Beef Up Your Mineral Feeding Program: *Are Your Cows Getting What They Need in the Third Trimester of Pregnancy?*

By Erik Brettingen, B.S.

Limiting or decreasing the amount of mineral provided to beef cattle is a common practice to save money throughout the year for some beef producers. If a cow is shorted the vitamins and minerals needed during the third trimester of pregnancy, it will negatively affect the health of the cow and her calf. The third trimester is a critical time, with 75% of the calf's total weight gain occurring over these three months[1]. The fetus's growth increases the nutritional stress load on the dam and cows that don't consume enough mineral during this period deplete crucial reserves of many nutrients such as calcium, copper, manganese, selenium, and zinc. By reducing supplemental mineral during this time, future rebreeding, immune function, udder health, and calf health can all be negatively affected. Providing an adequate supply of supplemental bioavailable vitamins and minerals during the third trimester is a must to maximize health and productivity of both the cow and her calf.

Uterine Health and Re-Breeding: Mineral depletion can affect reproduction in a couple different ways. The first is due to improper immune function. The placenta is attached to the cow's uterine lining by little circular structures called cotyledons. These cotyledons attach to caruncles on the cow's placenta to create the connection that delivers nutrients to the calf while in utero. Shortly after birth, these connections are dissolved by the cow's white blood cells, and the placenta is expelled. White blood cells are the first defense of the immune system and they require proper mineral levels for optimal function. Zinc, copper, manganese, and selenium are key building blocks for antioxidants, proteins, and enzymes that are critical to immune function[2]. If the immune system doesn't have these key trace minerals available, it becomes suppressed and unable to properly separate the placenta from the cow's uterus. This results in a retained placenta which increases the cow's odds of developing a uterine infection. Cows that develop uterine infections are more challenging to get pregnant and often need to be culled.

The second way in which mineral supplementation affects re-breeding is due to organ function. The estrus cycle needs nutrients to properly develop and produce an egg that is available to be fertilized, and if fertilization occurs, the uterus must be healthy and provide an optimal environment for a growing fetus. The tissues involved in this process cannot function properly and support a pregnancy if the cow's vitamin and mineral reserves have been depleted from growing the previous calf without proper supplementation. Cows supplemented with highly bioavailable trace minerals are open for fewer days and become pregnant after being exposed to fewer services.

Udder Health: In the third trimester the udder must develop and prepare for the demand that is to come, producing high volumes of milk for the calf. Cows supplemented with adequate levels of Vitamin E and highly bioavailable trace minerals have significantly lower somatic cell counts, higher milk fat and protein levels, and higher overall milk production. Mineral supplementation can also increase antibodies in the colostrum produced by the cow [3]. These udder health benefits are very advantageous to the calf. Higher volumes of increased fat and protein content in milk mean better average daily gains and a thriftier calf at weaning time. Increased antibodies in colostrum give calves added protection against harmful pathogens and diseases for the first few weeks of their life.

Musculoskeletal Calf Health in Utero: During the last 3 months of pregnancy, a cow must gain

1.0 pound per day to keep up with the growing fetus. This added weight gain, paired with a growing placenta, fetus, and an udder preparing for lactation, add up to require 25% more nutrients than were needed in early gestation[4]. The growing calf needs ample amounts of vitamins and minerals to develop a healthy musculoskeletal system and a high-functioning immune system. Selenium is of special concern as it is vital for muscle growth and prevention of white muscle disease in the calf.

Crystal Creek® Beef Mineral General Feeding Guide

Production Phase	Mineral Feeding Strategy
Phase 1 (Calving, Lactation)	Full Free-Choice Crystal Creek® Beef Mineral
Phase 2 (Lactation, Re-Breeding, 1st Trimester of Pregnancy)	Full Free-Choice Crystal Creek® Beef Mineral
Phase 3 (2nd Trimester of Pregnancy, Dry)	Cut Crystal Creek® Beef Mineral with added salt to save money
Phase 4 (3rd Trimester, Rapidly developing calf, preparing for calving and lactation)	Full Free-Choice Crystal Creek® Beef Mineral

Crystal Creek® Beef Mineral Promotes Cow and Calf Health:

Crystal Creek® Beef Minerals are formulated with high quality, readily bioavailable polysaccharide chelated trace minerals. The selenium source in the Crystal Creek® Beef Mineral is selenium yeast, which is over 85% bioavailable to the cow compared to sodium selenite, which is less than 25% bioavailable. The strong vitamin levels provide everything the dam needs for the growing calf, developing a healthy and productive udder to nourish the calf, and a successful rebreed. Call 1-888-376-6777 to speak with a Crystal Creek® nutritionist to learn more.

Sources:

[1] http://igrow.org/livestock/beef/whats-going-on-in-there-fetal-development-of-the-beef-calf/

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[2] https://www.animalsciencepublications.org/publications/jas/abstracts/92/2/416?search-result=1

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[3] http://www.lrrd.org/lrrd24/12/muto24220.htm

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[4] http://www.sites.ext.vt.edu/newsletter-archive/livestock/aps-97_12/aps-851.html

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