

**KCES's**

**Moolji Jaitha College (Autonomous), Jalgaon**



**SYLLABUS**

**B. Voc. Agriculture**

**[W.e.f. Academic Year: 2019-20]**

<b>F. Y. B. Voc. - Agriculture (NSQF Level V)</b>					
<b>Semester I</b>					
<b>General Education Component</b>					
<b>Paper No.</b>	<b>Paper Code</b>	<b>Paper Title</b>	<b>Mode</b>	<b>Credits</b>	<b>Marks</b>
1	AGR-111	Introduction to Computer - I	Theory	02	100
2	AGR-112	Soft Skills Development - I	Theory	02	100
3	AGR - 113	Computer Literacy Skills Lab	Practical	04	100
4	AGR - 114	Soft Skills Development Lab - I	Practical	04	100
<b>Total</b>				<b>12</b>	<b>400</b>
<b>Skill Development Component</b>					
5	AGR-121	Basics of Plant Biology part I	Theory	02	100
6	AGR 122	Basics of Plant Biology part II	Theory	02	100
7	AGR-123	Introduction to Soil Science and Techniques for Soil and water Analysis	Theory	02	100
8	AGR-124	Preparation of soil and water samples for analysis in the lab, sanitation and safety (AGR/N8101 & AGR/N8105)	Practical	04	100
9	AGR-125	Calibration of equipments and preparation of different types of solutions; Soil and water health card (AGR/N8106 & AGR/N8107)	Practical	04	100
10	AGR-126	Estimation of N, P, K and OC	Practical	04	100
<b>Total</b>				<b>18</b>	<b>600</b>
Total Credits = General Education Component + Skill Development Component					12+18=30

**F. Y. B. Voc. - Agriculture  
(NSQF Level V)**

**Semester II**

<b>Paper No.</b>	<b>Paper Code</b>	<b>Paper Title</b>	<b>Mode</b>	<b>Credits</b>	<b>Marks</b>
1	AGR - 211	Introduction to Computer - II	Theory	02	100
2	AGR - 212	Soft Skills Development - II	Theory	02	100
3	AGR - 213	Office Operations Lab - I	Practical	04	100
4	AGR - 214	Soft Skills Development Lab - II	Practical	04	100
<b>Total</b>				<b>12</b>	<b>400</b>
<b>Skill Development Component</b>					
5	AGR - 221	Introduction to Indian Agriculture and crop production practices for selected crops	Theory	02	100
6	AGR - 222	Cultivation practices for selected crops	Theory	02	100
7	AGR - 223	Organic farming management	Theory	02	100
8	AGR - 224	Cultivation practices / SOPs for selected crops in Kharif	Practical	04	100
9	AGR - 225	Organic Farming Practices and Management	Practical	04	100
10	AGR 226	Cultivation practices / SOPs for selected crops in Rabi	Practical	04	100
<b>Total</b>				<b>18</b>	<b>600</b>
Total Credits = General Education Component + Skill Development Component					12+18=30

## **AGR -111: Introduction to Computer - I**

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**Period : 30**

**Credit: 02**

### **Unit 1 - Basics of Computer**

**Periods: 10**

- 1.1 Computer: definition, characteristics, advantages and disadvantages
- 1.2 Generations of computer
- 1.3 Block diagram of computer
- 1.4 Types of computer: analog, digital and hybrid

### **Unit 2 – Memory**

**Periods: 08**

- 2.1 Overview of Memory
- 2.2 Types of Memory
  - a. Primary Memory: RAM and ROM
  - b. Secondary Memory: Hard disk, CD, DVD, USB flash memory & Solid state memory

### **Unit 3 - I/O Devices**

**Periods: 12**

- 3.1 Concept of software and hardware, Relationship between software and hardware
- 3.2 Input devices - Keyboard, Mouse, Scanner, Joystick, MICR, OMR, Bar Code Reader
- 3.3 Output devices - Monitor: *CRT, Flat panel & Touch screen*, Printer: *Dot Matrix, Ink-jet & Laser*, Plotter
- 3.4 Ports: overview, types – audio, graphics, network, USB and HDMI

