

Animal Science and Technology (76)

Introduction

About 70 per cent of the Indian population is dependent on agriculture for their livelihood. Livestock constitute an important component of the agriculture and about 80 per cent of livestock is held by the small and marginal farmers. The per cent contribution of the livestock to the national economy is about 6 % of GDP.

Production and use of animal products in the human diet is receiving tremendous attention in the recent times and the need for developing modern livestock management is recognized very well. The other objectives are to provide animal power for farming and transportation and utilize agro industrial by-products for converting these into valuable animal products and also for the creation of numerous employment opportunities throughout the year. The major improvement in animal productivity will take place through new approach of biotechnology in the field of nutrition, breeding and management.

Considering the existing educational status at the higher secondary level it is obvious that the Animal Science course would provide strong backup for self and wage employment opportunities to the students in future.

Objectives

To enable the students to

1. acquire the knowledge of the habitat, general characteristics and economic utility of various breeds of cattle, buffalo, sheep, goat, poultry, pigs and dogs.
2. study anatomy and physiology of livestock and poultry.
3. understand feeding and management practices of various categories of dairy animals.
4. study various practices involved poultry keeping viz. housing, feeding, health coverage and marketing.
5. impart knowledge about sheep, goat and pig farming.
6. know housing, feeding and management practices of pups, bitches and dogs.
7. train the students in livestock management, forage production and health control measures.
8. study the various diseases of livestock and poultry including their control measures.
9. develop young entrepreneurs for self employment through livestock farming.
10. have information about role of livestock products viz. milk, meat, mutton, pork and eggs in human nutrition.

Std. XI : Theory

1. Introduction to Animal Husbandry

- 1.1 Present position of Livestock and Poultry in India and World
- 1.2 Scope and limitations for Livestock and Poultry farming in India
- 1.3 Nutritive value of animal products
- 1.4 Integrated livestock farming
- 1.5 Common terms used in Animal Husbandry

2. Cattle breeds

- 2.1 Classification of cattle breeds
- 2.2 Milch purpose- Sahiwal, Red Sindhi, Gir and Tharparkar



- 2.3 Dual purpose-Deoni, Ongole, Kankrej and Hariana
- 2.4 Draft purpose-Khillar, Dangi, Red Kandhari and Gaolao
- 2.5 Exotic breeds - Holstein Friesian, Jersey and Brown Swiss.
- 2.6 Crossbreds of Maharashtra - Holdeo and Phule Triveni
- 3. Buffalo breeds**
- 3.1 Classification of buffalo breeds
- 3.2 Murrah, Surti, Mehsana, Jaffarabadi, Nagpuri, Pandharpuri, Marathwadi
- 4. Sheep and Goat breeds**
- 4.1 Classification of sheep breeds
- 4.2 Sheep breeds: Indian (Deccani, Bannur) and Extotic (Merino, Rambouillet and Southdown) breeds.
- 4.3 Classification of goat breeds
- 4.4 Goat breeds: Indian breeds (Osmanabadi, Sangamneri, Jamunapari, Black Bengal, Barberi and Pashmina) and extotic breeds (Saanen, Alpine)
- 5. Pig and Dog breeds**
- 5.1 Classification of pig breeds
- 5.2 Pig breeds: Indian (Deshi breed) and exotic (White Yorkshire, Landrace) breeds.
- 5.3 Classification of dog breeds
- 5.4 Dog breeds: Pomeranian, German shepherd, Doberman and Labrador
- 6. Poultry breeds**
- 6.1 Classification of poultry breeds
- 6.2 Indian breeds : Aseel and Kadaknath
- 6.3 Exotic breeds : White Leg Horn and Rhode Island Red
- 6.4 Commercial strains
- 7. Animal breeding and selection**
- 7.1 Systems of breeding: Inbreeding and Outbreeding
- 7.2 Basis of selection: Individual, pedigree and progeny testing.
- 7.3 Methods of selection: Tandem, Independent culling and Selection Index Method
- 7.4 Conservation of local germplasm
- 8. Skeletal system**
- 8.1 Bones
- 8.2 Skeleton
- 8.3 Joints
- 9. Circulatory System**
- 9.1 Heart
- 9.2 Blood vessels
- 9.3 Blood
- 9.4 Blood circulation
- 9.5 Lymphatic system
- 10. Respiratory System**
- 10.1 Respiratory organs
- 10.2 Mechanism of respiration
- 11. Urinary System**
- 11.1 Organs of urinary system
- 11.2 Structure of nephron
- 11.3 Urine formation
- 12. Digestive System**
- 12.1 Organs of alimentary canal of ruminants
- 12.2 Accessory glands
- 12.3 Ruminant digestion
- 13. Reproductive System**
- 13.1 Male reproductive system
- 13.2 Female reproductive system
- 13.3 Oestrous cycle
- 13.4 Fertilization
- 13.5 Pregnancy
- 13.6 Parturition
- 13.7 Udder



