## LIVESTOCK PRODUCTION AND MANAGEMENT

### Course Structure – at a Glance

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Objective: To acquaint students on basic aspects of dairying in India compared with developed countries, problems and prospectus of dairying, detailed aspects of care and management of different classes of dairy cattle and buffaloes.

Theory

UNIT I
Introduction - Development of Dairy Industry in India and world - Present status and future prospects of livestock development in India

UNIT II
Important breeds of cattle and buffalo, traits of economic importance and their inter-relationships - Selection of high quality animals - Role of management in improving the reproduction efficiency in farm animals. - Housing and rearing systems.

UNIT III
Breeding Management: System of breeding Economic traits. Methods of Breeding - Prenatal and postnatal care and management of cattle and buffalo - Care of neonate and young calves - Management strategies for reducing mortality in calves, age at first calving and calving interval in cattle and buffaloes.

UNIT IV
Management of labour, Milking management, Machine milking and hand milking. Different laws governing the livestock sectors to produce quality products on par with international standards - Technique of harvesting clean and hygienic livestock products, transportation of animals, health management. Wallowing in buffaloes- Management of draught animals and summer management

UNIT V
Feed and fodder resources used for feeding of cattle and buffaloes- Scientific technique of feeding, watering - Computation of practical and economical ration, supply of green fodder around the year and enrichment of poor quality roughages.

Practical
Visits to cattle farms and critical analysis of various types of managerial practices - Study of breeding management in the farm- Analysis of practical feeding management- Disease control- Housing - milking - calf, heifer and adult management- Dairy Cattle and Buffalo judging - Project preparation for external funding and commercial farms and enterprises for dairy products -marketing strategies for milk and milk products and meat.

Suggested Readings
Dutta G. 1994. Care and Management of Dairy Cattle and Buffaloes. 3rd Ed. ICAR.
Disease Management: Role of management in the prevention and control of diseases. Special Management: Deworming - Dipping and spraying- shearing -Avoidance of goatry odour in milk, Tupping

UNIT V
Wool: Importance of wool - Fiber structure- Fleece characters - Goat fibers -Characters of mohair and pashmina, fur and Angora - Marketing of goat fibers / wool.- Planning of sheep and goat farm of various sizes - Economics of sheep and goat farming.

Practical
Visit to sheep and goat farms and critical analysis of various managerial practices under different conditions. Study of practical housing management -Analysis of practical diseases control management - Shearing management -Record keeping. - Preparation of project for commercial farming -Characterization of sheep and goats; handling of sheep and goat; daily and periodical operations for sheep and goats - Methods of identification of sheep and goat. Cost of rearing sheep and goat for mutton and wool - Housing plans for various age and categories of sheep and goat - Dipping; Vaccination of sheep and goat - Shearing of wool.

Suggested Readings

LPM 603: SWINE PRODUCTION AND MANAGEMENT

Objective: To impart knowledge on various aspects of swine farming in India, principles of housing, breeding, feeding and health care of pigs, management practices at different stages of growth and economic pig production systems.

Theory
UNIT I

UNIT II
Breeds of pigs - Selection of breeding stock - Breeding seasons - Age and weight at first services - Methods for detection of heat - Natural service and artificial insemination - Care of pregnant sows, piglets and growers - Care of breeding boar.

UNIT III
Housing, sanitation and hygiene, disease prevention measures - Housing and equipment -Wallowing - Sanitation and hygiene - Role of management in the prevention and the control of diseases.

UNIT IV
Feeding and management of new born, weaner and finishers, dry, pregnant and farrowing sows - Feeding principles to be followed - Methods of watering -Feeder space - Water space, etc - Marketing: Methods of marketing in swine production - Record keeping.

Practical
Visits to piggeries and critical Analysis of various types of managerial practices - Analysis of the trend and structures of pig population - Analysis of practical breeding management methods, practical disease control management - special management methods - Ageing and identification - Judging -Constraints and remedial measures in pig farming - Economics of production -Project preparation for research and commercial farms.

Suggested Readings
LPM 604: LABORATORY ANIMAL PRODUCTION AND MANAGEMENT 1+1

Objective: To educate the students become familiarize with various aspects of rabbit farming, problems and prospectus, principles of housing, breeding, feeding and health care of rabbits, rats, mice and guinea pigs, measures to reduce the mortality in young ones at different seasons.

Theory

UNIT I
Introduction - Importance of rabbit for meat and fur production, rats, mice and guinea pigs, - Common breeds and strains.

