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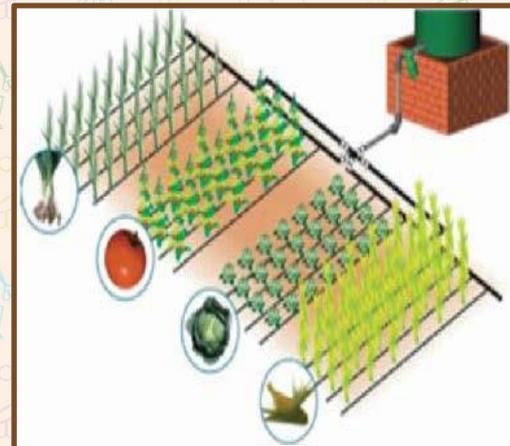
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Agriculture Skill Council of India

# Facilitator Guide



Sector  
**Agriculture**

Sub-Sector  
**Agriculture Crop Production**

Occupation  
**Precision Farming**

Reference ID: **AGR/Q1002**, Version **3.0**

NSQF Level: **4**

# Micro-Irrigation Technician



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## Published by

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**Shri Narendra Modi**  
Prime Minister of India

“ Skilling is building a better India.  
If we have to move India towards  
development then Skill Development  
should be our mission. ”



## Acknowledgements

We are thankful to all organizations and individuals who have helped us in preparation of this Facilitator Guide. We also wish to extend our gratitude to all those who reviewed the content and provided valuable inputs for improving quality, coherence and content presentation of chapters. This Facilitator Guide will lead to successful roll out of the skill development initiatives, helping greatly our stakeholders particularly trainees, trainers and assessors etc. We are thankful to our Subject Matter Expert for the content and helping us in preparation of this Facilitator Guide.

It is expected that this publication would meet the complete requirements of QP/NOS based training delivery. We welcome the suggestions from users, industry experts and other stakeholders for any improvement in future.

## About this Guide

The objective of the guide is to provide an approach map for interacting with the trainees undergoing training on this job role. The aim of the course is to provide both theoretical and practical knowledge to the trainees. The guide is neither a substitute nor complete road map, but an aid to help to pass on the knowledge on all the aspects to the trainees in a systematic manner. It is expected that the trainer is fully conversant with all the contents of the guide. The guide is just to indicate that how to proceed for covering a topic and includes some additional information that may be necessary for the trainer to develop better comprehension on following aspects:

- **Knowledge and Understanding:** Satisfactory operational learning and comprehension to play out the required chore.
- **Performance Criteria:** Pick up the required aptitudes through hands on preparing and play out the required operations inside the predetermined measures.
- **Professional Skills:** Capacity to settle on operational choices relating to the zone of work.

The job will also include judging the comprehension and also help them learn more by hands on training. But it has to be ensured that these are in accordance with the knowledge imparted and time spent on each unit. It is expected that irrespective of the region, knowledge on all aspects will be imparted to trainees.

## Symbols Used



Ask



Activity



Do



Demonstrate



Explain



Elaborate



Example



Exercise



Facilitation Notes



Field Visit



Learning Outcomes



Notes



Objectives



Practical



Resources



Role Play



Summarize



Say



Team Activity

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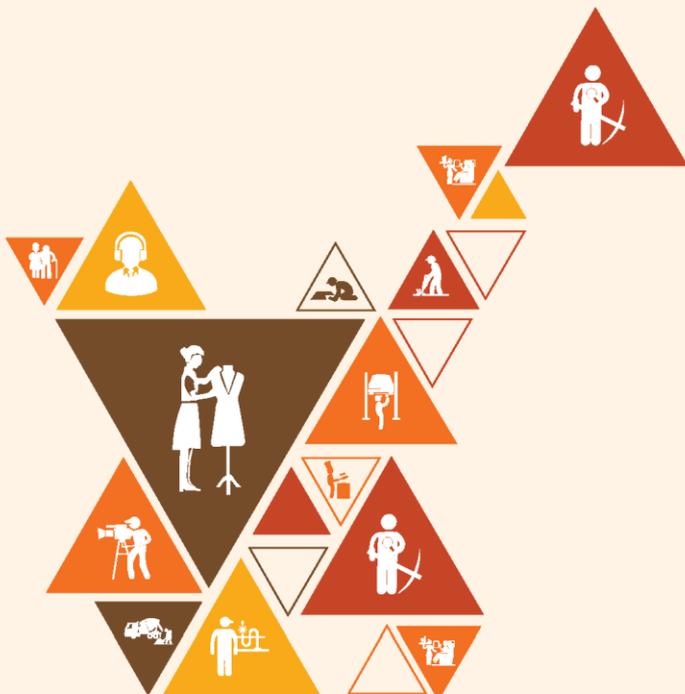


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# 1. Introduction to the Role of Micro- Irrigation Technician

Unit 1.1 - Importance of Irrigation System in India



Bridge Module

## Key Learning Outcomes



**After the completion of this module, the participant will be able to:**

1. Describe the size and scope of the agriculture industry and its sub-sectors.
2. Discuss the role and responsibilities of a Micro Irrigation Technician.
3. Identify various employment opportunities for a Micro Irrigation Technician

## UNIT 1.1: Importance of Irrigation System in India

### Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe the importance of Micro Irrigation System in Indian Agriculture
2. Explain the types of Irrigation System

### Resources

- Available objects such as a white board, duster, marker, notepad, pens, participant handbook, computer, projector, flip charts.
- Power point slides, pictures / posters that depict various information about Micro irrigation system and its importance in agriculture.
- Supplementary videos on types of irrigation systems.

### Ask

- What do you mean by 'Irrigation'?
- What is the importance of irrigation in Indian agriculture?
- In your opinion what is the role of a Micro Irrigation Technician?

### Elaborate

With the help of participants handbook elaborate the following:

- Irrigation system
- Importance of Irrigation in Indian agriculture
- Job role of a Micro Irrigation Technician

## Team Activity



- Make the participants stand in circle, close enough to the person so that they can transfer the parcel quickly.
- Say 'stop' when students least expect it. The person who has the parcel at that time should get out and introduce themselves by providing their names and little additional information such as name of his/her village, things people do in their village for living, list at least one benefit of Micro irrigation.
- At the end of the game, appreciate the winner and thanks everyone for their participation.

## Field Visit



- Plan a visit to a farm, where a micro irrigation system has been installed.
- Ask the participants to discuss the following with the owner of the farm.
  - ✓ What are the advantages of micro irrigation system?
  - ✓ In which crop(s), micro irrigation system has been more useful?
  - ✓ What are the common problems that you encounter in maintaining micro irrigation system?

## Notes for Facilitation



- A brief general explanation of terms used in participant manual will help participants to take part in discussions.
- Help participants to get rid of inhibition and anxiety (if any) thus ensuring maximum class participation.
- Encourage participants of group discussion to ask questions so that they can clear their doubts (if any) on future job role.
- Assist participants to streamline their thought process while discussing the question.
- You can invite representative of any organization who employs micro irrigation technician to speak on 'expectations from trainees'.
- Understand their job role as a micro irrigation technician
- Indicate briefly the option for career progression and career mobility of sericulturist completing training under NSQF framework. He /she can work anywhere in India or even seek employment outside the country.
- Create a sense of pride amongst the participants as an important self employment job.
- Inculcate the serving attitudes and create awareness of 'people' dimensions associated with micro irrigation.
- Learn about their limitations and pre-requisite to follow legal / government guidelines..