14. Nervous system, endocrine glands and sense organs

- 14.1 Central Nervous system
- 14.2 Endocrine glands
- 14.3 Sense organs: Eye, ear and skin

15. Poultry anatomy and Physiology

- 15.1 Skeletal system
- 15.2 Digestive system
- 15.3 Respiratory system
- 15.4 Reproductive system
- 15.5 Endocrine glands

16. Artificial Insemination

- 16.1 Definition, advantages and disadvantages
- 16.2 Semen collection
- 16.3 Semen composition and properties
- 16.4 Semen preservation
- 16.5 Insemination
- 16.6 Embryo transfer technology
- 16.7 Cloning technique

17. Milk

- 17.1 Composition of milk
- 17.2 Properties of milk
- 17.3 Preservation of milk
- 17.4 Marketing of milk
- 17.5 Adulteration of milk

18. Forage production

- 18.1 Forage production in India
- 18.2 Cultivation practices of common fodder crops viz. Maize, Jawar, cowpea, Lucerne, Berseem, Gajraj, Subabhul

Practicals (XI)

1. Nomenclature of external body parts of livestock and poultry.
2. Demonstration of morphological features of various breeds of cattle.
3. Demonstration of morphological features of various breeds of buffalo.

4. Demonstration of morphological features of various breeds of sheep and goat.
5. Demonstration of morphological features of various breeds of dog and pig.
6. Demonstration of morphological features of various breeds of poultry.
7. Demonstration of age of livestock by dentition and horn ring method.
8. Demonstration of weight of animals by measurement.
9. Preparation of animals for show and judging of animals.
10. Handling and casting of animals.
11. Study of various body systems of ruminants.
12. Signs and detection of heat in animals.
13. Study of methods of pregnancy diagnosis.
14. Signs and stages of parturition.
15. Demonstration of internal organs of poultry and structure of an egg.
16. Study of equipments required for collection of semen
17. Analysis of milk for fat and specific gravity.
18. Identification of commonly used fodder crops.
19. Visit to local veterinary dispensary to demonstrate A.I. technique.
20. Visit to dairy plant and slaughter house

Project Work (XI)

1. Collect the information of Cattle/ Buffalo/ Sheep/ Goat/ Pig/ Dog /Poultry breeds in the surrounding area.
2. Visit and observe nearest Artificial Insemination (A.I.) Centre.
3. Visit and study co-operative milk sangh/ Government milk scheme.
4. Collect the specimens of common fodder crops.



Note : Teacher can allot any one above project work.

Std. XII

1. Feed nutrients

- 1.1 Water
- 1.2 Protein
- 1.3 Carbohydrates
- 1.4 Lipids
- 1.5 Vitamins
- 1.6 Minerals

2. Feeds and Feeding

- 2.1 Classification of feedstuffs
- 2.2 Unconventional feedstuffs
- 2.3 Preservation of forages
- 2.4 Anti-nutritional/harmful constituents
- 2.5 Processing of feedstuffs
- 2.6 Feeding standards
- 2.7 Ration
- 2.8 Thumb rule for cattle feeding
- 2.9 Watering of animals

3. Routine management practices

- 3.1 Identification of animals
- 3.2 Dehorning
- 3.3 Castration
- 3.4 Grooming
- 3.5 Milking
- 3.6 Drying off
- 3.7 Culling
- 3.8 Hoof trimming
- 3.9 Ringing of bulls
- 3.10 Deworming
- 3.11 Spraying and dipping
- 3.12 Vaccination
- 3.13 Record keeping
- 3.14 Carcass disposal

4. Housing of dairy animals

- 4.1 Objectives of housing
- 4.2 Selection of site
- 4.3 Systems of housing
- 4.4 Components of the farm buildings

5. Dairy cattle and Buffalo management

- 5.1 Raising of calves
- 5.2 Raising of heifers
- 5.3 Care and management of pregnant animals
- 5.4 Care and management of freshly calved animals
- 5.5 Care and management of lactating animals
- 5.6 Care and management of breeding bull

6. Goat Management

- 6.1 Importance of goat farming
- 6.2 Housing
- 6.3 Management of kids
- 6.4 Management of pregnant and lactating does
- 6.5 Management of breeding bucks

7. Sheep Management

- 7.1 Importance of sheep farming
- 7.2 Housing
- 7.3 Management of lambs
- 7.4 Management of pregnant and lactating ewes.
- 7.5 Management of breeding rams.

8. Poultry housing and equipments

- 8.1 Principles of housing
- 8.2 Construction of house
- 8.3 Systems of poultry keeping
- 8.4 Equipments

9. Poultry nutrition

- 9.1 Principles of poultry feeding
- 9.2 Classification of poultry feed ingredients.



