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Animal Husbandry

Ever since the beginning of civilisation, humans have depended on animals for many requirements, such as that of food (milk, meat and egg), clothing (hide or wool), labour (pulling, carrying load) and security etc. The development of desirable qualities in all such animal species, through creating better breeds, has been an important human achievement. For this, humans have consistently tried to improve the breeds of domesticated animals to make them more useful for them. In this lesson, you will learn about the common breeds of such animals, their uses and some methods of improving their breeds.

OBJECTIVES

After completing this lesson, you will be able to:

- *define the term Animal Husbandry;*

- *defferentiate between wild, tamed and domesticated animals;*

- *classify the domesticated animals into various categories;*

- *list the high yielding breeds of cattle in India and abroad;*

- *describe in brief the raising and caring of cattle;*

- *enumerate principal dairy products;*

- *describe modern techniques of genetic improvement such as artificial insemination and embryo transplant;*

- *list the important breeds of cattle, pig, sheep, goat, horse, poultry and their specific uses;*

- *list the common diseases of animals, their symptoms and their causal organisms.*

33.1 ANIMAL HUSBANDRY

The branch of science, which deals with the study of various breeds of domesticated animals and their management for obtaining better products and services from them

is known as **Animal Husbandry**. The term husbandry derives from the word "husband" which means 'one who takes care'. When it incorporates the study of proper utilisation of economically important domestic animals, it is called **Livestock Management.**

Different Categories of Animals

Wild –Those that breed better where they are free than they do when they are captivated. They have no common use for humans. Example Lion, Tiger, Rhinoceres, Deer etc.

Tamed – Those, which are caught from the wild and trained to be useful to humans in some way. Elephant, Chimpanzee, Gorilla, Yak etc.

Domesticated – Those that are of use at home and are easily bred and looked after by humans. Common domesticated animals are dog, horse, cow, sheep, buffalo, fowl etc.

Importance of domestic animals

On the basis of utility, domestic animals are categorised into the following functional groups

1.	Milk giving animals	Cattle, buffalo, goat, sheep etc.
2.	Draught (used for load bearing) animals	Bullock, horse, donkey, mule, camel, elephant, yak etc.
3.	Fibre, hide and skin yielding	Sheep, goat, cattle, buffalo, camel etc.
4.	Meat and egg yielding animals	Fowl (hen) and duck, goat, buffalo, pig etc.

33.2 MILK AND MEAT YIELDING ANIMALS

Depending upon the availability and regional considerations different animals are reared for the purposes of yielding milk and meat in India. India is the world's largest producer of milk. The majority of the milk consumed is also in liquid form in India. Over 53% of milk produced in India is from the water buffalo and a majority of milk processing plants in the country depend upon buffalo milk.

The **National Dairy Development Board (NDDB)** is the main agency behind the cooperative movement in India. India is now seeking joint ventures and financial participation from the private sector including foreign investment for production of milk and milk products in India.

Cattle

Cattle mainly include cow, bull, oxen, goat, sheep etc. The females of the species provide milk, which in turn contribute animals protein to the diet of people. While the female species of these cattle are used for milk, the male species play an

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important role in the agricultural economy by providing labour, meat and hide. Milk itself is taken in many forms like ghee, curd, butter and cheese etc. The excreta of these animals (dung) is used as manure, in biogas and as fuel. There are several important breeds of cattle in India and abroad.

33.2.1 Milk yielding animals

What is a breed ?

A breed is a group of one species of animals, which have the same descent and are similar in body shape, size and structure.

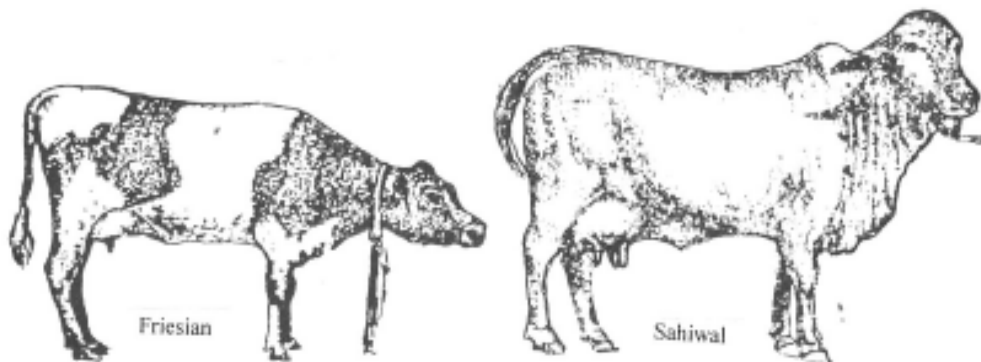### Categories of Important breeds:

There is following three categories

1. Indian breeds 2. Exotic Breeds 3. Improved breeds

(a) Indian Breeds

Gir, Sahiwal, Red Sindhi, Thararkar, Kankrej etc. are some high yielding varieties of Indian cattle (Fig. 33.1)

Fig. 33.1 Indian breeds of high milk yielding

(b) Exotic Breeds (Imported breeds)

Hilstein, Friesian, Jersey, Swiss etc. are some of the high yielding varieties that have been imported from abroad and reared widely in India.

(c) Improved breeds of Indian cattle

Certain improved breeds have been developed by making a cross between two desired breeds. A cross between **Sahiwal** and **Friesian** varieties has been named as Friewal, Karan Swiss is another improved breed for milk production in large quantities. Table 33.1 shows some indian breeds, their milk yield and distribution.

Table 33.1 Some Indian Breeds and their Milk Yield

Breed	Milk yield (litres) Per lactation period	Distribution
Gir	1200-2200	Gujarat, Rajasthan, Maharastra
Red Sindhi	700- 2200 Pakistan	Andhra Pradesh, all part of world including India and
Sahiwal	1100- 3100	Haryana, Punjab. Uttar Pradesh
Kankrej	1400	Gujarat
Tharparkar	700-2200	Rajasthan
Mewati	1100	Rajasthan
Ongole	700	Andhra Pradesh
Hariana	500	Gujarat,Rajasthan
Hallikar	227-1134 litres	South India
Kangayam	665 litres	Tamil Nadu
Murrah	20-22 litre/day	Punajb, Haryana, Uttar Pradesh

Lactation Period is the period of milk production between birth of a young one and the next pregnancy and it usually lasts about 300 days.

Breeds of Buffaloes

Breed	Distribution
Murrah	Haryana and Punjab
Bhadawari	Uttar Pradesh and Madhya Pradesh
Jaffarabadi	Gujarat
Surti	Gujarat
Mehsana	Gujarat (cross breed between Surti and Murrah)
Nagpuri	Maharastra
Nill Ravi	Punjab
Porlakmedi	Orissa

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33.2.2 Cattle feed

The main feed of cows and buffaloes are grass but this does not provide them all the nourishment. They require balanced diet in the form of roughage which is fibrous food containing large amount of fibres such as hay fodder, leguminous plants-soyabeans, peas and cereals like maize, jowar etc.

The diet of cattle mainly consists of roughage (dry or green fodder or fibrous food) and concentrates like grains, oil cakes and seeds, mineral salts and vitamins.

33.2.3 Dairy Products

Milk as drawn from the animals is known as full cream milk. When the cream is separated and the remaining milk is called toned milk. This milk contains no fat and is known as **skimmed milk**. On the basis of fat contents the various milk product are as follows:

Cream : It is prepared by churning milk, the fat comes on the top which is separated by draining out the liquid. It is known as cream with 10-70% fat contents.

Curd : Milk is converted to curd due to bacterial activities.

Butter Milk : It is the left over liquid after removal of butter.

Ghee : After heating butter, the water evaporates and fat contents are almost 100%.

Condensed milk : Milk is concentrated by removing water contents with or without adding sugar. It has 31% milk solids with 9% fats.

Powdered milk : It is the powdered form of milk.

Cheese : It is coagulated milk protein-casein with fat and water.

Khoya : A desicated milk product prepared by evaporating water contents and reducing the bulk to about 70-75%.

Cattle Dung : Cattle dung is mainly used to make dung cakes for burning as fuels. It is used mainly in villages of India. The farmers also use cattle dung to produce bio gas and the leftover residue as manure.

Biogas plant (Gobar gas plant)

Bio gas plant is a chamber where animal excreta (Cow dung, buffalo dung etc) and some anaerobic bacteria are fed into airtight biogas chamber. Decomposition of excreta produces methane gas used as a smoke free gas for cooking. This gas can also be utilized for lighting. The left over solid residue serves as a good manure.

