Minerals are essential nutrients. For example, sodium, chlorine and potassium are crucial to maintain fluid balances in the body and blood. Sodium chloride (salt) should always be provided because cattle need more salt than occurs naturally in forages. Iron is an important component of red blood cells enabling them to carry oxygen. Bone formation and milk production depend on calcium and phosphorus.

Calcium and phosphorus are called macro-minerals because they are required in fairly large amounts. Deficiency is generally not a problem because these minerals are often present in high levels in many feeds. Phosphorus supplementation is sometimes needed, however, when cows are on dry grass or crop residues for long periods. Phosphorus levels in most harvested forages are generally adequate, unless it’s very poor quality hay. Calcium is adequate in most forages, but is higher in alfalfa than in grass.

Other minerals such as copper, iron, iodine, manganese, selenium and zinc are needed in very tiny amounts and are called trace minerals. Adequate levels of copper, zinc, manganese and selenium are crucial for a healthy immune system and optimum reproduction. Reproductive performance in cattle, skeletal development in young animals, optimum health, and strong immunity all depend on these important trace minerals. Some soils and plants, however, are short on various minerals, leaving feeds deficient. In most geographic areas of the U.S., soils are deficient in selenium.

Manganese, another important trace mineral, is important for proper bone and cartilage formation which directly affects bone growth in young animals. It is also crucial for optimum fertility in cows. Signs of deficiency in calves include skeletal deformities, swollen joints and stiffness.

Many livestock producers use supplemental minerals to augment cattle diets. These are often supplied in salt/mineral mixes, provided free choice. Consumption is varied however, with some animals consuming too much while others eat inadequate amounts or none at all. Also, other aspects of diet (including certain minerals that may negatively interact with the supplement during digestion) may hinder absorption by the body. Because of this variability, some stockmen resort to individually dosing their animals by drench, bolus or injection to make sure the cattle directly receive the necessary minerals. In recent years, the value of injected trace minerals has been scientifically recognized. Providing important trace minerals (selenium, copper, zinc and manganese) by injection has been recognized as a reliable way to ensure that cattle receive them.

According to Dr. Ron Skinner, a Montana veterinarian who does herd health/nutrition consulting, the most important time to supplement trace minerals is during the last 60 days of pregnancy when the fetus’ immune system is developing, and during the 60 to 90 days after calving until the cow is rebred.

Many livestock producers use supplemental minerals to augment cattle diets. These are often supplied in salt/mineral mixes, provided free choice. Consumption is varied however, with some animals consuming too much while others eat inadequate amounts or none at all. Also, other aspects of diet (including certain minerals that may negatively interact with the supplement during digestion) may hinder absorption by the body. Because of this variability, some stockmen resort to individually dosing their animals by drench, bolus or injection to make sure the cattle directly receive the necessary minerals. In recent years, the value of injected trace minerals has been scientifically recognized. Providing important trace minerals (selenium, copper, zinc and manganese) by injection has been recognized as a reliable way to ensure that cattle receive them.

According to Dr. Ron Skinner, a Montana veterinarian who does herd health/nutrition consulting, the most important time to supplement trace minerals is during the last 60 days of pregnancy when the fetus’ immune system is developing, and during the 60 to 90 days after calving until the cow is rebred.

TESTING CATTLE - Mineral content of soil in which feed is grown determines availability of trace minerals in cattle diets. Soil
and feed tests can be done to see if supplementation is needed. Keep in mind that overdoses of trace minerals are toxic.

If several animals in a herd experience health problems, poor fertility, poor response to vaccination, low weight gains or other signs of poor performance, a trace mineral deficiency may be to blame. One way to find out is to have your vet take blood samples, liver biopsies or urine samples from your animals. This sampling is usually adequate to measure the level of most minerals in the body, though illness may skew results. Diarrhea, acidosis, stress, fever, trauma, etc. can alter concentrations of certain minerals in body fluids and tissues.

