

6-1-2014

## Baleage Decision Tool for Beef Cattle Producers

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### Recommended Citation

Pruitt, J., & Lacy, R. (2014). Baleage Decision Tool for Beef Cattle Producers. *The Journal of Extension*, 52(3), Article 14. <https://tigerprints.clemson.edu/joe/vol52/iss3/14>

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## Baleage Decision Tool for Beef Cattle Producers

### Abstract

This article describes a bale-wrapping decision tool designed for use by Extension educators, lenders, and beef cattle producers. Use of bale-wrapping machines reduces storage losses and increases nutritional content of stored forages. This software tool allows users to estimate costs of production associated with purchase of a bale-wrapping machine and how the purchase decision affects the potential cost savings for the cattle operation. It is available to interested users in a Microsoft Excel spreadsheet.

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## Introduction

Recent droughts have negatively affected forage availability for U.S. beef cow-calf producers. Weather has always played a factor in forage production because producers often have limited time frames to cut, bale, and harvest forages to use as hay during winter feeding periods. This can result in harvested forages having less than optimal nutritional quality and result in the need for additional supplementation to meet the dietary requirements of beef cattle. Beef cattle producers are often further constrained due to the presence of off-farm employment (U.S. Department of Agriculture National Agricultural Statistics Service, 2009).

Internet-based hay directories (Parish & Rhinehart, 2009) and storage structures (Dillivan, 2012) are two examples of tools available to producers in times of limited forage availability or to minimize storage losses. Use of implements that wrap harvested forages in plastic also have the ability to increase producers' ability to retain forage in times of scarcity while improving nutritional quality and minimizing storage losses. By allowing producers the ability to harvest forage at higher moisture levels (60% moisture versus 15% for hay), they allow producers to harvest forages at shorter growth intervals, thus increasing forage quality and quantity. The improved forage quality offers the potential to reduce additional supplementation needs during the winter feeding period. The Baleage Decision tool seeks to aid producers in determining the cost effectiveness of adding a bale wrapper to their beef cow-calf operation. It is available to Extension educators and beef cow-calf producers in a Microsoft

Excel 2007 spreadsheet with an accompanying bulletin on cost comparisons on conventional hay and baleage production.

The downloadable spreadsheet decision-making tool allows producers and their lenders the opportunity to be more informed about the advantages of incorporation of bale wrappers to a beef cow-calf operation. Extension educators benefit from the opportunity for "interactive and hands-on learning producers at teachable moments" (Raper, DeVuyst, & Doye, 2010).

This decision tool has five primary benefits.

1. Users are able to enter specific assumptions regarding their herd size and winter forage needs.
2. Individuals can also adjust assumptions about the cost and usage level of machinery associated with forage production on their operation.
3. Users can view cost comparisons of two different types of bale wrappers and conventional hay baling equipment.
4. Individuals can see the cost savings to their operation under different levels of hay storage loss assumptions at different herd sizes.
5. Users may also price per nutrient comparisons of baleage to other supplements commonly used during winter feeding periods.

## Procedures

There are six worksheets contained in the file. The first worksheet, "assumptions," allows individuals to enter information on the:

1. Size of the beef cow herd,
2. Weight of the bales (hay and baleage) at harvest on an as-fed basis,
3. Number of cuttings and yield per ton (dry matter basis),
4. Purchase price of forage harvesting equipment,
5. Equipment usage and input cost assumptions, and
6. Hay storage losses under hay and baleage production systems.

Assumptions regarding the equipment are preset but can be adjusted by the user. The assumptions that can be changed are shaded in green. On the second worksheet, "budget," users can view per hour and per bale cost for three different scenarios: one for two different bale wrapper types (continuous or in-line bale wrapper and individual bale wrapper) and conventional hay production. The "sensitivity" worksheet allows users to view forage production costs on per acre, per ton, per bale, and per cow basis. Included in this analysis are estimates of per cow costs assuming different levels of hay

(baleage) loss. Users can also view annual loan payment comparisons for purchased forage equipment needed to produce baleage and breakeven herd size given the assumptions listed in the first worksheet. Different sensitivity reports are also included that illustrate the increase (decrease) in operation costs at different herd sizes as well as the number of days needed to breakeven given differences in cost of feeding hay and baleage.

A comparison of different feedstuff alternatives is included in the "feedstuff comparison" worksheet that allows users to view different feedstuffs priced on a per ton, per pound of crude protein, or per pound of total digestible nutrient basis. The final two worksheets illustrate the savings from each of the two different types of bale-wrapping machines at different herd size and hay storage loss levels.

## Summary

Using the Baleage Decision tool, beef cattle producers, lenders, and Extension educators are able to view estimated costs of production associated with use of a bale-wrapping machine compared to conventional hay production. Users of the decision tool are able to adjust assumptions that allow for tailoring of the results to their specific operation and to determine the cost effectiveness of the potential investment in a bale-wrapping machine to produce baleage.

The Baleage Decision Tool was developed by the Louisiana Cooperative Extension Service and the University of Georgia Cooperative Extension. The decision tool is downloadable, with the accompanying Extension bulletin, at [www.lsuagcenter.com/beef](http://www.lsuagcenter.com/beef) and in the Decision-aids section at [www.secattleadvisor.com](http://www.secattleadvisor.com).

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