### **Recommended Books:**

- Computer Fundamentals by P. K. Sinha, BPB Publications
- Fundamentals of Computers by V. Rajaraman, PHI
- Fundamentals of Computers by E Balagurusamy, Tata McGraw-Hill Education
- Absolute Beginner's Guide to Computer Basics by Miller, Pearson Education India, 2007
- Computer Literacy BASICS by Connie Morrison, Dolores Wells, Cengage Learning
- Personal Computing Demystified by Larry Long, McGraw Hill Professional
- Computer Concepts: Illustrated Introductory by Dan Oja, June Jamrich Parsons, Cengage Learning

## AGR-112: Soft Skills Development - I

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**Period : 30**

**Credit: 02**

### **Unit 1- Sentence**

**Periods: 03**

1.1 Definition

1.2 Types of sentence - declarative, interrogative, imperative and exclamatory

1.3 Affirmative and negative sentence

1.4 Subject and predicate

### **Unit 2 - Parts of speech**

**Periods: 10**

2.1 Parts of speech: nouns, pronouns, adjectives, verbs, adverbs, prepositions, conjunction and interjection

### **Unit 3 - Tense**

**Periods: 10**

3.1 Present tense: simple, continuous, perfect, perfect continuous

3.2 Past tense: simple, continuous, perfect, perfect continuous

3.3 Future tense: simple, continuous, perfect, perfect continuous

### **Unit 4 - Determiners**

**Periods: 05**

4.1 Articles

4.2 Demonstrative

4.3 Possessive

4.4 Quantifier

### **Unit 5 – Modals**

**Periods: 02**

5.1 Modals: can, could, may, might, will, would, shall, should and must

5.2 Basic punctuation rules

5.3 Basic capitalization rules

5.4 Synonym and antonym

### **Recommended Books:**

- Elementary English Grammar & Composition For Class-7 by N.K. Aggarwala, Goyal Brothers Prakashan
- Basic English Grammar by Howard Sargeant, Saddleback Educational Pub
- Middle School English Grammar and Composition by P. C. Wren, S. Chand Publishing

## **AGR -113: Computer Literacy Skills Lab**

**Period : 120**

**Credit: 04**

<b>S.No.</b>	<b>Name of Practical</b>
01	Introduction to various components of computer system
02	Acquisition of computer hardware
03	Acquisition of computer software
04	Installing peripherals of computer with start and shutdown process
05	Use of mouse comfortably
06	Use of keyboard for typing
07	Use of start menu, windows explorer, recycle bin, network and control panel
08	Use of taskbar and desktop context (right click) menu
09	Use of various windows utility programs
10	Installing and uninstalling of computer software
11	Files and folder management in windows explorer
12	Data access and management in network
13	Scanning the document

### **Recommended Books:**

- Absolute Beginner's Guide to Computer Basics by Miller, Pearson Education India, 2007
- Computer Literacy BASICS by Connie Morrison, Dolores Wells, Cengage Learning
- Personal Computing Demystified by Larry Long, McGraw Hill Professional
- Computer Concepts: Illustrated Introductory by Dan Oja, June Jamrich Parsons, Cengage Learning

## **AGR -114: Soft Skills Development Lab - I**

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**Period : 120**

**Credit: 04**

<b>Practical No.</b>	<b>Name of Practical</b>	<b>No. of Practical</b>
01	Learn to handle dictionary to search word meaning	01
02	Find the meaning of 50 common nouns from dictionary	04
03	Find the meaning of 50 abstract nouns from dictionary	04
04	Find the meaning of 50 adjectives from dictionary	04
05	Find the meaning of 50 verbs from dictionary	04
06	Develop listening skills by listening various songs, documentaries and podcast	03
07	Read the news from the newspaper	04
08	Read the editorial from the newspaper	04
09	Read the article from the magazine	04
10	Learn and practice to introduce about yourself	02
11	Tell your favorite story	03
12	Speak about your favorite personality	03

### **Recommended Books:**

- Elementary English Grammar & Composition For Class-7 by N.K. Aggarwala, Goyal Brothers Prakashan
- Basic English Grammar by Howard Sargeant, Saddleback Educational Pub
- Middle School English Grammar and Composition by P. C. Wren, S. Chand Publishing

## AGR -121: Basics of Plant Biology Part I

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**Total Hours: 30**

**Credits: 02**

**Unit 1: Basics of Plant Biology**

**Periods: 08**

Biological kingdom; Classification of plant kingdom; Characteristics of each group; Evolution of different groups; Special characters of Angiosperms

