



Ridin' Herd

► by Rick Rasby, Extension beef specialist, University of Nebraska

Forage feeding losses can add up

A lot of long hours and expense are invested into harvesting quality forages and storing them for later use. As a producer, you wouldn't dream of throwing away one-third of the forages that were intended to be fed to the cow herd. Many times, that's what happens when livestock are allowed unlimited access to hay in a feeding situation. Livestock trample, overconsume, foul and use for bedding 25%-45% of the hay when it is fed with no restrictions or is not processed.



Spending a little may pay

As forage feeding systems are incorporated into the feeding system to reduce losses, the financial commitment will increase. The key is to balance the financial outlay of implementing a feeding system to reduce forage losses with the dollars saved in reducing the amount of forage needed. Many times this is dependent on the cost of the forage. As the cost of the harvested forage increases, it appears easier to justify the cost of machinery and feeding devices.

Feeding frequency and amount

Feeding hay daily according to diet needs can reduce hay loss and waste. Compared to feeding a several-day supply each time hay is provided, daily feeding will force livestock to eat hay they might otherwise refuse, overconsume, trample and waste (see Table 1). Cattle will waste less hay when the amount fed is limited to what is needed in a single day. One-fourth more hay is needed

when a four-day supply is fed with free access than when a one-day supply is fed.

Excessive hay consumption can be a big problem when large hay packages are fed without restriction. A dry, pregnant cow can eat up to 15%-20% more hay than she needs when allowed free access to good-quality hay. A 1,200-pound (lb.) cow consuming 27 lb. daily could consume 31 lb. per day with free access to the forage. This can amount to almost 500 lb. per cow during a four-month feeding period for spring-calving cows. A 100-cow herd may overconsume 24 tons of hay if the cows have free access. This is in addition to the extra needed to replace wasted hay when offered free access.

Devices to reduce losses

Feeding losses when hay is fed daily in bunks can be kept in the 3% to 14% range (see Table 2). Well-designed feeders (with solid bottom panels) will have losses in the 3% to 10% range, for an average forage loss of about 6%. Large bales fed free choice in muddy conditions without a rack or feeder



can result in forage losses exceeding 45%.

Feedbunks are excellent for feeding small square bales. Round bales can be fed in specially designed racks. Loose or compressed haystacks can have collapsible racks or electric wire around them to reduce trampling of hay around the edges. No matter how hay is fed, efforts that limit the amount of hay accessible to trampling will save feed.

Feed hay at a well-drained site and on firm ground when possible. Hayracks or bale feeders with solid barriers at the bottom prevent livestock from pulling hay out to be stepped on. Some producers have fed forages on an upslope with the hay next to an electric fence. Their observation is that when the hay is spread in a long line so all cows have access next to the electric fence, forage losses due to trampling are minimal.

Also, the type of forage presented to cattle can influence the amount lost during the feeding process (see Table 3). Allowing cattle free access to forages that have a thicker stalk or stem results in greater forage losses during feeding compared to thin-stemmed forages like hays. When cattle are fed forages like sorghum-Sudan hay, and the feeding method and access are not controlled, they tend to select the leaves and upper parts of the stalk, not the lower part of the stalk, which results in greater feeding losses. When feeding method and access amount are controlled, feeding losses are not much different among forage types.

Even if big-round-bale feeders are used to reduce forage feeding losses, there still can be substantial losses.

There is not a lot of data on the effect of bale packaging quality on feeding losses. It appears that loosely packaged bales fed in a bale feeder can result in high feeding losses. Cows pull the loose hay through the feeder, and forage is deposited on the ground around the feeder.

Dry-matter (DM) losses occur when handling hay from field to feeding (see Table 4). By the time hay is fed, losses can be substantial and can increase the amount of production needed from the original

Table 1: Hay wasted by cows when amount fed was controlled

Feeding system	Hay per cow per feeding, lb.	Hay refused or wasted, %	Hay required over rack feeding, %
Rack feeding on pasture	—	5	—
No rack feeding on pasture			
1-day supply	20	11	12
2-day supply	40	25	33
4-day supply	80	31	45

Table 2: Hay wastage when fed with or without racks

Feeder type	Amount wasted, %
Round bale without rack ¹	45
Round bale with rack ¹	9
Ring feeder with skirt ²	5.9
Cone feeder ²	3.3
Cradle feeder ²	14.2
Trailer feeder ²	11.1

¹Anderson, University of Nebraska.

²Buskirk, Michigan State University.

standing crop by 35%. By effectively controlling the amount of hay lost and wasted during harvest, storage and feeding, production costs can be reduced, and baling hay can be made more profitable.

Grinding or processing

There are some misconceptions that grinding forages will increase forage quality. This is not true. In some grinding situations, quality may decrease, especially if the hay is ground on a windy day. Grinding decreases particle size. When particle size is decreased, the amount of time the ground forage needs to stay in the rumen to be digested decreases. A decrease in rumen retention time means forage intake will increase. This means a cow can consume more of the forage.

This concept becomes important when feeding cows a low-quality forage and restricting intake. It will not pass through the rumen at a very rapid rate because it takes so long to digest. Grinding or processing hay in a bale processor increases consumption of low- to medium-quality forages.

Grinding different forages together will allow the producer to combine forages of differing quality for best use in a cow diet. It also allows a way to manage problem forages such as those containing potentially toxic levels of nitrate.

Table 3: Percent dry-matter wastage of hays and sorghum-Sudan hays

Forage fed	Loss when fed in bunks, %	Loss when fed on pasture, %	Loss with controlled-access feeding, %
Bermuda grass hay	2.6	14.6	5.5
Sorghum-Sudan hay	1.1	36.0	2.6

Source: Oklahoma State University.

Final thoughts

Controlling forage feeding losses is important. It must also be recognized that as forage feeding losses move closer to zero, money can be invested on extra equipment or material such as bunks, feeding racks, inverted tires, etc. If the forage is ground, a feed wagon and/or loader on the tractor is needed. Costs need to be balanced with savings.



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Editor's Note: "Ridin' Herd" is a monthly column written by Rick Rasby, professor of animal science at the University of Nebraska. The column focuses on beef nutrition and its effects on performance and profitability.

Table 4: Dry-matter losses of hay from field to feeding¹

	Range, %	Average, %
Mowing	1-6	3
Raking	5-20	10
Swathing with conditioner	1-10	5
Plant respiration	2-16	5
Baling, % of windrow	1-15	5
Storing, % of stack		
outside	5-30	15
inside	2-12	5
Transporting	1-5	3
Feeding, % of stack or bale		
with feeder	1-10	5
without feeder	2-45	15
Total % of original standing crop	10-80	35

¹Without rain damage, rainfall can reduce yields as much as 20%.