

## MAXIMIZING ALFALFA IN DAIRY FEEDING PROGRAMS

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Alfalfa is an excellent feed for dairy cows. When used properly, alfalfa can help cut cost of production and increase level of production. However, like everything else, the feeding of alfalfa needs to be managed to maximize efficient production. There are three key steps involved in maximizing alfalfa in a dairy feeding program. These are:

- 1) harvest alfalfa at the proper stage of maturity
- 2) know what the alfalfa contains and feed accordingly
- 3) get the alfalfa to the cows that need it.

### Harvest At The Proper Stage

Many farmers do an excellent job of establishing and growing fields of alfalfa. However, many often fail to utilize alfalfa to its fullest extent as a feed once it is grown. This is especially true when alfalfa is used as a feed for dairy cows.

Stage of maturity has one of the biggest effects on the quality of alfalfa as a feed for dairy cows. Unfortunately, it is often one of the most overlooked areas. For optimum utilization in a dairy feeding program alfalfa should be harvested in the late bud to early bloom stage of maturity. As alfalfa matures past this stage of maturity its quality as a feed is reduced daily. Table 1 shows the protein, fiber and energy content of alfalfa harvested at four stages of maturity. As the alfalfa matured from prebloom to full bloom the fiber content increased and the crude protein and energy content decreased. Table 2 shows the effect this same alfalfa had on animal intake and performance. As the alfalfa matured, animal intake and milk production both decreased. It is interesting to note that, in this study, cows fed 39 pounds of high quality alfalfa and only 10 pounds of grain produced almost 80 pounds of milk. This indicates the kind of production high quality alfalfa will support.

Table 1. Nutrient Composition of Alfalfa at Different Stages of Maturity.

<u>Stage of Maturity</u>	<u>CP</u>	<u>ADF</u>	<u>NDF</u>	<u>NE<sub>T</sub></u>
	------(%)-----			Mcal/lb
Prebloom	21.1	30.2	40.5	.67
Early Bloom	18.9	33.0	42.0	.64
Midbloom	14.7	38.0	52.5	.58
Full Bloom	16.3	45.9	59.5	.48

Source: Kawas et. al. (1983)

Table 2. Effect of Maturity and Amount of Alfalfa on Intake and Milk Production.

	Dry Matter Intake (lb)				4% FCM (lb)			
	% Hay				% Hay			
	29	46	63	80	29	46	63	80
Prebloom	56.1	55.2	49.9	49.3	86.2	87.3	83.3	79.8
Early Bloom	46.6	47.5	42.5	42.7	77.4	77.4	69.2	68.1
Midbloom	50.4	47.1	43.3	36.7	64.8	66.4	62.6	57.3
Full Bloom	53.9	51.7	47.1	40.5	69.7	64.8	55.6	52.2

**Know What It Contains**

In any feeding program, in order to maximize production a balanced ration should be fed. Balancing a ration involves: A) determining the nutrient requirement of the herd; B) knowing the amount of nutrients provided by the forage; and, C) supplying the difference in the grain mix. If A and B are known, then C is easy to calculate:  $C = A - B$ . There are tables and equations to tell us the nutrient requirements of cows for different levels of production. There are tables that tell us what the "average" nutrient content of alfalfa is. Unfortunately, there can be major variations in the nutrient content of alfalfa. If these variations are not taken into account when feeding alfalfa, production will suffer.

There are several factors which effect the nutrient content of alfalfa. These include: stage of maturity, soil fertility, weather, storage conditions and variety of alfalfa. These factors will effect not only protein, fiber and energy content, but also mineral and vitamin content. It is because of this potential for variation that it is so important to have alfalfa, or any forage being fed, analyzed for nutrient content. Without this information, assumptions about the quality of alfalfa have to be made when balancing a ration. These assumptions can cost the producer money in either increased feed costs or decreased production.

Whenever alfalfa is added to or removed from the feeding program, changes should be made in the grain mix. Table 3 shows some example grain mixes that could be used when feeding three

Table 3. Grain Mixes for Different Levels of Alfalfa.

Ingredients (lb/ton)	Forage Programs		
	Corn silage <sup>a</sup>	Corn silage- Alfalfa <sup>b</sup>	Alfalfa <sup>c</sup>
Shelled corn	1074	1406	1953
Soybean meal	805	525	--
Dicalcium phosphate	20	20	25
Limestone	45	25	--
Magnesium oxide	6	4	2
Sodium bicarbonate	30	--	--
Trace mineral salt	20	20	20

<sup>a</sup>65 lb corn silage; 22% grain mix

<sup>b</sup>42.5 lb corn silage and 10 lb alfalfa hay; 18% grain mix

<sup>c</sup>28 lb alfalfa hay; 9% grain mix

levels of alfalfa. In general, as alfalfa levels increase, less protein and minerals, especially calcium, are needed in the grain mix. If alfalfa levels decrease, more protein and minerals, especially calcium, should be added to the grain mix. If a change is made in the forage program without a change in the grain mix, nutrient deficiencies or imbalances will often occur.

### **Get It To The Right Cows**

This is an area that is often misunderstood. While alfalfa is an excellent feed, not all dairy animals need to be fed high quality alfalfa. In fact, some should not be fed alfalfa.

The animal in the dairy herd that has the greatest need for high quality alfalfa is the high producing dairy cow in early lactation. She has the greatest demand for nutrients of any animal on the farm. She needs the highest quality forage to achieve maximum production levels and has the greatest need for high quality alfalfa. Growing heifers, cows in late lactation and bred heifers should also be fed quality forages, but their nutrient needs can be more easily supplemented in the grain mix. These animals can grow and produce well using forages of lesser quality if alfalfa is not available.

The point to remember is if supplies of high quality alfalfa are limited, alfalfa should be fed to top producers, especially those in the first two to three months of lactation. If possible, feed 8 to 10 pounds per day to those cows and use other forages for heifers and late lactation cows. Using this strategy will allow more milk to be produced per ton of alfalfa when supplies are limited.

Alfalfa should not be fed to dry cows or "close-up" bred heifers. Alfalfa contains much more calcium than other forages. Levels of calcium in alfalfa are often greater than 2% of the dry matter. Feeding even five to ten pounds of alfalfa per day in the last month before calving will often lead to problems with milk fever at calving time. Therefore, alfalfa should not be fed to any dairy animal in the last month before she calves.

### **Summary**

Alfalfa is an excellent feed for dairy cows if managed and used properly. If not used properly, potential increases in production can be lost. To maximize production using alfalfa it is important to harvest alfalfa at the proper stage of maturity, have it analyzed for nutrient content, have a ration balanced using that analysis and feed it to the right animals. Top producers in early lactation have the greatest need for high quality alfalfa. If supplies are limited these are the animals that should be fed alfalfa. Alfalfa should not be fed to dry cows or close-up bred heifers.