

AGRICULTURE (Code No.808)

JOB ROLE: AGRICULTURE EXTENSION WORKER
SESSION 2019-2020
CLASS XII

1. Introduction

Agriculture has been the prime enterprise for the National Economy of this country for centuries and that is why India is called Agrarian country. This sector also provides maximum employment to the people of this country. Agriculture is the production of food and fiber, ever since its advent. It has undergone several paradigm changes. The major landmark in Agriculture happened during 1960s when the country witnessed Green Revolution. Which boosted the crop production. Use of short duration crop varieties, fertilizers, pesticides and agricultural tools and expansion of area under irrigation were important interventions brought in Agriculture. Livestock is an integral part of Agriculture in India. Their by-products are used to build and maintain soil fertility along with plant protection. The animal products such as meat, milk and eggs are the source of nutrients in human diet as well.

Several emerging dimensions of contemporary Agriculture such as organic agriculture and animal husbandry practices are now getting attention. Food processing, value addition and preservation have been the focus of policies formation in recent times which are helpful in minimizing the wastage in Agriculture. This is helping in better income realizing through marketing of value added products. The income from Agriculture can also be increased by associating in subsidiary enterprises such as mushroom production, bio-pesticides, bee-keeping, vermi-culture etc.

2. Course Objectives

The board objectives of teaching Agriculture at Senior Secondary level are:

1. To help the students to comprehend the facts and importance of Agriculture.
2. To expose the students to crop production, animal husbandry, horticulture etc.
3. To familiarize the students with waste management and physical environment in Agriculture.
4. To expose the students to find better income and avenue generating avenue of agriculture and its associated activities.

3. Curriculum

This course is a planned sequence of instructions consisting of Units meant for developing employability and Skills competencies of students of Class XII opting for Skills subject along with general education subjects.

Theory	70 marks
Practical	30 marks
Total Marks	100 marks

The unit-wise distribution of Periods and marks for Class XII is as follows:

CLASS XII SESSION (2019-2020)				
Section	Units	No. of Periods for Theory and Practical 260		Max. Marks for Theory and Practical 100
Part A	Employability Skills			
	Unit 1: Communication Skills – IV	10		10
	Unit 2: Self-management Skills – IV	10		
	Unit 3: Information and Communication Technology Skills – IV	10		
	Unit 4: Entrepreneurial Skills – IV	15		
	Unit 5: Green Skills – IV	05		
	Total	50		10
Part B	Skills	Theory Periods	Practical Periods	
SECTION : I	Advanced Crop Production and Organic Farming			25
	Unit I: Advanced Crop Production	52	15	
	Unit - II Organic Farming	24	07	
SECTION : II	Post-Harvest Management , Food Processing and Value Addition	12	05	25
	Unit III: Post-Harvest Management			
	Unit IV: Food Processing and Value Addition	42	15	
SECTION : III	Subsidiary Enterprises of Agriculture	30	08	10
	Unit V: Subsidiary Enterprises in Agriculture			
	Total	160	50	60
Part C	Practical Work			
	Practical Examination			10
	Written Test			05
	Viva Voce			05
	Total			20
Part D	Project Work/Field Visit			

	Practical File/Student Portfolio		05
	Total		05
	Grand Total		100

4. CONTENTS

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Part A: EMPLOYABILITY SKILLS

	Units
1.	Communication Skills- IV
2.	Self-management Skills – IV
3.	Information and Communication Technology Skills – IV
4.	Entrepreneurial Skills – IV
5.	Green Skills – IV
	Detailed curriculum of Employability Skills is available separately

PART B: SKILLS

Unit- I: Advance Crop Production

1. Food production including horticultural crops and its importance in the economy and nutritional security.
2. Soil fertility, productivity and concept of essential plant nutrients. Classification of essential plant nutrients.
3. Roles and functions of essential plant nutrients, their important deficiency symptoms.
4. Soil samplings and its processing. Introduction to soil pH and Organic Carbon.
5. Introduction to manure, fertilizers, Bio-fertilizers, their methods of application. Concept of Integrated Nutrient Management (INM).
6. Concept of soil moisture availability various irrigation methods. Concept of precision and pressure irrigation - Drip and sprinkler irrigation.

7. Methods of insect pest and disease management - Chemical, Biological and Mechanical. Concept of Integrated Pest Management (IPM).

Unit - II: Organic Farming

1. Concept, history and importance of Organic farming.
2. Present status and contribution in the National economy.
3. Important food products grown organically. Important Government Schemes for the promotion of organic farming in our country. Kitchen gardening.

