Model Curriculum

QP Name: Solanaceous Crop Cultivator

QP Code: AGR/Q0402

Version: 3.0

NSQF Level: 3

Model Curriculum Version: 2.0

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

Table of Contents

Training Parameters

Sector	Agriculture
Sub-Sector	Agriculture Crop production
Occupation	Field Crops Cultivation (Food Crops)
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/6111.0101
Minimum Educational Qualification and Experience	Minimum Educational Qualification: Grade 10 OR Grade 8 with two years of (NTC/ NAC) after 8th OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2-year relevant experience OR 5th grade pass with 5-year relevant experience OR Previous relevant Qualification of NSQF Level 2 with 1-year relevant experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months' relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	17 Years
Last Reviewed On	27-01-2022
Next Review Date	27-01-2025
NSQC Approval Date	27-01-2022
QP Version	3.0
Model Curriculum Creation Date	27-01-2022
Model Curriculum Valid Up to Date	27-01-2025
Model Curriculum Version	2.0
Minimum Duration of the Course	270 Hours

Maximum Duration of the Course	270 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:

- Describe the process of selecting and preparing the site and sow the Solanaceous crop
- Describe the process of transplanting the seedlings of Solanaceous crop
- Demonstrate the process of carrying out macro and micronutrient management of Solanaceous crop
- Describe the process of managing weed growth in Solanaceous crop
- Demonstrate the process of performing integrated pest and disease management for the Solanaceous crop
- Demonstrate the process of performing irrigation management for the Solanaceous crop
- Demonstrate the process of carrying out harvesting, processing and marketing of Solanaceous crop.
- Describe the basic farm management
- Describe the process of analysing the market information to make key decisions on crop cultivation
- Explain the basic entrepreneurial activities for small enterprise.
- Describe the process of undertaking employability and entrepreneurial practices.
- Describe the process of engaging in collective farming/activity.
- Demonstrate various practices to maintain personal hygiene, cleanliness, and safety at the workplace.

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**	**0:00**	**05:00**
Module 1: Introduction to the role of a Solanaceous Crop Cultivator	05:00	0:00	0:00	0:00	05:00
AGR/N0408: Seed selection and seedling production NOS Version- 1.0 NSQF Level- 4	**05:00**	**05:00**	**0:00**	**0:00**	**10:00**
Module 2: Process of seed Selection and seedling Production	05:00	05:00	0:00	0:00	10:00
AGR/N0409: Soil preparation and transplanting in	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**

solanaceous crops **NOS Version- 2.0** **NSQF Level- 4**					
Module 3: Process of soil preparation and transplanting in solanaceous crops	10:00	20:00	0:00	0:00	30:00
AGR/N0401: Soil nutrient Management in vegetable crops **NOS Version-2.0** **NSQF Level- 4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 4: Process of carrying out nutrient management in vegetable crops	10:00	20:00	0:00	0:00	30:00
AGR/N0402: Weed control and management in vegetable crops **NOS Version-1.0** **NSQF Level- 4**	**05:00**	**10:00**	**0:00**	**0:00**	**15:00**
Module 5: Process of managing the weed growth in the vegetable crops	05:00	10:00	0:00	0:00	15:00
AGR/N0403: Integrated pest and disease management in vegetable crops **NOS Version- 2.0** **NSQF Level-4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 6: Process of performing integrated pest and disease management for solanaceous crop	10:00	20:00	0:00	0:00	30:00
AGR/N0404: Irrigation management in vegetable crops **NOS Version- 1.0** **NSQF Level-4**	**05:00**	**10:00**	**0:00**	**0:00**	**15:00**
Module 7: Process of performing irrigation management for solanaceous crop	05:00	10:00	0:00	0:00	15:00

