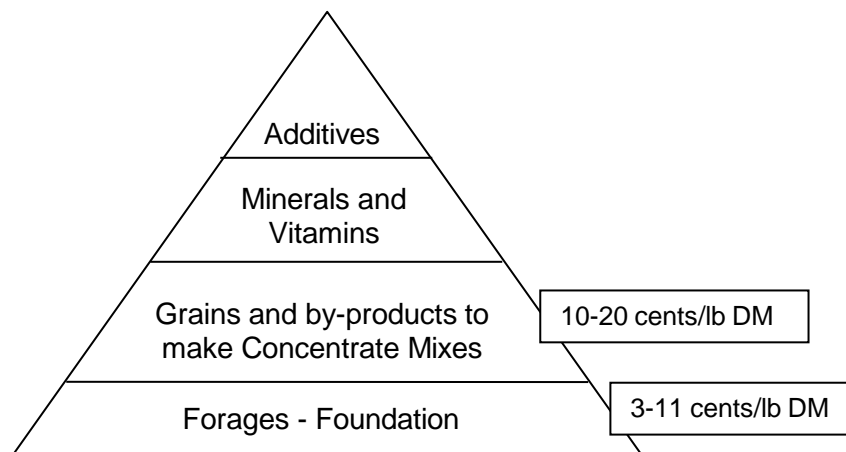


Decisions Related to Your Forage Program Impact Profit on a Dairy

By: Donna Amaral-Phillips, Ph.D.



Forages are the foundation upon which rations for dairy cows and heifers are built. Grains, byproducts, minerals and vitamins then are added to complement the forages being fed. Generally speaking, 55% or more of a dairy cow's ration dry matter comes from forages. The higher the quality of forages being fed, the more forage you can feed, and generally the ration supports a greater milk production at a more economical cost. With increasing feed costs coupled with lower milk prices, the importance of incorporating high quality forages has taken on even more importance.



How can we incorporate more forage and less concentrates?

In the past, many rations have contained 50 to 60% of the dry matter coming from forages. In recent years, these percentages have been pushed upwards to include 60 % or more of the diet coming from forages, especially in lower producing groups of dairy cows. Increasing the amount of forages fed has been successful when quality forages are available.

Quality forages provide more nutrients in every bite. Thus, less concentrate or grain needs to be fed to provide dairy cows with the nutrients they need to support milk production. To determine the quality of any forage, a representative sample must be collected, sent to a forage testing laboratory, and analyzed by that lab for its' nutrient content. These results are then used to balance a least cost ration for the cows in the herd. The higher the quality of forages available, the greater the amount of forage used to balance a ration for a particular group of cows or heifers.

How can I control the quality of forages on my farm?

The quality of forages varies from year-to-year as well as from field-to-field in the same year. Thus, the importance of separate forage samples representing different cuttings and crops need to be analyzed. Various factors determine the quality of forages. These include:

- ✓ Growing conditions- such as temperature, rainfall and overall fertility
- ✓ Species harvested- for example grasses versus legumes. Generally, legumes are more digestible than grasses and are higher in crude protein.
- ✓ Variety differences
- ✓ Stage of maturity forages are harvested

Management can control fertility as needed for growth of specific crop. However, changes in environmental temperature and rainfall are beyond our control. Varietal differences may impact the quality of forages, especially as they relate to NDF digestibility or the leafiness of the plant. The best example of varietal differences is related to brown midrib crops such as corn for silage or sudangrasses. The brown midrib gene decreases the amount of lignin in the plant and increases the digestibility of the NDF component of the plant. These varieties are generally more digestible than their non-brown midrib genetically similar corn varieties.

The quality of forages is greatly impacted by the stage of maturity at which the plants are harvested. This factor is definitely under management's or your control. As grass and legume plants mature, the percentage of leaves in the total plant decreases while the percentage of stems increases. As a result, the digestibility or energy value of the crop decreases with advancing stage of maturity. Thus, the recommendation is to harvest grasses and small grains, such as wheat and rye, at the late boot stage of maturity or just before the seed head emerges from the stem. Delaying harvest does increase yield slightly, but can negatively impact milk production and heifer growth and the amount of forage that can be used in the diet because of lower levels of digestible nutrients. Remember that the hardest nutrient to get into cattle of all ages is energy, thus forage maturity or the stage at harvest greatly impacts the amount of forage which can be effectively used in dairy cattle diets and maintain milk production or growth.

Stage of Maturity for Harvest in Spring	
Grasses	Late Boot*
Alfalfa	Late Bud (note this is the stage just before early flower and earlier than previously recommended)
Oats/Rye	Late Boot*
Wheat	Late Boot* and then soft dough**
* Late Boot- Just before the seed head emerges from the stem (see Figure 1)	
** Soft dough – wheat kernel is filled out and is soft when pinched with fingernail	



Figure 1. Late boot stage of maturity of a fescue plant. Notice that the seed head is just starting to emerge from the stem stat

Kentucky's spring weather is often times an enemy when trying to harvest quality forages. Spring rains can delay harvest. The key is to make the most of Kentucky's unpredictable weather. Starting a few days before the

optimum stage of maturity allows you to harvest higher quality forages overall with only small decreases in yields. These small decreases in yield result in more milk or growth per acre, which greatly affects your bottom line. Ideally, you want to be one of the first of your neighbors in the field instead of the last. Those dairy neighbors in the field first are often times those who are able to utilize more forage in their cows' diets and get higher economical milk yield and thus more income after feed costs are accounted for.