







Model Curriculum

QP Name: Spice Crop Cultivator

Electives: Herbal Spices/ Seed Spices/ Tree Spices/ Rhizomatous Spices/ Oil

Yielding Spices/ Pod Spices/ Berry Spices/ Saffron

QP Code: AGR/Q0603

Version: 2.0

NSQF Level: 4

Model Curriculum Version: 1.0

Agriculture Skill Council of India || Agriculture Skill Council of India (ASCI), 6th Floor, GNG Tower, Plot No. 10, Sector – 44







Table of Contents

Contents

Training Parameters	3
Program Overview	4
Training Outcomes	4
Compulsory Modules	4
Elective Modules	5
Module 15: Process of carrying out cultivation of berry spice crops	8
Module 1: Introduction to the role of a Spice Crop Cultivator	9
Module 2: Process of performing soil fertility management for spice crops	10
Module 3: Process of performing weed management in spice crops	11
Module 4: Process of performing integrated pest and disease management in spice crops	12
Module 5: Process of performing irrigation management in spice crops	14
Module 6: Hygiene and cleanliness	15
Module 7: Safety and emergency procedures	16
Module 8: Employability Skills	17
Module 9: Process of carrying out the cultivation of herbal spice crops	19
Module 10: Process of carrying out cultivation of seed spice crops	21
Module 11: Process of carrying out cultivation of tree spice crops	23
Module 12: Process of carrying out cultivation of rhizomatous spice crops	25
Module 13: Process of carrying out cultivation of oil-yielding spice crops	28
Module 14: Process of carrying out cultivation of pod spice crops	30
Module 15: Process of carrying out cultivation of berry spice crops	32
Module 16: Process of carrying out cultivation of saffron	35
Module 17: On-the-Job Training	38
Annexure	39
Trainer Requirements	39
Assessor Requirements	40
Assessment Strategy	41
References	46
Glossary	46
Acronyms and Abbreviations	47







Training Parameters

Sector	Agriculture
Sub-Sector	Agriculture Crop Production
Occupation	Spice Crops Cultivation
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/6111
Minimum Educational Qualification and Experience	12th grade pass OR 10th grade pass with 2 years of relevant experience OR 10th grade pass and pursuing continuous schooling OR Previous relevant qualification of NSQF Level 3.0 with minimum education as 8th grade pass with 3 years of relevant experience OR Previous relevant qualification of NSQF Level 3.5 with 1.5 years of relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	29/03/2023
Next Review Date	29/03/2026
NSQC Approval Date	29/03/2023
QP Version	2.0
Model Curriculum Creation Date	29/03/2023
Model Curriculum Valid Up to Date	29/03/2026
Model Curriculum Version	1.0
Minimum Duration of the Course	390 Hours
Maximum Duration of the Course	600 Hours







Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner should have acquired the listed knowledge and skills to:

- Explain the process of performing soil fertility management for spice crops.
- Explain the process of performing weed management in spice crops.
- Explain the process of performing integrated pest and disease management in spice crops.
- Explain the process of performing irrigation management in spice crops.
- Demonstrate various practices to ensure health and safety at work.
- Describe the process of carrying out the cultivation of herbal spice crops.
- Describe the process of carrying out cultivation of seed spice crops.
- Describe the process of carrying out cultivation of tree spice crops.
- Describe the process of carrying out cultivation of rhizomatous spice crops.
- Describe the process of carrying out cultivation of oil-yielding spice crops.
- Describe the process of carrying out cultivation of pod spice crops.
- Describe the process of carrying out cultivation of berry spice crops.
- Describe the process of carrying out cultivation of saffron.

Compulsory Modules

The table lists the modules and their duration corresponding to the Compulsory NOS of the QP.

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	05:00	00:00	0:00	00:00	05:00
Module 1: Introduction to the role of a Spice Crop Cultivator	05:00	00:00	0:00	00:00	05:00
AGR/N0601: Perform soil fertility management for spice crops NOS Version- 2.0 NSQF Level- 4	25:00	30:00	0:00	00:00	55:00
Module 2: Process of performing soil fertility management for spice crops	25:00	30:00	0:00	00:00	55:00
AGR/N0602: Perform weed management in spice crops NOS Version- 2.0 NSQF Level- 4	30:00	30:00	0:00	00:00	60:00







OJT: 30 Hours						
Total Duration	180:00	150:00	0:00	00:00	330:00	
Module 8: Employability Skills	60:00	00:00	0:00	00:00	60:00	
DGT/VSQ/N0102: Employability Skills NOS Version- 1.0 NSQF Level- 4	60:00	00:00	0:00	00:00	60:00	
Module 7: Safety and emergency procedures	03:00	15:00	0:00	00:00	18:00	
Module 6: Hygiene and cleanliness	02:00	10:00	0:00	00:00	12:00	
AGR/N9903 Maintain health and safety at the workplace NOS Version- 3.0 NSQF Level- 4	05:00	25:00	0:00	00:00	30:00	
Module 5: Process of performing irrigation management in spice crops	10:00	20:00	0:00	00:00	30:00	
AGR/N0604: Perform irrigation management in spice crops NOS Version- 2.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00	
Module 4: Process of performing integrated pest and disease management in spice crops	45:00	45:00	0:00	00:00	90:00	
AGR/N0603: Perform integrated pest and disease management in spice crops NOS Version- 2.0 NSQF Level- 4	45:00	45:00	0:00	00:00	90:00	
Module 3: Process of performing weed management in spice crops	30:00	30:00	0:00	00:00	60:00	

Elective Modules

The table lists the modules and their duration corresponding to the Elective NOS of the QP.

Elective 1: Herbal Spices







NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0629: Carry out the cultivation of herbal spice crops NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 9: Process of carrying out the cultivation of herbal spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00

Elective 2: Seed Spices

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0630: Carry out cultivation of seed spice crops NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 10: Process of carrying out cultivation of seed spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00

Elective 3: Tree Spices

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0631: Carry out cultivation of tree spice crops NOS Version- 1.0	10:00	20:00	0:00	00:00	30:00
Module 11: Process of carrying out cultivation of tree spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00







NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0632: Carry out cultivation of rhizomatous spice crops NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 12: Process of carrying out cultivation of rhizomatous spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00

Elective 5: Oil-yielding Spices

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0633: Carry out cultivation of oil-yielding spice crops NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 13: Process of carrying out cultivation of oil-yielding spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00

Elective 6: Pod Spices

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0634: Carry out cultivation of pod spice crops NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 14: Process of carrying out cultivation of pod spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00







Elective 7: Berry Spices

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0635: Carry out cultivation of berry spice crops NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 15: Process of carrying out cultivation of berry spice crops	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00

Elective 8: Saffron

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
AGR/N0636: Carry out cultivation of saffron NOS Version- 1.0 NSQF Level- 4	10:00	20:00	0:00	00:00	30:00
Module 16: Process of carrying out cultivation of saffron	10:00	20:00	0:00	00:00	30:00
Total Duration	10:00	20:00	0:00	00:00	30:00







Module Details

Module 1: Introduction to the role of a Spice Crop Cultivator Bridge Module

Terminal Outcomes:

• Discuss the job role of a Spice Crop Cultivator.

Duration: 05:00	Duration: 0:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Describe the size and scope of the agriculture industry and its sub- sectors. 	•
 Discuss the role and responsibilities of a Spice Crop Cultivator. 	
 Identify various employment opportunities for a Spice Crop Cultivator. 	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, White	board, Marker, Projector, Laptop, Video Films
Tools, Equipment and Other Requirements	
NA	







Module 2: Process of performing soil fertility management for spice crops Mapped to AGR/N0601 v1.0

Terminal Outcomes:

• Elucidate ways to coordinate soil testing and manage soil fertility.