33.2.4 Meat yielding animals
(i) Sheep

Sheep is the second largest species reared by mankind and it provides wool, meat, milk and hide. Their droppings form good manure. Important breeds of sheep in India are as follows:

Breeds of Sheep

Breed	Distribution
Chokla	Rajasthan
Nial	Rajasthan and Haryana
Marwari	Rajasthan and Gujarat
Magra	Rajasthan
Jaisalmeri	Rajasthan
Pugul	Bikaner (Rajasthan)
Malpura	Rajasthan
Potanwadi	Uttar Pradesh and Delhi
Muzaffararanagari	Haryana
Hissardale	Himachal Pradesh and Haryana
Nellore	Andhra Pradesh
Bellary, Hassan, Mandya	Karnataka
Mecheri, Kalikarsal, Vembur	Tamil Nadu

Exotic Breeds

The main exotic breeds of sheep are Toggenberg, Saanen, French, Alpine and Nuibian and Angora.

Feeding of sheep

They feed on green grasses and other wild plants. When sheep are reared for a particular purpose, they are given protein, minerals and vitamin rich food. The main constituents of their food are as follows :

Leguminous fodder : Urad, mung, berseem etc.

Oil cakes : Groundnut, seasame cake, (rich in proteins)

Grains : Maize, barley, oats and jowar.

Lime, common salt : Sterilised bone meal (rich in mineral salts)

(ii) Goat

Important breeds of goats used for milk, meat and hide. There are about 19 well known Indian breeds, apart from a number of local non-descript breeds that are scattered throughout the country. The breeds are mentioned below on the basis of their location.

Himalayan Region (hilly track)

Cham, Gadd : Kashmir, Himachal Pradesh , Jammu and Kashmir

Pashmina : Himachal Pradesh, Ladakh, Lahul and Spiti valley

Chegu : Kashmir

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Northern Region

Jamunaparu – Uttar Pradesh, Madhya Pradesh

Beetal – Punjab

Barhari – Delhi, Uttar Pradesh, Haryana

Central Region

Marwari, Mehsana and Zelwadi – Rajasthan, Gujarat and Madhya Pradesh

Kathiawar – Gujarat and Rajasthan

Southern Region

Surti – Gujarat

Deccani, Osmanabadi – Andhra Pradesh, Tamilnadu

Malabari – Kerala

Eastern Region

Bengali – West Bengal, Assam and Tripura

Feeding of goat

The goats are fed on open fields with enough green. They can be only given cereal and grain products. Sometimes however, a milk goat requires a balanced feed with 4-5 kg of fodder and a mixture of crushed grains such as yellow maize, jowar and other cereals and ground nut or linseed oil meal or steamed bone meal.

(iii) Pig

Pig farming is gaining importance in India. Pigs provide only 8% of total meat production in our country. Pig skin, fat and hair are required for leather, soap, oil, hair-brush industry respectively. Pig manure is rich in nitrogen, phosporus and potassium.

Pigs contribute about 5% of total meat production in India, and constitute a rich source of animal protein available at low cost. The calorific value of Pork (pig's meat) is much more than the other edible meats. Pigs can feed on farm waste, garbage and spoiled grains.

Breeds of pigs

Breed	Distribution
Large white Yorkshire	England, India
Middle white Yorkshire	England, India
Landrace	Denmark
Essex saddleback	Hempshire
Tamworth	England
Bershile	England

INTEXT QUESTIONS 33.1

1. What is practice of feeding, caring and breeding of domestic animals is called?

   ....

2. Give difference between wild, tamed and domesticated animals.

   ....

3. Name two high milk yielding varieties of Indian cattle.

   ....

4. What does cattle feed mainly consists of ?

   ....

33.3 DRAUGHT ANIMALS

Draught animals are animals need for carrying load. From time immemorial a number of animal species have been used for special purposes by humans, utilising their mechanical strength, endurance and speed. These include horse for riding and swift running; elephant for riding, strength and heavy load lifting, camel for riding in sandy desert and ability to survive without water for long duration, donkey and mule (a hybrid of male donkey and female horse) for carrying load. Most of the draught animals are herbivorous and survive on leaves of trees, shrubs and bushes. While raising them, they are also fed on grains, beans, cottonseeds, maize and bran besides dry/ green fodder. In Rajasthan, camel is used for yielding milk also.

Horse

The horse has fast movement, great stamina and endurance. Its body is suited for ride, load pulling, mountain climbing and forest travelling. So the horse is an important draught or work animal. They learn fast and can be maintained easily in various climatic conditions. Due to their ability to move swiftly in rough areas, they are still useful in hills and in the deserts.

