

Plan for proper minerals in dairy goat rations

POMONA, Calif. — An adequate mineral ration figures heavily in the care and feeding of a productive dairy goat, says Tony Cunha, Dean Emeritus at California State Polytechnic University.

A goat definitely needs calcium and phosphorus and the University of Florida recommends a level of 0.7 percent calcium and 0.4 percent phosphorus in the total ration of high producing dairy goats, Cunha says.

Goats fed a ration low in salt developed deficiency symptoms in four to six weeks. The symptoms included persistent licking, restlessness, dull shaggy hair, poor growth and low intake of feed and marked emaciation during lactation.

After 224 days, the salt deficient goats weighed 80 percent as much as those fed salt. They ate six percent less feed daily and required 18.5 percent more feed per pound of gain.

It is usually recommended that sheep be fed 0.5 percent salt in their total ration or one percent salt in the concentrate mixture. Growing lambs require 0.4 percent salt in the total ration dry matter. Cunha recommends using those

levels for the goat until research information is obtained on their needs. Salt needs can vary considerably, depending on many factors.

Because of this, it is recommended that goats also be self-fed salt so they can consume more than is in the ration if needed.

When possible, it is best to supply the salt in the form of loose salt. Salt blocks also can be used, but the degree of hardness needs to be controlled. An extremely hard block can cause sore tongues and too much time spent licking it. A block that is too soft can leach excessively when it rains. So, salt or mineral blocks need to meet the rainfall, humidity and environment conditions that exist in the area where they are used.

Goats also need the trace minerals iron, copper, cobalt, manganese, zinc, iodine and selenium. Unfortunately, says Cunha, very little research has been conducted on trace mineral needs of the goat. Therefore, it is recommended that the trace mineral levels recommended for sheep by the U.S. National Research Council be used for goats until more accurate goat data becomes available. The trace

mineral levels suggested are shown in Table 1.

It is estimated that goats consume from 4.5 to 18 pounds of salt yearly. Since all goats need salt, it can serve as a natural carrier for the trace minerals. Moreover, most of their feed supply comes from forages. Therefore, the practical method of providing the trace minerals for goats is through the use of trace mineralized salt.

Cunha estimates that all the trace minerals can be added to salt at a cost of one to two cents per pound of salt, depending on the levels of trace minerals used.

If goats consume 4.5 to 18 pounds of salt per year, the cost of providing all the trace minerals per goat for a year would be from 4.5 to 36 cents, depending on the stage of their life cycle. This is very low cost insurance against a lack of trace minerals for a whole year.

Mineral mixtures should be developed for the areas in which they are used. Calcium and phosphorus can be supplied in the

ration or by self-feeding. Many times the calcium and/or phosphorus source is mixed with salt or trace mineralized salt to give it more palatability. Animals will do a fairly good job of balancing their own mineral needs.

This is their only alternative under extensive grazing conditions where no other feeds are used. But, very important for those making mineral mixtures is to have them palatable to the extent the animal will consume about what it needs. If the mineral mixture is too palatable the animal will over-consume minerals. If it's too unpalatable, the animal will not consume enough.

Many mineral elements are unpalatable, depending on their source and processing method and temperature used. Therefore, making complete mineral mixtures which the animal will consume at the proper level is a very challenging area that needs more attention in the future.

The minerals should be self-fed in mineral boxes covered with a roof to keep out the rain and prevent leaching. Also, it is very important to locate them in areas where they can be filled periodically. Goats need minerals daily, so the mineral boxes should not be allowed to stay empty for any period of time, Cunha concludes.



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Table 1. Suggested Mineral Levels for Goats

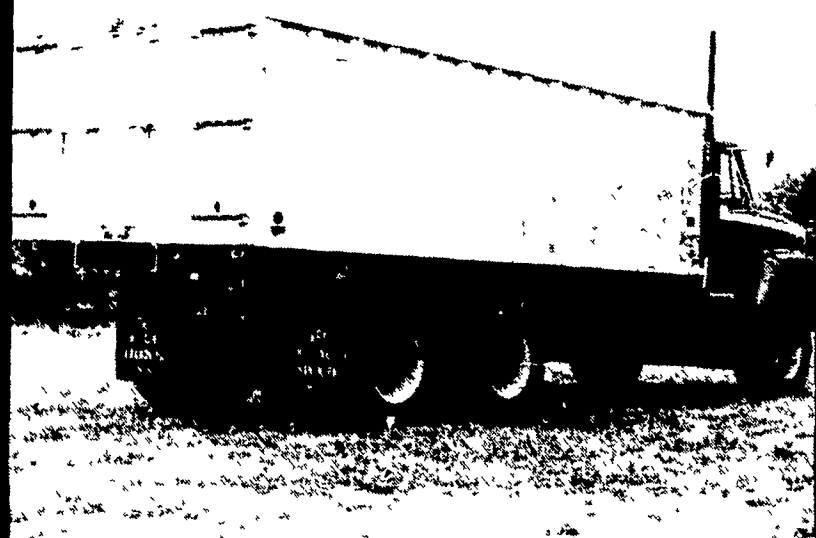
Trace mineral element	Level recommended in total ration, ppm	Level that is toxic, ppm
Iodine	0.1-0.8	8
Zinc	35-50	1000
Manganese	20-40	500*
Cobalt	0.1	100-200
Iron	30-50	1000*
Copper	5	8-25
Selenium	0.1	over 2

*Based on 1000 ppm of iron being toxic for dairy cattle and 500 ppm of manganese being toxic for the pig. All other levels are based on NRC recommendations for sheep.

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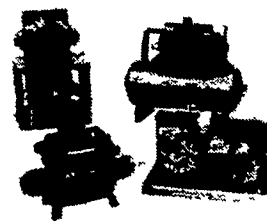
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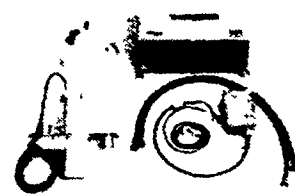
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