- 9.3 Balanced ration for poultry
 9.4 Methods of feeding for chicks, broilers and layers
- 10. Poultry Management**
- 10.1 Hatchery Management
 10.2 Rearing of chicks
 10.3 Layer management
 10.4 Broiler management
 10.5 Marketing of poultry products
- 11. Pig Management**
- 11.1 Importance of pig farming
 11.2 Management of piglets
 11.3 Management of lactating and pregnant sows
 11.4 Management of boars
- 12. Dog Management**
- 12.1 Importance of dogs
 12.2 Management of pups
 12.3 Management of lactating and pregnant bitches
 12.4 Management of male dogs
- 13. Diseases of livestock**
- 13.1 Introduction to diseases
 13.2 Bacterial diseases : Anthrax, H.S., B.Q., Brucellosis, Enterotoxaemia, Mastitis
 13.3 Viral diseases : Foot and mouth disease, Ephemeral fever, PPR (Peste des petits Ruminants), Blue tongue, Sheep and goat pox, Rabies
 13.4 Protozoan diseases : Theileriosis, Surra and Babesiosis
 13.5 Parasitic diseases : Endoparasites and Ectoparasites
 13.6 Systemic diseases : Simple indigestion, Tympany, Diarrhoea, Pneumonia, Anaemia
 13.7 Reproductive disorders : Dystokia, Retention of placenta, Metritis,

- Prolapse of uterus, Infertility
 13.8 Metabolic diseases : Milk fever, Ketosis
 13.9 Contingency planning for livestock
- 14. Poultry diseases**
- 14.1 Bacterial diseases : Bacillary white diarrhoea, Colibacillosis, Chronic respiratory disease (C.R.D.)
 14.2 Viral diseases : Ranikhet disease, Gumboro disease, Marek's disease, Fowl pox, Bird flu
 14.3 Fungal diseases : Aflatoxicosis, Aspergillosis
 14.4 Parasitic diseases : Coccidiosis, Ectoparasites and endoparasites
 14.5 Nutritional diseases : Vitamins and mineral deficiencies

Practicals (XII)

1. Study and identification of commonly used conventional and non-conventional feedstuffs.
2. Method for silage and hay making.
3. Feeding schedules for different classes of livestock.
4. Computation of ration of various classes of livestock as per ISI standards and feed formulation by using computer.
5. Demonstration of chaffing and urea-molasses treatment.
6. Study of housing systems for livestock.
7. Identification marks for livestock.
8. Demonstration of dehorning and castration.
9. Routine management practices viz. grooming, washing, clipping and spraying.
10. Milking of animals.
11. Maintenance of various farm, breeding and health record by using computers.
12. Study of poultry housing.



13. Study of equipments required for poultry farming.
14. Computation of ration for chicks, broilers and layers as per ISI standards.
15. Grading of eggs.
16. Recording of temperature, pulse and respiration.
17. Identification and uses of commonly used medicines and instruments in animal treatment.
18. Demonstration of various methods of administration of drugs.
19. First-aid for bleeding, wound, tympany, diarrhoea and indigestion.
20. Visit to various livestock , poultry and pig farms.

Project Work (XII)

1. Practice of routine management practices of cattle/ Buffalo.
 2. Visit and study cattle / buffalo scientific byre.
 3. Visit, observe and practice scientific milking method.
 4. Vaccinations against Ranikhet disease to deshi birds in villages.
 5. Observe feeding pattern and prepare feeding schedules for cattle / buffalo.
- Note : Teacher can allot any one above project work.

List of Equipments / Materials

1. A.I equipments – Artificial vagina, latex cone, latex liner, glass tube.
2. Dairy equipments – Lactometer, Butyrometer, Gerber’s centrifugal machine.
3. Poultry equipments – waterers, feeders, nests, roosts, egg cages and trays, brooder, egg incubator.
4. Veterinary instruments – Drenching bottle, feeding cup, enema pot, irrigator, infusion set, syringe, trocar and canula, pestle mortar, milk siphon, scalpel, scissor, artery forcep, tissue forcep, Burdizzo’s castrator, automatic vaccinator, strip cup, plastic paddle.
5. Dairy farm equipments – Hot and cold branding sets, ear tags (metal and plastic), tattooing set, dehorning saw, electric dehorner, spray pump, bull holder, bull nose punch, bullnose ring, hoof trimmer, curry comb, body brush, feeding pail, wool shearer.
6. Feed processing equipments – Chaff cutter, hammer mill.
7. Computer.
8. Models of livestock breeds and body systems, laboratory model for silage making.
9. Laminated photographs of livestock breeds.
10. Charts of body systems, external body parts of livestock and poultry, structure of egg.
11. Drug museum of commonly used drugs in animal treatment.
12. Museum of commonly used feedstuffs in livestock production.

