



Cattle Producer's Handbook

Nutrition Section

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Composition of Common and Alternative Feedstuffs for Beef Cattle

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Feed Composition Analysis and Limitations of Table Values

Analysis of feed nutrient composition allows for a prediction about how animals will respond when those feeds are included in their diet. Nutrient composition is not constant and can vary for many reasons. An analysis of the actual feed to be used is much more accurate than the information in the tables provided in this publication, but tabular data can sometimes be helpful in making feeding decisions.

When using table values, one can expect organic components (crude protein, fat, and fiber) to vary as much as ± 15 percent, mineral concentrations to vary as much as ± 30 percent, and energy values to vary as much as ± 10 percent. Consequently, values shown can only be used as general guidelines; however, they do not replace standard analytical procedures used to determine nutrient composition of feeds frequently used in individual feeding programs.

Values are listed on a **dry matter (DM) basis** and can be converted to an as-fed basis by multiplying the nutrient value by the percent dry matter. For example, if a feed is 12 percent crude protein (CP) on a DM basis and contains 88 percent DM, the feed would have 10.56 percent CP on an as-fed basis ($0.88 \times 12 = 10.56$).

Nutrient Analysis of Byproduct and Alternative Feeds

The beef cattle industry uses many nontraditional feeds, including byproducts from other agricultural industries. These feeds may provide important economic advantages in ration formulation. However, the nutritional quality of the feedstuff and freedom from harmful residues and toxins are also key components of the decision making process.

Byproduct and alternative feedstuffs can vary widely in nutrient content, which makes a nutrient analysis or some assessment of the feed value (dry matter, energy, protein, and major mineral concentrations) critical to develop balanced, least-cost rations. A good guideline with byproduct or alternative feeds would be to ask for wet chemistry analysis to determine nutrient content. If near infrared spectroscopy (NIRS) is used, make sure that the laboratory has calibrated its equipment for your specific feed; otherwise, the analysis will not provide accurate data.

Additional Considerations for Byproduct and Alternative Feeds

Cost—Actual byproduct cost is not the only factor to consider when feeding alternate feeds. There may be high labor, transportation, and storage costs associated with the feedstuff. Potatoes, for example, may have dry matter values as low as 10 percent and be difficult and costly to transport. Many of the cull fruits and vegetables are difficult to store, resulting in a high rate of spoilage, which further increases the cost of the feed delivered to the feed bunk. Byproduct or co-product feeds may require adaptations to current storage facilities.

Feed Quality—The variation in composition associated with byproduct feeds can result in difficult ration quality control. As discussed earlier, it is important to have each feed periodically analyzed for its chemical composition. The analysis should include dry matter, crude protein, fiber (neutral detergent fiber and acid detergent fiber), energy, minerals, and harmful residues and toxins if these are a concern. Keep in mind that a guaranteed analysis is sometimes provided by the seller.

All feedstuffs vary in nutrient composition because of a variety of factors, including but not limited to year