**Unit 2: Plant Morphology**

**Periods: 10**

Morphology of flowering plants; Roots, stem, leaves, inflorescence, flower, fruits: General concept and its modification

**Unit 3: Plant Anatomy**

**Periods: 12**

Types and functions of cell and tissues; conducting tissues, stomata types and its function

**Recommended Books:**

- Ganguly, H.C. & K. S. Das (1986) College Botany Vol.-I (6th Edition), New Central Book Agency, Calcutta, India
- Lawrence G.H.M. (1951) Taxonomy of Vascular plants. Macmillan, New York, USA.
- Pandey, B.P. (1997) Taxonomy of Angiosperms. S. Chand & Company Ltd., New Delhi, India.
- Subramanyam, N.S. (1997) Modern Plant Taxonomy. Vikas Publishing house, New Delhi, India.
- Mukerjee Susilkumar (1984) College Botany Vol III Published by J.N. Sen. B.S.I. New Central Book Agency Calcutta.
- Kochhar, P. L. Plant Ecology, Genetic and Evolution, S. Nagin and Co. Ltd., New Delhi, India
- Harold Charles Bold, *et.al*, "Morphology of Plants and Fungi", 1987, Harper and Row Publications
- V.K.Jain, "Fundamentals of Plant Physiology", S.Chand Publications, New Delhi
- S.N.Pandey and B.K.Sinha, "Plant Physiology", 4<sup>th</sup> Edition, Vikas Publishing House



## AGR -122: Basics of Plant Biology Part II

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**Total Hours: 30**

**Credits: 02**

### **Unit 1: Plant Physiology**

**Periods: 18**

Plant water relations: photosynthesis, Translocation of solutes: Respiration; Growth hormones

### **Unit 2: Elementary cytology and Genetics**

**Periods: 12**

Cell structure and its organelles, prokaryotic and eukaryotic cell; cell cycle, Mendel's laws

### **Recommended Books:**

- Ganguly, H.C. & K. S. Das (1986) College Botany Vol.-I (6th Edition), New Central Book Agency, Calcutta, India
- Lawrence G.H.M. (1951) Taxonomy of Vascular plants. Macmillan, New York, USA.
- Pandey, B.P. (1997) Taxonomy of Angiosperms. S. Chand & Company Ltd., New Delhi, India.
- Subramanyam, N.S. (1997) Modern Plant Taxonomy. Vikas Publishing house, New Delhi, India.
- Mukerjee Susilkumar (1984) College Botany Vol III Published by J.N. Sen. B.S.I. New Central Book Agency Calcutta.
- Kochhar, P. L. Plant Ecology, Genetic and Evolution, S. Nagin and Co. Ltd., New Delhi, India
- Harold Charles Bold, *et.al*, "Morphology of Plants and Fungi", 1987, Harper and Row Publications
- V.K.Jain, "Fundamentals of Plant Physiology", S.Chand Publications, New Delhi
- S.N.Pandey and B.K.Sinha, "Plant Physiology", 4<sup>th</sup> Edition, Vikas Publishing House

## **AGR -123: Introduction to Soil Science and Techniques for Soil and water Analysis**

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**Total Hours: 30**

**Credits: 02**

### **Unit 1: Introduction to soil science and its analysis**

**Periods: 6**

General concept on rock formation; different types of soil and its characteristics; soil map of India and special reference to Maharashtra; composition of soil; need analysis

### **Unit 2: Safety and hygiene of the lab and person**

**Periods: 6**

Familiarity with lab and equipments; Need of safety and hygiene in the lab; precaution, disinfection and fumigation

### **Unit3: Preparation of water and soil sample for analysis hours**

**Periods: 6**

Collection of sample, its categorization, drying, sieving and storage

### **Unit 4: Calibration of instruments and solution preparation**

**Periods: 6**

Understanding of different terms for preparation of solution; Different types of solution and method of preparation; calibration of instruments and least count

### **Unit 5: Analysis and report making**

**Periods: 6**

Understanding of NPK ratio, different methods of estimation of N, P, K and OC; Preparation of soil health card

### **Recommended Books:**

- Sumati Narayan & Tahir Ali, "Manual of Soil, Plants & Water Analysis", 2016, Daya Publication house, New Delhi
- Sanjay K. Goswami , "Labrotary Manual-Soil, Plants & Water Analysis" Cornell Nutrient Management Sprear Progress
- Arundhati Nimbalkar , "Soil, Plants & Water Analysis Manual", 2015, Scitus Academics LIC
- M.A.Wani , "Soil, Plants & Water Analysis Manual", 2011
- Dhyan Singh , Chhonkar P.K., & Bs Dwivedi, "Manual on Soil, Plant & Water Analysis, Westville Publication House, New Delhi.

