



DAIRY SOLUTIONS

Don't underestimate alfalfa's potential during times of high commodity costs

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The last couple of years have led to uncertainty in commodity market pricing, and this year has been no different, with commodity prices skyrocketing. This has been especially true for byproduct protein sources, such as soybean and canola meal. These byproducts, which were once economical to feed in lactating dairy cattle rations, are now adding significant costs to the ration. However, high-quality, high protein alfalfa, which many times is overlooked, can be a viable, economical option.

Alfalfa is not only a highly digestible, quality protein source, but it also brings other benefits to the ration. It adds fiber, it's palatable, and it has a high rate of passage. In the rumen, the plant protein is broken down into microbial protein, which the cow can utilize as a protein source. In the case of alfalfa haylage, the silage fermentation bacteria break down some of the plant protein into peptides, which are readily degraded by rumen bacteria. This can lead to excessive ammonia nitrogen production in the rumen if not balanced correctly in the ration. Because dry hay does not undergo the same fermentation process as haylage, there is more bypass protein in dry hay than in haylage. As a result of this higher protein, alfalfa is an excellent protein source and remains a better option than other small grains. Harvesting at optimal maturity, chopping silage and/or baling at the correct moisture level, and sealing and protecting harvested forages from the elements will ensure that your alfalfa crop is an economical and productive part of your dairy ration.

Within the alfalfa plant, the leaves typically contain 25–30% crude protein, while the stems have 6–10%. Shorter alfalfa typically has a greater protein content than tall, stemmy alfalfa. Other factors that can increase the protein content include:

- Early cutting
- Choosing a more dormant variety
- Minimizing leaf loss during harvest
- Using a lactic acid-producing inoculant for silage to reduce protein degradation during fermentation or a hay treatment such as [BulletProof®](#) on haylage or baled dry hay

Cows can do very well on higher forage diets. This is especially true if the forage is of a high quality. Besides just crude protein, fiber digestibility is another metric that affects alfalfa quality. Paying close attention to the fiber digestibility as well as the protein content during times of high commodity prices is crucial.

In addition to maximizing the protein content at harvest, outlined below are more tips for increasing the overall forage quality at the time of harvest:

- Harvest timing: Scout fields and identify when to cut based on plant growth and the stage of maturity, and don't rely as heavily on the traditional approach of cutting hay on a schedule connected to a calendar. We need to strive for improved digestible forage yield. Scouting fields also helps to identify any plant disease, nutrient deficiencies and other quality deterrents. To determine the timing for the first cutting, use the predictive equations for alfalfa quality (PEAQ), which helps to predict the leaf-to-stem ratio and the relative feed quality (RFQ). For second and later cuttings, scissor-clipped samples are the best option, as the PEAQ is less accurate for later cuttings. About 15-20 days after the prior cutting, begin scouting fields and take scissors clippings for laboratory analysis as soon as you observe anything that resembles a bud. For each field that you sample, aim for at least three scissors clips, each from a 1-square foot area. For larger fields, take one subsample for every 10 acres in field size. After collecting your samples, carefully cut up all of the subsamples into about 1-inch pieces into a bucket and send a sample to the laboratory for RFQ analysis. It is important to note for PEAQ and scissors clips that the quality measured that day is for the standing crop and approximately five to fifteen points of RFQ are lost through harvest (leaf loss) and fermentation.

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- Balance yield and quality by targeting the quality based on the group of animals being fed: As the forage matures over time, the forage quality typically decreases while yield increases. This change in quality occurs the fastest in the first cutting, while second and later cuttings change in fiber and digestibility at a slower rate. For example, the first cutting can decrease about five points of RFV per day, while the second cutting decreases two to three points per day (Figure 1). If heifers are being fed, quality may be sacrificed and the focus may be on quantity, whereas if cows are the target, quality should be the focus. No matter the target group, try to minimize ash contamination during harvest especially if using wheel rakes and discbines, as ash contamination from soil can reduce quality and potential performance.

Figure 1.

Daily alfalfa forage change in yield and quality during the growing season			
Cutting	Yield (lb/day)	RFV per day	RFQ per day
		-----Daily Change-----	
1	100	-5	-5
2	100	-2 to -3	-5
3	100	-2	-4
4	100	-1	-4

- Fertilize: The main nutrients that alfalfa typically needs are phosphorus, potassium and sulfur. As a rule of thumb, nitrogen is not necessary, as the established alfalfa plant has the ability to fix nitrogen. Manure isn't typically applied to alfalfa acres, but can be applied in the fall of the terminal alfalfa year, in the fall or spring prior to alfalfa seeding, or on established alfalfa that has recently been harvested. Applying manure on established alfalfa may occur when there is insufficient manure storage capacity, and manure must be spread during the summer months. Results have been mixed with yields being increased and no detrimental effects to the plant, while in other cases there has been damage to the stand and a reduction in yield. If you need to spread manure on established alfalfa do so within three days of harvest as this can reduce damage to the plant from wheel tracks. Work with your agronomist to take soil samples to determine the best fertilizer recommendation for your fields, as excessive fertilization does not necessarily mean greater yields.
- Apply fungicide/pesticide: Several diseases caused by fungi as well as many pests can negatively affect alfalfa. Management of these diseases and pests is crucial. Begin scouting fields early and continue to monitor fields between cuttings to see if and which pests are problematic. Fungicide application can help with leaf retention, and result in a healthier plant at harvest. The longer the duration between cutting intervals, the greater the likelihood of fungal disease pressure. Work with your agronomist to determine the best fungicide and pesticide application schedule to fit your operation.
- Establish a liming program: Aglime, along with fertilizer, are the building blocks of soil productivity. Aglime helps to reduce soil acidity, increases yield potential, adds calcium and magnesium to the soil, and creates a favorable environment for microorganisms to break down organic residue. Due to the increased crop yields over recent years, there is a greater demand on the soil. Again, work with your agronomist to take soil samples to determine the acidity and nutrient status of the soil at minimum of every 3 to 4 years.

High-quality alfalfa, harvested as dry hay or haylage, is a viable option for dairy rations during times of high prices for byproduct protein products. When considering alfalfa as an option, close attention must be paid to the protein content, as well as fiber digestibility. Work with your local Hubbard Feeds representative to determine the best ration scenario for your herd.

References:

[Alfalfa – Team Forage \(wisc.edu\)](#)

[Time hay cutting by ditching the calendar | Hay and Forage Magazine](#)