AGR/N0410: Harvest and post-harvest management in solanaceous crop **NOS Version- 2.0** **NSQF Level- 4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 8: Process of carrying out harvesting, post-harvest management in solanaceous crop	10:00	20:00	0:00	0:00	30:00
AGR/N9901: Basic farm management **NOS Version- 1.0** **NSQF Level-4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 9: Process of managing basic farm activities	10:00	20:00	0:00	0:00	30:00
AGR/N9902: Assimilating market information **NOS Version- 1.0** **NSQF Level-4**	**10:00**	**05:00**	**0:00**	**0:00**	**15:00**
Module 10: Process of assimilating market information	10:00	05:00	0:00	0:00	15:00
AGR/N9903 Maintain health and safety at the workplace **NOS Version- 3.0** **NSQF Level- 4**	**10:00**	**20:00**	**0:00**	**0:00**	**30:00**
Module 11: Hygiene and cleanliness	3:00	3:00	0:00	0:00	06:00
Module 12: Safety and emergency procedures	7:00	17:00	0:00	0:00	24:00
DGT/VSQ/N0101 Employability Skills **NOS Version-1.0** **NSQF Level-2**	**30:00**	**00:00**	**0:00**	**0:00**	**30:00**
Module 13: Employability Skills	30:00	00:00	0:00	0:00	00:00
Total Duration	**120:00**	**150:00**	**0:00**	**0:00**	**270:00**

Module Details

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

Terminal Outcomes:

- Discuss the job role of a Solanaceous 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 Solanaceous Crop Cultivator. - Identify various employment opportunities for a Solanaceous Crop Cultivator.	
Classroom Aids	
Training Kit - Trainer Guide, Presentations, Whiteboard, Marker, Projector, Laptop, Video Films	
Tools, Equipment and Other Requirements	
NA	

Module 2: Process of seed Selection and seedling Production
Mapped to AGR/N0408 v1.0

Terminal Outcomes:

- Describe the process of selecting the site for the cultivation of Solanaceous crops
- Describe the process of procuring and preparing the planting material.
- Describe the process of sowing the seeds for solanaceous crop cultivation

Duration: 5:00	Duration: 05:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List out various varieties of solanaceous crops - Explain different methods of seedling production - Explain various characteristics of seed with their suitability to the location - Explain characteristics of healthy varieties - Explain the advantages and disadvantages of soil nursery or tray method - Explain depth and spacing of planting seedlings in case of soil nursery & tray - Describe characteristics of appropriate tray (hole size, depth, rate, etc.) - Explain use of mesh net house and net tunnels - Explain ideal temperature, moisture & water content for seedlings to sprout	- identify various and appropriate variety (including hybrid) of solanaceous crops - identify various vendors / suppliers (including government nurseries /department) of the seed that are certified - Demonstrate the process of procurement of seeds in appropriate quantities - Analyse the market rates for solanaceous crop seeds (such as tomato, capsicum, etc) - Demonstrate the nursery or tray method for growing seedlings - Demonstrate the sowing of seeds at correct depth and appropriate spacing - Demonstrate the watering of seeds sown as per the requirement - Analyse the demand of various varieties in the market - Demonstrate the use of mesh net house and net tunnels
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
NA	

Module 3: Process of soil preparation and transplanting in solanaceous crops

Mapped to ARG/N0409 v2.0

Terminal Outcomes:

- Demonstrate the process of preparation of land for solanaceous crop cultivation
- Demonstrate the process of transplanting the seedlings
- Demonstrate various practices for effective resource optimisation.
- Demonstrate various waste management practices.
- Discuss ways to promote diversity and inclusion at the workplace.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- State appropriate time for planting by taking soil, climatic conditions - Explain the advantages and disadvantages of intercropping and types of plant to be intercropped - Explain the advantages of crop rotation - Explain the required distances between the ridges and furrows as per the varieties of solanaceous crops - Explain the importance of pre irrigation of the land prior to transplanting	- Identify various authorized centers of soil testing - Demonstrate the preparation of the land to get appropriate tilth - Demonstrate ploughing of land as per the requirement of the crop - Demonstrate the use of appropriate equipment for soil levelling - Estimate the requirement of farm yard manure and fertilizer in appropriate quantity based on the size of land and cropping density - Demonstrate the use of planting equipment (shovel or trowel) - Demonstrate transplanting of seedling at appropriate time and stage with proper spacing - Demonstrate the preparation of ridges and furrows - Demonstrate application of apply farm yard manure and fertilizers
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
NA	

Module 4: Process of carrying out nutrient management in vegetable crops
Mapped to AGR/N0401 v2.0