## **AGR -124: Preparation of soil and water samples for analysis in the lab, sanitation and safety (AGR/N8101 & AGR/N8105)**

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**Total Hours: 120**

**Credits: 04**

- Drawing/lay out plan for new laboratory (AGR/ N8101)
- Identification of major lab instruments and its least count
- Methods of lab cleaning, mopping , use of disinfectants, fumigation of the lab
- Different chemicals, lab wares, equipments and their use
- Antidotes for different hazardous chemicals and other safety measures; first aid and its use
- Measuring of liquid up to 0.5 ml and Demonstration of titration method
- Weighing of solid up to 1 mg
- Estimation of pH of different solutions
- Estimation of EC and TDS
- Understanding of lab assistant on different aspects (AGR/N8111)

## **AGR -125: Calibration of equipments and preparation of different types of solutions; Soil and water health card (AGR/N8106 & AGR/N8107)**

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**Total Hours: 120**

**Credits: 04**

### **Practicals:**

1. Functioning of spectrophotometer
2. Preparation of soil samples for analysis
3. Conduct analysis of different parameters of water (AGR/N 8109)
4. Methods of soil sampling from farmers field and processing soil samples for analysis.
5. Preparation of different solutions Normal, Molar, Molal
6. Demonstration of osmosis and transpiration
7. Different types of register and formats
8. Preparation of soil health card

## **AGR -126: Estimation of N, P, K and OC**

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**Total Hours: 120**

**Credits: 04**

### **Practicals:**

1. Estimation of N
2. Estimation of P
3. Estimation of K
4. Estimation of OC

**F. Y. B. Voc. - Agriculture  
(NSQF Level V)**

**Semester II**

<b>Paper No.</b>	<b>Paper Code</b>	<b>Paper Title</b>	<b>Mode</b>	<b>Credits</b>	<b>Marks</b>
1	AGR - 211	Introduction to Computer - II	Theory	02	100
2	AGR - 212	Soft Skills Development - II	Theory	02	100
3	AGR - 213	Office Operations Lab - I	Practical	04	100
4	AGR - 214	Soft Skills Development Lab - II	Practical	04	100
<b>Total</b>				<b>12</b>	<b>400</b>

**Skill Development Component**

5	AGR - 221	Introduction to Indian Agriculture and crop production practices for selected crops	Theory	04	100
6	AGR - 222	Cultivation practices for selected crops	Theory	04	100
7	AGR - 223	Organic farming management	Theory	04	100
8	AGR - 224	Cultivation practices / SOPs for selected crops in Kharif	Practical	04	100
9	AGR - 225	Organic Farming Practices and Management	Practical	03	100
10	AGR - 226	Cultivation practices / SOPs for selected crops in Rabi	Practical	03	100
<b>Total</b>				<b>18</b>	<b>600</b>

Total Credits = General Education Component + Skill Development Component 12+18=30

## **AGR -211: Introduction to Computer - II**

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**Total Hours: 30**

**Credit:02**

**Unit 1 – Multimedia**

**Periods: 03**

1.1 Overview

1.2 Elements of multimedia - text, image, audio, video and animation

1.3 Advantages, disadvantages and applications of multimedia

**Unit 2 - Network**

**Periods: 06**

2.1 Overview

2.2 Types - LAN, MAN and WAN

2.3 Network topology - star, bus, ring, mesh and hybrid

2.4 Understanding terminologies: server, client, internet and web

**Unit 3 - Data Communication**

**Periods: 06**

3.1 Overview

3.2 Components - message, sender, receiver, medium and protocol

3.3 Transmission media - guided media and unguided media

3.4 Types - simplex, half duplex and full duplex; Serial and Parallel

**Unit 4 - Operating system**

**Periods: 06**

4.1 Overview

4.2 Functions

4.3 Types - batch, time-sharing, distributed, network and real-time

**Unit 5 - DBMS**

**Periods: 06**

5.1 Overview of table, database and DBMS

5.2 Advantages and disadvantages of DBMS

5.3 DBMS users - end user, sophisticated users, application programmers and DBA

**Unit 6 - Emerging trends**

**Periods: 03**

6.1 Tablet Computer

6.2 Artificial intelligence

6.3 Virtual reality

6.4 3D printing

6.5 Navigation technology

6.6 VFX

**Recommended Books:**

- Computer Fundamentals by P. K. Sinha, BPB Publications
- Fundamentals of Computers by V. Rajaraman, PHI
- Fundamentals of Computers by E Balagurusamy, Tata McGraw-Hill Education

