

# **Performance of a Predictive Computer Model to Simulate Gastrointestinal Nematode Epidemiology on Ontario Sheep Farms**

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With increasing levels of anthelmintic resistance worldwide, it is important to adopt new control strategies for gastrointestinal nematodes which help minimize the use of dewormers. With the help of advanced computing power, predictive models can now be developed as tools for parasite management. Models such as these may help reduce the number of times anthelmintics are used on a farm by indicating to farmers when in the year animals are most likely to require treatment(s) or which pasture rotation scheme would be best suited for their farm to ensure low parasite levels. During this study the performance of an existing predictive sheep parasite model, built in the United Kingdom (UK), was evaluated using Canadian data. This model used a number of farm specific inputs to be able to predict the average daily egg count for lambs and ewes over a one year period. These inputs included initial ewe parasite egg output, pasture-related information, management dynamics and daily climate values. To measure how accurately the UK model predicted fecal egg counts (FECs) on Canadian farms, model predictions were compared against monthly FECs. Results from this study were favourable; 56% of the FECs on Canadian farms could be predicted with the UK model. Inaccurate predictions (44%) were attributed to unusual factors which could not currently be accounted for in the UK model. These included certain management practices (e.g. accelerated lambing) and climate factors (e.g. snowfall). Before this UK model could be utilised as a tool in Canada, some modifications would be required to accommodate certain Canadian management and weather factors.