## Exercise



### Key Solutions to PHB Exercises

1. Refer section 1.1.4 of PHB.
2. Refer section 1.1.3 of PHB.







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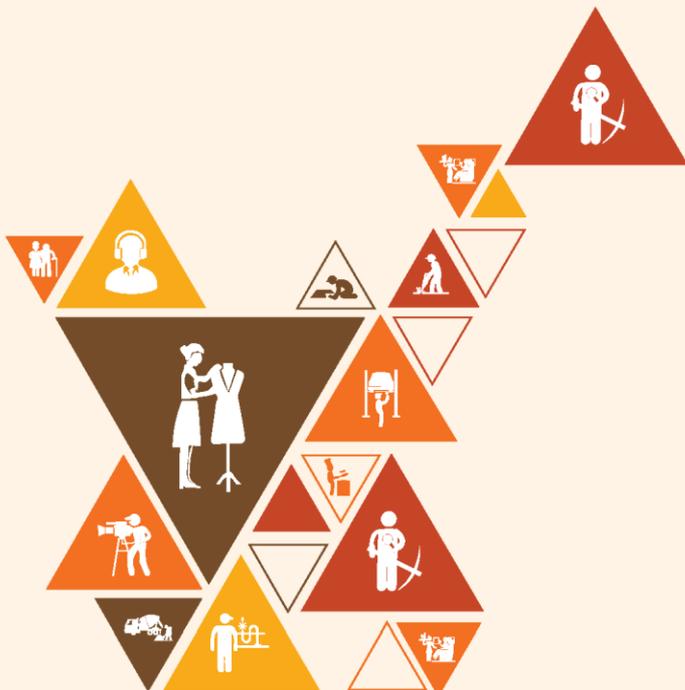
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## 2. Preparation for Setting Up Micro Irrigation System

Unit 2.1 - Designing of Micro Irrigation Systems

Unit 2.2 - Layout of Designed Irrigation System



AGR/N1004

## Key Learning Outcomes



**After the completion of this module, the participant will be able to:**

1. List different types of micro irrigation systems such as sprinkler irrigation, drip irrigation, spray irrigation and subsurface irrigation system.
2. Explain the difference between different types of irrigation systems.
3. List various parameters to be assessed while planning the installation of a micro-irrigation system.
4. Explain how to evaluate the land gradient and elevation differences to select a suitable micro irrigation system.
5. Explain how to calculate the water needs of a crop during various stages of its growth.
6. Explain the relevant regulatory requirements to be adhered to in the planning and installation of an irrigation system.
7. List various tools, equipment and resources required for the installation of a micro-irrigation system.

## UNIT 2.1: Designing of Micro Irrigation Systems

### Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain how to design Micro Irrigation Systems
2. Identify the characteristics of the soil, climatic conditions, land gradient, crop, etc. essential for designing the system
3. Describe Micro irrigation principles in the design of the Micro Irrigation System in the field

### Resources to be Used

- Available objects such as a white board, duster, marker, notepad, pens, participant handbook, computer, projector, flip charts.
- Power point slides, pictures / posters indicating designing of micro irrigation systems.
- Video films describing the procedure of designing of micro irrigation systems.

### Ask

- Do you know about micro irrigation?
- Do you know about the designing of micro irrigation systems?

### Elaborate

With the help of participants handbook elaborate the following:

- Key points in designing an Irrigation system
- Step-by step design procedure for sprinkler irrigation system

## Activity

**Purpose:** The purpose of this activity is to understand the process of designing micro irrigation system

**Expected time:** 20-30 minutes

**Resources:** Videos, PPT, white board etc

**Methodology:** Demonstration, Discussion

**Instructions:**

- With the help of few videos show the students the process of designing micro irrigation systems.
- Motivate students to engage in the video.
- Conduct a question answer session at the end of the video session.
- Appreciate the students who were actively asking questions.

## Demonstrate

- Demonstrate the step wise procedure for designing of sprinkler irrigation system.
- Motivate the participants to observe the demonstration carefully.
- During demonstration clarify all doubts of the participants.

## Notes of Facilitation

- Address the queries of the participants related to the topic.
- Participants may be asked to search online for detailed information on how to design and construct micro irrigation system.
- Plan a field visit to nearest farm to show them how to design sprinkler irrigation system.
- Participants should be provided with practical exposure.

## Exercise

### Key Solutions to PHB Exercises

1. To determine soil type, take a sample of soil and observe its texture, structure, and colour. Soil texture can be determined by feeling the soil and observing how it clumps together, while soil structure refers to the arrangement of soil particles into aggregates. Soil colour can also provide clues about the soil type.
2. Parameters to consider during the design of micro irrigation systems include crop water requirements, soil type and texture, topography and slope of the land, available water sources, water quality, and the specific micro irrigation technology being used (e.g. drip or sprinkler). Other factors may include climate, rainfall patterns, and environmental regulations.

## UNIT 2.2: Layout of Designed Irrigation System

### Unit Objectives

**After the completion of this unit, the participant will be able to:**

1. Explain how to do layout of designed Micro irrigation systems
2. Describe Layout irrigation system as per the legend used in drawing
3. Elaborate how to Handle the site deviation if required
4. Take note of basics of crop cultivation such as spacing, water requirement, spacing of the crop stand, nature of rooting etc.

### Resources to be Used

- Available objects such as participant handbook, white board, duster, marker, notepad, pens, computer, projector, flip charts
- Power point slides, pictures or posters illustrating layout of designed irrigation system
- Schematic diagram of layout design of drip irrigation system
- Materials like Drip kit, shovel, stakes, etc.

### Ask

- How many of you know about layout/design of irrigation system?
- Have you ever seen layout of drip irrigation in a farm?

### Elaborate

With the help of participants handbook elaborate the following:

- Layout of designed irrigation system
- Crop cultivation
- System components
- Planning and design considerations

## Activity

**Purpose:** The purpose of this activity is to understand the layout of micro irrigation system.

**Expected time:** 30-45 minutes

**Resources:** plough, shovel, stakes, drip kit.

**Methodology:** Discussion, practical

**Instructions:**

- Divide the class into 4-5 groups and take them to nearby field.
- Ask the participants observe the layout of micro irrigation system of the field.
- Allot each group a demo plot and ask them to layout irrigation system in their own plot.

## Say

- Sum up the key learning features of above activity. Emphasis and elaborate on important aspects of each group discussion topic.

## Notes for Facilitation

- Arrange relevant handouts on layout of designed irrigation systems.
- Focus on learning by doing.
- Fix up the meeting with KVKs and progressive farmers for timely field visits and demonstration regarding layout of micro irrigation.
- Arrange innovative videos related to design of micro irrigation system.
- Encourage the students to design micro irrigation system in their own field.

## Exercise

**Key Solutions to PHB Exercises**

1. Valves
2. Emitters
3. d







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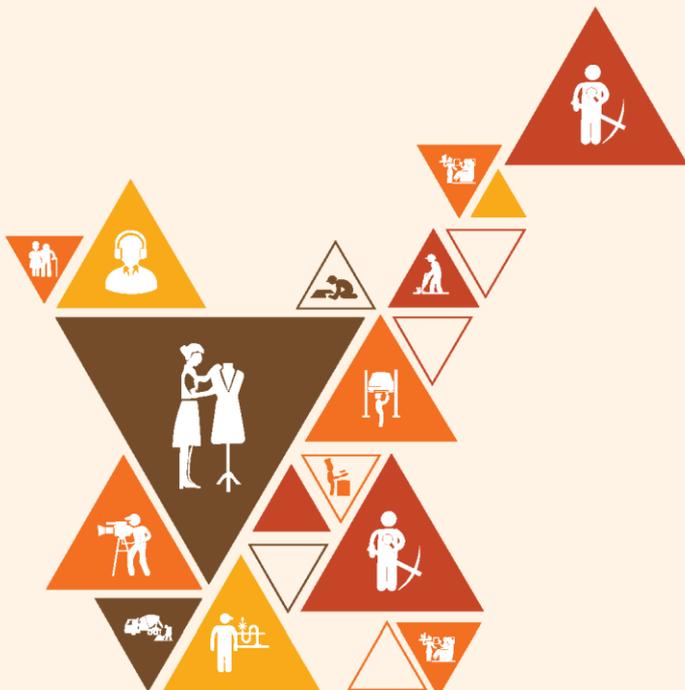


## 3. Installation of Micro Irrigation System

Unit 3.1 - Components of Micro Irrigation System

Unit 3.2 - Installation Techniques

Unit 3.3 - Training of Farmers



AGR/N1005

## Key Learning Outcomes



**After the completion of this module, the participant will be able to:**

1. Describe the process of connecting various components and fittings to prepare a micro-irrigation system.
2. Explain the advantage of using an irrigation timer.
3. Describe the process of installing a water pump.
4. Explain the concept of fertigation system and the advantages of using it.
5. Explain the process of testing the functioning of a micro-irrigation system after installation and carrying out the necessary troubleshooting.
6. Explain the importance of following the maintenance schedule for a micro-irrigation system.
7. Describe the process of retrieving the micro-irrigation system after harvesting and installing it again before planting the next crop

## UNIT 3.1: Components of Micro Irrigation System

### Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe various components of MIS
2. Explain various parts of the MI units for timely fit and installation

### Resources to be Used

- White board, duster, markers, notepad, pens, participant handbook, computer, projector, flip charts, power point slides indicating components of micro irrigation system, drip irrigation equipment like pump, automatic back flush, fertilizer injector, drip lines, drippers, pressure gauge, disk filter, micro jets, sprinklers, micro soaker hose, misters, automatic flush valves etc.

