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Michigan State University Extension Service

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MICHIGAN BEEF PRODUCTION

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Feedbunk Management in Feedlots

Dr. Danny G. Fox, Cornell University, and
Dr. Donald R. Gill, Oklahoma State University

Feedbunk management is a combination of management factors involved with obtaining maximum performance, minimum digestive disorders, and keeping cattle on feed. In cattle feeding, quality control is being able to deliver to the cattle on a consistent basis the same quality or intended ration composition. Feedbunk management and quality control are directly involved with obtaining both maximum and most economical performance from cattle. It should be every feeder's goal to obtain maximum feed intake of a consistently high quality ration, since both rate and efficiency of gain are directly related to nutrient intake.

Ration Management Factors

Fresh Feed — The cattle feeder should strive to have fresh and palatable feed in front of his cattle at all times. The quality of feeds used should be carefully controlled. The feeder should avoid the use of low quality or spoiled feeds, as either may reduce feed intake. Most times it is better to discard spoiled feed rather than chance that it may reduce feed intake. As a rule, when off quality feed reduces feed intake by 5%, gains will be reduced by 10%. Net energy tables can pinpoint this phenomenon.

Avoid Stale Feeds — The length of time that feed may be left in the bunk before becoming stale depends on the moisture content, frequency of feeding, weather conditions and the combination of feeds in the ration. Sooner or later, all feed not consumed will become stale and must be discarded. Feedbunks should be cleaned out periodically, not less frequently than once a week.

It is *not* poor management to have the cattle clean up the bunks at least once a day, providing that the cattle are not out of feed to the extent that they become restless or engorge when fed again. Clean water is just as essential as fresh feed so cattle feeders should not overlook the supply of clean fresh water. Many good cattle feeders clean waterers daily.

Control Variation in Nutrients and Quality — Variation in the moisture content of the feeds making up a ration is the largest single source of serious variation in rations using silage, haylage, green chop or high moisture grains. There is no way to insure a successful feeding program using any feed which can vary in moisture content without formulating on some standard moisture basis (i.e. 10% or 0%) and adjusting the as-fed formulas as often as necessary. See the fact sheet "Correction for Moisture Content of Feeds" for a complete explanation.

Quality control in cattle feeding begins with making corrections for the variations in the moisture content of the feed commodities fed to cattle.

Select Only High Quality Silages and Roughages — Silage quality is extremely variable, even after converted to a constant dry matter basis. Factors that influence nutrient content are weather conditions, stage of maturity at harvest and varieties used. The grain content of corn silage is one of the most important factors affecting quality. Corn silage usually averages 35 to 45% grain on a dry basis, but it may vary from none to over 50%. It is usually desirable to use varieties for silage that produce high grain yields. If silage is to be purchased, it may be advisable to recommend specific varieties to potential suppliers to

assure obtaining uniformity in the quality of the silage. Another important factor is the stage of maturity at harvest. All corn silage should be harvested as near the hard dent stage (about 65% moisture) as possible to obtain maximum digestible dry matter yield, palatability and minimum storage losses.

Grain content is not always a reliable predictor of quality. Some drought stricken silage containing little or no grain may be nearly as high in energy as normal corn silage since it will frequently have a lower fiber content. Drought stricken silages will usually need to be supplemented with additional grain, however, to make them equivalent to normal corn silage. A fiber analysis may be one of the best indicators of energy content of forage, and it may be desirable to obtain a fiber analysis when in doubt as to the energy content.

Hay crops made as hay or silage are also quite variable in both protein and energy. The best indicator of hay quality is fiber level and stage of maturity when harvested, in addition to weather damage. As hay plants become more mature they increase in fiber content and decrease in protein content, resulting in a reduction in energy and protein. When hay is exposed to weathering many of the soluble sugars, proteins and vitamins are leached out. Therefore, hay should be made as nearly as possible to when it starts to bloom and care should be taken to avoid weather damage. When hay is purchased it is good to know when it was made and how much it was exposed to the weather. Obtaining a protein and/or fiber analysis on forages should aid in quality control and in determining how they should be supplemented.

Use Questionable Feedstuffs as Only Part of the Ration —

Often screenings or old or heat damaged feeds can be economically fed if properly processed and managed. They should be limited to only a portion of the ration to minimize the risk of reducing performance, due to their variation in nutrients and quality. When fed as only a portion of the ration they are not nearly so likely to reduce performance due to their variation from one load to another. Care should be taken to properly supplement these types of feeds. It may be advisable to provide higher than normal levels of supplemental minerals, vitamins and protein to provide a wide margin of safety when it is recognized that a particular feedstuff is quite variable in nutrient content from load to load.

