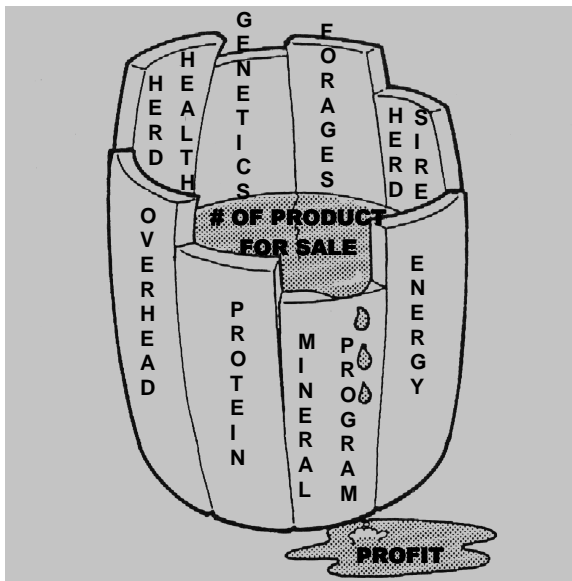


## HAVE YOU EVALUATED YOUR MINERAL PROGRAM?

Britt Hicks, Ph.D.

Area Extension Livestock Specialist  
Oklahoma Panhandle Research & Extension Center  
Goodwell, OK

The proper balance of protein, energy, vitamins and all nutritionally important minerals is needed to make a successful nutrition program. Nutrient balance is the key to any effective nutrition program. Going into the fall and winter, it is time to evaluate your mineral program to be sure that it is optimal for the situation. As our knowledge of minerals grows, we are finding out that minerals may limit production in better-managed herds to a much greater extent than generally recognized. **The most limiting factor in an operation dictates productivity.** This concept is illustrated in the figure below. In this example, water is lost from the lowest slat in the barrel (mineral program) and the effect of other limiting factors (protein, energy, herd health, forage, genetics, etc.) would not be realized until the proper mineral program is provided. **In many operations, the mineral program is the most limiting factor.** In many grass pastures, phosphorus is frequently the most limiting nutrient. Whereas, in small grain pastures such as wheat or oats, calcium and/or magnesium are frequently more limiting.



Recent surveys have suggested that the trace minerals, copper and zinc, may be limiting nutrients in many situations. In a national forage survey of 352 samples, only 2.5% of the samples contained adequate zinc and 36% of the samples contained adequate copper. Similar deficiencies have been observed in 1113 forage samples that I have collected over the last several years predominantly in Oklahoma and Texas. In these samples, only 14.6% provided adequate zinc and 39.4% were adequate in copper. Cattle cannot perform to their genetic potential even if you meet over 100% of their protein and energy needs but fail to meet their mineral needs.

These surveys suggest that nearly all forages are deficient in one or more minerals and that there is a widespread occurrence of deficient levels of copper and zinc for beef cattle grazing forages. This is further

complicated by the fact that the availability of minerals may be affected by the distribution and form of mineral in the feedstuff, as well as interactions with other minerals or dietary components that inhibit absorption or utilization of a given mineral. Research has shown that mineral deficiencies in ruminants fed forages often result from low availability rather than low concentration of a given mineral. Just because minerals can be found in plants does not mean they are available to the animal. Soil mineral level, soil pH, climatic conditions plant species and stage of plant maturity all factor into mineral content and bioavailability for forages. For these reasons, it is important that cattle be on a good, balanced mineral program so as to optimize performance.

Adequate minerals should always be available in any operation. Recognize the role minerals play in good health as well as fertility and growth. Frequently, the first thing a producer cuts from his program during tight times is the mineral program. Cutting the mineral program is never recommended since minerals are important in maintaining reproduction and performance. Cutting minerals out of a feeding program may reduce cost in the short term but will reduce returns and

effectively increase cost over the long term. Based on my personal research experience with minerals over the last 20 years, I am convinced that marginal deficiencies in minerals probably are more costly to producers than are the added profits from animal drugs such as ionophores or antibiotics