Common Indian breeds and their distribution are as follows-

Breed	Region
Kathiawari or kaunchi	Rajasthan and Gujarat
Marwari or malvi	Rajasthan
Bhutia	Tarai belt of Himalayan region (Punjab-Bhutan)
Manipuri Pony	Eastern hill region
Sipti Pony	Himachal Pradesh

33.4 FIBRE, HIDE AND SKIN YIELDING ANIMALS

Besides providing meat, milk and transport, livestock provide many commercially useful products such as fibre, skin and hide. Generally sheep and goat provide fibres for making of products like wollen strings, ropes, carpets, clothing and brushes etc.

33.5 EGG YIELDING ANIMALS

This category consists of egg producing animals whose eggs are used as food by mankind to provide proteins. **Poultry farming is defined as a term for rearing and keeping of birds such as fowl, duck and hen for egg and meat**. Poultry farming has become popular because it is comparatively easy to start and maintain. It gives quick return within one to six month of investments,, is easily manageable and requires less space and labour. Poultry birds and their eggs are a rich source of nutrients. Figure 33.2 gives a comparative account of the composition of fowl meat and that of eggs.
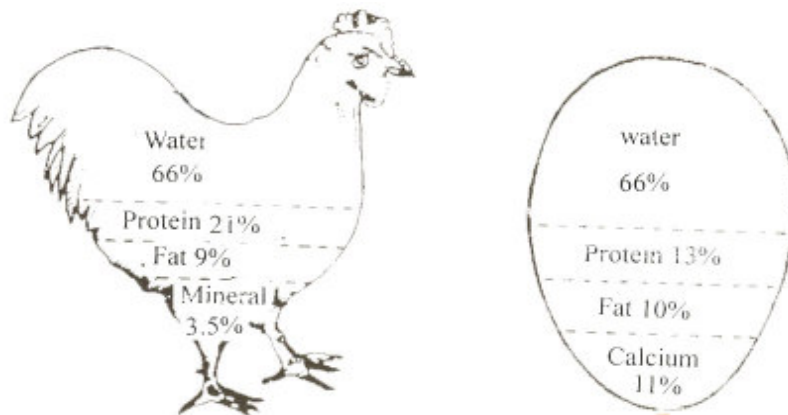
Fig. 33.2 Composition of chicken and egg.

Common breeds of Poultry birds

Indian poultry breeds provide good quality meat but produces small sized eggs. They have natural immunity against common diseases as compared to exotic varieties bred abroad which require greater protection and immunisation.

The chicken is commonly classified on the basis of its origin.

    (a) American,   (b) Asiatic,

    (c) Mediterranean and   (d) English

1. Plymouth Rock, Rhode Island Red, New Hampshire - American

2. Brahma, Cochin, Langshan - Asiatic

3. Leg horn, Minoxa - Mediterranean

4. Cornish, Australorp - English

Indigenous Breeds

Aseel – Rajasthan, Andhra Pradesh, Uttar Pradesh

Busra – Gujarat and Maharastra

Chittagong – Eastern India

Karaknath – Madhya Pradesh

(i) Indian Breeds

The Indian breeds of hen include Aseel, Chittagaog, Ghagus and Basra. Their egg laying capacity is around 200 eggs per year.

(ii) Exotic Breeds

These breeds are important from other countries and include White leghorn, Minorca, Rhode Island red. These birds have high egg laying capacity but carry less flesh as compared to Indian birds.

(iii) Upgraded variety

Some improved varieties have been developed in India by hybridisation such as B 77, ILS 82 etc. They grow fast and also have as high an egg laying capacity as the exotic varieties and are better suited to the Indian climate.

Poultry Feed

Depending upon the requirement of meat or egg production, poultry feed mainly consists of maize, rice, wheat bran, ground nut cake, fish meal, lime stones, bone meal, common salt, vitamins and minerals.

33.6 GENETIC IMPROVEMENT IN ANIMALS

The application of laws of animal health and reproduction genetics has contributed towards increase in milk, egg and meat productivity. The increase in egg production brought about the silver revolution in the area of animal husbandry. The methods being widely used are **artificial insemination** and **embryo transplant**.

(i) Artificial insemination

Artificial insemination involves collection of semen from a healthy bull of the desired breed, its storage at low temperatures and introduction into the females of cattle of other breeds for bringing about fertilisation using sterilised (germ free) equipment. Advantages of this method are:

    (a)   Up to 3000 females can be fertilised from semen collected from one bull.

