

Is a Pelleted Feed Required in an Automated Milking System (AMS)?

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It is currently recommended that a pelleted concentrate is offered while cows are milked in an AMS. This recommendation is designed to ensure cattle can consume concentrate rapidly to enable precision feeding strategies. However, most studies have reported no added benefit of increasing the amount of concentrate offered in the AMS. Thus, research is warranted to evaluate whether the form of concentrate offered affects production outcomes for cows when fed low concentrate allocations in the AMS. The objective of this study was to evaluate the effect of providing barley grain that was either steam-rolled (**SR**) or pelleted (**PEL**) on dry matter intake and milk and milk component yield for cows in AMS.

Five Holstein cows (98 ± 7.8 DIM) housed in a guided-traffic flow barn were used in a crossover design with 24-d periods. Cows were fed a common partial mixed ration (PMR) containing a 55:45 forage:concentrate ratio and were offered sufficient concentrate in the AMS to achieve either 2.5 kg/d of SR or PEL (DM basis). Cows were granted milking permission when predicted milk yield exceeded 9 kg or when the interval from the last milking exceeded 4 h. Dry matter intake, voluntary visits to the AMS, and milk and milk component yield were measured.

The form of concentrate offered in the AMS had no effect on total DMI or PMR intake with average values of 29.8 and 27.3 kg/d, respectively ($P \geq 0.79$). Interestingly, cows fed PEL and SR did not differ for concentrate intake in the AMS averaging 2.48 kg/d ($P = 0.16$). Voluntary milking frequency was also not affected by form of concentrate offered in the AMS with an average of 3.51 visits/d. Milk yield (41.5 kg/d) and the yield of CP (1.43 kg/d) and fat (1.60 kg/d) did not differ among treatments ($P \geq 0.27$). However, milk fat concentration was reduced for cows fed PEL compared to SR (3.82 vs. 3.92%, respectively; $P = 0.03$). Milk urea nitrogen tended to be reduced for cows fed PEL compared to SR (13.8 vs. 15.6 mg/dL; $P = 0.10$).

Implications: These data indicate that, with a low quantity of concentrate allocated in the AMS, it may be possible to feed steam-rolled barley grain without affecting voluntary visits to the AMS and milk component yield.