



Importance of containers in high- tech nursery

Hasmukh Leua, S. S. Gaikwad, A. I. Makwana, Shakti Arbat, S. S. Masaye, H. F. Patel, V. K. Patel and N. B. Patel

Horticulture Polytechnic Agriculture Experimental Station (N.A.U.) Paria, VALSAD (GUJARAT) INDIA

In horticulture various types of containers are used for sowing of seeds of fruits, vegetables, ornamental and floral plants. A flower pot or plant pot is a container in which flowers and other plants are cultivated. Containers for plant propagation are available in various forms, sizes and in different materials.

There are two types of nursery production:

Field and container. Field stock is either direct seeded or transplanted from seedlings and then lifted as bare-root stock for use as nursery liners, fruit trees seedlings for Christmas trees, wind breaks and conservation plantings. Field stock is also grown for balled and bur lapped landscape or shade trees. Container stock, which is propagated from seed, rooted cuttings and field grown seedlings, is common in both forestry and landscape nursery production.

There are several factors to keep in mind when deciding what containers to use. The factors include :

- Cost
- Appearance
- Design (Shape and size)
- Features that control root growth
- Durability
- Availability
- Shipping capacity
- How affects the growing medium moisture content and temperature.
- How suits the particular needs of the nursery.

Round black pots are the industry standard, but can cause root constriction that leads to plants with poorly developed root systems. There are other kinds of containers that promote better root systems.

A wide selection of ornamentals is produced in containers. Home owners usually prefer to buy containerized plants because the plants are easier to transport and transplant than balled and bur lapped plants.

Advantages of containerized production :

- Achieving high plant densities
- Using land unsuited for production
- Planting at times independent of the weather
- Eliminating some operations like root pruning
- Lowering transportation costs because of light weight media

-Experiencing less root loss and greater chance of survival than with field grown trees

Dis-advantages :

- Small containers need frequent watering
- Nutrients deplete rapidly
- Plants require winter protection
- Plants easily become root bound
- Wind can knock over trees
- Containers are costly
- Labour cost to pot up the plants is high
- Temperature extremes stress roots

Pots and containers designed for enhanced root growth are an important feature in containerized nursery production. Each pot and container offers its own advantages and disadvantages.

Inadequate drainage and aeration of container media is a limiting factor in the production of quality nursery crops. In severe cases this may lead to or contribute to the pre-mature death of the plant. In addition to appropriate growing medium the bags and containers should be provided with vents and drainage holes at the bottom to drain the excess water and for aeration in root zone.

Container depth : The only way to reduce the effects of perched water table is to increase the depth of container. The deeper the container, the lower the impact of the saturated area at the bottom of the container and the deeper the container, the greater the overall aeration and the less the pores are filled with water.



Effect of container depth on aeration and water content

	% aeration	% water
6" pot	21%	49%
4" pot	15%	56%
BP cell	9%	61%
Plug tray	3%	68%

Fonteno, 1987

- Growing medium used : 3 pine bark : 1 peat : 1 sand
- BP cell : Bedding plant cell (48% tray)
- Plug tray : 273 plug tray
- % aeration, % water as a % of total pore space

Containers :

Lat pots :

Earthen pots :

Large sized pots :
(30x30x30cm or bigger):

These pots are used for growing perennial ornamental plants like Areliya, Acalypha, croton, Thuja etc.



Medium sized pots: (20x20x20 cm): These pots are used for sowing seedlings small shrubs, indoor plants and rooted cuttings.

Small sized pots :

(15x15x15 cm): These pots are used for sowing seedlings of fruit plants and ornamental plants and they are easy for transporting.



Metal pots : These pots are used for raising perennial ornamental indoor plants.

Cement pots : These are pots for raising perennial plants for public garden and big bungalows garden.

Plastic pots : These pots are light in weight and easy to transport and used for indoor plants.



Ceramic pots : These pots are used for indoor gardening and as they have to keep under shade. Different shape and size of ceramic pot plants are used for Bonsai.

Baskets:

Hanging basket : These pots are used for hanging plants and are hanged in balcony or verandah.

- Bamboo basket :
- Plastic basket :

Thali :

Earthen seed pan :
These shallow pots are used for raising seedling from seeds.

Iron thali : Used as above

Plastic tray : Used as above



Polythene bags : Small, medium and big sized bags are

available, which are widely used in place of pots because plastic preserved moisture for longer time and cheaper and easy to transport.



Containers for plant propagation: Comes in various forms, sizes and different materials – Polystyrene, polyethylene, fibre or paper.

Polybags : Containers most commonly used in tree nurseries in developing countries. It is usually made made of black polythelene and have several drainage holes at the bottom.

Poly sleeves : Made from same material and are cut from a continuous roll and have no bottom Above both types are often locally made and cheap and readily obtained in most countries. They come in various gauges and volumes between 0.3 to 45 liters.



Bags or sleeves are not very durable and can break prematurely. For plants with a long nursery cycle, this can be a problem. They are normally used only once. The discarded polybags and polysleeves are a problem for nursery waste management, as they do not decay and are often burnt

Jiffy pots : Made from compressed peat and need to be filled with a growth substrate. Roots can easily penetrate the container walls, so root curling does not occur. The seedling is planted together with the pot which is biodegradable.



Root trainers : They are usually rigid containers with internal vertical ribs, which direct roots straight down if prevent spiral growth. The containers are set on frames or beds above the ground to allow air-pruning of roots as they emerge from the containers. Seedlings grown in root trainers have more vigorous and rapid root growth than seedlings grown in polybags.

Reference:

Booklet, Hi-Tech Nursery Management.

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