When testing for mineral deficiencies it is important to test several animals and not just a sick one or one that died. “Traditional recommendations are to check 10 animals or 10 percent of the herd, whichever is the most logical number for your herd size. But if you only have 20 cows, 10 percent (2 cows) is not an adequate number; you’d need to test at least 5 or 6 cows,” says Dr. Skinner. “At the other end of the spectrum, if you get a good sampling of 10 cows from a 300-cow herd, this might be enough animals to test,” he says. You need to make sure you have enough samples to get a true picture of the herd’s mineral status.

SELENIUM DEFICIENCY – Soils and feeds in many regions are low in selenium, and a few areas have too much. Cattle are unhealthy if they don’t have enough, and unhealthy if they get too much. Selenium is vital for proper body function, reproduction and a healthy immune system, but in excess it is toxic causing loss of tail hair or hooves. Selenium, along with vitamin E, is crucial for producing an enzyme that protects muscle cells from damage, and is important for muscle function. According to Dr. Steve Blezinger, a cattle nutritionist in Texas, selenium deficiency has been linked to reduced immunity (reducing the number and activity of cells required for normal immune response), decreased reproductive performance, retained placenta, and general poor performance.

Selenium deficiency can lead to a wide variety of muscle diseases and weakness, reproductive problems, decrease in fertility, increased susceptibility to disease, and impaired heart function in young animals especially if dams have inadequate selenium during pregnancy. Calves may be stillborn or die within a few days of birth. In some regions, white muscle disease can occur unless the dam was supplemented or the calf is given an injection of selenium at birth. Calves with white muscle disease may be weak, or die suddenly because the heart muscle is impaired.

COPPER DEFICIENCY – Low copper levels in cattle can result in many problems from poor hair coat to reduced weight gains, impaired immune system, broken bones, or lower reproduction rates. Often it’s a subtle problem you don’t suspect unless you check copper levels in your animals. When deficiency is corrected, they do better.

One of the most visible signs of copper deficiency is change in hair color. Black animals develop a red tint and red animals become bleached and light colored. The coat becomes dull and animals may be slow to shed in the spring. In young animals, copper deficiency can result in diarrhea and higher incidence of diseases, lameness and poor response to vaccination. Affected animals may have a stiff gait; the ends of the cannon bones may be enlarged and painful, with sore fetlock joints. Pasterns may be upright, with the calf walking on its toes. Bones may be weak and brittle. Heifers may be late reaching puberty and fertility may be impaired. Cows may be slow to cycle after calving.

Cattle may develop severe copper deficiency due to excess of other trace minerals such as molybdenum or sulfur. Deficiency may be primary when there’s not enough copper in the soil or plants grown on those soils, or secondary when other factors prevent utilization of copper. Elements that bind with copper to prevent absorption by the body include molybdenum, iron, zinc, sulfur, lead and calcium carbonate. When evaluating a forage sample for copper, always look at the copper to molybdenum ratio. If forages contain less than 8 to 10 parts per million of copper, they are borderline deficient. The problem is compounded when molybdenum levels are in excess of 1 to 3 parts per million or when the copper to molybdenum ratio falls below 3 to 1.

Even if you don’t think you have a copper problem, it pays to check. Copper levels in forages can vary from year to year, depending on weather conditions, soil factors, fertilization of fields and pastures, etc. Another thing that makes it difficult to recognize a copper problem is that you often don’t see obvious signs (like discolored hair). Cattle may have subtle symptoms such as higher incidence of disease, more respiratory problems, or calves with diarrhea or disappointing weight gains.

Forage samples, blood tests or liver biopsies can determine if there’s a problem. Several strategies can be used to correct a deficiency. You can supplement with extra copper in a loose salt/mineral mix, or individually dose each animal with oral drenching, copper boluses or injections. Some of the early copper injection products caused injection site swellings, but newer products such as Multimin (providing copper, selenium, zinc and manganese) are less irritating.

Trace mineral blocks, which some ranchers rely on, generally do not contain enough copper to correct deficiencies. Even a salt/mineral mix is not 100 percent effective because cattle have variable salt intake.”

