



**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



N.S.D.C.  
National  
Skill Development  
Corporation

Transforming the skill landscape



**ASCI**

Agriculture Skill Council of India

# Facilitator Guide



Sector  
**Agriculture**

Sub-Sector  
**Forestry, Environment &  
Renewable Energy Management**

Occupation  
**Agro Forestry Management**

Reference ID: **AGR/Q6101**, Version **3.0**  
NSQF Level: **3**

## Bamboo Grower



Scan this QR to access eBook  
<https://eskillindia.org/Home/handbook/84>





**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 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

This facilitator guide is intended to empower the trainer/facilitator to prepare the participant to become ‘Bamboo Grower’ as per the Qualification Pack (QP).

The objective of the guide is to provide an approach map for interacting with the trainees undergoing training on the job role. The aim of the course is to provide both theoretical and practical knowledge to the trainees, and also to guide them.

The guide is neither a substitute nor complete road map, but an aid to help you 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 handbook. 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.

Facilitator with the help of this guide will be able to build among participants:

- **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 help them learn more by field visits and providing hands on training. It is expected that irrespective of the region, knowledge on all aspects of Bamboo Grower 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



Tips

## Table of Contents

S.No.	Modules and Units	Page No.
1.	<b>Introduction to the Role of a Bamboo Grower</b>	<b>1</b>
	Unit 1.1 - Overview and Scope Of Bamboo Grower	3
2.	<b>Process of Propagating Bamboo Samplings in the Nursery (AGR/N6101)</b>	<b>7</b>
	Unit 2.1 - Tools Required for the Nursery Preparation	9
	Unit 2.2 - Preparation for Planting Site	11
	Unit 2.3 - Sowing Methodologies	13
	Unit 2.4 - Irrigation, Weed Control and Fertilizer Application	15
	Unit 2.5 - Pruning Practices	17
3.	<b>Process of Selecting the Bamboo Variety, Site and Preparing the Field (AGR/N6103)</b>	<b>22</b>
	Unit 3.1 - Prepare the Land Layout	24
	Unit 3.2 - Preparation of Soil for Transplanting	27
	Unit 3.3 - Prepare Planting Material for Bamboo Cultivation	29
4.	<b>Process of Transplanting And Maintaining the Bamboo Saplings (AGR/N6104)</b>	<b>33</b>
	Unit 4.1 - Transplanting the Saplings	35
5.	<b>Process Of Carrying Out Pruning and Weeding in Bamboo Crop (AGR/N6105)</b>	<b>40</b>
	Unit 5.1 - Weeds and Control Process	42
	Unit 5.2 - Disposal of Removed Weed and other Waste	44
	Unit 5.3 - Mulching and its Importance	46
6.	<b>Process of Carrying Out Irrigation, Nutrient Management and Intercropping (AGR/N6106)</b>	<b>50</b>
	Unit 6.1 - Irrigation Systems	52
	Unit 6.2 - Root Spreading and Soil Texture	54
	Unit 6.3 - Water Drainage System	56
	Unit 6.4 - Irrigation Schedule and Management	58
7.	<b>Process of carrying out integrated Pest And Disease Management for Bamboo Crop (AGR/N6107)</b>	<b>62</b>
	Unit 7.1 - Characters of Insects Pests, their diseases and precaution	64
	Unit 7.2 - Integrated Pest and Disease Management	67
8.	<b>Process of Carrying Out Harvesting, Post-harvest Processing and Marketing Activities (AGR/N6108)</b>	<b>71</b>
	Unit 8.1 - Harvesting	73
	Unit 8.2 - Post - Harvest and Storage	75
9.	<b>Hygiene and cleanliness (AGR/N9903)</b>	<b>80</b>
	Unit 9.1 – Hygiene and Workplace Housekeeping	82
10.	<b>Safety and emergency procedures (AGB/N9903)</b>	<b>86</b>
	Unit 10.1 – Emergency Procedures and First Aid	88
11.	<b>Employability Skills 30 Hours (DGT/VSQ/N0101)</b>	<b>93</b>
	To access MSDE Upgraded Employability Skills, click here: <a href="https://eskillindia.org/NewEmployability">https://eskillindia.org/NewEmployability</a>	
12.	<b>Annexures</b>	<b>95</b>
	Annexure I - Training Delivery Plan	96
	Annexure II - Assessment Criteria	106
	Annexure III - QR Codes – Video Links	108







**Skill India**  
कौशल भारत-कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



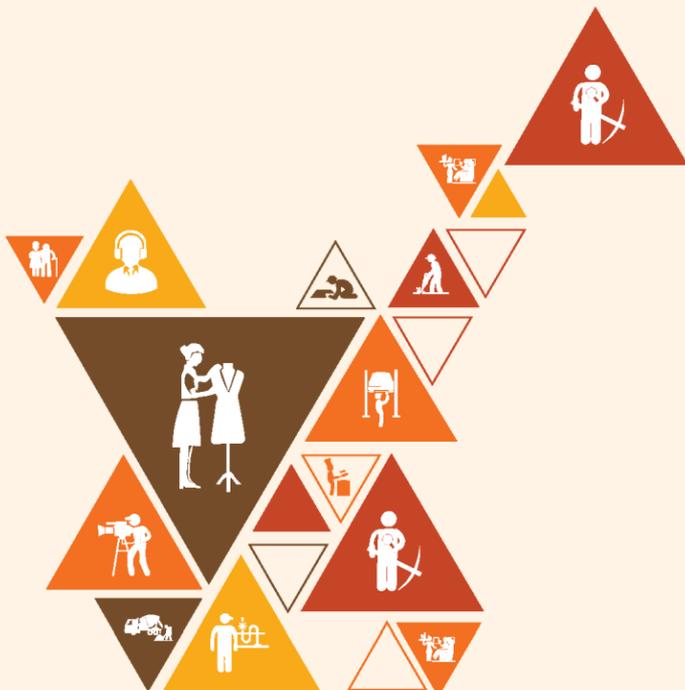
**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape



# 1. Introduction to the Role of a Bamboo Grower

Unit 1.1 – Overview and Scope of Bamboo Grower



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 Bamboo Grower.
3. Identify various employment opportunities for a Bamboo Grower.

## UNIT 1.1 : Overview and Scope of Bamboo Grower

### Unit Objectives

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

1. Explain the scope of the Agro-Industry.
2. Explain the job description of Bamboo Grower.
3. Explain the scope of Agro-forestry in India.
4. Explain the various uses of Bamboo.

### Resources to be Used

- Participant handbook, white board, marker, duster, computer, projector, flip charts, pen, notebook, etc.

### Say

- Greet all participants with smile and appreciate participants for being on time and for participating in this course.
- Give your brief introduction to participants, and describe the purpose of the training session .

### Ask

- Have you seen bamboo tree at forest or home or garden?
- In your opinion what can be role of a bamboo grower?
- What are different types of bamboo species?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:elaborate:

- Size and Scope of the agriculture industry and its sub-sectors
- Scope of Agro-forestry in India
- Job description of Bamboo Grower
- Importance of Bamboo
- Bamboo uses over time
- Important Bamboo species in India

## Activity

**Purpose :** To recall the different species of Bamboo. This activity may be planned for 20-30 minutes.

**Methodology:** Pen and paper activity

**Procedure :**

- Divide the participants into 2 or 3 groups.
- Ask the participants to enlist the different important species of Bamboo in India and get a volunteer out from every group one by one to write the points on the board.
- Then discuss those points with the participants.

## Say

- Appreciate the students for their participation.

## Notes for Facilitation

- You can invite representative of any organization who employs bamboo grower .
- Indicate briefly the option for career progression and career mobility of bamboo grower completing training under NSQF framework.
- Ask the participants if they have any questions.
- Encourage other participants to answer it and encourage peer learning in the class.
- Show more innovative images as per topic requirements for better understanding of the topics.
- Ask them to answer the questions given in the participant handbook.

## Exercise

### Key Solutions to PHB Exercises

1. The farmer is responsible for cultivation of bamboo on a given piece of land and is responsible right from procurement of seed material to the sale of farm produce in the market. For more, Refer section 1.1.3.
2. There is tremendous scope for agro forestry because India has achieved self-sufficiency in food production. Now its attention is becoming more focused on the ecological problems and shortage of fuel, fodder and other outputs as well as unemployment. For more details, Refer section 1.1.2.
3. The most valuable economic resource for the locals in tropical and sub-tropical region may be bamboo. Bamboo is such a versatile plant, individuals have used it in a variety of ways. Some purposes of bamboo in the past include are Food for animals and livestock, Medicine, Musical instruments, Carved artwork, Irrigation systems, Weapons, Cutting boards, bamboo steamers and other kitchenware, Clothing, bedding and other fabrics.
4. Different species of Bamboo in India  
1. Bambusa bakcoa, 2. Bambusa nutans, 3. Bambusa polymorpha, 4. Bambusa vulgaris, etc.  
For more, Refer section 1.1.6.
5. Refer section 1.1.1.







**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape



## 2. Process of Propagating Bamboo Sapling in the Nursery

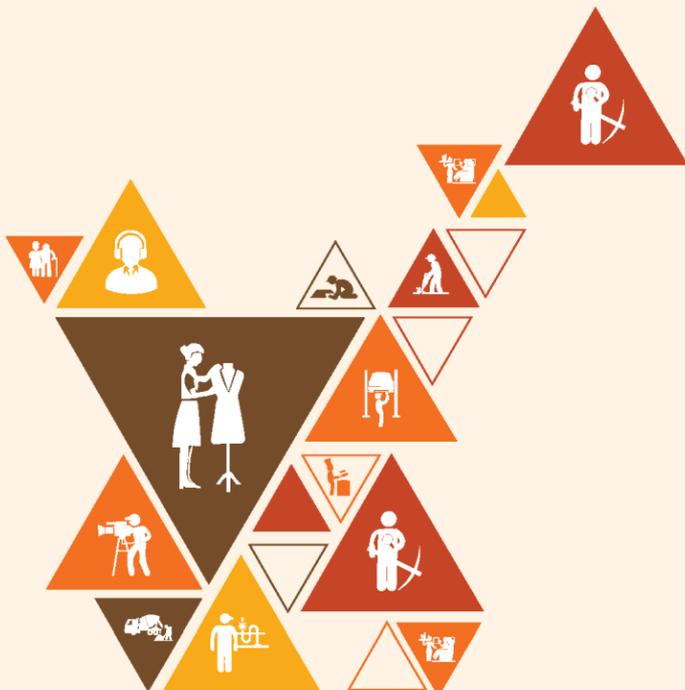
Unit 2.1 - Tools Required for the Nursery Preparation

Unit 2.2 - Preparation for Planting Site

Unit 2.3 - Sowing Methodologies

Unit 2.4 - Irrigation, Weed Control and Fertilizer Application

Unit 2.5 - Pruning Practices



AGR/N6101

## Key Learning Outcomes

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

1. Explain the criteria for selecting a site for nursery propagation of bamboo saplings such as the appropriate climatic conditions, adequate exposure to sunlight.
2. Describe different methods for the cultivation of bamboo saplings such as planting culms, cutting, tillering, layering, etc.
3. Describe the process of selecting a vendor and procuring the resources required for the cultivation of bamboo saplings
4. Explain the importance of maintaining safe and hygienic storage and transportation of the planting material and other resources.
5. Explain the importance of ensuring effective drainage in the nursery bed.
6. Explain the importance of providing immediate care such as water and fertiliser to the saplings.
7. State the irrigation schedule and the recommended quantity of water for irrigating bamboo saplings.
8. Explain the importance and ways of protecting saplings from strong winds, overexposure to sunlight and fluctuations in temperature.
9. State the recommended temperature and humidity for storing bamboo saplings.
10. Explain the importance of transporting bamboo saplings to the field safely and maintaining the required level of moisture during transit.

## UNIT 2.1: Tools Required for the Nursery Preparation

### Unit Objectives

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

1. Explain the tools required for the nursery preparation.
2. Discuss the selection of nursery site.
3. Describe the nursery size and layout.
4. Explain about the temporary and permanent nurseries.
5. Discuss the nursery infrastructure and equipment.

### Resources to be Used

- Available objects such as participant handbook, white board, duster, marker, computer, projector, flip charts, pen, notebook, sticky notes etc.
- Slides in power point presentation showing specific innovative images of tools and equipment used in nursery, factors affecting selection of nursery site, types of nurseries, etc.
- Nursery tools like spades, picks, pruning scissors, wheelbarrows, etc.

### Ask

- Have you ever been to nursery? If yes, share your observations.
- What are the different factors to be considered for selection of nursery site for bamboo?
- Have you ever used any tools or implements of nursery?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Species suitable for Cultivation
- Selection of Nursery site
- Nursery size and Layout
- Temporary and Permanent Nurseries
- Nursery infrastructure and equipments

### Field Visit

**Purpose :** To provide live experience of bamboo nursery construction to participants.

**Methodology :** Field visit and the time varies according to the location, it may be 2 hours.

- Take the participants to nearby farm/nursery.
- Show the participants the different types of nurseries-temporary & permanent nurseries.
- Ask the participants to observe the size and layout of bamboo nurseries carefully.

