

Syllabus For Plant Nursery Technician

Course Name	Plant Nursery Technician
Course Code	AGR/2023/PLNT/163
Sector	Agriculture
Level	3
Occupation	Plant Nursery Technician involves working in a plant nursery or greenhouse, responsible for cultivating and caring for plants. They propagate plants through seeds, cuttings, or grafting, ensuring healthy growth and development. Plant Nursery Technicians manage greenhouse conditions, water plants and apply fertilizers for optimal growth. They monitor and address pest and disease issues to maintain plant health. Additionally, they assist customers with plant selection, offer expert advice and contribute to the overall success of the nursery operation.
Job Description	A Plant Nursery Technician is responsible for cultivating and propagating plants in a nursery setting. They are involved in various tasks such as sowing seeds, transplanting seedlings, managing irrigation systems, monitoring plant health, and maintaining nursery facilities.
Course Duration	Total Duration 390 Hrs (Theory 90 hrs, Practical 180 Hrs, OJT 60 Hrs, Employability Skill 60 Hrs)
Trainees' Entry Qualification	Grade 10 OR Grade 8 with two year of (NTC/ NAC) after 8 th OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR Previous relevant Qualification of NSQF Level 2 with one yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
Trainers Qualification	Minimum educational qualification: Diploma or Bachelor's degree in Horticulture or related field. Relevant industry experience of at least 2 years. Teaching experience and/or a teaching qualification is desirable.

Structure of Course:

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total
1	Nursery Management Techniques	Manage effectively a plant nursery, including tasks such as seed propagation, plant care, pest management, enabling them to produce and maintain healthy, high-	20	40	60

Module No.	Module name	Outcome	Theory (Hrs)	Practical (Hrs)	Total
		quality plants			
2	Plant Propagation Techniques	Apply various methods of plant propagation, including seed sowing, cuttings, grafting, and division, enabling them to successfully produce new plants, maintain genetic diversity, and contribute to sustainable plant cultivation and horticultural practices.	20	40	60
3	Nursery Plant Health Management	Identify and manage plant pests, diseases, and other health-related issues in a nursery setting, utilizing appropriate preventive and curative measures, ensuring the production of healthy and disease-free plants.	20	40	60
4	Nursery Facilities and Equipment Management	Maintain nursery facilities, including greenhouses, shade houses and irrigation systems, as well as managing nursery equipment, ensuring optimal environmental conditions for plant growth and productivity.	10	20	30
5	Nursery Sales and Customer Service	Interact with customers, provide expert advice on plant selection and care, and offer excellent customer service in a nursery setting, contributing to increased customer satisfaction, repeat business and overall success of the nursery operation	20	40	60
6.	OJT			60	60
7.	EMPLOYABILITY SKILLS		--	--	60
TOTAL:			90	240	390

SYLLABUS:**Module No. 1: Nursery Management Techniques**

Outcome:- Manage effectively a plant nursery, including tasks such as seed propagation, plant care, pest management, enabling them to produce and maintain healthy, high-quality plants

Theory Content:

- Principles of plant nursery management
- Propagation methods in plant nurseries
- Soil preparation and potting techniques
- Irrigation and fertilization practices
- Pest and disease control measures in the nursery

Practical Content:

- Nursery layout and design
- Seed sowing and seedling management
- Potting and container selection
- Irrigation system setup and maintenance
- Identification and management of pests and diseases

Tools & Equipment needed :

- Shovels, spades, and hoes
- Seed trays and pots
- Watering cans and hoses
- Fertilizers and pesticides
- Pruning shears and hand tools

Module No. 2: Plant Propagation Techniques

Outcome- Apply various methods of plant propagation, including seed sowing, cuttings, grafting and division, enabling them to successfully produce new plants, maintain genetic diversity and contribute to sustainable plant cultivation and horticultural practices.

Theory Content:

- Methods of plant propagation
- Seed sowing techniques and seedling management
- Cutting propagation and grafting techniques
- Tissue culture and micro-propagation
- Nursery inventory management

Practical Content:

- Seed sowing and germination
- Stem and leaf cuttings
- Grafting and budding techniques
- Tissue culture laboratory practices

- Inventory management and labeling

Tools & Equipment needed:

- Propagation trays and containers
- Pruning knives and grafting tools
- Sterilization equipment
- Growth hormones and rooting agents
- Laboratory equipment (for tissue culture)

Module No. 3: Nursery Plant Health Management

Outcome:- Identify and manage plant pests, diseases, and other health-related issues in a nursery setting, utilizing appropriate preventive and curative measures, ensuring the production of healthy and disease-free plants.

Theory Content:

- Common pests and diseases in nursery plants
- Integrated pest management strategies
- Plant health monitoring and maintenance
- Nutritional deficiencies and remedies
- Safe handling and disposal of pesticides

Practical Content:

- Pest and disease identification
- Monitoring and scouting techniques
- Application of integrated pest management methods
- Nutrient analysis and application
- Proper handling and disposal of chemicals

Tools & Equipment needed:

- Magnifying lenses and microscopes
- Insect traps and pheromone dispensers
- Sprayers and dusters
- Soil testing kits
- Personal protective equipment (PPE)

Module No. 4: Nursery Facilities and Equipment Management

Outcome:- Maintain nursery facilities, including greenhouses, shade houses and irrigation systems, as well as managing nursery equipment, ensuring optimal environmental conditions for plant growth and productivity.

