BENCHES

(17)

a) Floor as benches

Growing plants directly on the floor in conjunction with ground floor heating systems using the floor for growing plants is gaining popularity, but the cement must be laid exactly level in order to achieve an even distribution of water when flooding floors. Porous concrete floors may be expanded in width to serve as "benches". The main advantage is the porosity offered and the lowered cost from bypassing above ground structures. This system works well for some species. However, the added fatigue on employees may not be worth the initial savings when considering the strain of working at an awkward position.

b) Raised benches

Bench Arrangement

Maximum utilization of growing facilities is largely based on the amount of growing area achieved. Benches in the peninsular design may result in a greater growing area than if they were in a longitudinal arrangement. The peninsular design also allows many species to be conveniently segregated, which can be a real advantage for retail growers. However, many growers have found routine tasks such as watering much easier on longitudinally placed benches. Lastly, non-stationery benches, which provide even more growing space, are gaining popularity with growers. Movable benches, known as rolling benches, can increase efficiency up to 90 percent of the floor space. Bench platforms are moved by a crank at the end of the bench from side to side. Some can be moved by hand by sliding the benches over the top of long steel poles. Aisles are created where the grower wants to work at any given time. Rolling benches are easy to move by practically any labourer, which is an added bonus. Movable benches, however, are not appropriate in a retail setting or where plants must be accessed frequently. Retailers are better served by staying with conventional benches such as the longitudinal, peninsular, or other comparable type designs.

Bench Space Efficiency

Benching efficiency is defined as the square feet of bench space to the entire greenhouse floor area. This number is expressed as a percentage.

Bench Design

An alternative to conventional benching systems is the ebb and flow (flood or sub irrigation) benches. Metal or wood benches are replaced with watertight, molded plastic trays. Trays are periodically flooded with water and desired fertilizer concentration, which can be taken up throughout the plants via capillary action. This system has such advantages as reduced and uniform applications of water and fertilizer. Excess water and fertilizer are collected after each

flood and drain cycle to be recirculated later. Up to 50 percent reductions in water and fertilizer savings. Labour costs will also be reduced since the entire bench can be watered at the same time. An added benefit is that foliage will stay dry and plants can be grouped closely for greater production efficiency.

Materials for benches:

a) Wooden benches- Locust, cedar, redwood, and cypress are all woods highly resistant to decay. Paint benches before use with copper naphthenate or other preservatives to augment the natural decay resistance of the wood chosen.

b) Concrete- These benches are permanent and do not allow for change later. Concrete benches are durable and will not require additional treatment to prevent decay such as with wood. They may be reinforced with steel rods, when poured, for additional durability. Lastly, consider drilling holes in the base of the bench for proper drainage.

c) Metal- Entire metal or steel benches are used alone or in combination with another material. Advantages of galvanized metals over wood are the longevity and resistance to rot and decay. Metal benches may be expensive to install initially, but can be considered a one-time cost. Also consider the lowered maintenance costs when these types of benches are used.

d) Temporary or portable benches-

i) Plastic- Although plastics are becoming more common for bench beds, plastic frames are not always desirable. They are often not as durable or able to support as much weight as other benching materials.

ii) Pallets - Another portable bench system can be inexpensively constructed by placing pallets on cement blocks for support. Besides the low cost, this portable display can be easily and quickly disassembled.

CONTAINERS
(18)

Selection of suitable containers depends upon the crop to be produced in greenhouse, plant characteristics like crop stage, duration, vigour, growth habit, root system, etc. Generally long duration, deep rooted and vigorous crop plants require bigger containers compared to short duration, shallow and less vigorous ones.

Advantages:

- Increases production capacity by reducing crop time.
- High quality of the greenhouse product
- Uniformity in plant growth with good vigour
- Provide quick take off with little or no transplanting shock.
- Easy maintenance of sanitation in greenhouse

- Easy to handle, grade and shift or for transportation.
- Better water drainage and aeration in pot media.
- Easy to monitor chemical characteristics and plant nutrition with advanced irrigation systems like drips.

Type of containers

1.Plastic- The most common and inexpensive type of planter is the plastic planter. These are available in a multitude of sizes, shapes and designer colors and range in price from downright cheap to the more expensive designer lines. These planters are available with or without drainage trays and with smooth or textured surfaces. These containers are water-tight and non-porous.

2.Ceramic- Ceramic planters are usually slightly more expensive than plastic planters. They are also available with or without water drainage trays. Ceramic containers come in natural, textured surfaces or painted and glossy finishes. Some are hand-formed, imperfect and artistic.

3.Wood- Wood planters are less common than other types. Custom planters commonly constructed in wood, come in a variety of finishes and can give a particular decor a natural look. These planters should be lined with a non-porous material because wood can stain and rot if water-soaked. Wooden planters can be treated with a preservative, using only products recommended for applying to wooden greenhouses and avoiding those like creosote that could harm the plants.

4.Fiberglass- Fiberglass planters are used widely in commercial plantings. The surface is durable and easily formed into different custom shapes for any look. They can be given many different surface textures and painted any colour or pattern imaginable. They are water-tight; ridges are often built into bottom surfaces to provide drainage isolation.

5.Metal- Metal planters provide a nice accent for plants. The most common metals used in planter construction are brass, copper, stainless steel and aluminum. Wrought iron is also commonly used as a decorative container. Metal surfaces range from antique to highly polished to brushed. Metals require more maintenance than other surface materials. Treating of surfaces with sealants can reduce the tendency for tarnishing and minimize maintenance. Most metal containers do not provide drainage and are used primarily as outer covers for plant containers.

6.Clay/Terra cota- Clay pots can be used for interior display. Because they are porous, it is necessary to place pots on a waterproof tray to catch excess water and prevent bleeding of moisture through the pot onto carpet, floor or other surface areas.