

The economic effects of blanket versus selective anthelmintic treatment strategies in dairy COWS

J. Charlier¹, B. Levecke¹, B. Devleeschauwer¹, J. Vercruysse¹, H. Hogeveen²

¹Department of Virology, Parasitology and Immunology, Ghent University, Belgium; ²Chair Group Business Economics, Wageningen University, The Netherlands

Background: Gastrointestinal nematode infections (mainly those with *Ostertagia ostertagi*) continue to be a major cause of production losses in dairy cattle. Anthelmintic treatments are a cornerstone of the current control strategies, but there is an increasing pressure to use the available anthelmintics selectively in order to slow down the development of anthelmintic resistance and prevent residues in the food chain. However, selective treatment approaches involve additional costs for diagnostics and labour and it has not been evaluated whether they could be economically competitive. The objectives of this study were (1) to investigate the economic effects at farm level of blanket vs. selective anthelmintic treatment strategies in dairy cows and (2) to determine how these effects depend on level of infection or herd size.

Methods: A conceptual model was developed where the complex process of nematode control was split up in parts small enough to understand independently. The variations or uncertainty in each step were taken into account by Monte Carlo simulation. A total of 6 different treatment strategies were compared with the baseline situation where no treatments were applied. These treatment strategies included different blanket or selective treatments at calving or at housing. Input data were created based on literature and expert opinion. A univariate sensitivity analysis was conducted to evaluate the effects of a changing herd size, level of infection and economic parameters.

Results: In general, all evaluated control strategies resulted in an expected economic benefit compared with the baseline situation. However, the large variation in expected benefits indicated that on the individual farm this benefit is not guaranteed. The strategies applying treatment at calving outperformed the strategies with treatment at housing. Selective treatment strategies performed at least as well (or better) than blanket control strategies. A higher level of infection of a herd resulted in higher expected benefits for the different control strategies. Increases in herd size reduced the variation and thus the risk for the producer when a certain strategy is applied.

Conclusion: Selective anthelmintic treatment in dairy cows holds potential as an economically competitive alternative for blanket treatment strategies.
