

**PANJAB UNIVERSITY CHANDIGARH- 160 014 (IN DIA)**  
(Estd. under the Panjab University Act VII of 1947-enacted by the Govt. of India)



**FACULTY OF DAIRYING ANIMAL  
HUSBANDRY AND AGRICULTURE**

**SYLLABI**

**FOR**

**ADVANCED DIPLOMA IN ORGANIC  
FARMING (1<sup>st</sup> to 4<sup>th</sup> SEMESTER)**

**SESSION 2020-21**

# SYLLABUS OF ADVANCE DIPLOMA COURSE IN ORGANIC FARMING

Course Duration: 4 Semesters

## SEMESTER –I

Course Title: Organic Farming-I

Lectures to be delivered=100; Periods/week= 5;  
Each period= 60 minutes; Field work & Practical: 10hr /week

**Theory:** 70marks  
**Practical Exam:** 25marks  
**Internal Assessment:** 05 marks

**Objective:** To train/prepare students in the area of organic farming and its application in agriculture.

### Instructions for the paper setter:

Question paper will have **FOUR** units. Examiner will set a total of **NINE** questions comprising **TWO** questions from each unit and **ONE** compulsory question (**10** marks) of short answer type covering the whole syllabus. Students will attempt **ONE** question (**15** marks) from each unit and the compulsory question.

### UNIT-I

1. **Agriculture:** Introduction, conventional farming, evolution of agriculture: from tools through ages, classification of crops and their geographical distribution.
2. **Chemical Fertilizers:** Chemical fertilizers and their impact on environment. Pollution of soil, surface and ground water due to over use of fertilizers and pesticides and remedial measures, inorganic and organic fertilizers.

### UNIT-II

3. **Organic Farming:** Benefits and impact of agriculture on trade and industrial development, crop production and yield in the state as compared to that of other states and countries.
4. **Economics of Farming:** Economics and basic knowledge of farm implements -ploughs, spray pumps, tractors. Harvesters and threshers – harvest combines, reapers, chaff cutters, sugarcane crushers.

### UNIT-III

- 5 **Organic Manure:** Types of organic manure-Green manure, farm yard manure, farm compost, urban waste compost, rural waste compost.
- 6 **Vermicompost:** Introduction, concept, preparations and applications.

### UNIT-IV

- 7 **Biofertilizers:** Introduction, role in soil fertility and crop yield, crop-rotation, bio-pesticides.
- 8 **Merits and Demerits of Organic Farming:** Application of compost and mulching, concept and methodology of humus formation.

#### **Practicals:**

1. Visit to local organic farm.
2. Visit to composting plant.
3. To prepare list of green labels that are in use for food products.
4. Analysis of moisture content of compost/Vermicompost/soil.
5. Analysis of pH of soil.
6. To prepare Vermicompost at lab scale from various kinds of agro-waste.

#### **Suggested Reading:**

Altieri, M. (1990). *Agroecology: The Science of Sustainable Agriculture*. Westview Press, Boulder, CO.

Bavec, F. and Bavec, M. (2007). *Organic Production and Use of Alternative Crops*. CRC Press, Boca Raton, FL.

Joshi, M., Setty, T.K.P. and Prabhakarasetty (2006). *Sustainability through organic farming*. 1st Edition. Kalyani Publishers, Ludhiana, India.

Kristensen, P., Taji, A. and Reganold, J. (2006). *Organic Agriculture: A Global Perspective*. CSIRO Press, Victoria, Australia.

**Course Evaluation:** Active participation, Homework assignments, Class examination, Power point presentation and Final examination.

## SEMESTER –II

**Course Title:** Organic Farming-II

Lectures to be delivered=100; Periods/week= 5;  
Each period= 60 minutes; Field work & Practical: 10hr /week

**Theory:** 70marks  
**Practical Exam:** 25marks  
**Internal Assessment:** 05 marks

**Objective:** To train/prepare students in the area and applications of organic farming in agriculture

### **Instructions for the paper setter:**

Question paper will have **FOUR** units. Examiner will set a total of **NINE** questions comprising **TWO** questions from each unit and **ONE** compulsory question (**10** marks) of short answer type covering the whole syllabus. Students will attempt **ONE** question (**15** marks) from each unit and the compulsory question.

### UNIT-I

1. **Pesticides:** Introduction, relevance in management of pests and diseases, ill-effects with particular reference to bio-magnification and other environmental hazards.
2. **Microorganisms:** Importance of micro-organisms in agriculture. Organic matter decomposition cycles of matter in nature, biological nitrogen fixation- a brief account.

