CHAPTER – 10

Feeding and watering of animals

Objectives

Feeding of animals, amount of feed and water to be given to the animals.

Introduction

Feeding of the animals is started from morning 6 am to evening 8 pm. During milking it is started with milking in dairy animals with the concentrate mixture and after that watering at around 8 am. Then green and dry fodder and again concentrate during the milking time. Amount of roughage and concentrate varies with stage of the animals and their level of production. Drinking water must be clean, free from pathogenic microbes and algae etc.

Some terms related to feeding of animals

1. **Dry matter:** The feed without moisture sometime referred as total solids. This is the sum of crude protein, ether extract, crude fibre and nitrogen free extract and ash. For example, fresh maize fodder have 75% moisture indicates 10 kg of fresh maize fodder will give (10*75/100 or 2.5 kg dry matter). Concentrate mixture and straws are having 88-92% DM.
2. **Fodder:** green or dry entire above ground part of forages or crops used for animal feeding.
3. **Hay:** the aerial apart of finer stemmed forage crops stored in dry form (moisture comes down to 15-20%). Lucerne and oats fodder are stored in this form due to finer stem and these are to be harvested
4. Legume: Refers to the crops that can fix atmospheric nitrogen into soil through bacteria that live in their roots. Berseem, lucerne, cowpea, clovers etc are the best example and these are to be grown in the land used for rice –wheat cultivation which extract nitrogen from the soil.
5. **Nutrient:** Compounds that lies in feeds/ foods performs specific function in the animal body. For example, fibre in the ruminants or dairy animals have gut filling effect, laxative effect and through fermentation produces volatile fatty acids, that resulting in glucogenic and ketogenic effect. Gluogenic effects causes glucose production and ketogenic effects produces fatty acids and fat in the animal body.
6. Ration and balanced ration: A ration is the feed allowed for a given animal during a

day of 24 hrs. The feed may be given at a time or in portions at intervals. Balanced ration may be defined as the ration that provides all essential nutrients to the animal in such a proportion and amounts that are required for the nourishment of the particular animal for 24 hrs.

7. Desirable characteristics of balanced ration:

   a) Liberal feeding: Animal should be provided plenty with all requirements which are necessary avoiding overfeeding or deficiency, both of which affect the utilization of nutrients in the system for various physiological state.

   b) Individual feeding with balanced ration: Animals should be fed individually instead of herd or flock to fulfill the requirement and minimize the loss and maximize the profit from animal rearing. It will also help to maintain proper physiological functions.

   c) Palatable, good, sound and laxative ration: Bad smell, mouldy, spoiled and poor quality feeds are not taken up by the animals. Feeds should be palatable, sound with good quality without any toxic principles. Feeds/ fodders should be laxative enough otherwise it will incompletely digested and essential nutrients will not be available to the animals. Constipation is often associated with various digestive disorders.

   d) Variety of feeds with vitamins and minerals: For balancing the ration variety of feeds should be incorporated so that deficiency of nutrient in a particular feed may be compensated from the other feedstuffs. At the same time concentrate mixture should contain 2 percent of mineral mixture and 1 percent of common salt to fulfill the mineral mixture as these are important for many vital functions in the body.

   e) Fairly bulky ration with green and dry combination: 2/3rd of the ration must be green and dry combination for optimum production in terms of growth and milk yield. Greens are bulky, easily digestible, laxative and contain enough vitamins and minerals. Green and dry fodder is also essential for dietary fibre and maintaining optimum rumen environment.

   f) Proper mixing, sudden change and economic ration: Sudden changes are often associated with digestive disorders resulting in inappetence causing reduction in milk yield. Green and dry fodder or ingredients used in concentrate mixture are to be mixed properly to avoid any undesirable effect. The ultimate aim is to make animal healthy and profit out of the animal rearing.

Water

Water is the ideal dispersing medium because of its solvent and ionizing powers which

facilitates cell reaction and due to its high specific heat which helps to absorb the heat of these reactions with a minimum rise of temperature. Lean adult body contains about 70 percent of water, though the amount varies from embryo to mature animals. In case of animals, the water content is approximately 95 percent for the embryo shortly after conception, 75-80 percent at birth, 65-72 percent at 5 months and 40-65 percent in mature animal which indicates the importance of water in animal body. It is to be noted that India with less than 3 percent water resources harbouring more than 11 percent animals and more than 16 percent human beings. So, we have to use water in judicious way for better future.

Functions of water

a) By solvent action, it serves as universal medium in which cellular reaction, ionic and other reaction takes place.

b) Lubrication: It acts as lubricant to prevent friction and drying in joints, pleura, conjunctive etc.

c) Hydrolytic action: In this process H^+ and OH^- ions water introduced into bigger molecules to breakdown process.

d) Cell rigidity and elasticity: The body must have a definite form which it can be retain and yet within limits it must be able to change its shape by comprising to some extent to the force applied at any particular point. This is made possible by liquid content of the cell.

e) Transport: It acts as a vehicle for transporting absorbed and reabsorbed of various food materials and excretory products to the definite organ.

f) Heat regulation: As the specific heat of water is high, it is important in heat regulation of body by conduction and distribution, heat loss through urine, feces and respiration as well as sweating.

g) Refractive medium: The aquous humor helps to keep up the shape and tension of the eye ball and acts as the refractive medium of light.

Note: For feeding and watering animals one should stay at any farm/ herd for at least 72 h or 3 days and more for practical purposes.

Sample questions

1 What is balanced ration? What is the importance of forages in dairy animals?

2 Write 3 important desirable characteristics of balanced ration.

3 Write down the main functions of water in animal body.