- Arrange experts for live demonstration on construction of bamboo nurseries.
- Ask some of the participants to carry out nursery preparation of bamboos.
- At the end of the field visit, answer the query of the participants.
- Supervise and guide the participants to carry out the procedure for raising bamboo nursery.
- Encourage the participants to make notes for better recollection of the topic.

## Demonstrate



- Take the participants to demonstration area and show them the tools and equipment used in nursery and ask them to identify.
- Describe maintenance of tools and equipment to prevent their wear and tear, increase their life and prepare the tools for next time use.

## Notes for Facilitation



- Arrange relevant reference material based on content in participant handbook.
- Assist all participants to understand the concept.
- Ensure sufficient pictorial presentation for learning, arrange for visual aids, power point presentations, charts, flip charts etc.
- Ensure essential tools in the classroom for identification and explanation.

## Exercise



### Key Solutions to PHB Exercises

1. Although about 18 genera and 134 species of bamboos are reported from India, only less than 20 species have been identified as commercially important. This includes native species as well as exotic ones from the South east Asian region which have been in cultivation for along time in parts of the country and other that are expected to be suitable in the different agro climatic zones. For more details, Refer section 2.1.1.
2. Several factors should be considered in selecting a site for a bamboo propagation nursery.
  1. Location and accessibility
  2. Water supply
  3. Topography
  4. Soil
  5. Sun and Shade

## UNIT 2.2: Preparation for Planting Site

### Unit Objectives

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

1. Explain the preparation of planting site.
2. Describe the planting site conditions.
3. Discuss the planting operations.

### Resources to be Used

- Available objects such as participant handbook, white board, duster, marker, computer, projector, flip charts, pen, notebook, sticky notes etc.
- Power point slides describing the planting site conditions.
- Illustrations or relevant videos on planting operations.
- Materials like potting containers, polybags, polythene tubes, etc.

### Ask

- What are the necessary steps to establish bamboo plantations?
- What are the different factors to be considered for raising bamboo plantations?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Guidelines suggested to aid the establishment of a productive plantation.
- Local factors to be considered before raising bamboo plantations.
- Planting site conditions:
  - ✓ Covered work space.
  - ✓ Water supply and irrigation system.
  - ✓ Storage room.
  - ✓ Potting soil.
  - ✓ Fences.
- Planting site operations:
  - ✓ Potting containers.
  - ✓ Preparation of potting soil.

## Demonstrate



- Demonstrate the following:
  - ✓ The steps to be followed for establishment of productive plantation.
  - ✓ Potting procedure of bamboo plants.
  - ✓ Preparation of potting soil.
- Motivate the participants to observe the demonstration carefully.
- Clarify the doubts of participants.

## Team Activity



**Purpose :** To enhance the knowledge on different aspects of establishing bamboo plantations and potting of bamboo plants.

**Methodology :** Learning by doing and the time varies according to the location, it may be 2 hours.

- Organize a visit to planting site with the participants.
- Motivate participants to observe the steps to be followed to establish bamboo plantations carefully.
- Divide the class into 5 groups so that they can prepare potting mix and practice potting of bamboo plants as per the demonstrated way.
- Assist the participants to carry out the activity successfully.

## Notes for Facilitation



- Ask the participants if they have any questions and clarify all the doubts of the participants.
- Arrange demonstration of potting of plants through audio visual aids.
- Fix up the meeting with KVK or some progressive farmers for timely field visit and nursery demonstration.
- Focus on learning by doing.
- Make the classroom more participatory.

## Exercise



### Key Solutions to PHB Exercises

1. Planting site condition
  1. Covered Work Space
  2. Water Supply and Irrigation System
  3. Storage Room
  4. Potting Soil
  5. Fences
2. Operating a nursery efficiently requires a strong attention to detail and a high level of quality control. Young plants are like infants and need tender loving care so that they grow healthy and strong. The nursery manager or supervisor needs to strictly enforce standard operating procedures to ensure that all the plants in production receive adequate care and attention. For more, Refer section 2.2.3.

## UNIT 2.3: Sowing Methodologies

### Unit Objectives

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

1. Explain raising of planting materials.
2. Discuss labeling, seedlings, shading watering and treatments.

### Resources to be Used

- Available objects such as a whiteboard, duster and flip chart, paper, pen, projector, computer/laptop etc.
- Power point slides describing the raising of planting materials.
- Live samples of seed/planting material of bamboo plants.
- Teaching aids and reference materials depicting relevant information on labelling, seedlings, shading, watering and treatments.

### Say

- Greet the participants and revise the key learnings of previous session discussion.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:elaborate:

- Raising of Planting material
- Labeling, Seedlings, Shading, Watering and Treatments

### Demonstrate

- Display seed, wildings, culm cuttings, offsets as propagation material.

### Field Visit

**Purpose:** To acquaint about the Micro propagation. This activity may be planned for 1-2 hours or depends on the distance of location.

**Methodology :** Live demonstration on propagation of bamboos .

- Take the participants to bamboo nursery and arrange live demonstration on propagation of bamboos.
- Ask the participants to note down the observations in their notebook.

- Also ask them to perform labelling, separation of seedlings, shading, watering and treatment functions of seedlings in groups.
- Ask the participants if they require any kind of help or not.
- The participants would be enabled to perform hands on training on propagation methods.

## Notes for Facilitation



- Arrange propagation material of bamboo plants.
- Enhance participation of students in the discussion and activities.
- Relevant videos and YouTube links related to propagation of bamboos may be shown to the participants.
- Organize a visit to bamboo nursery for better understanding of the concept.

## Exercise



### Key Solutions to PHB Exercises

1. Very young bamboo seedlings (as well as small culm cuttings) are very susceptible to sun scorch. Shade capable of blocking upto 75% of direct sunlight should be provided to protect the plants. For more, Refer section 2.3.1.
2. Labeling : When labeling the plants, it is advisable to use a coding system that not only refers to the species, but also to the provenance of the mother plant.

Seedling : When propagating by seed, it is advisable to place the seedlings of a particular species in a separate nursery block or location. Seedlings should be separated from plants of the same species that were vegetatively propagated.

Shading : Whatever planting stock issued (seedling, wildings, offsets, or cuttings) shade must initially be provided to protect them from direct sunlight.

Watering : Water is needed by young seedlings and cuttings in beds or polythene tubes. During cold weather , watering may be done once per day. In the dry season, watering should be done twice a day. As a rule , plants in the nursery should be watered regularly.

Treatments : After one month, it is recommended that sprouts from cuttings are treated with some effective fungicide (e.g., Copper sulphate) to avoid fungal attack. If necessary, farmyard manure may be applied to increase the vigour of the sprouts.

## UNIT 2.4: Irrigation, Weed Control and Fertilizer Application

### Unit Objectives

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

1. Discuss about the weed control process.
2. Explain the process of fertilizer applications.
3. Discuss about the diseases and their management.

### Resources to be Used

- Participant handbook, pens, notepad, computer, projector, white board, flip charts, marker, PPT slides on weed control and fertilizer application, specific innovative images of different diseases of bamboo species, audio-visual aids etc.

### Ask

- In what proportion fertilizers are applied on seed bed?
- What steps should be followed for weeding?
- What are common diseases in bamboo species?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Weed control.
- Fertilizer application.
- Diseases and their management.
- Irrigation

### Demonstrate

With the help of Audio-visual aids,

- The weeding procedure.
- The steps for fertilizer application.

## Activity



**Purpose:** To recall different diseases of bamboo species and their management.

**Methodology :** Pen and paper activity

**Tentative time :** 20-30 minutes

### Procedure

- Give participants the task to list out different diseases prevalent in bamboo species.
- Ask the participants to discuss amongst themselves how will they manage these diseases.
- Conduct a Q/A session after the discussion for 10-15 minutes.

## Notes for Facilitation



- Assist all groups to understand the topic clearly through visualization.
- Answer all the questions of the participant.
- Arrange audio visual aids showing innovative images of different diseases of bamboo species.
- Focus on ensuring pictorial as well as live presentation for learning.
- Involve the participants through group activities, discussions and learning by doing.

## Exercise



### Key Solutions to PHB Exercises

1. Regular weeding in the initial two to three years is very important for quicker establishment and faster growth of bamboo clumps. Refer section 2.4.1.
2. Diseases that affect the Bamboo
  1. Rot of emerging and growing culms
  2. Bamboo Blight
  3. Thread Blight

## UNIT 2.5: Pruning Practices

### Unit Objectives

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

1. Explain the general guidelines on pruning and purposes of tree pruning.
2. Discuss about the timing of pruning and types of pruning.
3. Describe about the pruning techniques and pruning practices.

### Resources to be Used

- Participant handbook, pens, notepad, computer, projector, white board, flip charts, marker, PPT slides on pruning practices, small chainsaws, pole saws, tubular saws, long pruners, pruning knife etc.

### Say

- Greet the participants and recall the previous session learning outcomes.

### Elaborate

Refer to participant handbook and explain:

- The steps involved in pruning.
- General guidelines on pruning.
- Purpose of tree pruning.
- Types of pruning.
- Timing of pruning.
- Safety measures.
- Pruning techniques.

### Demonstrate

- Demonstrate pruning techniques in bamboo.
- Also demonstrate the safety measures to be taken for pruning operations.
- During demonstration, encourage the participants to observe the pruning technique carefully and ask questions.

## Team Activity

**Purpose :** To perform the pruning techniques using appropriate tools mentioned in resources section. The duration may vary depending on location of site or may 2-3 hours.

**Methodology :** Hands on training

- Take the participants to nearby bamboo forest. Arrange for the required pruning tools.
- Divide the class into 4-5 groups and ask the groups to practice pruning operations in bamboo plants.
- During the activity assist the groups to carry out the pruning activity successfully with the help of pruning tools and demonstrate the correct method in case of anomalies.
- Clear the doubts individually.
- This activity may be done under the supervision of a horticultural expert.

## Notes for Facilitation

- Assist the participants to understand the topic clearly with active participation.
- Show more innovative images as per topic requirements for better understanding of the topics.
- Engage horticulture expert to discuss and demonstrate pruning techniques in bamboo species.
- Establish linkage with bamboo nurseries for technical and practical sessions and hands on experience.

## Exercise

### Key Solutions to PHB Exercises

1. The pruning practices involves the following steps:

- Some of the bamboo species like bambusa bambos, b. Balcooa, b. Nutans and dendrocalamus hamiltonii has a tendency to produce large number of branches at the base of the clump thus producing a congestion.
- It indirectly can affect the development of new sprouts. In order to prevent the congestion, it is advisable to prune these branches when the clump is two to three years old and continue every year preferably during the months of november to february.
- The thorns provide supplementary income for the farmer since it can be used for fencing.
- Cleaning of the clump is done by removing the dead and dying culms from the clump and thinning the clump by removal of weaker culms and this will facilitate proper growth of new shoots.
- Removal of the upper part of the culm is also recommended in areas prone to heavy wind and frost.

2. Purpose of the pruning are:

- Reducing risk and inconvenience to the public:
- Maintaining or improving health and structure of trees.
- Improving appearance of trees.

### 3. Types of Pruning are:

- Formative pruning: Selective pruning of the lateral branches of a tree so as to develop a strong and straight trunk, a well-balanced crown with properly spaced scaffolding branches and a clear central leader.
- Crown lifting: Selective pruning to remove lower branches to increase vertical clearance from ground level.
- Crown reduction: Selective pruning to reduce the overall height and spread of the crown, leaving the tree in a well-balanced and natural form and shape.
- Crown thinning: Selective pruning to remove weak, thin, crossing and live branches to reduce the density of foliage. Crown thinning should not affect the overall height and spread of the tree.
- Cleaning: Selective pruning to remove dead, withered, damaged or diseased branches.

### 4. Timing of the Pruning:

- Evergreen tree: Pruning of evergreen trees just before spring is preferred due to faster healing in the coming growing season.
- Deciduous tree: Pruning of deciduous trees after shedding leaves in winter when trees are dormant is preferred. This can minimize the risk of pest problem associated with wounding and allowing trees to take advantage of the full growing season to close and compartmentalize wounds.
- Young tree: Suitable structural pruning of young trees would facilitate the development of a straight trunk.

