

**DIPLOMA (AGRICULTURE) – FIFTH SEMESTER**

Fifth Semester			
S. No.	Name of Subject	Credits	Total Marks
1	Principles of Agril. Economics , Farm Management and Marketing	5	100
2	Concept of Agroservice & Agriculture Extension	4	100
3	Emerging Concept and Practice in Agriculture	5	100
4	Insect and Their Role in Agriculture	5	100
5	Disaster Management	5	100
<b>Total</b>		<b>24</b>	

**Subject Name:** PRINCIPLES OF AGRIL. ECONOMICS, FARM MANAGEMENT AND MARKETING

1. Pattern of Land utilization, Agril.crops and farmers situation in India, NE region and in Arunachal Pradesh- Fundamentals of Economics - demand and supply, law of diminishing returns etc.
2. Farm management, components- farm plan, cropping patterns, labour management, farm records.
3. Budget and finance management in agriculture farms.
4. Agril. Marketing and trading methods- traditional and advanced.
5. Role of cooperative sector in agri- business and marketing.
6. Role of SHGs and women in farm operations, farm management and marketing.

**References**

1. Agriculture Economics – by S. Subba Reddy, P. REGHURAM, T.V. Neelakanta Sastri and J.Bhavani Devi
2. Fundamental of Farm business management by SS. Johl and TR. Kapoor
3. Economics of farm production and management- by VT. Raju and DVS. Rao
4. Agricultural marketing in India by SS. Acharya and NL. Agarwal

**Subject Name:** CONCEPT OF AGROSERVICE & AGRICULTURE EXTENSION

1. Basic Concepts of Agro Service its scope and importance
2. Types of service required for socio economic development of the farming community.
3. Land Development, Planting, Plant protection, Harvesting as essential components of Agro Farm Services
4. Crop ecology – Microclimate, harvest index, sink source ratio Ideotype for some crops.
5. Education – meaning and types, Extension Education and Agricultural Extension – meaning, objectives, principles and philosophy.
6. Importance and problems of rural development. Agricultural and rural development programmes of pre and post-independence era.
7. Powers, functions and organizational set-up privatization of extension.

8. New trends in extension education and privatization of extension.
9. Emergence of broad based extension. Extension programme planning.
10. Principles and steps in programme development process. Monitoring and evaluation of extension programmes.
11. Scope and importance of agricultural journalism.
12. Diffusion and adoption of innovations. Capacity building of extension personnel and farmers

#### **Practical's**

1. Study and gain knowledge about agro service.
2. Know and understand about agro climatic zone and their importance
3. To know and gain knowledge on prevailing cropping pattern
4. To gain knowledge about agro development programmes.
5. To gain knowledge about watershed development.

#### **References**

1. Govt. of India: "Extension Education in Community Development" Directorate of Extension, Ministry of Food and Agri., Govt. of India New Delhi.
2. Supe S.V. "An Introduction to Extension Education," Oxford & IBH Publishing Company Pvt., Ltd., 66 Janpath, New Delhi 110001.
3. Dahama, O.P. & Bhatnagar "Extension and Communication for Development" Exford & IBH Publishing Company, 66-Janpath, New Delhi 110001/
4. Dahama, O.P., Communication & Extension (Revised Edition) Ram Prasad & Sons, Agra

#### **Subject Name:** EMERGING CONCEPT AND PRACTICE IN AGRICULTURE

1. Protected cultivation-introduction, need, classification ,components of structures associated with protected cultivation and standards, macro and micro climate control options, design calibration, crop management (existing and new crops,)irrigation, fertilizer designing and fertigation
2. Introduction to green house technology, types of green houses, plant response to green house environment
3. Planning and design of green house Design criteria ofgreenhouses for cooling and heating purposes, Materials of construction for traditional and low cost green house, irrigation systems used in green houses,solar green house,hot air green house heating systems,green house drying, cost estimation and economic analysis
4. Hi tech farming-Introduction,types,requirments
5. Systems,components,management procedures,crops established and their management under hydroponic and aeroponics farm system
6. Crop management scheduling, automation system, fertilizer designing and fertigation
7. E-Agriculture, Concepts and applications, use of ICT in Agriculture
8. Emerging concept like
  - 1)National e market
  - 2)Fasal bema yojana
  - 3)Soil health programme
  - 4)Agri commodity exchange,APMC acts

#### **Practical's**

1. Raising of seedlings and saplings under protected conditions
2. Use of protrays in quality planting material production, Bed preparation and planting of crop for production, Inter cultural operations etc.
3. Gain significant knowledge about different equipments used and type of green house.

4. Gain significant knowledge on irrigation systems used in green house.
5. Gain knowledge about Hi tech farming system.
6. Gain knowledge and learn about application of ICT in agriculture.
7. Study and gain knowledge on crop simulation models.

