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# Dairy Connection

Doboy® - a division of Domain, Inc.

## The Importance of Mineral and Vitamin Nutrition

Dairy producers and nutritionists have long known the importance of supplementing mineral in the dairy ration. Lactating cows are under stress to not only produce great quantities of high quality milk, but to breed back in a short time frame. Feeding the correct amount of the right combination of minerals helps to increase milk production, improve reproduction, reduce somatic cell counts and improve the cow's immune response, improving overall health. If any mineral or vitamin is deficient, it can affect cow performance.

Minerals are essential in the ration for normal growth and reproduction and can be broken down into two categories: macro minerals and trace minerals. Macro minerals are those that are required in gram quantities and are important components of bone and tissue as well as bodily fluids. These minerals are calcium, phosphorous, magnesium, potassium, sulfur and sodium chloride (salt). Trace minerals are required in milligrams or micrograms and function as parts of enzyme systems or as components of hormones of the endocrine systems. Trace minerals include: iron, manganese, copper, zinc, cobalt, iodine and selenium.

### Macro Minerals

**Calcium and phosphorous:** Calcium and phosphorous are the most abundant minerals in the body, comprising 70% of the total body mineral content. They are not only the essential components of bones and teeth, but are also important in muscle function and contraction. They are closely related, so a deficiency or overabundance of one could interfere with the utilization of the other. The normal ratio of calcium to phosphorous in the bone is 1.6:1. A deficiency of these minerals can result in reduced appetite, lowered disease resistance, decreased reproductive efficiency, poor feed utilization, and increased incidence of milk fever. In addition, phosphorous is important for normal growth and function of rumen microorganisms.

**Magnesium:** Magnesium is the next most abundant mineral in the body and is involved in muscle contraction as well as serving to function in enzyme systems. Supplementing magnesium has been shown to increase fat corrected milk yield.

**Potassium:** Like magnesium, potassium functions in enzyme systems and influences muscle activity. Potassium is a major mineral component of milk. The level of potassium must be closely watched in dry cow rations because too high a level can increase the chance of milk fever.

**Sulfur:** Sulfur aids in protein and nitrogen utilization in cows. A sulfur deficiency can reduce feed intake, lower gains, decrease digestibility and reduce milk production. It is important in close up dry cow rations to help prevent milk fever.

**Sodium Chloride (salt):** Sodium chloride helps maintain body fluid balance and is a controlling factor in nerve transmission. Supplementation of salt is especially important under heat stress conditions. Signs of deficiency include a craving for salt, lack of appetite, poor growth, haggard appearance, rough hair coat and decreased milk production.

### Trace Minerals

**Iron:** Iron is a component of hemoglobin and is involved in cell respiration. A deficiency can result in anemia.

**Manganese:** Manganese is a part of normal bone structure and is very important in reproduction. A deficiency can have a negative effect on reproductive performance.

**Copper:** Copper is important for normal immune function and can help prevent infections like mastitis. Signs of deficiency are anemia, decreased growth rates, loss of body weight and diarrhea. A characteristic sign is swelling of the leg bones above the pastern.

**Zinc:** Zinc is vital in the metabolism of other nutrients. Research has shown that supplemental zinc helps prevent hoof problems and foot rot in addition to helping maintain skin tissue and improving the inflammatory response.

**Cobalt:** Cobalt is a part of blood formation (as a part of Vitamin B12). It helps to increase rumen microbial activity and enhances the digestion of forages.

**Iodine:** Iodine is involved in energy metabolism and thyroid function. It helps with reproduction and aids in the prevention of retained placentas.

**Selenium:** Selenium plays a key role in the immune system by protecting white blood cells. Supplemented with Vitamin E, selenium has been shown to help strengthen the immune system. A deficiency of selenium can result in white muscle disease, reproductive problems and retained placentas. However, if you live in an area where the soil has high levels of selenium, you should also caution against too much selenium. Selenium toxicity can cause dullness, labored respiration and diarrhea. Earlier signs of selenium toxicity are abnormal hoof growth and hair coat.

### Vitamins

**Vitamin A:** Vitamin A helps to maintain healthy tissues and plays an important role in good vision. A lack of vitamin A reduces the animal's ability to protect itself against invading organisms, making it more susceptible to infection. Infections of the reproductive tract can result in decreased breeding efficiency.

**Vitamin D:** This vitamin increases the absorption of calcium and phosphorous and is needed for normal bone calcification.