### 5. Refer to section 2.5.7-Pruning techniques







**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape

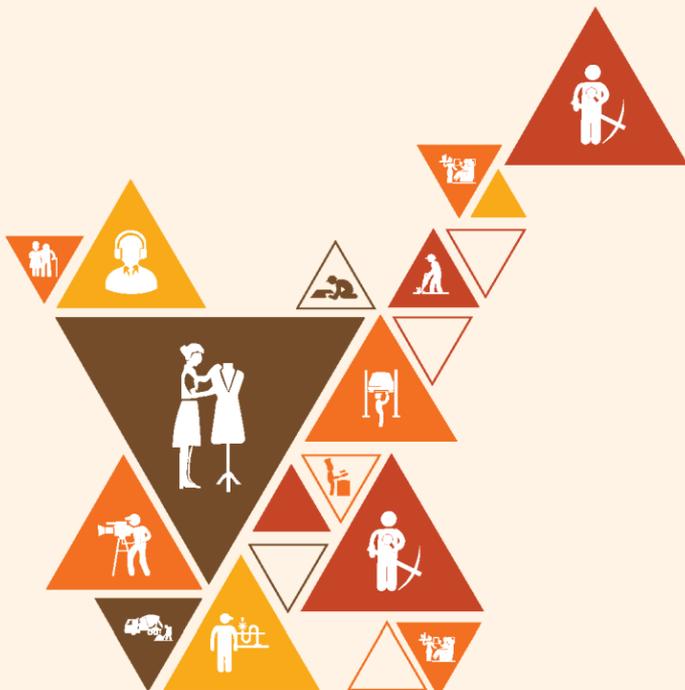


## 3. Process of Selecting the Bamboo Variety, Site and Preparing the Field

Unit 3.1 - Prepare the Land Layout

Unit 3.2 - Preparation of Soil for Transplanting

Unit 3.3 – Prepare planting material for Bamboo Cultivation



AGR/N6103

## Key Learning Outcomes

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

1. Explain the criteria for selecting a variety of bamboo to be cultivated and a site for cultivation.
2. Explain the characteristics of soil suitable for bamboo cultivation.
3. Explain the importance and process of clearing and deep ploughing the bamboo cultivation field.
4. Describe the process of sampling the field soil and getting it tested by an approved lab to determine its macro and micronutrients needs.
5. Explain the importance of applying the prescribed organic and inorganic fertilisers.
6. Explain the use of lime or gypsum to adjust the soil's pH and salinity levels.
7. Explain the importance of creating drains in the field for the effective drainage of water.
8. Explain the importance of erecting fences around the field to protect it from stray animals and other external threats.

## UNIT 3.1: Prepare the Land Layout

### Unit Objectives

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

1. Prepare land layout for planting a bamboo.
2. Undertake ploughing for bamboo.
3. Prepare bunds and trenches.
4. Prepare pits.

### Resources to be Used

- Available objects such as participant handbook, pen, whiteboard, flip charts duster, marker, projector, computer, notepad, etc.
- PowerPoint slides describing the preparation of land layout.
- Pictures or posters different tools used for ploughing.
- Tools like nangal(plough), mai(leveller), hulabarl (pointed carrying pole), kachl(sickle) etc.

### Ask

- Do you know how to prepare land for cultivation?
- Can you name some tools and implements used for land preparation?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Land layout for bamboo.
- Ploughing for bamboo.
- Preparation of bunds and trenches.
- Preparation of pits.
- Importance of applying prescribed organic and inorganic fertilisers.
- Use of lime or gypsum to adjust the soil's pH

### Demonstrate

- The procedure to prepare bunds and trenches and pits for bamboo plants.
- During demonstration, ask the participants to observe the process carefully.

## Team Activity

**Purpose :** To impart practical experience on land preparation to participants using tools as mentioned in resources section. This may be plan for 1-2 hours or depend on distance of location.

**Methodology :** Hands on practice

- Divide the class into 4-5 groups.
- Take the groups to nearby field.
- Ask the groups to complete these tasks:
  - ✓ Prepare the land layout for bamboo.
  - ✓ Peg out (demarcate) a block for bamboo plantations.
  - ✓ Dig trenches and bunds according to specifications.
  - ✓ Prepare pits according to specifications for bamboo plants.
  - ✓ Plants the bamboo plants in the pit.
  - ✓ Back-fill the pits with the mixed and enriched soil.
  - ✓ Water the bamboo plants regularly.

## Do

- Supervise and guide the participants for completing their tasks.
- Check if they have correctly prepared layout, prepared pits and planted bamboo plants as per specifications.
- Ask the participants if they need any kind of help or not.
- Appreciate for their active participation in the activity.

## Tips

- Show innovative videos on land preparation.
- Try to facilitate small area for demo plots which can be distributed among participants for hands on training.

## Notes for Facilitation

- Organize visit or establish linkage to farm for technical and practical sessions and hands on experience.
- Encourage the students to prepare their own field.
- Ensure sufficient pictorial presentation for learning; arrange for visual aids, power point presentations, etc.
- Show photographs of different ploughing used for bamboo.

## Exercise



### Key Solutions to PHB Exercises

1. The use of lime and gypsum as soil amendments can enhance crop production. The two types of material provide different outcomes in the soil profile which are important to differentiate to know when and where to best utilize these products. Lime, also known as agricultural limestone, neutralizes soil acidity and provides calcium and magnesium available for plant uptake. Gypsum is a calcium sulfate containing product that provides both calcium and sulfate to the soil system. No change in pH can be expected from a gypsum application. The calcium in gypsum can replace sodium in sodic soils or aluminum where aluminum toxicity might be a concern. Refer section 3.1.6.
2. After clearing the land and before digging the pits, the bamboo plantation area should be measured and marked with sticks from the point that will be the center of the pit.

The pit should be wide and deep enough to ensure that the roots of the bamboo plants have sufficient space, and are not restrained in their search for moisture and nutrients. It is best to prepare the pits before rainy season, and the dug out soil exposed to weather conditions.

## UNIT 3.2: Preparation of Soil for Transplanting

### Unit Objectives

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

1. Describe the preparation of the soil for plantation.
2. Explain the weed management.
3. Explain about the management of Clump.

### Resources to be Used

- Participant handbook, pen, whiteboard, flip charts, duster, marker, projector, computer, notepad.
- PowerPoint slides describing the preparation of the soil for plantation, pictures or posters on weed management, etc.

### Ask

- What is the importance of cleaning field before planting?
- What are the effects of weed in bamboo farming?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Cleaning method of field for planting.
- Trimming
- Transport the planting material
- Irrigation
- Soil condition for Bamboo Farming
- Clump Management

### Team Activity

**Purpose** : To manage weeds and clean the fields and time will be 1-2 hours.

**Methodology** : Hands on experience

- Organize a field visit to bamboo plantations.
- Divide the class into 4-5 groups to practice removing small patches of weeds.
- Also ask the groups to clean the field for planting.

## Notes for Facilitation

- Make sure the participants have thorough understanding of weed management.
- Encourage the participants to clean the field before planting bamboo plants.
- Redirect the questions to other participants to encourage active learning in the class.
- Ask the participants to complete their activities within the given time frame.
- Field demonstration and hands on training is necessary.
- Motivate the non-participating students to take part in the activity.
- Clarify all doubts of the participants.

## Exercise

### Key Solutions to PHB Exercises

1. Hardening up is to expose the seedlings to harsh conditions to make them strong so that they will be able to survive under harsh climate in the field after planting out. It is also a gradual preparation of seedlings for field conditions.
  - Hardening up process:
    - ✓ When the seedlings grow and reach the planting size, the shade should be removed to exposure to more sunshine.
    - ✓ Reduction in watering intensity (quantity) and frequency-water twice a week and later once a week.
    - ✓ Before planting out, root pruning should be carried out frequently or re-arrangement of pots to allow more adoption to stress.
    - ✓ Good preparation for out planting results in good field survival, therefore hardening off should be done 2 – 3 weeks before out planting time.
2. Refer to activity given in unit 3.2.1-Preparation of Soil for Transplanting.
3. Refer to section 3.2.3-Transport the Planting Material.
4. Refer to section 3.3.1-Clump Management.

## UNIT 3.3: Prepare Planting Material For Bamboo Cultivation

### Unit Objectives

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

1. Explain why high-yielding bamboo plantation is required.
2. About the role of a high-yielding bamboo plantation in rural development.
3. Establish a high-yielding bamboo plantation.
4. About general development attributes and advantages.
5. About the suitable agro-ecological regions.
6. Scope for small enterprise development.
7. Explain technology assessment.

### Resources to be Used

- Participant handbook, writing pad, white board, flip charts, duster, marker, projector, computer, pens, videos, PowerPoint slides of related images, etc.

### Say

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

### Elaborate

With the help of PHB or audio-visual aids, elaborate:elaborate:

- Why High-yielding Bamboo Plantations to be preferred
- Role of High-yielding Bamboo Plantations
- General development attributes and advantages.
- Suitable Agro-ecological Regions
- Scope for small enterprise development
- Requirement for Success
- Technology assessment

## 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 enlist the Role of High- yielding Bamboo Plantation.
- Now discuss the points of every group.

## Notes for Facilitation



- Field demonstration and hands on training is necessary.
- Motivate the non-participating students to take part in the activity.
- Clarify all doubts of the participants.

## Exercise



### Key Solutions to PHB Exercises

1. Refer section 3.3.1.- High- yielding Bamboo Plantation
2. General Development Attributes and Advantages
  - Income generation for poor rural people.
  - Improves and broadens farmers plant cultivation skills base, making them more able to handle shocks and empowering them with new abilities.
  - Increasing the area of managed bamboo resources.
  - Brings degraded land back into productivity and reduces erosion.
  - Promotes the sustainable increased use of bamboo as a wood substitute.
3. Refer section 3.3.5 - Small Enterprise Development
4. Refer section 3.3.7 – Technology Assessment







**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



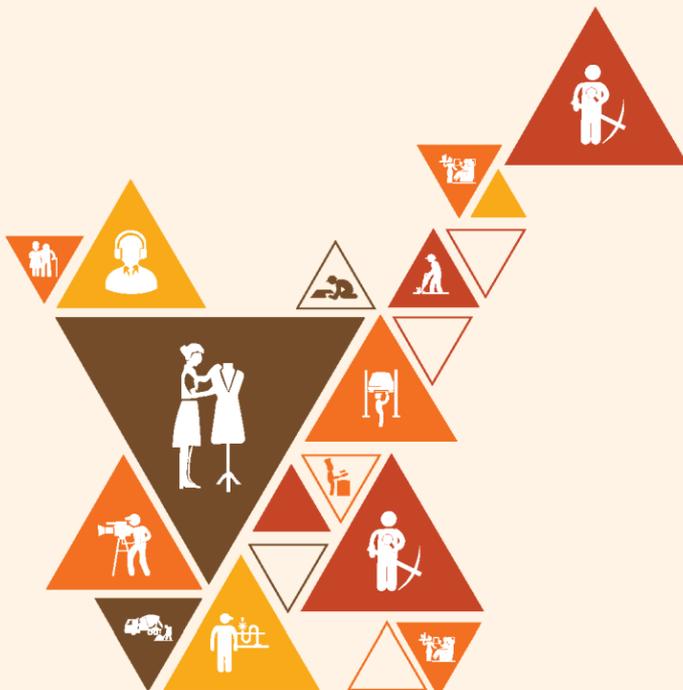
**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape



# 4. Process of Transplanting and Maintaining the Bamboo Sapling

Unit 4.1 – Transplanting the Saplings



AGR/N6104

## Key Learning Outcomes

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

1. Explain the importance of acclimatising and transplanting bamboo saplings at an appropriate temperature to ensure their survival.
2. Explain the use of the relevant tools and implements for transplanting bamboo saplings
3. State the recommended planting depth and density to be maintained while transplanting bamboo saplings.
4. Explain the importance of watering the bamboo sapling with the recommended quantity and applying the recommended fertilisers in an appropriate quantity soon after transplanting them.
5. Explain the importance and ways of protecting bamboo saplings from strong winds direct sunlight during the early stages of their growth.
6. Explain the importance of monitoring the transplanted saplings.
7. Explain the importance of irrigating bamboo sapling with an appropriate quantity of water to prevent root rot.
8. State the recommended insecticides and pesticides to be applied to bamboo saplings.

## UNIT 4.1: Transplanting the Saplings

### Unit Objectives

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

1. Explain Transplanting.
2. Explain the use of the relevant tools and implements.
3. Identify the spacing between bamboo sapling.
4. Explain the watering of Bamboo Sapling.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, commuter, pens, notepad etc.
- PPT Slides depicting various information on soil sampling and soil testing.
- Soil sampling tools such as trowel, soil tube, soil auger, a spade or a pick axe, clean jar or zip lock bag, labels, record sheet etc.
- Soil testing tools such as pH meter, EC meter, various reagents used in soil testing, etc.

### Say

- Greet the participants and revise the key learnings of previous session discussion.

### Ask

- Do you have any idea how to collect soil samples? If yes, share your views.
- What do you mean by soil testing?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Transplanting
- Soil Testing
- Analyse the Soil Nutrients
- Interpretation of Report
- Use of the relevant tools and implements for transplanting bamboo saplings
- Spacing between Bamboo Plants

## Activity



**Purpose :** To enhance the knowledge of soil sampling.

**Methodology :** Hands on experience and time may be 1-2 hrs as per the demonstration site.

- Take the participants to a nearby garden or yard and demonstrate the procedure of sampling.
- Ask them to traverse the yard and select a suitable spot for sampling and ask them on what basis the spot was selected for sampling.
- Also ask them to do soil sampling and record details of soil sample in record sheet.
- During the activity, clear the doubts of participants.
- Assign the participants to maintain record of this practical work.

## Say



- Did you find this activity helpful? I hope all of you are now acquainted with the method of soil sampling. Let us now do soil testing for the given soil sample to understand the procedure of soil testing.

## Demonstrate



- This is a skill practice and demonstration activity on soil test.
- Demonstrate the soil test procedure for pH and physico-chemical properties with the help of appropriate tools and soil testing equipment.
- Ask the students to perform this activity individually and practice. Give sufficient time to perform this activity accurately.

## Notes for Facilitation



- Ensure the participants are well equipped with methods to collect soil samples and are able to do soil testing.
- Arrange to show them various tools used for soil sampling.
- Show them a soil sample which is prepared for submission to the testing lab.
- Participants may be taken to soil testing lab to show them the procedure adopted for soil testing.
- Encourage hands on experience through practical assignments.

