

## HELMINTH INFECTIONS: DO THEY AFFECT THE PRODUCTIVE EFFICIENCY OF SPECIALISED DAIRY FARMS?

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Subclinical infections with gastrointestinal (GI) nematodes and liver fluke are an important cause of production losses in grazing dairy cattle. Attempts to evaluate the economic impact of these production losses were mainly based on partial analysis techniques, and few studies have looked more integrally at the impact on productive efficiency at farm level. Because the impact of helminth infections has become more subtle and is farm-specific, a more refined economic evaluation of actions is needed to increase or maintain the health of livestock on individual farms. The objective of this research is to analyse the effect of GI nematode and liver fluke infections on the technical efficiency in dairy farms. Farm-specific results from a parasitic monitoring campaign, expressed as an optical density ratio (ODR), are linked with individual farm data from the Belgian Farm Accountancy Data Network (FADN). As a result, a dataset of about 45 specialised dairy farms is obtained, combining economic and epidemiologic information. Their technical efficiency (TE) is calculated with non-parametric data envelopment (DEA) analysis. Multiple variants of the DEA approach are used, differing in the way they incorporate infection in the production model. Rank correlation, regression models, and cluster analysis are used to analyse the relationship between TE and the level of helminth infection. Preliminary data analysis shows an ODR mean and standard deviation of  $0.82 \pm 0.21$  and  $0.79 \pm 0.34$ , for GI nematode and liver fluke infections, respectively. More than 80% of the farms have an ODR above 0.5, suggestive for a negative effect of helminth infections on milk production. The TE scores, which range between 0 (totally

inefficient) and 1 (fully efficient), show a mean technical efficiency of 0.708.  
More than 90% of the farms are shown to produce at an inefficient level