

Survey of gastrointestinal nematodes in breeding-age heifers on six Saskatchewan dairy farms

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Gastrointestinal nematodes (GIN) are a threat to the health and welfare of cattle worldwide and have substantial detrimental effects on dairy cattle productivity. Furthermore, evidence of anthelmintic drug resistance is increasing worldwide. There is a scarcity of evidence regarding the epidemiology, burden and predominant species of GIN in dairy heifers in Canada on which to make evidence-based recommendations for sustainable control. This research aims to address this lack of information by determining GIN burden, predominant nematode species and change in nematode burden over the grazing period in breeding-age dairy heifers in Saskatchewan.

Fresh environmental fecal samples were collected from 30 grazing breeding-age heifers on six dairy farms in Saskatchewan at monthly intervals in June, July and August 2016. Nematode fecal egg counts (FEC) measured in eggs per gram of feces (EPG) were determined using the Modified Wisconsin Sugar Flotation Technique and light microscopy. Descriptive analyses indicate population-averaged geometric mean FEC of 0.98 (95% CI: 0.76-1.25), 2.62 (95% CI: 2.15-3.25) and 4.13 (95% CI: 3.23-5.28) EPG for June, July and August, respectively. Predominant nematode species identified at the farm-level were determined by deep amplicon sequencing of the ITS-2 rDNA locus of nematode larvae. The predominant nematode species on all farms were *Cooperia oncophora* and *Ostertagia ostertagi*. The burdens, the predominant nematode species and the increasing FECs over the grazing period found here are consistent with the literature for young grazing cattle in temperate climates.

Implications: The results of this study demonstrate the presence of nematode burdens in grazing dairy heifers in Saskatchewan. Going forward, more extensive research on the prevalence, epidemiology and efficacy of current anthelmintic drugs in the western Canadian dairy industry will provide a foundation on which to base future sustainable parasite control practices.