## Exercise



### Key Solutions to PHB Exercises

1. The roots of the bamboo plant are amazingly tough. You'll need a sharp shovel or axe to cut the root bunches for bamboo plant moving. The easiest way is to use a chainsaw. Wear protective clothing and eye covering to prevent thrown rocks or splinters. Cut down through the earth about a foot away from the clump of stems. Make a complete circle through the dirt, slicing down about 12 inches (30+ cm.).

Slide a shovel underneath the clump and rock it up out of the ground. Plunge the root clump into a bucket of water immediately. Lean the stand of bamboo against a shed or fence, as this plant doesn't do well if you lay it down on the ground. Have a moist hole already dug for the bamboo's new home. Carry the bucket to the hole and transfer the clump of bamboo from the water to the soil. Cover the roots and water the plant very well. Cover the base of the plant with organic mulch such as dried leaves or grass clippings. Bamboo loves water, especially when it's stressed, and mulch will shade the soil and help keep in as much moisture as possible.

2. Use of the relevant tools and implements for transplanting bamboo saplings:
  1. Kudali
  2. Garden fork
  3. Weeding fork
  4. Crow bar
  5. Pick-Axe
  6. Spade
  7. Hoe-cum-Rake
  8. Furrow opener
  9. Hand leveler
  10. Trowel (Khurpi)
  
3. The arrangement of plants on the area planted. The spacing between bamboo plants will **depend on the species** to be planted, the **primary goal** of the plantation, and local soil and climate conditions. The size and physical dimensions of the bamboo species to be planted is an important factor to determine the **planting density**.

**Sunlight Requirement:-**

Bamboo requires at least six hours of direct sunlight per day. In general, the more sunlight you can provide the plant, the happier it will be. So, choose a location where your bamboo will benefit from the full sun rather than partial shade. Sunlight accelerates plant growth, but younger plants need cover during summer. Additionally, too little or too much sunlight can cause problems for a species. A lot of sunlight can kill and burn the foliage of the plant.

**Irrigation:-**

Irrigation must be done regularly while the bamboos are grown on nursery beds. Immediate water should be provided at the time of transplanting seedlings from nursery to main field. It must be noted that bamboo trees are sensitive to water logging hence you must drain out the soil especially during heavy rainfall or flooding. You can also adopt drip irrigation system for better utilization of water.







**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape



**ASCI**

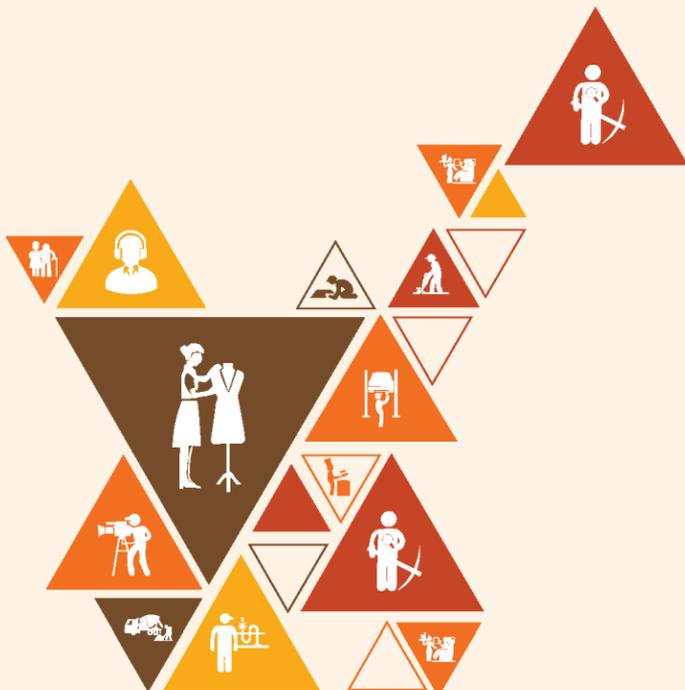
Agriculture Skill Council of India

# 5. Process of Carrying out Pruning and Weeding in Bamboo Crop

Unit 5.1 – Weeds and Control Process

Unit 5.2 - Disposal of Removed Weed and Other Waste

Unit 5.3 - Mulching and its Importance



**AGR/N6105**

## Key Learning Outcomes

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

1. Explain the use of the appropriate tools and implements such as pruner and lopper for pruning unwanted or dead culms, branches or leaves from bamboo trees.
2. Describe different methods of pruning bamboo trees.
3. State the recommended chemicals to be applied on the pruned areas on bamboo trees.
4. Explain how to utilise the pruned tree parts to prepare compost.
5. Explain the importance of pruning bamboo clumps at appropriate intervals to prevent clump congestion.
6. Explain the use of the appropriate weeding tools and implements for manual and mechanical weeding.
7. Explain the importance of disposing the eliminated weeds away from the field.

## UNIT 5.1: Weeds and Control Process

### Unit Objectives

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

1. Identify weeds and its types.
2. Discuss methods to control weeds.
3. Explain the use of appropriate tools for pruning.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, computer, flip charts, pens, papers etc.
- Power point slides on weeds and its types.
- Teaching aids such as charts/posters showcasing methods of eradication of weeds.
- Samples of different herbicides used to control weeds.

### Ask

- What is weed?
- What are different types of weed?
- How weeds can be controlled?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Weeding.
- Types of weeds.
- Weed controlling methods such as:
  - ✓ Preventative measures.
  - ✓ Curative or control measures.
- Tools for pruning

### Activity

**Purpose :** To identify the weeds and time will be 40-50 minutes.

**Methodology :** Learning by doing (Weed collection)

- Ask the participants to bring weeds found in their fields with their common names in the class.
- Keep all collected weeds and ask all the participants to identify them and how will they control weeds.

**Say**

- Did you find this activity interesting? This activity will help us to have better understanding of weeds and how to control them. I hope you will enjoy the upcoming session as well.

**Notes for Facilitation**

- Encourage participants to use biological methods to control weeds.
- Involve participants in different weed control programs for providing assistance.
- Put a chart of chemicals in the workshop with regard to uses and their doses required for different categories or types of weeds.
- Give project to trainees to collect information on the presence of different kinds of weeds in agricultural fields.

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

1. Weed controlling methods Broadly classified in two groups:

1. Preventive Measures
2. Curative or Control Measures

For more details, Refer section 5.1.2.

**2. Tools for Pruning:**

1. Pruning shears
2. Loppers
3. Hand saws

## UNIT 5.2: Disposal of Removed Weed and Other Waste

### Unit Objectives

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

1. Explain weeds disposal methods.
2. Explain the methods of pruning.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, computer, flip charts, pen, notebook etc.
- Power point slides on weeds disposal methods.

### Ask

- Why it is necessary to dispose weeds?
- What are different methods to dispose weeds?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Disposal methods of weeds:
  - ✓ Trash
  - ✓ Compost
  - ✓ Bonfire
- Methods of pruning

### Team Activity

**Purpose** : To enhance the knowledge of weed management.

**Methodology** : Practical and the time varies according to the location, it may be 2 hours.

- Arrange a visit to nearby garden for practical on weed management
- Give the task to participants to rogue weeds from the garden.
- Divide the class into 3 groups.
- Ask first group to toss the weeds in the black trash bag.
- Ask the second group to make a compost heap to dispose the weeds.
- Ask the third group to burn the weeds in faraway place.
- At the end of the activity, discuss among each other and compare the benefits of these disposal methods.

## Say



- Thank you everyone for their activity participation.

## Notes for Facilitation



- Advise the participants to put compost heap in their farm.
- Live demonstration of different methods of disposing weeds should be shown to the participants.
- Plan a trip to nearby field/garden for the better understanding of the topic.

## Exercise



### Key Solutions to PHB Exercises

1. Methods of pruning :
  1. Mastering Pruning Basics
  2. Targeting Certain Parts of the Plant
  3. Containing the Spread of Bamboo
2. Weed disposal methods :
  1. Trash
  2. Compost
  3. Bonfire

## UNIT 5.3: Mulching and Its Importance

### Unit Objectives

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

1. Explain mulching and its type.
2. Explain the Importance of mulching .

### Resources to be Used

- Available objects such as white board, duster, marker, projector, laptop etc.
- Any available video and PowerPoint slides on mulching and its importance.
- Live samples of different mulching materials.

### Ask

- If the participants have heard about the term mulching?
- If yes, what is its role in farming?

### Say

- Mulching is an effective way of preventing weed growth. It helps conserve soil moisture and contributes organic nutrients to the plant.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Mulching and its types.
- Importance of mulching.

### Demonstrate

- Various mulching materials.

### Activity

**Purpose** : To know about various mulching materials.

**Methodology** : Pen and paper activity and it may be planned for 30 minutes.

- Ask the participants to list out the locally available mulching materials and group them into organic and inorganic mulches.
- After these discuss with the participants regarding the benefits of mulching.

## Notes for Facilitation

- Make sure the students are well acquainted with mulching and its importance.
- Arrange various mulching materials for demonstration.
- Prearrange innovative videos describing the different types of mulches.
- Encourage peer learning among participants in the class by answering other participant's questions.
- Focus on ensuring pictorial presentation of learning.

## Exercise

### Key Solutions to PHB Exercises

1. Mulch is a layer of material applied to the surface of soil. Mulching is a proven way of improving the growth of bamboo. Mulching is achieved by uniformly spreading a layer of leaf litter or other organic material on the surface of the soil around the bamboo clump.

#### Types of Mulch:

- Organic mulch: Organic mulch is made up of organic matter such as wood chips, sawdust, straw, hay, newspaper or magazine strips, bark, leaves or grass clippings.
  - Inorganic mulch: Inorganic mulch is made up of pebbles, masonry chips, plastic sheeting or torn rubber.
2. Mulch is a valuable for your bamboo health and care because:
    - Mulch insulates the soil helping to provide a buffer from heat and cold temperatures.
    - Mulch retains water helping to keep the roots moist.
    - Mulch keeps weeds out to help prevent root competition.
    - Mulch prevents soil compaction.
    - Mulch reduces lawn mower damage







## Key Learning Outcomes

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

1. Explain how to ascertain the irrigation needs of bamboo trees based on the soil moisture and climate.
2. Describe the process of irrigating bamboo trees with the recommended quantity of water and the appropriate irrigation method to be followed.
3. Explain the importance of following the irrigation schedule as per the stages of growth of bamboo trees.
4. Explain the benefits of intercropping.
5. Explain how to select appropriate vegetable or cash crops for intercropping with the bamboo crop.
6. Describe the importance of maintaining the recommended planting density while intercropping to allow for optimum growth of intercropped vegetables/ crops.
7. Explain the importance of trimming the culms on bamboo plants.
8. State the recommended practices to be followed to prevent canopy exposure, loss of soil moisture through evaporation and competition from weeds and other vegetation.
9. State the recommended organic or inorganic fertilisers to be applied to the field during intercropping.
10. Describe the process of determining the macro and micronutrients needs of the soil through a soil analysis by an approved lab, and applying the recommended fertilisers.

## UNIT 6.1: Irrigation Systems

### Unit Objectives

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

1. Explain irrigation and its importance.
2. Discuss types of irrigation system.
3. Explain about the intercropping.

### Resources to be Used

- Available objects such as white board, duster, marker, overhead projector, laptop, pen, notebook etc.
- PowerPoint slides describing irrigation and its importance.
- Relevant videos on different types of irrigation systems.

### Ask

- What is irrigation?
- What are different types of irrigations?

### Say

- Irrigation is an artificial application of water to the soil usually for assisting in growing of crops.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Importance of Irrigation.
- Types of irrigation system:
  - ✓ Surface irrigation.
  - ✓ Sprinkler irrigation.
  - ✓ Drip irrigation.
  - ✓ Center pivot irrigation.
  - ✓ Manual irrigation.
- Intercropping

## Activity



**Purpose:** To acquaint about different types of irrigations through video demonstration. This activity may be planned for 30-40 minutes.

**Methodology :** Q/A Session

- Use a video to show the students various types of irrigation systems.
- Conduct a question and answer (Q & A) session at the end of the video session.
- Encourage students to ask questions related to the video.
- Answer all questions individually.
- Appreciate the students who have been asking questions and participating actively.

## Notes for Facilitation



- Make sure students are well equipped with knowledge of irrigation systems.
- Prepare teaching aids such as collage, posters etc. on different types of irrigation systems.
- Ask the students if have any doubts regarding the topic.
- Organize meeting with progressive farmer or KVK to show live demonstration on irrigation systems.

## Exercise



### Key Solutions to PHB Exercises

1. Intercropping is defined simply as growing two or more crop types on one field. The practice of intercropping has actually been around since farming began.

#### **BENEFITS OF INTERCROPPING**

- Diversity and stability of fields.
- Reduction in chemical/fertilizer application.
- A complementary sharing of plant resources, such as Nitrogen from N fixing plants.
- Weed suppression, and a reduction in susceptibility to insects and disease.

2. Types of irrigation system:

- ✓ Surface irrigation.
- ✓ Sprinkler irrigation.
- ✓ Drip irrigation.
- ✓ Center pivot irrigation.
- ✓ Manual irrigation.