### Elaborate

With the help of participants handbook elaborate the following:

- Components of Micro Irrigation System (MIS)

### Activity

**Purpose:** The purpose of this activity is to understand about the different components of MIS.

**Expected time:** 40-45 minutes

**Resources:** Overhead projector, laser pointer.

**Methodology:** Demonstration, Discussion

**Instructions:**

- Display the pictures of different components of MIS.
- Ask the participants to identify them and note down the answers in their notepad.
- See if they have correctly identified the component or not.
- Ask the participants to discuss about the purpose of different components of MIS.
- Motivate them to engage them in activity and clear doubts of the participants.

## Notes for Facilitation



- Ensure that all the participants are well equipped with different components of micro irrigation system.
- Pre arrange slides/charts or visuals for better understanding of the topic.
- Ask the students if have any doubts regarding the topic.
- Visit an agricultural farm to show the participants the different components of micro irrigation system.
- Make the classroom more participatory.

## Exercise



### Key Solutions to PHB Exercises

1. Components of an irrigation system include: water source, pumping unit, mainline, valves, control system, distribution network, emitters, filters, and accessories.
2. Refer section 3.1.1 of PHB.

## UNIT 3.2: Installation Techniques

### Unit Objectives

**After the completion of this unit, the participant will be able to:**

1. Describe about use of right components at the right place for better installation
2. How to do quick and error free installation of the MIS

### Resources to be Used

- White board, duster, marker, notepad, pens, participant handbook, computer, projector, flip charts, power point slides or videos describing installation techniques of micro irrigation system, drip irrigation equipment like pump, pipes, emitters, end cap, flush valve, “y” connector, back flow preventor , fertilizer injector, filters, pressure regulator, etc.

### Ask

- Does anyone know the technique to install micro irrigation system (MIS) in farm field?
- What are tools or equipment required for the installation of MIS?

### Elaborate

With the help of the participants handbook elaborate the following:

- Designing of irrigation layout
- Water delivery method
- Types of drip emitter
- Flow rate and spacing
- The procedure to install various components of MIS

### Demonstrate

- The procedure to install various components of MIS.
- During demonstration ask the participants to observe the process carefully.

## Activity

**Purpose:** The purpose of this activity is to get to know the process of preparing disinfectant solution

**Expected time:** 60-90 minutes

**Resources:** pen, notebook, relevant tools and chemicals

**Methodology:** Hands on, Discussion

**Instructions:**

- Divide the class into 4-5 groups.
- Take the groups to nearby field.
- Ask the groups to complete these tasks:
  - ✓ Peg out (demarcate) a block according to an irrigation design plan.
  - ✓ Dig conveyance system trenches according to specifications.
  - ✓ Install irrigation pipes, valves, and filters.
  - ✓ Back-fill the trenches according to specifications.
  - ✓ Test the irrigation system.

## Notes for Facilitation

- Assist the participants to understand the topic clearly with active participation.
- Organize visit or establish linkage to farm for technical and practical sessions and hands on experience.
- Engage Micro irrigation technician to discuss and demonstrate the installation technique.
- Ensure sufficient pictorial presentation for learning, arrange for visual aids, power point presentations, flip charts etc.

## Exercise

### Key Solutions to PHB Exercises

1. Tools/equipment required for setting up the Micro irrigation system are: Polyethylene tubing, Emitters, Connectors, Pressure regulator, Filters, Punch tool, Scissors, Pressure gauge, Valves, Backflow preventer, PVC cement
2. Steps for error-free installation of Micro Irrigation System: Plan the system layout, Install the mainline, Install the control valves, Install the lateral lines, Install emitters, Install filters and pressure regulators, Install a backflow preventer, Install the pressure gauge, Turn on the water supply and flush the system, Adjust the system for optimal performance.

## UNIT 3.3: Training of Farmers

### Unit Objectives

**After the completion of this unit, the participant will be able to:**

1. Train farmers on using the system
2. Explain farmers on how to retrieve the system after harvest and again laying the pipelines

### Resources to be Used

- White board, duster, marker, notepad, pens, participant handbook, computer, projector, charts, videos, power point slides describing drip irrigation for greenhouse vegetable production, specific images of different components of drip irrigation etc.

### Ask

- How can you train the farmers regarding installation of Micro irrigation system?
- Do you know about the components of training of farmers?
- What are the benefits of drip irrigation to the farmers?

### Elaborate

With the help of the participants handbook elaborate the following:

- Training of farmers
- Greenhouse-herb and vegetable production
- Drip irrigation for greenhouse vegetable production
- Benefits of drip irrigation

### Team Activity

- Divide the class into 4-5 groups and assign each group to collect information on any one of the following topics with respect to any selected village:
- Ask the group leader to make presentation on the same:
  - ✓ Different irrigation methods used by village farmers
  - ✓ Major economic activities within a village pertaining to greenhouse technology
  - ✓ Drip irrigation for greenhouse technology
  - ✓ Benefits of drip irrigation to village farmers

**Say**

- Sum up the key learning features of above group discussion topics. Emphasis and elaborate on important aspects of each group discussion topic.

**Field Visit**

- Take the participants to nearby greenhouse and arrange for live demonstration on drip irrigation for greenhouse vegetable production.
- This will help to witness how to plan drip irrigation system for green house and what are different components of a drip irrigation system, irrigation frequencies and time of individual irrigations.

**Notes for Facilitation**

- Arrange relevant reference material based on content in participant handbook.
- Assist all participants to understand the concept.
- Carry some pictures and show some videos on Greenhouse-herb and vegetable production.
- Constantly motivate each student to participate to improve their presentation skill, use of tools etc.
- Relevant websites or you tube links may be shared for more detailed information on drip irrigation.

**Exercise****Key Solutions to PHB Exercises**

1. To train and address farmers regarding the establishment of micro irrigation system:
  - Conduct training programs and workshops on the benefits and importance of micro irrigation system.
  - Provide hands-on training to farmers on the installation and maintenance of micro irrigation system.
  - Use local language and visual aids to explain the technical aspects of the system.
  - Demonstrate the installation process in the farmer's field and encourage farmer participation.
  - Form farmer groups and provide support in the form of technical guidance and assistance.
  - Monitor the performance of the system and provide feedback to farmers to improve their understanding and implementation of the system.
2. Black Polyethylene Pipe







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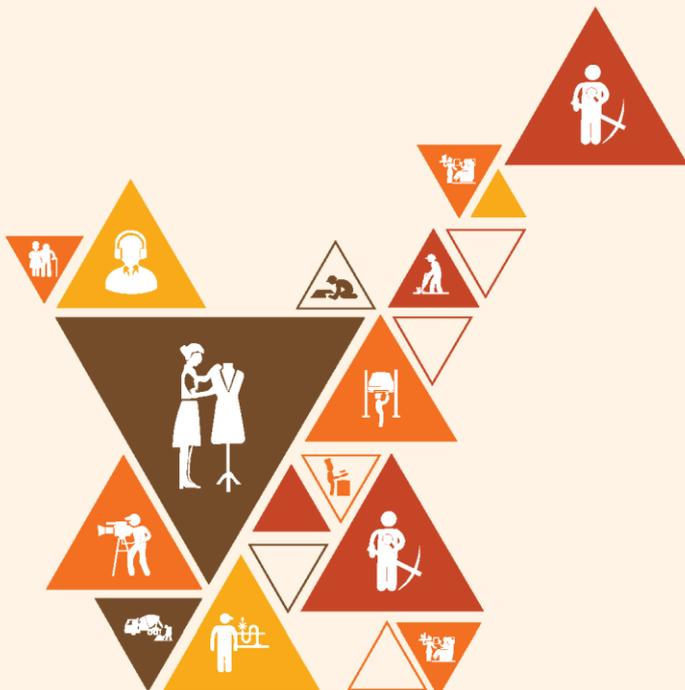
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## 4. Repair and Maintenance of the Micro-Irrigation System

Unit 4.1 - Trouble Shooting the Problems that Occur in the Farmer's Field

Unit 4.2 - Maintenance of Micro Irrigation System



AGR/N1006

## Key Learning Outcomes



**After the completion of this module, the participant will be able to:**

1. Describe the process of conducting regular checks on a micro-irrigation system to identify the repair and maintenance needs.
2. Describe the process of carrying out regular repair and maintenance of the micro-irrigation system.
3. Describe the process of carrying out chlorine/ acid treatment to remove salts such as carbonates, bi-carbonates, iron and calcium from the micro-irrigation system.
4. Explain the importance of recycling and disposing different types of waste as per the applicable regulatory requirements

## UNIT 4.1: Trouble Shooting the Problems that Occur in the Farmer's Field

### Unit Objectives

After the completion of this unit, the participant will be able to:

1. Identify various problems farmer may come across in the farmer's field
2. Address the common problems during the installation of the system

### Resources to be Used

- Participant handbook, pens, notepad, computer, projector, white board, flip charts, marker, duster, sticky notes, videos, PPT slides on troubleshooting problems of Micro irrigation systems, etc.

