

Comparison of gastrointestinal parasites and management practices between organic and conventional dairy herds in Minnesota

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Introduction

Clinical infestations with gastrointestinal (GI) parasites are considered by some to be among the most expensive diseases in the cattle industry due to lost productivity and increased operating expenses. The National Organic Program restricts the use of synthetic anthelmintics to emergency situations. Instead, organic farmers are required to implement best management practices and alternative therapies to prevent GI parasite infestations. At present, little is known about the burden of GI parasites in dairy cattle in Minnesota or the effectiveness of preventive management practices on organic dairies. The objectives of this study were to describe the prevalence of GI parasites in cattle on Minnesota dairy herds, to evaluate the association of management practices with GI parasite egg counts, and to compare GI parasite egg counts between organic and conventional dairy farms.

Materials and Methods

All organic dairy herds (n = 114) in Minnesota were invited to participate. A convenience sample of conventional herds were enrolled for comparison on the basis of their proximity to an organic herd and raising heifers on farm but without regard to whether the herd was pasture-based. All participants were interviewed about management practices and the GI parasite prevention protocols for their herds. Fecal samples were collected from a maximum of 20 breeding-age heifers per herd and analyzed with the Wisconsin sugar float method to determine the quantity of strongyle, *Strongyloides*, *Moniezia*, *Trichuris*, *Capillaria*, *Nematodirus*, *Dictyocaulus*, and *Buxtonella* eggs, and the presence or absence of *Eimeria*. Additionally, hygiene scores for the mature dairy herd and cleanliness of water and bedding were recorded. Data were summarized by means of frequency statistics for categorical variables. The geometric mean

parasite egg counts per herd were calculated for further herd-level analysis. A Mann-Whitney-U test was used to compare the geometric mean egg count of each assessed parasite between organic and conventional herds. For all analyses, statistical significance was set at $\alpha = 0.05$.

Results

One thousand eighty-three fecal samples from 33 organic and 27 conventional farms were evaluated. The geometric mean quantity of strongyle eggs in cattle on organic farms (5.2 eggs/animal) was significantly ($P < 0.001$) higher than that in cattle on conventional farms (0 eggs/animal). Organic producers were significantly ($P = 0.01$) more likely to view GI parasites as a problem on their farm than were conventional producers. With the exception of 2 organic farms, *Eimeria* was found on all farms. No difference was observed between organic and conventional farms in regard to the other assessed GI parasites. Farms that used an indoor feedline tended ($P = 0.08$) to have lower strongyle egg counts than those that did not use an indoor feedline. Not surprisingly, GI parasites that are associated with grazing (i.e., *Moniezia*, strongyle) were more commonly found in organic and grass-based herds than in herds with confinement housing ($P < 0.01$). Furthermore, frequency of bedding changes on farm ($r < -0.4$; $P < 0.01$) and hygiene of the mature herd ($r = -0.23$; $P = 0.09$) were negatively correlated with strongyle egg counts in heifers.

Significance

Although this pilot study included data from only 60 herds, it provided current information about GI parasites on Minnesota dairy farms. Even though organic herds had higher mean strongyle egg counts than did conventional farms, the egg counts for the other GI parasites assessed were generally fairly low for both organic and conventional dairy herds.