## UNIT 6.2: Root Spreading and Soil Texture

### Unit Objectives

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

1. Explain soil preparation for bamboo.
2. Discuss controlling the bamboo spread.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, laptop, charts, pen, notepad etc.
- PowerPoint slides indicating different methods to control bamboo spread.
- Videos describing soil preparation for bamboo.

### Ask

- Do you know about “Running bamboo”?
- How can you control spreading habit of bamboos?

### Say

- Bamboo is a very versatile plant and can grow in almost any soil type. However, having the ideal soils will encourage healthier root systems, promote accelerated growth and grow more attractive plants.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Soil for bamboo.
- Controlling bamboo spread:
  - ✓ Running bamboo.
  - ✓ Bamboo shoot removal.
  - ✓ Bamboo rhizome pruning.
  - ✓ Raised bed.
  - ✓ Trenching.
  - ✓ Bamboo barrier.
  - ✓ Combination: Raised bed with bamboo barrier.

## Field Visit



**Purpose:** To provide practical exposure on how to control bamboo spread.. This activity may be planned for 1-2 hours or depends on the distance of location.

**Methodology :** Field visit

- Organize a field visit to bamboo forest with the participants.
- Arrange experts for live demonstration on various methods to control bamboo spread.
- Ask the participants to observe each method of controlling bamboo spread carefully.
- Ask some of the participants to carry out the process of bamboo rhizome pruning and trenching for controlling bamboo spread.

## Notes for Facilitation



- Explain the various methods of controlling bamboo spread.
- Facilitators may use rotational basis for individuals or in groups to take up different activities, answering the question, etc.
- Video session describing various methods of controlling bamboo spread should be arranged.
- Motivate the participants to practice controlling methods in their own bamboo plantations.

## Exercise



### Key Solutions to PHB Exercises

1. Bamboo grows best in soil that is aerated, light in structure and rich inorganic nutrients. The soil should allow good drainage but still retain moisture. Bamboo grows best with ample water but the roots must not become soggy and waterlogged. Having soil that is constantly over saturated with water will suffocate the roots from air and can cause the roots to rot. So it is very important to have well drained soil. Refer section 6.2.1.
2. Controlling bamboo spread:
  - ✓ Running bamboo.
  - ✓ Bamboo shoot removal.
  - ✓ Bamboo rhizome pruning.
  - ✓ Raised bed.
  - ✓ Trenching.
  - ✓ Bamboo barrier.
  - ✓ Combination: Raised bed with bamboo barrier.

## UNIT 6.3: Water Drainage System

### Unit Objectives

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

1. Explain water drainage and its need.
2. Discuss types of agricultural drainage.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, laptop, pen, papers, etc.
- Power point slides or pictures of different types of agricultural drainage.

### Ask

- What is drainage?

### Say

- The removal of excess water either from the group surface or from the root zone is called drainage.

### Explain

- Water drainage system and its need.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Water drainage.
- Types of Agricultural drainage such as:
  - Surface drainage:
    - ✓ Open ditch drains.
    - ✓ Field ditch.
    - ✓ Narrow ditches.
  - Sub surface drainage or underground drainage:
    - ✓ Tile or pipe drain.
    - ✓ Box drains.
    - ✓ Rubble (coarse stones or gravels filled) drains.
    - ✓ Mole drains.
    - ✓ Use of pumps for drainage.

## Activity

**Purpose:** To perceive the knowledge different types of agriculture drainage.

**Methodology:** Learning by observing and it may be planned for 20-30 minutes.

### Procedure

- Display the pictures of different types of agriculture drainage.
- Ask the students to observe the pictures carefully.
- Provide each student answer sheet.
- Ask the participants to identify type of drainage system and write answers in their answer sheets.
- Motivate them to engage into activity and answer the questions.
- Ask them if they require any clarification or help.
- See if the students have correctly identified the drainage systems or not.
- Confer an award to the best performing student.

## Notes for Facilitation

- Discuss different types of agricultural drainage.
- Plan a field visit to nearby field or farm to show various types of agricultural drainage.
- Ensure more pictorial presentation of learning where ever possible in classroom.
- Make class more participatory.

## Exercise

### Key Solutions to PHB Exercises

1. Refer section 6.3.2 – Types of agriculture drainage
2. **Water drainage:** The removal of excess water either from the ground surface or from the root zone is called drainage. Excess water may be caused by rainfall or by using too much irrigation water, but may also have other origins such as canal seepage or floods.

## UNIT 6.4: Irrigation Schedule and Management

### Unit Objectives

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

1. Explain irrigation schedule.
2. Discuss types of agriculture drainage.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, laptop etc.
- PowerPoint slides or relevant reference materials on irrigation schedule and management.
- Charts or tabulation depicting irrigation water need for various crops.

### Ask

- What do you mean by irrigation scheduling?
- What is the importance of irrigation scheduling?
- What is plant observation method?
- If they have information or clue on how to determine irrigation requirement?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Irrigation schedule.
- Watering bamboo.
- Importance of irrigation schedule and its types.
- Irrigation management.

### Demonstrate

- The method to determine the irrigation schedule through simple calculation method.

## Team Activity



**Purpose :** To determine irrigation schedule . Time may be plan for 15-20 minutes.

**Methodology :** Pen and Paper activity

### Procedure

- Dive the class into 4-5 groups.
- Ask the groups to calculate irrigation water need for the bamboo crop.
- Guide them to correctly perform this activity.
- Check if they have correctly calculated irrigation water requirement or not.
- At the end of the activity, ask one member from each group to share with others.
- Also, ask them to make an irrigation chart for the bamboo crop.

## Notes for Facilitation



- Keep some exercises handy for the activity.
- Check some valid references on irrigation scheduling and management.
- Ensure practical session where ever required.

## Exercise



### Key Solutions to PHB Exercises

1. **Irrigation Scheduling** is the process used by irrigation system managers to determine the correct frequency and duration of watering. Refer section 6.4.1.
2. The accurate determination of an irrigation schedule is a time-consuming and complicated process. The introduction of computer programs, however, has made it easier and it is possible to schedule the irrigation water supply exactly according to the water needs of the crops. Refer section 6.4.3.







**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape



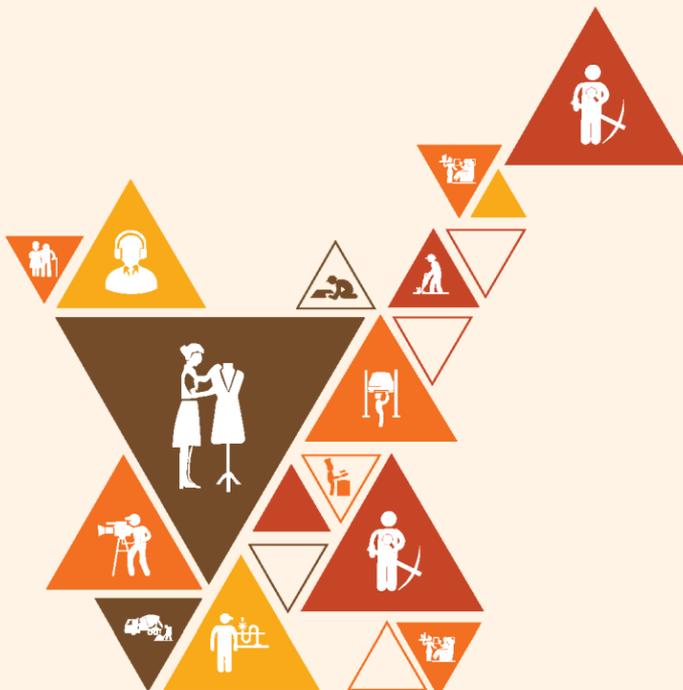
**ASCI**

Agriculture Skill Council of India

# 7. Process of Carrying Out Integrated Pest and Disease Management for Bamboo Crop

Unit 7.1 - Characters of Insects Pests, Their Diseases and Precautions

Unit 7.2 - Integrated Pest and Diseases Management



**AGR/N6107**

## Key Learning Outcomes

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

1. Explain the recommended prophylactic measures to be followed to protect bamboo trees from common pests and disease.
2. Explain how to identify the symptoms, stage and location of various pests and diseases in bamboo trees along with the extent of the damage.
3. Describe the process of selecting and applying appropriate treatment to bamboo culms to eliminate the identified pest and disease.
4. Explain the use of the relevant PPE.
5. Explain the importance of maintaining the record of pesticides/ insecticides/ fungicides applied to bamboo trees.
6. Explain the benefits of resource optimization.
7. Explain the criteria for segregating waste into appropriate categories.

## UNIT 7.1: Characters of Insects Pest, their Diseases and Precautions

### Unit Objectives

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

1. Explain about insects pests.
2. Explain about the bamboo diseases.
3. Discuss for controlling bamboo diseases and pests.

### Resources to be Used

- Available objects such as white board, duster, marker, projector, computer, pen, notepad etc.
- Power point slides showcasing various methods to control bamboo diseases and pests.
- Pictures or posters on different bamboo diseases.
- Samples of different botanical pesticides.
- Live specimen of insects pests.

### Say

- Greet the participants and revise the key learnings of previous session discussion.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Insect pests of bamboo:
  - ✓ Defoliators.
  - ✓ Leaf rollers.
  - ✓ Sap suckers.
  - ✓ Shoot & culm borers.
  - ✓ Pests of felled bamboos.
- Bamboo diseases
- Controlling bamboo diseases and pests:
  - ✓ Cultural control.
  - ✓ Physical control.
  - ✓ Biological control.
  - ✓ Chemical control.

## Activity

**Purpose:** To acquaint about the various insect pests of bamboo. This activity may be planned for 30-45 minutes.

**Methodology :** Visual representation

- Display the pictures of important insect-pests of bamboo species on projector.
- Ask the participants to identify them and note down the observations in their notepad.
- Ask the participants to discuss the symptoms of these insect-pests and their management.
- Encourage them to participate in the discussion and clear doubts.

## Role Play

- Choose two students from the class for expert and bamboo grower role play to discuss issues and control measures.
- Ask any one of them to enact the role of agricultural expert from entomology department. Instruct the other student to enact the role of a bamboo grower.
- Ask both students to enact a scenario where a farmer faces issues of insects-pests and diseases in his bamboo plantations and an agricultural expert communicates with him to identify the reasons behind the issue and devise appropriate methods to control these diseases and pests.
- Observe how the students depict through this role play. Repeat the act with few more students.
- Instruct the rest of the class to observe the act carefully and take down the crucial notes.

## Summarize

Sum up the session with appreciation for active and patient learning of the participants.

## Do

- Share your inputs and insight to encourage the students and add to what they talk about.
- Ensure that all students participate in the class.
- Encourage the non-participating students to open up and speak.
- Instruct students to enact the role-play in simple english. However, please inform them that they are required to communicate with bamboo growers in local languages of their areas of operation.

## Notes for Facilitation



- Discuss the different methods to control bamboo diseases and pests.
- Display pictures or slides depicting relevant information on controlling bamboo diseases and pests.
- Preplan some activities for roleplay and class activity.
- Plan a trip to bamboo forest to show different diseases affecting bamboos.
- Encourage the participants to overcome anxiety during role play.
- Arrange relevant handouts and leaflets for better understanding of the topic.
- Prepare charts on insects-pests which affect various stages of bamboo crops.
- Arrange audio visual aids showing innovative images of different insect-pests.
- Nearby visit to field will help the students to learn better.

## Exercise



### Key Solutions to PHB Exercises

1. Types of Insect pests of bamboo:
  - Defoliators.
  - Leaf rollers.
  - Sap suckers.
  - Shoot & culm borers.
  - Pests of felled bamboos.
2. Various control methods including cultural control, biological control, physical control, and chemical control against bamboo pests and diseases have been reported in bamboo plantation area, but the application of chemical pesticides is the most predominant measure used very often. Besides polluting the environment, the excessive use of broad-spectrum insecticide also killed the natural enemies which result in resistance and resurgence of pests. Therefore, IPM program for bamboo is required. For more, Refer section 7.1.3.

## UNIT 7.2: Integrated Pest and Diseases Management

### Unit Objectives

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

1. Explain about integrated pest management.
2. Explain about integrated diseases management.

### Resources to be Used

- Available objects such as participant handbook, white board, duster, marker, overhead projector, laptop, laser pointer, pens, A4 sheets, etc.
- PowerPoint slides on Integrated pest and diseases management.

### Ask

- What do you understand by integrated pest management?
- Do you know about integrated diseases management?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Integrated pest management (IPM).
- Integrated disease management (IDM):
  - ✓ Hygiene.
  - ✓ Control entry.
  - ✓ Disease-free plants.
  - ✓ Control the growing environment.
  - ✓ Inspect plants regularly.
  - ✓ Waste management.
  - ✓ Control insects and weeds.
  - ✓ Fungicides.

## Activity

**Purpose :** Knowledge enhancement . Time may be plan for 30-40 minutes.

**Methodology :** Quiz

- Conduct a pop quiz by displaying each question on the white display screen, from the laptop via an overhead project.
- Provide A4 sheet to every student present in the class.
- The questions will mainly in the form of multiple-choice questions (MCQ).
- The questions should be related entirely to the unit.
- Each question will carry two marks.
- There will be no negative marking.
- Ask the students to write down the answers on a white sheet provided.