Practical – Key Learning Outcomes
Demonstrate how to collect soil samples from the field and label them with the appropriate information, e.g.
name of the farmer, location of the farm, previous, present and planned crop, etc.
 Show how to prepare organic fertilizers using green and animal waste.
 Demonstrate the process of applying the recommended fertilizers to the soil in an appropriate quantity to achieve the required macro and micronutrient
levels.
 Prepare sample records concerning the use of fertilizers.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Ridge furrow maker, Cocopeat/ Pro tray (Nursery), Rubber gloves, Respiratory Masks, Nematicide, Trichodermaviride/ Pseudomonas fluorescens (Seed treatment agent), FYM, Urea, Weeder, Pesticide







Module 3: Process of performing weed management in spice crops Mapped to ARG/N0602 v1.0

Terminal Outcomes:

- Elucidate ways to identify the weed growth.
- Describe the process of performing weed management.

Duration: 30:00	Duration: 30:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 List different types of commonly found weeds in spice crops and how to identify them. Explain the growth pattern of different types of weeds. State the critical period of weed competition. Describe the organic methods of weed control, such as mulching. Describe the cultural, mechanical, biological and chemical weed control methods. Explain the benefits of using different weed control methods in combination. Explain the use of appropriate herbicides and bio-herbicides. Explain the importance of identifying and retaining weeds of importance. List the appropriate precautions to be taken while preparing and applying herbicides. Explain the importance of using herbicides in the recommended dose. 	 Show how to check the spice crop fields to identify the growth of weeds. Demonstrate the use of the appropriate tools, implements and equipment for mechanical weed control. Show how to prepare the recommended herbicide/ bio-herbicide solution for chemical weed control. Demonstrate the process of applying herbicides/ bio-herbicides in the recommended dose, using the appropriate Personal Protection Equipment (PPE). Prepare sample record concerning the use of herbicides/ bio-herbicides. Demonstrate how to maintain the herbicides and herbicide application equipment separately to prevent crosscontamination with other chemicals.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Pheromone trap, Bags for storage, Zinc (Micronutrient), Rope, Any one Herbal Spices/ Seed Spices/ Tree Spices/ Rhizomatous Spices/ Oil Yielding Spices/ Pod(Cardamom) Spices, Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape







Module 4: Process of performing integrated pest and disease management in spice crops

Mapped to AGR/N0603 v2.0

Terminal Outcomes:

- Explain the importance of following the appropriate preventive measures.
- Elucidate ways to identify pest and disease infestation in spice crops.
- Describe the process of applying the necessary treatment.

Duration: 45:00	Duration: 45:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Explain the concept and benefits of integrated pest and disease management. 	 Demonstrate how to cultivate pest and disease-resistant varieties of spice crops.
 State the appropriate preventive measures to be followed to protect spice crops from pest and disease infestation. 	 Show how to establish the nursery in a disease-free area to raise vigorous and disease-free seedlings for a healthy crop.
 Explain the relevant biotic and abiotic factors that cause diseases in spice crops. 	 Show how to conduct regular field visits to identify pest and diseases infestation in spice crop.
• Explain different modes of pest and disease transfer.	Demonstrate the process of carrying out appropriate documentation
• List the common pest and diseases that infest the spice crops and their	concerning the pest and disease identification.
 Explain the use of different types of pest traps. 	 Show how to prepare the pesticides for application taking the necessary personal protection measures.
• Explain the practice and benefits of crop rotation.	 Demonstrate the process of applying pesticides in the recommended quantity, following the prescription on
 Explain the importance of conducting regular visits in the crop field to identify pest and disease infestation. 	 Prepare sample records concerning the use of pesticides and insecticides.
 Explain how to determine the stage of pest and disease incidence and the extent of damage and ETL of pests. 	ase of pesticides and insecticides.
 Explain the importance of determining the causal organism for the spice crop diseases and their treatment. 	
• Explain the use of relevant plant protection equipment.	
• Explain the benefits of following the appropriate cultural, mechanical,	







biological and chemical methods in combination for pest and disease control.

- List the harmful effects of pesticide residue and adoption of Pre-harvest Interval (PHI).
- Discuss the applicable regulations on pesticide residue.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Pheromone trap, Bags for storage, Zinc (Micronutrient), Rope, Any one Herbal Spices/ Seed Spices/ Tree Spices/ Rhizomatous Spices/ Oil Yielding Spices/ Pod(Cardamom) Spices, Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape







Module 5: Process of performing irrigation management in spice crops Mapped to AGR/N0604 v2.0

Terminal Outcomes:

- Elucidate ways to coordinate the testing of irrigation water.
- Describe the process of installing the irrigation system.
- Describe the process of irrigating the spice crops.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Explain the impact of irrigation on plant growth and crop yield. Describe different irrigation methods and their advantages and disadvantages. Describe the appropriate irrigation methods for spice crop fields. Elucidate the timing and method of irrigation appropriate for different soil types and climatic conditions. Explain the importance of carrying out testing of irrigation water. Describe the process of sampling and testing irrigation water. 	 Show how to collect water samples from the source of irrigation water and label them for testing. Demonstrate the process of installing the irrigation system or coordinate with an expert for the installation, as appropriate. Demonstrate the process of carrying out regular repair and maintenance of the irrigation system. Show how to irrigate the spice crops with the recommended quantity, ensuring to avoid over and under irrigation. Show how to drain out excess water
 Explain the importance of carrying out regular repair and maintenance of irrigation systems. 	from the field to prevent waterlogging and adverse effects on the crop.
List the irrigation requirements of different spice crops.	
 Discuss the appropriate practices to be followed to avoid over and under irrigation. 	
List the irrigation schedule recommended for different spice crops.	
 Explain the importance of avoiding waterlogging in spice crop fields. 	

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Ridge furrow maker, Cocopeat/ Pro tray (Nursery), Rubber gloves, Respiratory Masks, Nematicide, Trichodermaviride/ Pseudomonas fluorescens (Seed treatment agent), FYM, Urea, Weeder, Pesticide







Module 6: Hygiene and cleanliness Mapped to NOS AGR/N9903 v3.0

Terminal Outcomes:

- Discuss how to adhere to personal hygiene practices.
- Demonstrate ways to ensure cleanliness around the workplace.

Duration: 02:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 Explain the requirements of personal health, hygiene and fitness at work. Describe common health-related guidelines laid down by the organizations/ Government at the workplace 	 Demonstrate personal hygiene practices to be followed at the workplace. Demonstrate the correct way of washing hands using soap and water, and alcohol-based hand rubs.
 Explain the importance of good housekeeping at the workplace. 	 Demonstrate the steps to follow to put on and take off a mask safely.
 Explain the importance of informing the designated authority on personal health issues related to injuries and infectious diseases. 	 Show how to sanitize and disinfect one's work area regularly.
	 Demonstrate adherence to the workplace sanitization norms.
	 Show how to ensure the cleanliness of the work area.
Classroom Aids:	

Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.

Tools, Equipment and Other Requirements

Personal Protective Equipment, Cleaning Equipment and Materials, Sanitizer, Soap, Mask







Module 7: Safety and emergency procedures Mapped to NOS AGR/N9903 v3.0

Terminal Outcomes:

- Describe how to adhere to safety guidelines.
- Show how to administer appropriate emergency procedures.

