

Mineral Moxie

That last one-third of a cow's pregnancy is the time to use your mineral smarts.



Cows in the last trimester of pregnancy and the first 100 days following calving require a conscientious mineral program.



Vernon Hill, Va., Angus breeder Mike McDowell feeds a mineral with extra copper and selenium formulated for his area.

Story & photos by
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If your budget for cow minerals doesn't stretch year-round, at least make sure your females get what they need that last trimester of pregnancy.

"We need to focus the most on mineral nutrition the last trimester of pregnancy and the first 100 days following calving when cows are rebreeding," says John Arthington, University of Florida animal scientist. "That includes both the quality of the mineral nutrition as well as the assurance they are eating the mineral in the proper amount."

He explains, "Copper (Cu) and zinc (Zn) are both excreted from the body during stress, and calving is very stressful. Cows need stores in their tissues to replenish those lost in calving. They are also putting minerals in the calf through fetal growth."

Montana Extension beef cattle specialist John Paterson agrees.

"We worked with a set of cows at Montana State Prison and did liver biopsies on them. We monitored how their mineral status changed over a 12-month period, primarily with copper," he explains. "The data showed the animals really started losing copper from the liver that last trimester. It makes sense. They were sending it over to the fetus."

He adds, "It looked to us like they

were building zinc levels in the liver before calving, but those declined after calving. Zinc is necessary to repair tissue, and calving is an insult to the cow's body."

Angus breeder Mike McDowell, Vernon Hill, Va., agrees with Arthington and Paterson on the importance of quality mineral nutrition.

"We use a loose, free-choice mineral Virginia Tech recommends for our area with extra selenium (Se) and copper, as well as calcium (Ca) and phosphorus (P) at a 2:1 ratio," he says. "We're in a selenium- and copper-deficient area, and we've seen responses from increased levels of selenium and copper in fertility and health."

Paterson says the levels of macrominerals, particularly calcium, phosphorus and magnesium (Mg), also need to be emphasized.

"Our guys are usually feeding hay the last trimester of pregnancy," he explains. "In droughty parts of the country it is usually barley, wheat or oat hay. These annuals have



really high levels of potassium (K) and low levels of calcium and magnesium. Grass tetany is caused by a deficiency of magnesium in the diet. I think that's caused by an excess of potassium."

Paterson notes that on winter range, cattle don't tend to have problems with tetany. However, when winter range is gone and spring growth is lush and green, "you better have the magnesium out there," he says.

The good news is, at times, producers can safely cut their mineral budget by letting their cows get the minerals they need from their feed supplement.

"Many producers oversupplement minerals to cows during the winter supplementation period," Arthington explains. "Almost every commercial winter energy and protein supplement

contains a fortified macro- and trace-mineral pack. So why feed them extra free-choice minerals?"

If cows' mineral needs are being met that last trimester of pregnancy, either from their feed or mineral supplement, chances are their calves benefit from it, too.

"We did a small study and divided cows into three groups," Paterson elaborates. "One group got no minerals the last

third of pregnancy, the other got organic minerals and the third group got inorganic minerals. We didn't have enough numbers [for it to be statistically relevant], so what I have is my opinion. It looks like there was a case or two less of calf scours in the mineral groups."

Arthington says it makes sense that selenium, supplied to the cow in the last trimester of pregnancy, should have a positive effect on calf health. "It appears

selenium has a nice impact on the ability of the cow to expel her placenta, it has a nice impact on the formation of quality colostrum, it is linked to decreased bacterial counts in milk, and a deficiency of selenium is linked to white muscle disease."

McDowell not only makes sure his cows get the minerals they need during the last part of pregnancy, but also gives his

(Continued on page 112)

Organic vs. inorganic

When it comes to minerals, it seems organic vs. inorganic is a popular subject for debate. John Arthington, University of Florida animal scientist, comments, "If producers are interested in using an organic mineral but only have room in their mineral budget to use them at certain times, I urge them to use them during the last trimester of pregnancy and the first 100 days following calving, during rebreeding. That is clearly when their use is most important."

"There is a lot of variability in the data with organic vs. inorganic minerals, but organic minerals — minerals complexed to an organic carrier — are more available to the animal," Arthington says.

He adds, "With organic mineral studies, we have seen very good responses with first- and second-calf heifers in overall pregnancy rates and days open. By the time they are 3- and 4-year-olds those benefits are almost always lost."

The Florida researcher says there are two exceptions. He says one is when there are antagonists in the forages, like sulfur (S), iron (Fe), molybdenum (Mo) or aluminum (Al). The other is when producers have trouble getting cows to eat minerals. "Then maybe even mature cows will respond," he says.

"In today's market, it is not hard for producers to find multiple alternatives when they purchase inorganic and organic minerals during different seasons of the year," he says. "Usually the same manufacturer will provide those alternatives."

Mineral Moxie (from page 23)

newborn calves a 2-cc injection of Bo-Se[®], a selenium-vitamin E injectable by Schering Animal Health. “We have seen improved health and survivability in calves and a lower incidence of scours,” he reports.

As important as minerals are, though, Paterson says there are two areas that are

even more vital — overall nutrition and a thorough vaccination program.

“Do you have the quantity needed, the daily intake of protein and energy? Are you maintaining a body condition score (BCS) of a 5 or 6? If you aren’t, you have bigger problems than minerals.”

He shares that in a University of Idaho study, one group of cows got 50% of their required protein while the other group got their full required amount of protein. Ten percent of the calves in the 50%-protein group had weak calf syndrome. “That is striking,” he says.

He also emphasizes, “It is so critical to work with your local veterinarian to make sure you have a good vaccination program. The vaccination titer is better with a good mineral program. Both of these have to go together.”



They only count when they're in the cow

The highest-quality minerals in the world, along with faithfully filled mineral feeders, don't do a bit of good if the cows turn up their noses at them. And yes, that is a common problem. Check out the chart (Fig. 1) from University of Florida animal scientist John Arthington. The spikes are times when cows ignore free-choice minerals.

Jane Parish, Mississippi Extension beef specialist, recommends, “If cows aren't eating enough minerals, move the mineral feeder near water or other places your cattle tend to congregate. Also check mineral frequently for caking, and break loose any caked mineral. Make sure salt is mixed in the mineral mix, too. If you offer it separately, your cows may tend to eat the salt and ignore the minerals.”

Arthington suggests, “If you are buying a commodity blend feed, get the mill to mix a low-cost mineral supplement with it. That is an excellent way to supplement cows with minerals.”

If you are feeding a straight commodity feed, he says you can get the local feed mill to mix up a mineral-based range cube or cake and feed it twice a week. “That is simple and easy to do,” he says.

If you are providing your cows' minerals through feed, though, he recommends, “Always make sure the mineral feeders are full of white stock salt.”

Fig. 1: Decrease in voluntary free-choice mineral intake (increased refusal) during the winter months

This refusal corresponds directly to the provision of winter energy/protein supplements. Once winter supplementation ends, the cows begin to readily consume free-choice mineral again.