Theory Content:

- Design and layout of nursery facilities
- Greenhouse and shade structure management
- Nursery equipment operation and maintenance

- Safety protocols in the nursery environment
- Waste disposal and recycling practices

Practical Content:

- Nursery facility design and layout planning
- Greenhouse and shade structure maintenance
- Operation and maintenance of nursery equipment
- Safety procedures and protocols
- Waste management and recycling methods

Tools & Equipment needed:

- Greenhouse materials (plastic sheets, frames)
- Thermometers and ventilation systems
- Nursery equipment (wheelbarrows, trolleys)
- First aid kits and fire safety equipment
- Recycling bins and waste disposal containers

Module No. 5: Nursery Sales and Customer Service

Outcome:- Interact with customers, provide expert advice on plant selection and care, and offer excellent customer service in a nursery setting, contributing to increased customer satisfaction, repeat business and overall success of the nursery operation

Theory Content:

- Marketing principles and strategies for plant nurseries
- Communication and customer service skills
- Plant selection assistance and advice
- Sales transactions and record-keeping
- Quality control measures for nursery products

Practical Content:

- Plant merchandising and display techniques
- Customer interaction and assistance
- Sales transactions and point-of-sale systems
- Record-keeping and inventory management
- Quality control checks and procedures

Tools & Equipment needed:

- Price tags and labels
- Point-of-sale systems (cash registers, barcode scanners)
- Record-keeping templates and software
- Display shelves and stands
- Quality control tools (magnifying lenses, moisture meters)

Module No. 6: Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).

Outcome:

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain.

Theory Content:**Practical Content:**

Assessor will check report prepared for this component of Practical training of the course and assess whether competency has been developed to work in the real job situation with special emphasis on basic safety and hazards in this domain. (The trainee is expected to undertake work in actual workplace under any supervisor / contractor for 60 Hours.)

Module No. 7: Employability Skills***Key Learning Outcomes*****Introduction to Employability Skills Duration: 1.5 Hours****After completing this programme, participants will be able to:**

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

Constitutional values - Citizenship Duration: 1.5 Hours

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

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

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

Basic English Skills Duration: 10 Hours

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

Career Development & Goal Setting Duration: 2 Hours

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

Communication Skills Duration: 5 Hours

12. Demonstrate how to communicate effectively using verbal and nonverbal communication

etiquette.

13. Explain the importance of active listening for effective communication
14. Discuss the significance of working collaboratively with others in a team

Diversity & Inclusion Duration: 2.5 Hours

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

Financial and Legal Literacy Duration: 5 Hours

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

Essential Digital Skills Duration: 10 Hours

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

Entrepreneurship Duration: 7 Hours

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

Customer Service Duration: 5 Hours

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

Getting Ready for apprenticeship & Jobs Duration: 8 Hours

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

Learning Outcome – Assessment Criteria

Module No.	Outcome	Assessment Criteria
1	Manage effectively a plant nursery, including tasks such as seed propagation, plant care, pest management, enabling them to produce and maintain healthy, high-quality plants	<p>1.1 Describe a clear understanding of the key principles and concepts related to plant nursery management.</p> <p>1.2 Demonstrate the practical application of different propagation methods, showcasing proficiency in preparing propagules, maintaining optimal growing conditions, and monitoring successful root development or plant regeneration.</p> <p>1.3 Explain the importance of soil preparation in a plant nursery, including soil sterilization, amendments, and nutrient enrichment techniques.</p> <p>1.4 Demonstrate the ability to operate and maintain irrigation systems effectively, ensuring accurate water delivery, uniform distribution, and water conservation practices.</p> <p>1.5 Identify common pests and diseases affecting nursery plants, demonstrating knowledge of their lifecycle, symptoms, and suitable control methods.</p>
2	Apply various methods of plant propagation, including seed sowing, cuttings, grafting, and division, enabling them to successfully produce new plants, maintain genetic diversity, and contribute to sustainable plant cultivation and horticultural practices.	<p>2.1 Explain different methods of plant propagation, including sexual and asexual propagation techniques, highlighting their key characteristics, advantages, and limitations.</p> <p>2.2 Monitor and evaluate seedling performance, identifying common challenges and implementing appropriate measures to address issues such as damping off, nutrient deficiencies, or overwatering.</p> <p>2.3 Perform the cutting propagation techniques, including the selection and preparation of appropriate cutting materials, hormone application, and optimal rooting conditions.</p> <p>2.4 Provide a detailed explanation of tissue culture and micro-propagation, including the steps involved, required laboratory equipment, and key principles of sterile techniques.</p>