Physical Condition of the Ration

Several factors affect the physical condition, uniformity and palatability of the ration in the feedbunk. First of all, proper mixing may help improve palatability and will help avoid sorting as it will tend

to mask the flavor of those ingredients that are somewhat less palatable, such as high urea supplements or feeds containing a small amount of weed seeds or mold. Proper mixing is also important from the standpoint of quality control and to prevent segregation of ingredients. It is of little value to take great care to properly formulate the ration and adjust for moisture variations if the ration is not uniformly mixed. Often protein content will vary from 2 to 3% within a load of feed as a result of poor or inadequate mixing. Proper mixing is important to be sure every animal gets the proper daily level of feed additives. The following guidelines should be helpful in avoiding problems due to inadequate mixing:

1. It is usually a good practice to have the additives and/or high urea levels carried in a supplement fed at a level of at least 1 lb. per head daily. If high protein equivalent supplements are used and/or only small amounts of supplemental protein are needed, they can be diluted and premixed with some ground grain before adding it to the major portion of the ration. Proper mixing is more critical where high urea supplements and additives are being added through the protein supplement.

2. The physical form of the ration may need to be altered if separation of some of the ingredients tends to occur. When using whole shelled corn, for example, it will probably be desirable to pellet the protein supplement. If using finely ground grain, however, it may be desirable to have the supplement in a meal form, to add some molasses, or to use a liquid supplement to prevent separation. In some rations the forage may need to be chopped rather fine to avoid separation. It may be desirable to use a high moisture forage with dry grain and dry forage with high moisture grain to help prevent separation and as an aid in obtaining a uniformly mixed ration. The physical form may need to be altered where wind is a problem by using some high moisture feeds in the ration or by adding small amounts of fat or molasses.

3. It may be desirable to use a higher roughage level where adequate mixing is not possible. When the ration is well mixed, a 5 to 10% roughage level on dry basis may be adequate to obtain maximum net energy intake, to prevent digestive disorders and going off feed. Where the ration is not adequately mixed, it may be necessary to have 15 to 20% roughage in the ration on a dry basis to provide a wider margin of safety to minimize death loss, founder or digestive upsets.

4. It may be desirable to obtain a chemical analysis on feed samples taken from the bunk periodically. These can be used to check the accuracy of formulation.

5. If problems with distribution of minor ingredients are encountered, it may be helpful to change the order that the ingredients are being added to the

mix. For example, many times a better distribution of the supplement is obtained if the grain is added first, followed by the supplement. These might then be mixed for a short time before the roughage is added. In effect, this procedure results in the supplement being pre-mixed with the grain before the roughage is added.

A second factor affecting the physical condition of the ration is the density of the ration. Cattle do not like a ration containing a lot of fine particles or when it becomes caked on the bottom of the bunk. For example, a ration that contains a lot of high moisture grain will tend to form a hard, dense mass in the feedbunk after several hours exposure to the elements and cattle saliva. Therefore, a higher roughage level may be needed when high moisture rather than dry grain is used to avoid this problem. Likewise, it may be more critical to choose the proper type and form of roughage when finely ground grain is used. One should always be able to run a hand through the feed in the bunk without having to dig it loose first.

Moisture Content of the Ration

There is probably an optimum moisture content for each ration. Cattle do not like a dry and dusty ration. Likewise, when a ration is too high in moisture, total dry matter intake may be reduced. Studies at the University of Minnesota indicate that maximum dry matter intake is obtained at about 34% moisture content of the ration, and feeding rations containing more or less moisture than this level might be expected to result in a lower dry matter intake. Many studies with high moisture vs. dry corn in high concentrate rations, however, have not shown any consistent differences in dry matter intake. The moisture level that is optimum probably needs to be evaluated on the basis of effect on mixing and segregation of ingredients, wind, and the combination of feedstuffs used in a particular ration.

Feed Combinations

Care must be taken to avoid feed combinations that cause difficulty in feedlot cattle. Often certain combinations of feedstuffs such as barley, wheat, oats and/or alfalfa hay contribute to problems with digestive disorders and in keeping cattle on feed. The following guidelines should be helpful in avoiding combinations that are troublesome.

1. Do not include over 40 to 50% of the grain as wheat in a high concentrate ration. Limit rye to 20% of the ration.

2. Where barley and wheat are the major feeds available in addition to corn, proportions of $\frac{1}{3}$ barley, $\frac{1}{3}$ corn and $\frac{1}{3}$ wheat should work reasonably well together.

3. If the ration is made up primarily of barley or oats and alfalfa and problems with bloat are encountered, replace part of the barley or oats with corn, replace part of the alfalfa with grass hay, and/or replace part of the alfalfa and barley or oats with corn silage.

4. If digestive disorders are being encountered, make some changes in the combinations of feeds being used. Often just changing the proportion between barley or oats and alfalfa will reduce the incidence of bloat, for example.

