

## Consider Supplementation

### INTRODUCTION

When calves are at a high value, supplementing nutrients to cattle grazing pasture can be a profitable practice. The period following weaning is a when calves are biologically ready for a rapid growth and development. These calves have developed a functional rumen thus allowing efficient use of forage. The level of forage intake is a major restriction for production of stocker cattle.

Feed supplementations may increase forage intake as well as correct nutrient deficiencies. Most forage, including improved forages, is not always nutritionally balanced for the type and class of cattle that are grazing the pastures. For maximum production efficiency, cattle should be given certain minimum levels of nutrients. The nutrients that are commonly deficient in grazed forages are: protein, energy, phosphorus, salt, and some trace minerals depending on the soil and forage content.

Supplementation is a method which allows the calves to consume a feed or mineral and balances the forage grazed to optimize production. Supplements are used for several reasons:

1. Supply deficient nutrients
2. Increase intake of forage
3. Improve growth rates
4. Better utilize the forage
5. Increase stocking rates

### SUPPLEMENT CONCEPTS

A supplement program needs to consider the type of forage available, and the type of cattle that will be grazing the forage. An inventory of the nutrients available to the cattle from the forage has to be considered. The primary nutrients necessary for optimal growth of cattle consist of energy, protein, minerals and vitamins.

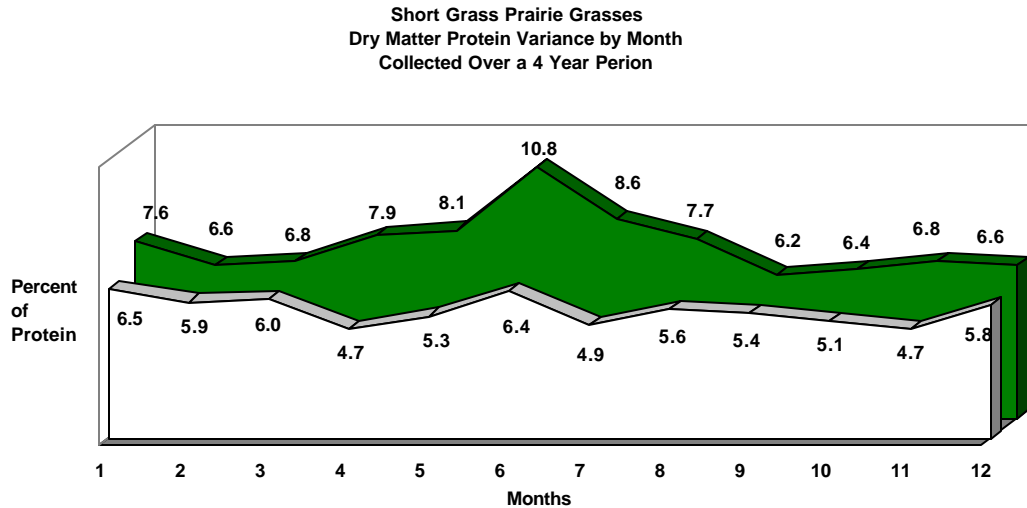
Forage nutrient values may be chemically determined or may be established from published values. However, when published values they may not represent the actual nutrients available from the forage. Irrespective, to establish a proper supplementation program, an estimation of these nutrient values should be available.

The goals, or performance, of the cattle grazing these forages must be established. If cattle are not to gain optimally, then a minimum of supplementation is necessary, or none. As an example cows grazing improved forage nursing calves can do well with a mineral supplementation where as first calf heifers may not do as well. The first calf heifer depending on age and weight at may require more protein and energy that can be consumed. Remember first calf heifers need protein and energy for maintenance, growth, for milk production and condition to be rebred. First calf heifers have not reached their mature growth

While mature cows can consume enough forage to meet maintenance, milk production and be in condition to rebreed.

Figure 1 represents the changes of forage for protein within a growing season. This example illustrates the variability for protein during the growing season for short prairie grasses. Depending on the size of the calf, the protein may be

deficient for expected gains. The calf needs to consume daily the protein and energy necessary for optimum gains.



How much to supplement often becomes a question when more than minerals are considered? Data was summarized for cattle grazing mostly Bermuda grass pastures to determine the effect of additional grain fed on the performance of cattle. Table 1 illustrates the expected additional gain of a 500 lb grazing calf at different consumption levels of energy in the form of grain. The optimum grain intake per day is optimized at 1 to 3 pounds of grain per head per day for a 500 lb grazing calf with respect to converting grain into gain (Feed to Gain).

Table 1. Gain Expected from Supplemental Energy from Grain.

Supplement lbs/day	Additional Gain lbs/day	Feed to Gain Additional Gain
1	0.12	8.3
2	0.24	8.3
3	0.34	8.8
4	0.43	9.3
5	0.51	9.8
6	0.58	10.3
7	0.64	11.0
8	0.68	11.8
9	0.72	12.5
10	0.75	13.3

Protein is necessary for maintenance and growth of rumen microbes and animal tissue in the grazing calf. The National Research Council, developed a system for expressing the protein requirements for ruminants in terms of degraded intake protein (DIP) and undegraded intake protein (UIP). DIP is soluble and is

utilized by the rumen microbes to produce microbial protein that can move to the lower gut and be absorbed and utilized for maintenance, growth, lactation and reproduction. Undegraded Intake Protein (UIP) is protein that is not degraded in the rumen and is described as by pass protein or escape protein. This is protein that can be absorbed in the lower gut and utilized by the animal for maintenance, growth, lactation and reproduction. The system can be used to determine deficient nutrients in forages and supplements can be designed to best use the forage. Bermuda and Rye grass pastures protein fractions are illustrated in Table 2.

Table 2. Percentage protein fractions DIP and UIP for Bermuda and Rye Grasses

Grass	Dry Matter Crude Protein %	Digestible Intake Protein % (DIP)	Undegraded Intake Protein % (UIP)
Bermuda Grass	14	10.5	3.5
Rye Grass	20	16.0	4.0

### Summary

The goal of a supplement program for the cow operation to optimize the forage available for cows and bulls. When designing the program it is important to establish the goals of the program. When calf prices are high and forage is available then perhaps a program for calves to gain additional weight might be considered. The supplement for weaned calves should contain protein and be compatible to maximize gains from the forage. Grazing yearling programs can supplement with lower protein than weaned calves.

Implementation of a supplement program requires delivering to the cattle a higher intake than minerals alone. Methods of supplementation are feeding the supplement in feed troughs, cubes fed on the ground, cooked and or chemical blocks and tubs and use of self feeders. To supplement beyond minerals may require additional facilities and equipment.

Mineral supplementation should be the minimum supplement for a cow calf operation. Protein and energy supplements should be considered and designed when the goals can be met for a return on the investment of supplementation.

Proper supplementation at proper times can improve cow and calf performance.

Dr. David Hutcheson, PhD.  
 Animal-Agricultural Consulting, Inc.  
[Dhutch1941@sbcglobal.net](mailto:Dhutch1941@sbcglobal.net)  
 806-359-1091 office/fax  
 806-676-0525 cell phone