WAGENINGEN UNIVERSITY
WAGENINGEN UR

Assessing the impact of within-herds control strategies against Bovine Leukaemia Virus (BLV) in dairy herds, by simulation

MONTI, G.; FRANKENA, K. AND DE JONG, M.C.M.

Aims of the study

- To evaluate the impact of various control strategies against BLV within herds by simulation
- To determine the time required for achieving eradication

Material & Methods

Simulation was based on a Maternal Antibody Protected-Susceptible-Infected (MSI) stochastic and age-structured model (adults, heifers and calves), starting from a quasi-stationary state, using Montecarlo techniques (1000 runs) for a time -horizon of 50 years.

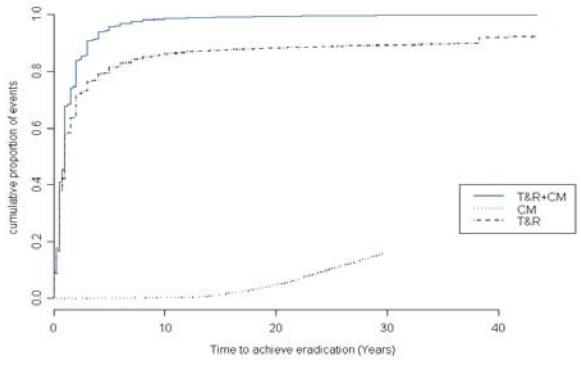
Model Assumptions
- Removal of positive reactors is done immediately after testing.
- All removed animals are replaced instantaneously by susceptible individuals of the same age-group and supply is not limited.
- We accounted for imperfect test sensitivity

Evaluation of model responsiveness to various input parameters
- Test Sensitivity (91-95-99%)
- Herd Size (100-200-800 animals/farm)
- Sampling Frequency (1-2-4 times/year)
- Testing all animals in the herd against testing animals older than 6 months-only

Control Strategies
- No actions (null)
- Corrective management only (decrease in the baseline transmission rate of 25-50-90-99%) (CM)
- Test & Removal of positive reactors (TR)
- Test & Removal of positive reactors + Corrective management

Results

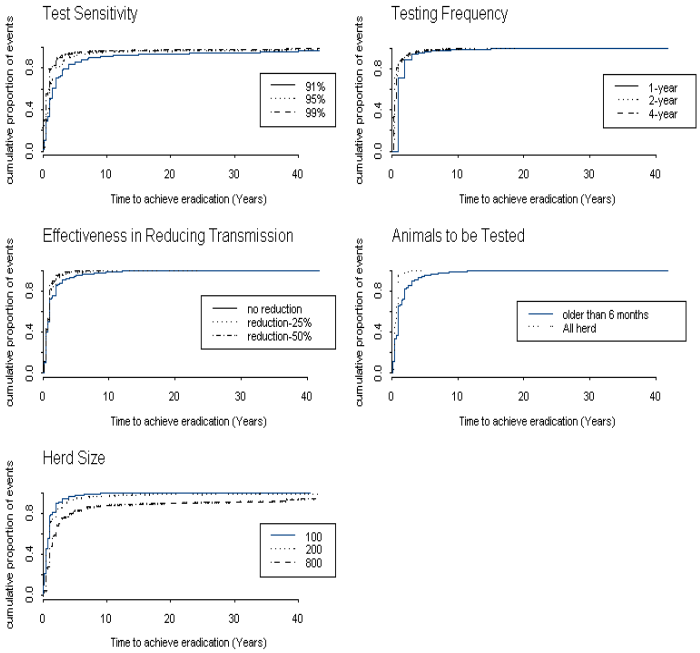
Figure 1. Cumulative proportion of runs that achieve eradication over time after considering different BLV control strategies



Conclusions

- the time-scale of BLV eradication within a dairy herd may be very long when infection does become endemic, depending on the right choice of control strategy
- within-herd eradication of BLV will require intensive effort, especially for large herds, and only be effective over a time-scale of several years.
- The model supports a multi-size policy that considered the use of combined control measures to control the spread of the disease.

Figure 2. Cumulative proportion of runs that achieve eradication over time after considering different BLV control measures and conditions.



Departement of Animal Sciences
Marijkeweg 40
Postbus 338
6700 AH Wageningen
Tel: (+31) 0317-483952
Fax: (+31) 0317-483962
E-mail: Office.AS@wur.nl
Internet: http://www.zod.wau.nl