

# **JOB ROLE – DAIRY FARMER-I**

Sector – Agriculture

(Qualification Pack Code: Ref.Id.AGR/Q4101)

Class XI<sup>th</sup>



PSS Central Institute of Vocational Education  
Shyamla Hills, Bhopal – 462 013 , Madhya Pradesh, India

---

[www.psscive.ac.in](http://www.psscive.ac.in)

## **Unit 4 : Providing Feed and Water for Livestock**

### **Session 2 : Feeding of dairy animals**

# Content

| Title  | Slide No. |
|--|-----------|
| Session Objectives   | 04        |
| Introduction   | 05        |
| Requirement of feed  | 06        |
| Feed Requirement based on Thumb Rule Methods                   | 07-08     |
| Feed requirements on the basis of various stages of production | 09        |
| Feed requirements based on scientific feeding standards        | 10        |
| Feed supplements for optimum growth and production             | 11        |
| Major ingredients for feed preparation                         | 12        |
| Major feed ingredients used for preparation of rations         | 13-14     |
| Summary  | 15        |

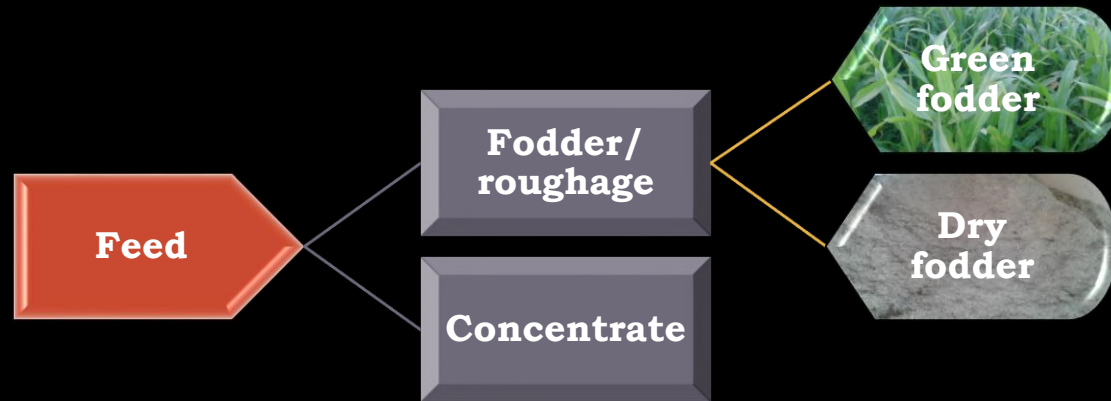
# Session Objectives

In this session the students will learn about

- Types of animal feed
- Requirement of animal feed
- Feed requirement based on thumb rule method
  - Based on dry matter
  - Based on various stages of production
  - Based on scientific feeding standards
- Feed supplements for optimum growth and production
- Major ingredients for feed preparation

# Introduction

- Dairy animals consume mainly two types of feed: concentrates and fodder .



- Fodder may be either in green form or dry form.
- It is always better to meet an animal's nutrient requirement from good quality green fodder, as its nutritive value is equivalent to concentrate mixture.
- The concentrate requirements can be replaced by good quality green fodder to a certain extent

**Feed is required for**

**Maintenance**

Minimum requirements of nutrients to maintain the normal body conditions and functions of the animal.

**Growth**

Growing animals need nutrients to meet requirements for increases in body size and weight. Growth requires an extra 20 percent of the maintenance ration, if the animal is 3 years old or less. If over 3 years and under 4 years, 10 percent extra is needed but for an adult animal over four years of age a maintenance diet is sufficient.

**Lactation**

Lactating animal need additional nutrients for milk production. Such nutrients' requirements depend upon the level of milk production and composition of the milk.

**Pregnancy**

A pregnant animal needs additional nutrients for the growing foetus. During the last three months of the pregnancy, the growth of foetus and placenta is comparatively faster and therefore extra nutrients are required in this period.

**Work (draft)**

Male cattle are extensively used for draft and pulling work. To meet the nutrient requirement for the heavy work done by such animals, they need extra nutrients depending upon the duration and type of work (heavy or light).

# Feed requirements based on thumb rule methods

- Feed requirements for maintenance based on dry matter
- All feeds contain some amount of water. If all the water of a feed is taken out, the remaining content of the feed is termed as dry matter (DM).
- DM intake is the amount of feed the animal consumes per day less the moisture content in that feed.
- Animals need to consume a certain amount of DM per day to maintain health and production.
- Daily DM requirements of indigenous breeds of cattle are about 2.0–2.5 per cent of their body weight.
- Crossbred cows and buffaloes daily consume higher DM, i.e., 2.5–3.0 per cent of their body weight.

