

Short Communication

Nursery pro-trays and its importance in horticulture

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Abstract

Production of quality seedlings is an essential component for horticultural nursery trade and considered as a basic requirement for further commercialization. The Pro-tray nursery is an upcoming technique for quality seedling production. The paper highlights the benefits, methods and production of high quality seedlings as an entrepreneurship and its potentiality.

Key words: Nursery, seedlings, pro-tray, media, germination.

Introduction:

Production of quality seedlings is essential for good growth and performance of all kinds of crops, especially vegetable crops. Therefore, the practice of large scale seedling production is emerging as a profession and commercial activity. In the past, farmers used to produce the seedlings at a relatively low cost by preparing their own nursery beds. However, due to increase in demand for seeds of hybrid varieties which cost much more than the open pollinated varieties, many progressive farmers and agriculture entrepreneurs have taken-up the production of quality seedlings using seedling trays as a commercial activity (NAIP, ICAR, naip.icar.gov.in).

The Pro-tray nursery is an upcoming technique for quality seedling production where seedlings are produced under shade net. Such seedlings have better germination and healthy vegetative growth. They are free from pest-diseases and develop good root system within 25-30 days (Bryant, 1995; Copeland, 1976).

The benefits of pro-tray nursery are as follows:

- Production of pest free quality seedlings
- Having independent area for each seed
- Improved seed germination
- Better root development
- Minimized seedling mortality and damping off disease
- Provides uniform, healthy and early maturity

- Easy handling and cheaper transportation
- Good main field establishment and crop stand

Since the hybrid seeds are expensive, this method helps to reduce the cost by minimizing the seed wastage (YCMOU, 1992).

Seedling Trays:

Seedling trays are also called as pro-trays (propagation tray) or flats, plug trays or jiffy trays. The dimensions of the trays generally are 54.0 cm in length and 27.0 cm in width and cavity depth is 4.0 cm. These trays are made of polypropylene and re-usable. Life of the tray depends on the handling of the seedling trays. Seedling trays have been designed in such a way that a sapling gets a pre-calculated growing media and the right amount of moisture. The trays have pre-punched holes to each cavity for proper drainage of excess water and also right spacing.

Seedling Production Using Seedling Trays:

It is already a commercial venture to produce the hybrids seedlings of all kinds including tomato, capsicum, cauliflower and cabbage using seedling trays and protective structure. They make these seedlings available for sale to the other farmers. Papaya seedlings can also be raised in trays which are bigger in size. This method is mostly adopted for raising seedlings of F_1 hybrids since the cost of the seed is quite high. The vegetable or any other seedlings are produced under protective structures such as insect proof net houses, shade houses and low cost naturally ventilated greenhouses (Sharmila *et al.*, 2014).



Pro-Trays

Seedlings in Pro-trays

Rooted Seedlings

Advantages of Raising Seedling in Pro-trays:

1. Growing in seedling trays with right growing media helps in proper germination as it provides independent area for each seed to germinate and grow.
2. Seedling mortality or damping off diseases are reduced by using sterilized growing media. This results in uniform and healthy growth of all seedlings.
3. The use of trays enables easy handling and economy in transportation.
4. The use of trays improves germination and saves a lot of expensive seeds.
5. Root development in seedlings is better and no root damage while transplanting is almost avoided. This results in uniform crop with early maturity.

Growing Media for Seedling Trays:

Sterilized commercial growing media are better as the incidence of seedling diseases is less or nil and they contain right amount of moisture. The most common growing medium used is coco peat, which is steam sterilized to prevent nursery diseases. Coco peat is a by-product of coir industry and it has high water holding capacity. It should be well decomposed, sterilized and supplemented with major nutrient sources before using. Other growing media which have given good result are vermin-compost and sand mixed in equal proportions (McNiel, 2002).

Method of Seedling Raising:

1. Fill the seedling tray with appropriate growing medium such as coco peat.
2. Sow one seed per cell and cover by coco peat. No irrigation is required before or after sowing, if coco peat contains enough moisture.
3. Keep about 10 trays one over the other for 3 to 6 days, depending on the crops. Cover the entire stack of tray with polyethylene sheet. This arrangement ensures the conservation of moisture in the seedling trays until

germination. Therefore, no irrigation is required till seedling emergence.

4. Seeds start emerging after about 3-6 days of sowing depending upon the crops. Then the trays are kept spread over a bed covered with polyethylene sheet.
5. The germinating trays are then irrigated lightly depending upon the prevailing weather conditions. The trays are also drenched with fungicides as a precautionary measure against seedling mortality.
6. Seedling trays are watered daily, or as needed using water can or a hose with a fine sprinkle attachment. Do not over irrigate the trays to avoid leaching of nutrients which favours microclimate for disease.
7. The media may need to be supplemented with the nutrient solution, if the seedlings show deficiency symptom. Apply 0.3 % (3g/litre) of 100% water soluble fertilizer twice (12 and 20 days after sowing).
8. Protect the trays from rainfall by covering the polyethylene sheets in the form of low tunnel.
9. Harden the seedlings by withholding irrigation and reducing the shade before Transplanting (Mathers, 2002).

Conclusion:

The pro-tray method of raising nursery seedlings is an effective way for commercial production. It is highly economic and successful for large scale production and commercialization.

References:

- Bryant, G. 1995. Propagation Handbook. Stackpole Books: Mechanicsburg, Pennsylvania.
- Copeland, L. O. 1976. Principles of seed science and technology. Minneapolis: Burgess.
- Mathers, Hannah. 2002. Nursery stock production using the pot-in-pot technique, Department of Horticulture, Ohio State University.
- McNiel, Robert. 2002. Physical and economic requirements for pot-in-pot nursery production, Department of Horticulture and Landscape Architecture, University of Kentucky.
- Sharmila, B.C., Mohan, B. and Alagudurai, S. 2014. Raising of Hybrid Vegetable Seedlings under Protrays. *Journal of Krishi Vigyan*, 2(2): 64-68.
- Yashwantrao Chavan Maharashtra Open University, Maharashtra. 1992. Resource Book on Horticulture Nursery Management. National Agricultural Innovation Project, ICAR, New Delhi, India.