Late-afternoon-cut hay makes more milk

Whether you're feeding green chop or ensiled forage, or even grazing cows, p.m.-cut grazed hay will make more milk.

by Hank Mayland and Glenn Shewmaker

Pouring a glass of milk is only a few steps away from pouring a glass of sunshine. Solar energy drives photosynthesis in green plants to produce simple sugars. When these plants are eaten by the cow, those sugars provide energy to rumen microorganisms which, in turn, provide energy to the cow for milk production.

On warm sunny days, soluble sugars accumulate in plants faster than the plants can use them. At night, photosynthesis does not operate, and there is a loss of soluble sugars. This whole process results in a daily cycling of soluble sugars in the forage. Figure 1 clearly shows the gradual accumulation of plant sugar which builds as the day progresses. The drop in plant sugars occurs sometime after sunset.

Leaves questions to be answered...

Can this cycling of sugars be sensed by cows, and, if so, is there any difference in intake and milk production? In the extra sugars in the afternoon forage affect grazing behavior, green chopped forage intake, milk production, animal preference, or hay intake?

In the past, we may have dismissed such sensory perceptions. Current investigations suggest that sugars begin accumulating in forages at a steady rate from an hour or two after sunset and continue until one to two hours before sunrise. To start cutting at midafternoon and continue until an hour or two after sundown will provide a six to seven-hour cutting period which is common to many operations.

Grazing animals prefer high sugars...

Free-grazing animals adopt behavioral patterns allowing them to optimize their energy intake. Grazing ruminants generally eat more and faster in mid to late afternoon than at other times. The faster intake rate may be a response to sweeter forage available in the afternoon versus early morning, you can make a difference of 10 to 20 RFV points. For the hay grower, that may be a 15 to 20 percent boost in dollar return.

Figure 1. Daily cycling of plant sugars

Shown as total nonstructural carbohydrates (TNC) in forage.

Animal preference was attributed to the extra-soluble sugars in the hay cut at sundown. The study was repeated using alfalfa cut at sundown and sunset. Results were similar to those obtained when feeding the grass hay.

Our current investigations suggest that sugars begin accumulating in forages at a steady rate from an hour or two after sunset and continue until one to two hours before sunrise. To start cutting at middle-afternoon and continue until an hour or two after sundown will provide a six to seven-hour cutting period which is common to many operations.

Grazing animals prefer high sugars...

Feeding total mixed rations (TMR) containing alfalfa hay cut in the afternoon versus cut in the morning increased milk production. In a University study by Daeyoon Kim and Michael Armbrust, 22 midlactation Holsteins were fed a TMR containing 40 percent alfalfa hay. For one group, the alfalfa was cut at 4 to 6 p.m. and the other at 6 to 8 a.m. The group on the p.m.-cut hay ate six pounds more TMR per day and produced 7.5 more pounds milk per day than the group eating the TMR containing a.m.-cut alfalfa hay.

We have shown that the daily cycling of sugars in plants is important to dairy animals. Appellate can be stimulated and milk production can be enhanced by eating afternoon forage. The soluble sugars may not only satisfy a "sweet tooth," but they are important in providing readily available energy for growth and milk production.

This remarkable research is ongoing, and more is yet to be learned. Nevertheless, the early results can be adapted by forage growers and dairy producers. The bottom line is that these practices can be implemented with little or no additional cost.

So, pour yourself a glass of sunshine.