Duration: 03:00	Duration: 15:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 List the Personal Protective Equipment (PPE) required at the workplace. 	 Check various areas of the workplace for leakages, water-logging, pests, fire, etc.
 Describe the commonly reported hazards at the workplace. Describe the hazards caused due to chemicals/pesticides/fumigants. Describe the basic safety checks to be done before the operation of any equipment/machinery. Describe the common first aid procedures to be followed in case of emergencies. State measures that can be taken to prevent accidents and damage s at the workplace. Explain the importance of reporting 	 Demonstrate how to safely use the PPE and implement it as applicable to the workplace. Display the correct way of donning, doffing and discarding PPE such as face masks, hand gloves, face shields, PPE suits, etc. Sanitize the tools, equipment and machinery properly. Demonstrate the safe disposal of waste. Demonstrate procedures for dealing with accidents, fires and emergencies.
details of first aid administered, to the reporting officer/doctor, in accordance with workplace procedures • State common health and safety guidelines to be followed at the workplace.	 Demonstrate emergency procedures to the given workplace requirements. Demonstrate the use of emergency equipment in accordance with manufacturers' specifications and workplace requirements. Demonstrate the administration of first aid. Prepare a list of relevant hotline/emergency numbers

Classroom Aids:

Computer, Projection Equipment, PowerPoint Presentation and Software, Facilitator's Guide, Participant's Handbook.

Tools, Equipment and Other Requirements

Personal Protective Equipment, First Aid Kit, Equipment used in Medical Emergencies.







Module 8: Employability Skills Mapped to NOS DGT/VSQ/N0102 v1.0

Duration: 60:00

Key Learning Outcomes

Introduction to Employability Skills Duration: 1.5 Hours

After completing this programme, participants will be able to:

- 1. Discuss the Employability Skills required for jobs in various industries
- 2. List different learning and employability related GOI and private portals and their usage

Constitutional values - Citizenship Duration: 1.5 Hours

- Explain the constitutional values, including civic rights and duties, citizenship, responsibility towards society and personal values and ethics such as honesty, integrity, caring and respecting others that are required to become a responsible citizen
- 4. Show how to practice different environmentally sustainable practices.

Becoming a Professional in the 21st Century Duration: 2.5 Hours

- 5. Discuss importance of relevant 21st century skills.
- 6. Exhibit 21st century skills like Self-Awareness, Behavior Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn etc. in personal or professional life.
- 7. Describe the benefits of continuous learning.

Basic English Skills Duration: 10 Hours

- 8. Show how to use basic English sentences for everyday conversation in different contexts, in person and over the telephone
- 9. Read and interpret text written in basic English
- 10. Write a short note/paragraph / letter/e -mail using basic English

Career Development & Goal Setting Duration: 2 Hours

11. Create a career development plan with well-defined short- and long-term goals

Communication Skills Duration: 5 Hours

- 12. Demonstrate how to communicate effectively using verbal and nonverbal communication etiquette.
- 13. Explain the importance of active listening for effective communication
- 14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

- 15. Demonstrate how to behave, communicate, and conduct oneself appropriately with all genders and PwD
- 16. Discuss the significance of escalating sexual harassment issues as per POSH act.

Financial and Legal Literacy Duration:5 Hours

- 17. Outline the importance of selecting the right financial institution, product, and service
- 18. Demonstrate how to carry out offline and online financial transactions, safely and securely
- 19. List the common components of salary and compute income, expenditure, taxes, investments etc.
- **20.** Discuss the legal rights, laws, and aids







Essential Digital Skills Duration: 10 Hours

- 21. Describe the role of digital technology in today's life
- 22. Demonstrate how to operate digital devices and use the associated applications and features, safely and securely
- 23. Discuss the significance of displaying responsible online behavior while browsing, using various social media platforms, e-mails, etc., safely and securely
- 24. Create sample word documents, excel sheets and presentations using basic features
- 25. utilize virtual collaboration tools to work effectively

Entrepreneurship Duration: 7 Hours

- 26. Explain the types of entrepreneurship and enterprises
- 27. Discuss how to identify opportunities for potential business, sources of funding and associated financial and legal risks with its mitigation plan
- 28. Describe the 4Ps of Marketing-Product, Price, Place and Promotion and apply them as per requirement
- 29. Create a sample business plan, for the selected business opportunity

Customer Service Duration: 5 Hours

- 30. Describe the significance of analyzing different types and needs of customers
- 31. Explain the significance of identifying customer needs and responding to them in a professional manner.
- 32. Discuss the significance of maintaining hygiene and dressing appropriately

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

- 33. Create a professional Curriculum Vitae (CV)
- 34. Use various offline and online job search sources such as employment exchanges, recruitment agencies, and job portals respectively
- 35. Discuss the significance of maintaining hygiene and confidence during an interview
- 36. Perform a mock interview
- 37. List the steps for searching and registering for apprenticeship opportunities







Module 9: Process of carrying out the cultivation of herbal spice crops Mapped to AGR/N0629 v1.0

Terminal Outcomes:

- Explain the criteria of selecting an appropriate site.
- Explain the process of arranging the required agricultural inputs.
- Describe the process of propagating seedlings in the nursery.
- Describe the process of preparing the field.
- Describe the process of transplanting the seedlings.
- Elucidate ways to maintain the herbal spice crop.
- Describe the process of performing harvesting and post-harvest management.
- Elucidate ways to market herbal spices.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 List different herbal spice crops and their characteristics. Elucidate the benefits and nutraceutical properties of common herbal spices. State the appropriate agro-climatic conditions for the cultivation of herbal spice crops. Explain different planting and cropping 	 Demonstrate how to maintain records concerning the procurement of agricultural inputs. Demonstrate the process of preparing the appropriate type of nursery bed, i.e. raised, level or sunken bed, for raising seedlings of the relevant herbal spice crops.
 Explain the relevant intercultural operations. 	 Demonstrate the process of performing the plant protection and irrigation and nutrient management of seedlings/saplings.
• List the agricultural inputs, tools, equipment and implements required for the cultivation of herbal spice crops.	 Show how to remove any debris and waste materials from the field. Demonstrate the process of carrying
 Explain the criteria for selecting an appropriate site for the cultivation of herbal spice crops. List the requirement of different agricultural inputs for the cultivation of herbal spice crops. 	 out ploughing in the main field to remove weeds. Demonstrate the process of applying and incorporating a mixture of topsoil/compost/ manure in the field, as appropriate.
 State the irrigation requirement of different herbal spice crops. State the macro and micronutrient requirements of different herbal spice crops and the appropriate organic and inorganic fertilizers to be used. 	 Show how to create drainage channels in the field to drain out excess water to prevent waterlogging. Demonstrate the process of installing an appropriate irrigation system in the field to irrigate the spice crops efficiently with the minimum wastage
• List the common types of weeds found in herbal spice crops and how to control	of water.







them.

- List the relevant pests and diseases that affect herbal spice crops and the appropriate preventive and remedial measures to be taken.
- Explain the safe preparation and application of different types of pesticides.
- Explain the use of appropriate plant protection equipment.
- List the maturity indices of the different herbal spice crops and the use of appropriate tools and implements for harvesting them.
- Describe the post-harvest management processes relevant to herbal spice crops.
- Explain the applicable parameters for the sorting and grading of produce.
- List the appropriate measures to be followed during harvesting and postharvest handling to preserve the quality of herbal spice crop produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- Explain different types of buyers of herbal spices.
- Describe the process of negotiating with buyers.
- State the appropriate packing material and mode of transport for herbal spices.
- List the recommended measures to be followed to protect herbal spices from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

- Demonstrate the use of the appropriate field preparation tools, implements and machinery appropriately, ensuring personal safety.
- Show how to acclimatize the seedlings before transplanting them.
- Show how to transplant seedlings in the main field during the weather recommended for the selected herbal spice crop.
- Demonstrate how to remove weeds following the appropriate mechanical, biological and chemical weed control methods.
- Demonstrate how to prepare the appropriate pesticide/insecticide for application and apply it using the appropriate plant protection equipment.
- Demonstrate the process of carrying out post-harvest activities, such as cleaning and sun-drying, according to the type of herbal spice crop.
- Demonstrate the process of carrying out sorting and grading of the produce based on the applicable parameters.
- Show how to pack the herbal spices in the appropriate packaging.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate how to maintain the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Ridge furrow maker, Cocopeat/ Pro tray (Nursery), Rubber gloves, Respiratory Masks, Nematicide, Trichodermaviride/ Pseudomonas fluorescens (Seed treatment agent), FYM, Urea, Weeder, Pesticide







