EXTENDED LECTURE OUTLINE

MDC6 121 **Farming Based Livelihood System** **(2+1)**

Extended syllabusof Agronomy

Theory

Farming systems: definition of farm, farming system, cropping system, cropping pattern, farming based livelihood system, classification of farming systems. Prevalent farming systems in India contributing to livelihood: major farming systems; crop and animal husbandry, seedproduction-based farming systems and their spread in different states of the country. Types of traditional and modern farming systems: commercial/modern agriculture, conservation agriculture, dryland and wetland agriculture, contract farming. Components of farming-based livelihood systems (FBLS)/Integrated farming systems (IFS): crops, cropping systems; crop rotation, mixed cropping & farming system, intercropping system, multistoried cropping system. Agroforestry systems: agroforestry, types of agroforestry systems; agri-silviculture, agri-horticulture, agri-horti-silviculture, horti-pasture, silvi-pasture, shelterbelts/windbreaks, alley cropping and taungya system.Factors affecting integration of various enterprises of farming for livelihood.Feasibility of different farming systems for different agro-climatic zones, commercial farming-based livelihood models by NABARD, ICAR and other organization across the country. Case studies on different enterprises associated with farming.

Practical component:

1. Field visit of innovative farming system models.
2. Visit of agri-based enterprises and their fundamental aspects for integration production, processing and distribution sectors.
3. Study of agri-enterprises involved in industry and service sectors (value chain models)

Extended syllabusofAgril. Economics

Status of agriculture in India and different states, income of farmers and rural people in India.Role of agriculture in Indian economy. Contribution of different states to food grains production and their trends. Distribution of income across farm size groups in India.

Livelihood – Definitions, concepts and livelihood pattern in urban and rural areas. Different indicators to study livelihood systems.Differences between rural and urban livelihoods. Indicators of livelihood systems-Sustainable Livelihood Security Index, Livelihood Vulnerability

Index, Economic Efficiency Index, Livelihood Sustainability Index, Ecological security index, Poverty, Livelihood asset tracking method, etc.

Agricultural Livelihood System (ALS): meaning, approaches and framework-meaning, types, and factors influence agricultural livelihood system, Sustainable livelihood framework, Integrated Farming Systems, Agribusiness and its framework.

Schemes and programs by central and state government with regard to Agricultural Livelihood systems-PM-KISAN, PM-FBY, PM-KMY, RKVY, STRY, DAESI, National Biogas Manure and Management Programme, MGNAREGA, Minimum Support Price Scheme, National Mission for Sustainable Agriculture (NMSA), National Innovations on Climate Resilient Agriculture (NICRA), Integrated Scheme for Agricultural Marketing (ISAM), and Mission for Integrated Development of Horticulture (MIDH). NHM.

Public and private organization involved in promotion of farming-based livelihood opportunities-NABARD, Livelihood fund for family farming, Bharat Rural Livelihoods Foundation, TATA Trust, IFAD, CARD, Agritech private companies.

Role of farming based livelihood enterprises in 21st century in view of circular economy, green economy, climate change, digitalization and changing life style

Practical component:

- Survey of farming systems and Agricultural based livelihood enterprises
- Study of agri-enterprises involved in industry and service sectors(Value chain model)
- Concept of project formulation on farming –based livelihoodsystems along with cost and profit analysis

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Extended syllabus ofHorticulture crops(6 theory classes only)

1 Class	**Definition,Branches,Importance,andscopeofhorticulture** • **Definitionofhorticulture,Branchesofhorticulture** ▪ **Importanceofhorticulturecrops:** Foodsecurityandnutrition–Nutritionalvalue,Foodsecurity, Economicdevelopment–High-valuecrops,Exportpotential ▪ Environmentalandecologicalbenefits–Improvementofairandwaterquality, Conservation of biodiversity, Sustainable land use, Aestheticandtherapeuticbenefits, Employmentgeneration, Industrialandcommercialuse–Rawmaterialsforindustries,Plantationcrops, Culturalandsocialimportance–Culturaltraditions, Technologicalandresearchcontributions–GeneticresearchInnovationin cultivation practices ▪ **Scopeofhorticulturecrops :** Diverseplantcategories, Geographicandclimaticadaptability, Sustainabilityandconservation, Scopeinurbanandperi-urbanareas ▪ Scientificandtechnologicaladvancements
2 Class	**Integrated farming in horticulture crops**

