

**COW/CALF NUTRITION****Pasture Supplementation of Beef Cattle****Alfredo DiCostanzo****University of Minnesota Beef Team**

The mature beef cow is well suited to grazing cool season grasses, and grass-legume mixtures prevalent in the Upper Midwest. Indeed, it is seldom necessary to consider supplementation unless specific cattle management goals, drought, or forage shortages are considered. Yet, for the mature beef cow, mineral, particularly trace mineral supplementation should not be forgotten during summer grazing. Calcium and phosphorus are typically high in forages or diets fed to cows in the Upper Midwest. Magnesium may need to be supplemented when nitrogen or potassium concentration of forages is elevated due to fertilization, when high-milk-producing cows grazing lush spring pastures (grass). Also, of special interest is the fact that many forages in the US are limited in two micro-minerals (copper and zinc), and the concentration of selenium (another micro-mineral) is highly variable and can fluctuate from limiting to excessive in various regions of the country.

Minimum trace mineral concentrations (when feeding 2 oz/cow/day) for zinc, copper and selenium in the supplement are 4000 ppm or .40% from zinc sulfate or zinc oxide, 800 ppm or .08% from copper sulfate, and 10 to 20 ppm or .001% to .002% selenium in areas where selenium is needed. When formulating mineral supplements for Simmental, Limousin, Charolais, or Maine-Anjou cattle and their crosses, it is important to remember that their requirement for copper is 1.5 times higher than the base requirement (10 ppm). Similarly, Jersey and Brahman cattle are more susceptible to Cu toxicity.

Producers (and researchers) are often interested about differences in performance in response to various sources of minerals (organic vs inorganic). Although still under study in various universities, organic mineral sources were observed to improve growth and reproductive performance in three studies (Colorado and Minnesota) where high levels of performance (embryo transfer or response to estrous synchronization and artificial insemination) were expected. In these studies, the base forage was deficient in copper and zinc.

Heifers exposed to breeding for their first year are actively growing, and often they may not harvest grass in sufficient amounts (low forage availability), or the quality may be compromised (drought or inadequate grazing management). Nutritional deficiencies experienced during the first breeding year lead to poor winter body reserves and poor reproductive performance during the second breeding.

Whether weight gain is required for heifers to winter in adequate body condition (better than BCS 5 at the end of grazing season) or to recuperate from a poor summer forage supply, prudent choice of supplements permits reaching the desired objective in a cost effective manner. When supplementing energy to grazing cattle, using starch supplements (corn) reduces forage intake. However, when supplementing energy in a moderate to high protein supplement, forage intake is

not depressed significantly. Therefore, strategies to supplement growing cattle on moderate- to high-quality grassland depend on short- and long-term management goals. If growth is required with no concern for reduction in forage intake, as may be the case for ensuring that lightweight bred heifers undergo catch-up growth, then high-starch formulations are recommended. On the other hand, when attempting to optimize forage use, use of low-starch, high-protein formulations is recommended.

The decision to supplement creep feed to suckling calves is directly based on market endpoint, supplement cost, and pasture conditions. When given the choice, calves will continue to suckle and consume creep feed preferentially over consuming grass. Thus, when experiencing severe drought, creep feeding presents a less drastic alternative to preserving forage for use by the mother cows than early weaning, at least temporarily. Low-cost creep feeding supplements, resulting from feeding low-cost supplements fed at high intakes or high-cost supplements fed at low intakes and high calf prices support the use of creep feed.

A list of situations when creep feeding may be advantageous is provided:

Calf prices are high relative to feed prices

1. Fall-born calves
2. Calves from first-calf heifers
3. Forage for cows is limited
4. Maximum weight or “bloom” is desired
5. Male calves
6. Large-frame, late-maturing calves

On the other hand, creep feeding may be less apt to be advantageous when:

1. Feed prices are high relative to calf prices
2. Heavy milking cows
3. Forage is abundant
4. Heifer calves
5. Smaller-framed, earlier maturing breeds
6. Spring calves
7. When calves are to be backgrounded on a high-roughage diet

For specific situations, expert and specific advice should be sought. The situations mentioned above should provide a start for an informed discussion on pasture supplementation with your nutritionist.