### Ask

- In your opinion what are the problems that can occur in the MIS?
- How can you troubleshoot the problems that occur in the farmer's field?
- Do you know about irrigation efficiencies for various MIS?

### Explain

- Troubleshooting the problems that occur in the farmer's field

### Elaborate

With the help of the participants handbook elaborate the following:

- Constraints and risks featured by Micro irrigation system (MIS)
- Possible improvements to micro irrigation techniques
- Irrigation efficiency for various Micro irrigation techniques

## Role Play

- Ask for a role play between 2-3 participants to enact a scene in village setting e.g. complaining farmer, Micro irrigation technician (lead role), and neighbours. Place some noticeable things within the environment e.g. micro irrigation system (MIS) in one corner of the farm.
- During the role play one participant (complaining farmer) would complain about problems in his/her MIS and other participant (Micro irrigation technician) would demonstrate how to troubleshoot the problems that occur in MIS.
- At the end of the play, comment on observed positive and negative points, re-emphasize the need of careful listening of complain, looking into detail of environment etc.

## Notes for Facilitation

- Make sure the participants are well aware on how to identify problem in MIS and remedy for the same.
- Enumerate irrigation efficiency for various MIS and describe trouble shooting the problems.
- Field demonstration and hands on training is necessary.
- Micro irrigation technician to demonstrate how to troubleshoot problems in MIS could be invited.

## Exercise

### Key Solutions to PHB Exercises

1. Problems faced in micro irrigation system may include clogging of emitters, improper water distribution, leaks in the system, high maintenance requirements, and inadequate water pressure.
2. To deal with the problems faced in micro irrigation system:
  - Regularly inspect and maintain the system
  - Use appropriate filters and pressure regulators to prevent clogging and ensure proper water distribution
  - Repair leaks promptly
  - Ensure proper design and installation of the system
  - Use appropriate emitters and spacing to achieve optimal water application
  - Monitor water pressure and make necessary adjustments
  - Provide farmer training and technical support to address any issues that arise.

## UNIT 4.2: Maintenance of Micro Irrigation System

### Unit Objectives

After the completion of this unit, the participant will be able to:

1. Do system cleaning as per the field situation in terms of type of soil and its other characteristics
2. Fix the system clogging due to fertigation
3. Follow various maintenance guidelines prescribed for a given micro irrigation system.

### Resources to be Used

- Participant handbook, pens, notepad, computer, projector, white board, flip charts, marker, duster, relevant digital content, PPT slides or videos on maintenance operations of micro irrigation systems, audio-visual aids, pump, filter, hydro-cyclone valves etc.

### Ask

- How many of you know about maintenance of micro irrigation system?
- Why it is important to maintain micro irrigation system?
- What do you mean by 'Automation'?

### Explain

- Maintenance of Micro Irrigation system

### Elaborate

With the help of the participants handbook elaborate the following:

- General maintenance guidelines
- Automation
- Design procedures

## Demonstrate

- Demonstrate in the field for cleaning of micro irrigation system clogged due to contamination of water, algae and bacterial growth and precipitation.
- During demonstration ask the participants to observe cleaning process carefully.
- Ask the participants if they have any doubts.

## Team Activity

- Divide the class into three teams.
- Assign one topic to each group from below list.
- No team should get the same topic.
- Give sufficient time for teams to refer to the text in participant handbook related to assigned topic and discuss among them.
- Facilitate team members to answer any query related to topics.
  - ✓ Maintenance
  - ✓ Automation
  - ✓ Design procedures
- After completion of discussion of groups, each team will take their turn and will present the assigned topic in front of class. This will facilitate peer learning.

## Do

- Summarize the key points discussed during the activity and ask learners to reflect on what they have learned.

## Notes for Facilitation

- Trainer must organize the visit to a farm to give demonstration and exposure to real situation of maintenance operations of Micro irrigation system.
- Arrange for the material for demonstration whenever possible.
- Prearrange slides, pictures or videos specific to the topic.
- Constantly motivate each student to participate.
- Involve the participants through group activities, discussions and learning by doing.

## Exercise

### Key Solutions to PHB Exercises

1. Common problems in micro irrigation system include clogging of emitters, leaks, pressure issues, uneven water distribution, and maintenance issues.
2. To clean micro irrigation system:
  - Flush the system with clean water before and after the growing season
  - Use appropriate filters to prevent clogging
  - Install a screen filter at the water source to prevent debris from entering the system
  - Use a flush valve to flush out debris from the system
  - Chemically clean the system with an appropriate cleaning solution as recommended by the manufacturer.







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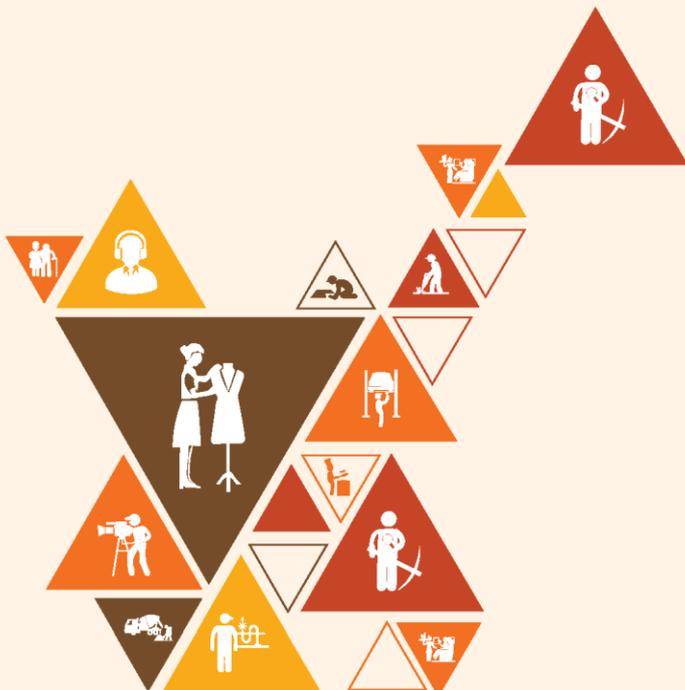
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# 5. Hygiene and Cleanliness

Unit 5.1 - Personal Hygiene Practices

Unit 5.2 - Cleanliness Around the Workplace



AGR/N9903

## Key Learning Outcomes



**After the completion of this module, the participant will be able to:**

1. Explain the requirements of personal health, hygiene and fitness at work.
2. Describe common health-related guidelines laid down by the organizations/ Government at the workplace.
3. Explain the importance of good housekeeping at the workplace.
4. Explain the importance of informing the designated authority on personal health issues related to injuries and infectious diseases.

## UNIT 5.1: Personal Hygiene Practices

### Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe the process for maintaining good hygienic practices at workplace.
2. Explain the follow the workplace sanitization norms including distancing from sick people.

### Resources to be Used

- Available objects such as a participant handbook, white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

### Say

- Greet the participants and before beginning the session, recapitulate the previous session discussions.

### Ask

- Do you understand by the term “Hygiene”.?