UNIT II
System of housing - Common diseases and their control measure. Management of specific pathogen free and gnotobiotic animals, concepts to related to welfare of laboratory animals

UNIT III
Breeding - Age at maturity, litter size - Weaning - Feeding of growers - Selection of replacement stock, transportation of rabbit.

UNIT IV
Transportation of Laboratory animals - marketing of meat and fur.

Practical
Handling and restraining of laboratory animals - Visits to small animal farms and critical analysis of various types of managerial practices - Analysis of the trend and structures of Laboratory animals population - Analysis of practical breeding management methods - practical disease control management and special management methods - Ageing and identification - Judging - Economics of production.

Suggested Readings

LPM 605: SHELTER MANAGEMENT 1+1

Objective: To familiarize students with type of houses suited for different livestock under varying climatic conditions.

Theory

UNIT I
General principles in planning animal houses- farmstead and animal houses -Selection of site and planning- layouts for livestock farm of different sizes in different climatic zones in India - Farm structures - General principles of construction of enclosures, floor and road.

UNIT II
Housing requirements of different classes of Livestock - Preparation of layouts, plans, arrangement of alley - Fitting and facilities in the houses for horses, dairy cattle, calves, bulls, work cattle, dogs, pigs, sheep, goats, and poultry.

UNIT III
Improvement of existing buildings; water supply; feed and fodder delivery systems - Economics of Livestock housing.

UNIT IV
Housing - Disease control measures and sanitation of all classes of livestock

Practical
Score card for animal houses - Time and motion study in Animal houses -Preparation of plans for Animal houses for horses, cattle, sheep, pigs, goats, and other livestock - Dogs and other pet animals - Economics of livestock housing - Preparation of plan for animal houses of different sizes and climatic zones of India.

Suggested Readings
LPM 606: PRINCIPLES OF ENVIRONMENTAL HYGIENE AND WASTE MANAGEMENT

Objective: To familiarize students on principles of air and water hygiene with reference to impurities and inclusions of water, collection and disposal of waste from the animal house, modern techniques in manure disposal and biosecurity measures to be adapted for hygienic production of livestock products.

Theory

UNIT I
Animal air hygiene: Definition - Composition of air - Air pollution - Factors affecting outdoor and indoor pollution - Assessment of these factors on animal health and production - Methods to control these factors.

UNIT II
Water Hygiene: Importance of water - Impurities and inclusions - Sterilization

Examination of water and water supplies - Collection of samples-Topographical physical, chemical, bacteriological and microscopic examination of water - Hygienic requirements and standards for drinking water

Quantity of water required by domestic animals - Methods of watering.

UNIT III
Manure - Quantity of manure voided by domestic animals - Animal excreta a factor in spread of disease - Hygienic and economic disposal of farm waste -Modern techniques used in automation / semi-automation in disposal of farm waste.

UNIT IV
Environmental protection act, Air (Prevention and control of pollution) act and water (Prevention and control of pollution) act - Biosecurity measures to be adapted for efficient and healthy production

UNIT VI
Effect of environmental pollution on livestock and its products directly and indirectly - Controlling environmental pollution - Different factors affecting the quality of livestock and its products meant for human consumption

Suggested Readings


LPM 607: CLIMATOLOGY AND ANIMAL PRODUCTION

Objective: To familiarize students on climate, weather, various climatic factors and their role in production and health of animals in both temperate and tropics, micro and macroclimatic conditions of animal house and assessing the heat tolerance of bovines.

Theory

UNIT I
Definition of climate -Classification of climatic regions - Climatic factors-Assessment of climate - Study of climatic factors in relation to animal production.

UNIT II
Light, natural and artificial light-mechanism of light action-photo period and light responses - Applications - Importance of light in production of animals and birds.

UNIT III
Introduction of breeds into different climatic regions - Agro meteorology and weather forecasting for Animal Husbandry activities - Micro climate modification in animal houses.

UNIT IV
Estimation of microclimatic conditions in Animal house - Measurement of Temperature, Relative humidity, Air Velocity and Mean temperature of the surrounding, measurement of intensity of light in animal houses - Construction of climographs and hythergraphs - Estimation of cooling power of atmosphere-heat tolerance test in bovines.
LPM 608:  POUlTRY FARM AND HATCHERY MANAGEMENT  

Objective: To acquaint students on basic aspects of housing, feeding, breeding and health care of poultry and comparing the performance under cage and floor system of management of poultry, biosecurity measures to be followed to reduce mortality and efficient hatchery management to produce healthy young ones.

Theory
UNIT I
Poultry housing systems Cage Vs floor system, litter management and lights for poultry, rearing turkey, duck and quails.

UNIT II
Management of chicks, growing, laying and breeding flocks, broiler production, selection and culling of laying flocks.