Terminal Outcomes:

- Explain how to determine the macro and micronutrients requirements.
- Demonstrate the process of applying fertilisers to the soil.
- Demonstrate the process of performing soil conservation.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain the basic concepts of plant nutrition and soil fertility. - Explain different types of macro and micronutrients, their properties and their functions. - List common symptoms of nutrient deficiency in plants. - Explain different types of green manure and nitrogen-fixing crops. - Describe the process of soil sampling and testing. - Explain the importance of getting the soil tested through a government-approved lab. - Explain how to interpret the soil analysis report to determine the macro and micronutrient requirements of the soil. - Explain different soil types, their advantages and disadvantages with reference to the presence of various nutrients. - State the appropriate time and methods for the application of different types of fertilisers. - Explain the importance of regulating the dose of fertiliser according to the crop cycle. - State the recommended dosage and application time of fertiliser for different types of crops. - Explain the importance of soil conservation and various soil	- Demonstrate the process of preparing organic fertilisers such as farmyard manure, vermicompost and inorganic fertiliser solutions. - Demonstrate the process of preparing the mixture of liquid fertilisers for application in the field, using them in the recommended quantity. - Show how to prepare the field for the application of fertilisers. - Demonstrate the process of applying organic and inorganic fertilisers containing the required macro and micronutrients to the soil in the recommended dose. - Show how to regulate the dose of fertiliser according to the crop cycle. - Prepare a sample record of fertilisers used in the field. - Prepare a sample soil nutrition supplementation calendar based on the stages of the crop's growth. - Demonstrate the process of applying mulch and organic fertilisers to conserve soil moisture.

conservation practices.

- Explain various varieties of organic and inorganic fertilisers to be applied to the soil to improve its fertility, and nutrient content.

- Explain the harmful effects of the over-dosage of fertilizers.

- Describe the process of preparing a soil nutrition supplementation calendar based on the stages of the crop's growth.

Classroom Aids

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

Tools, Equipment and Other Requirements

Sprayer, Fertilisers, Bio Fertilisers, Cloth Bags for Soil Sample, Khurpa

Module 5: Process of managing the weed growth in the vegetable crops
Mapped to ARG/N0402 v1.0

Terminal Outcomes:

- Describe the process of identifying weed growth.
- Demonstrate the process of performing weed management

Duration: 05:00	Duration: 10:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
- State the critical period for organic weed control, reducing the dependence on herbicides and weedicides. - Explain the adverse effect of different types of weed such as grass, broad leaves, sedges on crop growth. - Explain various types of weed of vegetable crops - Describe different weed control methods such as preventative, intercultural, mechanical, biological and chemicals. - Explain the advantages and disadvantages of different weeding methods. - State the critical period of crop-weed competition. - Describe different manual weeding techniques. - Explain the use of relevant weeding equipment such as hoe and spade. - Explain the use of pre-emergent and post-emergent herbicides. - Explain the difference between blanket and spot application of herbicides. - Describe the process of soil solarisation and pasteurisation. - Explain various environmental norms to be adhered to during herbicide application. - Explain the effects of herbicide	- Demonstrate how to maintain the record of observations with respect to weed identification and their growth. - select the recommended herbicide as per the crop need - Demonstrate the process of preparing the recommended herbicide/ bio-herbicide solution suitable to the crop. - Show how to spray the herbicide/ bio-herbicide safely in the recommended dose. - Demonstrate the process of removing weeds manually using the appropriate hand tools and implements, as required. - identify the types of weed in the vegetable crop as against the growth stage of the crop - Demonstrate the suitable cultural and mechanical methods to control weeds - select the combination of different types of weed control methods for effective weed management

residue on the crop.

- Explain different ways to minimize pollution caused due to overuse of herbicides.

- Explain the importance of inspecting the field regularly to identify weed growth.

- Explain the appropriate combination of different types of intercultural and mechanical methods for effective weed control such as solarisation and pasteurisation.

- Describe the process of selecting and preparing the recommended herbicide/ bio-herbicide solution suitable to the crop.

- Explain about band and patch application of herbicides

- Explain the importance of retaining the weeds during the weeding process.