### Explain

Explain with the help of PHB :

- Workplace Hygiene
- Personal Hygiene
- Washroom Hygiene
- Security measures for the safety of employees and other

### Activity

**Purpose:** To understand the need for personal hygiene

**Methodology:** Discussion for 15 minutes.

**Expected Outcome:** Participants have to list the external parts of the body that need to be kept clean and healthy, while explaining why it is needed.

- Put up the power point slide and start a discussion around the subject – what is personal hygiene and why it is needed.

**Do**

- During the activity, encourage the participants to ask questions and have active participation.
- At the end of the activity, clarify the doubts the participants.
- Provide your own expert advice and opinion regarding the topic.

**Notes for Facilitation**

- Conclude the unit by calling for volunteers to sum up one by one the learning on importance of sanitizing the workplace, the procedure to sanitize and disinfect work area.
- Encourage active participation and engagement from students, such as through group discussions and hands-on exercises.
- Provide a balance of both theoretical and practical information on the use PPEs, Cleaning disinfectants and other objects needed in this process.
- Get participants to open up their participant handbooks and solve the exercises given at the end of the unit. Discuss the answers.

**Exercise****Key Solutions to PHB Exercises****A. Short Questions**

1. One of the best ways to protect yourself from getting gastro or infectious diseases.
2. Wear face mask, frequently wash your hands, avoid touching your eyes, nose, etc.
3. Barrier face covering, surgical masks, N95 Respirators, etc.

**B. Multiple Choice Questions**

1. Personal Protective Equipment
2. 2019
3. Homemade face mask

**C. Fill in the Blanks**

1. Work environment
2. 2014
3. Before start the work

**D. State True/False.**

1. True
2. True
3. True

## UNIT 5.2: Cleanliness Around the Workplace

### Unit Objectives

**After the completion of this unit, the participant will be able to:**

1. Describe the importance of workplace safety.
2. Explain about PPE equipment/kit.
3. Explain cleaning, disinfection and pest control measures.
4. Describe the importance of drainage and waste disposal around workplace.
5. Describe the importance of labeling and risk assessment practices in workplace.

### Resources to be Used

- Available objects such as participant handbook, white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

### Say

- Greet the participants and before beginning the session, recapitulate the previous session discussions.

### Ask

- Have you ever heard about PPE ?

### Elaborate

With the help of participants handbook elaborate the following:

- Inspection of Personal Protective Equipment (PPE).
- Cleaning and disinfection
- Pest Control system
- Drainage and Waste disposal

## Activity

**Purpose :** To perceive the topic and time will be 20 minutes.

**Methodology :** Pen and paper

- Divide the participants into groups
- Ask the participants to label the chart paper “Tips For Cleanliness”.
- Now discuss the points of every group.

## Notes for Facilitation

- Encourage active participation and engagement from students, such as through group discussions and hands-on exercises.
- Provide a balance of both theoretical and practical information on the use PPEs, Cleaning disinfectants and other objects needed in this process.
- Get participants to open up their participant handbooks and solve the exercises given at the end of the unit.

## Exercise

### Key Solutions to PHB Exercises

#### A. Short Questions

##### 1. Workplace Safety Inspection Checklists

- Employer posting of safety guidelines in a public and visible place
- Record-keeping of safety permits, occupational injuries and employee training records
- Safety and health program existence, consistency and participation
- Medical services and first aid availability, proximity and response

##### 2. Methods of Disinfection

- Chemical Disinfectants
- Chlorine and chlorine compounds
- Formaldehyde
- Glutaraldehyde
- Hydrogen peroxide
- Lodophors

3. Risk happens across all the organizations whether it is public, private or semi government. The process of assessing, monitoring, and responding to the risks in order to reduce their impact is achieved through the implementation of a risk management framework. Risk management framework is a basic conceptual structure used to address the risks faced by an organization. Refer section 12.2.9 in PHB.

**B. Multiple Choice Questions**

1. Both of the above
2. All of the above
3. All of the above

**C. Fill in the Blanks**

1. To decrease
2. Soil and organic material

**D. State whether True or False**

1. True
2. True
3. True

# Notes



A large rectangular area containing 30 horizontal lines for writing notes.





## Key Learning Outcomes



**After the completion of this module, the participant will be able to:**

1. List the Personal Protective Equipment (PPE) required at the workplace.
2. Describe the commonly reported hazards at the workplace.
3. Describe the hazards caused due to chemicals/pesticides/fumigants.
4. Describe the basic safety checks to be done before the operation of any equipment/machinery.
5. Describe the common first aid procedures to be followed in case of emergencies.
6. State measures that can be taken to prevent accidents and damage s at the workplace.
7. Explain the importance of reporting details of first aid administered, to the reporting officer/doctor, in accordance with workplace procedures.
8. State common health and safety guidelines to be followed at the workplace.

## UNIT 6.1: Safety at the Workplace

### Unit Objectives

**After the completion of this unit, the participant will be able to:**

1. Explain basic safety checks before operating all machinery and vehicles
2. Identifying work that requires plant protection equipment
3. Explain the dangers of insecticides/fumigants and their safety measures
4. Discuss the use tools and materials safely and correctly and put them back in designated storage locations when not in use.
5. Explain the dispose of waste safely and correctly in a designated area
6. Identify the risks to those working around you and take action to reduce the risks associated with tasks in the workplace
7. Explain acts in a way that minimizes environmental damage
8. Explain about in case of any kind of accident, immediate consult the concerned person and take appropriate action to reduce the future risk.
9. Explain the use of emergency procedures according to Company standards
10. Informs administration about first aid as per workplace procedure

### Resources to be Used

- Available objects such as a participant handbook, white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

### Say

- Good day and welcome all the participants to the training session. Recall the key points of previous session discussion.

### Elaborate

- Elaborate the following topics with the help of participant handbook, audio visual aids etc.
  - ✓ Safety guidelines
  - ✓ Health hazards
  - ✓ Health risk factors
  - ✓ Steps of operation
  - ✓ Farm equipment inspection
  - ✓ Personal Protective Equipment
  - ✓ Emergency Procedures

## Activity



**Purpose:** To acquaint participants with the emergency situations that occur at the workplace.

**Resources:** Presentation slides.

**Methodology:** Quiz

**Expected Outcome:** Participants will be able to identify the emergency situations that can occur at the workplace.

- Show the presentation slides and ask the participants to identify the emergency situations one by one. Note their response.
- Post the Quiz, show the presentation slide with the correct answers.

## Say



- Sum up key learnings of the above discussion.

## Notes for Facilitation



- Assist all groups to understand the topic clearly through visualization.
- Encourage the participants to maintain their own records.
- Keep some exercises handy for the activity.
- Constantly motivate each student to participate.
- Address the queries of the participants and clear all the doubts participants.

## Exercise



### Key Solutions to PHB Exercises

1. (a) All the equipments and tools used on the day is pre-inspected.  
(b) All workplaces are inspected and any hazards are taken care of.  
(c) If unable to remove or protect against the hazard, a warning sign should be provided in such case.
2. Chemical safety checklist
  - (a) Separate storage area for pesticides
  - (b) Adequate supply of water
  - (c) Warning sign- NO SMOKING
  - (d) Availability of suitable PPE
3. Emergency procedures
  - (a) Apply first aid upon exposure or injury by equipment or during pesticide overexposure
  - (b) Giving proper rest to the person under heat stress
  - (c) Call the local doctor or drive in personal to the nearest emergency treatment center.







