Practical-4

Visit to Local Vegetable Nursery and Acquaintance with Different Nursery Management Practices

Exercise 4.1: Visit to a local vegetable nursery and acquaintance with nursery management practices

OBJECTIVE:

- Imparting knowledge of innovative nursery raising and management practices by visiting a local nursery.

Delivery schedule: 02 periods.

Student's expectations/learning objective:

- Importance of quality nursery in vegetable crops.
- Features of model vegetable nursery.
- Methods of selection of quality planting material, packaging and transportation.

Handouts/material/equipment's & tools required: Paper sheet and pen to note down the instructions/ information.

Pre-learning required: Nursery raising techniques in vegetable crops.

Introduction:

Nursery seedlings of vegetable crops are produced by a number of government nurseries including SAUs and ICAR Institutes as well as progressive growers. With awareness among people regarding benefits of eating vegetables, the consumption of vegetables has increased manifold, and thus the demand for quality seed and seedlings has increased manifold throughout the country in the recent past to produce quality vegetables. However, the biggest problem is that the majority of farmers procure planting material from unreliable sources which may at times cause great loss. Availability of quality nursery has a great scope for enhancing the production and profitability of vegetable crops in the country as non-availability of quality planting material may lead to complete failure, reduction in the quality of vegetable produce, low yield, fluctuations in production *etc.* Nursery management is a technical and skill oriented job which require proper attention at different stages for the production of quality seedlings. It needs lot of planning, expertise and efficient management. Errors done

during raising a nursery cannot be rectified at later stages which also reduce the returns along with wastage of time and energy. Therefore, technical knowledge and careful planning are pre-requisite for a farmer before adopting nursery raising of vegetables as an entrepreneur. Provision of certain basic pre-requisites must be done for the establishment of a nursery on modern lines. Therefore, to get knowledge about scientific raising of vegetable nursery, it is important to get some training from a reliable source. Also, one should visit some public sector vegetable nurseries or the nurseries raised by progressive growers in the nearby areas to get a practical exposure along with acquaintance with the experience of commercial nursery growers which can motivate youth to take up nursery raising as an entrepreneur in future.

Important attributes of quality planting material:

- Nursery plants should be true to type and should be raised from healthy, disease free and quality seed procured from a reliable source.
- Nursery seedlings should attain an appropriate height of 12-15 cm which is most suitable for transplanting with minimum mortality rate.
- Nursery plants should be healthy and free from diseases and insect-pests (thoroughly check the lower side of leaves).
- Before uprooting the seedlings, it is essential to ensure that the seedlings have been properly hardened.
- Root system of nursery seedlings should be well developed and there should be no damage while uprooting the plants from nursery. So, apply irrigation 2-3 hours before uprooting the seedlings.
- Rigorous inspection of nursery plants before sale to ensure the supply of only healthy and disease free plants to the growers.

Selection of planting material

While selecting quality planting material, the following points should be taken into consideration:

- An easy technique to identify the best quality planting material is that a particular variety has distinct uniform leaf characteristics. Any variation observed among the seedlings can be adjudged as off-type or poor quality planting material. Always discard such material.
- Select healthy, stocky and medium-sized seedlings with vigorous root system. The material should be free from insect-pests and diseases and should never be over aged.
- After uprooting the seedlings, provide soil ball to cover the roots and wrap it with any material like polythene or net to keep the soil ball intact. Keep soil ball moist by sprinkling water on it.
- Keep plants in containers in a way that the plant and root system remains intact.

Packaging:

- Packaging should be strong enough to withstand handling and shipment.
- Planting material should be packaged in a filling compound, in a manner to minimize desiccation, movement, and damage during transport, and to allow adequate ventilation.
- Seedlings should not be enclosed in airtight containers.

Transportation

- Generally, healthy seedlings should be transported.
- It should be the consignor's responsibility to ensure that adequate advance arrangements are made to care for the seedlings until the consignee takes them into his charge.
- All possible precautions should be taken in advance to ensure that shipment containers are not exposed to desiccating conditions, and that they are not left exposed to the sun, extreme heat, or freezing conditions (temperatures).
- Plants should be stored in such a manner that they have adequate ventilation.
- The estimated time of arrival of the plant specimen should be notified in advance to the consignee.

Components of model nursery:

In business, reputation matters a lot and a nursery man can earn good reputation if he meets out the demand of stakeholders without any fail. The following points should be taken into consideration before establishing a model nursery.

1. Technical knowledge:

The knowledge on nursery management before establishing a nursery is pre- requisite for its success. Nursery management is highly skilled and technical job, which requires proper attention and expertise. Therefore, a person who wishes to establish a nursery must have technical knowledge on every aspect of the nursery production.

2. Layout of model nursery:

Layout is the plan map containing arrangement of different features *i.e.* which thing should be at which place of a nursery such as roads, paths, buildings, beds, irrigation channels, compost pit *etc.* It is prepared for effective utilization of inputs in a systematic manner so that there is minimum wastage of inputs, time and energy. A location specific model should be designed for nursery establishment as per requirements. Certain important components should be taken into consideration and provision should be made for these during planning and layout of nurseries, which are as follows:

(i) Fencing:

Prior to the establishment of a nursery, a good fence with barbed wire must be erected all around the nursery to prevent damage due to stray animals and thieves. The fence could be further strengthened by planting a hedge of thorny bushes like Duranta *(Neel kanti)*.