## Do

- On the completion of the session, ask the students to exchange their papers with the peers so that everybody gets a paper to check.
- Display the correct answers on the white screen from your laptop, via the overhead projector.
- Encourage the non-participating students to participate actively.
- Declare the name of the student, who scored the highest and applaud him/her for good performance.

## Notes for Facilitation

- Ensure each student are well equipped with knowledge of integrated pest and disease management.
- Arrange for leaflets, brochures, etc. published by various institutions which can be a good source of information.
- Motivate participants participate in the activity and confer award to best performer.

## Exercise

### Key Solutions to PHB Exercises

1. Integrated pest management (IPM), also known as integrated pest control (IPC) is a broad-based approach that integrates practices for economic control of pests. IPM aims to suppress pest populations below the economic injury level (EIL). Refer section 7.2.1
2. Integrated disease management is the practice of using a range of measures to prevent and manage diseases in crops. Hazard analysis is used to identify the potential for infection so that preventative or curative measures can be put in place to minimize the risk of disease infection and spread. During the cropping cycle , regular crop monitoring is used to decide if and what action is needed. For more, Refer section 7.2.2







**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**N · S · D · C**  
National  
Skill Development  
Corporation

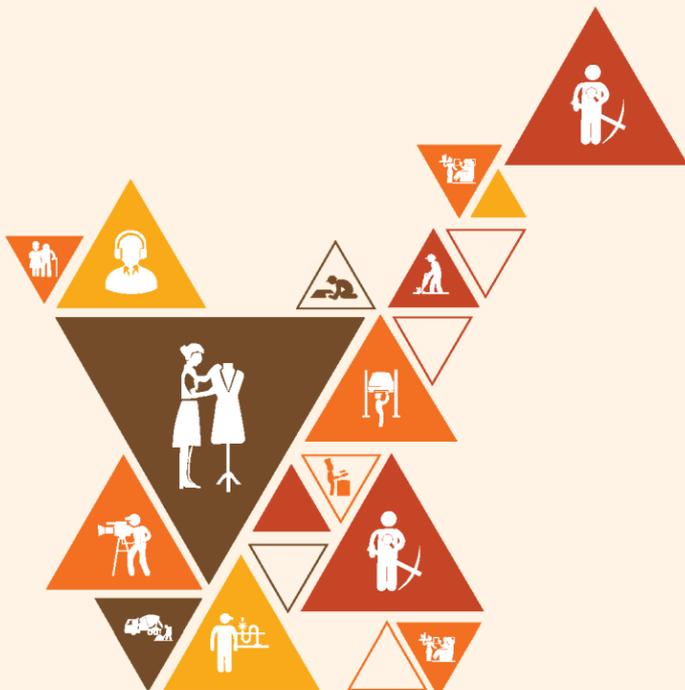
Transforming the skill landscape



# 8. Process of Carrying Out Harvesting, Post-Harvest Processing and Marketing Activities

Unit 8.1 - Harvesting

Unit 8.2 - Post - Harvest and Storage



**AGR/N6108**

## Key Learning Outcomes

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

1. List the signs of maturity of bamboo culms for being harvested.
2. State the appropriate season for harvesting bamboo culms.
3. Explain the use of the appropriate hand and mechanical tools and implements for harvesting bamboo culms.
4. Explain the importance of disinfecting the tools and implements before using them.
5. Explain the importance of removing branches extending from the lower nodes of the mature culms.
6. Explain the importance of ensuring no damage to young culms and rhizomes on bamboo trees during harvesting.
7. Explain the importance of collecting and transporting the harvested bamboo culms appropriately to avoid scratches or injury to their epidermal layer.
8. Explain the criteria for selecting the appropriate storage area for storing culms.
9. Explain the importance of stacking bamboo culms vertically in the storage area.
10. State the appropriate time for selling the harvested bamboo culms considering their seasonal demand.
11. Describe the process of identifying relevant buyers or market such as eMandi and local traders for the harvested bamboo culms.
12. Explain how to negotiate the price with the buyer(s).
13. State the appropriate mode of transportation for transporting bamboo culms.

## UNIT 8.1: Harvesting

### Unit Objectives

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

1. Explain the correct time for harvesting.
2. Explain the harvesting procedure.

### Resources to be Used

- Available objects such as white board, duster, marker, flip charts, pens / pencils, notepad, computer, projector, etc.
- Slides in power points presentations providing relevant information on harvesting of bamboo.
- Harvesting tools such as machete or saw loppers, paring knife, hacksaws, chainsaws, for demonstration.

### Ask

- What do you mean by harvesting?
- What are tools to be used for harvesting of bamboo plants? Mention few of them.
- In your opinion what can be the necessary conditions and appropriate time to harvest bamboo plants?
- How can you know if the bamboo is ready for harvest or not?

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Time of harvesting.
- Method of harvesting.
- Harvesting procedure.

### Demonstrate

- The method of harvesting bamboo culms using harvesting tools through live demonstration.
- During the demonstration, encourage the students to observe it carefully.
- Clarify the doubts of participants.

## Field Visit



**Purpose** : To Identify bamboos ready for harvest.

**Methodology** : Field visit and the time varies according to the location, it may be 2 hours.

- Organize field visit to bamboo forests to identify bamboos ready for harvest.
- Ask the students to identify the mature bamboos for harvesting.
- Ask the students to observe carefully how bamboo culms are harvested.
- Ask them to harvest bamboo culms in accordance to demonstrated way.
- Facilitate the students to carry out the harvesting operation successfully.
- Encourage the participants to engage well in the activity and ask questions.

## Notes for Facilitation



- Assist all the participants to understand the concept clearly through visualization.
- Ask the participants if they have any questions related to the topic.
- Motivate the participants to work in teams so that they develop team building skills.
- Give assignments to enlist different tools used for harvesting with proper diagram.
- YouTube videos related to harvesting may be shown to the participants to enhance their learning.

## Exercise



### Key Solutions to PHB Exercises

1. Refer section 8.1.3.
2. The sugar content in bamboo also varies with age. The starch content is lowest during the first year and highest between year 1-3. Obviously we don't want to harvest immature bamboo because it didn't complete the process of lignification, and is therefore less strong and usually collapses on drying. Bamboo is considered mature between 4 and 7 years, after which they slowly start to deteriorate.

## UNIT 8.2: Post - Harvest and Storage

### Unit Objectives

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

1. Perform post-harvest treatment process.
2. Explain the drying process of the bamboo.
3. Explain where to sell Bamboo produce.

### Resources to be Used

- Available objects such as white board, duster, marker, flip charts, pens / pencils, notepad, computer, projector, etc.
- Audio-visual aids through images, charts, power point slides on post-harvest treatment of bamboo.
- Videos on drying methods of bamboo culms.
- Power point slides or illustrations depicting potential marketing locations for bamboo.

### Say

- Greet the participants and recall the previous session learning outcomes.

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- Post-harvest treatment and preservation:
  - ✓ Water soaking.
  - ✓ Curing.
  - ✓ Smoking.
- Drying of bamboo culms:
  - ✓ Air drying.
  - ✓ Kiln drying.
- Market locations.

### Demonstrate

- The three types of post-harvest treatment:
  - ✓ Water soaking.
  - ✓ Curing.
  - ✓ Smoking.
- During demonstration, ask the participants to observe the post-harvest treatment of bamboo carefully.

## Field Visit

**Purpose :** To enhance the knowledge on post-harvest treatment.

**Methodology :** Field visit and the time varies according to the location, it may be 2 hours.

- Arrange a visit to nearby place where post-harvest treatment and preservation of bamboo is carried out.
- During field visit, ask the participants to observe the post-harvest treatment process carefully.
- Divide the whole class into few groups.
- Ask each group to practice the different methods of post-harvest treatment as per demonstration.
- Ask the participants if they need any kind of clarification or help.
- Also demonstrate the participants about the different methods of drying of bamboo culms.

## Say

- Appreciate the students for the participating in the activity.
- Emphasize and elaborate on important aspects of post-harvest treatment of bamboo.

## Team Activity

**Purpose :** To gain insight of marketing of bamboo through peer learning. Time may be plan for 15-20 minutes.

**Methodology :** Pen and Paper activity

- Arrange the participants in 4-5 groups.
- Ask each group to think about the potential market locations where bamboo can be sold and discuss the various purposes of bamboo.
- Ask them to notedown their opinions in a notebook.
- Each group will read aloud what the members have written down.
- This will encourage participatory learning.

## Notes for Facilitation

- Plan a visit to any bamboo processing plant and show them various methods of drying adopted by them.
- Ask the participants if they have any questions and clarify all doubts of the participants.
- Encourage the non-participants to participate in the activity.
- Invite an expert to explain drying methods of bamboo culms.
- Ask the participants to search more detailed information on marketing.
- Prearrange pictures, posters, power point slides related to topic.
- Clarify the doubts the participants regarding the topic.

## Exercise



### Key Solutions to PHB Exercises

1. Air-drying is the process of removing moisture from bamboo by exposure to atmospheric conditions. There are two types, the horizontal and the oblique stacking. By proper stacking for air circulation, culms can be dried with no need to add energy above the capacity of the ambient air. However, it has some disadvantages. Drying time is long, ranging from several weeks to several months for the required moisture content. During air-drying, splits can occur and culms can be infected by fungi, especially moulds. The air drying depends largely on the climatic conditions. Since the weather cannot be regulated, there is little control over the drying process. The air-drying conditions are difficult for reaching a moisture content below about 12% as required for later processing.
2. Refer to section 8.2.1 in unit 8.2-Post-harvest and storage. Some of the treatment methods could be water soaking, curing and smoking.
3. Stacking and storage of the harvested bamboo are essential features in the bamboo plantation management. Harvested bamboo may often have to be used immediately for many reasons like:
  1. to bulk a quantity for supply in the market,
  2. to hold supplies till a better price is obtained,
  3. to carry out preservation and treatment activitiesRefer section 8.2.3 in unit 8.2.







## 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 9.1: Hygiene And Workplace Housekeeping

### Unit Objectives

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

1. Explain the requirements of personal health, hygiene and fitness at work.
2. Describe general health guidelines set by organizations / Govt. at the work place.
3. Explain the importance of Good Housekeeping at the work place.
4. Explain the importance of notifying the designated authority on personal health issues related to injuries and infectious diseases.

### Resources to be Used

- Available objects such as computer, projector, pens, paper, white board, marker, flip chart, audio-visual aids, etc.

### Say

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

### Elaborate

With the help of PHB or audio-visual aids, elaborate:

- What is personal hygiene ?
- How to manage your personal hygiene
- General health guidelines at workplace by organizations/Government
- Importance of Good Housekeeping at Workplace
- Notifying designated authority on personal health issues related to injuries and infectious diseases

### Activity

**Purpose :** Knowledge enhancement . Time may be plan for 15 minutes.

**Methodology :** Pen and Paper activity

- Ask each participants to write down how to manage your personal hygiene.
- Ask 4-5 participants to stand randomly and share the findings among their peers.

## Notes for Facilitation

- Familiarize all the participants with hygiene and workplace housekeeping.
- Ask the participants if they have any questions and clarify all doubts of the participants.
- Clarify the doubts the participants regarding the topic.

## Exercise

### Key Solutions to PHB Exercises

1. Manage your personal hygiene :
  1. Wash daily
  2. Clean hair
  3. Clean clothes
  4. Keeping nails clean
  5. Oral hygiene
2. Refer section 9.1.3.
3. Effective housekeeping can help control or eliminate workplace hazards.







## Key Learning Outcomes

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

1. List the 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 10.1: Emergency Procedures and First Aid

### Unit Objectives

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

1. Explain site inspection and reporting on a regular basis.
2. Ensuring prevention of accidents and loss.
3. Explain workplace safety using Personal Protective Equipment (PPE).
4. Explain dealing with accidents, fires and emergencies.
5. Explain use of emergency evacuation.
6. Explain administer first aid.
7. Follow the do's and don'ts related to security.

### 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

With the help of PHB or audio-visual aids, elaborate:

- Workplace Investigation and Reporting Issues
- Prevention of Accidents and Losses
- Personal Protective Equipment
- Hazards, Accidents, Fires and Emergencies
- Emergency evacuation routes and exit signs
- First Aid
- India emergency helpline number

## Activity

**Purpose :** Knowledge enhancement . Time may be plan for 15 minutes.

**Methodology :** Pen and Paper activity

- Ask each participants to write down purpose of first aid
- Ask 4-5 participants to stand randomly and share the findings among their peers.

## Do

- Appreciate the efforts the students participating in the activity.
- Discuss general rules to be followed as a first aid provider

## Notes for Facilitation

- Describe all the mentioned topics with the help of appropriate audio-visual aids.
- Arrange the personal protective equipment for live demonstration of using PPEs.
- Prepare a chart describing basic emergency first aid procedure.
- Arrange first aid kit to demonstrate first aid technique.