## **AGR -212: Soft Skills Development - II**

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**Total Hours : 30**

**Credit: 2**

### **Unit 1: Basics of Communication**

**Periods: 10**

Communication and communication skill : general concept; different types of communications and its importance; Process of communication; Barriers to Communication; The Seven Cs of Effective Communication (Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness), purpose of professional communication; Importance of effective communication

### **Unit 2: Communication at Work Place**

**Periods: 10**

Letter Components and Layout, Planning a letter, Process of Letter writing, E-mail Communication, Memo and Memo reports, Employment Communication: Notice agenda and Minutes of meeting, Brochures, Notice, circular and memo

### **Unit 3: Report Writing**

**Periods: 4**

Effective writing, type of business reports, structure and kinds of reports, writing of abstracts and summaries, writing definitions

### **Unit 4: Job communication**

**Periods: 2**

Job application: cover letter, CV, resume, appointment letter and resignation letter

Report: overview, structure and types

### **Unit 5: Communication network and other communication skills**

**Periods: 4**

Communication networks types and advantage and disadvantages of it; Reading skills, listening skills, note-making, précis writing, audio-visual aids, and oral communication; better public speaking and presentation

#### **Reference:**

- Aruna Koneru, "Professional Communication", 2008, McGraw Hill Education, ISBN 978-0070660021
- Herta A Murphy, Herbert W Hildebrandt, Jane P Thomas, "Effective Business Communications", 7th Revised edition (1997) , McGraw-Hill Publishing. ISBN: 978-0070443983
- Urmila Rai, "Business Communication", 2011, Himalaya Publishing House , ISBN 978-8183184380/ 978-9350247990
- R.C. Sharma and Krishna Mohan, "Business Correspondence and Report Writing" , 4 edition (2010), McGraw Hill Education, ISBN: 978-0070681989
- Dale Carnegie, "How to win friends and influence people" Reprint 2016 Rupa Publications India Pvt. Ltd. New Delhi



## AGR -213: Office Operations Lab - I

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**Total Hours : 120**

**Credit: 04**

<b>Practical No.</b>	<b>Name of Practical</b>	<b>No. of Practical</b>
01	Introduction to office suite software	01
02	Basic operations in office suite software	01
03	Page layout operations by using word processing software	02
04	Editing a document by using word processing software	04
05	Formatting a document by using word processing software	04
06	Inserting illustrations in the document by using word processing software	04
07	Inserting header, footer and page numbering in the document by using word processing software	04
08	Performing the table operations in the document by using word processing software	04
09	Formatting the table in the document by using word processing software	04
10	Viewing the document by using word processing software	04
11	Preparing a document through mail merge by using word processing software	04
12	File type conversions (docx to pdf and pdf to docx)	02
13	Pages management operations of pdf files	02

### **Recommended Books:**

- MS-Office by S. S. Shrivastava, Firewall Media, 2008
- Learning Ms Office 2007 by Ramesh Bangia, Khanna
- MS Office 2007 in A Nutshell by Saxena Sanjay, Vikas Publishing House

## AGR -214: Soft Skills Development Lab - II

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Total Hours : 120

Credit: 04

Practical No.	Name of Practical	No. of Practical
01	Learn social etiquettes	01
02	Learn business etiquettes	01
03	Learn telephone etiquettes	01
04	Learn to ask for and give information	01
05	Learn to make requests and responding to requests	01
06	Tell about industry visit to your friend	02
07	Conversation with your friend regarding to plan for a trip	02
08	Write informal letters	05
09	Write inquiry letters	05
10	Write complaint letters	05
11	Write your resume	03
12	Write a covering letter for applying job	02
13	Write a resignation letter	02
14	Prepare a notice	02
15	Prepare a oral presentation on the given topic	03
16	Group discussion	04