- Explain the importance of maintaining the herbicides and herbicide application equipment separately to prevent cross-contamination with other chemicals.

Classroom Aids

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

Tools, Equipment and Other Requirements

Chemicals, Sprayer, Weeder, Hoe, Sickle

Module 6: Process of performing integrated pest and disease management for solanaceous crop

Mapped to NOS AGR/N0403 v2.0

Terminal Outcomes:

- Explain the importance of following the relevant preventive measures to control pests and diseases.
- Describe the process of identifying pests and diseases in the Solanaceous crop.
- Describe the process of identifying and applying the necessary treatment.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
- Explain various types of diseases found in Solanaceous crop and their symptoms. - Explain different biotic and abiotic factors causing diseases and disorders in plants. - Explain different modes of transmission of disease such as implements, vectors, rain, wind. - Explain the importance of adopting safe production methods for safe produce. - Explain the advantages of biological control of insects, pests & diseases, bio-pesticides and pheromones used in IPM (Integrated Pest Management). - State the minimum residue levels and Protected Health Information (PHI) for different types of pesticides. - Explain the use of the pesticide spraying tools and equipment. - Explain the applicable national and international standards on pesticide residues. - Explain the benefits of using pest and disease-resistant varieties of Solanaceous crop - State the recommended practices to be followed to restrict the entry of pathogens into the field through	- Demonstrate the process of removing the diseased crop to prevent the spread of pests and disease to healthy crops. - Demonstrate the use of light and pheromone traps to identify the presence and population of pests, insects and vectors. - Demonstrate the process of applying the recommended treatment as per the prescription to remove pests and diseases. - Demonstrate the use of relevant PPE. - Demonstrate the preparation of a sample record of the use of any pesticides, insecticides and any other treatment. - identify stages of crop and pest incidence - Analyse symptoms and extent of damages - Demonstrate how to conduct regular field scouting to identify disease symptoms and plant disease vectors - Demonstrate the ways to restrict entry of pathogens into fields through planting material, irrigation water, workers and tools

planting material, irrigation water, workers, tools and equipment, and vectors such as whitefly.

- Explain the practice of crop rotation with suitable crops.

- Explain the importance of identifying and removing the diseased crop to prevent the spread of pests and disease to the healthy crop.

- Explain the use of the recommended combination of biological, mechanical and chemical control methods for effective pest and disease prevention such as traps, sticky plates etc.

- Explain how to identify different types of pests in Solanaceous crop crops such as stem borer, leaf folder, Fall Armyworm, Panicle mites etc.

- Explain the signs of plant disease vectors and major Solanaceous crop diseases such as leaf spot, leaf blight, anthracnose, Powdery mildew, root rot, rust, yellow mosaic, etc.

- Describe the process of determining the stage of pest incidence along with the extent of damage and Economic Threshold Levels (ETL) of the pests.

- Explain the use of IPM methods such as light and pheromone traps to identify the presence and population of insects and vectors

- Describe the process of determining the causal organism for the disease and its treatment.

- List natural enemies of Solanaceous crop pests and explain the benefits of adopting them.

- Explain the importance of applying the recommended treatment as per the prescription and maintaining the record of their use.

- Explain how to minimise pollution caused by the overuse of pesticides.

- List the banned pesticide

formulations. • Explain how to deal with chemical poisoning.	

Classroom Aids

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

Tools, Equipment and Other Requirements

Chemicals, Sprayer, Face Mask, Rubber Gloves, Pheromone Traps, Light Traps, Bird Perches, Sticky Traps

Module 7: Process of performing irrigation management for solanaceous crop

Mapped to AGR/N0404 v1.0

Terminal Outcomes:

- Describe the process of preparing for field irrigation.
- Demonstrate the process of irrigating the field.
- Describe the process of managing water usage.

