

Cattle Producer's Handbook

Pricing Protein and Energy Supplements Corrected for Moisture Content

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“You can’t starve the profit out of a cow!” Many roughage feeds fall short of meeting the nutrient requirements of a mature cow or replacement heifer in their last trimester of pregnancy and 3 to 4 months postpartum. Protein and/or energy supplementation is essential during this period to help ensure conception of the cow or heifer while producing heavy calves at weaning. Comparing products on a cost per pound of nutrient basis can simplify choosing an economical protein or energy supplement.

Additionally, feeds frequently differ in water (moisture) content. Because moisture content directly affects nutrient concentration and dollar value per ton, a producer must correct for moisture in order to properly compare feeds when buying and selling. This fact sheet explains how to go “supplement shopping” with a least-cost ration formulation in mind.

Moisture and Dry Matter Content

“Percentage of moisture” is a phrase used to express the amount of water contained in feeds. Moisture content can be a large portion of the total weight of high moisture feeds, such as balage, haylage, and high moisture grains. High moisture balage containing 60 percent water is provided as an example (Fig. 1). If 1 ton (2,000 lb) of the balage is completely dried, only 800 pounds from the initial 2,000 pounds will remain. Therefore, the balage dry matter is 40 percent ($800 \div 2,000 \times 100$) and the moisture is 60 percent. Either term can be used to describe the dry matter/water relationship. Conversion between the two terms is as follows:

$$\% \text{ dry matter} = 100 - \% \text{ moisture} = 100 - 60 = 40$$

$$\% \text{ moisture} = 100 - \% \text{ dry matter} = 100 - 40 = 60$$

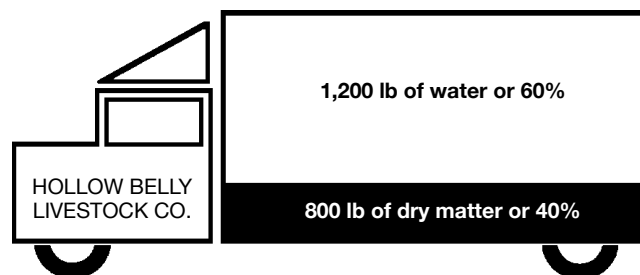


Fig. 1. High moisture balage containing 60 percent water.

In laboratory reports, nutrient composition of feeds is recorded with and without correction for moisture content. As-fed composition is used to describe feeds without correction for moisture and relates to the composition of the feed at time of feeding and (or) in storage.

Some feed testing laboratories use the term “as-received” in place of “as-fed” when reporting nutrient composition of a feed. As-received and as-fed analysis will be equivalent if moisture is not lost between time of sampling, analysis, and feeding. “Dry matter basis” is a term that is used to express the nutrient content of a feed without the moisture included. Therefore, the proportion of each nutrient will be greater on a dry matter basis compared to the as-fed value.

In some situations, only one form of nutrient composition is available: either the as-fed values or values on a dry matter basis. It is important to fully understand the difference because as-fed composition and dry matter composition are different. The magnitude of the difference will depend on the moisture content.

To compare the amount of protein in two feeds with differing amounts of moisture, the percent protein must