Module 10: Process of carrying out cultivation of seed spice crops Mapped to AGR/N0630 v1.0

Terminal Outcomes:

- Explain the process of preparing the field for sowing seeds.
- Describe the process of sowing the seeds of seed spice crop.
- Elucidate ways to maintain the seed spice crop.
- Describe the process of performing harvesting and post-harvest management.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 List different seed spice crops and their characteristics. Elucidate the benefits and nutraceutical properties of common seed spices. List the appropriate agro-climatic 	 Demonstrate the process of carrying out ploughing in the main field for the recommended number of times to achieve a fine tilth. Show how to incorporate the recommended quantity of Farm Yard
conditions for the cultivation of seed spice crops.	Manure (FYM) in the field during its preparation for the cultivation of seed spice crops.
 Explain different planting and cropping systems. Explain the relevant intercultural 	 Show how to create the appropriate type of bed in the field for sowing seeds of the selected seed spice crop.
operations.	·
 List the agricultural inputs, tools, equipment and implements required for the cultivation of seed spice crops. 	 Show how to create water channels for irrigation and drainage or install an appropriate type of irrigation system for the irrigation of crop.
 Explain the criteria for selecting an appropriate site for the cultivation of seed spice crops. 	 Demonstrate the process of carrying out pre-sowing seed treatment using the recommended fungicide to protect them from relevant pests and diseases.
 Explain the requirement of different agricultural inputs for the cultivation of seed spice crops. 	Demonstrate the process of carrying out seed splitting according to the selected
 State the recommended planting density for different seed spice crops. 	seed spice crop, e.g. coriander, to aid their germination and achieve a good germination percentage.
 List the irrigation requirement of different seed spice crops. 	Demonstrate how to sow seeds in the field, maintaining the appropriate
 List the macro and micronutrient requirements of different seed spice crops and the appropriate organic and 	planting density by following the recommended seed rate.
inorganic fertilizers to be used.	 Demonstrate the process of carrying top dressing after the recommended number
• List the common types of weeds found	of days after sowing for the irrigated

crops.

in seed spice crops and how to control







them.

- List the relevant pests and diseases that affect seed spice crops and the appropriate preventive and remedial measures to be taken.
- Explain the safe preparation and application of different types of pesticides.
- Explain the use of appropriate plant protection equipment.
- State the maturity indices of the different seed spice crops and the use of appropriate tools and implements for harvesting them.
- Explain the post-harvest management processes relevant to seed spice crops.
- Explain the appropriate measures to be followed during harvesting and post-harvest handling to preserve the quality of seed spice crop produce.
- Explain the applicable parameters for the sorting and grading of produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- State different types of buyers of seed spices.
- Describe the process of negotiating with buyers.
- State the appropriate packing material and mode of transport for seed spices.
- State the recommended measures to be followed to protect seed spices from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

- Show how to irrigate the seed spice crops with an appropriate quantity of water following the recommended irrigation schedule.
- Demonstrate the process of preparing and applying the recommended preemergence herbicide to suppress the emergence of weeds.
- Demonstrate the process of carrying out thinning after an appropriate number of days after sowing and perform weeding, when necessary.
- Show how to prepare the appropriate pesticides/insecticides and apply them using the appropriate plant protection equipment.
- Show how to identify the maturity indices of seed spice crops and harvest them using the appropriate tools and implements.
- Demonstrate the process of carrying out post-harvest activities, such as cleaning, sun-drying and threshing according to the type of seed spice crop.
- Demonstrate the process of carrying out sorting and grading of the produce based on the applicable parameters.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Ridge furrow maker, Cocopeat/ Pro tray (Nursery), Rubber gloves, Respiratory Masks, Nematicide, Trichodermaviride/ Pseudomonas fluorescens (Seed treatment agent), FYM, Urea, Weeder, Pesticide







Module 11: Process of carrying out cultivation of tree spice crops Mapped to AGR/N0631 v1.0

Terminal Outcomes:

- Describe the process of propagating tree spice crop seedlings.
- Explain the process of preparing the field for transplanting seedlings.
- Describe the process of transplanting and maintaining the seedlings.
- Describe the process of performing harvesting and post-harvest management.

Ouration: 10:00	Duration: 20:00
heory – Key Learning Outcomes	Practical – Key Learning Outcomes
 List different tree spice crops and their characteristics. Explain the benefits and nutraceutical properties of common tree spices. List the appropriate agro-climatic conditions for the cultivation of tree spice crops. 	 Demonstrate the process of preparing the appropriate type of nursery bed for the propagation of tree spice crops seedlings. Show how to extract seeds from the ripe fruits of high-yielding trees and prepare them for sowing by de-pulping and drying them, as required.
 Explain different planting and cropping systems. Explain the relevant intercultural operations. 	 Demonstrate how to sow the seeds in the nursery bed within the appropriate duration as recommended for the selected tree spice crop.
 List the agricultural inputs, tools, equipment and implements required for the cultivation of tree spice crops. Explain the criteria for selecting an appropriate site for the cultivation of 	 Demonstrate the process of carrying out vegetative propagation of the tree spice crop saplings, following the appropriate methods, e.g. budding and grafting.
 State the recommended planting density for different tree spice crops. 	 Demonstrate the process of harvesting the seedlings at the appropriate age using the relevant tools and implements.
 List the irrigation requirement of different tree spice crops. List the macro and micronutrient requirements of different tree spice crops and the appropriate organic and inorganic fertilizers to be used. List the common types of weeds found 	 Show how to prepare pits of the recommended dimensions in the main field, maintaining the recommended spacing between pits. Demonstrate the process of applying the recommended bio-fertilizer and organic fertilizers in the pits before
 in tree spice crops and how to control them. State the relevant pests and diseases that affect tree spice crops and the appropriate preventive and remedial 	 Demonstrate the process of transplanting seedlings in the pits, providing them immediate care, such as mulching and irrigation.







measures to be taken.

- Explain the use of appropriate plant protection equipment.
- Explain the maturity indices of the different tree spice crops and the use of appropriate tools and implements for harvesting them.
- Describe the post-harvest management processes relevant to tree spice crops.
- Explain the appropriate measures to be followed during harvesting and postharvest handling to preserve the quality of tree spice crop produce.
- Explain the applicable parameters for the sorting and grading of produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- List different types of buyers of tree spices.
- Explain the process of negotiating with buyers.
- State the appropriate packing material and mode of transport for tree spices.
- Explain the recommended measures to be followed to protect tree spices from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

- Demonstrate the process of applying the recommended organic and inorganic fertilizers to meet the macro and micronutrient needs of tree spice crops.
- Demonstrate the process of carrying out weeding using the appropriate tools and implements.
- Show how to prepare pesticide/insecticide for application as per the manufacturer's instructions.
- Demonstrate the process of applying pesticide//insecticide using the appropriate plant protection equipment, ensuring personal protection with the use of relevant PPE.
- Demonstrate the process of carrying out post-harvest activities, such as cleaning and sun-drying according to the type of tree spice crop.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Ridge furrow maker, Cocopeat/ Pro tray (Nursery), Rubber gloves, Respiratory Masks, Nematicide, Trichodermaviride/ Pseudomonas fluorescens (Seed treatment agent), FYM, Urea, Weeder, Pesticide







Module 12: Process of carrying out cultivation of rhizomatous spice crops Mapped to AGR/N0632 v1.0

Terminal Outcomes:

- Describe the process of propagating rhizomatous spice crop seedlings.
- Explain the process of preparing the field for transplanting seedlings.
- Describe the process of transplanting and maintaining the seedlings.
- Describe the process of performing harvesting and post-harvest management.
- Elucidate ways to market rhizomatous spices.

