

## The effects of pellet starch concentration and allocation amount for Holstein cows in early, mid, and late lactation in an automatic milking system

S. C. Dondé<sup>1</sup>, A.J. Schwanke<sup>2</sup>, T. DeVries<sup>2</sup>, R. C. da Silva<sup>3</sup>, G. B. Penner<sup>1\*</sup>

<sup>1</sup>Department of Animal and Poultry Science, University of Saskatchewan, Saskatoon, SK, Canada S7N 5A8; <sup>2</sup>Department of Animal Biosciences, University of Guelph, Guelph, ON, Canada N1G 2W1; <sup>3</sup>Department of Animal Science, Luiz de Queiroz College of Agriculture, Piracicaba, SP, Brazil. Email: [greg.penner@usask.ca](mailto:greg.penner@usask.ca)

This study evaluated the effects of pellet starch concentration and amount of pellet delivered in an automated milking system (**AMS**) on feed intake and milking characteristics. Twenty-four Holstein cows in early ( $85 \pm 25.7$ ), mid ( $185 \pm 35.1$ ) or late ( $290 \pm 69.5$  days in milk; **DIM**) lactation were housed in a free-stall barn with feed-first guided traffic flow AMS. Treatments included pellets with high (**HS**; 34%DM) or low (**LS**; 24%DM) starch with high (**HA**; 6kg/d DM) or low (**LA**; 2kg/d DM) quantities allocated within a 4×4 Latin square. Pellet starch did not affect the amount of pellet consumed, but HA cows consumed more than LA ( $4.3$  vs  $1.8$  kg/d;  $P < 0.01$ ). Relative to LA, HA cows left  $0.4$  kg/d more pellet in the AMS ( $P < 0.01$ ) and ate  $1.2$  kg/d less PMR ( $P = 0.05$ ). However, total DMI was  $1.3$  kg/d greater for HA than LA ( $P = 0.05$ ). Pellet starch and DIM did not affect PMR intake or DMI. Milking frequency was not affected by pellet starch or DIM but HA cows tended have to greater milking frequency ( $2.7$  vs  $2.6$  no./d;  $P = 0.06$ ) over LA. Milk yield ( $42.6$  L/d) was not affected by pellet starch, amount, or DIM. Compared to LS, HS decreased milk fat concentration ( $3.9$  vs  $4.1\%$ ;  $P < 0.01$ ) and providing the HA reduced milk fat concentration ( $3.9$  vs  $4.1\%$ ;  $P < 0.01$ ) over LA; however, pellet starch and the allocation did not affect fat yield ( $P \geq 0.15$  average =  $1.7$  kg/d). True protein yield was not affected.

**Take home message:** Feeding a high starch AMS pellet may reduce milk fat concentration. Feeding higher amounts of pellet in the AMS may reduce PMR intake while increasing total DMI. HA of pellets may also increase attendance at the AMS; however, there was no effect on milk yield and a reduction in milk fat concentration.

## The longitudinal effects of topical treatment on chronic and recurring cases of digital dermatitis

C. S. Gammariello, A. P. Dias, J. De Buck; University of Calgary; [corienne.gammariello@ucalgary.ca](mailto:corienne.gammariello@ucalgary.ca)

Digital dermatitis (DD) is a polymicrobial, infectious disease of dairy cattle that compromises animal welfare and productivity through the development of painful, ulcerative heel lesions. The presence of DD in a herd is associated with lameness, extra veterinary costs, and reduced milk production leading to major concerns within the dairy industry. Oxytetracycline is a common topical antibiotic used to treat DD but lesions often persist after treatment. It is unclear if this is due to a failure of oxytetracycline treatment to eliminate DD-associated bacteria or if treated lesions are reintroduced to pathogens from the environment. This study will aim to investigate changes in the bacterial populations of DD lesions after topical treatment of oxytetracycline to better understand cases of chronic and recurrent DD in dairy cattle. Forty Holstein cows from 4 local, Albertan farms with M2 DD lesions will receive topical lesion treatment of oxytetracycline powder. Treated lesions will be repeatedly sampled from using cotton swabs for a total of 18 timepoints across a year. Swabs will be analyzed using qPCR methods to quantify DD-associated bacteria such as *Treponema*, *Porphyromonas*, *Fusobacterium*, and *Mycoplasma* species. Microbiome analyses will also be performed to assess and compare variations in bacterial populations across time.

**Take home message:** The potential research outcomes of this study include indication of which DD bacteria persist after treatment and are associated with chronic, recurring DD lesions. We hope the implications of this study will contribute to the optimization of future DD drug treatments.