Effect of Weather

Extreme, rapid changes in weather affect cattle performance; one major influence of weather is on feed intake. During periods immediately preceding changes in weather, cattle may abruptly increase feed consumption, which may result in digestive disorders due to an abrupt increase in grain intake. This will then likely be followed by a period of going off feed and sickness due to digestive disorders. They may also simply reduce feed intake during periods of bad weather. It is probably advisable to feed higher levels of roughage in finishing rations (15% to 20% vs. 5% to 10% on a dry basis) during periods of time when rapid and abrupt changes in weather occur such as during the winter. This provides a wider margin of safety against digestive disorders when abrupt changes in feed intake occur.

Effect of Lot Condition

Cattle should have a dry place to lie down close to feed and water. Cattle will hesitate to wade through mud to get to the feedbunk, and studies at the University of California show that mud can reduce cattle gains up to 25 to 35%. They may also stand in the shed or behind the windbreak when winds are high if they have to walk across the feedlot to get to the feedbunk. Mounds are usually best located perpendicular to the bunk apron, and adequate concrete should be used to eliminate mud between the resting area and feed. It should be possible for all cattle to eat at once to enhance observation of sick cattle and to allow easy access to feed for more timid animals. Once cattle are on feed, however, bunk space per head can be greatly reduced.

Feeding Technique

Feeding System Needed — The major objective in any feeding system is to have fresh and palatable feed in front of the cattle 24 hours a day from the time they arrive in the feedlot until removed for slaughter.

There is probably no one best system to accomplish this, and each feeder needs to develop a feeding pattern that will allow the bunks to be nearly cleaned up each day to avoid stale feed and at the same time a system that never allows cattle to be out of feed for more than ½ to 1 hour. Cattle will not be affected if the bunks are slick for ½ to 1 hour each day particularly if this is part of the normal feeding pattern. They will appear restless and hungry, however, after this time, and one of two things will likely happen when the cattle are fed after they have been out of feed for extended periods.

1. They may eat less than normal, resulting in reduced performance.
2. They may gorge themselves, resulting in going off feed and digestive disorders.

Many feeders feel that feeding on some kind of schedule allows them to best anticipate when the cattle are going to have the feed nearly cleaned up but yet not be out of feed for extended periods because of a higher than expected feed intake. This also allows the cattle to anticipate when fresh feed will be placed in the bunk.

Number of Times to Feed Each Day — Many feeders have observed that the more often cattle are fed the more often they will come to the feedbunk to eat as a result of anticipating fresh feed. When small quantities are fed many times a day there will likely be less chance of stale feed or cattle being out of feed for extended periods. There is a practical limit on how many feedings a day can be justified from the standpoint of labor and equipment costs, and the number of times it is practical to feed each day has to be determined for each situation. Some major factors to consider are type of feeds used in the ration and weather. When high moisture feeds are used, the cattle may need to be fed more often than when dry feeds are used, particularly during hot weather. The feeding pattern may need to be changed somewhat during the different seasons of the year. In the winter cattle eat more during the day than at night, so more feed should be placed in the bunk at the morning feeding. Conversely, in the summer cattle will eat more during

the night or cooler hours of the day, so more feed should be placed in the bunk in the evening.

Any cattle feeder should recognize that the most important man in any cattle feeding operation is the one who feeds the cattle. Clean bottom bunks and lack of digestive problems are a sign of a careful feeder; whereas, spoiled feed caked over the bottom of the bunk indicates a careless feeder. Being able to anticipate the amount of increase or decrease needed at each feeding is important in avoiding stale feed or having cattle out of feed for extended periods. Knowing how to get cattle to a full feed and keep them there requires skill and judgment; this is best developed by careful observation in combination with an awareness of all the factors important in bunk management and quality control.

Management of Self-Feeders

In many cases it is impossible to obtain the level of performance using self-feeders that a skillful feeder using bunk lines can reach. However, many feeders who do not have a high degree of skill at bunk line feeding will probably do as well using self-feeders. If the ration form is one which leads itself to self feeders i.e., 8-14% moisture content, and proper physical form, reduced labor costs may make self-feeding most practical.

Fresh feed is important and self-feeders must be inspected daily for proper feeding and stale feed. Physical separation of the ration in self-feeders often limits their usefulness. Feeders should avoid a buildup of fines in the bottom of the self-feeder which the cattle usually reject until they become quite hungry. Founder and bloat in cattle being self-fed are usually symptoms of ration separation in the self-feeder. Ration formulation in terms of physical characteristics for self-feeding is much more important than for bunk line feeding. Supplements are best pelleted for use in self-feeders, and any feed ingredient which is quite fine and which leads to fines in mixing and in the self-feeder is likely to cause trouble. Feeders who successfully use self-feeders will probably spend as much or more time inspecting feeders as those who use bunk-line feeding.



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