



Bale Grazing Wastage

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Bale Grazing has been around long enough that I no longer consider it a new practice. Whether or not you use this management technique, you have no doubt heard about it and know the pros and cons of putting this practice in place on your farm.

When we first started to explore the practice of bale grazing, someone told me (and I can't remember who) that there is no waste with bale grazing. All that hay trampled on around the bale during the winter isn't technically waste. It is fertilizer. The nutrients in the bale are recycled back to the field to help fertilize future forage. Shawn Cabak of Mb Ag indicated in an article that "If you are feeding 30 alfalfa-grass bales per acre at 1,250 pounds per bale and 14 per cent protein, you are bringing in 714 pounds of nitrogen, 64 pounds of phosphorus, 542 pounds of potassium, per acre." Whether that forage is cycled through the cow or spread on the field most of that available nutrient is available to subsequent crops. Research at the University of Saskatchewan compared bale grazing nutrient retention versus spreading manure and it showed that in-field feeding allowed 30-45% recovery of added N and 21-32% recovery of added P while spreading manure allowed only 5-9% recovery of added N and 3-5% recovery of added P. So when you look at this kind of information, you think why worry about hay wastage as long as the wastage is taking place in the field and not in the feedlot.

When we get into a year like 2018/19 and feed supplies are limited, one question that is often revisited is "How much waste can be created when overwintered cattle are bale grazed?" Having an estimate of this number can and does help in knowing how much feed you may need and allows you to plan ahead to reduce the risk of a forage shortfall.

Dan Buskirk, Michigan State University Beef Specialist, has both reviewed literature and conducted research on the effects of feeder design on hay waste. His literature reviews indicate that waste from hay rings can range from 5- 15% but hay waste can range from 11- 45% when fed without rings. When hay is in short supply and/or expensive, the advantages of bale grazing in reducing yardage costs of \$1.508/cow/day (Beef Cow COP) may not be realized.

Because this review had such a wide range, although interesting, it wasn't all that useful if you are trying to calculate how much feed you will need to get through the winter. Checking further I found a project that was carried out by the Lakeland Agricultural Research Association (LARA) that measured bale grazing waste.

The trial measured wastage on the same farm with the same herd over a four year period - 2008 to 2011. The herd grazed the bales during the winter, usually January and February and tarps were used to collect waste from individual bales over the period of the trial.

In the spring, residue was collected from the tarps and weighed, and the large piles of manure were removed before its collection. Samples were taken back to the lab where they were dried and sorted to estimate hay versus manure in the residue. The average amount of manure in the residue samples was about 20%, meaning that about 20% of what looked like wasted feed in the field was actually manure.

Year	Bale Type	Orientation	Estimated % Waste	% Manure in Residue	Initial Quality		Waste Quality	
					CP (%)	TDN (%)	CP (%)	TDN (%)
2008	Fescue/Alfalfa	end	17.69	15.76	13.86	58.33	7.65	43.43
2009	Fescue/Alfalfa	side	9.96	20.24	14.9	58.89	9.57	45.49
		end	13.48	18.82				
2010	Fescue/Alfalfa	side	7.27*	34.96	10.69	54.72	7.42	41.85
		end	16.59	32.69				
2011	Fescue/Alfalfa	side	7.12 ^b	20.02				
		end	16.08 ^a	21.85				
Average	Fescue/Alfalfa	side	8.54	20.13	13.01	57.31	8.21	43.59
		end	15.96	22.28				

1*low number of data points excluded from ave.

The trial found that the four year average wastage for end-placed bales was just below 16%. The amount of waste seems reasonable when compared to previous research indicating 19% waste for bales processed on snow and 12% waste for bales unrolled on snow in the [Beef Cow-Calf manual](#). Weather also seems to have an impact on wastage as the winter with the highest snowfall amounts also had the highest wastage.

There appeared to be a reduction in waste when bales were placed on their sides rather than on end. While this was the general trend, the winter of 2011 did show statistically significantly less wastage from side-placed bales than end-placed bales – % compared to 16%.

The difference with this trial and “normal” practice is that the cattle had a limited access grazing system where they were turned out to the bales every morning around 9 a.m. and then chased back out around 4 p.m. On really cold days, the cattle were left in the bales overnight until the weather changed. This limited access system could have impacted the amount of waste produced.

While this trial has now been completed, some additional questions that could be answered with more tarps are:

- Is there a difference in the amount of waste when the twine is removed in the fall?
- What is the interaction between twine and bale placement (ie. twine left on, bale on side versus twine removed, bale on side versus twine left on, bale on end and twine removed, bale on end)?
- Could net wrap work in this system and what impact would it have on waste?
- What is the difference in waste between the Tellier system and a system managed without limited access and a system managed by electric fence?

In summary the trial points out that:

- Bale grazing (in this system with limited access) seems to have a reasonable amount of waste when compared to other in-field winter feeding systems (processing bales, unrolling on snow).
- There seems to be less wastage from side placed bales than from end placed bales.
- Bale grazing can improve forage production in the fields where the grazing occurs.
- Remove twine in the fall.

For more information on this trial and bale grazing go to:

[LARA Bale Grazing Wastage Estimation Trial](#)

[Benefits of Bale Grazing](#)