

mineral needs of LIVESTOCK

THE BASIC THREE . . .

● SALT ● PHOSPHORUS ● CALCIUM

WHY YOUR ANIMALS NEED THEM

SALT

Animals need plenty of salt to make efficient use of feed.

Researchers found that hogs on a ration without salt needed 562 pounds of feed per 100 pounds of gain. Another lot on the same ration plus salt, gained twice as fast and needed only 363 pounds of feed per 100 pounds of gain.

Salt Toxicity - It is almost impossible to poison livestock with salt, unless water is restricted.

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PHOSPHORUS

Lack of phosphorus causes rough hair coats and slow growth. Animals also have poor appetites (they chew rocks, bones, wood, etc.) make poor use of feed particularly protein and, in severe cases, fail to breed and reproduce. Phosphorus is needed in the blood to help carry nutrients to different parts of the body.

Cereal grains are fairly good sources of phosphorus. Protein supplements such as soybean oilmeal, linseed oilmeal, wheat bran and cotton seed meal contain more phosphorus than do cereal grains. Lush, fast growing grass is a fair supplier of phosphorus.

Phosphorus content of all grasses and hays decreases with maturity. It usually drops to low levels in prairie grass by September and even earlier with dry weather. For this reason, western range cattle often are "phosphorus hungry" in the fall.

CALCIUM

Grains, low quality roughages and protein supplements are poor suppliers of calcium. Alfalfa and sweet clover hay are good sources of calcium. Commercial protein supplement manufacturers many times add calcium and phosphorus to supply the needed amounts.

FEEDING MINERALS

BEEF CATTLE

Salt and Trace Minerals – Use trace mineral salt: Provide about 1-1/2 to 2-1/2 pounds per head per month. Block salt can provide minimum requirements, but timid cattle will not receive enough unless sufficient blocks are available. Block salt, especially, is useful in spreading grazing over large pastures. Place the salt away from the water supply to widen the grazing pattern.

Where salt is not exposed to weather, loose salt, block salt and rock salt are all satisfactory. Loose salt is best for use in mixing with other minerals.

Cattle on high roughage rations, particularly silage or lush growing grass, eat more salt than cattle on high grain rations. Pasture cattle eat much more salt than dry lot cattle.

Salt as a protein regulator: Salt may be used to regulate consumption of protein concentrates self-fed to cattle. The greatest advantage for this practice is in winter grazing areas to reduce labor of feeding supplement daily. The concentration of salt in the mixture varies with the type, kind and quality of roughage being grazed, age of cattle, season of year, etc.

About 100 pounds of salt to 200 pounds of protein supplement will control the intake of protein to approximately 2 pounds per cow per day. The amount of salt required to control the intake of protein should be adjusted to each particular set of conditions. This practice is not recommended where the water supply is unsure, because of freezing, mechanical failures of pumps, etc.

Mixing salt to control protein intake is not practical where cattle are fed other feeds daily.

Phosphorus and Calcium – For breeding stock the following mixtures are satisfactory:

1. A half and half mix of dicalcium phosphate and loose trace mineral salt.
2. A half and half mix of steamed bonemeal and loose trace mineral salt.
3. In western North Dakota where mature prairie grasses are used for hay and pasture, as the main feed source, a mineral mixture should have at least 10 per cent phosphorus and not more than 30 per cent calcium. Several high phosphorus commercial mineral supplements are on the market. Many range protein supplements are fortified with phosphorus.

FEEDLOT CATTLE

The need for calcium and phosphorus supplements depends largely on the ration being fed. An all-purpose mineral which contains at least 6-1/2 per cent phosphorus and about 30 per cent calcium usually is satisfactory for feedlot cattle. Offer it free-choice. Feed trace mineralized salt in addition.

Western feeder cattle upon arrival after shipment should be offered a high phosphorus mineral mixture similar to 1, 2 or 3 above, for a period of approximately three weeks. A switch to a lower phosphorus supplement may then be more satisfactory.

SHEEP

Salt – Provide 1/2 to 1 pound of trace mineral salt per ewe per month, free-choice and preferably in the loose form. Trace mineralized salt is best.

Sheep tend to use more salt if fed high silage rations or when on fast growing pasture.

One pound phenothiazine mixed with each 10 pounds of salt helps to control internal parasites. Feed phenothiazine in the salt during the pasture season.

Phosphorus – The mix as suggested for cattle also works for sheep on similar rations.

