

1, 2, 3, 4 ... which cut is the best?

Robert Berthiaume, PhD, agr.,
Forage Systems Expert, R&D, Valacta

By the time you read this article, you will probably have finished your first and, in many cases, second cut of hay. Do second-cut forages “make more milk” than first-cut forages? Are the fourth-cut forages “special” and their quality hard to predict? What’s the real story?

Producers simply have to deal with their area climatic conditions in such a way as to maximize the yield, quality and persistence of their forages. Nonetheless, a number of factors argue in favour of the idea that “first-cut forages are special.”

Growing conditions

Plants respond to temperature as well as to the quantity and intensity of the sunlight and precipitation they receive. More sunlight means higher forage yields and a higher sugar content. Conditions in Quebec during the period preceding the first cut are typically characterized by intense sunlight and increasing daylight hours, reaching a maximum at the summer solstice on June 21. This is not the case for the later cuts. The fourth cut, for example, coincides with decreasing sunlight intensity and shorter days.

With regard to temperature, it is important to remember that forage plants prefer cool climates. When temperatures are high, forage plants tend to deposit more lignin (the completely indigestible fraction) in their cell walls in an effort to save water. Hence, the hotter the weather, the greater the plant growth, but digestibility is necessarily reduced. Hence, first- and fourth-cut forages have an advantage.

The next consideration is rainfall. Under dry, cool conditions, forage plants grow slowly but retain their quality. When conditions are hot and humid, however, yields are high, but quality is poor.

Neutral detergent fiber (NDF) digestibility

Variations in climatic conditions affect the digestibility of the NDF contained in forages. Figure 1 presents the results of a trial conducted on dairy farms in Wisconsin. It is clear that NDF digestibility is higher in first-cut forages than in those of subsequent cuts.

Window of opportunity

The first cut thus gives producers the opportunity to harvest more digestible forages. Why is this not always the case?

Although generous, Mother Nature often presents farmers with challenges like the speed at which forage quality is lost. Because quality diminishes more rapidly in first-cut forages, cutting at the optimal stage of development is difficult. Only those producers with efficient harvest operations are able to do so year after year. Grasses are particularly challenging; they mature faster than legume crops, narrowing down the window of opportunity for harvesting top quality grass forages.

Potential yield

Dairy producers must juggle yield, quality and persistence to optimize their forage harvest. Under normal conditions, first-cut yields exceed the subsequent ones. Indeed, the authors of the study report that in a harvest system with three cuts per year, the first cut represents 43 per cent of the total season yield. It drops to 36 per cent in a four-cut system. Greater variability is observed in first-cut yields however.

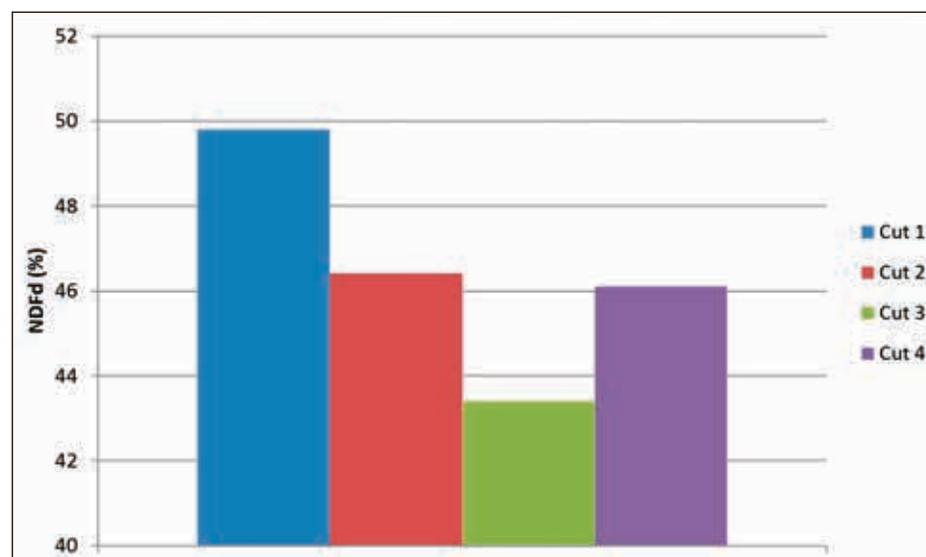
The first cut sets the tone

Ultimately, one of the most important factors – and an oft-forgotten one – is the limited length of our growing season. This means that when the first cut is done at the right time, subsequent cuts must be timed so as to take into account not only the needs of the herd but those of the plants as well. This is especially true for alfalfa, which requires a rest period in the fall to reduce the chance of winterkill.

What is the NDF digestibility of my forages?

NDF digestibility varies greatly from one type of forage to another and from one

Figure 1. NDF digestibility by cut for five consecutive years (2007-2012).



Source: Wisconsin Alfalfa Yield and Persistence Project

cut to the next. Since NDF can reach 60 per cent of the dry matter of the forage, digestibility of NDF has an enormous impact on the energy contribution of forages in the ration. Hence it is important to determine the digestibility of your forages.

Use Analyses PLUS

Conventional forage analyses use the lignin content of the plants to predict NDF digestibility. The relationship between lignin and NDF digestibility is not perfect, however, and it is thus preferable to measure NDF digestibility directly. This is exactly what Valacta’s infrared Analyses PLUS service does.

Ration’L, the software used by Valacta advisors to formulate rations, is programmed to use a value of the NDF digestibility of your forages that is based on infrared Analyses PLUS measurements. Hence your cows’ rations will be adjusted according to a measured value rather than a value estimated from the lignin content.

How to plan the first cut

When farmers often use plant maturity and/or experience to determine when they should start the first cut. They are useful tools but they are also subjective and imperfect. Valacta is currently working with a number of partners to



Accurate measurements mean accurate rations

Precise values for NDF digestibility translate into more accurate calculations of a forage’s energy contribution and its breakdown in the rumen. Ration formulation is thus that much more exact – provided those measurements are taken into account by the formulation tools you are using!

perfect the “alfalfa-o-meter”, a tool that is already used by U.S. farmers. Height measurements combined with accumulated growing degree days will help to better synchronize the start of the first cut to maximize the yield, quality and persistence of forages. So stay tuned...



An alfalfa-o-meter.