### **Recommended Books:**

- Business Communicator – V.K. Jain, O. P. Biyani, S. Chand, New Delhi.
- The Communicator – Board of Editors , Orient Blackswan Pvt. Ltd
- The Art of Powerful Communication – Dinesh K. Vohra, Are Maria Publications, Pune

## **AGR-221: Introduction to Indian Agriculture and crop production practices for selected crops**

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**Total Hours: 30**

**Credits: 02**

### **Unit 1 Introduction to Indian Agriculture and agroclimatic zones**

**Periods: 06**

Indian Agriculture - Evolution of agriculture, from tools through ages, status of Indian Agriculture its scope, Importance and role of Agriculture in Indian economy and International trade; change in agriculture sector; classification of crops, their geographical distribution and yield in the state as compared to that of other states and countries; Agroclimatic zones of India, characteristics of every agroclimatic zones with special reference to Maharashtra

### **Unit 2 Land preparation and sowing**

**Periods: 06**

Land preparation - tillage operations - definition, objectives, characteristic of ideal tillage, types of tillage, effect of tillage on soil properties; Tillage practices for different soil types and crops; ploughing, harrowing, seed bed preparation, characteristics of good seed beds  
Sowing - various methods of sowing and their suitability under different conditions, advantage and disadvantages; Seedling practices in relation to kind of seed, time of sowing, soil moisture, etc.; Germination and Transplanting

### **Unit 3 Cropping system**

**Periods: 06**

Cropping system: definition, types, advantages and disadvantages of each system

### **Unit 4 Introduction to Fertilizer, Irrigation, pest, diseases and weed**

**Periods: 06**

Fertilizer : its types , its composition , advantages and disadvantages of fertilizer application on crop growth; Irrigation - definition, various methods of irrigation, advantages and disadvantages of each method; weed - definition, effects of weeds on crop growth, pest and diseases - identification, effect on crop growth

### **Unit 5 Introduction to harvest and post harvest techniques**

**Periods: 06**

Introduction to harvest and post harvest techniques; signs of maturity of different crops; Different harvesting methods for common crops, post harvest techniques for common crops

### **Recommended Books:**

- Lorentz C. Pearson, "Principles of Agronomy", 1967, Reinhold Publications , Rexburg, Idaho
- Hand Books of Agriculture by I. C. A. R.
- Weeds of North India, I. C. A. R.
- K.S. Yawalkar, J.P. Agarwal, S. Bokde, "Manures and Fertilizers", 2<sup>nd</sup> Edition, 1967, Agri-Horticultural Pub. House

## **AGR-222: Cultivation practices for selected crops**

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**Total Hours: 30**

**Credits: 02**

### **Unit 1**

**Period 06**

Origin, Geographical distribution, Economic importance, Soil and climatic requirements  
Seed Rate, Method of planting, Spacing, Varieties, Cultural practices, Intercropping, Pest and disease management, Harvest and Yield of crops

**Cereals:** rice, maize, sorghum, pearl millet and finger millet, Small millets, wheat

### **Unit 2**

**Period 06**

Origin, Geographical distribution, Economic importance, Soil and climatic requirements  
Seed Rate, Method of planting, Spacing, Varieties, Cultural practices, Intercropping, Pest and disease management, Harvest and Yield of crops

**Pulses-** pigeon pea, mung bean, urd bean, Cowpea, kidney bean, chickpea, peas, French bean

### **Unit 3**

**Period 06**

Origin, Geographical distribution, Economic importance, Soil and climatic requirements  
Seed Rate, Method of planting, Spacing, Varieties, Cultural practices, Intercropping, Pest and disease management, Harvest and Yield of crops

**Oilseeds-** groundnut, soybean, Sesame, rapeseed, mustard and sunflower; Safflower, linseed

### **Unit 4**

**Period 06**

Origin, Geographical distribution, Economic importance, Soil and climatic requirements  
Seed Rate, Method of planting, Spacing, Varieties, Cultural practices, Intercropping, Pest and disease management, Harvest and Yield of crops

**Fibre and forage** cotton & Jute, cluster bean, berseem, Lucerne,

### **Unit 5**

**Period 06**

Origin, Geographical distribution, Economic importance, Soil and climatic requirements  
Seed Rate, Method of planting, Spacing, Varieties, Cultural practices, Intercropping, Pest and disease management, Harvest and Yield of crops

