

## KEYS TO HAYLAGE PRODUCTION

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This is the time of the year that many livestock producers are constantly watching the weather forecast. Most of our cool-season grasses are starting to produce seedheads and need to be mowed for hay. In order to make hay that won't mold, it has to be dried to below 18 percent moisture prior to baling. Since these grasses are usually 80-85 percent moisture at harvest, it will take 5-7 days from get these forages dry enough to bale.

A week without rain is hard to find in early May, so producers often delay into late May or June. This later harvest allows the plant to become more mature, causing a higher fiber content and lower protein and energy level. A lower quality hay crop is the end result.

Over the last several years, haylage has become a popular form of stored forage production. With this production system, the forage is baled at a higher moisture content, then wrapped in plastic to form an airtight package. The forage ferments and produces a stable feed that can be used later during the winter.

### **The fermentation process**

Once the bale is wrapped in plastic, no more oxygen can get into the bale. Within 1-2 days, all of the oxygen in the bale is used, creating an anaerobic environment, meaning no oxygen is present. Bacteria that live without oxygen begin to grow and multiply. The primary ones are *Lactobacillus*. These bacteria use the sugars in the forage crop and make lactic acid as a byproduct. The lactic acid causes the pH to drop, which eventually leads to a pH low enough that most all bacterial function stops and a stable package is produced, which can be stored for several months until feeding.

### **Keys to successful haylage production**

**The right moisture content** – In order to get good fermentation, the crop needs to be baled at the proper moisture content. It is recommended to bale and wrap between 40 and 60 percent moisture. You should target 50 percent moisture, which gives a 10 percent margin on either side. If the bale is too wet, it is difficult to produce enough lactic acid to drop the pH enough for a stable package, and often butyric acid is produced, resulting in a very unpleasant and unpalatable crop. If the bale is too dry, then there is not enough moisture for complete fermentation, resulting in a lower lactic acid level and a shorter storage life for the bale.

**Proper wrapping** – Fermentation depends on having an oxygen-free environment. This is produced by wrapping the bales in 4-6 layers of plastic, without allowing punctures or holes to be produced. If too few layers of plastic are used, there may still be some oxygen movement through the plastic, making it more difficult to produce the anaerobic conditions needed for fermentation. If a bale is punctured after wrapping, the area around the hole will be exposed to oxygen, resulting in spoilage of the surrounding forage.

### **Pros of haylage production**

Because haylage is only dried to 50 percent moisture instead of need to be 18 percent for hay, fewer days are needed between mowing and baling. Often producers can mow

one day and bale the next. Fewer days without rain means that a crop going for haylage can often be harvested more timely than one for hay. The result would be a feed that is higher in protein and energy. It is important to understand, however, that making haylage out of a crop does not improve the nutrient content. Often haylage crops are higher quality because they can get harvest at an earlier stage of maturity.

### **Cons of haylage production**

*Cost-* The extra expense of the plastic will add a few dollars to the cost of each bale. There will also be the expense of either purchasing or renting a wrapper.

*Moisture-* every bale will contain two or three times more water than a bale of hay. You will be storing and moving a lot of water.

*Risk* – If you don't get the moisture in the correct range, you may end up with a product that is unpalatable at best or toxic at worst. Although these aren't common, they are risks that should be considered.

The ability to produce haylage has added another tool to a forage producers toolbox. Used correctly, they can improve the quality and efficiency of stored feed production.