### UNIT-II

3. **SEED Beds:** Seed bed preparation. Characteristics of good seed beds. Methods of sowing and their suitability under different environmental conditions.
4. **Seedling Practices:** In relation to kind of seed, time of sowing, soil moisture. Micro-organisms as pathogens, calendar of farming operations.

### UNIT-III

5. **Basic Entomology:** Common pests of Wheat, Rice, Maize, Lady finger, Cauliflower, Sugarcane and Sarson.
6. **Integrated Pest Management:** Concept, approaches and its components.

## UNIT-IV

7. **Weeds:** Characteristics, dissemination, competition for growth factors and losses caused by weeds. Common methods of weed control.
8. **Standards of Product:** Organic standards, organic certification of farms, green labels, organic food production.

### PRACTICALS

1. Preparation of field for sowing, transplanting of different crops. Application of manures and fertilizers.
2. Seed viability test by using Tetra-zolium chloride method.
3. Determination of moisture contents of seeds of wheat, rice, Gram and Maize.
4. Analysis of different types of water samples for pH, total solids and the presence of microbes by water testing kit.
5. Identification of different weeds – their collection weeding and hoeing in various crops.
6. Nursery raising, cultural operations for common/regional crops.

### Suggested Reading:

Singh, S.S., Gupta. P. and Gupta, A.K. (1994). Handbook of Agricultural Sciences. Kalyani Pub. New Delhi.

Handbook of Agriculture. (1961). I.C.A.R., New Delhi.

Bujarak B. B. (2010.) Vigyanak Dhanga Nal Kheti. Sangam Pub. Samana Punjab.

Reddy, T. Y. and Reddy, G.H.S. (2013). Principles of Agronomy. Kalyani Pub. Ludhiana.

Tyagi, I.D. (2002). Modern Agriculture: Oscar Publication, New Delhi.

Punjab Agricultural University Handbook (2005). Pub. PAU Ludhiana.

**Course Evaluation:** Active participation, Homework assignments, Class examination, Power point presentation and Final examination.

## SEMESTER-III

**Course Title:** Organic Farming III

**Lectures to be delivered** = 100; Periods/ 5 weeks

**Each period**= 60 minutes; Field Work & Practical: 10 hr/week

**Theory:** 70 marks

**Practical Exam:** 25 marks

**Internal Assessment:** 05 marks

**Objective:** To train/prepare students in the area of organic farming and its application in agriculture.

Instructions for the paper setter: Question paper will have **FOUR** units.-Examiner will set a total of **NINE** questions comprising **TWO** questions from each **ONE** compulsory questions (10marks) of short answer type covering the whole syllabus. Students will attempt **ONE** question (**15 marks**) from each unit and the compulsory question.

### UNIT-I

**Methods of raising crop plants:** Different methods of sowing crop plants; Modern concept of tillage; Basic idea about nature and properties of soils (composition, soil texture and profile).

**Sustainable Agriculture:** Introduction Role, Concepts of Basic Principles, Input management for Sustainable Agricultural Systems.

### UNIT –II

**Dairy farming:** Importance of dairy farming in India; Important breeds of cow and buffalo, their milking yield, lactation period: Management and Control of Important diseases of animals.

**Poultry farming:** Present status and future prospectus of poultry industry in india. Important methods of housing poultry birds.

### UNIT –III

**Meat Industry:** Introduction, definition, important meat birds, their methods of raising, market of organic meat.

**Horticulture:** Introduction, methods of planning orchards, important fruit plants of Punjab (Citrus, Mango, Litchi, Guava) and their cultivation practices.

## UNIT-IV

**Mushrooms:** Introduction, Types, Nutritional value of different mushrooms.

**Mushroom Cultivation:** Methods of cultivation of mushroom with special emphasis on Oyster mushroom (including methods of preparing compost, spawn, spawning, cropping and harvesting etc.)

### Practicals:

1. Identification of Important crop plants, fruit plants and flowering plants.
2. Visit to Mushroom Cultivation centre/ flower farm.
3. Study of different horticulture nursery.
4. Visit to local poultry/ dairy farm units.

### Suggested Readings:

Yadav. R.P. (2010) The DBS Handbook of Agriculture. Chaman Enterprises, New Delhi

Organically Produced Foods. 3<sup>rd</sup> edition (2007). World Health Organization. Food and Agriculture Organization of United Nations, Rome.

