## LIVESTOCK PRODUCTION MANAGEMENT

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* Compulsory for Master’s programme; **Compulsory for Doctoral programme
# LIVESTOCK PRODUCTION MANAGEMENT

## Course Contents

### LPM 601  CATTLE AND BUFFALO PRODUCTION AND MANAGEMENT

**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**

### LPM 602  SHEEP AND GOAT PRODUCTION AND MANAGEMENT

**Objective**
To acquaint students on status of sheep and goat farming in India, importance of record keeping, principles of housing and feeding, breeding management to improve the reproductive efficiency and detailed account on care and management of different classes of sheep and goat.

**Theory**

**UNIT-I**: Introduction - Population structure and importance- Advantages and disadvantages of sheep farming under different systems of management – type of housing and equipments- Important sheep and goat breeds- Advantages and disadvantages of sheep and goat farming.

**UNIT-II**: Breeding Management: Breeding seasons - fitness of purchase for first breeding - methods of detection of heat - Natural Service and artificial insemination - Care of the pregnant Animals - Breeding stock - Use of teaser- Culling.

**UNIT-III**: Feeding Management: Feeding methods - Principles to be followed in feeding and watering- feeder space, waterer space, Designing feeders and waterers. -Range management - Stocking rate and pasture improvement and utilization; management under stall fed conditions, Transportation of sheep and goat.

UNIT-V: Wool: Importance of wool - Fiber structure - Fleece characters - Goat fibres - Characters of mohair and pashmina, fur and Angora - Marketing of goat fibres/ 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 1+1 SEM - I

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-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 LABORATORAY ANIMAL PRODUCTION 1+1 SEM - II

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-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 SEM - I

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 indifferent 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 alleys- 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 2+ 0 SEM - II

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-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-V: 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 1+0 SEM - I
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.

Suggested Readings

LPM 608 POULTRY FARM AND HATCHERY 2+1 SEM - I
MANAGEMENT
Objective
To acquaint students on basic aspects of housing, feeding, breeding and healthcare 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-IV: Embryonic development and factors effecting fertility and hatchability of eggs.
UNIT-V: Chick sexing, packing and hatchery business - Transporting management off arm 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  1+0  SEM - II

Objective
To make acquainted students on principles of farm animal behaviour with regard to environmental influence, group formation, social behaviour 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.

Suggested Readings

LPM 610  INTEGRATED LIVESTOCK  2+1  SEM - II

FARMING SYSTEM

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-à-vis gobar gas plant, FYM, solar and wind energy utilization, cattle, buffalo sheep, goat, pig, poultry, rabbit, silk worm, bee keeping etc.
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
Mukherjee TK. 1992. *Integrated Livestock Fish Production Systems*. 376


**LPM 611**  
**EQUINE PRODUCTION AND MANAGEMENT**  
1+1  
**SEM - I**

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


**Practical**

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

**Suggested Readings**


**LPM 612**  
**WILD LIFE MANAGEMENT AND CONSERVATION**  
2+0  
**SEM - II**

**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.


Suggested Readings

LPM 613 LIVESTOCK BUSINESS MANAGEMENT 1+1 SEM - I

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.

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 3+0 SEM - I
PRODUCTION AND MANAGEMENT

Objective
To acquaint students on latest developments on dairying in India compared with developed countries, problems and prospects 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 agro climatic zone of India - Management systems for cattle and buffaloes.
UNIT-IV: Advances in Feeding Management of cattle and buffaloes, Feed for milking herd, dry cows, bulls and calves, Management of high yielding animals.
UNIT-V: Milking Management – Biosynthesis of milk - Factors affecting the composition and yield of milk – milk ejection reflex - Milking systems –Sanitary standards for the f
quality milk – Cessation of milking, advances in herd management- raising calves –
growing heifers, replacements and culling –marketing, Computerization of dairy
enterprises.
UNIT-VI: Advance in health management of dairy animals, metabolic diseases of high
yielder- advances in preventive measures for production related diseases.

Suggested Readings
Selected articles from journals.

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
Gupta JL. 2006. Sheep Production and Management. CBS.
Selected articles from journals.

LPM 703 ADVANCES IN SWINE PRODUCTION AND MANAGEMENT

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 SEM - II

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 and 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 AND MANAGEMENT 2+1 SEM - I

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

Theory UNIT-I: Planning, organization, 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-à-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 SEM - II

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-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 waterling of farm animals.

Suggested Readings
Selected articles from journals.

LPM 707 ADVANCES IN EQUINE MANAGEMENT 2+0 SEM - I

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 workhorses.
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.
LIVESTOCK PRODUCTION MANAGEMENT

List of Journals

- Asian Journal of Buffalo Production and Management
- Australian Journal of Animal Science
- British Poultry Science
- Canadian Journal of Animal Science
- Indian Dairyman
- Indian Journal of Animal Nutrition
- Indian Journal of Animal Production and Management
- Indian Journal of Animal Science
- Indian Journal of Dairy Science
- Indian Journal of Field Veterinarians
- Indian Journal of Poultry Science
- Internal Journal of Animal Science
- Journal of Animal Sciences
- Journal of Dairy Sciences
- Livestock Production Science
- Poultry Science
- The Indian Veterinary Journal
- World Poultry Science Journal

E-Resources

- www.pork.org
- www.ifri.org
- www.fao.org
- www.defra.org.uk
- www.aciar.gov.au
- www.asap.asn.au
- www.thepigsite.com
- www.epa.com
- http://animalscience.ucdavis.edu
- www.tanu.edu
- www.sciencedirect.com
- http://trop.edmgr.com
- www.nianp.res.in/
- http://www.aphca.org

Suggested Broad Topics for Master’s and Doctoral Research

- Dairy cattle and buffalo Production
  - Pre and postpartum management of dairy animals
  - Reducing age at first calving
  - Reducing calf mortality
  - Reducing calving intervals
  - Increasing reproductive efficiency
  - Farming system research / extension approach
  - System approach to livestock development
  - Housing management of animals in semi arid region

- Poultry Production
  - Poultry housing system
  - Stocking density in poultry
- Environmental effects on poultry
- Feeding management of poultry
- Methods of processing poultry manure
- System of approach for poultry development
- **Small ruminant production**
  - Sheep and goat housing system
  - Impact study on scientific management of sheep and goat
  - Environmental effects on sheep and goat
  - Feeding management of sheep and goat
- **Rabbit production**
  - Rabbit housing system
  - Feeding management of rabbit
  - Productive and reproductive performance of rabbit under tropical climate
- **Swine production**
  - Swine housing system
  - Feeding management of swine
  - Productive and reproductive performance of pigs under tropical climate