Duration: 10:00 Duration: 20:00 Theory – Key Learning Outcomes Practical – Key Learning Outcomes • List different rhizomatous spice crops Demonstrate the process of preparing and their characteristics. the appropriate type of nursery bed for the cultivation of rhizomatous spice • Explain the benefits and nutraceutical crops. properties of common rhizomatous spices. Show how to treat the seeds and seed rhizomes using the appropriate List the appropriate agro-climatic fungicide in the recommended conditions for the cultivation of quantity. rhizomatous spice crops. Demonstrate the process of sowing the Explain different planting and cropping treated seeds and seed rhizomes at the systems. recommended planting density. Explain the relevant intercultural Show how to determine the maturity of operations. rhizomatous spice crop seedlings and • List the agricultural inputs, tools, harvest them at the appropriate age equipment and implements required relevant tools and using the for the cultivation of rhizomatous spice implements. crops. Show how to prepare the main field by Explain the criteria for selecting an carrying out ploughing for the appropriate site for the cultivation of recommended number of times using rhizomatous spice crops. the appropriate implements, such as the chisel plough, disc plough and State the recommended planting cultivator. density for different rhizomatous spice crops. Demonstrate the process of applying lime in the field with laterite soil in the • Explain the irrigation requirement of recommended quantity, incorporating different rhizomatous spice crops. it thoroughly. Explain the macro and micronutrient Show how to create pits of the requirements of different rhizomatous recommended dimensions in the main spice crops and the appropriate organic field, filling them with welland inorganic fertilizers to be used. decomposed manure. List the common types of weeds found Demonstrate the process of carrying in rhizomatous spice crops and how to out planting during the recommended

weather for the optimum yield.

• List the relevant pests and diseases that

control them.







- affect rhizomatous crops and the appropriate preventive and remedial measures to be taken.
- Explain the use of appropriate plant protection equipment.
- Explain the maturity indices of the different rhizomatous spice crops and the use of appropriate tools and implements for harvesting them.
- Describe the post-harvest management processes relevant to rhizomatous spice crops.
- Explain the appropriate measures to be followed during harvesting and postharvest handling to preserve the quality of rhizomatous spice crop produce.
- Explain the applicable parameters for the sorting and grading of produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- List different types of buyers of rhizomatous spices.
- Explain the process of negotiating with buyers.
- State the appropriate packing material and mode of transport for rhizomatous spices.
- Explain the recommended measures to be followed to protect rhizomatous spices from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

- Demonstrate the process of planting rhizomes in the pits, providing them immediate care, such as mulching and irrigation.
- Show how to irrigate the rhizomatous spice crops with the recommended quantity according to the weather and the recommended irrigation schedule.
- Demonstrate the process of applying the recommended organic and inorganic fertilizers to the rhizomatous crops according to their macro and micronutrient needs.
- Demonstrate the process of carrying out intercropping with the recommended crops for the best utilization of soil nutrients.
- Demonstrate the process of carrying out weeding using the appropriate tools and implements.
- Show how to prepare pesticide/insecticide for application as per the manufacturer's instructions.
- Demonstrate the process of applying pesticide//insecticide using the appropriate plant protection equipment, ensuring personal protection with the use of relevant PPE.
- Demonstrate the process of carrying out ploughing in the field and collect rhizomes through hand picking or lift the clumps using a spade.
- Demonstrate the process of carrying out post-harvest activities, such as clearing mud and other extraneous matter adhering to the harvested rhizomatous spice crop.
- Demonstrate the process of carrying out sorting and grading of the produce based on the applicable parameters.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.







 Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape







Module 13: Process of carrying out cultivation of oil-yielding spice crops Mapped to AGR/N0633 v1.0

Terminal Outcomes:

- Describe the process of propagating oil-yielding spice crop seedlings.
- Explain the process of preparing the field and transplant seedlings.
- Elucidate ways to maintain the seedlings.
- Describe the process of performing harvesting and post-harvest management.
- Elucidate ways to market spice extract oils.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
 List different oil-yielding spice crops and their characteristics. Explain the benefits and nutraceutical properties of common oil-yielding spices. List the appropriate agro-climatic conditions for the cultivation of oil-yielding spice crops. 	 Demonstrate how to check the soil's pH using a pH meter and apply the appropriate treatment to adjust the pH, as required. Demonstrate the process of carrying out vegetative propagation of oil-yielding spice crops through stolons in the nursery.
Explain different planting and cropping systems.Explain the relevant intercultural	 Demonstrate the process of carrying out ploughing and harrowing in the field for the recommended number of times to achieve a fine tilth.
 List the agricultural inputs, tools, equipment and implements required for the cultivation of oil-yielding spice 	 Show how to create beds of the recommended size with furrows in the field to facilitate irrigation and minimize the growth of weeds.
 Explain the criteria for selecting an appropriate site for the cultivation of 	 Show how to prepare stolons for planting, cutting them into pieces of appropriate length.
 oil-yielding spice crops. Explain the requirement of different agricultural inputs for the cultivation of oil-yielding spice crops. 	 Demonstrate the process of planting the stolons in furrows at the recommended planting depth and density.
 State the recommended planting density for different oil-yielding spice crops. 	 Demonstrate the process of applying the recommended organic and inorganic fertilizers in the
 State the irrigation requirement of different oil-yielding spice crops. 	recommended quantity to achieve the healthy growth of oil-yielding spice crop plants.
 State the macro and micronutrient requirements of different oil-yielding spice crops and the appropriate organic and inorganic fertilizers to be used. 	 Demonstrate the process of carrying out regular irrigation in the field as per the recommended irrigation schedule and prevailing weather conditions.







- List the common types of weeds found in oil-yielding spice crops and how to control them.
- List the relevant pests and diseases that affect tree oil-yielding crops and the appropriate preventive and remedial measures to be taken.
- Explain the use of appropriate plant protection equipment.
- Explain the maturity indices of the different oil-yielding spice crops and the use of appropriate tools and implements for harvesting them.
- Describe the post-harvest management processes relevant to oil-yielding spice crops and the use of relevant tools and equipment.
- Explain the appropriate measures to be followed during harvesting and postharvest handling to preserve the quality of oil-yielding spice crop produce.
- Explain the applicable parameters for the sorting and grading of produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- List different types of buyers of spice extract oils.
- Describe the process of negotiating with buyers.
- State the appropriate packing material and mode of transport for spice extract oils.
- State the recommended measures to be followed to protect spice extract oils from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

- Demonstrate how to prepare the appropriate pesticide/insecticide for application and apply it using the appropriate plant protection equipment.
- Demonstrate the process of carrying out sorting and grading based on the applicable parameters.
- Demonstrate the process of carrying out distillation to extract oil from the harvested oil-yielding spice crop.
- Demonstrate the process of performing oil purification using the appropriate tools, equipment and recommended compounds.
- Show how to pack the purified oil using the appropriate packaging, e.g. Polyvinyl Chloride (PVC) drums, Galvanized Iron (GI) drums or aluminium containers.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape







Module 14: Process of carrying out cultivation of pod spice crops Mapped to AGR/N0634 v1.0

Terminal Outcomes:

