UMC Science and Technology GUIDE
Published by the University of Missouri - Columbia Extension Division

ATTENTION SMALL FARM FAMILIES

Reducing Waste in Feeding Hay

H. N. Wheaton, Dept. of Agronomy, College of Agriculture

There can be excessive wastage in all systems of feeding hay unless some precautions are used. It is a common sight in Missouri to see large fields of small round bales with cattle having unlimited access to the entire acreage of bales. This is tremendously wasteful. Cattle with unlimited access to small bales left in the field may consume and waste as much as 55 pounds of hay per day per cow. When cattle are limited to a three week supply the amount needed per cow can be lowered to about 32 pounds per day.

The use of an electric wire to limit access to small bales left in the field can reduce the wastage and provide a very practical feeding method. The Rotobaler has many low cost advantages if feeding losses are reduced in feeding the bales.

Research shows that wastage is as much as 40% or more when cattle are allowed free access to large bales without feed racks. Missouri reported wastage of over 40 percent when large hay packages were fed without racks to dairy replacement heifers (Table 1).

Table 1. Hay Waste by Heifers for Three Types of Bales.

Bale Type	Percentage Wasted
Square in feeder	6.6 %
Hawk Bilt in feeder	8.8 %
Hawk Bilt no feeder	47.5 %
Vermeer in feeder	8.3 %
Vermeer no feeder	42.3 %

*University of Missouri

Table 2. Percent Dry Matter Wastage of Bermudagrass and Sorghum-Sudan Hay*

	Daily Feeding in Bunks	Free Access on Sod	Controlled Access
Bermuda	2.6 %	14.6 %	5.5 %
Sorghum - Sudan	1.1 %	36.0 %	2.6 %

*Oklahoma State University

Oklahoma reported more wastage with low quality sorghum-sudan hay than when higher quality bermudagrass was fed (Table 2).

Table 3. Hay Required/Cow/Day and Percent Wastage When Large Hay Packages Were Fed With and Without Racks.*

Type	Hay per cow/day (lbs)	Percent wastage without rack
Hesston		
no rack	33.4	35
rack	24.7	
Vermeer		
no rack	28.2	22.6
rack	23.0	
Hawk Bilt		
no rack	32.3	38.6
rack	23.3	

*Purdue University.

Table 4. Feeding Conventional Bales vs. Stacked Hay. Stacked Hay Fed One Stack at a Time*

	Baled	Stacks
Avg. Daily Gain	1.42	1.19
Hay per cwt gain	754	1,178
Grain per cwt gain	247	293
Percent hay wastage	6 %	41 %

*Auburn University.

Excessive Consumption

Few economic studies have considered excessive hay consumption associated with the newer systems as a factor in arriving at conclusions.

One of the major problems associated with large hay packages is excessive consumption. There seems to be no doubt, however, that the large hay packages can be

Table 5. Daily Wastage in Feeding Hay Bales*

	Percent Loss	
	1-Day Supply	8-Day Supply
Large Round Bales		
without rack	10	34
with rack	3.7	4.7
Conventional Bales		
without rack	4 %	

*Lichtenberg et al, Agronomy Abstracts, 1975, p. 106.

made and managed in ways that will keep spoilage and feeding losses to acceptable levels.

There is also little doubt that when only storage and feeding losses, labor comparisons, power and time requirements are considered that large hay package systems could be suitable not only to large cattle operators but to medium sized (50-75 cows) and in some cases small (less than 50 cows) ranches as well.

The opportunity for excessive hay intake is not solely a problem with large hay packages but is associated with grazing stockpiled forage and also with using small round bales left in place in the field.

A review of the research indicates that excessive hay intake by a dry pregnant cow varies from 20 to 30 percent when fed ad lib from large hay packages. Spoilage losses from outside storage amount to about 6 % of the dry matter and 10% of the total digestible nutrients (TDN). In addition, wastage during feeding (under ideal conditions, i.e. using hay racks and etc.) is about 3 % higher than when cattle are hand fed conventional bales.

Table 6. Additional Hay Required When Using Large Hay Packages Compared to Daily Hand Feeding Conventional Bales for 120-Day Winter Feeding Period.*

25 % more consumption	600 lbs hay
8 % extra spoilage	200 lbs hay
3 % more wastage	75 lbs hay
TOTAL	875 lbs hay

*Assumption for 1,000 lb cow, spring calving.

For an average size Missouri cow herd (30 cows) that calves in the spring an additional 13.1 tons of hay would be required with a large package system (rack fed) than if the cows were fed daily with conventional bales.

It should be pointed out that the daily feed requirement for fall calving cows is about one-third greater than for spring calving cows. Therefore, excessive consumption would be of little or no concern for fall calving cows.

References

Auburn University, AES Bull. 455, 1974

Lechtenberg, V. E. *et al.* P. U. Agronomy Abstracts, 1975, p. 106.

Lechtenberg, V. E. *et al.* Charolais Mag. January, 1975.

Martz, Fred and S. Bell, Univ. of Mo. AES Research Report - 1973

Rider, Allen. Oklahoma State University - Personal Communication, 1974.

Smith, Wm. Purdue University, 1974.

S. Indiana Forage Farm Report, P. 4, 1960.

■ Issued in furtherance of Cooperative Extension Work Acts of May 8 and June 30, 1914 in cooperation with the United States Department of Agriculture. Leonard C. Douglas, Acting Director, Cooperative Extension Service, University of Missouri and Lincoln University, Columbia, Missouri 65211. ■ An equal opportunity institution.