

TECHNICAL BULLETIN

DO ANIMALS EAT MINERALS BECAUSE THEY NEED THEM OR BECAUSE THEY TASTE GOOD?

Animals eat minerals because they taste good, but they only taste good when they are needed. I know that sounds like gibberish, but consider this: Appetite for any given mineral is governed by a biological feedback loop that involves taste buds, the cellular tissue concentration of the mineral, and the solubility of that mineral in the feed. When the taste buds are triggered by deficiencies of nutrients in the tissues, they are able to recognize the needed nutrients - the greater the need, the greater the palatability. In this case, solubility equates to palatability - it tastes good if you need it. When the animal reaches satiety for that mineral, it no longer “tastes good,” and they quit eating it.

This is the same innate physiological ability of animals that allows them to pick and choose the elements they need from a properly presented, cafeteria-style mineral program. It is this same trait that allows grazing herbivores to balance their ration for energy, protein, and minerals in one 6 to 8 hour grazing cycle — if the proper nutrients are available in the pasture and if the forage is properly presented.

Carriers, Flavorings, and Palatability

Formulation of our products requires the use of some plant products and salt as carriers or bulk extenders. We do not add flavor enhancers or consumption inhibitors.

As a simplified example, consider our **Cu-Mix** product. Animals need only relatively small amounts of copper. If we provided an undiluted source of copper, one lick of that source of copper would provide an excess of most animals’ needs. Since there is a universal need for salt (NaCl) in animal nutrition, we dilute the copper with salt. We must always include plain white salt as one of the free choice selections. Thus, the animals are not forced to eat the copper when they want salt or overeat salt when they want copper.

Apply this basic concept to all of our minerals, and you can see how complex the formulation can be. It’s not only about palatability, but also about choice.

In the example above, salt is a nutrient carrier, in that it adds bulk, but is also a required nutrient. Plant products are also used in some products where the active ingredients are not compatible with salt. These are not chosen for nutrient value but are chosen to be of neutral palatability so the animal neither ‘likes’ nor ‘dislikes’ the product, based on the particular carrier. This enables the animals to exercise their nutritional wisdom.

Apparent Excess Consumption

When beginning an individual, self regulated mineral program, it is not uncommon for some animals to consume considerable amounts of certain items. In addition to filling their immediate requirements, animals will also eat to compensate for previous deficiencies; e.g. to replace bone mineral loss or to re-establish liver reserves. It may take up to 6 months for this apparent excess

consumption to taper off. If it does not taper off, one needs to check other issues as described below. Do not confuse this higher than anticipated consumption with overeating. **Animals rarely, if ever, over-consume.** They eat a particular product because they need it.

- Animals may be forced to consume more minerals than needed when subjected to improperly formulated rations or mineral supplements. For example, if there is too much Calcium in a TMR (Total Mixed Ration), animals will eat extra Phosphorus from a cafeteria-style mineral program, to balance the Ca/P ratio. Consumption of Phosphorus will go down if some Calcium is removed from the force-fed ration. If feeding a TMR along with a cafeteria-style mineral program, it is best to add only about 50 to 75% of the computed amounts of minerals to the TMR. This allows the animals to fine tune their mineral balance without having to eat excess minerals to compensate for a force-fed, unbalanced minerals in the ration.
- Feeding other mineral products in addition to the cafeteria style mineral program may alter the consumption of self select minerals. This is particularly true if these products are force-fed in the ration or if they contain taste enhancers.
- **A-Mix** consumption goes up as hay and forages age and deplete in vitamin content. High nitrates in the water or high nitrates or urea in the feed will also increase the need for **A-Mix**. Excess protein or basic nutrient deficiencies in the ration will affect consumption, as will molds or mycotoxins in the feed.
- **BVC-Mix** intake increases with stress. Stress can be caused by many situations; including bad weather, extreme high production or performance, relocation, stray electrical currents, geothermal events, and stressful herd dynamics.
- Iodine consumption increases if nitrates are high in the feed or water, if animals are subjected to stray voltage or geo-magnetic fields, or if they are fed moldy feed.
- Animals will often adjust their mineral consumption overnight in response to ration changes or impending changes in the weather. They will also adjust their mineral consumption in response to exposure to worming medicines, vaccinations, and other drugs or chemicals such as insecticides or herbicide residues.
- Consumption changes after stabilized on the free choice system could be caused by differences in seasonal needs. For example, animals frequently take more sulfur when they are building a new hair coat in spring and fall.
- High Total Dissolved Solids (TDS) and other issues in the drinking water may cause compensatory changes in self regulated vitamin and mineral consumption.
- There is the possibility that some animals may possess or develop a taste for a particular ingredient. Little weight should be given to that opinion unless and until the other factors listed above are investigated and eliminated.

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Hey, Doc, my cows are eating dirt. Waddya got for that? Richard J. Holliday, DVM Progressive Dairy Magazine
September 2007 Issue.

□ http://www.progressivedairy.com/index.php?option=com_content&view=article&id=1027%3A1007-pd-hey-doc-waddya-got-for-&Itemid=241

Addressing milk fever in your organic dairy herd Richard Holliday, DVM, Holistic Veterinary Practice Dairy Herd Network Updated: July 30, 2009 <http://www.dairyherd.com/dairy-resources/minerals/addressing-milk-fever-in-your-organic-dairy-herd-114031659.html>

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An analysis of this flawed University research can be viewed at: □ <http://www.dochollidaysblog.com/article-index/an-analysis-of-a-flawed.html>

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