- Describe the process of propagating pod spice crop seedlings.
- Explain the process of preparing the field and transplant seedlings.
- Elucidate ways to maintain the seedlings.
- Describe the process of performing harvesting and post-harvest management.
- Elucidate ways to market pod spices.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• List different pod spice crops and their characteristics.	 Demonstrate how to treat the seeds using the appropriate fungicide.
 Explain the benefits and nutraceutical properties of common pod spices. 	 Show how to prepare the nursery bed of the appropriate size, incorporating well-rotten manure, wood ash and
 List the appropriate agro-climatic conditions for the cultivation of pod spice crops. 	jungle soil. • Demonstrate how to check the soil's pH
 Explain different planting and cropping systems. 	using a pH meter and apply the appropriate treatment, e.g. lime, to adjust the pH, as required.
 Explain the relevant intercultural operations. 	 Demonstrate the process of sowing seeds in the nursery bed at the
 List the agricultural inputs, tools, equipment and implements required for the cultivation of pod spice crops. 	recommended seed rate and cover the nursery bed with a thin layer of fine sand.
 Explain the criteria for selecting an appropriate site for the cultivation of pod spice crops. 	 Demonstrate the process of carrying out mulching to preserve soil moisture in the nursery bed.
 Explain the requirement of different agricultural inputs for the cultivation of pod spice crops. 	 Demonstrate the process of establishing clonal/secondary nursery for large-scale multiplication of high-
 State the recommended planting density for different pod spice crops. 	yielding varieties of pod spice crop.Demonstrate the process of harvesting
 List the irrigation requirement of different pod spice crops. 	the seedlings from the primary nursery bed after the recommended duration and transplant them into the secondary
 State the macro and micronutrient requirements of different pod spice 	nursery bed.
crops and the appropriate organic and inorganic fertilizers to be used.	 Demonstrate the process of carrying out vegetative propagation of pod spice crop saplings through suckers, if
 Explain the common types of weeds found in pod spice crops and how to 	required.
control them.	 Demonstrate the process of harvesting seedlings/saplings using the







- List the relevant pests and diseases that affect the pod crops and the appropriate preventive and remedial measures to be taken.
- Explain the safe preparation and application of different types of pesticides.
- Explain the use of appropriate plant protection equipment.
- Explain the maturity indices of the different pod spice crops and the use of appropriate tools and implements for harvesting them.
- Describe the post-harvest management processes relevant to pod spice crops.
- Explain the appropriate measures to be followed during harvesting and postharvest handling to preserve the quality of pod spice crop produce.
- State the applicable parameters for the sorting and grading of produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- List different types of buyers of pod spices.
- Describe the process of negotiating with buyers.
- State the appropriate packing material and mode of transport for pod spices.
- Explain the recommended measures to be followed to protect pod spices from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

- appropriate tools and implements.
- Show how to prepare pits of the recommended dimensions in the main field at the recommended spacing.
- Demonstrate the process of installing the appropriate irrigation system.
- Demonstrate the process of transplanting the seedlings in the main field and provide them immediate aftercare, e.g. mulching and irrigation.
- Show how to irrigate the pod spice crop plants as per the recommended irrigation schedule and prevailing weather conditions.
- Show how to prepare the appropriate pesticide/insecticide for application and apply it using the appropriate plant protection equipment.
- Demonstrate the process of carrying out fumigation in the field, as appropriate.
- Demonstrate how to sort and grade the produce based on the applicable parameters.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape







Module 15: Process of carrying out cultivation of berry spice crops Mapped to AGR/N0635 v1.0

Terminal Outcomes:

- Explain the criteria of selecting an appropriate site.
- Describe the process of propagating berry spice crop saplings.
- Explain the process of preparing the field for transplanting saplings.
- Describe the process of transplanting the saplings.
- Elucidate ways to maintain the berry spice crop vines/plants.
- Describe the process of carrying out weeding and pruning.
- Describe the process of performing harvesting and post-harvest management
- Elucidate ways to market berry spices.

Duration: 10:00	Duration: 20:00		
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes		
 List different berry spice crops and their characteristics. Explain the appropriate agro-climatic conditions for the cultivation of berry spice crops. 	 Show how to extract runner shoots from high-yielding and healthy berry spice crop vines/plants. Demonstrate how to plant the berry spice crop planting material, e.g. 		
 Explain the intercultural operations relevant to berry spice crops. 	cuttings during the months recommended for the selected crop.		
 List the agricultural inputs, tools, equipment and implements required for the cultivation of berry spice crops. 	 Demonstrate the process of maintaining the saplings, applying appropriate organic and inorganic fertilizers to meet their nutrient 		
 Explain the criteria for selecting an appropriate site for the cultivation of berry spice crops. State the recommended planting depth and density for different berry spice 	 Demonstrate the process of harvesting the saplings at the appropriate stage of growth and maintain them under the appropriate conditions to ensure their 		
crops.	survival before transplantation.		
 State the irrigation requirement of different berry spice crops at different stages of their growth. 	 Demonstrate the process of carrying out ploughing in the field to a fine tilth. Show how to prepare pits of the 		
 State the macro and micronutrient requirements of different berry spice crops and the appropriate organic and inorganic fertilizers to be used. 	recommended dimensions at appropriate spacing for planting the berry crop saplings.		
 Explain the common types of weeds found in berry spice crops and how to control them. 	 Show how to fill in the pits with an appropriate quantity of FYM/compost mixed with topsoil. 		
List the relevant pests and diseases that affect the berry crops and the	 Demonstrate the process of transplanting the berry spice crop saplings in the field taking the necessary 		







appropriate preventive and remedial measures to be taken.

- List the maturity indices of the different berry spice crops and the use of appropriate tools and implements for harvesting them.
- Describe the post-harvest management processes relevant to berry spice crops.
- List the appropriate measures to be followed during harvesting and postharvest handling to preserve the quality of berry spice crop produce.
- Explain the applicable parameters for the sorting and grading of produce.
- Discuss the applicable Good Agricultural Practices (GAP).
- List different types of buyers of berry spices.
- State the appropriate packing material and mode of transport for berry spices.
- Explain the recommended measures to be followed to protect berry spices from contamination while transporting them.
- Explain the importance of maintaining records of sales and payments.

precautions.

- Demonstrate how to install appropriate support to train the growth of berry spice crop vines/plants.
- Show how to cultivate the recommended types of trees to train the berry spice crop vines during the later stages of their growth.
- Demonstrate the process of applying the recommended organic and inorganic fertilizers in the recommended quantity to achieve the healthy growth of berry spice crop vines/plants.
- Demonstrate the process of carrying out irrigation with the recommended quantity of water as per the appropriate irrigation schedule.
- Show how to prepare the appropriate pesticide/insecticide for application and apply it using the appropriate plant protection equipment.
- Demonstrate the process of applying the recommended treatment in an appropriate quantity to prevent spike shedding in berry spice crops.
- Demonstrate the process of using the appropriate PPE while applying pesticides/insecticides to ensure personal protection.
- Show how to remove weeds growing among the berry spice crop vines/plants.
- Demonstrate the process of carrying out weeding at the recommended intervals.
- Demonstrate the process of carrying out harvesting after the recommended number of years after planting the berry spice crops.
- Demonstrate the process of carrying out post-harvest activities, such as dipping in hot water and sun drying.
- Demonstrate the process of carrying out sorting and grading of the produce based on the applicable parameters.







- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape





depth, following the recommended



Module 16: Process of carrying out cultivation of saffron Mapped to AGR/N0636 v1.0

Terminal Outcomes:

- Explain the criteria of selecting an appropriate site.
- Elucidate ways to arrange the planting material.
- Explain the process of sorting and treating saffron corms.
- Explain the process of preparing the field and plant saffron corms.
- Elucidate ways to maintain the saffron plants.
- Describe the process of performing harvesting and post-harvest management.
- Elucidate ways to market the saffron.

