

Livestock Production and management (LPM)

1. Ruminant Production and their Management

- 1.1 Introduction; historical back ground of ruminant production; scope, importance and present situation of ruminant and their production; common terminology, zoological classification and constraints of ruminants production in Nepal.
- 1.2 Breeds and their characteristics
 - 1.2.1 Exotic cattle breeds and their characteristic: jersey, Holstein Friesian, Brown Swiss, Ayrshire
 - 1.2.2 Indigenous cattle breeds and their characteristics: Hariyana, Sahiwal, Red Sindhi, Siri, Achame, Yak, Nak and chauri
 - 1.2.3 Indigenous buffalo breeds and their characteristics: Murrah, Surti, Jaffarabadi, Nili-rabi Lime, Parkote and Gaddi
 - 1.2.4 Exotic and indigenous sheep breeds and their characteristics: Merino, Rambullet, Romney, Damascus, Kage, Baruwal, Lampuchre, Bhyanglung
 - 1.2.5 Common breeds of goats and their characteristics: Sannan, Barbari, Beetle, Jamunapari, Kasmiri, Khari, Chyngra, Anglo-nubion, and Boar
- 1.3 Housing management of large ruminants
 - 1.3.1 Housing system: merit and demerit of housing system; provision of housing system
 - 1.3.2 Housing for small ruminants: sheep and goat
- 1.4 Care and management
 - 1.4.1 Care and management of pregnant cattle /buffalo/sheep/goat
 - 1.4.2 Care management of animal during giving birth
 - 1.4.3 Management of newly born calf
 - 1.4.4 Weaning and raising young calf artificially
 - 1.4.5 Management of lactating cow/buffalo
 - 1.4.6 Dry cow buffalo management
 - 1.4.7 Heifer management
 - 1.4.8 Managing lambs/kids from weaning to market
 - 1.4.9 Bull and buck management
 - 1.4.10 Use of draft animal in Nepalese agriculture system
- 1.5 Nature and grading of wool and factors affecting the value/quality of wool shearing care, storing and marketing of wool
- 1.6 Judging and selection of ruminants

2. Pig and Poultry Production

- 2.1 Introduction and Terminology related to pig and poultry
- 2.2 Present status, scope and importance of pig and poultry industry in Nepal.
- 2.3 Care and management of new born piglet, gilt and sow, pregnant and breeding boar
- 2.4 Housing and housing system of pig and poultry: needs of housing, site selection, housing requirement, housing equipment; system of housing.
- 2.5 Nomenclature and breeds of fowl; classification of fowl and their characteristics (Aseel, white leghorn, Rhode Island Red, Plymouth Rock , Australorp, Sussex, New Hampshire).
- 2.6 Common breeds of pig (Nepali local; Berkshire, Yorkshire, Duroc Jersey Hampshire, Landrace, Tamworth)
- 2.7 Brooding and rearing chicks: System of brooding (advantage and disadvantage); management of chicks in brooder
- 2.8 Care of the chicks during summer; effective management practices (Housing, water management feed and nutrition, medication and other Managerial practices)
- 2.9 Formation, structure, food value and chemical composition of eggs.
- 2.10 Collection, handling, grading and egg quality parameters (Quality parameters; exterior quality factors; interior egg quality)
- 2.11 Hatching of egg (selection and care of good hatching egg, abnormal egg, Methods of hatching; natural and artificial; advantage and disadvantage. Factors effecting hatching Management of incubator during incubation
- 2.12 Selection and culling of chickens: The points consider during disqualifying the birds, meat production standards, egg production standards, additional standards of good strains, culling the growing stock:
- 2.13 Care and management of broiler, pullet, breeding and laying hen.
- 2.14 Maintenance of bio - security in commercial farm; management options and Bio-security measures

3. Animal Housing and Sanitation

- 3.1 Housing: Type of housing for farm animals and poultry; selection of site, type of buildings, building materials and quality; conventional and traditional animal housing; systems of housing-head to head and tail to tail system; their advantages and disadvantages.
- 3.2 Housing for swine
- 3.3 Housing for poultry (deep litter, cage system, battery brooding)
- 3.4 Requirement of water for various species of farm animals and poultry birds
- 3.5 Sanitation: Drainage, disposal of cow dung, urine and farm animal washings
- 3.6 Ventilation: Importance of ventilation and its types and requirements
- 3.7 Diseases associated with water, poor housing and ventilation.

