

Propagation and Nursery Management Programmer (PNMP)
Core Qualification File Syllabus

Details of Theory Syllabus

Sl.No.	CONTENTS	DETAILS
1.	Nursery:(3Hrs)	1.1. Importance of nursery in Horticulture 1.2. Types of Nursery
2.	Establishment of nursery: (8Hrs)	2.1. Important factors of nursery 2.2. Layout of nursery 2.3. Components of nursery 2.4. Different propagation structures
3.	Preparation of beds, pots and growing media: (8 Hrs)	3.1. Nursery beds preparation 3.2. Seedling production of vegetable 3.3. Seedling production of ornamental crops 3.4. Preparation of pot and growing media
4	Management of nursery: (6 Hrs)	4.1. Management of young nursery plants 4.2. Irrigation Management 4.3. Nutrition Management 4.4. Weeds Management 4.5. Plant protection
5	Potting and repotting: (3 Hrs)	5.1. Potting of nursery plants 5.2. Repotting of nursery plants
6	Propagation : (6 Hrs)	6.1. Needs of propagation 6.2. Sexual method of propagation 6.3. Asexual method of propagation 6.4. Advantages and disadvantages
7	Seed Dormancy: (6 Hrs)	7.1. Causes of seed dormancy (internal and external) 7.2. Methods of breaking Dormancy
8	Vegetative propagation by specialized structures : (6 Hrs)	8.1. Propagation by bulb 8.2. Propagation by corm 8.3. Propagation by rhizome 8.4. Propagation by tuber 8.5. Propagation by tuberous root 8.6. Propagation by off-sets
9	Progeny and rootstock: (4 Hrs)	9.1. Growing and Maintenance of progeny plants 9.2. Raising of rootstock
10	Methods of Vegetative Propagation: (10 Hrs)	10.1. Vegetative Propagation through layering 10.2. Vegetative Propagation through cutting 10.3. Vegetative Propagation through budding 10.4. Vegetative Propagation through grafting
11	Growth regulators in plant propagation: (3 Hrs)	11.1. Definition of growth regulators 11.2. Types of growth regulators 11.3. Use of growth regulators in plant propagation

12	Micro propagation (tissue culture) : (4 Hrs)	12.1. Definition of micro propagation (tissue culture) 12.2. Advantages and disadvantages 12.3. Various culture techniques micro propagation
13	Nursery Registration and entrepreneurship development : (5 Hrs)	13.1. Needs for Registration of Nursery 13.2. Needs for accreditation of Nursery 13.3. Needs for certification of Nursery 13.4. Requirements for Nursery Registration
	TOTAL	72 Hrs

Detail of Practical Syllabus

SL NO	CONTENT (Any Eight)	DETAILS
1.	Layout of a commercial Nursery: (4 Hrs)	1.1. Site selection for nursery 1.2. Leveling nursery area 1.3. Selection of plots
2.	Nursery tools and implements: (4 Hrs)	2.1. Identification of Nursery tools and implements 2.2. Use tools and implements during nursery operations
3.	Basic operation in nursery (6 Hrs)	3.1. Demonstrate the preparation of land 3.2. Demonstrate the preparation of drainage channel 3.3. Demonstrate the preparation of demarcation of plots 3.4. Demonstrate the preparation of erection of fencing
4.	Different beds preparation and raising of seedling and transplanting: (8 Hrs)	4.1. Demonstrate the preparation of nursery bed: raised bed, sunken bed, level beds, 4.2. Preparation of germination bed, transplant bed, storage bed, seedling bed and cutting bed 4.3. <u>Practicing raising and transplanting of seedling</u>
5	Management of nutrient, water, weed and plant protection measures: (8 Hrs)	5.1. Demonstrate nutrient management 5.2. Demonstrate water management 5.3. Demonstrate weed management 5.4. Demonstrate plant protection in nursery plants
6	Plant growth regulators: (6 Hrs)	6.1. Demonstrate the procedure preparation of growth regulators 6.2. Use of growth regulators for seed germination 6.3. Use of growth regulators in cutting and layering
7	Pots, growing media, potting and repotting. (6 Hrs)	7.1. Preparation and maintenance of pots 7.2. Identification of different Media for nursery operations
8	Lifting, Labeling and Packing: (6 Hrs)	8.1 Study of lifting of nursery plants 8.2. Study of labeling of nursery plants 8.3 Study of Packing of nursery plants

