QLF QUALITY LIQUID FEEDS

CATTLE SENSE

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Harvested Forage: Use it, Don't Lose it!

As I was following a hay trailer down the highway last week, crisp corn leaves cascading about my pickup, I was graphically reminded of the importance of minimizing waste of our harvested forages. Baled hay and crop residues are the primary component of many winter diets . . . and of a cow/calf operation's expense budget. It just makes sense to ensure that as much of that resource as possible actually makes it into the cows.

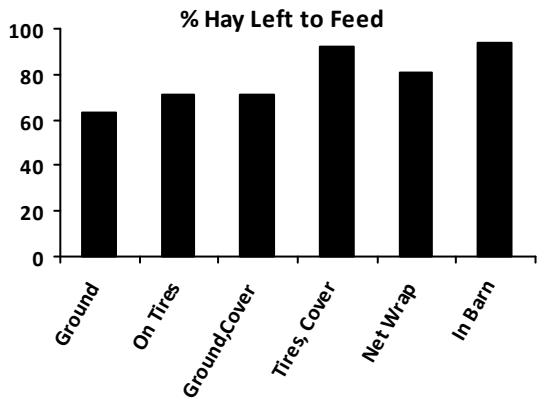
We know that losses occur during transport, storage, and feeding of hay. Research has shown that moving bales generally results in a 1 to 10% loss in dry matter, that storage losses can range from 5 to 50%, and that waste after feeding runs an additional 3 to 50%. Those numbers show us two things – with such large ranges, it is obvious there are management options that can make a big difference; and, the impact of reducing hay losses can be economically significant.

Storing Hay

Losses can be due to physical disappearance (wind, wildlife) or weathering, which is largely driven by moisture entering the top and bottom of the bale. Variables include weather, which can't be controlled, and bale location and placement, which can. Obviously the least storage loss occurs when bales are kept under a roof or other protection. But when that is not an option, key points to consider include: keep bales off of wet ground; store bales tightly end-to-end, arranged to allow prevailing winds to move between rows; stay away from trees or structures that would accumulate snow or rainwater; and, plan to minimize handling.

There are published studies that validate the importance of each of these practices. Work at South Dakota State University compared dry matter losses of bales that were either lined up end-to-end, stood on end, or stacked in a pyramid. DM losses for the three treatments were 0.8%, 4.0%, and 10.3%, respectively.

A trial from Indiana looked at storing big round bales on crushed rock, rather than directly on the ground. In this case, keeping the bottom of the bale relatively dry decreased DM losses from 23% to 11% -- less than half.



A more extensive demonstration, conducted by the University of Tennessee, compared six different strategies for storing hay from June through January. Bales were either stored on the ground, uncovered, covered, or net-wrapped; on tires, uncovered or covered; or in a hay barn. Dry matter losses ranged from 6% to 37%, representing a significant difference in how much hay was actually available to feed in January.

Feeding Hay

Again, a number of factors contribute to the level of waste: weather (rain, snow, wind), drainage, type of hay, type of bale, feeder type and design (if used), frequency of hay delivery, and use of hay processors and/or bale treatment.

Some older Missouri work measured feeding losses of 7% when small square bales were fed in a rack, of 9% when large round bales were fed in a rack, and 45% (almost half!) when large round bales were placed without a feeder. A study done at Kansas State compared both forage type and feeding method, again showing large losses when hay was offered without a feeder.

	Ground Hay, Bunks	**Ground Hay, On Ground**	**Unrolled On Ground**
Wheat Hay Waste, %	8	13	23
Sudan Hay Waste, %	11	16	22

An additional tool for reducing hay wastage is direct treatment of the forage with a liquid supplement. These products would typically be applied to the flat face of the bale at 7-10%, by weight, and allowed to soak through prior to storage or feeding. Multiple field demonstrations have shown a readily visible difference in hay refusals and sorting.

Researchers at Purdue quantified the difference in waste when cows were provided with 1, 2, or 4 days worth of hay at a time. When fed daily, the cattle refused or wasted 11%; when fed every other day, this figure rose dramatically, to 25%; and when a 4-day supply was delivered, 31% was wasted. Under this scenario, 45% more hay would have to be fed in order for the cows to consume the same amount. Extra costs would include not just the additional hay, but also the expense of getting it to the cattle.

A recent report from the University of Wisconsin specifically addressed the differences in daily waste when a mixed alfalfa/orchardgrass hay was fed to beef cows in a variety of bale feeders.

Hay DM Loss by Feeder Type	
Cone Feeder	3.5%
Ring Feeder	6.1%
Hay Trailer	11.4%
Cradle Feeder	14.6%

The Bottom Line

It is clear that hay waste can be drastically lowered by protected storage conditions, use of appropriate feeders, treating and/or processing hay, and more frequent delivery. However, each of these practices come with costs in equipment, facilities, time and labor. So is it worth doing? The following table shows the accumulative effect of being at the low, middle, or high end of the ranges for waste given at the beginning of this discussion. . . and the additional hay that would be required if losses are not tightly managed.

	LOW	**MEDIUM**	**HIGH**
Transportation Losses, %	1	5	10
Storage Losses, %	5	25	50
Feeding Losses, %	3	25	50
% of Hay Fed That Is Consumed	91%	53%	23%
Additional Hay Use	---	**DOUBLE**	**QUADRUPLE**