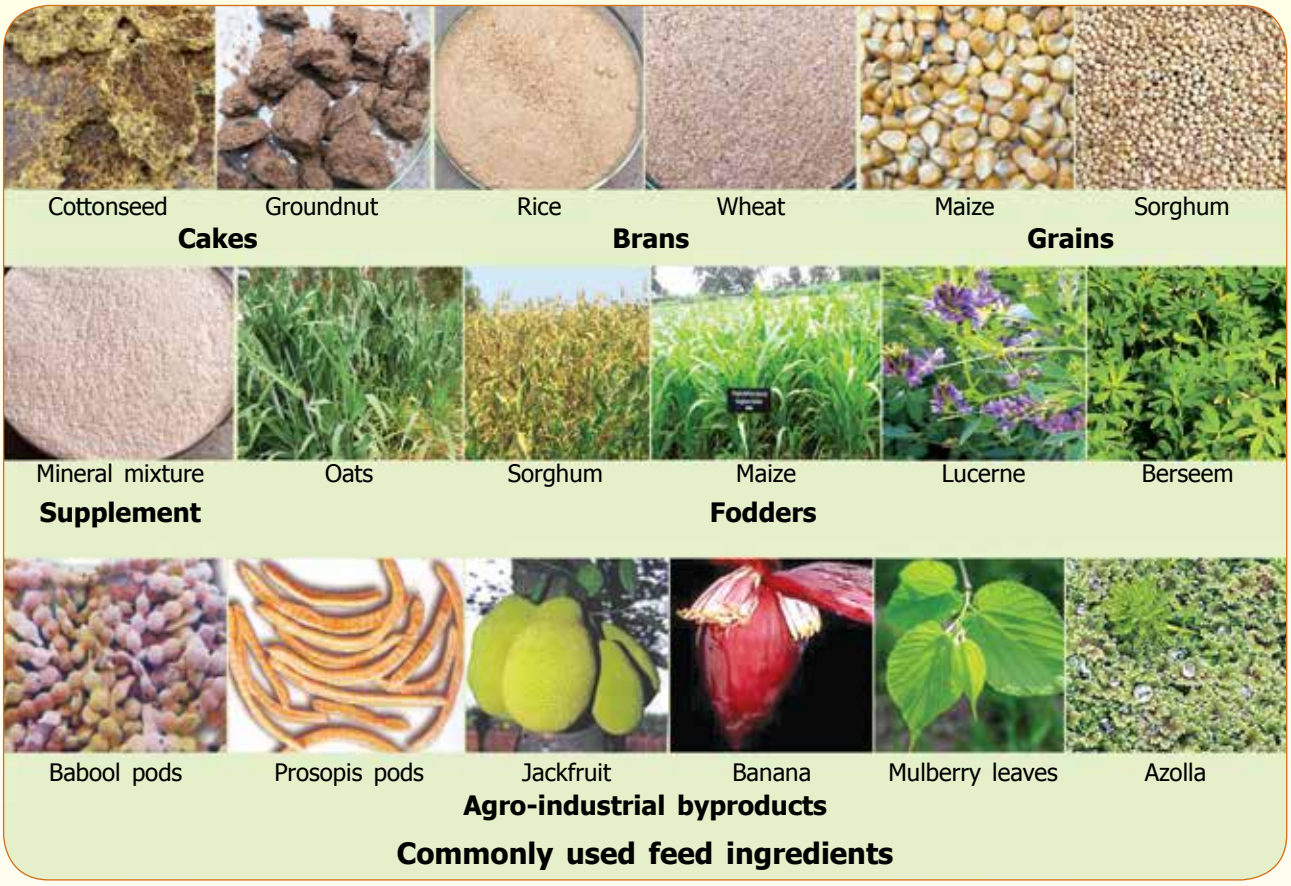
# Ration Balancing Programme




## An effective tool to improve milk production at least cost

National Dairy Development Board
Anand

## Introduction

The feed given to animals usually comprises one or two locally available concentrate feed ingredients, grasses and crop residues. This leads to imbalanced feeding which means that proteins, energy, minerals and vitamins in the ration are either more or less. While imbalanced feeding adversely affects the health and productivity of animals in various ways, it also reduces the net daily income to milk producers from dairying because the potential of milk production of animals is not fully exploited. At times, when the animals are overfed, this can also raise the cost of milk production.

Therefore, milk producers need to understand the implications of imbalanced feeding and recognise the importance of giving their animals balanced ration.