	IntegratedFarmingSystems(IFS)inhorticulture: Key Features of Integrated Farming Systems (IFS) in horticulture - Crop diversification, Resource recycling, Water use efficiency, Soil health improvement, Livelihood opportunities and benefits – Income stability, Employment generation, Improved nutrition, Challenges – Initial setup costs, Knowledge intensive
3 Class	**Contract farming and dryland farming based livelihood systems** ▪ **Contractfarminginhorticulture :** Key features of contract farming in horticulture – Pre-agreed terms, Input support, Assured market and price, Quality control, Livelihood opportunities and benefits – Risk reduction, Access to technology, Income enhancement, Linkages to export markets, Challenges – Dependency on companies, Quality rejections, Legal disputes ▪ **Drylandfarminginhorticulture:** Key Features of dryland farming in horticulture – Drought-resistant crops, Water conservation techniques, Low external input, Agroforestry, Livelihood opportunities and benefits – Income in marginal areas, Sustainable practices, Low input costs, Resilience to climate change, Challenges – Water scarcity, Market access, Limited crop choices
4 Class	**Fruit,vegetable,andflower-basedlivelihoodsystems** ▪ **Fruitcrop-basedlivelihoodsystems :** Livelihood opportunities – Smallholder farmers, Employment generation, Value addition, Organic fruit farming**,** Challenges – Perishability, Market fluctuations ▪ **Vegetablecrop-basedlivelihoodsystems :** Livelihood opportunities – Small and marginal farmers, Urban and peri-urban agriculture, Women's participation, Contract farming, Exports and processed products, Challenges – High input costs, Water dependency, Price volatility ▪ **Flowercrop-basedlivelihoodsystems :** Livelihood opportunities – Commercial floriculture, Nursery business, Export market, Allied industries, Value addition, Challenges – Post-harvest losses, High input costs, Export barriers
5 Class	**Plantation,spice,medicinal,andaromaticcrops-basedlivelihoodsystems** ▪ **Plantationcrop-basedlivelihoodsystems** : Livelihood opportunities– Employment generation, Smallholder farmers, Processing and value addition, Export potential, Challenges – Price volatility, Climate sensitivity, Labor issues ▪ **Spicecrop-basedlivelihoodsystems:** Livelihood opportunities – Smallholder farming, Export and trade, Processing and value addition, Intercropping systems, Spice cooperatives, Challenges – Price fluctuations, Pest and disease outbreaks, Market access ▪ **MedicinalCrop-Basedlivelihoodsystems:** Livelihood opportunities – Herbal

	industry, Low input costs, Contract farming, Agroforestry systems, Challenges – Quality control, Market uncertainty, Sustainability ▪ **Aromaticcrop-basedlivelihoodsystems:** Livelihood opportunities – Essential oil industry, Niche market opportunities, Agro-tourism, and value addition, Challenges – Capital intensive, Market saturation, Climate sensitivity
6 Class	**Post-harvesthandlingandvalueaddition-basedlivelihoodsystems** ▪ **Post-harvesthandlingofhorticulturecrops :** Key aspects of post-harvest handling – Harvesting, Sorting, and grading, Cleaning and washing, Packaging, Storage, Transportation, Livelihood opportunities in post-harvest handling – Employment in packhouses and sorting units, Cold storage units, Logistics and transportation, Rural entrepreneurship, Challenges – Infrastructure deficit, High post-harvest losses, High costs ▪ **Valueadditionofhorticulturecrops:** Types of value addition in horticulture – Primary processing, Secondary processing, Tertiary processing, Livelihood opportunities in value addition – Small-scale processing units, Entrepreneurship in agri-business, Export markets, Food processing industry jobs, High initial investment, Lack of technical knowledge, Market access, Quality standards

PleaseNote:Thestudentsshallbeintroducedtotheaboveconceptsonlyinbrief.

Referencebooks:

1. JitendraSingh,2014,*BasicHorticulture*,KalyaniPublishers,Ludhiana
2. Kumar,N.,2021,*IntroductiontoHorticulture*,MedtechSciencePress,NewDelhi
3. Chadha,K.L.,2019,*HandbookofHorticulture*,ICAR,NewDelhi

Extended syllabus ofAnimal Science

Role of Livestock in Agriculture: Contribution of livestock- food, fibre & skins, draft, dung & other waste materials, storage, weed control, cultural, sports/recreation, companion animals. Role of livestock in farmer's economy(Income, Employment, food, social security, draft and Dung.

Breeds: Important Breeds of livestock and Poultry (HF, Jersey, Hallikar, Bandur, Deccani, Osmanabadi, Yorkshire, Giriraja, Swarnadhara and local birds, Surthi)

PoultryHousing Systems of Rearing/PoultryProduction Systems: Extensive (Scavenging system/backyard system of rearing, Semi-Intensive and Intensive system (Deep litter system of rearing, Cage system of rearing, slatted floor system and slat cum litter system of rearing Poultry birds, Advantages and disadvantages of the different systems of rearing birds.

DairyProductionSystems- Extensive System (Grazing), Semi-intensive and Intensive system of management/rearing (Conventional system of rearing)

Sheep and Goats Production Systems – Tethering concept, Extensive system of rearing, Semi-intensive system of rearing, Intensive system of rearing (stall fed sheep and goats rearing / Raised platform system of rearing)

Piggery Production System: Intensive system of rearing, Systems of management Integration of Livestock Production system (Livestock and Poultry)

Aquaculture -Definition, types of aquaculture, suitable fish species for fresh water fish farming. Fish seed rearing to meet the seed requirement, fresh water fish farming-different methods of fish farming

Recent development in fish farming, Integrated Fish farming, advantages, integration with livestock farming

Livestock with Fish farming: Dairy cum fish farming, Piggery cum fish farming and poultry/duck farming. Integration with agricultural crops. Management of water quality in aquaculture. Harvesting and transportation of fish