Effect of Cutting Management and Maceration on Forage Total Non-structural Carbohydrates Concentration and Cattle Preference.

G. Raggio[1], A. Tucker[1], M. Mongeon[1], R. Bergeron[1] and R. Berthiaume[2]

[1]University of Guelph, Alfred, ON, K0B 1A0; [2]Agriculture & Agri-Food Canada, Sherbrooke, QC, J1M 1Z3
Email: robert.berthiaume@agr.gc.ca

The aim of this study was to assess the effect of hay made from forage cut at sundown (PM) or sunup (AM) and macerated (M) or not on forage non-structural carbohydrates (NSC) and cattle preference. Half of a grass-legume field at the late bud stage was cut at 18:00 whereas the second half was cut at 06:00 the next morning. Half of each half field (1/4) was macerated at 09:00 on day 2 and the remaining quarters were left to wilt without maceration. Hay was field dried, baled, and chopped prior to usage. A preference trial was conducted over 6 consecutive days with six Holstein heifers. During adaptation, hay from each treatment was offered alone as meals. Four treatments were used: AM control, AM macerated, PM control and PM macerated. Each possible pair of the four treatments (n = 6) was randomly assigned to the animals (one pair d^{-1}), over 6 consecutive days. Two heifers at a time were moved to an adjacent pen separated in two, offered 2 kg of each type of hay in adjacent tubs, and allowed 30 minutes to eat. Intake was calculated as the difference between hay offered and leftover. A video recorder was used to monitor behaviour (parameters measured: nose in bucket, chewing above bucket, nudging bucket). Hay samples were collected during the 6 experimental days and pooled by treatment. Heifer positions in the pen, treatments and treatment positions (left or right) were randomized daily. Data were analyzed as a multidimensional scaling and also by ANOVA with a model including hay and animal effects. Treatments had no effects on feed composition (CP 10 ± 0.7 %, ADF 39 ± 1.0 %, NDF 64 ± 1.8 %). However, cutting time (AM vs. PM) tended to affect NSC concentration (24 vs. 25 ± 0.4 %, P = 0.09). Cutting in PM vs. AM (1359 vs. 754 ± 112 g, P = 0.01) and macerating or not (1521 vs. 592 ± 112 g, P <0.01) increased hay consumption. Heifers showed a strong preference for macerated hay.

Implications: These results suggest that both mowing in the PM and maceration were effective at increasing short-term dry matter intake. In addition, heifers demonstrated a stronger preference towards macerated grass-legume hays.