MINERALS for Livestock and Poultry

LIVESTOCK NEED MINERALS

Although some 14 minerals are needed by animals, ordinary livestock feeds in North Dakota usually provide them in sufficient quantities, except the following:

PHOSPHORUS . . . Likely to be lacking in rations of all classes of livestock. Lack of phosphorus causes, poor growth, loss of appetite, dehydrated or abnormal appetite for sticks, bones and dirt, rough hair, cracking joints and unthrifty appearance.

CALCIUM (Lime) . . . Likely to be lacking in swine rations. Cattle and sheep receiving plenty of roughage usually get enough calcium. Too little calcium causes brittle bones, stiffness in legs, swollen joints, posterior paralysis of swine, and weak young. North Dakota soils are generally high in calcium. Phosphorus is the mineral of most concern in livestock rations.

An ample supply of vitamin D (or plenty of sunshine) is necessary for the proper use of calcium and phosphorus. An over-supply of minerals in the ration may be harmful. This occurs when too much mineral is fed with the grain, especially if water is salty and when the only salt fed is with the mineral.

SALT (sodium chloride) . . . Natural livestock feeds do not supply enough salt. Keep granulated salt before livestock at all times. Too little causes loss of condition and depraved appetite.

IODINE . . . Likely to be lacking in feed of all pregnant animals. Is most serious in hogs and sheep. Lack of iodine causes enlarged necks and hairless pigs at birth.

Feed iodized salt or add 1/2 ounce of sodium or potassium iodide powder to each 100 pounds of mineral or salt during gestation period.

MANGANESE . . . Likely to be lacking in poultry rations, causing Perosis (slipped tendon) in chicks and poults.

IRON - COPPER . . . Likely to be lacking in rations of suckling pigs that are penned inside or on floors, causing anemia. Pigs are weak, listless and short of breath.
Provide plenty of clean soil or green feed for the pigs to eat. Use a mixture of 4 ounces of ferrous sulfate (copperas) in 100 pounds of slaked lime, or ground limestone. Scatter several handfuls in bedding of each sow and litter every other day. Feed mixture containing iron and copper to sows during gestation.

**MINERALS FOR DAIRY CATTLE**

The mineral requirements of dairy cattle are high because milk is rich in minerals. Dairy feeds must furnish the minerals for milk production, as well as for maintenance, growth and reproduction.

**SALT**
Natural feeds do not contain enough salt. Give dairy cattle granulated salt at all times.

**PHOSPHORUS**
Most dairy rations are low in phosphorus, especially if the ration is low in protein. Therefore, phosphorus should be supplied at all times. The feeding, or odorless, form of steamed meal should be used. All recommendations here are for this type of bone meal. Steamed bone meal is the best source of phosphorus.

Grain rations should contain 1 pound of bone meal to each 100 pounds of grain. Mineral mixtures containing 6 percent or more of phosphorus are satisfactory, but 2% times as much of this mineral must be fed to supply the same amount of phosphorus as is supplied by bone meal. Cows not receiving grain should be fed mineral free choice.

**CALCIUM**
Most North Dakota soils are high in calcium. Feeds and supplements that provide phosphorus will supply sufficient calcium. Steamed bone meal provides plenty of calcium, or mineral mixtures containing over 20 percent calcium are satisfactory when they contain at least 6 percent phosphorus.

**IODINE**
Iodine for dairy cattle may be taken care of by feeding fresh iodized salt.

**MINERALS FOR BEEF CATTLE**

In general, the requirements of beef cattle are the same as for dairy cattle. Phosphorus can be supplied by feeding free choice steamed bone meal or other mineral high in phosphorus. Provide granulated iodized salt to pregnant cows.
MINERALS FOR SHEEP

SALT . . . Provide salt at all times; either free choice or mixed in as 1/2 percent of grain mixture. Do not give sheep that are salt-hungry all the salt they will eat until they are used to it.

PHOSPHORUS . . . Phosphorus trouble is common with sheep, especially pregnant and milking ewes wintering on non-legume hay. Additional phosphorus is needed in sheep rations. Steamed bone-meal, or a simple mineral mixture containing at least 8 percent phosphorus, is advised. Sheep should have minerals before them at all times.

CALCIUM . . . Sheep getting good rations seldom suffer for lack of calcium. Steamed bone-meal, or a simple mineral mixture given to provide phosphorus, will also supply the calcium sheep need.

