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Popular Article

Urea Molasses Mineral Block: A Nutritional Boost for Enhanced Livestock Productivity

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Introduction:

The rearing of livestock plays an important role in the development of rural economy. The livestock husbandry not only provides milk, meat, wool, manure, urine energy etc. but also provides self-employment for unemployed youth. At present about more than 60-65 % of the rural population is engaged in rearing of livestock. It is evident that the average productivity of milking animals is quite low. This may probably be due to low genetic potential for milk production, poor nutrition and poor management and care of the animals. Therefore, proper feeding of the animals is essential for improving their productive potential. Since, there is a shortage of 63.5 % green fodder, 23.56 % Dry fodder and 64 % concentrate feed for Indian livestock so, small dairy farmers face great difficulty in feeding their dairy animals for getting optimum production. Under such situation, crop residues such as rice straw, wheat straw, maize stalks and natural herbage like grass, tree leaves etc. are fed to the animals along with a small quantity of costly concentrate. Such feeding practice does not provide adequate nutrients to the animals for Improving their growth and exploiting their productive potential. In general, Low quality crop residues are deficient in fermentable nitrogen, carbohydrates and important minerals. Various attempts have been made to make use of locally available feed resources so that crops and livestock can be produced more efficiently and profitably. Consequently, feed supplementation strategies have been developed to correct the nutrient deficiency of poor quality roughages for feeding of dairy animals. Earlier, the main focus was on increasing the straw utilization by ruminants. However, straw is available in large quantities but it is low in its nutritive value due to presence of high lignocelluloses content, small amounts of crude protein and essential minerals. Infact, the feeding value of poor quality straws have been shown to be improved by using physical, chemical and biological treatments, but none of these treatments became Popular amongst farmers because of the extra cost and extra work involved. In order to find out suitable supplements for optimizing rumen fermentation so that enhanced production and reproductive performance can be achieved, another technique used was to supplement the diet with more readily available energy and protein that were lacking in the basal diet.

What is a Urea Molasses Mineral Block (UMMB)?

UMMB is composed of a variety of ingredients, each contributing to the overall mixture. Typically, it includes molasses, urea, a mineral mixture, salt, calcite powder, bentonite, cottonseed meal, deoiled mahua seed cake, wheat bran, and crushed maize. The exact composition of the Urea Molasses Mineral Block may vary depending on the availability of the feed ingredients.

Composition of UMMB:

Ingredients	Example I	Example II
Molasses	45 %	40 %
Urea	15 %	5 %
Mineral Mixture	15 %	3 %
Salt	8 %	2 %
Calcite Powder	4 %	-
Bentonite	3 %	-
Cotton Seed Meal	10 %	-
Deoiled Mahua Seed Cake	-	10 %
Wheat Bran	-	20 %
Crushed Maize	-	20 %

Role of Urea and Molasses Feeding in Ruminants:

The Urea-Molasses-Mineral Block (UMMB) is an effective feed supplement for ruminants, designed to support the consistent growth of rumen microbes by providing a steady supply of fermentable nitrogen. Its supplementation enhances feed intake, boosts milk production, and improves growth rates, making it a cost-efficient method for utilizing locally available feed resources to increase productivity. UMMB delivers fermentable nitrogen, energy, and minerals gradually through licking, which is essential for sustaining optimal microbial activity. Microbial protein can contribute approximately 30–40% of an animal's crude protein needs.

Incorporating UMMB into crop-residue-based diets is particularly advantageous, as ruminants can synthesize microbial protein from non-protein nitrogen sources. Molasses, a key component of UMMB, is rich in sugars, which account for 60–65% of its solid content. Faster fermentation of these carbohydrates aids in capturing rumen-degradable protein more efficiently, thereby improving the supply of metabolizable protein to dairy animals.

Urea, another major ingredient, acts as a source of non-protein nitrogen, which rumen microbes use to synthesize protein. With approximately 46% nitrogen content, urea offers a crude protein equivalent of about 281% when converted by microbes. However, urea itself lacks essential nutrients like energy, minerals, and vitamins. Ruminants convert urea into protein through the release of ammonia and carbon dioxide. The ammonia is either utilized for microbial protein synthesis or detoxified and expelled through urine.

Precautions for Using UMMB:

- **Suitable for Ruminants Only:** Feed UMMB exclusively to ruminants like cattle, sheep, and goats. Avoid giving it to monogastric animals such as horses, donkeys, and pigs.

- **Age Restrictions Apply:** Do not feed UMMB to young ruminants under six months of age, including lambs and kids.
- **Supplement, Not a Primary Feed:** Use UMMB as a dietary supplement, not as a replacement for the main feed. Ensure sufficient coarse forage is included in the diet.
- **Avoid Overconsumption Risks:** Never provide UMMB in powdered form or dissolved in water, as this may lead to excessive intake.
- **Proper Feeding Quantities:** Limit intake to 100 grams/day for sheep and goats and 500–700 grams/day for cattle.
- **Empty Stomach Caution:** Avoid giving UMMB to severely malnourished animals with empty stomachs, as it can lead to toxicity.
- **Water Availability:** Ensure animals have constant access to clean drinking water for safe consumption.

Benefits of UMMB Feeding:

Benefits of Feeding UMMB Blocks to Livestock is-

- ***Protein and Energy Source:*** Provides non-protein nitrogen (urea) converted into microbial protein, enhancing overall protein and energy intake.
- ***Improved Digestibility:*** Boosts the breakdown of fibrous feed, improving dry matter and fiber digestibility by 30-50%.
- ***Mineral and Vitamin Supplementation:*** Supplies essential minerals (calcium, phosphorus, zinc, etc.) and vitamins for better metabolism, growth, and bone development.
- ***Enhanced Palatability:*** Molasses increases palatability, ensuring consistent intake of nutrients.
- ***Weight Gain and Growth:*** Promotes growth, weight gain, and physical development in livestock, especially young animals.
- ***Better Reproductive Performance:*** Provides balanced nutrition, supporting fertility and reproductive health.
- ***Cost-Effective and Convenient:*** Easy to use, requires minimal labor, and is affordable for farmers.
- ***Drought and Scarcity Solution:*** Serves as a nutritional supplement during dry seasons or when forage is limited.
- ***Reduces Bloat Risk:*** Helps prevent frothy bloat by improving rumen fermentation.
- ***Prevents Nutritional Deficiencies:*** Acts as a curative measure for conditions like PICA and improves coat quality.
- ***Methane Reduction:*** Lowers methane emissions due to better digestibility, making it environmentally sustainable.
- ***Flexible Usage:*** Suitable for both grazing and confined animals, ensuring year-round use.

UMMB blocks support overall livestock health, productivity, and sustainability, making them a valuable supplement for ruminants.

Adaptation of UMMB in Ruminants:

The full daily ration of the block should not be offered as soon as the feeding period starts but should be built up to over a period of at least 7-10 days. This is particularly important when animals have suffered a degree of

underfeeding as intake can be more rapid than usual. Animals not used to urea and also eating rapidly are the most likely to suffer from urea poisoning. Adaptation period for cattle is less than 700 gram per day.

Conclusions:

Urea Molasses Mineral Blocks are a practical and economical solution to address nutrient deficiencies in ruminants, particularly in regions facing feed scarcity. By improving digestibility, productivity, and overall health, UMMBs play a vital role in sustainable livestock management. Proper formulation, storage, and feeding practices ensure their effectiveness and safety, making them a valuable addition to animal nutrition programs worldwide.

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