Beef Briefs

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USING WHEAT IN BEEF RATIONS

The drought situation in many areas of the state will force many cattle feeders to use some alternative feedstuffs in the coming year. One such alternative for this year may be the use of wheat in cattle diets.

Frequent changes in the price of wheat often make it attractive as a feed for beef cattle. Wheat has about 100 percent of the energy value of corn, and it has about 105 percent of the protein value. This makes wheat even more desirable as a ration component when protein costs are high.

Wheat provides a highly-degradable source of energy for the ruminant. As a result, wheat cannot totally replace corn as the energy component of the diet because of a higher incidence of acidosis and founder.

Therefore, a general rule is that wheat should not replace more than 50 percent of the corn in the diet, particularly for feedlot steers. Secondly, because of the high degradability of wheat energy, cattle should be switched to wheat rations slowly to allow adaptation by the rumen. It should take up to two weeks to shift feedlot cattle for corn to high-wheat diets.

The fiber level of wheat is also low (about three percent), so the fiber content of the ration would need to be adjusted to keep it at least six percent in the total ration. Wheat should be coarsely ground or rolled to prevent fines.

During a wet harvest season, many of the wheat kernels may sprout before harvest. Most studies have shown sprouted wheat will not effect gains or feed efficiency for beef cattle compared to normal grain. The usual limitations for use of wheat in rations should be used. High levels of sprouting will effect the energy value of the feed.

Wheat that is more than 20 percent sprouted has been shown to have about 92 percent of the energy value of normal grain. Also, precautions should be taken to identify molds that may be present in sprouted grain. Excessively moldy or very dark grain should not be fed, and even slightly moldy grain should not be fed to pregnant cows or heifers.

Selection Of Alternative Feeds

As feed is the largest single cost input associated with beef cattle production, it can easily become the most important factor in profitability.

Beef animals are ruminants, and can utilize a wide variety of feeds for energy and production. Cost per unit of energy or nutrients determines the value of a specific feedstuff for cattle.

Factors to be considered in evaluating a cattle feed include:

- Its dry matter content
- Its availability, transportation charges, perishability, and storability
- Its palatability
- Possible harmful residues.

Dry Matter

The various feedstuffs used in livestock production can differ widely in the proportions of dry matter and moisture.

Dry grain may be 90 percent or more dry matter. In liquid whey, there is usually no more than 5 percent dry matter — the rest is water. (It is obviously less expensive to provide water to the animal in other ways.)

It is the dry matter portion of the feed that provides its nutrients. Laboratory analysis of a feed will provide a precise determination of its dry matter — "quickie" tests with field-moisture testers or microwave ovens can be used to determine dry matter content on the farm.

Transportatio And Storage

The actual cost of transporting and storing a feed is closely related to its dry-matter content. In moving a ton of liquid whey, one is moving about 1,900 pounds of water and only 100 pounds of dry matter. In a ton of grain, there is only about 200 pounds of water.

To determine the actual cost of transporting a feed, divide the per-ton shipping cost by 2,000, then divide this figure by the feed's dry-matter content. For example, if it costs $10 per ton to move whey that is five percent dry matter, its transportation cost is $10.00/2,000= $.005 per wet pound. Dividing $.005/.05 gives the cost of transporting the energy and protein in the whey: $0.10, which is 10 cents per pound.

On the other hand, if you are moving corn (90 percent dry matter) at the same cost, 10 dollars per ton, the transportation cost is $.0055 per pound of dry matter ($10.00/2,000 = $.005; $.005/.9 = $0.0055) or just a bit more than one half cent per pound of nutrient.

Use the same procedure to evaluate storage costs. Consider only the dry matter portion of the feed. An additional cost may be incurred if a dry material must be added to a wet feed to arrive at a dry matter value suitable for storage or proper fermentation. The opposite is true if water is added to material for proper storage or fermentation purposes.

Palatability

While the cost per unit of nutrient may look very favorable for some feeds, the palatability and/or usable form of the product may inhibit its usefulness.

Urea is a good example. Although it provides an extremely low per-unit cost for protein, it must be fed in small amounts, if at all, in some rations. Accurate weighing and mixing is essential to prevent the animals from ingesting toxic amounts. The cost of mixing it with other feeds or purchasing it as part of a complete protein or mineral supplement will add to the cost per unit of protein.

Other feeds where problems may be encountered include feather meal, fishmeal, bone meal, poultry litter, and some fresh vegetable wastes.

Residues

Toxic or otherwise undesirable residues, though not usually a problem, may be encountered in some food processing by-products, nonprotein nitrogen sources, and moldy feeds.

For example, certain types of noodles must be withdrawn from the cattle rations a couple of weeks prior to slaughter. Because of the type of fat used as an ingredient, continued feeding causes off-flavors and colors in the meat.

Some food processing by-products also contain foreign objects or unwanted ingredients (such as metal trimmings in cannery waste and grease and salt in cooked potato waste). Urea must be accurately weighed and mixed into a feed to avoid toxicity. Moldy feeds can be very dangerous to cattle if toxic substances are present. Moldy feeds have less feed value.

Calculating Nutrient Costs

The tables below list the relative energy and protein values for several feeds, compared to a standard feed material.

Mid-bloom alfalfa hay is the standard used here for dried forages, shelled corn is the standard for grains, corn silage the standard for wet forages, and soybean meal the standard for protein feeds.

The nutrient factor is the relative nutrient value of the feed compared to the standard for both protein and energy. The value factor is the equivalent price of the feed compared to the standard for both energy and protein on an as-fed basis.

For example, if corn costs $107 per ton, the equivalent energy value of potato chips is $87 per ton relative to corn, and the protein value is $92 per ton. Similarly, the energy value of dried bean cannery waste is only $88 per ton when soybean meal is $300 per ton; this is because there is more than twice as much water in the waste than in the meal, and about half as much crude protein per unit of dry matter.

Equivalent Pricing

An alternative method of making cost comparisons of various feedstuffs is to evaluate them in terms of the nutrient of interest.

Some arithmetic is required. For example, a cost comparison of second grass-legume vs. third cut grass hay would go as follows. The factors to be considered include DM content, TDN content, crude protein content, and price. Descriptions follow

- Grass-legume hay: 2nd cut,

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