IODINE . . . Shortage of iodine often occurs in ewes and causes dead or weak lambs with big necks. Iodized salt should be provided during pregnancy.

MINERALS FOR SWINE

SALT . . . All hogs should have salt which may be 1/2 percent of grain mixture, or it can be fed free choice. Salt-hungry pigs should be given small amounts daily until they are used to it. Hogs without salt for some time may over-eat, causing digestive disturbances or even death.

PHOSPHORUS . . Hog rations are seldom low in phosphorus, especially if the ration includes milk, meat scraps or other animal by-products in proper amounts. If hogs are not fed a complete ration then steamed bone-meal or a mineral mixture should be fed free choice.

CALCIUM . . . Cereal grains are low in calcium and swine rations may be low in calcium if they do not contain animal by-product feeds. Steamed bone-meal is a good source of calcium and ground limestone may be used, a mixture of 2 parts steamed bone-meal, 1 part ground limestone and 1 part salt is recommended.

IODINE . . . . . . Pregnant sow rations should contain iodine at all times. (See discussion on iodine.)
MINERALS FOR POULTRY

CALCIUM - PHOSPHORUS. . . Necessary for normal development of the bones of growing fowls and for egg production. For efficient use of these two minerals, vitamin D (either produced in the animal's body by the action of sunlight or added to the ration of fish-liver oils or irradiated animal sterols) is necessary. Too much of either calcium or phosphorus in the rations of growing chicks is objectionable, and may cause a leg trouble known as perosis.

The calcium and phosphorus requirements for growing chickens may be supplied by meat scraps or bonemeal. If 10 percent or more of the growing ration is meat scraps, no other source of calcium and phosphorus is required. When vegetable protein supplements, such as soybean meal, are used, approximately 1 pound of bonemeal should be added for each 5 pounds of the supplement.

In rations for laying hens phosphorus is supplied in sufficient quantity by the meat scrap contained in the mash, provided that no more than half of the protein supplements are of vegetable origin. To supply the high calcium requirements for egg-shell formation, the hens should have free access to oyster shell or calcite.

MANGANESE. . . . Necessary in sufficient amounts for high egg production, thick egg shells, and high hatchability. Manganese shortage in the rations of chicks and poults results in perosis (slipped tendon). As stated previously this condition is also made worse by too much calcium and phosphorus in the ration. When poultry have good pasture, they usually get plenty of manganese. Four ounces of manganese sulfate for each ton of feed will give both chicks and breeder flocks enough manganese.

SALT . . . . Desirable to add about 1 percent salt in the mash to provide sodium and chlorine. Feed iodized salt to give the flock the iodine it needs.

CHOOSING A MINERAL

Steamed bonemeal contains, on the average, 13.17 percent phosphorus and 32.01 percent calcium and is the best supplemental source of these minerals. Bonemeal may be fed in the grain mix-
ture or fed free choice alone or in a mixture. Cattle and sheepmen usually mix salt with bone-meal when feeding it free choice to get animals to eat more of it and to keep it from blowing.

Steamed bone-meal will probably provide the phosphorus and calcium needs of hogs. But swine rations are most likely to be short in calcium so the mineral mixture can be cheapened by mixing ground limestone, or similar high calcium mineral, (but no more than half and half) with bone-meal.

In choosing a commercial mineral mixture, the most important consideration should be its phosphorus content. The mixture should contain not less than 8 percent phosphorus and the higher the phosphorus the better the mineral. Since calcium is inexpensive, most mixtures contain sufficient quantities of this element and some are too high in calcium. A mineral mixture should contain at least 20 percent calcium, but not more than 5 times as much calcium as phosphorus.

In addition to phosphorus and calcium the only other compounds known to be necessary in mineral mixtures are those containing iodine, iron, copper and manganese (for poultry) under North Dakota conditions.

Most of the complex mineral mixtures are made up of a large number of ingredients, of which only a few are necessary under North Dakota conditions. Some are claimed to have medicinal or tonic properties. A part of these ingredients are of no known value in animal feeding, some of them are just added as filler and others may be injurious.

The complex mixtures usually are quite high priced and unwarranted claims of their value are often made. Often these minerals are deficient in phosphorus and calcium and many contain a high percentage of salt which costs the livestock producer too much.

**FEED STEAMED BONEMEAL TO SUPPLY PHOSPHORUS AND CALCIUM**

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