## Disadvantages of imbalanced feeding

- Low milk production, poor growth and reproduction
- Milk production of animals lower than their genetic potential
- Shorter lactation length and increased inter-calving period
- Animals more prone to metabolic diseases such as milk fever and ketosis
- Slow growth of young animals delaying the age of first calving
- Low productivity and shorter duration of productive life

## What is ration balancing?

All species require balanced ration for optimal growth. Ration balancing is the process to balance the level of various nutrients of an animal, from the available feed resources, to meet its nutrient requirements for maintenance and production.

### Types of dietary feed ingredients

- **Compound cattle feed**: This is considered to be a balanced source of nutrients for growth and milk production. However, only 10 to 12 per cent of the total feed ingredients are used to produce compound cattle feed. Compound cattle feed does not always complement the feed ingredients used by milk producers.
- **Other feeds**: Feed ingredients like rapeseed cake/meal, groundnut cake/meal, sunflower meal, cottonseed cake/meal, soya bean meal, guar meal, maize gluten, sesame cake, coconut cake, linseed cake, safflower meal, deoiled rice bran, rice polish, wheat bran, maize bran, maize grain, sorghum grain, wheat, broken rice, millets and chunnies are fed as such, depending on availability and cost.
- **Crops residues & grasses**: Wheat straw, paddy straw, sorghum straw, maize stovers, straw of pearl millet and locally available grasses are fed as basal feed.
- **Green fodder**: Maize, sorghum, oats, hybrid napier bajra, lucerne, cowpea and berseem are available seasonally and fed in a limited quantity.
- **Mineral mixture**: This is a source of macro and micro minerals, usually lacking in the animal's ration.

## NDDB's Ration Balancing Programme

The objective of this programme is to produce an optimum quantity of milk at the least cost from milch animals by readjusting, wherever required, the proportion of locally available dietary feed ingredients, so as to provide them adequate amounts of proteins, minerals, vitamins as well as energy. NDDB has developed a user-friendly software for ration balancing, that can be used by dedicated local resource persons (LRPs).

The LRP is trained by the implementing agency to effectively use the software in the local language and involves the following steps:

1. **Assessing nutrient status of animals**: This is assessed on the basis of prevalent feeding practices as well as factors such as the level of milk production, milk fat per cent, body weight, lactation stage and pregnancy status.

2. **Assessing chemical composition of locally available feed resources**: The software contains a database of the analyses of the chemical composition of feeds and fodders available in various parts of the country. The chemical composition of different grains, oil cakes/meals, brans, chunnies, agro-industrial byproducts, cultivated green fodders, grasses, crop residues, tree leaves and mineral supplements can be known through this software.

3. **Assessing nutrient requirement of animals**: The software has a database of the nutrient requirements of the various types of animals based on the feeding standards commonly followed in India. The total nutrient requirement of an animal is assessed for dry matter, crude protein, total digestible nutrients (TDN), calcium and phosphorus.

4. **Formulating least cost balanced ration using locally available resources**: Based on chemical composition of available feed resources and in accordance with the nutrient requirement of the animal/s, the software computes the least cost ration within the given nutritional and available resource constraints. The LRP advises the milk producer to prepare the least cost ration using feed ingredients in the proportion as indicated by the software. In case there is a change in feed resources, the LRP reformulates the least cost ration through the software.

Demonstration of ration balancing programme to milk producers

**A technical officer explaining the concept of RBP to LRPs**

**A milk producer feeding balanced ration to her cow**

The local resource person (LRP) revisits the milk producer according to his/her requirement and keeps a record of the various observations related to the quality and quantity of milk, including the cost of milk production before and after implementation of the Ration Balancing Programme and increase in the net daily income per animal.

For this purpose, implementing agencies provide the necessary facilities such as a personal digital assistant/netbook loaded with NDDB's Ration Balancing Programme software, a weighing balance, measuring tape and ear tags with applicators, to the LRP.

The LRP functions in a dedicated manner to implement the Ration Balancing Programme in a village and provides services to the farmers.

## Implementing agencies for Ration Balancing Programme

Various agencies such as dairy cooperatives, service providing organisations and NGOs can implement the Ration Balancing Programme.

## Benefits of Ration Balancing Programme

- Uses locally available feed resources to balance the ration of animals at least cost
- Increases milk production with more fat and solids-not-fat
- Helps increase the net daily income
- Improves reproduction efficiency
- Helps reduce inter-calving period, thereby increasing the productive life of animals
- Improves the general health of animals
- Improves the growth rate in calves leading to early maturity

For more information, please contact: Dr M R Garg • mrgarg@nddb.coop