4. Bee Pet and Lab Animal Management

- 4.1 Introduction of apiculture and its prospects in Nepal
- 4.2 Common bee races, its morphology and anatomy
- 4.3 Management -seasonal management of honey bees
- 4.4 Honey bee products and its extraction
- 4.5 Diseases, insects and other enemies of honey bee and their control
- 4.6 Introduction and importance of pet animals in Nepal
- 4.7 Common breeds of pet animals (dogs, cats) and birds
- 4.8 Pet animals, restraining and controlling of pet animals
- 4.9 Care and management, selection of pup, habitat, food and feeding of pet.
- 4.10 Common diseases and parasites of pets with their control.
- 4.11 Introduction and importance of lab animals.
- 4.12 Care and housing system and space requirement for lab animals.
- 4.13 Computation and compound of balanced diet for lab animals
(mice, rats, guinea-pig)

5. Wild Life Production and Management

- 5.1 Introduction, definition and values of wild life
- 5.2 Present and future status of wild life population and management in Nepal
- 5.3 Wild life law enforcement
- 5.4 Distribution, habitats and housing of various classes of wild lives
- 5.5 Care of various classes of wild lives.
- 5.6 Feeding habits, feeds and feeding system of wild life.
- 5.7 Methods of restraint, capture, handling and physical examination of wild animals.
- 5.8 National park, reservoir and other protected areas in Nepal.
- 5.9 International organizations concerning wild life conservation.

6. Abattoir Practices and Animal Product Technology

- 6.1 History, definition, and present situation of abattoir and slaughter slab in Nepal.
- 6.2 Handling and care of slaughter animal and birds at lairage.
- 6.3 Inspection of slaughter animals and birds (Ante and postmortem).
- 6.4 Slaughter procedure and methods of stunning.
- 6.5 Location and layout of abattoir.
- 6.6 Water supply, ventilation and light.
- 6.7 Hygiene practices.
- 6.8 Abattoir environment impact and mitigation.
- 6.9 Bio-security and slaughter house and meat inspection Act 2055.
- 6.10 Fabrication and preservation of meat.
- 6.11 Facilities required for health safety and by products utilization.

7. Milk and Milk Product Technology

- 7.1 Definition milk and diagrammatic representation of milk constituents.
- 7.2 Composition of milk: fat, lactose, protein, energy, vitamin and minerals.
- 7.3 Nutritive value of milk.
- 7.4 Physical and chemical properties of milk.
- 7.5 Factors affecting the composition of milk.
- 7.6 Natural flavor and off-flavor of milk; way to manage natural flavor.
- 7.7 Milk processing: receiving weighing, sampling, platform test, straining, filtration and clarification.
- 7.8 Cooling system, transportation, emulsification and homogenization.
- 7.9 Pasteurization, sterilization, packaging, distribution and storage of milk and products
- 7.10 Products processing: Methods of preparation, type, flow diagram, nutritive values and uses of following dairy products- cream, butter, ghee, *khoa*, *chhena*, *dahi* (yogurt), ice-cream, powder milk, condensed milk and cheese
- 7.11 Sweets prepared from *chhena* and *khoa*

8. Meat and Meat Product Technology

- 8.1 Definition, prospects and problems of meat industry in Nepal.
- 8.2 Pre-slaughter care and handling effect on meat quality.
- 8.3 Structure and growth of muscles.
- 8.4 Chemical and biochemical constitution of muscles.
- 8.5 Eating quality of meat.
- 8.6 Meat preservation and maintenance of quality.
- 8.7 Edible and inedible carcass and their utilization and handling.
- 8.8 Conversion of muscle to meat.
- 8.9 Microbiology, deterioration and contamination of meat; safe meat production.
- 8.10 Comminuted and emulsified meat products common of Nepal.
- 8.11 Curing methods and ingredients.