Duration: 5:00	Duration: 10:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- State the timing and method of irrigation appropriate for a given soil type and climatic conditions. - State the quantity of water required for the specific crop and its effect on the yield. - Explain critical periods of water need for vegetable crops - Explain the importance of sampling irrigation water through an authorised lab to determine its quality. - Explain various measures to be followed to improve the water quality. - Describe the process of setting up different types of irrigation systems such as surface irrigation, drip irrigation, sub-surface irrigation system. - Explain the advantages and disadvantages of different types of irrigation systems. - Explain basic irrigation principles - Explain the importance of irrigating the field according to the recommended irrigation schedule for the crop and the factors to consider in scheduling irrigation. - Explain the recommended practices to prevent over and under irrigation. - Explain the recommended practices for effective drainage of excess	- Demonstrate the process of setting up the appropriate irrigation system such as surface irrigation, drip irrigation, sub-surface irrigation system based on the requirement of the specific field crop. - Demonstrate the process of irrigating the field according to the recommended irrigation schedule for the crop. - Demonstrate the sampling techniques for water testing - Create proper water drainage - Prepare a sample record of field irrigation to ensure irrigation as per the schedule. - select the suitable irrigation method in consultation with the expert - Demonstrate how to plug water spills and leakages to prevent its wastage. - Demonstrate implementation of measures to ensure optimum water use efficiency - Demonstrate the use of various types of micro irrigation equipments to be used (misters, drippers, sprinklers, foggers, etc) - Demonstrate the process of fertigation

- water from the field.

- Explain the importance of maintaining the recommended level of water in the soil to prevent the harmful effects of inappropriate levels of moisture in it.

- Explain basic concept of fertigation

- Explain key considerations in scheduling irrigation

- Explain various practices for optimised use of water and prevent its wastage.

Classroom Aids

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

Tools, Equipment and Other Requirements

NA

Module 8: Process of carrying out harvesting, post-harvest management in solanaceous crop

Mapped to AGR/N0410 v2.0

- Demonstrate the process of harvesting the Solanaceous crops
- Demonstrate how to process and pack the Solanaceous crops
- Describe the process of managing the inventory and market the produce.

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain the ideal climate and conditions for harvesting Solanaceous crop. - Explain how to assess the maturity of Solanaceous crop to ensure their readiness for being harvested. - Explain harvesting of the crop based on use and distance from the market - Describe the manual and mechanical methods for harvesting Solanaceous crop and the use of relevant tools and equipment. - Explain the importance and ways of maintaining the recommended level of moisture in Solanaceous crop. - Explain the signs of biological infestation in Solanaceous crop and the importance of segregating the infested and damaged Solanaceous crop. - Explain the relevant parameters to sort out the harvested Solanaceous crop such as quality, colour, size, appearance, etc. - State the appropriate packing material for packing a variety of Solanaceous crops such as jute bags, - Polypropylene (PP) pouches, High-Density Polyethylene (HDPE) packaging, etc. - Explain the importance and ways of protecting the produce from damage and contamination. - State the appropriate temperature and humidity for storing the	- Demonstrate the process of harvesting the crop using necessary tools, equipment and machinery. - Demonstrate the process of sorting the harvested Solanaceous crop on the applicable parameters such as quality, colour, size and appearance. - Show how to pack the Solanaceous crop following the relevant packaging standards and label the packs with the necessary information as per the applicable regulatory requirements. - Show how to weigh the packed Solanaceous crop to ensure correct weight in the packs and seal them. - Demonstrate the process of applying the recommended treatment in the storage area to remove pests and rodents and store the packed Solanaceous crop - Demonstrate how to process the payment using an e-payment method. - Show how to calculate the benefit-cost (B:C) ratio. - Prepare a sample manual and/ or electronic record of the sales and payments. - Demonstrate grading of crop based on size, color and quality - Demonstrate packaging of crop with appropriate material and method - Analyse market rates of the crop

Solanaceous crop

- Explain the basic inventory management practices.

- Describe the process of identifying and negotiating with potential buyers.