“Trace mineral blocks, which some ranchers rely on, generally do contain enough copper to correct deficiencies. Even a salt/mineral mix is not 100 percent effective because cattle have variable salt intake.”

ZINC – According to Dr. Blezinger, several extensive forage studies have shown that zinc may be the most widely deficient trace mineral. Zinc is important for proper function of many body systems, including production of certain enzymes, male fertility, and hoof structure. “Zinc is deposited in high concentrations in the liver of the fetus, if the dam has adequate levels in her body, but liver levels decline between 30 days and 9 months of age. Calves may approach weaning with marginal zinc levels. This poses a risk for weaning and feedlot situations due to zinc’s effect on appetite and immunity,” explains Blezinger. Signs of severe zinc deficiency include swollen feet with open lesions, excessive salivation, loss of hair, reduced appetite and feed intake, reduced feed efficiency and
growth, and impaired immune response.

Even if calves have adequate levels of copper, zinc and selenium, stress (such as weaning) may still cause problems. If calves are short on these important elements they are even more at risk when stressed. This is often the cause of big “wrecks” at weaning. Even if they don’t get sick, they may not gain as well as they should. They may also be at risk for “silent pneumonia” which will lower weight gains.

It can be a challenge to get calves to eat enough mineral supplement. Even if their dams are eating it, trace minerals are not transferred through milk very well. To make sure all calves have adequate trace minerals, some stockmen give each calf an injectable product soon after birth. Blezinger recommends incorporating an injectable product into management programs. “Periodically injecting the cows (with an injection 30 to 60 days prior to calving, and again 30 days prior to rebreeding) and the calves (at birth, and again just prior to weaning) will significantly improve trace mineral status and performance of cows and calves,” he says.

**INJECTABLE PRODUCTS**

Dr. Lourens Havenga, Chief Executive Officer of Multimin USA, Inc. (an injectable trace mineral product), says that when the USDA did their most recent survey they found a higher number of individual animals and herds deficient in zinc than either copper or selenium. “When we created our injectable mineral product for the US, we based it on the 2001 NRC requirements and actual absorption of minerals, recognizing proper ratios of copper, zinc, manganese and selenium.” Multimin 90 can adequately address the needs of most animals.

Havenga points to several university studies that showed the benefits of injected trace mineral products—looking at how rapidly the minerals are absorbed and how long they are stored in the liver. Other studies have evaluated effects on calf health and reproductive performance when injecting cows before and after calving.

“Subsequent to launching our new product, I also contacted researchers at Iowa State University to do additional studies,” says Havenga. “I was fortunate to meet with Stephanie Hansen, PhD, who has done a lot of trace mineral research. She worked with Dr. J. Spears on injectable products while she was in North Carolina. She provided us with an elaborate and detailed trial report, and presented some of her research findings at the Animal Science meeting in Denver Colorado in mid-July 2010.”

Dr. Hansen found that the injected product is absorbed rapidly. “Once you’ve injected the animal, mineral levels in the blood increase and reach a peak within 8 to 10 hours. Most of the mineral that the animal doesn’t utilize is stored in the liver. We later had other studies done at Texas A&M that showed the product lasts (stored in the liver) for about 2 to 3 months, depending on mineral status prior to injection,” says Havenga.

“Another part of the research done at Iowa State looked at enzyme responses. These start immediately, but by 14 days after injection significant changes were confirmed. This is why we recommend that producers use this product a little in advance of stresses, calving or breeding, especially for enhancing reproductive performance. It’s best if you can inject cows about a month before they’ll be breeding, or about a month before calving (at a minimum) for optimum benefit. You can use it earlier than that, such as at preg checking time, but shouldn’t use it much closer to these events because cattle might not get full benefit,” he explains.