    (b)   The semen can be stored for a long period and transported over long distances.

    (c)   Economical and high success rates of fertilisation.

(ii) Embryo transplant

This method of breed improvement has been quite successful in sheep and goat. In this method, embryos (depending on their period of development) from superior breeds are removed during the early stages of pregnancy and are transferred to the other female with inferior characters, in whose body the gestation period is completed. By this technique, quality and productivity in the livestock can be improved. Unlike artificial insemination, this method has low success rate due to greater chances of contamination.

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33.7 COMMON DISEASES OF ANIMALS

Domestic animals often suffer from various diseases caused due to infection by bacteria, viruses, fungi, protozoa and worms.

(a) Cattle

Common diseases in cattle are as follows:

Category of Pathogen	Disease	Symptoms
Bacteria	Anthrax	Swelling on the body reduced yield of milk
	Tuberculosis	Dry husky cough, Lungs are affected.
Virus	Foot and Mouth disease	Excessive salivation, Lameness and fever
	Rinder pest	Blood stained high fever diarrhoea
Protozoa	Trypanosomiasis	Intermittent fever and death
Fungus	Ringwork	Rounded scabs on head and neck.

(b) Poultry Disease

Rearing of poultry birds requires properly ventilated place and vaccination of new born chicks. Poultry diseases can be classified as infectious or non-infectious. Non-infectious diseases are caused by faulty management, faulty feed preparation and inadequate diet or nutritionally deficient disease. Infectious diseases are classified according to the type of disease causing organisms and are as follows.

Parasitic **(external)** – Lice, mites, tick and fleas

           (internal) – Round worms, tapeworm and hexamitiasis

Protozoan – Coccidiosis in chicken, leucocytozoonosis

Bacterial – Pullorum, Typhoid, Paratyphoid, fowl cholera

Viral – Ranikhet disease, fowl pox, infectious bronchitis, infection bursitis, avian encephalomycytis, Marek disease, leukosis, chronic respiratory disease, Hepatitis etc.

Fungal – Aspergillosis, Moniliasis
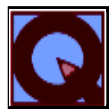
INTEXT QUESTIONS 33.2

1. Name common bacterial diseases and their symptoms in cattle.

   ....

2. Name any two improved varieties of poultry birds.

   ....

3. Name any two draught animals

   (i)   ....

   (ii) ....

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4. State two methods which we can make genetic improvement in the animals?

   (i)   ....

   (ii)   ....

5. A certain cattle is suffering from blood stained and high fever diarrhoea. Name the disease and its pathogen.

   ....

6. Mentioned common diseases in the birds.

   ....

WHAT YOU HAVE LEARNT

- Animal husbandry deals with breeding, feeding and caring of domestic animals.

- Gir, Red, Sindhi, Sahiwal and Tharparker are some high-yielding varieties of cows.

- Friesian, Jersey, Swiss are high-yielding exotic varieties of cows.

- Cattle dung provides manure, fuel, and bio-gas for cooking and lighting.

- Sheep provide milk, wool, hide and manure.

- Bikaneri, Kashmiri, Gaddi are some important breed of sheep.

- Indian Poultry birds provide more meat.

- Aseel, Ghagus, Chittagong and Basra are some good varieties of Indian Poultry.

- ILS 82 and B 77 are improved varieties of Indian poultry.

- Artificial insemination and embryo transplant are methods of genetic improvement.

- Cattle may be affected by bacterial, viral , fungal or protozoan diseases.

- Ranikhet and Fowl pox are diseases of poultry birds.

TERMINAL QUESTIONS

1. Define the term animal husbandry.

2. Discuss the importance of artificial insemination.

3. Classify animals according to their importance. Also give two examples of each category.

4. Name any three diseases that affect cattle, also name the pathogen involved and give one symptom of each.

ANSWER TO INTEXT QUESTIONS

33.1 1. Animal Husbandry

  2. See section 33.1

  3. Gir, Red Sindhi, Sahiwal

  4. Roughage and concentrate

33.2 1. Anthrax - swelling on the body tuberculosis by husky cough, lungs are affected

  2. ILS 82, B 77

  3. Horse, mule, camel

  4. (i) Artificial insemination (ii) embryo transplant

  5. Render pest, virus

  6. Ranikhet, cowl pox