SECTION-II

Unit III: Postharvest Management

1. Post harvesting management of fruits, vegetables and flowers, cereals, pulses and oilseeds.

Status of food processing in our country.

2. Important Government schemes for food sector.

Unit IV: Food Processing and Value Addition

1. Principles and methods of food processing and preservation. Benefits of food processing.
2. Important value added products from fruits, vegetables, cereals, pulses and oil seeds. Preparation of jam, jelly, ketchup, morabba, pickles, marmalade.
3. Packaging, quality standards and their marketing including export.
4. Flowers and their harvesting: important processed flower products, packaging, storage and their marketing.
5. Concept of safe food and important food regulations.

SECTION-III

1. Important subsidiary enterprises based on Agriculture including Horticulture and their importance in the socio-

economic status of an individual.

2. Mushroom, their nutritional status and methods of production
3. Beekeeping and its important usage and importance of Honey, Wax and Royal jelly.
4. Landscaping, development and maintenance of lawns and avenue gardens.
5. Preparation of Bio-pesticides (plant based), Organic manures (composts) and Vermi composting.
6. Setting up nurseries and marketing of plant sapling and important Govt. Schemes for the support of these enterprises.

5. TEACHING ACTIVITIES

The teaching and training activities have to be conducted in classroom, laboratory/ workshops and field visits. Students should be taken to field visits for interaction with experts and to expose them to the various tools, equipment, materials, procedures and operations in the workplace. Special emphasis should be laid on the occupational safety, health and hygiene during the training and field visits.

CLASSROOM ACTIVITIES

Classroom activities are an integral part of this course and interactive lecture sessions, followed by discussions should be conducted by trained teachers. teachers should make effective use of a variety of instructional or teaching aids, such as audio-video materials, colour slides, charts, diagrams, models, exhibits, hand-outs, online teaching materials, etc. to transmit knowledge and impart training to the students.

PRACTICAL WORK IN LABORATORY/WORKSHOP

Practical work may include but not limited to hands-on-training, simulated training, role play, case based studies, exercises, etc. Equipment and supplies should be provided to enhance hands-on learning experience of students. Only trained personnel should teach specialized techniques. A training plan that reflects tools, equipment, materials, skills and activities to be performed by the students should be submitted by the teacher to the Head of the Institution. .

SKILL ASSESSMENT (PRACTICAL)

Assessment of skills by the students should be done by the assessors/examiners on the basis of practical demonstration of skills by the candidate, Practical examination allows candidates to demonstrate that they have the knowledge and understanding of performing a task. This will include hands-on practical exam and viva voce. For practical, there should be a team of two evaluators. The same team of examiners will conduct the viva voce.

Project Work (individual or group project) is a great way to assess the practical skills on a certain time period or timeline. Project work should be given on the basis of the capability of the individual to perform the tasks or activities involved in the project. Projects should be discussed in the class and the teacher should periodically monitor the progress of the project and provide feedback for improvement and innovation. Field visits should be organised as part of the project work. Field visits can be followed by a small-group work/project work. When the class returns from the field visit, each group might be asked to use the information that they have gathered to prepare presentations or reports of their observations. Project work should be assessed on the basis of practical file or student portfolio.

Student Portfolio is a compilation of documents that supports the candidate's claim of competence. Documents may include reports, articles, photos of products prepared by students in relation to the unit of competency.

Viva voce allows candidates to demonstrate communication skills and content knowledge. Audio or video recording can be done at the time of viva voce. The number of external examiners would be decided as per the existing norms of the Board and these norms should be suitably adopted/adapted as per the specific requirements of the subject. Viva voce should also be conducted to obtain feedback on the student's experiences and learning during the project work/field visits.

6. ORGANISATION OF FIELD VISIT/EDUCATIONAL TOURS

In field visits, children will go outside the classroom to obtain specific information from experts or to make observations of the activities. A checklist of observations to be made by the students during the field visits should be developed by the Teachers for systematic collection of information by the students on the various aspects. Principals and Teachers should identify the different opportunities for field visits within a short distance from the school and make necessary arrangements for the visits. At least three field visits should be conducted in a year

7. LIST OF EQUIPMENT AND MATERIAL

The list given below is suggestive and an exhaustive list should be prepared by the skill teacher. Only basic tools, equipment and accessories should be procured by the Institution so that the routine tasks can be performed by the students regularly for practice and acquiring adequate practical experience.