- State the appropriate mode of transport for transporting a variety of Solanaceous crop

- Explain harvesting based on demand of type in the market (in case of tomatoes)

Classroom Aids

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

Tools, Equipment and Other Requirements

Sickle, Harvester, Thresher, Sprayer, Fumigants, Storage Bags, Bag Sealing Machine/ Tools, Weighing Machine

Module 9: Process of managing basic farm activities
Mapped to AGR/N9901 v2.0

- Describe crop planning
- Demonstrate the process of documentation and record keeping
- Describe Financial Management
- Explain market interface

Duration: 10:00	Duration: 20:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain various intercropping patterns based on the main crop - Explain about the soil testing report and its components - Explain the key considerations in selecting the main crop and intercrop for profit maximization - Explain the benefits of intercropping and type of crops to be intercropped - Explain the benefits of crop rotation and types of crop to be rotated - Explain about the record keeping components and methodologies for various activities - Explain the basic accounting principles - Explain basic book-keeping principles - List out different markets/mandi in the region - Explain relevant health and safety requirements applicable in the work environment - Explain relevant legislation, standards, policies and procedures at work - Explain the importance of following health, hygiene, safety and quality standards and the impact of not following the standards on consumers and the business	- Select the crop based on agro-climatic condition of the region - Demonstrate sampling of soil for soil testing - Analyse the soil testing report and its components - Demonstrate planting suitable intercrop as per the main crop - Calculate the total cost involved in production of crop viz. from land preparation to marketing - Estimate the market demand for the produce - Analyse the rates of different produce and the fluctuation in the pricing - Estimate the transportation requirement for the produce - Demonstrate the procedure to maintain various records and calendars like crop production activity record, crop calendars, calendars of weed, insects and pest calendar - identify local traders, mandis in the villages and nearby and compare the rates - Demonstrate the procedure to maintain the books of accounts
Classroom Aids	
Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop	
Tools, Equipment and Other Requirements	
XXXX	

Module10: Process of assimilating market information
Mapped to AGR/N9902 v2.0

- Analyse market information to make key decisions on solanaceous crop cultivation

Duration: 10:00	Duration: 05:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- Explain how to use market information for taking cost effective production decisions - Describe the prices of different products such as seeds, pest, fertilizer, etc based on quality and variety of selected crop - Explain how to use market information to decide on crop and area to be sown which could result in better productivity for the season - Explain various methods of collecting information through personal visit, telephone, internet and published reports, magazines and articles, workshops, attending seminars and training by agriculture extension service providers - Explain benefits derived from market information - Explain about the price fluctuations in markets and explain how to take appropriate decision	- Analyse availability and non-availability of specific market information - Demonstrate documentation of market information - evaluate the authenticity of information received - Analyse the information for taking decision - Demonstrate the methods to collect information like personal visit, telephonic conversations, internet etc. - Estimate the periodicity and cost of assessing market information - identify different sources of information at market level through commission agents, mandi, samitis and input dealers - identify different sources of information through media sources like radio, newspapers, television, magazine, internet, sms in mobile phones etc. - identify the appropriate sources of specific market information and proper ways to collect the required information - Demonstrate the use of market information for appropriate post-harvesting decision like drying , grading, bagging, transportation, processing and storage - Show how to decide on marketing parameters like where to sell, when to sell, to whom to sell and what quantity to sell etc. which leads to

| | profit |
| | • Analyse and make projections/future price movements through information sources |

| **Classroom Aids** |
| Training Kit (Trainer Guide, Presentations). Whiteboard, Marker, Projector, Laptop |
| **Tools, Equipment and Other Requirements** |
| XXXX |

Module 11: 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: 03:00	Duration: 03:00
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. - Explain the importance of good housekeeping at the workplace. - Explain the importance of informing the designated authority on personal health issues related to injuries and infectious diseases.	- 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. - Demonstrate the steps to follow to put on and take off a mask safely. - 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 12: 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: 07:00	Duration: 17:00
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
- List the Personal Protective Equipment (PPE) required at the workplace. - 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 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.	- Check various areas of the workplace for leakages, water-logging, pests, fire, etc. - Demonstrate how to safely use the PPE and implements 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. - 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 13: Employability Skills (30 hours)
Mapped to NOS DGT/VSQ/N0101 v1.0

Duration: 30:00
Key Learning Outcomes

Introduction to Employability Skills Duration: 1 Hour
After completing this programme, participants will be able to:
1. Discuss the importance of Employability Skills in meeting the job requirements

Constitutional values - Citizenship Duration: 1 Hour
2. Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen.
3. Show how to practice different environmentally sustainable practices

Becoming a Professional in the 21st Century Duration: 1 Hours
4. Discuss 21st century skills.
5. Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mindset in different situations.