## Exercise

### Key Solutions to PHB Exercises

#### A. Short Questions

1. General hygiene steps in the workplace include washing hands regularly, keeping the workplace clean and tidy , wearing appropriate personal protective equipment , using proper waste disposal methods, and avoiding touching your face.
2. If you suspect a case of COVID-19 at the workplace , the courses of action to be taken include immediately isolating the suspected case, providing medical attention, informing local health authorities, conducting contact tracing, and following the guidance of public health officials.
3. First aid refers to the immediate and temporary care given to a person who has been injured or taken ill. The goal of first aid is to preserve life, prevent further injury , and promote recovery . Example of first include controlling bleeding, performing CPR, and treating burns or shock.
4. Fire extinguisher categories are Class A (for fires involving ordinary combustibles such as wood or paper), Class B (for fires involving flammable liquids or gases), Class C (for fires involving electrical equipments ), Class D (for fires involving flammable metals ), and Class K ( for fires involving cooking oils or fats ).
5. The first aid measures in case of a fracture include immobilizing the injured area with a splint or sling, applying ice to reduce swelling, providing pain relief medication, and seeking medical attention as soon as possible. It is important to avoid moving the injured person and to keep them warm and comfortable until medical help arrives.

**B. Fill in the blanks**

1. Emergency Evacuation
2. Hazard Control Program
3. Ordinary Combustibles
4. 112
5. 101
6. 18004251213











**Skill India**  
कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



**N · S · D · C**  
National  
Skill Development  
Corporation

Transforming the skill landscape



**ASCI**

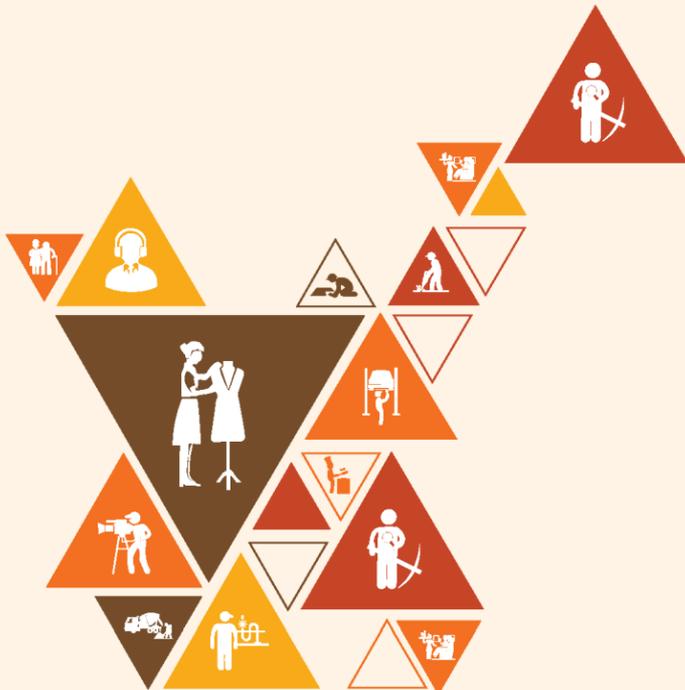
Agriculture Skill Council of India

## 12. 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>	Bamboo Grower		
<b>Qualification Pack Name &amp; Ref. ID</b>	AGR/Q6101		
<b>Version No.</b>	<b>3.0</b>	<b>Version Update Date</b>	<b>17/11/2022</b>
<b>Pre-requisites to Training (if any)</b>	8th Class (Pass and pursuing continuous regular schooling) OR 5th Class with 4 Years of experience relevant experience OR Ability to read and write with 5 Years of experience relevant experience in farm cultivation /operations OR Certificate-NSQF (Level-3 (Non-Timber Forest Produce (NTFP) Collector/Harvester)) with 6 Months of experience relevant experience		
<b>Training Outcomes</b>	<p><b>After completing this programme, participants will be able to:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate the process of propagating bamboo saplings in the nursery.</li> <li>• Describe the process of selecting the bamboo variety and site and preparing the field.</li> <li>• Demonstrate the process of transplanting and maintaining the bamboo sapling.</li> <li>• Demonstrate the process of carrying out pruning and weeding in the bamboo crop.</li> <li>• Demonstrate the process of carrying out irrigation, nutrient management and intercropping.</li> <li>• Demonstrate the process of carrying out integrated pest and disease management for the bamboo crop.</li> <li>• Demonstrate the process of carrying out harvesting, post-harvest processing and marketing activities.</li> <li>• Explain the basic entrepreneurial activities for small enterprise.</li> <li>• Describe the process of undertaking employability and entrepreneurial practices.</li> <li>• Demonstrate various practices to maintain health, hygiene and safety at the workplace.</li> </ul>		

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
1	Introduction to the role of Bamboo Grower T: 05:00 (HH:MM)	1. Overview and Scope of Bamboo Grower-I	<ul style="list-style-type: none"> <li>• Explain the scope of the Agro-Industry</li> <li>• Explain the job description of Bamboo Grower</li> </ul>	NA	Classroom lecture, activity, discussion	Participant handbook, white board, marker, duster, computer, projector, flip charts, pen, notebook, etc.	T: 2:00
		2. Overview and Scope of Bamboo Grower-II	<ul style="list-style-type: none"> <li>• Explain the scope of Agro-forestry in India</li> <li>• Explain the various uses of Bamboo</li> </ul>		Classroom lecture, activity, discussion	Participant handbook, white board, marker, duster, computer, projector, flip charts, pen, notebook, etc.	T: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
2	Process of Propagating bamboo samplings in the nursery T: 10:00 P: 15:00 (HH:MM)	1. Tools Required for the Nursery Preparation	<ul style="list-style-type: none"> <li>• Explain the tools required for the nursery preparation</li> <li>• Discuss the selection of nursery site</li> <li>• Describe the nursery size and layout</li> <li>• Explain about the temporary and permanent nurseries</li> <li>• Discuss the nursery infrastructure and equipment</li> </ul>	AGR/N6101 PC1, KU1, GS1-GS9	Classroom lecture, presentation, field visit, demonstration	PHB, White board, duster, flip chart board/paper etc., PPT showing specific innovative images of tools and equipment used in nursery, factors affecting selection of nursery site, types of nurseries, etc.	T: 2:00 P: 3:00
		2. Preparation for Planting Site	<ul style="list-style-type: none"> <li>• Explain the preparation of planting site</li> <li>• Describe the planting site conditions</li> <li>• Discuss the planting operations</li> </ul>	AGR/N6101 PC1, KU1, GS1-GS9	Classroom lecture, presentation, Team activity, demonstration	PHB, White board, duster, flip chart board/paper etc., PPT showing describing the planting site conditions, etc.	T: 2:00 P: 3:00
		3. Sowing Methodologies	<ul style="list-style-type: none"> <li>• Explain raising of planting materials</li> <li>• Discuss labeling, seedlings, shading watering and treatments</li> </ul>	AGR/N6101 PC2, PC7, KU2, KU6, GS1-GS9	Classroom lecture, presentation, demonstration, field visit	PHB, White board, duster, flip chart board/paper etc., PPT showing relevant images. Live samples of seed/planting material of bamboo plants.	T: 2:00 P: 3:00
		4. Irrigation, Weed Control and Fertilizer Application	<ul style="list-style-type: none"> <li>• Discuss about the weed control process</li> <li>• Explain the process of fertilizer applications</li> <li>• Discuss about the diseases and their management</li> </ul>	AGR/N6101 PC9, PC12, KU8, KU10, KU13, GS1-GS9	Classroom lecture, presentation, activity, demonstration	PHB, White board, duster, flip chart board/paper etc., PPT slides on weed control and fertilizer application, specific innovative images of different diseases of bamboo species, audio-visual aids etc.	T: 2:00 P: 3:00
		5. Pruning Practices	<ul style="list-style-type: none"> <li>• Explain the general guidelines on pruning and purposes of tree pruning</li> <li>• Discuss about the timing of pruning and types of pruning</li> <li>• Describe about the pruning techniques and pruning practices</li> </ul>	AGR/N6101 PC2, KU2, GS1-GS9	Classroom lecture, presentation, team activity, demonstration	PHB, White board, duster, flip chart board/paper etc., PPT slides on pruning practices, small chainsaws, pole saws, tubular saws, long pruners, pruning knife etc.	T: 2:00 P: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
3	Process of selecting the bamboo variety, site, and preparing the field T: 10:00 P: 20:00 (HH:MM)	1. Prepare the Land Layout-I	<ul style="list-style-type: none"> <li>Prepare land layout for planting a bamboo</li> <li>Undertake ploughing for bamboo</li> </ul>	AGR/N6103 PC6, KU1, GS1-GS6	Classroom lecture, presentation, demonstration, team activity	PHB, White board, duster, flip chart board/paper etc., PowerPoint slides describing the preparation of land layout.	T: 2:00 P: 4:00
		2. Prepare the Land Layout-II	<ul style="list-style-type: none"> <li>Prepare bunds and trenches</li> <li>Prepare pits</li> </ul>	AGR/N6103 PC6, KU1, GS1-GS6	Classroom lecture, presentation, demonstration, team activity	PHB, White board, duster, flip chart board/paper etc., PowerPoint slides describing the preparation of land layout.	T: 2:00 P: 4:00
		3. Preparation of Soil for Transplanting	<ul style="list-style-type: none"> <li>Describe the preparation of the soil for plantation</li> <li>Explain the weed management</li> <li>Explain about the management of Clump</li> </ul>	AGR/N6103 PC5, PC6, KU2, KU3, GS1-GS6	Classroom lecture, presentation, team activity	PHB, White board, duster, flip chart board/paper etc., PowerPoint slides describing the preparation of the soil for plantation, pictures or posters on weed management, etc.	T: 2:00 P: 4:00
		4. Prepare planting material for Bamboo Cultivation -I	<ul style="list-style-type: none"> <li>Explain why high-yielding bamboo plantation is required</li> <li>About the role of a high-yielding bamboo plantation in rural development</li> <li>Establish a high-yielding bamboo plantation.</li> </ul>	AGR/N6103 PC1, PC2, KU8, GS1-GS6	Classroom lecture, presentation, activity	Participant handbook, writing pad, white board, flip charts, duster, marker, projector, computer, pens, videos, PowerPoint slides of related images, etc.	T: 2:00 P: 4:00
		5. Prepare planting material for Bamboo Cultivation -II	<ul style="list-style-type: none"> <li>About general development attributes and advantages.</li> <li>About the suitable agro-ecological regions</li> <li>Scope for small enterprise development</li> <li>Explain technology assessment</li> </ul>	AGR/N6103 PC1, PC2, KU8, GS1-GS6	Classroom lecture, presentation, activity	Participant handbook, writing pad, white board, flip charts, duster, marker, projector, computer, pens, videos, PowerPoint slides of related images, etc.	T: 2:00 P: 4:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
4	Process of transplanting and maintaining the bamboo saplings T: 10:00 P: 20:00 (HH:MM)	1. Transplanting the Saplings-I	<ul style="list-style-type: none"> <li>Explain Transplanting</li> <li>Explain the use of the relevant tools and implements</li> </ul>	AGR/N6104 PC1-PC3, KU1, KU2, GS1-GS9	Classroom lecture, presentation, activity, demonstration	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images, Soil sampling tools such as trowel, soil tube, soil auger, a spade or a pick axe, clean jar or zip lock bag, labels, record sheet etc.	T: 3:00 P: 5:00
		2. Transplanting the Saplings -II	<ul style="list-style-type: none"> <li>Identify the spacing between bamboo sapling</li> </ul>	AGR/N6104 PC3, KU3, GS1-GS9	Classroom lecture, presentation, activity, demonstration	PHB, White board, duster, flip chart board/paper etc., PPT Slides depicting various information on soil sampling and soil testing.	T: 2:00 P: 5:00
		3. Transplanting the Saplings -III	<ul style="list-style-type: none"> <li>Explain the watering of Bamboo Sapling</li> </ul>	AGR/N6104 PC4, KU4, GS1-GS9	Classroom lecture, presentation, activity, demonstration	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 5:00
		4. Recap	<ul style="list-style-type: none"> <li>Recapitulate complete module learning</li> </ul>	AGR/N6104 PC1-PC4, KU1-KU4, GS1-GS9	Classroom lecture, presentation, activity, demonstration, Q/A session	PHB, white board, duster, flip chart board/paper, slides in power point presentation with relevant images, etc	T: 2:00 P: 5:00
5	Process of carrying out pruning and weeding in bamboo crop T: 10:00 P: 20:00 (HH:MM)	1. Weeds and Control Process-I	<ul style="list-style-type: none"> <li>Identify weeds and its types</li> <li>Discuss methods to control weeds</li> </ul>	AGR/N6105 PC9-PC12, KU8-KU10, GS1-GS9	Classroom lecture, presentation, activity	PHB, white board, duster, flip chart board/paper, Power point slides on weeds and its types.	T: 3:00 P: 5:00
		2. Weeds and Control Process-II	<ul style="list-style-type: none"> <li>Explain the use of appropriate tools for pruning</li> </ul>	AGR/N6105 PC9, KU8, GS1-GS9	Classroom lecture, presentation, activity	PHB, white board, duster, flip chart board/paper, Power point slides on weeds and its types. Teaching aids such as charts/posters showcasing methods of eradication of weeds.	T: 2:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		3. Disposal of Removed Weed and Other Waste	<ul style="list-style-type: none"> <li>Explain weeds disposal methods</li> <li>Explain the methods of pruning</li> </ul>	AGR/N6105 PC2, KU2, GS1-GS9	Classroom lecture, presentation, team activity	PHB, white board, duster, flip chart board/paper etc., Power point slides on weeds disposal methods.	T: 3:00 P: 5:00
		4. Mulching and its Importance	<ul style="list-style-type: none"> <li>Explain mulching and its type</li> <li>Explain the Importance of mulching</li> </ul>	AGR/N6105 PC6, KU5, GS1-GS9	Classroom lecture, presentation, activity, demonstration	PHB, white board, duster, flip chart board/paper etc., Slides in power point presentation showing relevant images.	T: 2:00 P: 5:00
6	Process of carrying out irrigation, nutrient management and intercropping T: 10:00 P: 20:00 (HH:MM)	1. Irrigation Systems	<ul style="list-style-type: none"> <li>Explain irrigation and its importance</li> <li>Discuss types of irrigation system</li> <li>Explain about the intercropping</li> </ul>	AGR/N6106 PC1-PC3, PC5, KU1- KU4, GS1- GS9	Classroom lecture, presentation, activity	PHB, white board, duster, flip chart board/paper, slides in PowerPoint slides describing irrigation and its importance.	T: 3:00 P: 5:00
		2. Root Spreading and Soil Texture	<ul style="list-style-type: none"> <li>Explain soil preparation for bamboo</li> <li>Discuss controlling the bamboo spread</li> </ul>	AGR/N6106 PC10, KU10, GS1-GS9	Classroom lecture, presentation, field visit	PHB, white board, duster, flip chart board/paper, slides in power point presentation with relevant images, etc	T: 2:00 P: 5:00
		3. Water Drainage System	<ul style="list-style-type: none"> <li>Explain water drainage and its need</li> <li>Discuss types of agricultural drainage</li> </ul>	AGR/N6106 PC1, KU1, GS1-GS9	Classroom lecture, presentation, activity	PHB, white board, duster, flip chart board/paper, slides in power point presentation with relevant images, etc	T: 3:00 P: 5:00
		4. Irrigation Schedule and Management	<ul style="list-style-type: none"> <li>Explain irrigation schedule</li> <li>Discuss types of agriculture drainage</li> </ul>	AGR/N6106 PC3, KU3, GS1-GS9	Classroom lecture, presentation, team activity, demonstration	PHB, white board, duster, flip chart board/paper, slides in power point presentation with relevant images, etc	T: 2:00 P: 5:00
7	Process of carrying out integrated pest and disease management for bamboo crop T: 10:00 P: 20:00 (HH:MM)	1. Characters of Insects Pests, their Diseases and Precautions-I	<ul style="list-style-type: none"> <li>Explain about insects pests</li> <li>Explain about the bamboo diseases</li> </ul>	AGR/N6107 PC2, KU2, GS1-GS8	Classroom lecture, presentation, activity, role play	PHB, white board, duster, flip chart board/paper, Power point slides showcasing various methods to control bamboo diseases and pests.	T: 3:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		2. Characters of Insects Pests, their Diseases and Precautions-II	<ul style="list-style-type: none"> <li>Discuss for controlling bamboo diseases and pests</li> </ul>	AGR/N6107 PC3, KU6, GS1-GS8	Classroom lecture, presentation, activity, role play	PHB, projector, display screen, round table sitting arrangement, white board, duster, flip chart board/paper etc., Pictures or posters on different bamboo diseases.	T: 2:00 P: 5:00
		3. Integrated Pest and Diseases Management	<ul style="list-style-type: none"> <li>Explain about integrated pest management</li> <li>Explain about integrated diseases management</li> </ul>	AGR/N6107 PC6, KU6, GS1-GS8	Classroom lecture, presentation, activity	PHB, projector, display screen, round table sitting arrangement, white board, duster, flip chart board/paper etc., PowerPoint slides on Integrated pest and diseases management.	T: 3:00 P: 5:00
		4. Recap	<ul style="list-style-type: none"> <li>Recapitulate complete module learning</li> </ul>	AGR/N6107 PC3, PC6, KU6, GS1- GS8	Classroom lecture, presentation, Q/A session	PHB, projector, display screen, round table sitting arrangement, white board, duster, flip chart board/paper etc.	T: 2:00 P: 5:00
8	Process of carrying out harvesting, post-harvest processing and marketing activities T: 10:00 P:20:00 (HH:MM)	1. Harvesting	<ul style="list-style-type: none"> <li>Explain the correct time for harvesting</li> <li>Explain the harvesting procedure</li> </ul>	AGR/N6108 PC2, KU1, KU2, GS1- GS9	Classroom lecture, presentation, field visit, demonstration	PHB, projector, display screen, round table sitting arrangement, white board, duster, flip chart board/paper etc., Slides in power points presentations providing relevant information on harvesting of bamboo.	T: 3:00 P: 5:00
		2. Post-Harvest and Storage -I	<ul style="list-style-type: none"> <li>Perform post-harvest treatment process</li> </ul>	AGR/N6108 PC6-PC9, KU7-KU10, GS1-GS9	Classroom lecture, presentation, field visit, demonstration, team activity	PHB, projector, white board, duster, flip chart board/paper etc., Audio-visual aids through images, charts, power point slides on post-harvest treatment of bamboo.	T: 2:00 P: 5:00

