

Evaluation of udder health parameters of organic and conventional dairy herds in Minnesota

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Introduction

The National Organic Program emphasizes the importance of disease prevention and does not allow organic dairy herds to use antimicrobials for dry cow therapy or for treatment of clinical mastitis. At present, little is known about the impact of these regulations on udder health or management practices on organic dairies in Minnesota. The objectives of this pilot study were to describe bulk-tank somatic cell and bacteria counts, udder health variables, and milking and udder health management practices of organic and conventional dairy herds in Minnesota, and to compare udder health variables and management practices between organic and conventional herds.

Materials and Methods

During 2012, all organic dairy herds (n=114) in Minnesota were invited to participate in the study. Conventional herds were enrolled as controls 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. Producers were interviewed about management practices and udder health variables for their herds. Additionally, for each herd, up to 3 bulk-tank samples were collected and later combined and analyzed for bacterial content and lab pasteurization count. Data were summarized with frequency statistics for categorical data and median and inter-quartile range (IQR) for continuous or count data. Bivariate comparisons between organic and conventional herds, as well as associations between variables, were tested with appropriate non-parametric tests in SAS 9.3. For all analyses, the statistical significance was set at $\alpha = 0.05$.

Results

Fifty-eight composite bulk-tank samples from 34 organic and 24 conventional herds were analyzed.

Overall, no difference was observed in the producer-reported bulk-tank SCC, prevalence of cows calving with mastitis, the measured colony forming units of mastitis pathogens in the bulk-tank sample (Coliforms, *non-agalactiae* *Streptococcus* spp, *Staphylococcus aureus*, other *Staphylococcus* spp, *Mycoplasma* spp), and the lab pasteurization count) between organic and conventional herds. *Streptococcus agalactiae* was only isolated on 2 organic farms and *Mycoplasma* spp was cultured from only 1 conventional farm. The proportion of cows with mastitis during the previous year reported by organic producers (15.1%; IQR, 12.3% to 23.5%) was significantly ($P=0.017$) greater than that reported by conventional producers (23.9%; IQR, 15.3% to 38.9%). During the previous year, the majority (> 63%) of both organic and conventional producers treated all clinical cases of mastitis; however, 19% of organic producers did not treat any clinical mastitis cases. Additionally, conventional producers tended ($P=0.07$) to see mastitis as a major challenge on their farms more commonly than did organic producers. All conventional producers used intramammary antimicrobials as standard dry-off treatment; however, the median producer-reported incidence of mastitis in parturient cows for conventional herds (10%; IQR, 1% to 10%) did not differ from that for organic herds (10%; IQR, 5% to 23%). The proportion of cows with ≤ 3 functioning quarters was negatively correlated with rolling herd average ($r=-0.32$; $P=0.015$) and tended to be positively correlated with the bulk-tank somatic cell count ($r=0.21$; $P=0.07$), but did not differ between organic and conventional herds.

Significance

Although the relatively small sample size limited the power of this study, little difference in udder health was found between organic and conventional herds.