UNIT III
Procuring, care and pre-incubation storage of hatching eggs - Method of incubation, sanitation disinfection and management of hatchery.

UNIT IV
Embryonic development and factors effecting fertility and hatchability of eggs.

UNIT V
Chick sexing, packing and hatchery business - Transporting management of farm and hatchery waste.

Practical
Poultry Farm management - Brooding of chicks; selection of laying flocks -Disease preventive measures - Selection and care of hatching eggs; incubator operation, fumigation and candling setting and hatching, packaging of chicks -Waste management - Marketing of products.

Suggested Readings

LPM 609:  FARM ANIMAL BEHAVIOR  

Objective: To make acquainted students on principles of farm animal behaviour with regard to environmental influence, group formation, social behaviour and and behavioural adaptations under domestication.

Theory
UNIT I
Introduction to Animal behaviour - Importance of animal behaviour studies -Patterns of behaviour - Daily and seasonal cycles of behaviour - Physiological basis of behaviour.

UNIT II
Environmental modification of behaviour - Developmental changes in behaviour - Genetic differences in behaviour - Behavioural disorders.

UNIT III
Group formation - Social relationship, process of socialisation locality and behaviour - Practical application - Behavioural character for managerial practices - Favourable and unfavourable behaviour for domestication -Behavioural adaptations under domestication.

UNIT IV

Suggested Readings


Fraser AF & Broom DM. 1997. Farm Animal Behaviour and Welfare. CABI.


LPM 610: INTEGRATED LIVESTOCK FARMING SYSTEM 2+1

Objective: To familiarize on various aspects viz., scope and limitations of integrated livestock farming system, recent approach and economic feasibility of different integration models for sustainable production

Theory

UNIT I
Scope and limitation of integrated farming systems - Sustainability of integrated Livestock Farming Systems and their economic importance.

UNIT II
Integration of fish, arable farming and different livestock enterprises vis-a-vis gobar gas plant, FYM, solar and wind energy utilization, cattle, buffalo sheep, goat, pig, poultry, rabbit, silk worm, bee keeping etc.

UNIT III
New approach for changing farming systems in present energy crises.

UNIT IV
Project formulation and evaluation of various livestock enterprises.

Practical

Various livestock farming units and their economic analysis - Evaluation of different farming systems and their economic importance - Preparing feasibility report for various farming projects.

Suggested Readings


LPM 611: EQUINE PRODUCTION AND MANAGEMENT 1+1

Objective: To educate the students become familiarize with principles of housing, breeding, feeding and health care of different classes of horse, stable routines and measures to reduce the mortality in young ones at different seasons.

Theory

UNIT I
Equine population in India - Breeds of native and exotic horses - Types and classes of light and work horses

UNIT II
Housing and routine management practices -Hygiene and maintenance of stable. Color and markings, Dentition and ageing - selecting and judging horses- unsoundness and stable vices

UNIT III
Feeding and breeding of horses donkey and Mules, foaling, care of foal

UNIT IV
Foot care and shoeing care, Stud farms - Race clubs - Race horses and their care - Horse behaviour and training - Exercising - Basic Horsemanship

UNIT V

Health management & diseases control. Control of internal and external parasites of horse - Colic and its prevention

UNIT VI

Mode of transport - Facilities requirement - Cleaning, disinfection and preparation of vehicles - Transport stress - Management during transport - Regulatory acts of states and centre in animal disease control and welfare - Precautions and requirements before, during and after transport - Laws governing the import and export of livestock and its products - Horse passport and trading

Practical

Control of horse for examination, passing of stomach tube, dentition and ageing, saddling, exercising of horse, hoof care.

Suggested Readings

Pilliner S. 1994. Care of the competition Horse. BT Batsford.

LPM 612: WILD LIFE MANAGEMENT AND CONSERVATION 2+0

Objective: To acquaint students with the principles and concepts of wild life sanctuaries and national parks, classification of wild animals, role of authorities in conservation and management of wild animals in captivity.

Theory

UNIT I

Zoo and captive wild animals - Principles and concepts - Ecology of wild life sanctuaries and National parks - wild life legislation in India - Status of forest in India - Biological and ecological basis of management of wild life.

UNIT II

Voluntary organization on wild life - Rules and regulations of zoo authority of India - Wild life protection act - Zoological classification of wild animals - Funding agencies for wild life research and preparation of project - Conservation of wild animals.