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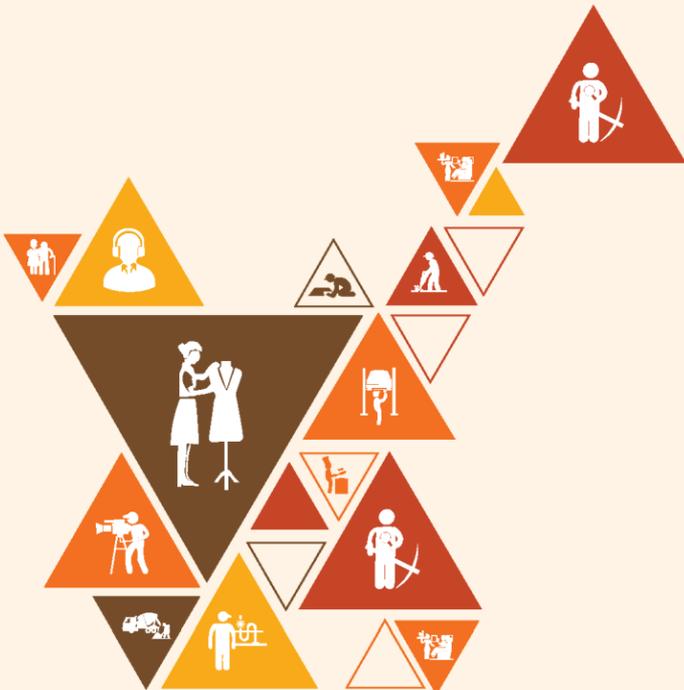


## 8. Annexures

Annexure I - Training Delivery Plan

Annexure II- Assessment Criteria

Annexure III- QR Codes –Video Links



## Annexure I

### Training Delivery Plan

Training Delivery Plan			
<b>Program Name:</b>	Micro-Irrigation Technician		
<b>Qualification Pack Name &amp; Ref. ID</b>	AGR/Q1002		
<b>Version No.</b>	3.0	<b>Version Update Date</b>	17/11/2022
<b>Pre-requisites to Training (if any)</b>	11th grade pass OR 10th Pass with 2 Years of relevant experience OR 10th Class Pass and pursuing continuous regular schooling OR 8th Class with 3 Years of relevant experience Or Certificate-NSQF Level- 4 (Irrigation Service Technician) with 6 months of relevant experience OR Previous relevant qualification of NSQF Level 3 with minimum education as 5th grade pass with 2 Years of relevant experience OR Previous relevant qualification of NSQF Level 3.5 with 1 year relevant experience		
<b>Training Outcomes</b>	<p><b>At the end of the program, the learner should have acquired the listed knowledge and skills to:</b></p> <ul style="list-style-type: none"> <li>• Describe the process of setting up a micro-irrigation system.</li> <li>• Demonstrate the process of installing the micro-irrigation system.</li> <li>• Demonstrate the process of carrying out the repair and maintenance of the micro-irrigation system.</li> <li>• Explain the basic entrepreneurial activities for small enterprise.</li> <li>• Describe the process of undertaking employability and entrepreneurial practices.</li> <li>• Explain the importance of following inclusive practices for Persons with Disabilities (PwD) and gender equality at work.</li> <li>• Demonstrate various practices to maintain personal hygiene, cleanliness, and safety at the Workplace</li> </ul>		

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
1	Introduction T: 5:00 (HH:MM)	1. Orientation	<ul style="list-style-type: none"> <li>• Introduce fellow participants</li> <li>• Build rapport with fellow students and their trainer</li> <li>• Explain the overall training outcomes of the programme</li> </ul>	Bridge Module	Team activity: Number game	Chairs, round table in U shape sitting shape	T: 1:30
		2. Importance of Irrigation System in India	<ul style="list-style-type: none"> <li>• Describe the importance of micro irrigation system in Indian agriculture</li> <li>• Explain the types of irrigation system</li> </ul>		Lecture, stage presentation, group presentations and discussion	Participant handbook (PHB) Projector, system facilitating power point presentations, round tables arranged in U shape for healthy discussion, white board, marker pen of different colors	T: 3:30

