

Effects of outdoor access on the pathogen-specific incidence rate of clinical mastitis of lactating cows in Alberta

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Outdoor access for dairy cattle has many advantages, but the impact on udder health is not known. Different pathogens can cause clinical mastitis in a dairy herd and can be categorized as environmental, contagious, and opportunistic bacteria mainly based on the route of transmission. The objective of this study was to quantify the effects of housing system (i.e., indoor intensive housing, outdoor access without pasture, and outdoor access with pasture), other herd-level factors, and season on the pathogen-specific incidence rate of clinical mastitis (IRCM) of lactating dairy cows in Alberta. To achieve this, 65 farms in Alberta collected milk samples of CM cases from August 2022 to June 2023, as part of a larger epidemiological study. Additionally, information on herd-level factors, housing type, and milking system was acquired. A total of 540 CM samples were collected and cultured to identify the pathogens present in each sample. Of these samples, 410 were regarded as new CM cases, the most isolated pathogens identified were environmental: *Escherichia coli* (23%), and secondly contagious: *Staphylococcus aureus* (16%), and non-*aureus* staphylococci (14%). Of all the cultured positive isolates, 19% contained contagious bacteria (*S. aureus*), 43% contained environmental bacteria (*E. coli*, *Streptococcus uberis*, or *Klebsiella* spp.) and 14% had opportunistic bacteria (non-*aureus* staphylococci). Housing type and herd size were not associated with IRCM; organic farms had a lower median IRCM compared with conventional farms, and season (winter, spring, summer, fall) resulted in a significant effect on median herd-level IRCM. In the Spring (March 19 to June 20) IRCM was lower for contagious and environmental pathogens. Although the median IRCM for farms providing pasture and alternative outdoor access to lactating cows was lower than the median IRCM for farms continuously housing cows indoors, this association was not significant.

Take home message: No significant difference between housing systems in Alberta and incidence of clinical mastitis could be identified in this study. Organic management systems and spring season significantly decreased IRCM, whereas autumn season significantly increased IRCM.



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