Ouration: 10:00	Duration: 20:00 Practical – Key Learning Outcomes		
heory – Key Learning Outcomes			
• List the appropriate agro-climatic conditions suitable for the cultivation of saffron.	 Show how to check the soil at the site is appropriately textured and well- drained with the recommended pH. 		
• Explain the importance of procuring planting material and agricultural	 Show how to remove the outer scales of corms before planting. 		
inputs from reliable sources, such as KVKs, agricultural universities and government-approved vendors.	 Demonstrate how to treat corms using the appropriate treatment before planting to control corm rot infection 		
 State the appropriate quality characteristics to be checked while 	and other soil borne diseases.		
procuring saffron corms and the appropriate conditions for storing them before planting.	 Show how to remove debris and waste material from the field before ploughing. 		
 Explain the criteria for sorting out corms unsuitable for planting. 	 Demonstrate the process of carrying out deep ploughing in the field to remove weeds and roots and achieve 		
Explain the importance of drying the	the recommended tilth.		
treated corms to achieve the appropriate moisture levels for planting.	 Demonstrate the process of carrying out planking to crush the hard clods, smoothen the soil surface and compact 		
Describe the process of preparing the	the soil lightly.		
field for planting saffron corms, e.g. deep ploughing and planking.	Show how to create drainage channels in the field to drain excess water and		
• Explain the importance of creating	prevent waterlogging in saffron field.		
drainage channels in saffron fields to prevent waterlogging.	Demonstrate the process of installing the appropriate irrigation system in		
• Explain the benefit of using irrigation systems.	saffron field, e.g. sprinkler irrigation system to irrigate the saffron crop.		
• Describe the process of planting saffron corms.	Show how to plant saffron corms in rows at the recommended spacing and		

• List the recommended spacing, depth







and seed rate for saffron crop.

- State the water requirements of saffron plants and the appropriate irrigation schedule.
- Explain the importance of carrying out hoeing in the saffron field at the recommended intervals.
- Explain the benefit of adopting Integrated Nutrient Management (INM) strategies for saffron cultivation.
- List the recommended manures and bio-fertilizers to be applied to saffron plants and the appropriate fertilizer application method to be followed.
- List the signs of pest and disease infestation in saffron plants and the appropriate preventive and remedial measures to be followed.
- Explain the appropriate safety measures to be taken while preparing and applying pesticides.
- List the common weeds found in saffron fields and the appropriate preventive and remedial measures.
- Explain the maturity indices of saffron crop and the appropriate time to pick them.
- Explain the appropriate hygiene measures to be taken while picking saffron flowers.
- Explain the relevant post-harvest activities, e.g. separation of stigma and drying.
- State the appropriate packing material to be used for packing saffron and the appropriate conditions for storing packed saffron.
- List different types of buyers of saffron.
- State the appropriate packing material and mode of transport for saffron.
- Explain the recommended measures to be followed to protect saffron from contamination while transporting them.
- Explain the importance of maintaining

seed rate.

- Demonstrate the process of carrying out irrigation with the appropriate quantity of water, following the recommended irrigation schedule.
- Demonstrate the process of carrying out hoeing in the saffron field at the recommended intervals to ensure effective soil aeration for the healthy growth of saffron plants.
- Demonstrate the process of applying the recommended manures and biofertilizers in the recommended quantity to achieve the healthy growth of saffron plants.
- Show how to prepare the appropriate pesticide treatment and apply it in the recommended quantity to eliminate saffron crop pests and diseases
- Show how to remove weeds growing among the saffron plants.
- Demonstrate the process of carrying out weeding at the recommended intervals using the appropriate weeding tools and implements.
- Demonstrate how to separate the stigma of saffron flowers within the recommended duration after flower picking to achieve the optimum pistil recovery.
- Show how to pack the dry saffron in airtight containers, maintaining the recommended moisture content.
- Demonstrate how to process the payments using the appropriate payment method including e-payment methods.
- Show how to calculate the benefit-cost (B:C) ratio.
- Demonstrate the process of maintaining the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.







records of sales and payments.

Classroom Aids

Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop

Tools, Equipment and Other Requirements

Rakes, SSP, MOP, Drip irrigation set, Knapsack Sprayer, Fawda/ Kudal, First aid box, Safety Shoes, Fire Extinguisher, Plastic tub for harvesting, Plastic sheet, Installed Video camera with high resolution and recording facility, Power tiller, Khurpi, Measuring tape







Module 17: On-the-Job Training

Mapped to Spice Crop Cultivator

Mandatory Duration: 30:00 Recommended Duration: 00:00

Location: On-Site

Terminal Outcomes

- Explain different methods of applying fertilizers, such as broadcasting, placement, aerial application, etc.
- Explain the growth pattern of different types of weeds.
- Explain the concept and benefits of integrated pest and disease management.
- Explain the impact of irrigation on plant growth and crop yield.
- Carry out ploughing in the main field for the recommended number of times to achieve a fine tilth.
- Perform the plant protection and irrigation and nutrient management of seedlings/saplings.
- Sow the seeds in the nursery bed within the appropriate duration as recommended for the selected tree spice crop.
- Prepare the main field by carrying out ploughing for the recommended number of times using the appropriate implements, such as the chisel plough, disc plough and cultivator.
- Carry out sorting and grading based on the applicable parameters.
- Carry out weeding at the recommended intervals.
- Maintain the manual and/or electronic record of sales and payments using the physical registers and/or the relevant computer application.







Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational	Specialization		Relevant Industry Training Experie Experience		ing Experience	Remarks
Qualification		Years	Specialization	Years	Specialization	
10th class	class 10th	7	Agriculture Crop Production	0		Spice Crop Cultivator with 7 Years experience with 10th Pass. Experience certificate issued by BDO/Agriculture Officer/Head of Grampanchayat/Loan disbursing bank or financial institution on official letter Head
12th Class	Class 12th	3	Agriculture Crop Production	0		Ex-Service-Man including Ex-Paramilitary personnel: Minimum Qualification is 10+2 with an Honourable Discharge/Pension. SSC would consider a relaxation/waiver of sector-specific experience on case to case basis.
Diploma	Diploma in Agriculture	3	Agriculture Crop Production	0		
Graduate	Graduate	2	Agriculture Crop Production	0		For the school Program minimum qualification of the Trainer should be Graduate. Their Teaching experience will be considered industry experience
Graduate	B.Sc. (Agriculture / Horticulture / Botany)	0.5	Agriculture Crop Production	0		
Post Graduate	M.Sc (Agriculture / Horticulture / Botany)	0		0		

Trainer Certification			
Domain Certification	Platform Certification		
Certified for Job Role " Spice Crop Cultivator ", mapped to QP: "AGR/Q0603, v2.0", Minimum accepted score is 80%	Recommended that the Trainer is certified for the Job Role: "Trainer (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2601, v2.0". The minimum accepted score as per MEPSC guidelines is 80%.		







Assessor Requirements

Experie		Trainin Experie	g/Assessment ence	Remarks
Years	Specialization			
	Specialization	Years	Specialization	

Assessor Certification				
Domain Certification	Platform Certification			
Certified for Job Role "Spice Crop Cultivator", mapped to QP: "AGR/Q0603, v2.0", Minimum accepted score is 80%	Certified for the Job Role: "Assessor (Vet and Skills)", mapped to the Qualification Pack: "MEP/Q2701, v2.0", with a minimum score of 80%.			







Assessment Strategy

Assessment System Overview

In Agriculture Sector it is of ultimate importance that individuals dealing with crop production or livestock have the requisite knowledge and competencies to undertake the task. Based on the Assessment Criteria, SSC in association with empaneled AAs, define the test structure for the given job roles to cover the required skills and competencies. Assessment strategy consists of the following:

- 1. <u>Multiple Choice Questions</u>: To assess basic knowledge (Objective/Subjective)
- 2. <u>Viva:</u> To assess awareness on processes (Oral and/or written questioning)
- 3. <u>Practical:</u> To evaluate skills and identify competencies. (Observation)

Assessments for knowledge and awareness on processes may be conducted through 'real-time' internet-based evaluation or by conducting the same 'offline' through TABs. Skills and competencies are to be assessed by conducting 'practical' on the ground through qualified and ToA certified assessors.