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
2	Preparation for Setting up Micro Irrigation System T:25:00 P:60:00 (HH:MM)	1. Introduction to Micro Irrigation Systems	<ul style="list-style-type: none"> <li>Define Micro Irrigation Systems and its significance</li> <li>Explain the advantages and disadvantages of Micro Irrigation Systems</li> </ul>	AGR/N1004 PC1-PC4, PC7, PC8, PC11, PC12, KU1-KU5, KU7, KU8, GS1-GS9	Lecture, stage presentation, discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 3:00 P: 4:00
		2. Soil and Climate Conditions for Micro Irrigation Systems	<ul style="list-style-type: none"> <li>Explain the importance of soil and climate conditions for Micro Irrigation Systems</li> <li>Identify the characteristics of soil and climate for Micro Irrigation Systems</li> </ul>		Lecture, stage presentation, role plays, demonstration and discussion	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 2:00 P: 6:00
		3. Land Gradient and Crop Characteristics for Micro Irrigation system	<ul style="list-style-type: none"> <li>Explain the significance of land gradient and crop characteristics in Micro Irrigation Systems</li> <li>Identify the suitable land gradient and crop characteristics for Micro Irrigation Systems</li> </ul>		Lecture, stage presentation, discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		4. Principles of Micro Irrigation Systems	<ul style="list-style-type: none"> <li>Explain the principles of Micro Irrigation Systems</li> <li>Describe the components of Micro Irrigation Systems</li> </ul>		Lecture, stage presentation, discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 4:00 P: 4:00
		5. Layout Design of Micro Irrigation Systems	<ul style="list-style-type: none"> <li>Explain the importance of layout design in Micro Irrigation Systems</li> <li>Identify the steps involved in layout design</li> </ul>		Lecture, stage presentation, discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		6. Irrigation System Layout as per Legend	<ul style="list-style-type: none"> <li>Describe the legend used in Micro Irrigation System layout</li> <li>Explain the significance of each symbol used in the legend</li> </ul>		Lecture, stage presentation, discussion	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 3:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		2. Components of Micro Irrigation System	<ul style="list-style-type: none"> <li>Identify the various components of Micro Irrigation System</li> <li>Explain the function of each component in Micro Irrigation System</li> </ul>	AGRN1005 PC4, PC6, PC7, PC9, PC11-PC14, PC17, PC20, PC21, KU1-KU5, KU7, KU8, GS1-GS9	Lecture, stage presentation, role plays, group presentations and discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		3. Types of Micro Irrigation System	<ul style="list-style-type: none"> <li>Identify the various types of Micro Irrigation System</li> <li>Explain the function and benefits of each type of Micro Irrigation System</li> </ul>		Lecture, stage presentation, role plays, group presentations and discussion, practical	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 2:00 P: 6:00
		4. Parts of Micro Irrigation Units	<ul style="list-style-type: none"> <li>Identify the various parts of Micro Irrigation Units</li> <li>Explain the function of each part in Micro Irrigation Units</li> </ul>		Lecture, stage presentation, discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		5. Selection of Components for Micro Irrigation System Installation	<ul style="list-style-type: none"> <li>Explain the importance of selecting the right components for Micro Irrigation System installation</li> <li>Identify the factors to be considered while selecting components for Micro Irrigation System installation</li> </ul>		Lecture, stage presentation, role plays, demonstration and discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		6. Pipe Sizing for Micro Irrigation System Installation	<ul style="list-style-type: none"> <li>Explain the importance of pipe sizing for Micro Irrigation System installation</li> <li>Identify the factors to be considered while sizing pipes for Micro Irrigation System installation</li> </ul>		Lecture, stage presentation, discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		7. Fitting and Installation of Micro Irrigation System Components	<ul style="list-style-type: none"> <li>Explain the importance of proper fitting and installation of Micro Irrigation System components</li> <li>Demonstrate the proper fitting and installation techniques of Micro Irrigation System components</li> </ul>		Lecture, stage presentation, discussion, demonstration	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 2:00 P: 6:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		8. Troubleshooting Micro Irrigation System Installation Issues	<ul style="list-style-type: none"> <li>• Explain the common installation issues faced in Micro Irrigation System</li> <li>• Identify the ways to troubleshoot Micro Irrigation System installation issues</li> </ul>	AGRN1005 PC4, PC6, PC7, PC9, PC11-PC14, PC17, PC20, PC21, KU1-KU5, KU7, KU8, GS1-GS9	Lecture, stage presentation, role plays, group presentations and discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		9. Quality Check of Micro Irrigation System Installation	<ul style="list-style-type: none"> <li>• Explain the importance of quality check in Micro Irrigation System installation</li> <li>• Identify the ways to ensure quality check of Micro Irrigation System installation</li> </ul>		Lecture, stage presentation, role plays, group presentations and discussion, practical	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 2:00 P: 6:00
		10. Micro Irrigation System Maintenance and Repair	<ul style="list-style-type: none"> <li>• Explain the importance of maintenance and repair of Micro Irrigation System</li> <li>• Identify the common maintenance and repair issues faced in Micro Irrigation System</li> </ul>		Lecture, stage presentation, discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		11. Importance of Training for Farmers on Micro Irrigation System Use	<ul style="list-style-type: none"> <li>• Explain the importance of training farmers on Micro Irrigation System use</li> <li>• Identify the key aspects to be covered in farmer training on Micro Irrigation System use</li> </ul>		Lecture, stage presentation, role plays, demonstration and discussion, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		12. Hands-on Training for Participants on Micro Irrigation System Use	<ul style="list-style-type: none"> <li>• Provide hands-on experience to participants on Micro Irrigation System use</li> <li>• Identify the practical challenges faced by farmers in using Micro Irrigation System</li> </ul>		Practical, demonstration, field visits, practical	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	P: 8:00
		13. Maintenance and Repair Training for Participants	<ul style="list-style-type: none"> <li>• Provide training to farmers on maintenance and repair of Micro Irrigation System</li> <li>• Identify the common maintenance and repair issues faced by farmers in Micro Irrigation System</li> </ul>		Lecture, demonstration, discussion, practical	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 2:00 P: 6:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		14. Retrieving Micro Irrigation System after Harvest	<ul style="list-style-type: none"> <li>Explain the importance of retrieving Micro Irrigation System after harvest</li> <li>Identify the steps involved in retrieving Micro Irrigation System after harvest.</li> </ul>	AGRN10 05 PC4, PC6, PC7, PC9, PC11- PC14, PC17, PC20,PC 21, KU1- KU5, KU7, KU8, GS1-GS9	Lecture, stage presentation, role plays, group presentations and discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 02:00 P: 06:00
		15. Drip irrigation	<ul style="list-style-type: none"> <li>Explain the process of implementing drip irrigation for greenhouse vegetable production</li> </ul>		Lecture, stage presentation, role plays, group presentations and discussion	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 04:00 P: 03:00
		16. Greenhouse	<ul style="list-style-type: none"> <li>Explain herb and vegetable production in greenhouse</li> <li>Explain wet and dry grower's watering technique</li> </ul>		Lecture, stage presentation, discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 03:00 P: 05:00
		17. Media preparation	<ul style="list-style-type: none"> <li>Describe physical properties of growing media</li> <li>Describe the chemical properties of growing media.</li> </ul>		Lecture, stage presentation, and discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T:03:00 P: 05:00
		18. Emitters used for drip irrigation	<ul style="list-style-type: none"> <li>Describe types of emitters used for drip irrigation</li> <li>Elaborate on spacing required for emitters.</li> </ul>		Lecture, stage presentation, discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 04:00 P: 04:00
		19. Recap	<ul style="list-style-type: none"> <li>Recapitulate complete module learning</li> </ul>		Lecture, stage presentation, discussion	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 04:00 P: 04:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
4	Repair and Maintenance of the Micro-Irrigation System T: 30:00 P: 30:00 (HH:MM)	1. Introduction to Micro Irrigation System Maintenance	<ul style="list-style-type: none"> <li>Introduce the importance of maintaining a micro-irrigation system for optimal crop growth.</li> <li>Provide an overview of the different problems that farmers may encounter with their micro-irrigation system.</li> </ul>	AGR/N1006 PC1-PC5, PC7, PC10, PC12-PC14, KU2-KU4, KU6-KU9, GS1-GS7	Lecture, stage presentation, role plays, group presentations and discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 5:00 P: 2:00
		2. Identifying Problems in the Micro-Irrigation System	<ul style="list-style-type: none"> <li>Identify and classify problems that can occur with micro-irrigation systems.</li> <li>Provide solutions for each type of problem.</li> </ul>		Lecture, stage presentation, role plays, group presentations and discussion	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 4:00 P: 4:00
		3. Common Problems during Installation	<ul style="list-style-type: none"> <li>Identify common installation problems.</li> <li>Provide solutions for each type of problem.</li> </ul>		Lecture, stage presentation, discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 3:00 P: 4:00
		4. System Cleaning	<ul style="list-style-type: none"> <li>Explain the importance of system cleaning.</li> <li>Demonstrate different methods of cleaning based on soil type and system characteristics.</li> </ul>		Lecture, stage presentation, role plays, demonstration and discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 4:00 P: 4:00
		5. Clogging Due to Fertigation	<ul style="list-style-type: none"> <li>Explain the causes and effects of clogging due to fertigation.</li> <li>Provide solutions for preventing and addressing clogging issues.</li> </ul>		Lecture, stage presentation, discussion	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 4:00 P: 3:00
		6. Maintenance Guidelines for Micro-Irrigation Systems	<ul style="list-style-type: none"> <li>Discuss different maintenance guidelines for a given micro-irrigation system.</li> <li>Demonstrate how to perform regular maintenance tasks.</li> </ul>		Lecture, stage presentation, discussion, demonstration	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 2:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		7. Practical Demonstration of Micro Irrigation System Maintenance	<ul style="list-style-type: none"> <li>Provide participants with practical experience in system maintenance in the field.</li> </ul>	AGR/N1006 PC1-PC5, PC7, PC10, PC12-PC14, KU2-KU4, KU6-KU9, GS1-GS7	Practical, demonstration, field visit	PHB, available objects such as a white board, duster, flip chart, paper, pen, marker etc. PPT showing relevant images	T: 2:00 P: 6:00
		8. Recap	<ul style="list-style-type: none"> <li>Recapitulate complete module learning</li> </ul>		Lecture, activities, role plays, group presentations and discussion, Activities	PHB, Chart papers, pencil, eraser, sharpener, scale, Projector, system facilitating power point presentations	T: 06:00 P: 02:00
5	Sanitation and Hygiene T: 03:00 P: 03:00 (HH:MM)	1. Personal hygiene practices	<ul style="list-style-type: none"> <li>Describe the process for maintaining good hygienic practices at workplace.</li> <li>Explain the follow the workplace sanitization norms including distancing from sick people</li> </ul>	AGR/N9903 PC1-PC4, PC6, PC8, KU1-KU10, KU13 GS1-GS9	Classroom lecture, discussion, demonstration activity	Whiteboard, marker, pen, note pad, participant handbook, related power point presentation, etc.	T: 2:00 P: 1:00
		2. Cleanliness Around the Workplace	<ul style="list-style-type: none"> <li>Importance of workplace safety.</li> <li>Explain the know abouts of PPE kit.</li> <li>Explain cleaning, disinfection and pest control measures</li> </ul>		Classroom lecture, discussion, demonstration , activity	Whiteboard, marker, pen, note pad, participant handbook, related power point presentation, etc.	T: 1:00 P: 2:00
6	Safety and Emergency Procedures T: 12:00 P: 12:00 (HH:MM)	1. Maintain standard safety procedures at the workplace	<ul style="list-style-type: none"> <li>Explain general safety procedures and identify work that requires plant protection equipment.</li> <li>Describe various safety procedures while handling material equipment, hazardous material or tool</li> </ul>	AGR/N9903 PC5, PC9, PC14-PC18, KU11, KU12, KU114-KU17, GS1-GS9	Lecture, stage presentation, role plays, group presentations and discussion	PHB, audio visual aids on worker's safety, White board, duster, flip chart board/paper	T: 4:00 P: 3:00
		2. Participation in safety awareness campaigns	<ul style="list-style-type: none"> <li>Explain safety related protocols and first aid, evacuation and emergency procedures</li> <li>Describe the protection measures from hazardous chemicals, machines, sharp tools and other equipment</li> </ul>		Classroom lecture, discussion, demonstration activity	PHB, audio visual aids on worker's safety, White board, duster, flip chart board/paper	T: 3:00 P: 4:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		3. Reporting of hazards	<ul style="list-style-type: none"> <li>• Explain the nature of work environment and receiving proper instructions</li> <li>• Describe effective communication on potential hazards, other issues and problems and reporting it to supervisor</li> </ul>		Lecture, Discussion, demonstration	Whiteboard, marker, pen, note pad, participant handbook, related power point presentation, etc.	T: 2:00 P: 3:00
		4. Recap	Recapitulate complete module learning		Lecture, activities, role plays, group presentations and discussion, field visits, demonstrations etc.	PHB, Projector, display screen, white board, marker, duster, paper, pen PPT and relevant audio-visual aids	T: 3:00 P: 2:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
7.	Employability Skills (60hrs)	Introduction to Employability Skills	<ul style="list-style-type: none"> <li>Describe importance of Employability Skills</li> <li>Prepare a note on different industries, trends, required skills</li> </ul>	DGT/VSQ /N0102	Classroom lecture, Team Activity	White-Board and, Markers, Chart Paper and Sketch pens, LCD Projector	1:30
		Constitutional Values: Citizenship	<ul style="list-style-type: none"> <li>Detail the principles of constitution of India</li> <li>Identify the various environmentally sustainable practices</li> </ul>		Classroom lecture, Team Activity	Laptop, PPT, White board Markers, note pad, pen etc.	1:30
		Becoming a Professional in the 21st Century	<ul style="list-style-type: none"> <li>Discuss relevant 21st century skills required for employment</li> <li>Practice critical thinking and decision making skills</li> </ul>		Classroom lecture, Team Activity	Laptop, PPT, White board Markers, note pad, pen etc.	2:30
		Basic Skills-I	<ul style="list-style-type: none"> <li>Read English text with appropriate articulation</li> <li>Practice basic English words, sentences, punctuation</li> </ul>		Classroom lecture, Team Activity, Role play, video session	Laptop, PPT, White board Markers, note pad, pen etc.	5:00
		Basic Skills-II	<ul style="list-style-type: none"> <li>Demonstrate active listening and reading skills</li> </ul>				Practical, demonstration, role play
		Career Development and Goal Setting	<ul style="list-style-type: none"> <li>Identify well-defined short- and long-term goals</li> <li>Explain how to build a career pathway</li> <li>Conduct job market research</li> <li>Discuss how to set career goals.</li> </ul>	DGT/VSQ /N0102	Class room lecture, discussion, demonstration, practical	Laptop, PPT, White board Markers, note pad, pen etc.	2:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Trainin g Tools / Aids	Duration
		Communication Skills	<ul style="list-style-type: none"> <li>Explain the importance of communication at workplace</li> <li>Demonstrate effective communication strategies</li> <li>Demonstrate how to communicate effectively using verbal and nonverbal communication</li> </ul>	DGT/VSQ /N0102	Class room lecture, discussion, demonstration, practical	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	5:00
		Diversity and Inclusion	<ul style="list-style-type: none"> <li>Explain the need of diversity at workplace</li> <li>Identify the various PwD policies applicable at workplace</li> <li>Discuss the significance of the POSH Act</li> </ul>	DGT/VSQ /N0102	Class room lecture, Inter-active discussion	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	2:30
		Financial and Legal Literacy	<ul style="list-style-type: none"> <li>Discuss various financial institutions, products, and services</li> <li>Explain the common components of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), tax deductions</li> </ul>	DGT/VSQ /N0102	Class room lecture, demonstrations, group discussion, practical	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	5:00
		Essential Digital Skills-I	<ul style="list-style-type: none"> <li>Detail the use and features of various MS Office tools, like MS Word, MS Excel, MS PowerPoint, etc.</li> <li>Demonstrate how to operate digital devices</li> <li>Create an e-mail id and follow e- mail etiquette to exchange e -mails</li> <li>Describe the role of digital technology in day-to-day life and the workplace</li> </ul>	DGT/VSQ /N0102	Class room lecture, discussion, Demonstration, practical, learning by doing	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	6:00
		Essential Digital Skills-II	<ul style="list-style-type: none"> <li>Practice Digital skills</li> </ul>		Demonstration, practical, learning by doing		4:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		Entrepreneurship	<ul style="list-style-type: none"> <li>Describe the types of entrepreneurship and enterprises</li> <li>Describe the 4Ps Of Marketing- Product, Price, Place and Promotion and Apply the mas Per requirement</li> <li>Create a sample Business plan, For the selected business</li> </ul>	DGT/VSQ /N0102	Class room lecture, discussion, Demonstration, practical	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	7:00
		Customer Service	<ul style="list-style-type: none"> <li>Identify types of customers and how to deal with them</li> <li>Identify methods to get customer feedback and how to implement them</li> <li>Explain various tools used to collect customer feedback</li> <li>Discuss the significance of maintaining hygiene and dressing appropriately</li> </ul>	DGT/VSQ /N0102	Class room lecture, activity, role play, video session	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	5:00
		Apprenticeships and Jobs	<ul style="list-style-type: none"> <li>Practice personal grooming strategies</li> <li>Illustrate the use of online platforms for job hunting</li> <li>Detail the concept of Apprenticeship</li> <li>Demonstrate how to enroll for Apprenticeship programs.</li> <li>Draft a professional Curriculum Vitae (CV)</li> <li>Role play a mock interview</li> </ul>	DGT/VSQ /N0102			8:00

