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Which Mineral Product is Right for My Cattle?

Written by: Kristin Thompson, Ruminant Nutritionist, MSc., PAg

Whether you are feeding cattle on pasture or in a dry lot, or you are feeding growing cattle versus mature cows, the use of a properly balanced ration is critical for optimal animal performance. Mineral supplementation plays a vital role in ensuring each animal's nutritional requirements are being met. However, when you consider the variety there is among the multitude of mineral products available, it can be a daunting market to navigate.

Below are a series of steps to take prior to your mineral purchase:

Step 1. Test forages. The nutritional content of on-farm forages needs to be understood, as the mineral you purchase must be balanced as a part of the total daily diet. Considering that forages make up a large portion of beef cattle diets, they will have a key impact on the selection of the appropriate mineral supplementation. There are also a number of mineral interactions that are antagonist and can lead to poor mineral utilization. For example, high molybdenum forages reduce the bioavailability of copper, leading to an increased supplemental copper requirement.

Step 2. Understand the group(s) of cattle that you are feeding and the nutritional requirements of each

group. For example, if you are purchasing a mineral for breeding cows, ensure it has adequate phosphorus, whose nutrition is linked to conception rates and return to estrus.

Step 3. Evaluate the feeding rate of each mineral. You will notice that this varies among products as well as feed companies. Two different products can target the same daily intake of a specific mineral, but list different nutrient concentrations and feeding rates on the tag. Therefore, to accurately compare minerals, it is necessary to know the expected intakes.

Step 4. Determine if the level of macro minerals is adequate. These are reported on the tag as a percentage of the total weight. To calculate the amount of each nutrient being supplied, simply multiply the percentage by the feeding rate. For example, a premix that is formulated with 3% magnesium and fed at 85 grams is providing 2.55 grams of magnesium per head per day (0.03×85 grams). Compare this to the nutritional requirements of your cattle.

Step 5. Evaluate the trace mineral and vitamin levels, which are reported as mg/kg and IU/kg, respectively. In this case, the level of the nutrient is calculated by multiplying the mg/kg amount by the feeding rate in kg. For example, taking the feeding rate of

the mineral in the previous example (85g) and a copper concentration of 3000 mg/kg, this mineral is providing 255 mg per head per day of copper ($0.085\text{kg (feeding rate)} \times 3000 \text{ mg/kg}$). The same methodology is applied for vitamins. Once again, compare this value to the nutritional requirements of your cattle.

Step 6. It is possible to purchase a mineral premix that includes a medication. In this case, it is very important to feed these products at a specified feeding rate, which will be outlined on the tag, to ensure the appropriate medication level is being supplied to the animals.

Step 7. Prior to mineral purchase, it is necessary to determine if you require the inclusion of any additives, such as chelated trace minerals, flavoring ingredients or fly control products. These will have an impact on the overall price, so it is important to consider prior to purchase.

Do not base mineral purchase decisions solely on price. Animal health and performance strongly rely on your evaluation of animal requirements compared to available mineral options. Discuss your options with your New-Life Mills Representative or Nutritionist.

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Meet: Kristin Thompson! *Ruminant Nutritionist*



I grew up in rural Saskatchewan on a mixed farm operation, where we raised an assortment of livestock and poultry species. Growing up on a farm and through the 4-H program instilled a deep love for agriculture and drove me to pursue the tremendous opportunities that this industry has to offer.

I attended the University of Saskatchewan where I obtained my Bachelor of Science in Agriculture, specializing in Animal Science and later a Masters Degree in Ruminant Nutrition and Genetics. I had the opportunity to work with a livestock genetics company in Saskatchewan prior to starting with New-Life Mills in 2015.

When not working, I can be found on the farm where I live with my husband, two children, dogs, cats and horses. We are currently cultivating our own farm vision and look forward to having our children grow up in this industry.

One of the main reasons I love working in agriculture is the people. I can't think of any other industry where I would rather spend my career. People in agriculture are some of the most hard-working, innovative and entrepreneurial individuals in the world, and I appreciate learning from everyone that I meet.

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Strategies for Extending Forage Supply

*Written by: Kristin Thompson, Ruminant Nutritionist, MSc., PAg &
Urs Nievergelt, Ruminant Nutrition and Production Consultant*



Drought conditions throughout the summer months in many areas of the province have resulted in reduced forage yields. Since forages are the main component of beef cattle diets, shortages have a significant impact on ration formulation and feed purchase decisions. Therefore, it is important to devise strategies for utilizing feed resources as effectively and efficiently as possible.

