Feed Costs: Corn Silage or Alfalfa

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Over the next several months we will discuss the three main factors (Table 1) that affect feed costs (actually this started in the October Buckeye Dairy News, but no one has ever said I was very well organized). As we should all know, the cost per pound of feed isn't what matters, it is the cost of feed per unit of milk produced. When we evaluate feed costs we have to evaluate input costs and effects on milk yields and other measures of productivity (e.g., reproduction, cow health, etc). To keep costs in line, all three categories in Table 1 need to be examined closely. Managing feed costs involves much more than just finding a cheap ingredient.

Table 1. Factors related to feed costs.

1. Ingredient selection
- Corn silage or alfalfa?
- Forage or concentrate?
- Soybean meal or cottonseed meal or canola meal or . . . ?
- Soyhulls or wheat midds or cottonseed or . . . ?
- Nothing or yeast or biotin or monensin or . . . ?

2. Feeding management
- How many different diets should I feed on my farm?
- How should I group my cows?
- What milk yield should I use when I formulate diets?
- How much extra feed should I give to a pen of cows?

3. Herd structure
- How many heifers are on the farm?
- How old are my heifers when they first calve?
- How long is the average dry period?
- What is my calving interval (or days open, etc)?

This Month's Topic: Corn Silage or Alfalfa ?

Total costs (fixed and variable costs associated with growing, harvesting and storing) of corn silage and alfalfa silage is dependent on dry matter (DM) yield. Total costs ($/ton) decrease as yield per acre increases. Assuming average DM yields for both corn silage and alfalfa silage, 1 ton of alfalfa DM costs about 1.4 times as much to produce as does 1 ton of corn silage DM. If your land resources were such that you have very high yielding corn but below average yielding alfalfa, the total costs for alfalfa could be 1.7 times that of corn. On the other hand, if you have above average alfalfa yields and below average corn yields, the total cost for alfalfa may be only about 1.2 times greater than that for corn silage. Because the nutritional value of alfalfa and corn silage differ markedly, production costs ($/ton) cannot be the sole criteria to value the two forages. On average, 1 ton of corn silage will provide 1.1 times more net energy (NEL) than alfalfa silage but 1 ton of alfalfa silage will provide about 2.6 times as much

metabolizable protein (MP). When protein is expensive, alfalfa may be a more profitable feed than corn silage but when energy is expensive the reverse will be true. When NEL ($/Mcal) and MP ($/lb) are at their 5 year average (SESAME used to calculate nutrient values) corn silage is a more economical source of nutrients than is alfalfa over a wide range in yields. The only situation when alfalfa is a more economical source of nutrient than corn silage is when the cost of NEL is below its 5 year average and MP is above its 5 year average and your land has above average alfalfa yields and below average corn yields. This means that on a typical farm in Ohio, corn silage usually provides nutrients at a lower cost than alfalfa, and diets on most farms should contain more corn silage than alfalfa. I did not state that corn silage should be the only forage fed; rather corn silage should be the ***predominant*** forage fed on most farms in Ohio. Depending on one crop to provide all your forage needs is extremely risky. For example, a drought will usually depress corn yields to a greater extent than alfalfa yields so if you only had corn you might not have enough forage to feed the cows.

With well-balanced diets, we do not expect much difference in cow performance when fed diets high in alfalfa or high in corn silage (Figure 1). Yields of milk and milk protein usually are not affected as corn silage replaces alfalfa. As corn silage replaces alfalfa, milk fat (% and yield) may decrease slightly but feed efficiency usually goes up slightly. Manure output decreases substantially as corn silage replaces alfalfa.

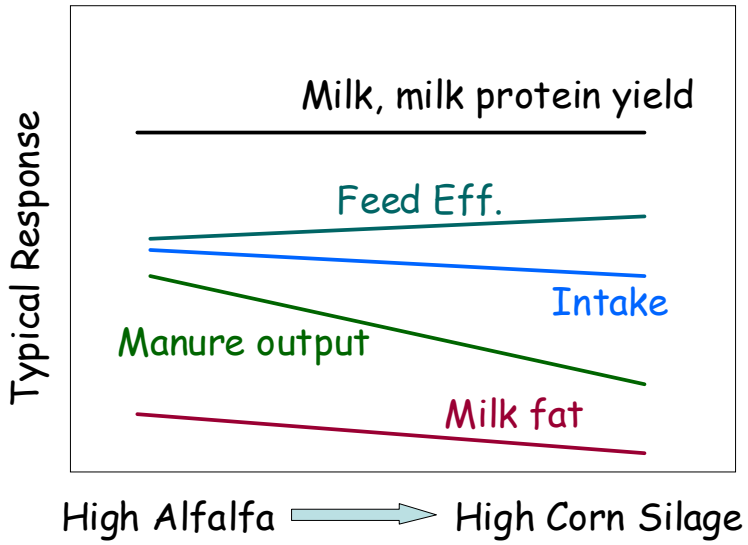

Figure 1. Relative change in productions measures as amount of alfalfa in a diet is replaced by corn silage. The steeper the line, the greater the effect.

The bottom line: **In most of Ohio, corn silage should be the predominant, but not sole forage fed to lactating dairy cows.**