1.	Tape	35.	Pruning knife
2.	Crow bar	36.	Super cut
3.	Rope	37.	Thinning scissor
4.	Khurpi	38.	Hand cultivator

5.	Wheel hoe	39.	Hand weedier
6.	Trenching hoe	40.	Weeding fork
7.	Transplanting travel	41.	Garden hoe
8.	Dibbler	42.	Shovel
9.	Planting board	43.	Digging fork
10.	Secateurs	44.	Garden rake
11.	Garden hatchet	45.	Spade
12.	Water can	46.	Small Trowel
13.	Sprinkler	47.	Rake
14.	Sprayer	48.	Drip and sprinkler
15.	Duster	49.	Mobile benches
16.	Temperature & humidity control	50.	Fan
17.	system	51.	Pad
18.	Automatic shade system	52.	Ventilator
19.	Fogging and blackout	53.	Thermometer
20.	Irrigation system	54.	Lux meter/Light meter
21.	Mobile benches,	55.	Misting
22.	Fan	56.	Digital electronic temperature indicator
23.	Pad		
24.	Ventilator	57.	Radiation measuring instrument
25.	Thermometer	58.	Sprayer
26.	Lux meter/Light meter	59.	Hygrometer
27.	Digital electronic temperature indicator	List of Chemicals	
		60.	Dry and liquid fertilizer

28	Radiation measuring instrument	61.	Peat
29.	Sprayer	62.	Formalin
30.	Hygrometer.	63.	Bavestin
31.	Temperature & humidity control system	64.	Sulphur
		65.	Insecticide
32.	Automatic shade system	66.	Indofil-45
33.	Fogging and blackout	67	Neem cake
34.	Irrigation system	68.	Plant Growth regulator/hormones

8. PRACTICAL GUIDELINES

SECTION I

Unit I: Advance Crop Production and Organic Farming

1. Soil sampling and determination of Soil pH.
2. Determination of soil organic carbon content.
3. Preparation of nursery and seed beds.
4. Seed treatment with fungicides and Bio-fertilizers.
5. Identification of different types of chemical fertilizers, composts ,bio-fertilizers.
6. Calculation of fertilizer requirement of crops (for wheat, rice and maize) based on their nutrient needs.
7. Preparation of FYM and Compost.
8. Uses of sprayers and dusters for pest control and nutrient spray.
9. Determination of moisture content of crop seeds (wheat, rice, maize and mustard).
10. To find out 100-grain weight of crop seeds (wheat, rice, maize and mustard).
11. Visit to a crop field and compare healthy plant with a diseased and insect affected plant.
12. Identification of different types of Insecticides, Fungicides and Herbicides.

SECTION: II

Unit II: Post-Harvest Management, Food Processing and Value Addition

1. Visit to Bakery Unit, Local Chakki.

2. Preparation of Jam, Jelly, ketchup and Morabba
3. Drying of fruits, vegetables and flowers.
4. Preparation of pickles.
5. Identification of fresh and aged vegetables and fruits.
6. Visit to cold storage and record the storage of various fruits and vegetables.
7. Harvesting and packaging of flowers.
8. Preparation of flower arrangements such as garland and rangoli.
9. Visit to a flower mandi and record the activities in the mandi.
10. Visit to a local fruit market and record the activities in the market.

SECTION: III

Unit III: Subsidiary Enterprises in Agriculture

1. Preparation of plant based bio-pesticides (neem)
2. Visit to Mushroom production unit.
3. Visit to nearby apiary and record the process of beekeeping.
4. Observe the characteristics of different bee products (honey and wax).
5. Visit to a vermin composting unit.
6. Observe the characteristics of compost.

Notes:

1. The students have to prepare a report on the visits recording their observations on the subject.
2. In case of practical of fruit and vegetable preservation and methods of production of value added products from fruits and vegetables, the student will have to write the procedure adopted and the necessary precautions to be taken in the answer sheet provided.

Report on the Visits

The student has to prepare a report of their visit to different organizations and submit to Subject teacher for the evaluation. The report must contain the student's original work and observations.

Viva Voce

Students can be asked questions based on:

1. Identification of objects.
2. Visit Report analysis.
3. Experiences in their field visits, etc.

A range of 5 to 10 questions can be asked depending on the response of the student. Evaluation $5 \times 1 = 5$ or should be based on number of questions answered. Evaluator should stick to the time and $\frac{1}{2} \times 10 = 5$ number of questions.