

Development and Validation of a Pruritic Index to Assess the Impact of Chorioptic Mange Infestation in Dairy Cows

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Introduction

Recent studies reported a significant negative association between presence of mange lesions and reduced milk production in early lactation. In addition, there was a significant positive production response to moxidectin therapy in the transition period. However, the biological reasons for these effects were not described. It is suspected that mange infestation results in intense pruritis and decreased dry matter intake. This experiment sought to develop and validate a semi-quantitative scoring system to categorize the degree of pruritis in mange-infested dairy cattle. In addition, the association between Pruritic Index Score, Mange Lesion Score, presence of *Chorioptes* mites, measures of productivity, and response to endectocide treatment in Ontario dairy cattle was examined.

Materials and Methods

Subjective measures of mange lesions and pruritis were developed and evaluated. Study herds were solicited from veterinary practitioners based on observed tail-head mange lesions. Herd managers completed questionnaires about parasite treatment and management practices, and provided access to Dairy Herd Improvement (DHI) production records. All lactating cows were scored for pruritic index and mange lesions at the enrollment visit. In a subset of 135 cows in three herds, each cow was scored for pruritic index and mange lesions by six different individuals to develop an inter-reader assessment of these subjective scoring systems

using a statistical permutation test. At the enrollment visit, milk samples were collected for evaluation of ELISA *Ostertagia* titers as a measure of internal parasite burden.

Mange-positive cows were randomly assigned to receive moxidectin pour-on endectocide or a placebo pour-on solution. Mange-negative control animals were selected by matching for parity and stage of lactation. Mange negative cows were also randomly assigned to receive moxidectin or placebo pour-on solutions.

Results and Conclusions

The study population consisted of 1,179 cows in 21 dairy herds. Overall prevalence of mange lesions was 47.8% and itchiness was 56.5%. Herd-level prevalence of mange lesions ranged from 19% to 72%. Inter-reader comparison of pruritic index and mange lesions showed a small but significant variation among readers. Pairwise comparison showed overall differences between mean scores for lesion and itch between readers, as well as significant differences between some readers for both lesion and itch scores. More differences were observed for inter-reader lesion scores than for itch scores. A low percentage of skin scrapings from itchy cows was positive for mites (24.9%). Pruritic index and mange lesion scores were significantly associated. When DIM, parity, and random herd effects were controlled, positive pruritic index score was significantly associated with higher milk production on the DHI test closest to enrollment. Results of milk ELISA, DHI milk production at enrollment, and the response to moxidectin treatment will be presented.