UNIT III

Wild life health control - Reproduction in zoos - Population analysis - Population manipulation - Habit analysis and design - The resources and its management - Distribution of important Indian animals - Zoo animals and birds - Breeding characteristics - Movements - Cover requirements - Food - Population density - Mortality - Nesting losses caused by predators, predator and prey relationship - Human interference - Refuge rehabilitation

UNIT IV

Restraints - Maps - Survey and plans of management systems - Principles, protective measures - Development and conservation of water supply - puberty - Breeding seasons - pregnancy - Parturition - Lactation postnatal survival of the young - Social factors among various species - Miscellaneous management procedures.

Suggested Readings

LPM 613:  LIVESTOCK BUSINESS MANAGEMENT  1+1

Objective: To acquaint students with knowledge in principles, planning, technical approach and preparing financial statement in Livestock Business Management and preparing projects for financing.

Theory

UNIT I
Management principles - Planning - Techniques, strategic planning, organization structure, co-ordination and controlling techniques - Approaches to management.

UNIT II
SWOT analysis, financial accounting - Accounting records - Balance sheet, fund flow statement - Cost and analysis for managerial decisions - Budgeting and control.

UNIT III

UNIT IV
Marketing - Objectives, strategies - Selecting and managing marketing channels - Pricing strategies - Sales promotion - Legislation relating licensing -Company law.

Practical
Preparation of financial statements, depreciation accounting methods, trend and variance analysis, cost-volume profit analysis - Financial planning and forecasting - Estimation of working capital requirement - Break even analysis -Visit to livestock business firms and banks - Preparing projects for financing.

Suggested Readings

LPM 701:  ADVANCES IN CATTLE AND BUFFALO PRODUCTION AND MANAGEMENT  3+0

Objective: To acquaint students on latest developments on dairying in India compared with developed countries, problems and prospectus of dairying, detailed aspects of care and management of different classes of dairy cattle and buffaloes.

Theory

UNIT I
Dairy farming in India - Global scenario - Present status and reasons for the same - Avenues for progress - The needs of the nation and how to achieve it.

UNIT II
Advances in housing management of dairy cattle and buffaloes in various agroclimatic zone of India - Management systems for cattle and buffaloes.

UNIT III

Advances in Feeding Management of cattle and buffalo. Feed for milking herd, dry cows, bulls and calves, Management of high yielding animals.

UNIT V

**UNIT VI**

Advance in health management of dairy animals, metabolic diseases of high yielders- advances in preventive measures for production related diseases

**Suggested Readings**


**LPM 702: ADVANCES IN SHEEP AND GOAT PRODUCTION AND MANAGEMENT**

**Objective:** To educate the students on advances in sheep and goat farming for improving their productivity through different management practices.

**Theory**

**UNIT I**

Utility origin - Domestication - Numbers and distribution of meat and dual purpose breeds - Methods of rearing - Range sheep production –

**UNIT II**

The farm flock - Pure bred flock - Management during breeding season - The sexual seasons and its control - Puberty - Time of the year to breed - Flushing - Ram-Ewe ratio.

**UNIT III**

Advances in feeding management, Nutrient deficiencies in range forage, Feed to supplement range forage, General feeding practices, Feeding materials, Lamb feeding, Use of antibiotics and hormones, Hand feeding, Self feeding, Pellet feeding, Feeding lambs and ewes during lactation.

**UNIT IV**

Recent development in sheep and goat management and their relevance under Indian economic conditions, needs and possibilities for future research.

**UNIT V**

Role of sheep husbandry in dry farming in India, Present development programmes in sheep and goat production, Advances in reproduction, housing, feeding and watering, diseases, Shearing methods and culling of sheep and goat.

**UNIT VI**

Role of goat in animal agriculture, Goat farming in India, selection of Breeding stock, Breeding problems, Housing, Principles of feeding, Practices, Crops and crop residues for goats, Milking practices.

**Practical**

Study of population trend and structure - Visit to sheep and goat farms and critical analysis of various farm practices, Analysis of breeding, feeding, housing - Disease control management, management of young ones and maturing systems Estimation of fibre diameter medullation percentage crimps, tensile strength, Grease, pH and moisture content of wool - Score card and grading of wool.

**Suggested Readings**

Objective: To educate about the latest advances of swine farming in India, principles of housing, breeding, feeding and health care of pigs, management practices at different stages of swine.

Theory

UNIT I
The past, present and future of Swine production systems in India and production policies adopted in advanced countries.

UNIT II
Advances in breeding and selection - Prenatal and postnatal development - Growth reproduction and lactation - Economic traits of swine production.

UNIT III
Advances in feeding and nutrition in pigs; automatic feeding and watering techniques, Feed stuffs, Energy, protein, minerals and vitamin sources, metabolic and nutritional disorders - Toxic substances.