## Total DM required



If the source of green roughage is non-legume



1/3<sup>rd</sup> green roughage

2/3<sup>rd</sup> dry roughage

If the source of green roughage is legume



1/4<sup>th</sup> green roughage

3/4<sup>th</sup> dry roughage



# Feed requirements on the basis of various stages of production

| Category of animals                 | Stages of production             |                  |                           |   |                                   |
|-------------------------------------|----------------------------------|------------------|---------------------------|---|-----------------------------------|
|                                     | Maintenance                      |                  | Milk production           | Pregnancy<br>(extra feed for pregnant animal over 5 months) | Growth<br>(extra feed for growth) |
|                                     | Straw/dry fodder (kg)            | Concentrate (kg) | Concentrate               | Concentrate (kg)  | Concentrate (kg)                  |
| Indigenous cattle                   | 4-5                              | 1.25             | 0.4 kg / litre milk yield | 1.25  | 1.00                              |
| Crossbred cattle                    | 4-6                              | 2.00             | 0.4 kg / litre milk yield | 1.75  | 1.00                              |
| Buffaloes                           | 4-6                              | 2.00             | 0.5 kg / litre milk yield | 1.75  | 1.00                              |
| Breeding bull                       | As per free choice of the animal | 2.50             | ---                       | ---   | ---                               |
| Bullock (working over 4 hrs. daily) | As per free choice of the animal | 3.00             | ---                       | ---   | ---                               |

# Feed requirements based on scientific feeding standards

- Feeding standards are a description of the exact quantity of all the nutrients required by the animals for maintaining their health and production.
- In calculating these standards, the body weight of the animal is the primary criterion.
- Feeding standards have been developed through experimentation, and have been modified and upgraded from time to time and contain the requirements of nutrients in tabular form.
- Some of the popular feeding standards are NRC (National Research Council)—the feeding standard of America, ARC (Agricultural Research Council)—the feeding standard of UK, and ICAR (Indian Council of Agricultural Research)—the feeding standard of India.

# Feed supplements for optimum growth and production

- Feed supplements are non-nutritive in nature and added for
  - (i) preserving nutritional properties of stored feeds (i.e., antioxidants and mold inhibitors)
  - (ii) facilitating feed pelleting (i.e., in their action as emulsifiers, stabilizers and binders)
  - (iii) facilitating growth (i.e., antibiotics and hormones)
  - (iv) facilitating feed ingestion and consumer acceptance of the product (i.e., colors)
  - (v) supplying essential nutrients in purified form (i.e., vitamins, minerals, amino acids, cholesterol and phospholipids)

## Major ingredients for feed preparation

- Like human, animals need a balanced diet for maintenance of body and production of milk, meat, etc. A single feed ingredient cannot meet the total nutrient requirement of the animals
- Various ingredients need to be mixed to get the well-balanced ration which can fulfil the nutrient requirement of dairy animals.

# Major feed ingredients used for preparation of rations

| Categories      | Common ingredients   |
|-----------------|--|
| Cereals         | Maize, wheat, barley, sorghum, millet, etc.                                |
| Oil cakes       | Soybean, groundnut, rapeseed, cottonseed, sesame, mustard, etc             |
| By-products     | Wheat bran, rice bran, rice polish, broken rice, dal chunnies, etc.        |
| Animal proteins | Fish meal, meat and bone meal, blood meal, etc.                            |
| Mineral sources | Di-calcium phosphate (DCP), limestone, oyster shells, dolomite stone, etc. |
| Other items     | Molasses, vegetable oils, jiggery, etc.                                    |

# Major ingredients for feed preparation



**Maize**



**Canola Meal**



**Wheat Bran**



**Cotton Seed Cake**



**Rice Bran**



**Dicalcium Phosphate**



# Summary

In this session the students have learnt about :

- Types of animal feed
- Requirement of animal feed
- Feed requirement based on thumb rule method
  - Based on dry matter
  - Based on various stages of production
  - Based on scientific feeding standards
- Feed supplements for optimum growth and production
- Major ingredients for feed preparation

**Project Coordinator : Dr. Kuldeep Singh**

**Assistance**

**Dr. Mukur Ganguly**



**Joint Director**

**PSS Central Institute of Vocational Education**

**Shyamla Hills, Bhopal – 462013 , Madhya Pradesh, India**

---

**E-mail: [jdpsscive@gmail.com](mailto:jdpsscive@gmail.com)**

**Tel. +91 755 2660691, 2704100, 2660391, 2660564**

**Fax +91 755 2660481**

**Website: [www.psscive.ac.in](http://www.psscive.ac.in)**