Basic English Skills Duration: 2 Hours
6. Use appropriate basic English sentences/phrases while speaking

Communication Skills Duration: 4 Hour
7. Demonstrate how to communicate in a well -mannered way with others.
8. Demonstrate working with others in a team

Diversity & Inclusion Duration: 1 Hour
9. Show how to conduct oneself appropriately with all genders and PwD
10. Discuss the significance of reporting sexual harassment issues in time

Financial and Legal Literacy Duration: 4 Hours
11. Discuss the significance of using financial products and services safely and securely.
12. Explain the importance of managing expenses, income, and savings.
13. Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws

Essential Digital Skills Duration: 3 Hours
14. Show how to operate digital devices and use the associated applications and features, safely and securely
15. Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely

Entrepreneurship Duration: 7 Hours
16. Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges

Customer Service Duration: 4 Hours
17. Differentiate between types of customers
18. Explain the significance of identifying customer needs and addressing them

19. Discuss the significance of maintaining hygiene and dressing appropriately

Getting ready for apprenticeship & Jobs Duration: 2 Hours
20. Create a biodata
21. Use various sources to search and apply for jobs
22. Discuss the significance of dressing up neatly and maintaining hygiene for an interview
23. Discuss how to search and register for apprenticeship opportunities

Annexure

Trainer Requirements

Trainer Prerequisites					
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	*Specialization*	*Years*	*Specialization*	
10th class		5	Agriculture Crop Production	0		Solanaceous Crop Cultivator with 5 Years' experience with 10th Pass. Experience certificate issued by BDO/Agriculture Officer/Head of Gram panchayat/Loan disbursing bank or financial institution on official letter Head
12th Class		4	Agriculture Crop Production	0		Ex-Service-Man including Ex-Paramilitary personnel: Minimum Qualification is 10+2 with an Honourable Discharge/Pension. SC would consider a relaxation/waiver of sector specific experience on case to case basis.
Diploma	Agriculture	3	Agriculture Crop Production	0		
Graduate	Graduate in any stream except Agriculture / Horticulture/ Forestry	2	Agriculture Crop Production	0		For school Program minimum qualification of Trainer should be Graduate in Botany/Agriculture. Their Teaching experience will be considered industry experience
Graduate	Agriculture / Horticulture/ Forestry	0		0		

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role " **Solanaceous Crop Cultivator**", mapped to QP: "AGR/Q0402, v1.0", 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, v20". The minimum accepted score as per MEPSC guidelines is 80%.

Assessor Requirements

Assessor Prerequisites					
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	Specialization	Years	Specialization	
B.Sc	Agriculture/ Botany/ Forestry/ Horticulture/ Floriculture and related streams	5	Agriculture / Forestry / Horticulture and related streams	0		Practical skills and knowledge required in various tasks of Solanaceous crops cultivation
M.Sc	Agriculture/ Botany/ Forestry/ Horticulture/ Floriculture and related streams	2	Agriculture / Forestry / Horticulture and related streams	0		Practical skills and knowledge required in various tasks of Solanaceous crops cultivation
PhD	Agriculture/ Botany/ Forestry/ Horticulture/ Floriculture and related streams	1	Agriculture / Forestry / Horticulture and related streams	0		Practical skills and knowledge required in various tasks of Solanaceous crops cultivation

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role " **Solanaceous Crop Cultivator**", mapped to QP: "AGR/Q0402, v1.0", 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 are 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.

- 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

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 question paper is 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:

- Geo Tagging 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:
    - o Signed Attendance sheet
    - o 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 tools 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 the assessor and proctor are 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

- <u>Aadhar verification</u> 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.

- <u>Geo Tagging</u>: 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 role-specific 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 candidates 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	The 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	The 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
DSR	Direct Seeded Rice
ETL	Economic Threshold Levels
HDPE	High-Density Polyethylene
IPM	Integrated Pest Management
NOS	National Occupational Standard (s)
NSQF	National Skills Qualifications Framework
OJT	On-the-job Training
PP	Polypropylene
PHI	Protected Health Information
PwD	People with Disability
PPE	Personal Protective Equipment
QP	Qualifications Pack
SRI	System of Rice Intensification