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For more information,
contact: James Coover
Crop Production Agent, Wildcat Extension District
jcoover@ksu.edu, (620) 724-8233

A Year for Baleage

There is likely going to be a lot more silage chopped this year. Many acres that were enrolled in prevented planting with their insurance or Farm Services Agency (FSA) after the last planting date needed a cover crop. The original rule was that nothing could be harvested, including a cover crop, until after November 1st. However, that date was moved up to September 1st. It was also decided that corn can be considered a cover crop if it was proven to FSA that the ground had the original intent of grain harvest. This made silage a practical solution. Many farmers that they don't normally feed silage are going to go with baleage silage this year due to their lack of equipment needed to feed silage that is chopped and loose. Silage, either in a pit, a silo, a long bag, or as baleage, involves some specific science and perhaps a little bit of art as well.

Baleage: Why bother?

While baleage does have some limitations with baling and wrapping at the right moisture and the extra expense of plastic, there are some major advantages. A normal bale can lose up to 30 percent during storage and the cattle can waste up to 40 to 50 percent of what is left. Baleage protects from that storage loss, preserves quality, and hopefully the cattle will eat more of it. Regular baling is also sometimes difficult in fall when drying times increase. Usually forage dries down to 50 percent for baleage within the first day after cutting. However, baleage fermentation doesn't make a poor forage "better". It is largely a preservation process. Research has shown that baleage does have better protein and relative feed value (RFV) but this is likely from keeping the original protein and RFV rather than increasing it during fermentation. There are two main important parts to creating good silage; a lack of oxygen and just the right amount of moisture.

Fermentation: An aerobic process

The silage process is a biological one that needs an environment without oxygen. The yeast and other microbes involved would prefer to have oxygen because they can be more efficient and completely breakdown the forage. Without oxygen, some of the desired microbes can still survive but can only digest the forages to a limited degree. In doing so they breakdown some of the forage producing acids that preserve the forage from the “bad” microorganisms and also increasing palatability.

- Bales should be wrapped tight to limit inter-bale air. Don't make bales too big to handle later.
- Wrap as soon as possible after baling. 24-hour maximum but preferred within 8 hours.
- Baleage plastic is normally stretched 1 mil thick at application. Suggested 4 wraps (4 mils) for bales feed under a year, 6 wraps for longer storage and forage with sharp stems, or 8 wraps for bales to be sold/transported.
- Mice during storage and equipment during movement can tear plastic resulting in spoilage. A certain type of tape can be used to repair tears if caught in time.

Moisture: Not too much, not too little

The right amount of moisture controls the rate of fermentation. Too wet and the microbes create the wrong acids and create an environment for *Clostridia*. Too dry and fermentation stops short and not enough acids are created. Ideally the bale pH needs to be around 4.5 after the fermentation process so *Listeria* and molds can't survive.

- Baleage preference is 50 to 60 percent moisture. Closer to 60 percent for grass forages and 50 percent for alfalfa.
- Over 70 percent and undesirable butyric acid is created which reduces palatability. Also excessive seepage can occur at the bottom of the bag. Under 40 percent and fermentation won't occur.
- Inoculates aren't necessary but can improve fermentation.
- Rain doesn't work to increase moisture of bales that are too dry.

The information in this article came from Dr. Doohong Min (Kansas Extension), Dr. Rob Kallenbach and Bob Schultheis (Missouri Extension), Dr. Dennis Hancock (Georgia Extension) and other state extension forage specialists. If you have any questions over making baleage, please give me a call at 620-724-8233. If you need some tips in cattle nutrition or feeding silage, our livestock agent Wendie Powell can help and can be reached at the same number.

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