

Agriculture and forestry University
Office of service commission

Subject : Animal Science

A. Livestock Production and management (LPM)

1. Ruminant Production and their
 - 1.1 Introduction, historical background 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 Care and management of pregnant animals, lactating animals, new born individuals, dry animals, heifers and breeding animals
 - 1.3 Identification, tagging, judging and selection of ruminants
 - 1.3.1 Recent advancement in animal and birds identification
 - 1.3.2 Indigenous knowledge system in animal identification
 - 1.3.3 Animal judging and body condition scoring
2. Non Ruminant Production and management
 - 2.1 Introduction and Terminology related to pig and poultry
 - 2.2 Present status, scope and importance of pig and poultry production in Nepal
 - 2.3 Care and management of new born piglet, gilt and sow, pregnant and breeding boar
 - 2.4 Brooding and rearing chicks : System of brooding(advantage and disadvantage) management of chicks in brooder
 - 2.5 Care of the chicks during summer, effective manage mental practices (Housing, water management feed and nutrition, medication and other managerial practices)
 - 2.6 Hatching of egg(selection and care of good hatching egg, abnormal egg, methods of hatching, natural and artificial, advantage and disadvantage.
 - 2.7 Care and management of broiler, pullet, breeding and laying hen.
 - 2.8 Care and management of rabbit with respect to meat and fur production
 - 2.9 care and management of breeding and pregnancy and kitten
 - 2.10 Care and management of equines of different production stages
3. Animal Housing and Sanitation
 - 3.1 Housing for cattle, buffalo, sheep, goat, pig and poultry : Types 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 Requirement of water for various species of farm animals and poultry birds
 - 3.3 Sanitation : Drainage, disposal of cow dung, urine and farm animal washing
 - 3.4 Ventilation : Importance of ventilation and its types and requirements
 - 3.5 Housing, thermoregulation and mitigation climatic impacts on birds and animals
 - 3.6 Principles and components climate smart livestock production and management system
 - 3.7 Concept of sustainable livestock production system
4. Animal Production Technology : meat, milk and their products

- 4.1 Meat and meat product technology
 - 4.1.1 Definition, prospects and problems of meat industry in Nepal
 - 4.1.2 Pre- slaughter care and handling effect on meat quality
 - 4.1.3 Chemical and biochemical constitution of muscles
 - 4.1.4 Meat preservation and maintenance of quality
 - 4.1.5 Microbiology, deterioration and contamination of meat, safe meat production.
 - 4.1.6 Comminuted and emulsified meat products common of Nepal
 - 4.1.7 Diversification of meat products and quality assurance
 - 4.1.8 Slaughterhouse and its management for quality meat production
- 4.2 Milk and Milk Products
 - 4.2.1 Definition milk and diagrammatic representation of milk constituents
 - 4.2.2 Composition and nutritive value of milk, fat, lactose, protein, energy, vitamin and minerals and the associated factors affecting it.
 - 4.2.3 Physio - chemical properties of milk, managing flavor in milk
 - 4.2.4 Milk processing : receiving weighing, sampling, platform test, straining, filtration and clarification
 - 4.2.5 Cooling system, transportation, emulsification and homogenization.
 - 4.2.6 Pasteurization, sterilization, packaging, distribution and storage of milk and products
 - 4.2.7 Products diversification , processing, quality control : Methods of preparation, type, flow diagram, nutritive values and uses of following dairy products .
 - 4.2.8 Dairy plants: element, establishment, operation, maintenance and sanitation.

B. Animal nutrition , feeds, fodder and forage production

- 5. Ruminant nutrition
 - 5.1 Introduction to animal nutrition, plant and animal cell composition
 - 5.2 Feed stuff and feeding guidelines and nutrient contents
 - 5.3 Feed ingredients : energy and protein rich.
 - 5.4 Classification, function and food source of protein, carbohydrate and lipids
 - 5.5 Function and deficiency symptoms of macro and micro minerals and soluble vitamins.
 - 5.6 Role of high fiber, low fiber diet and non-protein nitrogen in ruminant diet.
 - 5.7 Guidelines for using urea in feeds. use of unconventional feeds in ruminants diets(vegetable protein source, animal protein source, energy source and other unconventional feeds)
 - 5.8 Evaluation of animals feed quality, chemical analysis, digestibility trial, estimation by digestion trail, digestibility by different indicators method, digestibility methods, in-vitro digestibility methods.
 - 5.9 New concepts to determine requirements of proteins in ruminants, by pass protein, degradable and non-degradable protein computation of ration for cattle and buffaloes.
- 6. Nutrients digestion, metabolism, measurement and feed in nutrients
 - 6.1 Digestibility : measurement, factors affecting digestibility, determination of TDN and DCP in diets

- 6.2 Feeding standard (NRC, ARC, Indian feeding standard) for maintenance, growth, reproduction, lactation and wool production
- 6.3 Feeding requirements for young calves, kids and lambs
- 6.4 Feeding ruminants during scarcity season- Urea- molasses liquid feed, Urea-molasses- mineral blocks, straw treatment by urea.
- 6.5 Feed additives used in ruminants feeding
- 6.6 Preparation of hay and silage, advantages and disadvantages
- 6.7 Antibiotics in feeds and their residue management
- 7. Non- ruminant nutrition
 - 7.1 Poultry nutrition, basics and principles for different types and species of poultry birds
 - 7.2 Nutrient requirements and feeding of broilers, layers, duck , quails, turkeys and ostrich
 - 7.3 Piglet rearing and feeding, milk replacer and weaning management
 - 7.4 Nutrient requirements and feeding of pregnant and lactating sow
 - 7.5 Feeding requirements for breeding stocks- boars, sow and gilt
 - 7.6 Principle and practices of equine and rabbit feeding
 - 7.7 Feed additives used in non-ruminant feeding
- 8. Principles and practices of fodder production, pasture and rangeland management
 - 8.1 Feeds and feeding situation in Nepal
 - 8.2 Factors associated with fodder production- chemical composition and nutritive value
 - 8.3 Morphology of forage grasses, vegetative grass tiller and reproductive growth
 - 8.4 Principle of grass seed production
 - 8.5 Cultivation practices of various leguminous and non-leguminous forages
 - 8.6 Pasture establishment, seed quality, sowing and soil environment
 - 8.7 Nutrition of grazing animal, nutritive value of pasture, herbage intake and composition
 - 8.8 Silvi- pastoral system concept and practices and limitation
 - 8.9 Estimating the livestock unit(LU) and carrying capacity
 - 8.10 Rangeland policy of Nepal

C. Animal genetics, breeding, reproduction, molecular biology and biotechnology

- 9. Animal Genetics and breeding
 - 9.1 Animal cell and cell division
 - 9.2 Gametogenesis : spermatogenesis and oogenesis
 - 9.3 Chromosomal study : karyotyping, chromosomal verification and aberration
 - 9.4 Mendalian genetics : experiment, principle and extension