

## Behavioral Responses of Dairy Cows Subjected to Different Diets at Dry-off

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Typically, dairy cows are dried off 40 to 60 days before anticipated date of calving. Although this is a routine dairy management practice there appears to be considerable variation in dry-off procedures. The objectives of this trial were to investigate the effect of diet quality during dry-off on the rate of decline in milk production and cow behavior.

Forty-two late lactation cows averaging 345 DIM and milk yield of 16.4 kg/d were randomly assigned to one of two dietary treatments in groups of three, replicated over seven consecutive runs of 14 days. Cows were assigned to pens and were initially fed a late lactation TMR for five days, during the last two days of which data on behavior, dry matter intake (DMI) and milk production were collected. On day six, diets were changed to *ad libitum* hay with one pen offered oat hay (OH; 10.1% CP, 61.3% NDF, 39.8% ADF) and the other pen a tall fescue hay (GH; 14.3% CP, 60.6% NDF, 33.2% ADF) as the sole feed. Continuous recording of feeding behavior and standing and lying behavior were made for a further nine days. In addition, live observations of vocalization were made from 0600 to 0900 and 1500 to 1700 on days 5, 6, 7, and 12.

Dry matter intake was  $18.1 \pm 0.4$  kg/cow/d for the TMR and decreased from the first day of hay feeding to  $7.0 \pm 0.1$  and  $12.9 \pm 0.2$  kg/cow/d for OH and GH, respectively (all differences significant;  $P < 0.01$ ). The overall time spent feeding during TMR feeding averaged 333 min/cow/d. After switching to hay, cows in the GH group spent 12.3% more time eating ( $P < 0.05$ ) while there was no difference ( $P > 0.05$ ) for the OH group compared to the TMR. Milk production decreased significantly ( $P < 0.001$ ) following the change from TMR to OH and GH, with the decrease being greater for OH than for GH ( $P < 0.05$ ). On the 2<sup>nd</sup> and 3<sup>rd</sup> day of hay feeding, cows in the OH group decreased their milk production from 8.8 to 4.7 kg/cow/d and those in the GH group from 11.9 to 7.8 kg/cow/d. On the last day of milking, average milk production of the cows in the OH and GH groups was 4.9 kg/cow/d and 6.8 kg/cow/d, respectively.

There were significant ( $P < 0.001$ ) differences in call rates between the treatments and between days with maximum call rates on the 2<sup>nd</sup> day of hay feeding. The mean rates recorded on days 4, 5, 7 and 12 were for OH 1, 37, 79 and 9 calls/cow/d and for GH 4, 11, 18 and 1 calls/cow/d, although there was considerable variation among cows in both treatment groups. Standing time during the period of TMR feeding averaged 611.3 min, and increased ( $P < 0.01$ ) when cows were switched to OH or GH (increases of 68.1 and 43 min, respectively).

These results show that the feed quality at dry off can have important effects on cow behavior and milk production.