A high roughage diet for sheep may need to be reinforced with additional phosphorus.

Calcium – Your phosphorus mixture will take care of the calcium needs of your sheep.

Sheep are not likely to lack calcium if you feed good quality legume hay. Additional calcium may be needed if sheep are eating poor quality roughages such as straw or corn stover.

HOGS

Salt – If you give salt in loose form, pigs will regulate their own intake. If you feed a complete ration, add 1/2 per cent of the ration as salt to meet requirements. Trace mineralized salt is recommended.

Calcium and Phosphorus – Hogs can easily be in need of calcium since their main feeds of grain and protein supplement are low in this mineral. An all-purpose mineral with about 30 per cent calcium and 6 per cent phosphorus, fed free-choice usually is sufficient to cover any deficiency when fed in adequate amounts.

Calcium especially is important in gestation-lactation rations for sows. The lactating sow has unusually high requirements and unless calcium is supplied, may have a skeletal breakdown in the latter stages of lactation.

A satisfactory simple mineral mixture may be made of 40 per cent steamed bonemeal or dicalcium phosphate, 40 per cent ground limestone and 20 per cent trace mineralized salt. Feed it free choice.

Trace minerals are especially important in swine rations. Commercial swine supplements usually contain sufficient quantities of trace elements. Lack of zinc in the ration may result in parakeratosis. Trace elements are discussed in the following section.

TRACE ELEMENTS

Trace mineral salts have been suggested because livestock need the following elements.

Iodine - North Dakota is an iodine deficient area. A shortage leads to poor reproduction, the birth of hairless litters for hogs and goiter or big neck in cattle, sheep and hogs.

Be sure to use a fresh mineral mixture or salt. Iodine escapes easily into the air. Some or all of the iodine content may be lost from mineral mixtures stored for long periods.

Iron - Little pigs need iron from the start. With their rapid growth, deficiency will show up usually by the third day. Several different iron compounds are available for preventing anemia in little pigs.

Copper - Copper is needed for many vital body functions.

Cobalt - Cobalt is extremely important, particularly for cud-chewers, because the rumen bacteria need cobalt for manufacturing nutrients--vitamin B₁₂ is an important example. A few cents worth of cobalt will feed a large livestock herd for at least one year.

Manganese - Except for chickens, manganese is not thought to be lacking in rations. More information is needed on the extent and seriousness of deficiencies.

Magnesium - Enough magnesium usually is available, but small amounts are included in many trace mineral mixtures anyway.

Zinc - This mineral may be deficient in swine rations, especially if high calcium levels are used. Zinc deficiency in growing-fattening hog rations may result in parakeratosis.

POISONOUS MINERALS

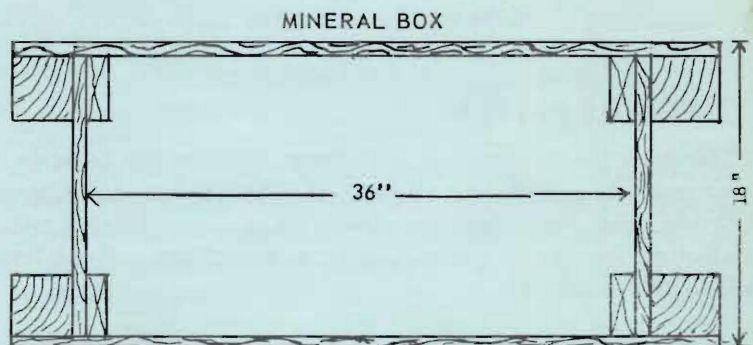
Fluorine is the most dangerous -- avoid mixtures which contain more than 0.3 per cent of it. Excess fluorine is likely to cause lameness, mottled teeth and poor production.

Other poisonous materials possibly helpful in small amounts but dangerous in larger portions are selenium, molybdenum and arsenic.

TABLE OF MINERAL SUPPLEMENTS

MINERAL SUPPLEMENT	% CALCIUM	% PHOSPHORUS
Bonemeal, steamed	28	13
Curacao phosphate	35	15
Defluorinated rock phosphate*	21	9
Defluorinated rock phosphate*	29	13
Defluorinated superphosphate	28	12
Dicalcium phosphate	26	18
Ground oyster shells	38	
Limestone (98%)	38	
Wood ashes	21	

* Variability in source ranges accounts for the difference in analysis.



George Strum
Extension Animal Husbandman
William Dinusson
Animal Nutritionist
Agricultural Experiment Station