



High Quality Baleage In Kentucky

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Introduction:

The ability to harvest forage as high moisture hay bales (baleage) gives Kentucky producers many advantages, including timely production, higher forage quality, and less weathering loss compared to traditional dry hay systems (1). Unfortunately, some producers have experienced reduced animal performance and even deaths from feeding improperly harvested baleage (2).



Purpose:

Define how moisture will affect fermentation parameters such as lactic acid levels and butyric acid levels of baleage.



Material and Methods:

- Collect moisture values and haylage forage samples from 57 different baleage lots. (minimum 10 bale cores per lot for one sample) of diverse forage types from Central and North Central Kentucky farms.
- Moisture, pH, and fermentation profiles were determined by a certified commercial laboratory.
- Fermentation Standards considered for favorable baleage (3):
 - pH of 5 or below
 - Lactic acid levels of 3% or greater of dry matter
 - Butyric acid levels of no more than 0.5% of dry matter

Figure 1. Frequency (n=57) of moisture content, Kentucky baleage, 2019

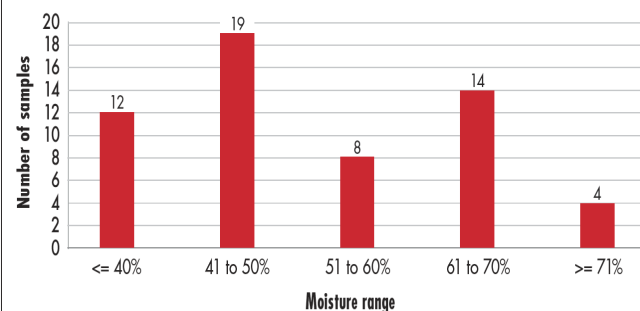


Figure 2. Effect of moisture content on pH and lactic acid concentration, Kentucky baleage, 2019

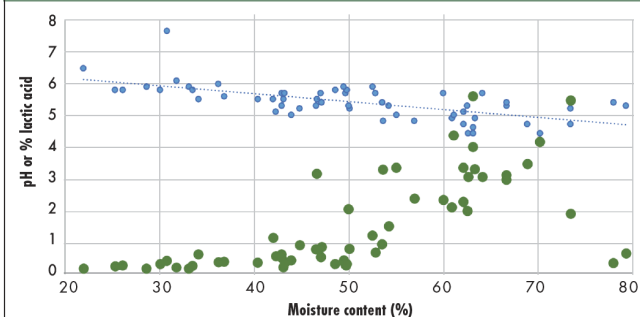
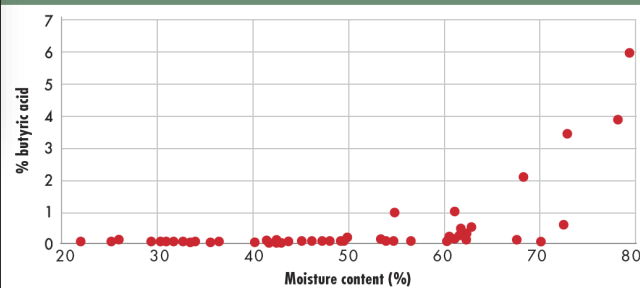


Figure 3. Effect of moisture content on butyric acid concentration, Kentucky baleage, 2019



Results:

- Moisture content varied widely. 72% of samples were between 41% and 70% moisture.
- Only when moisture approached 60% did samples reach 3% lactic acid and a pH of 5 or less.
- Butyric acid levels became elevated at 70% or more moisture.
- Fermentation characteristics were adequate for most samples when moisture content was between 60% and 70%.

Conclusions and Recommendations:

- Moisture content directly affects fermentation of baleage and should target between 50% to 60% moisture (1).
- Baleage with less than 50% moisture was storage stable but did not reach set fermentation standards.
- Baleage with higher moisture levels such as 70% created more butyric acid which is associated with botulism growth (3).
- Moisture should be watched closely while also using at least four layers of plastic (3) and preventing holes and loose-uneven bales (3).



Citations and Acknowledgments:

- J Dairy Sci. 1988. 71:2992-3002 (1988) Factors affecting silage quality and management implications.
- Off The Hoof (April 2014) What's in Your Baleage? University of Kentucky.
- Hay & Forage Grower. 2010.10-11 36:10-11 Assess feeding risk with fermentation analysis



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