**Sugar cane, tobacco and medicinal and aromatic plants**

### **Recommended Books:**

- Modern technique of raising field crops by Chidda Singh
- Agronomy of field crop by S.R. Reddy
- Hand book of Agriculture, ICAR New Delhi

## **AGR-223: Organic farming management**

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**Total Hours: 30**

**Credits: 02**

### **Unit 1 Concept and Introduction**

**Period 06**

Concept and development of organic farming; Principles of organic farming & Need for organic farming, Agencies and institutions related to organic agriculture, understand the pros and cons of conventional farming vs. organic farming, understand the effects of organic farming on costs and revenue,

### **Unit 2 Planning and Seed selection**

**Period 06**

Types of organic farming, Biodynamic farming, Benefits of organic farming. Scope and Present status of organic farming at national and international level

### **Unit 3 Soil Nutrient Management under Organic Farming and Weed Management** **Period 06**

Input of organic farming; Different types and method of preparation of manure and compost; plant protection

### **Unit 4 Integrated Pest Management and Irrigation Management**

**Period 06**

Organic farming systems, Soil tillage, Choice of Varieties, crop rotation and multiple cropping systems, intercropping in relation to maintained of soil productivity

### **Unit 5 Harvest and Post-harvest management under Organic Farming**

**Period 03**

Organic crop production method and post harvest management for selected crops; Certification

### **Unit 6**

**Period 03**

**Certification and undertake Business of Organic Farming and safety Measures**

### **Recommended Books:**

- Organic Farming for Sustainable Agriculture by Dahama A. K. Agrobios Publication.
- Organic Farming: Theory and Practices by Palanippan, S.P. and Anaadurai, K.
- Organic Farming in India, Problems and Prospects by Thapa, U. and Tripathi, P.
- Trends in Organic Farming in India by Agrobios Publication
- Handbook of Organic Farming.
- Recent Developments in Organic farming by Gulati and Barik

## **AGR-224: Cultivation practices / SOPs for selected crops of Kharif**

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**Total Hours: 120**

**Credits: 04**

1. Effect of sowing depth on germination of Kharif crops
2. To study the germination percentage of different crops
3. Effect of micro nutrients application on growth and yield in pulses
4. Effect of micro nutrients application on growth and yield in oil seed
5. Calculations of plant population, seed rate and fertilizers doses for various crop
6. Identification of weeds in Kharif season crops
7. Study of yield contributing characters and yield calculation of Kharif season crops

## **AGR-225: Organic Farming Practices and Management**

**(AGR/Q1201 Organic Grower)**

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**Total Hours: 120**

**Credits: 04**

1. AGR/N1201 Undertake planning for Organic Farming
2. AGR/N1202 Seed Selection and Treatment under Organic Farming
3. AGR/N1203 Soil Nutrient Management under Organic Farming
4. AGR/N1204 Weed control under Organic Farming
5. AGR/N1205 Irrigation Management under Organic Farming
6. AGR/N1206 Integrated Pest and Disease Management under Organic Farming
7. AGR/N1207 Harvest and Post-harvest Management under Organic Farming
8. AGR/N1208 Undertake Quality Assurance & Certification in Organic Farming
9. AGR/N1209 Undertake Business of Organic Farming
10. AGR/N9903 Maintain Health & Safety at the workplace
11. Cultivation of Azolla as bio fertilizer
12. Preparation of Vermicompost pit, vermi compost and vermi wash
13. Preparation and application of jivamrut
14. Preparation and application of bijamrut
15. Visit to Organic Farm to study the various components and their utilization

## **AGR-226: Cultivation practices / SOPs for selected crops of Rabi**

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**Total Hours: 120**

**Credits: 04**

1. Effect of sowing depth on germination of Rabi crops
2. To study the germination percentage of different crops
3. Cultivation of wheat using conventional method and SWI
4. Comparison of conventional method and use of different agriculture practices for chick pea
5. Effect of micro nutrients application on growth and yield in pulses
6. Calculations of plant population, seed rate and fertilizers doses for various crop
7. Identification of weeds in Rabi season crops
8. Study of yield contributing characters and yield calculation of Rabi season crops
9. Harvesting and threshing of cereals, pulses, oil seeds and cash crops