The first step in dealing with feed shortages is to conduct a forage inventory audit and establish feeding requirements. For example: the average cow will consume approximately 2% of her body weight in daily dry matter (DM) intake of good quality forages. Therefore, a 1200 lb beef cow will consume 24lbs (11kg) of forage DM which corresponds to 28lbs (12.7kg) as fed when a forage is 85% DM. For a herd size of 75 cows, this means that you will need 2,100 lbs of forage per day (as fed). If you are feeding for a period of 180 days, you would need a total of 172 tonnes of forage (378,000lbs) or 315 round bales weighing 1200lbs each. You will need to perform this same calculation for each cattle group on your operation to determine total forage requirements and compare this to available forage inventories. Even if

the numbers do not balance out and are only 40-50% of requirement, there are still feeding options available. Below are three considerations for dealing with low forage supplies:

Test Available Forages

Identifying the nutritional composition of the forages that you have available allows you to increase the efficiency of forage use. The higher quality forages should be fed to cattle groups with greater energy and protein requirements, such as growing bred heifers, whereas lower quality forages can be fed to mature cows in the first and second trimester. If you feed poor quality forages to the heifer groups, they will be unable to physically consume enough forage to meet requirements, as this group already has a reduced rumen capacity and increased nutrient requirements when compared to mature cows. Therefore, by assigning forage use based on quality and animal requirements, you are able to more effectively use your inventory and reduce waste.

Utilizing Straw-Based Rations

When forages are scarce, feeding straw is a valid option, if it is available. However, it is important to

understand that the nutritional value of straw is much lower when compared to other dry forages and not all straws will be the same. For example, barley straw will be more digestible than wheat straw. There are several methods that can be used to improve straw utilization:

1. Processing straw to reduce particles size through a tub grinder reduces feed sorting and limits feed waste.
2. The application of anhydrous ammonia to low quality forages and straw has been shown to improve protein content and digestibility. This in turn improves intakes and performance but it is an expensive process with associated risks in its application.
3. Supplementation with liquid molasses blends can increase forage dry matter intakes and enhance the feeds nutritive value. These supplements are highly palatable and can increase the energy of the total diet. There are multiple additional options for molasses products in the total diet. One method is the application of liquid molasses blends directly to low quality forage or straw bales.

Alternative Feeds

A common strategy utilized when forage inventories are low is to limit the feeding of forages and provide other protein and energy supplementation to meet nutritional requirements. Ingredients such as beet pulp and soybean hulls are byproduct sources of digestible fiber that can be used to extend forage supplies. Depending on the price of these ingredients, they can be cost effective when comparing on an animal performance basis. These feeds can be included on their own or combined in pellet blends along with other protein sources.

Other byproduct feeds, such as distillers' grains, are a good source of protein and provide some energy as well. They can be effectively used alongside forages without reducing intakes.

Non-protein nitrogen (NPN) sources, such as urea, can be included in rations when protein is limited such as with straw based rations. However, it is important to remember that NPN sources are used less efficiently in the rumen than true protein, and overfeeding can lead to toxicity. Therefore, the recommendation for urea is not to feed more than 0.05lbs for dry cows, 0.1lbs for lactating cows and 0.25lbs for feeder cattle, while calves less than 500lbs should not be fed urea. When urea is added to a ration, it is important to ensure proper mixing to prevent over-consumption.

Conclusion

As outlined above, there are multiple strategies for utilizing alternative feeds to extend forage inventories. However, when considering the purchase of an alternative feed, it is important to always compare on an equal nutrient basis and not simply on total price. For example, let us assume you have the choice of purchasing two protein sources. Option 1 costs \$330/tonne with 27% protein and Option 2 costs \$375/tonne with 38% protein. Based on price alone, Option 1 seems like the better buy. However, when compared on a cost per kg of protein basis, Option 2 is cheaper at \$0.99/kg of protein versus \$1.20/kg of protein for Option 1. Therefore, to feed the same amount of protein per head per day, it will cost you less to use Option 2 versus Option 1.

Points to Remember!

1. Conduct a forage inventory audit.
2. Evaluate the nutritional composition of all available forages on farm.
3. Understand the nutritional requirements of your different cattle groups.
4. Evaluate methods of improving forage DM digestibility prior to feed out.
5. Base supplemental feed purchases on an equal nutrient basis!
6. Consult with your Nutrition and Production Consultant or Nutritionist to discuss feeding strategies and to properly balance rations.