

# Research Summaries II

“Dairy and General”

Moderator - Don Hansen, DVM

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## Case-Control Study of Papillomatous Digital Dermatitis in Southern California Dairies

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In order to describe papillomatous digital dermatitis (PDD), and to determine risk factors for highly affected dairies, data from 37 southern California dairies with >5% of cows affected (highly affected dairies, cases) were compared with those from 20 dairies with ≤5% of cows affected (controls). Information on dairy environment, management and PDD occurrence was obtained from dairy managers, veterinarians and hooftrimmers, and by direct measurement. Odds of having a higher proportion (>5%) of cows affected were

19 times greater in dairies with muddy corrals than in drier dairies. Buying replacement heifers was associated with a 4.7-fold increase in the odds of higher PDD occurrence, compared to dairies that did not buy heifers. Spatial analysis, used to examine distribution patterns of the study dairies, showed no evidence of clustering among case or control dairies, and there was no association between case dairies and proximity to the major local river. These risk factors may be amenable to manipulation for disease control.

## Impact of Preventive Hoof Care on Dairy Heifer Performance

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Northern climate can place many restrictions on how to raise heifers and these restrictions can have an important effect on hoof growth. Heifers in northern climates are raised indoors during the winter months. They are either grouped with other heifers of similar size in pens or they are placed in tie-stalls. The latter method does not permit much free movement. The tie-stall is usually constructed of concrete with straw for bedding or rubber pads. Wet concrete in the tie-stalls

or moist manure pack in pens can soften the hoof wall and, coupled with reduced exercise, promote a longer toe due to less wear on the hoof wall. Most producers do not routinely trim their animals' hooves until after they have calved. When vaccinating and deworming heifers, one can often notice that they have long toes. Corrective trimming at an early age could allow a more normal claw, promoting more normal growth and wear while on pasture.

Studies have shown that claw conformation has an impact on longevity and production. The problem in dairy cattle is that hoof growth always exceeds hoof wear. When the hoof becomes too long, it becomes difficult to get much hoof wear when the animal walks. If the hoof is trimmed to a more normal shape, the animal is better able to wear the hoof down on their own. Rates of hoof growth and wear are lowest during the winter and highest during the spring and summer. Hoof growth is greatest in heifers and the least in older cows. Therefore, if one trims heifers after the season of rapid hoof growth (summer), they should maintain better hoof conformation longer than those trimmed before the warmer months.

Agriculture Canada funded a research project to investigate the impact of preventive hoof care on first lactation milk production. 252 heifers on eight Holstein dairies in Prince Edward Island were enrolled. All enrolled heifers were between the ages of 6 and 16 months. Four farms used tie-stalls for their heifers and four utilized large loafing pens. 50% of the heifers were

randomly selected for preventive hoof care by a professional hoof trimmer. Approximately half of the trimmed group were trimmed in May and the other part of the trimmed group were done in November-January, depending on when the heifers were brought into the barn for winter housing. 133 heifers completed their 305 day first lactation record; 68 had been trimmed as heifers and 65 had not. The trimmed heifers produced 500 kg more milk than the control heifers only when they were trimmed in the late fall. There was no difference between the groups if they were trimmed in the spring. The heifers kept in tie-stall winter housing responded to the fall trimming treatment with higher milk production than those heifers in large loafing pens.

Trimming heifers before they calve does have an impact on their first lactation milk production. In this data, it appears that trimming should be done in heifers in the fall when they return to their winter housing. Tie-stall heifers appear to benefit most from preventive hoof care.

## Efficacy of Monensin in the Prevention of Subclinical Ketosis in Lactating Dairy Cattle

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### Abstract

A field study was conducted to evaluate the efficacy of a monensin controlled release capsule (Rumensin CRC) for the prevention of subclinical ketosis in lactating dairy cattle. A total of 1011 cows from 25 Holstein dairy herds in southern Ontario were enrolled in this trial. Allotment of treatment and placebo capsules were randomised within farm and the capsules were administered approximately 21 days prior to expected calving date. Blood was collected at the time of bolus administration, and both blood and milk were obtained at weeks 1, 2, 3, 6 and 9 post calving. All cows were given body condition scores at each sampling period. Serum was evaluated for a seven item profile that included beta-hydroxybutyrate (BHB), glucose, calcium, phosphorus, aspartate aminotransferase (AST), total protein and urea. Milk was analysed qualitatively for acetoacetate and acetone using a sodium nitroprusside based test (Ketocheck).

Monensin treated cows had mean values of BHB that were significantly lower than controls for weeks 1, 2 and 3 post-calving ( $p < .05$ ). Mean glucose levels in treated cows were significantly higher than controls for weeks 1 and 2 post-calving ( $p < .05$ ). Mean serum urea values were significantly higher in treated cows for weeks 2 and 3 post-calving. Mean serum AST values were significantly lower in treated cows after freshening. No significant differences were found for serum calcium, phosphorus or total protein. Mean body condition scores were significantly higher for treated cows post-calving. Subclinical ketosis was defined, a priori, at a threshold of 1200  $\mu\text{mol/L}$  BHB. Monensin-treated cows had significantly less subclinical ketosis than placebo cows in every sampling week post-calving ( $p < .05$ ). Percent of cows with positive milk ketone tests were significantly lower for treated cows ( $p < .05$ ).

Prepartum administration of monensin significantly improved indicators of impaired energy metabolism in the postpartum period, including serum