Module No.	Outcome	Assessment Criteria
		2.5 Develop an inventory management plan for a plant nursery, considering factors such as space utilization, record-keeping systems, and inventory turnover.
3	Identify and manage plant pests, diseases, and other health-related issues in a nursery setting, utilizing appropriate preventive and curative measures, ensuring the production of healthy and disease-free plants.	3.1 Identify common pests and diseases affecting nursery plants. 3.2 Demonstrate pest identification, preventive measures, biological controls, cultural practices, and the appropriate use of chemical interventions when necessary. 3.3 Interpret plant health indicators. 3.4 Identify nutritional deficiencies in plants. 3.5 Demonstrate safe handling and disposal practices for pesticides and chemicals.
4	Maintain nursery facilities, including greenhouses, shade houses and irrigation systems, as well as managing nursery equipment, ensuring optimal environmental conditions for plant growth and productivity.	4.1 Explain the key components of the layout, justify their choices. 4.2 Demonstrate their understanding of efficient space utilization and workflow management. 4.3 Create a plan outlining temperature and humidity control, ventilation strategies, shading techniques, and lighting requirements. 4.4 Perform tasks such as using irrigation systems, potting or transplanting seedlings, or maintaining equipment. 4.5 Conduct a mock safety inspection of a nursery facility. 4.6 Create an inventory management and waste disposal plan for a plant nursery.
5	Interact with customers, provide expert advice on plant selection and care and offer excellent customer service in a nursery setting, contributing to increased customer satisfaction, repeat business and overall success of the nursery operation	5.1 Outline the target market, identify marketing channels and strategies and explain how they will promote the nursery products. 5.2 Participate in a role-playing scenario where students act as nursery staff assisting customers. 5.3 Demonstrate effective communication and customer service skills, 5.4 Provide appropriate advice to customers on plant care, growing conditions, and suitability. 5.5 Participate in a mock sales transaction where they handle customer inquiries, recommend products, and process sales. 5.6 Perform mock quality control inspections.

List of Tools, Equipment & materials needed for 30 Trainees

SI No	Items Name	Specification	Qty
1	Shovels, spades, and hoes	Of standard size and make	15
2	Seed trays and pots	Of standard size and make	15
3	Watering cans and hoses	Of standard size and make	15
4	Fertilizers and pesticides	Normally used in gardening	According to requirement
5	Pruning shears and hand tools	Of standard size and make	15
6	Shovels, spades, and hoes	Of standard size and make	15
7	Seed trays and pots	Of standard size and make	15
8	Propagation trays and containers	Of standard size and make	15
9	Pruning knives and grafting tools	Of standard size and make	15
10	Sterilization equipment	Of standard size and make	According to requirement
11	Growth hormones and rooting agents	As required for demonstration	According to requirement
12	Laboratory equipment (for tissue culture)	Of standard size and make	According to requirement
13	Magnifying lenses and microscopes	Of standard size and make	According to requirement
14	Insect traps and pheromone dispensers	As required for demonstration	According to requirement
15	Sprayers and dusters	Of standard size and make	According to requirement
16	Soil testing kits	Of standard size and make	According to requirement
17	Personal protective equipment (PPE)	Of standard size and make	30
18	Price tags and labels	As required for demonstration	According to requirement
19	Point-of-sale systems (cash registers, barcode scanners)	As required for demonstration	According to requirement
20	Record-keeping templates and software	As required for demonstration	According to requirement
21	Display shelves and stands	As required for demonstration	According to requirement
22	Quality control tools (magnifying lenses, moisture meters)	Of standard size and make	15
23	Greenhouse materials (plastic sheets, frames)	Of standard size and make	According

SI No	Items Name	Specification	Qty
			to requirement
24	Thermometers and ventilation systems	Of standard size and make	According to requirement
25	Nursery equipment (wheelbarrows, trolleys)	Of standard size and make	According to requirement
26	First aid kits and fire safety equipment	Of standard size and make	According to requirement
27	Recycling bins and waste disposal containers	Of standard size and make	According to requirement

Marks Distribution

Outcome	Outcome Code	Total Th marks	Total Pr marks	Total OJT marks
Manage effectively a plant nursery, including tasks such as seed propagation, plant care, pest management, enabling them to produce and maintain healthy, high-quality plants	AGR/0251/OC1	30	130	0
Apply various methods of plant propagation, including seed sowing, cuttings, grafting, and division, enabling them to successfully produce new plants, maintain genetic diversity, and contribute to sustainable plant cultivation and horticultural practices.	AGR/0251/OC2	40	140	0
Identify and manage plant pests, diseases, and other health-related issues in a nursery setting, utilizing appropriate preventive and curative measures, ensuring the production of healthy and disease-free plants.	AGR/0251/OC3	30	130	0
Maintain nursery facilities, including greenhouses, shade houses and irrigation systems, as well as managing nursery equipment, ensuring optimal environmental conditions for plant growth and productivity.	AGR/0251/OC4	20	120	0
Interact with customers, provide expert advice on plant selection and care, and offer excellent customer service in a nursery setting, contributing to increased customer satisfaction, repeat business and overall success of the nursery operation	AGR/0251/OC5	30	130	0
Work in real job situation with special emphasis on basic safety and hazards in this domain (OJT).	AGR/0251/OC6	0	0	150
Employability Skills – 60 Hrs	DGT/VSQ/N0102	50	0	0