UNIT IV
Advances in housing of pigs, environmental physiology - Infectious diseases and parasitism. reduction in new born piglet mortality.

Practical
Marketing - Study of population trend and structure. Analysis of breeding, feeding, housing, health care, farrowing management, summer management and special management principles practiced.

Suggested Readings
Selected articles from journals.

LPM 704: ADVANCES IN LABORATORY ANIMAL PRODUCTION AND MANAGEMENT 1+0
Objective: To educate the students on the latest advances in problems and prospectus, principles of housing, breeding, feeding and health care of rabbits, rats, mice & guinea pigs, measures to reduce the mortality in young ones at different seasons.

Theory

UNIT I
Importance and limitations of rabbits for meat and fur production, rats, mice & guinea pigs - Common breeds and strains.

UNIT II
Advances in system of housing, Common diseases and their control measure.

UNIT III
Breeding strategies - Age at maturity, litter size, Weaning, Feeding of growers, Selection of replacement stock, transportation of rabbit.

UNIT IV
Transportation of Laboratory animals - marketing of meat and fur.

UNIT V
Management of specific pathogen free and gnotobiotic animals , concepts to related to welfare of laboratory animals

Practical
Visit to Rabbit farms - Study of the various chores in government farms and private farms - Critical analysis of breeding, feeding, disease control management and housing - Rabbit slaughter technique.

Suggested readings
Selected articles from journals.
LPM 705: ADVANCES IN POULTRY PRODUCTION MANAGEMENT 2+1

Objective: To educate the students on advances in housing, feeding, breeding and health care in poultry farming.

Theory

UNIT I
Planning, organisation, executive and management of poultry farms and hatcheries of various sizes - alternative in poultry production

UNIT II
Demand, supply, present status of poultry production.

UNIT III
Problems and new management techniques in poultry for egg and meat in India vis-a-vis in other countries of the world, automation in poultry houses, management of specific pathogen free flocks.

UNIT IV
Poultry development policies and planning for higher production constraints in development and solutions, Ethology and entology in relation to poultry production

Practical
Planning and preparation of research and commercial projects on broiler and layer production management.

Suggested Readings
Selected articles from journals.

LPM 706: ADVANCES IN ENVIRONMENTAL MANAGEMENT 1+1

Objective: To educate the students on advances in climate, weather, various climatic factors monitoring and their role in production and health of animals in both temperate and tropics, micro and macroclimatic conditions of animal house and environmental influences on the performance of farm animal production.

Theory

UNIT I
The animal Industry and the quality of the environment - Management of the living environment - Microenvironment and macro environment.

UNIT II
Air Pollution: Indoor and out door - Chemical, physical and bacteriological changes - Causes - Standards and the extent tolerated by animals - Effects on animal production.

UNIT III
Fixing standards in relation to CO₂ - Air supply in relation to cubic space, temperature, air, velocity, relative humidity, dust particles, bacterial count, effective temperature and cooling power - Methods to get over pollution - Cleaning and washing - Air conditioning.

UNIT IV

UNIT V
Water Pollution: Significance, treatment and control - Funding agencies for animal welfare

Practical
Assessment of various factors in Indoor and outdoor environment - Assessment of CO₂, air supply, dust particles and bacterial count in air - Visit to sewage treatment plant - Planning farm waste disposals - Physical chemical and bacteriological examination of water watering of farm animals.

Suggested Readings
LPM 707: ADVANCES IN EQUINE MANAGEMENT  

Objective: To familiarize the students on latest aspects of principles of housing, breeding, feeding and health care of different classes of horse, stable routines and measures to reduce the mortality in young ones at different seasons.

Theory

UNIT I
New indigenous and exotic horses breeds- Types and classes of light and work horses

UNIT II
Advances in housing and routine management practices -Hygiene and maintenance of stable. Color and markings, Dentition and ageing selecting and judging horses- unsoundness and stable vices

UNIT III
New Feeding techniques and breeding of horses donkey and Mules, foaling, care of foal

UNIT IV
Foot care and shoeing care, Stud farms, Race clubs, Race horses and their care, Horse behaviour and training, Exercising, Basic Horsemanship

UNIT V
Advances in health management & diseases control. Control of internal and external parasites of horse- Colic and its prevention

UNIT VI
Mode of transport, Facilities requirement, Cleaning, disinfection and preparation of vehicles Transport stress, Management during transport, Regulatory acts of states and centre in animal disease control and welfare. Precautions and requirements before, during and after transport, Laws governing the import and export of livestock and its products, Horse passport and trading.

Suggested Readings
Selected articles from journals.