

Supplemental Needs for the Beef Cow Herd

Beef cow nutrition is important to the profitability and reproduction in the beef cowherd. The income and profitability of a beef cow herd is related to the rebreeding and reproduction rate of a herd. Other factors are calf weaning weights, percent of cows weaning calves, cost of maintaining the cow per year and price of calves. Nutrition and supplemental feed cost becomes one of the essential items that influence the profitability of the herd.

Body Condition Score (BCS) is a tool to evaluate the beef cowherd. BCS 5 allows rebreeding to occur within 80 days of calving. Regaining BCS from 3 to 5 during the winter requires additional energy through feed. Nutritional needs during the reproduction cycle are presented. Additional nutrition during environmental stress periods can improve the productivity of the Beef herd.

Supplemental protein is important at critical times for the Beef cow. Different forms of protein can be used including non-protein nitrogen or urea but guidelines should be followed when urea is used for Beef cows.

Minerals are necessary and most forage is deficient in salt and phosphorus. During certain growth periods of forage other minerals may be deficient. Trace minerals can be important during the reproductive cycle of beef cattle. Different sources of trace minerals have different biological availability for Beef Cattle.

Vitamin A may be deficient for beef cows during long dry periods when forage is not growing such as during drought periods. Vitamin can be stored in the liver if there is adequate intake of carotene.

Determining supplemental needs of beef cattle can be a challenging experience. Frame sizes, body condition, feed quality, types of feed and fluctuations in air temperatures all impact on feed consumption. Over-feeding is costly and wastes feed, while under-feeding may cause poor performance in the breeding herd.

The priorities for nutrient supplementation are

1. mineral-vitamins as first priority
2. protein as second priority
3. energy as third priority.

Minerals-Vitamins

A mineral-vitamin supplementation program is evaluated first since mineral and vitamin deficiencies can reduce growth, body condition score, and pregnancy rate. When considering cost, mineral-vitamin supplements are usually the more cost effective than other supplemental nutrients. The return on investing in effective mineral-vitamin supplementation can be significant Mineral supplemental cost will vary from \$8 to \$15 per cow per year.

Minerals known to be deficient and reduce performance incattle grazing forages are sodium, phosphorus, copper, cobalt, and selenium. Vitamins are not usually deficient, but cattle consuming dry forages (hay or frosted grass) for 2 months or more may have depleted liver reserves of vitamin A and benefit from supplementation.

A complete mineral supplement containing salt, calcium, phosphorus, and trace minerals is recommended to be provided free-choice. Mineral consumption varies across pastures, seasons and cattle, but average consumption of 2 oz/head/day of a mineral containing:

- 25% salt
- 14 to 18% calcium,
- 8% phosphorus
- 0.4% zinc
- 0.2% iron
- 0.2% manganese
- 0.15% copper
- 0.016% iodine
- 0.01% cobalt
- 0.002% selenium

will be sufficient in most cases. However, forages should be evaluated to determine the proper mineral supplementation.

Protein Supplementation

Protein supplements have been shown to increase forage intake and digestibility when protein is deficient. Protein supplements may increase forage consumption by 15 to 45%. Supplementing protein is usually more cost effective than purchasing energy supplements with low quality forages. Low or poor quality forages are expected to be consumed at 1.5% body weight or less and feeding a protein supplement will increase forage intake and digestibility improves performance

Low- to medium-quality forages do not perform as well when NPN (Non Protein Nitrogen) is included in the supplement. Bacterial protein synthesized per unit of energy is not constant and is affected by intake level, fiber content of the diet, and forage digestibility. Natural protein supplementation appears to be the protein of choice for low to medium quality forages.

Select the protein supplement that is the correct type and has a low cost/lb CP consumed. The cost of protein will depend on the supplement, quantities purchased, losses, and equipment and labor availability and cost. The first list the supplements that fit your needs and can be used in your system, then evaluate the cost of protein from these sources. The cost of protein (\$/100 lb) is calculated by dividing the cost of 100 lb of each protein source by the protein fraction (% protein/100). As an example for soybean meal costing \$235/ton or \$11.75/100 lb (235/20), 100 lb soybean meal contains 48 lb protein and 100 lb protein costs \$24.48 (11.75/.48).

The variation in purchase cost of protein supplements is related to the quantities purchased. Supplements that are formulated to be self-fed, which require less equipment and labor are usually more costly. Other costs that need to be added to purchase cost include transportation to your ranch, storing and feeding equipment maintenance and replacement costs, storage and feeding losses, and labor costs for storage and feeding each supplement. Protein supplements offered free-choice may be consumed above or below what is needed to meet supplemental protein requirements. As an example, if a

protein supplement needs to be consumed at 1.5 lb/day to meet protein requirements but is consumed at 3 lb/day, the additional 1.5 lb/day will improve performance based on its energy concentration. The additional supplement consumed above that needed to meet protein requirements should be valued at the cost of energy supplements.

Energy Supplementation

The costs of energy supplements can be significant and consideration should be to supplement only cows and heifers that will give an economical response. Energy supplementation will not be economical for cows that lost calves or cows in BCS 5 or above and calving late.

The cowherd can be divided into three categories for energy supplementation.

1. **Mature Cows in Good Condition**

Average quality hay supplemented with grain, minerals and vitamins, will meet the nutritional needs of this group.

2. **Bred Replacements and Second Calvers**

Young growing animals do not compete effectively for feed with the mature cows.

The heifers require either good quality hay or possible extra feed to meet their needs for growth and development.

3. **Thin and Old Cows**

This group of cattle may also have trouble competing for feed with the mature cows.

Body Condition of the Cows

- The body condition of cows starting supplemental feeding period has a major affect on the amount and quality of feed required.
- Cows have more difficulty gaining weight in winter than fall.
- Thin cows in the fall must gain weight throughout the winter. They require good quality forage or average quality forage with supplemental grain.
- Cows in good condition in the fall need enough feed to gain weight equal to the weight of the calf and cow.

Conclusion

Cow-calf production utilizes forages to provide most of the nutrients needed for maintaining the cow, growing the calf, and developing replacements. However, beef cattle need supplements in addition to forages during some phases of production and seasons of the year to support genetically achievable and economically optimum performance.

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