### References

1. Batnakar S & Schware R. Information and Communication Technology in Development- Cases from India. Sage Publ.
2. Meera SN. ICTs in Agricultural Extension: Tactical to Practical.
3. G.L. Ray, 2006. Extension communication and management. Kalyani Publ.
4. A.S. Sandhu, 2004. Text book on Agricultural communication process and methods. Oxford & TBH.
5. R Saravanan, C Kathiresan & T Indra Devi, 2011. Information & communication technology for agriculture and rural development. New India Publ. Agency

### Subject Name: INSECT AND THEIR ROLE IN AGRICULTURE

1. General introduction to phylum –arthopoda, its various classes and their distinguishing characters.  
Insect morphology: Body wall structure, function and modification of antenna, Mouth parts, Thorax, Abdomen
2. Taxonomy: Insect classification up to the level of families of agricultural importance
3. Economic importance of insects, nature and extent of damage, life history and management of the major insect pests of following crops as mentioned against them:  
**Paddy** *Leptocorisa varicornis*, *Hieroglyphus* Spp., *Nilaparvata lugens*, *Nephotetix*, spp., *Mythimna separata*.  
**Jowar Maize** *Chilo partellus*, *Atherigona varioscicata*, *Scirpophaga*, *Excerptalis*, *Chilo infuscatellus*,  
**Sugarcane** *Pyrilla prepusilla*.  
**Cotton** *Pectinophora gossypiella*, *Earias* Spp., *Sylepta derogata*, *Dysdercus* Spp., *Bemisia tabaci*, *Amrasca bigutulla*.  
**Oilseeds** *Lipaphis erysimi*, *Athalia proxima* *Bagrada* *Cruciferarum*, *Dasyneura lini*.  
**Pulses** *Helicoverpa armigera* *Agrotis* Spp., *Etiella zinckenella*, *Melanagromyza obtusa*, *Phytomyza atricornis*.  
**Pests of Fruit crops** *Drosicha mangiferae*, *papilio Democlius*, *Diaphorina citri* *Phyllocnistis citrella*, *Eriosoma lanigerum*.  
**Pest of Vegetable crops** *Leucinodes orbonalis*, *Epilachna viqintioctopunctata*. *Dacus cucurbitae*, *Plutella xylostella*.  
**Pests of Stored Grains** *Sitophilus oryzae*, *Trogoderma granarium*, *Sitotroga cerealella*, *Callosobruchus chinensis*
4. Importance of beneficial insect
5. Principles, methods of rearing, bee biology, production of honey, enemy disease, management of bee keeping
6. Types of silk worm, principles of mulberry cultivation, harvesting, cocoon management
7. Species of lac insects, biology, host plant, lac production, products

### Practical's

1. Methods of collection and preservation of insects including immature stages
2. Types of insect antennae, mouthparts and legs; Wing venation, types of wings and wing coupling apparatus.

3. Types of insect mouth parts and study of biting and chewing (orthopteran) and sucking (Hemipteran) mouth parts. Study of mouth parts of Diptera. Hymenoptera and Lepidoptera
4. Honey Bee Species and Bee Hives. Equipment for Handling Honeybees
5. Lac Insect: Biology and Behaviour. Inoculation Methods, Cropping and Enemies of Lac Insects

#### **References**

1. Awasthi, V.B. 1997. Introduction to general and applied entomology. Scientific Publishers, Jodhpur, 379 p.
2. Borror, D.J., C.A. Triple Horn and N.F.Johnson. 1987. An introduction to the study of insects (VI Edition). Harcourt Brace College Publishers, New York, 875p.
3. Bee keeping in India – Singh S, 1975
4. Lac cultivation in India – Glover P M 1937.
5. An introduction to Sericulture – Ganga, G; Sulochana Chetty J (2nd edt)

#### **Subject Name: DISASTER MANAGEMENT**

1. Natural Disasters- Meaning and nature of natural disasters, their types and effects. Floods, drought, cyclone, earthquakes, landslides, avalanches, volcanic eruptions, Heat and cold waves, Climatic change: global warming, Sea level rise, ozone depletion
2. Man Made Disasters- Nuclear disasters, chemical disasters, biological disasters, building fire, coal fire, forest fire, oil fire, air pollution, water pollution, deforestation, industrial waste water pollution, road accidents, rail accidents, air accidents, sea accidents.
3. Disaster Management- Effect to migrate natural disaster at national and global levels. International strategy for disaster reduction. Concept of disaster management, national disaster management framework; financial arrangements; role of NGOs, community –based organizations and media. Central, state, district and local administration; Armed forces in disaster response; Disaster response; Police and other organizations.

#### **Practical**

1. Study of common plants, insects, birds
2. Study of simple ecosystems-pond, river, hill slopes,
3. Visit to a local area to document environmental assets river/ forest/ grassland/ hill/ mountain,
4. Visit to a local polluted site Urban/Rural/Industrial/Agricultural.

#### **References**

Bharucha, E. 2005. Text book of Environmental Studies for undergraduate courses. University