DAIRY FARM MANAGEMENT BASICS

A Farm Management Course by

Glenn A. Shirk
Penn State Extension Agent
Lancaster County, Pennsylvania

Forage Quality - Article 12

Goals Meet the rumen's minimum need for effective fiber
Supply a significant amount of the cow's daily nutrient needs
Preserve as many of the nutrients in forages as possible
Enhance forage digestibility and the effectiveness of the fiber
Protect forages from spoilage organisms and toxic compounds

1 Good quality forages are important for a number of reasons

- They provide the fiber that is essential for keeping the rumen functioning well Forages are a major source of energy in the ration -- a fact which we sometimes forget
- You simply can not sustain high levels of efficient milk production and good health without good quality forages! When forage quality and forage intake drop milk production can drop, and the production that is lost can never be made up fully by feeding more concentrates In fact, feeding more concentrates could make the problem worse
- Forages form a floating fibrous mat in the rumen This mat harbors and feeds the microbes and stimulates cud chewing activity, and cud chewing activity stimulates the production of saliva which is used to help buffer the rumen against acid overload This fibrous mat also traps some of the finer particle feeds, keeping them in suspension longer so they can be more fully digested and utilized All of this greatly improves the utilization of the entire ration The result is, cows eat more, they milk more, they maintain better flesh, they are healthier and breed back sooner, and fewer feed nutrients end up in the gutter.

2 Forage quality is affected by maturity, moisture, length of chop, weathering and spoilage

- Nutrient values of forages drop off rapidly when legumes reach the early bloom stage of maturity, and when grasses and small grains leave the boot stage and start to head
- High moisture feeds need to have sufficient moisture levels to aid good packing and good fermentation Other feeds need to be dry enough to prevent spoilage in storage
- Weathering, curing and spoilage also affect quality The most soluble and the most digestible nutrients in forages are the ones most useful to the rumen microbes and to the cow These also are the same nutrients that are leached out first by weathering losses They also are the first to be used by bacteria in the fermentation process and they are consumed first by spoilage organisms The rumen and the cow get what's left over! So, your goal should be to preserve as much of these highly soluble and highly digestible nutrients in harvested forages as possible That is one of the beauties of grazing, the nutrients are consumed before they have a chance to become lost
- Dangerous molds and mycotoxins can develop in feeds that are not properly preserved In some cases, molds and mycotoxins develop on the crop in the field prior to harvest and show up in the stored feed in spite of your best preservation techniques

3 Fiber has to be "effective" to be useful to cattle Not all fiber is equal To be effective in forming a rumen mat and stimulating cud chewing activity, forages need to be long enough and digestible

- Larger particles make the fiber more effective That is one reason why grains can never replace forages, and why a large portion of the fiber in the ration should come from forages

  The particle size that really counts is the length of the fiber which cows actually eat The length of fiber she eats may be considerably shorter than the length of cut at harvest time due to all the mechanical actions of unloading, mixing and the conveying of feeds

  A good average length of chop at harvest time is about 3/8 inch However, the desired length of chop will be influenced by a number of factors

  Drier forages need to be chopped finer for better packing

  A coarser chop may be desirable if more long fiber is needed in the ration

  Kernel-processed silage require about a 3/4 inch chop

- Fiber needs to be digestible, but not too digestible

  Young, succulent, finely chopped, ensiled forages are easily digested and may pass through the digestive tract too rapidly to have had time to be fully utilized More of the nutrients end up in the gutter

  Old, weathered forages contain fewer nutrients, are less digestible and move out of the rumen more slowly and hamper feed intake Thus DMI and production suffer

3 One way to determine if cows are getting the right amount of fiber and the right kind of fiber is to

- Monitor their forage neutral detergent fiber (NDF) intake
- An approximate guideline is to keep it around 0 9 to 1 0% of the cow's body weight With careful management, these limits can be exceeded Consult your nutritionist for specific recommendations

  The forage NDF levels for cows in peak milk can be less in order to include more higher energy feed ingredients in the ration, but this has to be controlled very carefully, and preferably by feeding a TMR It should only be done for a short period of time, and only with cows that have come off of a good dry cow program and have a healthy, functional rumen In these cases, it may be possible to work with NDF intakes as low as 0 75% of body weight, but monitor cows closely and work closely with a good nutritionist

  Forage NDF levels need to be higher when forages are young and succulent and when they are ensiled and finely chopped They can also be higher for cattle that are on lower density rations, such as low producing and non-lactating cattle In these cases, levels may be increased to about 0 95 to 1 1% of body weight