**Vitamin E:** Vitamin E plays an important role in the immune system and functions closely with selenium. Supplemental E enhances the immune response, especially under stress conditions. When supplemented with selenium, it has been shown to reduce retained placenta, metritis (uterine infection), and cystic ovaries. Ohio State University research has also shown that it may help reduce the incidence and duration of mastitis.

Source: *Nutrient Requirements of Dairy Cattle, 2001*

## Find the Dobby® mineral and vitamin right for your herd.

Dobby's MPV Dairy Premixes are a unique blend of protected vitamins, organic and inorganic trace minerals vital for a cow's overall health and production. The vitamins are granulated to protect them from external conditions such as moisture, heat, light, and pressure. This process also helps to extend shelf life.

MPV Dairy Premixes contain two forms of trace minerals which help to improve their availability during times of stress. One form is inorganic trace minerals, which are required by rumen bacteria, then are absorbed by the cow. The other form is Zinpro's 4-Plex

which supplies the trace mineral requirement for manganese, copper, cobalt, and zinc. These sources are absorbed in the digestive system and improve health performance. MPV Dairy Premixes are an excellent choice for herds with high production levels, which can experience more stress and reproduction problems. MPV is a very palatable premix and can be fed free choice, topdressed or mixed in a TMR.

**Products:** MPV Formulator 1.5:1, code 661, MPV Formulator 2.5:1, code 662, MPV Formulator 3.5:1, code 663

**MPV Dry Cow** is an excellent source of essential vitamins and minerals necessary for the overall health of the dry cow. Four ounces of MPV Dry Cow contain 125,000 IUs of Vitamin A, 31,500 IUs of Vitamin D, and 1,000 IUs of Vitamin E. It's a source of organic selenium (Sel-Plex), which aids in reproduction performance after freshening. MPV Dry Cow also has the full level of Zinpro's Availa 4. These ingredients are included to help strengthen

the cow's immune system, encourage dry matter intake and reduce the chances of her developing a metabolic disorder after calving.

Trace minerals, selenium, and vitamins are all crucial for the dry cow and are key supplements in a dry cow program.

**Products:** MPV Dry Cow Formulator, code 660

**Dobby Heifer Minerals** are formulated to optimize health and rate of gain. They provide a balance of macro, trace minerals and vitamins to promote growth, overall health, and immune function.

**Products:** Hef-R Mineral w/ Rumensin, code 781, is a complete mineral and vitamin supplement designed to meet the nutritional

needs of heifers on pasture or dry lots. It contains the essential minerals, salt, trace minerals, selenium, and Vitamins A, D, & E. This mineral also contains the ionophore Rumensin to help increase rate of gain. It is recommended for heifers from 3 months of age to one month prior to freshening. **Hef-R Mineral w/ Bovatec, code 1781**, is similar to 781 offering the ionophore choice of Bovatec.

## Recipe Corner

### Cheesy Broccoli Potato Soup

#### INGREDIENTS:

- 4 Tbsp. butter
- 1 cup chopped onion
- 1/2 cup flour
- 4 cups low-sodium chicken broth
- 4 cups fat free milk
- 2 cups frozen broccoli, chopped
- 2 cups potatoes, peeled & diced
- 1 1/2 cups shredded Cheddar cheese
- 1 Tbsp. Worcestershire sauce
- 1 tsp. salt
- 1/2 tsp. pepper



Yield: 12 one-cup servings

Melt butter in large saucepan over medium heat, add onion and cook until tender. Add flour; stir until blended. Gradually stir in broth. Heat until slightly thickened. Add milk, broccoli and potatoes. Cook over low heat about 15 minutes or until broccoli and potatoes are tender. Stir in cheese and seasonings.

*Recipe created by 3-A-Day™ of Dairy*

### Dobby Heifer Mineral Promotion

Due to the recent jump in dical prices, Dobby is offering you a chance to lock in your free choice mineral at a reduced price. From now through March 31, 2008 contract 40 bags of mineral and receive substantial savings!

#### Eligible Products:

Hef-R Mineral w/Rumensin, code 781  
Hef-R Mineral w/Bovatec, code 1781

Contact your ANC or Dobby dealer for more information on contracting mineral.

For more information, be sure to visit our websites at [www.domaininc.com](http://www.domaininc.com) and [www.dobbyfeeds.com](http://www.dobbyfeeds.com)