A Texas A&M study came up with additional data regarding differences in cattle performance when injected with trace minerals. An experiment was conducted to determine effects of providing pre-calving and pre-breeding injections of Multimin and vitamin E on reproductive performance of cows and on health and survival of their calves. In this study, 67 crossbred cows at the Texas A&M Beef Center were randomly assigned to control or Multimin/vitamin E treatments. The treated cows were given injections 30 days prior to the start of calving and again 21 days prior to the start of breeding. The trace mineral injections were compared to the non-treated cows. The treated cows had significantly higher liver concentrations of copper than the controls, and higher liver concentrations of copper than the controls, remaining higher for 161 days after the last injection. In the Texas study, more cows became pregnant in the treated group; cows in the control group were 2.4 times more likely to be open.

“Researchers inject the product before the cows calved, and again before they bred the cows. This showed that if you use the product strategically, these 2 injections can keep liver levels elevated in the cow for almost a full year (production cycle). We stopped that trial at 256 days just before the cows started calving again the next season,” says Havenga.

“The benefit in the Texas A&M study was that we increased calving percentage, and those cows also calved earlier. The Multimin-treated cows bred back quicker and calved 6 days earlier, on average, than the untreated cows,” he says.

Making sure cows have adequate levels of trace minerals during pregnancy ensures normal bone formation and immune system development in the growing fetus, and also enables the fetus to have high performance.
adequate stores of these important minerals in its liver. This gets the calf off to a good start. Some stockmen give calves injections during the first days or weeks of life, or at branding time. Ideally, you need to make sure the calf has peak levels (and is not deficient) at the time of vaccinations, in order to mount strong immunities. Unless a calf has adequate trace mineral status, vaccination may not be able to protect him against disease.

CALF PERFORMANCE DEPENDS ON ADEQUATE MINERALS – Dr. Steve Blezinger (nutritional consultant in Sulfur Springs, Texas) says mineral supplementation of the pregnant cow is crucial to set the stage for health of her calf. Her mineral status has significant long-term effects on how the calf grows and develops. Trace mineral deficiencies may result in immune dysfunction, developmental abnormalities, and poor calf growth. "The developing fetus is totally dependent upon availability of essential nutrients from the dam's blood. From conception through birth, and up to weaning age, the cow is either the sole source of nutrition the calf receives, or at least a significant part," says Blezinger.

Trace mineral status affects a calf’s immune function and response to stress. "A study of calves from birth to feedlot found calves from mineral-supplemented cows had greater response to vaccines, and lower rates of sickness. Healthy calves had higher serum concentrations of zinc than calves experiencing respiratory disease," he says.

Adequate trace minerals in the cow’s diet during pregnancy are crucial, since copper, iron, manganese and zinc are being stored in the liver of the developing fetus. A deficiency in these minerals cannot be “caught up” by supplementing the cow after she calves, since these minerals are not passed through her milk, except in colostrum. Until the calf starts consuming a mineral supplement on his own he will be deficient—unless he gained adequate reserves in his liver during his mother’s pregnancy and via her colostrum. This is why it is important to supply the cow with adequate minerals, and why some ranchers hedge their bets with injectable trace mineral supplements to make sure every cow has enough of these important nutrients during pregnancy.

It’s time to add MULTIMIN® 90 to your breeding program!

Ask for it by name!

For the complete trial data please visit our

NEW WEBSITE
www.multiminglobal.com
1-866-269-6467 • 1-970-372-2302

A recent study injecting MULTIMIN 90 at pregnancy diagnosis and again 30 days before start of breeding indicated that:

- Conception to Fixed Time AI was greater in cows receiving MULTIMIN 90 (P=0.05) (60.2% vs. 51.2%)
- Overall pregnancy rate was better in cows receiving MULTIMIN 90 (93% vs. 89.9%)
- Cows receiving MULTIMIN 90 had greater body condition score gain between calving and breeding
- MULTIMIN 90 benefits calving distribution - 77.49% calves were born during the first 20 days of the calving season

Data listed above is based on a study conducted by Kansas State University.

Available in 100 ml & 500 ml

RX REQUIRED

Protected by U.S. Patent # 7,285,292.