



# Recognizing Value in Liquid Supplements

Beef cows provide the opportunity to productively utilize forages from marginal and untillable lands, and the fibrous residues from crops used for feed, fiber and fuel. But while cattle are able to digest and use these roughages, limited amounts of supplemental feeds are often also required to support optimal production and health.

Producers are faced with a myriad of supplementation products and programs to choose between. The 'right' choice must take into account nutrition, economics, and practical application. In many cases, molasses-based liquid supplements can deliver value in all three areas.

## NUTRITION

Supplementation of a forage diet should primarily target the needs, not of the cow, but of the rumen microbes in her rumen.

When the mix of feed reaching these 'bugs' contains all they need, in the combinations and forms they require, their numbers increase and so does their activity.

Feed is broken down more thoroughly, yielding more nutrients. And it passes through the system faster, opening space for additional forage intake. So the cow benefits from more total feed, plus more usable nutrition out of every mouthful.

With the forages typically fed to beef cows, the nutrient most limiting to this process is crude protein (nitrogen). Research strongly supports the value of 'protein supplements' – those with at least 25% CP – in improving forage utilization.

Supplements also contain energy, and it is important to supply it in a form beneficial to the fiber-digesting microbes. Sugars and soluble fiber fit this role, but starch and fat do not. At moderate to high levels, these can actually depress forage consumption and digestion.

Maintaining a stable environment, especially in terms of pH and nutrient availability, also helps support rumen microbial populations.

## ECONOMICS

No matter how "cheap" a feed appears to be, it isn't a good buy if it doesn't meet nutritional needs or logistically fit an operation. And even if the product is a viable option, cost per ton simply does not give enough information to guide a buying decision. Consider instead cost per unit of needed nutrient, or cost per head per day to deliver needed nutrition.

Supplementation carries costs beyond product. When comparing options, consider cost of storage, handling, time and labor, waste, and transportation.

### COST PER POUND OF PROTEIN

A] Liquid Supplement, 35% protein, \$350/ton  
 $(350/2000) \div .35 = 50¢ \text{ per pound of protein}$

B] Commodity mix, 16% protein, \$275/ton  
 $(275/2000) \div .16 = 86¢ \text{ per pound of protein}$

### COST PER HEAD PER DAY

–Target 0.7 lb of Supplemental CP–

A] Liquid Supplement, 32% protein, \$340/ton  
 $(340/2000) \times (.7 \div .32) = 37¢ \text{ per hd per day}$

B] Cubes, 18% protein, \$230/ton  
 $(230/2000) \times (.7 \div .18) = 45¢ \text{ per hd per day}$

## PRACTICAL FIT

Unless you have nothing else you need or want to do, convenience matters. And nothing is more convenient than self-fed supplements, especially when feeders are filled directly by a dealer.

Free choice supplements also allow every animal to get their share, and for intakes to match changing needs.

No one wants to invest in feed just to have it go to waste. Liquid supplements are stored and handled in closed systems, meaning minimal shrink or wastage.

Feeding programs need to fit the available resources and needs of the operation. Liquid feeds offer flexibility in delivery options: offered in lick wheel feeders, directly applied to forages, incorporated with bale processors, or included in mixed feeds or rations.

## COMPARING LIQUID SUPPLEMENTS

Liquid feeds can effectively, and cost-effectively, provide the nutrients needed to complement a range of forage-based diets. Formulations containing relatively high levels of crude protein and sugars help fuel the rumen and optimize forage utilization. Products may also be fortified with essential minerals, vitamins, and additives. But not all liquid supplements deliver the same value, or support the same outcomes.

Ingredient selection, overall composition, and manufacturing processes can significantly impact nutritional quality, animal intakes, handling characteristics, and even spoilage potential. A product available at a low per-ton cost may actually lead to increased total costs due to high intakes, problems with separation, freezing or pumping, or even reduced animal performance.

The feed tag is a valuable tool when making product comparisons. Be sure to consider:

- **Dry Matter.** Liquid feeds can range from less than half to almost 70% DM. A 50% DM product, at \$250 per ton, costs \$500 per ton of DM. A 65% DM product, at \$300 per ton, costs \$460/ton DM.
- **Protein.** With low and moderate quality forages, research shows the best responses to supplements with 30-40% protein concentrations. Many liquid supplements supply a large portion of their CP as non-protein nitrogen (NPN), primarily as urea. A review of research literature affirms the effectiveness of this naturally-occurring nitrogen source when delivered in liquid feed.
- **Sugar.** The sugars and other compounds found in molasses help fuel rumen fermentation, and contribute to a steady availability of carbohydrates in the ruminal environment. If sugars are not guaranteed on the feed tag, the level is likely low and possibly variable between loads.
- **Minerals.** Fortification of essential minerals can range from essentially none to a complete package that eliminates the need for additional supplementation. Sources can also vary; as with any mineral supplement, the greatest value comes from those with greater bioavailability. It is also important to be aware of the units used on the tag; some companies have been known to switch to units that allow them to display a larger numeric value in hopes of impressing a casual observer.
- **Fat.** There may be times when low levels of fat would be considered beneficial. But high levels of fat, coupled with high intakes, can depress fiber utilization. High fat inclusion without use of proper suspension agents (clay or gum) will lead to product separation and inconsistent and unbalanced nutrient delivery.
- **Clays.** Clay may be included in a liquid supplement to keep large amounts of fat, mineral, or additives uniformly distributed throughout the feed. However, fairly high levels of this suspension agent must be used to be effective, thereby displacing and diluting ingredients with nutritional value. Conversely, xanthan gum, when used for the same purpose, is included at very low levels.
- **Salt/Chloride.** Because cattle consume a specific amount per day, salts are typically used to assure a desired intake level of dry mineral mixes or liquids delivering mineral packages. If a liquid has high salt or chloride levels, but needs to be fed with a dry mineral to meet those requirements, the salt consumed with the liquid will discourage adequate mineral intake.
- **Group terms.** Feed companies are allowed to use group terms such as “molasses products” on their tags to allow flexibility in formulation without having to change tags. Basically anything that started out as a molasses can be a molasses product, including multiple fermentation by-products. These have already been exposed to a microbial population, meaning nutrients such as sugar have likely already been used up. And any feed, liquid or dry, with group terms in the ingredient listing are liable to be less consistent over time.
- **Intake flags.** Low dry matter, low protein, and low phosphorus are affiliated with increased intake levels.