

Principal Investigator

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Project Duration

2016 to 2017

Award Amount

\$9,829

Staff Contact

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Keywords

bale grazing, cattle, hay,
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How Much Can You Afford to Pay for Hay?

Project Summary

This study is investigating the impact of bale grazing on animal and pasture productivity. After taking all costs and benefits into consideration, what is the value of spent hay litter from purchased hay? How much can a farmer afford to pay for hay used for winter bale grazing?

We are monitoring changes in hay field and pasture productivity and quality to determine the true value of purchased bale-grazed hay. We expect to see the productivity of pastureland increase after we bale graze it. We are also measuring the true net cost and return on purchased hay—both from a forage perspective and a soil enhancement perspective.

Project Description

Soil health has become a hot topic in agriculture and has raised interest in pasture management and grazing. At grazing conferences and workshops in the upper Midwest, winter bale grazing (setting bales of hay out on a pasture and grazing them there) is often touted as a great way to add nutrients to the soil because of the spent hay litter left behind after the cattle are done grazing. I've heard statements like, "With what bale grazing can do for your soils, you can afford hay at almost any price!"

Is that true?

Bale grazing has been proven to be an effective way to increase productivity on grazing land. However, within a fixed acreage, there seems to be little advantage to just moving baled hay from one place on the farm to another. In order to boost productivity quickly, and to be able to produce enough beef to be economically viable, some form of purchased hay may be a producer's best option.

In our region, the cost of winter feed is often a grazier's biggest expense, and making hay is an essential component of producing grass-fed cattle. However, the need to make hay can often limit the amount of grazing land available (and thus the herd size) in a particular year, since some land needs to be hayed for winter feed instead of grazed during the growing season.

But what if hay could be affordably outsourced? If a producer bought all his or her hay, then grass-fed herds could grow larger, because most or all of a farm's land could be grazed. In an attempt to know the true cost and benefit of purchased hay in a bale grazing scenario, we must somehow measure the benefit of that hay litter on the pasture in subsequent years.

The site for this testing and demonstration is a 14 acre pasture at Lighthouse Farm near Milaca. The soil pH is about 6.0. The pasture was established in 1989 and is a mix of timothy, orchardgrass, and smooth brome grass. We hayed all 14 acres once in summer 2015 and grazed the regrowth in November of that year.

We split the site in half. On the “treatment” side, we set out purchased hay bales and grazed them during the winter of 2015-16. On the “control” side, we didn’t do any bale grazing at all. Otherwise, the two halves were managed identically. We recorded everything added to and harvested from the site. We conducted soil tests to monitor changes in soil nutrients and organic matter and forage tests to monitor forage quality.

In the spring, we dragged the treatment side to break up hay and manure clumps. We harvested hay off all 14 acres

in the summer, measuring yield and testing forage quality. We then grazed 14 yearling steers and heifers on the entire site from September 5-25, 2016 (20 days). We soil sampled again in fall 2016.

We bought 40 large round bales of hay weighing approximately 900 lb each at \$30 apiece and also fed our own hay. After weighing and forage testing the hay, we put them out, 7-10 bales at a time, about 25’ apart. We started bale grazing the same 14 animals in December.

Results

Baseline soil tests taken in the spring of 2016 showed average soil fertility and soil health. Table 1 shows forage quality in 2015 and 2016.

While forage quality improvements from 2015 to 2016 look impressive, it should be noted that the 2015 samples were

taken 9-10 months after the hay was baled, while the 2016 samples were taken only days after we made hay. We’ll be sampling the 2016 hay again in early 2017 in order to see how the quality changes over winter.

Table 1. Forage Quality of Hay Harvested from the Bale-grazed Half of the Study

Measure	2015	2016
Sampling Date	April 20, 2016	July 5, 2016
Crude Protein (Dry Matter)	7.7%	10.7%
Relative Feed Value	80	104
TDN (est,%)	55.2%	64.0%

Calves averaged 725 lb at turnout on September 5 and 755 lb on September 25, for an average daily rate of gain of 1.75 lb/day. This number is lower than what we normally achieve on our farm. We think regrowth may have been too short to really allow for efficient grazing. We also suspect that when we split the test group of 14 yearlings off from the rest of the herd, there was a day or two of stress on them from being separated, and they may not have gotten right down to grazing. Subsequent grazing in 2017 will help us determine the impact of these effects.

I suspect that at 25’, we put the bales too far apart. I expected the cattle to scatter the hay further than they did, but in the spring the hay litter was not evenly scattered and resulted in spotty regrowth. I plan to only allow 8-10’ between bales during our 2016-17 winter grazing season.

Management Tips

1. If you use small square bales, you will need some kind of feeder to keep cattle from wasting too much of it. We've actually used round bale feeders for feeding square bales and it works well.
2. We've put out as much as 3 weeks of feed at a time, with little "wastage."

Cooperator

Kent Solberg, Livestock and Grazing Consultant

Project Location

The study is located 6 miles south of Bock, MN on Mille Lacs Cty. Rd. 1.