



Bale Wrapping

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Bale wrapping is something many producers look at when trying to get that first cut off in the spring/early summer and Mother Nature isn't cooperating. It can also be a good option when getting hay to dry down is a challenge in late September or early October.

Some of the factors that increase the appeal of baleage technology are:

- Silage bales allow producers to store high-quality harvested forage with diminished curing time in the field. Another benefit is the decreased storage losses when compared to traditional hay stored outside. Losses of hay stored outside can range from 20 to 50%, while the losses of baleage typically are less than 5%.
- Round bale silage can greatly improve the timeliness of harvest, which in turn, can improve the quality of harvested forage.
- When processed properly, baled silage is often higher in quality than similar hay because of reduced leaf loss in legumes, shorter curing time, reduced spontaneous heating and less weather exposure in silage.

Bale wrapping works at any time, especially when weather conditions such as mild temperatures, frequent rains, heavy dew and overcast days make curing hay difficult. Waiting for perfect conditions can result in forages that are too mature and lower in quality, and rains can contribute to diminished quality by essentially washing away the water-soluble carbohydrates (WSC).

One of the keys to making good silage is having adequate levels of water-soluble carbohydrates in the forage. Generally a minimum of 6 to 12% WSC is required for silage to ferment properly. Rained on hay can have some of the WSC washed out, lowering its ability to ensile properly.

Alfalfa typically has a WSC in the 7-9% range which makes ensiling more difficult. Although it isn't a recommendation, cutting alfalfa in the afternoon may help to increase the WSC %. This increase in WSC may hold true during the summer when wilting of forage can happen overnight but as we move into fall, lower evening temperatures and higher humidity may limit the amount of drying that occurs, using some of these extra sugars during the overnight respiration process.

Generally, cereals make the best silage because they have low buffering capacity and higher WSC. Alfalfa is much riskier to ensile because of the high buffering capacity and lower levels of WSC. There is more room for error when putting up barley silage - there is no room for error when putting up alfalfa silage.

The general recommendation for baled silage is that it should be wrapped within two to twelve hours of baling, with a moisture content of 45 to 55%. An aerobiosis, or an oxygen-free environment, is required to produce well-preserved silage. Oxygen trapped in the bale at wrapping is removed through respiration of the harvested plant cells, and new oxygen is prevented from entering the environment by good wrapping.

When silage is exposed to air - either from poor wrapping or not having the bales rolled tightly - the bales heat and the plant sugars are converted to CO₂. This causes a loss in dry matter and decrease in total digestible nutrients (TDN).

Although it is recommended that wrapping of the bales take place as quickly as possible after baling, some work out of the U.S. Dairy Forage Research Center and the University of Arkansas show that producers may have about 24 hours to wrap bales in order to get good fermentation and a highly digestible end product; however, delays beyond 24 hours resulted in incremental declines in silage quality.

Key to achieving good silage is the creation of dense, well-shaped bales and the effectiveness of the airtight seal. Across the entire baling process from cutting to baling to wrapping to stacking and storing, there are opportunities for inadequate care or poor practices to lead to spoilage and, consequently, wastage.

For more information go to [Making Good Silage - Frequently Asked Question](#)