poultry
- Small ruminants
- Companion animals
- Fish
- Wildlife
- ...
- Humans





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Where do recent graduates work?

Utrecht University

Wageningen Bioveterinary Research

GD

MSD

Nederlandse Voedsel- en Warenautoriteit
Ministerie van Landbouw, Natuur en Voedselkwaliteit

SDa Autoriteit Diergeneesmiddelen


A lot is possible!!
What do you prefer!?
bart.vandenborne@wur.nl