Veeresh, G.K. Shivashankar, K. and Singhlachar, M.A. (1997), Organic Farming and Sustainable Agriculture, Association for Promotion of Organic Farming, Bangalore.

Chang S.T. and Miles, P.G. (2004) Mushrooms: Cultivation, Nutritional Value, Medicinal Effect and Environmental Impact. 2<sup>nd</sup> edition, CRC Press.

Wright S. McCrea, D. (2000). Handbook of Organic Food Processing and Production 2<sup>nd</sup> Edition, Blackwell Science Ltd.

Oruganti, M. (2011). Organic Dairy Farming- A new Trend in Dairy Sector, Veterinary World, (3): 128-130.

Pathak, P.K., Chander, M. and Biswas, A.K. (2003). Organic Meat: an Overview, Asian- Aust. J. Anim. Sci. 16 (8): 1230-1237.

Shukla, G.S. and Upadhyay, V.B. (2011) Economic Zoology Rastogi publications, Meerut.

Vishwapremi, K.K. Chandra. (1995) Economic Zoology Anmol Publications Pvt Ltd.

**Course Evaluation:** Active participation, Homework assignments, Class examination, Power point presentation and Final examination.

## SEMESTER-IV

**Course Title:** Organic Farming III

**Lectures to be delivered** = 100; Periods/ 5 weeks

**Each period**= 60 minutes; Field Work & Practical: 10 hr/week

**Theory:** 70 marks

**Practical Exam:** 25 marks

**Internal Assessment:** 05 marks

**Objective:** To train/prepare students in the area of organic farming and its application in agriculture.

Instructions for the paper setter: Question paper will have **FOUR** units.-Examiner will set a total of **NINE** questions comprising **TWO** questions from each **ONE** compulsory questions (**10marks**) of short answer type covering the whole syllabus. Students will attempt **ONE** question (**15 marks**) from each unit and the compulsory question.

### UNIT-I

**Agriculture:** Importance of Agriculture in Indian economy, Food Problem in India.

**Agronomy:** Introduction, Package and practices of field crops (Wheat, Rice, Gram, Sunflower, Sugarcane, Cotton).

### UNIT-II

**Nutrients:** Plant nutrition and concept of essential elements in plant growth, Deficiency symptoms of important nutrients (N,P,K,), fertilizer requirement for wheat, rice and maize.

**Fertilizers:** Nitrogenous fertilizers and their classification.

### UNIT-III

**Soil:** Important physical properties of soil, Different types of salts in salt effected soil, Calcareous soil, Reclamation of saltine and alkali soils.

**Tillage and important agronomic terms:** Primary and secondary tillage; Tillage implements; Objectives, Basic idea of inter cropping. Definition of intercropping; Relay cropping; Mix cropping and Trap cropping; Modern Concept of Tillage.



## UNIT-IV

**Irrigation:** Introduction, Importance of water, Sources of water, Methods of irrigation, Advantages and disadvantages of irrigation.

**Harvesting and post harvest technology:** Time of Harvesting, Methods of Harvesting, Machinery used for Threshing and Drying, Post Harvest Processing.

### Practicals:

1. Identification of important agricultural implements.
2. Visit of commercial seed processing and seed storage units
3. Visit to Agro-industry/ Agriculture Research Centre
4. Visit to Agriculture farm/ fruit Orchard/ Any other farm.

### Suggested Reading:

Yadav, R.P. (2010). The DBS Handbook of Agriculture, Chaman Enterprise, New Delhi.

Brady, N.C. and Well, R.R. (2002). The Nature and Properties of Soils (13<sup>th</sup> ed.). Pearson Education, Delhi.

Chandrasekaran, B., Annadurai, K. and Somasundram E. (2010). A Textbook of Agronomy, New Age International (P) Limited, Publishers, New Delhi.

Balasubramanian, P. and Palaniappan, S.P. (2001). Principles and Practices of Agronomy. AgroBios (India) Ltd., Jodhpur.

ICAR, (2006). Handbook of Agriculture, ICAR, New Delhi.

Reddy, T.Y. and Reddy, G.H.S., (1995, Principles of Agronomy, Kalyani Publishers, Ludhiana.

Reddy, S.R., (1999) Principles of Agronomy, Kalyani Publishers, Ludhiana.

**Course Evaluation:** Active participation, Homework assignments, Class examination, Power point presentation and Final examination.

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