An individual must have adequate knowledge and skills to perform a specific task, weightage for different aspects of the assessment is given as follows:

- Multiple Choice Questions: 20%-30%, depending on the specific QP
- Viva: 20%
- Practical: 50% 60% (Involves demonstrations of applications and presentations of procedures/tasks and other components)
- Assessment will be carried out by certified assessors through empaneled assessment partners. Based on the results of the assessment; ASCI will certify the learners/candidates

Testing Environment

Assessments are conducted on laptops, Mobiles and android tablets via both offline and online mode depending on the internet connectivity at the assessment location.

In remote locations/villages, assessments get delivered through tablets without the requirement of the Internet.

- Multilingual assessments (ASCI is conducting the assessments in 13 + languages pan India)
- Rubric driven assessments in Practical/Viva sections and responses recorded accordingly
- All responses, data, records and feedback stored digitally on the cloud
- Advanced auto-proctoring features photographs, time-stamp, geographic-tagging, toggle- screen/copy-paste disabled, etc.
- Android-based monitoring system
- End to end process from allocation of a batch to final result upload, there is no manual intervention







- Assessment will normally be fixed for a day after the end date of the training / within
 7 days of completion of training.
- Assessment will be conducted at the training venue
- The room where assessment is conducted will be set with proper seating arrangements with enough space to curb copying or other unethical activities
- Question bank of theory and practice will be prepared by ASCI /assessment agency and approved ASCI. Only from approved Question Bank assessment agency will prepare the question paper. Theory testing will include multiple-choice questions, pictorial questions, etc. which will test the trainee on his theoretical knowledge of the subject.

Assessment			
Assessment Type	Formative or Summative	Strategies	Examples
Theory	Summative	MCQ/Written exam	Knowledge of facts related to the job role and functions. Understanding of principles and concepts related to the job role and functions
Practical	Summative	Structured tasks/Demonstration	Practical application /Demonstration /Application tasks
Viva	Summative	Questioning and Probing	Mock interviews on the usability of job roles/advantages /importance of adherence to procedures. Viva will be used to gauge trainee's confidence and correct knowledge in handling the job situation

• The theory, practical and viva assessments will be carried out on the same day. In case of a greater number of candidates, the number of assessors and venue facilitation be increased and facilitated

The question paper pre-loaded in the computer /Tablet and it will be in the language as requested by the training partner.







Assessment Quality Assurance framework

Assessment Framework and Design:

Based on the Assessment Criteria, SSC in association with AAs will define the test structure for the given roles to cover the required skills and competencies. ASCI offer a bouquet of tools for multi-dimensional evaluation of candidates covering language, cognitive skills, behavioural traits and domain knowledge.

Theoretical Knowledge - Item constructs and types are determined by a theoretical understanding of the testing objectives and published research about the item types and constructs that have shown statistical validity towards measuring the construct. Test item types that have been reported to be coachable are not included. Based on these, items are developed by domain experts. They are provided with comprehensive guidelines of the testing objectives of each question and other quality measures.

Type – Questions based on Knowledge Required, Case-based practical scenario questions and automated simulation-based questions.

Practical Skills - The practical assessments are developed taking into consideration two aspects: what practical tasks is the candidate expected to perform on the job and what aspects of the job cannot be judged through theoretical assessments. The candidates shall be asked to perform either an entire task or a set of subtasks depending on the nature of the job role

Type – Standardized rubrics for evaluation against a set of tasks in a demo/practical task

Viva Voce - Those practical tasks which cannot be performed due to time or resource constraints are evaluated through the viva mode. Practical tasks are backed up with Viva for thorough assessment and complete evaluation

Type – Procedural questions, dos and don'ts, subjective questions to check the understanding of practical tasks.

The assessor has to go through an orientation program organized by the Assessment Agency. The training would give an overview to the assessors on the overall framework of QP evaluation. The assessor shall be given a NOS and PC level overview of each QP as applicable. The overall structure of assessment and objectivity of the marking scheme will be explained to them. The giving of marks will be driven by an objective framework that will maintain the standardization of the marking scheme.

Type of Evidence and Evidence Gathering Protocol:

During the assessment the evidence collected by AAs and ASCI are:

- GeoTagging to track ongoing assessment
- AA's coordinator emails the list of documents and evidence (photos and videos) to the assessor one day before the assessment. The list is mentioned below:
 - Signed Attendance sheet
 - Assessor feedback sheet







- Candidate feedback sheet
- Assessment checklist for assessor
- Candidate Aadhar/ID card verification
- Pictures of the classroom, labs to check the availability of adequate equipment's and tool to conduct the training and assessment
- Pictures and videos of Assessment, training feedback and infrastructure.
- Apart from the Assessor, a Technical assistant is popularly known as Proctor also ensures
 the proper documentation and they verify each other's tasks.
- To validate their work on the day of the assessment, regular calls and video calls are done.
- On-boarding and training of assessor and proctor is done on a timely basis to ensure that the quality of the assessment should be maintained.
- Training covers the understanding of QP, NSQF level, NOS and assessment structure

Methods of Validation

- <u>Morning Check (Pre-Assessment)</u>: Backend team of AA calls and confirms assessor/technical SPOC event status. Assessor/Technical SPOC are instructed to reach the centre on time by 9:30 AM / as decided with TC and delay should be highlighted to the Training Partner in advance.
- <u>Video Calls</u>: Random video calls are made to the technical SPOC/assessor so as to keep a check on assessment quality and ensure assessment is carried out in a fair and transparent manner
- Aadhar verification of candidates
- <u>Evening Check (Post Assessment)</u>: Calls are made to the ground team to ensure the event is over by what time and the documentation is done properly or not.
- <u>TP Calling</u>: To keep a check on malpractices, an independent audit team calls the TP on a
 recorded line to take confirmation if there was any malpractice activity observed in the
 assessment on part of the AA/SSC team. If calls are not connected, an email is sent to TP
 SPOC for taking their confirmation
- <u>Video and Picture Evidence:</u> Backend team collects video and pictures for assessment on a real-time basis and highlights any issue such as students sitting idle/ trainer helping the candidates during the assessment.
- <u>Surprise Visit:</u> Time to time SSC/AA Audit team can visit the assessment location and conduct a surprise audit for the assessment carried out by the ground team.
- Geo Tagging: On the day of the assessment, each technical SPOC is required to login into our internal app which is Geotagged. Any deviation with the centre address needs to be highlighted to the assessment team on a real-time basis.

Method for assessment documentation, archiving, and Access:

- ASCI have a fully automated result generation process in association with multiple AAs
- Theory, Practical and Viva marks form the basis of the results and encrypted files generated to avoid data manipulation. All responses were captured and stored in the







System with Time-Stamps at the end of AAs and SSC. NOS-wise and PC-wise scores can be generated.

- Maker Checker concept: One person prepares the results and another audit result which
 is internally approved by AA at first and then gets vetted at the end of SSC
- All softcopies of documents are received from the on-ground tech team over email. The
 same is downloaded by our internal backend team and saved in Repository. The
 repository consists of scheme-wise folders. These scheme-wise folders have two job rolespecific folders. These specific folders have Year wise and Month wise folders where all
 documents are saved in Batch specific folders. All Hard copies are filed and stored in the
 storeroom.

Result Review & Recheck Mechanism -

- Time-stamped assessment logs
- Answer/Endorsement sheets for each candidate
- Attendance Sheet
- Feedback Forms: Assessor feedback form, Candidate feedback form, TP feedback form
- The results for each of the candidate shall be stored and available for review (retained for 5 years/ till the conclusion of the project or scheme)







References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do upon the completion of the training.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do upon the completion of a module. A set of terminal outcomes help to achieve the training outcome.







Acronyms and Abbreviations

Term	Description
AGR	Agriculture
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
QP	Qualifications Pack
PwD	People with Disability
PPE	Personal Protective Equipment