S.No.2	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
		3. Post - Harvest and Storage -II	<ul style="list-style-type: none"> <li>• Explain the drying process of the bamboo</li> <li>• Explain where to sell Bamboo produce</li> </ul>	AGR/N6108 PC7, PC10, KU8, KU11, GS1-GS9	Classroom lecture, presentation, field visit, demonstration, team activity	PHB, projector, white board, duster, flip chart board/paper etc., Audio-visual aids through images, charts, power point slides on post-harvest treatment of bamboo.	T: 3:00 P: 5:00
		4. Recap	<ul style="list-style-type: none"> <li>• Recapitulate complete module learning</li> </ul>	AGR/N6108 PC2, PC6, PC7, KU7-KU10, GS1-GS9	Classroom lecture, presentation, Q/A session	PHB, projector, display screen, round table sitting arrangement, white board, duster, flip chart board/paper etc.	T: 2:00 P: 5:00
9	Hygiene and cleanliness T: 03:00 P: 03:00 (HH:MM)	1. Hygiene and Workplace Housekeeping	<ul style="list-style-type: none"> <li>• Explain the requirements of personal health, hygiene and fitness at work</li> <li>• Describe general health guidelines set by organizations / Govt. at the work place</li> <li>• Explain the importance of Good Housekeeping at the work place</li> <li>• Explain the importance of notifying the designated authority on personal health issues related to injuries and infectious diseases</li> </ul>	AGR/N9903 PC1-PC4, KU1, KU2, GS1-GS9	Classroom lecture, presentation, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 3:00
10	Safety and emergency procedures T: 12:00 P: 12:00 (HH:MM)	1. Emergency Procedures and First Aid-I	<ul style="list-style-type: none"> <li>• Explain site inspection and reporting on a regular basis</li> <li>• Ensuring prevention of accidents and loss</li> </ul>	AGR/N9903 PC20, KU3, GS1-GS9	Classroom lecture, presentation, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 4:00 P: 4:00
		2. Emergency Procedures and First Aid-II	<ul style="list-style-type: none"> <li>• Explain workplace safety using Personal Protective Equipment (PPE)</li> <li>• Explain dealing with accidents, fires and emergencies</li> </ul>	AGR/N9903 PC6, PC16, KU8, GS1-GS9	Classroom lecture, presentation, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 4:00 P: 4:00
		3. Emergency Procedures and First Aid-III	<ul style="list-style-type: none"> <li>• Explain use of emergency evacuation</li> <li>• Explain administer first aid</li> <li>• Follow the do's and don'ts related to security</li> </ul>	AGR/N9903 PC20, KU15, GS1-GS9	Classroom lecture, presentation, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 4:00 P: 4:00

S. No.	Module Name	Session Name	Session Objectives	NOS References	Methodology	Training Tools/Aids	Durations
11.	Employability Skills (30 hrs)	Introduction to Employability Skills	<ul style="list-style-type: none"> <li>Describe the importance of Employability Skills</li> <li>Prepare a note on different industries, trends, required skills</li> </ul>	DGT/VSQ/N0101	Team Activity: Interactive discussion	White-board and Markers Chart paper and sketch pens LCD Projector, Laptop for Presentation, audio visual aids, note pad, paper, pen, computers etc.	1 hr
		Constitutional Values: Citizenship	<ul style="list-style-type: none"> <li>Detail the principles of the constitution of India</li> <li>Identify the various environmentally sustainable practices</li> </ul>		Class room lecture, discussion, Demonstration, practical		1 hr
		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>		Class room lecture, discussion, Demonstration, practical		1 hr
		Basic English Skills	<ul style="list-style-type: none"> <li>Read English text with appropriate articulation</li> <li>Practice basic English words, sentences and punctuation</li> </ul>		Team Activity: Role play, video session		2hrs

S. No.	Module Name	Session Name	Session Objectives	NOS References	Methodology	Training Tools/Aids	Durations
		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</li> </ul>	DGT/VSQ / N0101	Class room lecture, Group discussion, demonstration , activity		4 hrs
		Essential Digital Skills	<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/ N0101			3 hrs

S. No.	Module Name	Session Name	Session Objectives	NOS References	Methodology	Training Tools/Aids	Durations
		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</li> </ul>	DGT/VSQ / N0101	Class room lecture, Group discussion, demonstration, activity		4 hrs
		Essential Digital Skills	<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/ N0101			3 hrs

## 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- Bamboo Grower	
Job Role	Bamboo Grower
Qualification Pack	AGR/Q6101
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 50% 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/N6101.Propagate bamboo saplings in the nursery	30	40	-	30	100	15
AGR/N6103.Select the bamboo variety and site, and prepare the field	30	40	-	30	100	15
AGR/N6104.Transplant and maintain the bamboo saplings	30	40	-	30	100	10
AGR/N6105.Carry out pruning and weeding in bamboo crop	30	40	-	30	100	10

AGR/N6106.Carry out irrigation, nutrient management and intercropping	30	40	-	30	100	10
AGR/N6107.Carry out integrated pest and disease management for bamboo crop	30	40	-	30	100	15
AGR/N6108.Carry out harvesting, post-harvest processing and marketing of bamboo culms	30	40	-	30	100	15
AGR/N9903.Maintain health and safety at the workplace	40	25	-	35	100	5
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	5
<b>Total</b>	<b>270</b>	<b>335</b>	<b>-</b>	<b>245</b>	<b>850</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 a Bamboo Grower	Unit 1.1 - Overview and Scope Of Bamboo Grower	About Bamboo	<a href="https://youtu.be/bGdMTIxU9Uc">https://youtu.be/bGdMTIxU9Uc</a>	 About Bamboo
		Varieties of bamboo	<a href="https://youtu.be/q32D3PD93ok">https://youtu.be/q32D3PD93ok</a>	 Varieties of bamboo
		Assisting in Veterinary Extension Services	<a href="https://youtu.be/EYKC8c6Fk0">https://youtu.be/EYKC8c6Fk0</a>	 Assisting in Veterinary Extension Services
<b>Chapter -2</b> Process of Propagating Bamboo Samplings in the Nursery	Unit 2.2 - Preparation for Planting Site	How to plant bamboo.	<a href="https://youtu.be/LYovi8-a_fs">https://youtu.be/LYovi8-a_fs</a>	 How to plant bamboo
		Weed control	<a href="https://youtu.be/mFMORVF7QrE">https://youtu.be/mFMORVF7QrE</a>	 Weed control
		Pruning	<a href="https://youtu.be/Mu59t3DQc8Q">https://youtu.be/Mu59t3DQc8Q</a>	 Pruning
<b>Chapter -4</b> Process of Transplanting And Maintaining the Bamboo Saplings	Unit 4.1 - Transplanting the Saplings	Transplanting	<a href="https://youtu.be/yx9qOYld8mU">https://youtu.be/yx9qOYld8mU</a>	 Transplanting
		Spacing between Bamboo	<a href="https://youtu.be/T7mtQtQDP34">https://youtu.be/T7mtQtQDP34</a>	 Spacing between Bamboo

Chapter No.	Unit No.	Topic	QR Code Links	QR code (s)
<b>Chapter -5</b> Process Of Carrying Out Pruning and Weeding in Bamboo Crop	Unit 5.1 - Weeds and Control Process	Tools for Pruning	<a href="https://youtu.be/GkkyG38BSRM">https://youtu.be/GkkyG38BSRM</a>	 Tools for Pruning
		Mulching	<a href="https://youtu.be/gQxIIIzT13U">https://youtu.be/gQxIIIzT13U</a>	 Mulching





**Skill India**

कौशल भारत - कुशल भारत



सत्यमेव जयते  
GOVERNMENT OF INDIA  
MINISTRY OF SKILL DEVELOPMENT  
& ENTREPRENEURSHIP



N·S·D·C  
National  
Skill Development  
Corporation

Transforming the skill landscape



Scan this QR to access eBook

<https://eskillindia.org/Home/handbook/84>



**ASCI**

Agriculture Skill Council of India

**Address:** 6th Floor ,GNG Buildin ,Plot No.10  
Sector -44, Gurugram - 122004,Haryana, India  
**Email:** info@asci-india.com  
**Web:** www.asci-india.com  
**Phone:** 0124-4288322, 4047488, 4046678  
**CIN No.:** U93000HR2013NPL048073