

# Sweet Forage Is Good, Twice As Much Is Even Better!

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Forage proteins are rapidly degraded in the rumen and microorganisms need a source of energy readily fermentable to use the products from protein degradation. Increasing forage energy improves the utilization of those products, decreasing nitrogen wasted in the environment. Previous work in our lab shows that the concentration of non-structural carbohydrates (sugars) in alfalfa increases with daylight exposition. Our work aims at increasing energy content of forages harvested in Canada to improve nitrogen utilization and reduce waste.

**Table 1. Performance of early and late lactating cows fed with alfalfa silage mowed in the afternoon (PM) or in the morning (AM).**

	Time of cutting	
	PM	AM
<b>Trial 1 : Early lactating cows</b>		
Total sugars in alfalfa silage (% DM)	4.4 <sup>b</sup>	3.2 <sup>a</sup>
Forage: concentrate in diet (% DM)	59:41	59:41
DMI (kg/d)	21.5	22.0
Milk yield (kg/day)	30.2	30.4
Milk Urea Nitrogen (mg/dL)	9.6 <sup>b</sup>	10.4 <sup>a</sup>
<b>Trial 2 : Late lactating cows</b>		
Total sugars in alfalfa silage (% DM)	12.8 <sup>b</sup>	10.5 <sup>a</sup>
Forage: concentrate in diet (% DM)	100:0	100:0
DMI (kg/d)	19.5 <sup>b</sup>	18.6 <sup>a</sup>
Milk yield (kg/day)	20.2 <sup>b</sup>	19.2 <sup>a</sup>
Milk Urea Nitrogen (mg/dL)	17.2 <sup>b</sup>	18.9 <sup>a</sup>

<sup>ab</sup> On a same row, means followed by different letters are statistically different ( $P < 0.05$ ).

In two independent trials, we showed that mowing in the afternoon after a sunny day increases the sugar concentration of forages (Table 1). In the first trial, cows were fed a diet of 41 % concentrate and 59 % alfalfa silage stored in large rectangular bales (50 % DM). The difference in forage sugar concentration was very small, so it made no difference in DMI or milk yield. In the second trial, late lactating cows were fed forage only. Cows fed PM-cut forage increased their DMI and milk yield. In both trials, milk urea decreased with PM-cut forage suggesting that cows used dietary protein more efficiently. These results show that it is possible to increase forage energy at no cost through changes in cutting management.