## Annexure II

### Assessment Criteria

#### CRITERIA FOR ASSESSMENT OF TRAINEES

(For Updated 'Assessment Criteria', please refer to Qualification Pack of this Job role available at <https://www.nqr.gov.in/>)

Assessment Criteria for ASCI- Micro-Irrigation Technician	
Job Role	Micro-Irrigation Technician
Qualification Pack	AGR/Q5201
Sector Skill Council	Agriculture

S.No.	Guidelines for Assessment
1.	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2.	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3.	Assessment will be conducted for all compulsory NOS, as well as the selected elective NOS/set of NOS.
4.	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5.	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria.
6.	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7.	In case of <i>unsuccessful completion</i> , the trainee may seek reassessment on the Qualification Pack.

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N1004.Prepare to set up the micro-irrigation system	30	40	-	30	100	25
AGR/N1005.Install the micro-irrigation system	30	40	-	30	100	30
AGR/N1006.Perform repair and maintenance of the micro-irrigation system	30	40	-	30	100	25
AGR/N9903.Maintain health and safety at the workplace	40	25	-	35	100	10
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
<b>Total</b>	<b>150</b>	<b>175</b>	<b>-</b>	<b>125</b>	<b>450</b>	<b>100</b>

## Annexure-III

## QR Codes –Video Links

Chapter No.	Unit No.	Topic	QR Code Links	QR code (s)
<b>Chapter -1</b> Introduction to the Role of Micro-Irrigation Technician	Unit 1.1 - Importance of Irrigation System in India	Micro Irrigation Technician	<a href="https://youtu.be/xTOnj2u1oGo">https://youtu.be/xTOnj2u1oGo</a>	 Micro Irrigation Technician
		Importance of Irrigation in Indian Agriculture	<a href="https://youtu.be/SwKRSWnTpDM">https://youtu.be/SwKRSWnTpDM</a>	 Importance of Irrigation in Indian Agriculture
		Overview of Micro-Irrigation Technician	<a href="https://youtu.be/pA0rsSXNHXU">https://youtu.be/pA0rsSXNHXU</a>	 Overview of Micro-Irrigation Technician
<b>Chapter -2</b> Preparation for Setting Up Micro Irrigation System	Unit 2.1 - Designing of Micro Irrigation Systems	Design of Micro Irrigation	<a href="https://youtu.be/gvISY9sjIOc">https://youtu.be/gvISY9sjIOc</a>	 Design of Micro Irrigation
		Design of Drip Irrigation System	<a href="https://youtu.be/tC1qLuHu0_g">https://youtu.be/tC1qLuHu0_g</a>	 Design of Drip Irrigation System
		Types of Irrigation System	<a href="https://youtu.be/Z9HAy9EYKks">https://youtu.be/Z9HAy9EYKks</a>	 Types of Irrigation System
<b>Chapter -3</b> Installation of Micro Irrigation System	Unit 3.1 - Components of Micro Irrigation System	Components of Micro Irrigation System	<a href="https://youtu.be/UtcwD4WZsbY">https://youtu.be/UtcwD4WZsbY</a>	 Components of Micro Irrigation System

Chapter No.	Unit No.	Topic	QR Code Links	QR code (s)
		Installing a Water Pump	<a href="https://youtu.be/OTI9iSGIObU">https://youtu.be/OTI9iSGIObU</a>	 Installing a Water Pump
		Concept of fertigation system	<a href="https://youtu.be/dD3wbplInFs">https://youtu.be/dD3wbplInFs</a>	 Concept of fertigation system
<b>Chapter -4</b> Installation of Micro Irrigation System	Unit 4.1 - Repair and Maintenance of the Micro- Irrigation System	Micro Irrigation System and Its Maintenance	<a href="https://youtu.be/XrmZ9hOJhL">https://youtu.be/XrmZ9hOJhL</a> c	 Micro Irrigation System and Its Maintenance





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