9	Methods and techniques of vegetative propagation: (10 Hrs)	9.1. Practicing propagation through layering 9.2. Practicing propagation through cutting 9.3. Practicing propagation through budding 9.4. Practicing propagation through grafting
10	Vegetative propagation by specialized organs : (4 Hrs)	10.1. Study propagation by bulb 10.2. Study propagation by corm 10.3. Study propagation by rhizome 10.4. Study propagation by tuber 10.5. Study propagation by tuberous root 10.6. Study propagation by off-sets
11	Rootstock and mother plants: (4 Hrs)	11.1. Practicing the growing and Maintenance of progeny plants 11.2. Practicing the raising of rootstock
12	Mist chamber and poly house: (6 Hrs)	12.1. Develop an idea on mist chamber 12.2. Develop an idea on poly house 12.3. Study the Cost of establishment of mist chamber 12.4. Study the Cost of establishment of poly house
13	Visit to a commercial nursery (8 Hrs)	13.1. Identification of different parameters of commercial nursery 13.2. Acquaintance with different nursery management practices 13.3. Steps of nursery development 13.4. Develop an idea on nursery
14	Projects: (16 Hrs)	Any two projects each of 8 Hrs.
	Total	96 Hrs.

Details of Project (Any two)

Sl. No.	Content (Any two, each 8 Hrs.)	Details
1.	Project I (8 Hrs)	Prepare a Model Horticultural Nursery with different Components
2.	Project II (8 Hrs)	Establishment of Model Nursery for Fast Multiplication of Elite Clones and Varieties of Fruit Crops (mango, Guava, Litchi and Ber).
3.	Project III (8 Hrs)	Establishment of Model Nursery for Fast Multiplication of Foliage plants.
4.	Project IV (8 Hrs)	Establishment of Model Nursery for Fast Multiplication of Flower plants.

OUTCOMES

Outcomes to be assessed	Assessment criteria for the outcome
1. Identify the different parameters for establishment of nursery.	(1.1) List out the components of nursery in view of types, factors layout and components. (1.2) Select the site of nursery raising. (1.3) Plan for a model nursery (1.4) Describe the importance of nursery raising. (1.5) Prepare the nursery beds for raising quality seedling. (1.6) Mix the basal fertilizer. (1.7) Prepare the pot for nursery plants. (1.8) Identify seedling of different crops. (1.9) Maintain young nursery plants. (1.10) Apply proper irrigation procedure. (1.11) Maintain proper nutrition and weed control with plant protection criteria . (1.12) Acquaint with beset nursery management practice by visiting a local ideal nursery.
2. Identify, select and apply the methods of potting, repotting, lifting, labeling and packing of nursery plants, nutrition, irrigation system , application of Nursery tools and implements, seed dormancy, progeny plants, rootstocks, growth regulators.	(2.1) Identify the procedure of potting, repotting, lifting, labeling and packing of nursery plants. (2.2) Identify the tools and implements required for nursery potting and repotting.. (2.3) Plan and demonstrate the potting, repotting, lifting, labeling and packing of nursery plants. (2.4) Acquaint with different irrigation method required for nursery. (2.5) Describe the methods of nutrition, plant protection. (2.6) Identify the major causes of seed dormancy and procedure of breaking dormancy. (2.7) Identify and select the plant regulator used in nursery. (2.8) Select the method to maintain progeny plants. (2.9) Transplant of rootstocks for preparing grafts.
3. Identify and select different propagation methods with their advantages and disadvantages.	(3.1) Describe different methods of propagation. (3.2) Define advantages and disadvantages of sexual and asexual propagation. (3.3) Elaborate the importance of sexual and asexual propagation of horticultural crops.

4. Select and apply different propagation techniques: layering, cutting, budding, grafting, micro propagation (tissue culture) and propagation by specialized structures: bulb, corm, rhizome, tuber, tuberous root, off-sets etc.	(4.1) Identify the role of vegetative Propagation in horticultural crops. (4.2) Accustomed the procedure of the scion collection. (4.4) Demonstrate the layering, cutting, budding, grafting, micro propagation (tissue culture). (4.6) List out different technique the propagation by specialized structures: bulb, corm, rhizome, tuber, tuberous root, off-sets. (4.7) Apply the method of procedure for layering,
5. Follow the procedure for Nursery Registration and entrepreneurship development.	(5.1) Identify the need of registration of nursery (5.2) Select the steps for Nursery Registration, accreditation and certification. (5.3) Explain the use of mist chamber and poly house. (5.4) Calculate the Cost of establishment of mist chamber and poly house. (5.5) Follow up to obtain the nursery certification reports. (5.6) Visit trade centres and export houses (5.7) Implement the procedure of entrepreneurship.
6. Locate a commercial nursery of private Companies/State Horticulture/Agricultural Universities and identify the activities related to Nursery management and execute the same.	(6.1) Describe the name, functions and application of different hand tools, measuring tools/devices used for propagation and in nursery. (6.2) Demonstrate the proper use of tools and equipment's in propagation unit (6.3) Demonstrate proper use of different components in propagation units.

6. Visit to a seed processing plant in Seed Companies/State Agricultural Universities.