(ii) Roads and paths:

A proper planning for roads and paths inside the nursery will not only add beauty, but also make the nursery operations easy and economical. There should not be wastage of land by unnecessarily laying out of paths and roads.

(iii) Irrigation system:

Nursery plants require proper supply of water for irrigation. Hence, provision for assured irrigation facilities must be made well in advance to obtain success in the production of seedlings. In areas with low water table and frequent power failures, water storage tanks/ rain water harvesting tanks should be constructed to provide life saving irrigation to the nursery plants.

(iv) Office cum store:

An office-cum-store is needed for effective management of the nursery. The office building may be constructed in a place which offers better supervision and serve as reception counter for customers visiting the nursery. A store room of suitable size is required for storing tools and implements, packaging material, labels, pesticides, fertilizers *etc.* There should be provision for sale counter also.

(v) Nursery seed beds:

In a nursery, this component is essential to raise the seedlings. These are to be laid out near the water source as frequent irrigations are needed. The beds should be raised 15 cm from the ground level to ensure good drainage. These should be located in an open place which receives sufficient sunlight. Beds of 1-meter width and of any convenient length are to be made. A working space of 30-45cm between the beds is necessary. This facilitates ease in sowing of seeds, weeding, watering, spraying and lifting of seedlings.

(vi) Propagation structures:

There should be adequate provision for modern propagation structures like poly houses, net houses, low poly tunnels *etc.* These structures provide optimum conditions to raise off-season nursery such as seed germination, seedling development and hardening of plants before transplanting them in the field.

(vii) Use of soil less mixture and pro-trays for raising seedlings:

For better success of nursery plants and to optimize the high cost of hybrid seeds, soil less media comprising of cocopeat, vermiculite and horticultural perlite can be used as root medium for raising the nursery. These ingredients are mixed in 3:1:1 ratio before filling in the multi-celled plastic plug-trays or pro-trays. The size of the cells depend upon the kind of the crop to be sown in the nursery trays

- Plastic trays with 187 cells and 1.5 inch depth are good for tomato, brinjal, cucumber and musk melon.
- Trays with 345 cells of 1 inch depth are good for small seeded crops like cabbage, cauliflower, lettuce and capsicum

Small polytubes are also used for raising plants of different cucurbits for off-season cultivation. These polytubes are filled with mixture of fertile soil, well rotten farm yard manure, leaf mould, *etc.* in different proportions. The filling mixture may be prepared well in advance by adding sufficient quantity of super phosphate for better decomposition and solubilisation.

(viii) Packaging yard:

A packaging yard is used for packing the plant material before sale/dispatch to outstations. The workers sort out the healthy seedlings and prepare the pack of seedlings carefully in the packaging yard. On the packed bunch, description of the crop and its variety should be properly indicated. Packing yard should be located near the sale counter.

(ix) Compost unit:

It is an important component of the nursery. A huge quantity of organic manure is required in the nursery for the production of healthy planting material. Therefore, it is advisable to construct vermicompost pit, where the weeds and waste material can be utilized for the production of organic manure at the nursery site itself. The in house production of compost reduces the expenditure to be incurred on the purchase of manures.

3. Linkage:

Nursery production is a programme which requires proper planning and monitoring for obtaining quality planting material and better returns. This can be performed by better coordination and linkages with the experts in State Agricultural Universities (SAUs), State Department of Agriculture/Horticulture, reputed nurserymen as well as concerned stakeholders.

4. Hi-tech interventions:

Hi-tech interventions like protected cultivation, micro-propagation, micro-irrigation, fertigation, use of growth regulators, organic farming, and automatic climatic controls measures *etc.* are used for efficient utilization of inputs and increasing the production efficiency.

5. Marketing management:

The commercialization of nursery production is possible with efficient and organized marketing. This can be promoted by encouraging participation in extension activities of SAUs and NGOs, Agri-fest, kisan mela, seminars and other market linkage activities.

Exercise 4.1: Visit a commercial vegetable nursery in a nearby area. Study different components of nursery and write your experiences with respect to the following points:

1. Layout of the nursery
2. Strengths of the nursery
3. Weaknesses of the nursery
4. Suggestions/scope for improvement of features of the nursery

Procedure:

i) Plan a visit to the nearby commercial vegetable nurseries of progressive growers.

ii) Study all the components including infrastructure used for establishing the vegetable nursery.

iii) Observe the impact of different components on the effectiveness and efficiency of raising the nursery seedlings.

iv) Inquire about the important vegetables including cultivars that have demand amongst the farmers.

v) Inquire about the different problems associated with nursery raising including insect-pests or diseases infestation and their probable solution.

vi) The procedure used for lifting of seedlings from the nursery.

vii) Identification and sorting procedure used for maintaining the quality of planting material.

viii) The techniques or material used for packaging the nursery seedlings and further transportation.

ix) Economic feasibility of vegetable nursery raising by taking the opinion of vegetable nursery grower.

Precautions:

i) Maintain the proper discipline during the visit.

ii) Do not pluck/uproot the seedlings or interfere in between the operations being carried out by the workers.

iii) Don't argue on unnecessary point with the nursery growers.

iv) Do not tress pass the nursery beds.