

Optimizing Livestock Health and Productivity Through Mineral Block Supplementation

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Introduction

Minerals play a critical role in the nutrition of livestock, particularly for dairy cattle and buffaloes. They are essential for maintaining health, promoting growth, ensuring reproductive success, and maximizing milk production. However, many natural feeds do not provide adequate amounts of these vital nutrients, leading to deficiencies that can negatively impact animal health and productivity. To address these gaps, mineral supplementation is necessary, with mineral blocks offering a more efficient and cost-effective alternative to traditional powder supplements. This guide explores the importance of minerals in livestock nutrition, the consequences of deficiencies, and the benefits of using mineral blocks, as well as providing detailed instructions on how to make them.

A. THE IMPORTANCE OF MINERALS IN LIVESTOCK NUTRITION

Minerals are vital nutrients required in small amounts but are crucial for the proper physiological functioning of animals. For dairy cattle and buffaloes, minerals play several key roles:

- **Health Maintenance:** Minerals are essential for maintaining overall health, supporting immune function, and preventing diseases.
- **Growth and Development:** Minerals such as calcium, phosphorus, and magnesium are crucial for bone development, muscle function, and metabolic processes.
- **Reproductive Health:** Adequate mineral intake ensures optimal reproductive performance. Deficiencies can lead to delayed estrus, poor conception rates, and other reproductive disorders.
- **Milk Production:** Lactating animals have higher mineral requirements because minerals like calcium and phosphorus are secreted in large amounts in milk.



B. MINERAL DEFICIENCIES AND THEIR CONSEQUENCES

Even if animals do not show immediate signs of mineral deficiencies, the long-term effects can be detrimental:

- **Susceptibility to Diseases:** A lack of essential minerals weakens the immune system, making animals more prone to infections and diseases.
- **Reproductive Issues:** Animals with insufficient mineral intake may have irregular estrus cycles, low conception rates, and increased incidences of stillbirths.
- **Slower Growth:** Deficient animals often exhibit stunted growth and poor body condition.
- **Lower Milk Production:** In dairy cattle and buffaloes, mineral deficiencies can lead to a significant drop in milk yield.

C. THE NEED FOR SUPPLEMENTATION OF MINERAL BLOCKS OVER POWDER SUPPLEMENTS

Given that most natural feeds do not provide all the necessary minerals in adequate amounts, supplementation is often necessary. However, traditional mineral supplementation methods, like feeding minerals in powder form, have several drawbacks like High wastage and uneven Intake.

Mineral blocks offer several advantages over traditional powder supplements:

Economical: Farmers can produce mineral blocks on their own using locally sourced materials, reducing the cost of supplementation.

Customizable: The composition of the blocks can be adjusted based on the specific mineral needs of the animals and the mineral content of their regular feed. For example, if the feed is already rich in phosphorus, the amount of dicalcium phosphate in the block can be reduced.

Convenient and Efficient: Mineral blocks can be left in the barn, allowing animals to lick them at their own pace. This reduces wastage and ensures a more controlled intake of minerals.

Longer Shelf Life: Blocks are less prone to spoilage and can be stored for extended periods if kept dry.

D. HOW TO MAKE MINERAL BLOCKS

Making mineral blocks involves several stages, from selecting the right ingredients to molding and drying the blocks. Here's a step-by-step guide:

Stage 1: Composition of the Mixture

The mineral block mixture typically includes:

- **Cement and Quicklime:** Act as binders to hold the block together.



- Common Salt and Dicalcium Phosphate: Provide essential minerals like sodium, calcium, and phosphorus.
- Trace Minerals: Such as cobalt chloride, copper sulfate, potassium iodide, zinc oxide, and sodium selenate, which are added in small amounts to meet the specific nutritional needs of the animals.

Stage 2: Preparing the Molds

Molds are made from wooden planks to form blocks of a specific size, usually around 1 kg each. The dimensions of the planks are adjusted to create molds that can be filled with the mineral mixture.

Stage 3: Mixing the Components

Prepare the Dry Ingredients: Cement, quicklime, dicalcium phosphate, common salt, and zinc oxide are crushed and sieved to a fine powder.

Dissolve Trace Minerals: Cobalt chloride, copper sulfate, potassium iodide, and sodium selenate are dissolved separately in water and then mixed thoroughly with the dry ingredients.

Stage 4: Adding Water

Water is added gradually to the dry mix while stirring until the mixture reaches a dough-like consistency. The amount of water added can vary depending on the moisture content of the ingredients and the desired firmness of the blocks.

Stage 5: Forming the Blocks

Prepare the Mold: Line the mold with a polythene sheet to prevent sticking and ease removal.

Fill the Mold: The mixture is poured into the mold, compacted well, and allowed to set. Holes can be made using sticks to facilitate drying and allow for hanging.

Stage 6: Curing and Storage

Curing: The blocks should be left to dry and harden in a dry, shaded area for at least 2-3 weeks.

Storage: Store the blocks in a dry place, wrapped in polythene to protect them from moisture and air. Blocks can be stored in the barn for immediate use or kept aside for future needs.

E. TYPES OF MINERAL BLOCKS

Different types of mineral blocks can be formulated to cater to various needs:

- **Urea Molasses Mineral Blocks (UMMB):** These blocks provide a balanced diet, especially in areas where animals are primarily fed straw and crop residues. UMMBs enhance the nutritive value of the diet and improve overall animal health.
- **Enriched Paddy Straw Blocks:** These blocks increase milk yield and are especially useful for feeding low-yielding cows.
- **Medicated Feed Blocks:** These blocks contain dewormers and are useful in preventing parasitic infections in areas with high worm burdens.



- **Anthelmintic Incorporated Mineral (AIM) Blocks:** Designed for sheep and goats to improve fertility and reduce the incidence of pica (abnormal craving for non-food substances) and kid mortality.

E. PRECAUTIONS IN USING MINERAL BLOCKS

While mineral blocks offer numerous benefits, certain precautions must be observed:

- **Gradual Introduction:** Introduce blocks gradually to prevent overconsumption, which can lead to toxicity, particularly with urea.
- **Placement:** Suspend blocks rather than placing them on flat surfaces to discourage biting and encourage licking, which controls intake.
- **Storage:** Keep blocks dry and protected from moisture to prevent them from softening or degrading.
- **Animal Suitability:** Ensure that blocks are suitable for the specific type and age of the animals being fed, especially when using medicated or high-urea blocks.

CONCLUSION

Mineral blocks are an effective, economical, and convenient way to ensure livestock receive the necessary minerals for optimal health and productivity. By tailoring the composition of these blocks to the specific needs of their animals, farmers can improve growth, reproduction, and milk production while minimizing costs and wastage. This approach not only enhances the well-being of livestock but also supports sustainable farming practices.