

They contain eager people who are urged to concentrate on motivation, leadership, and satisfaction as goals. The financial rewards will follow if the system is properly put together.

Is it time for you to reevaluate your role in your business? Can you properly identify yourself? Are you able to determine your course of activity and then develop a program which will enable you to maximize your input and results? You are in one role or another — manager or coach, which is it? It is hard to be both.

PROPAGATION AND PRODUCTION OF TROPICAL FOLIAGE PLANTS IN THE "POLY-POT-PACK"

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Abstract. This is a review of work conducted on a method of plant propagation and plant production using a high quality peat-lite mix pre-packaged in plastic film tailored to fit inside containers of specific shape and size. Production of foliage plants of commercial quality in these packs is shown to be feasible and offers several benefits. These include conservation of water, fertilizer, and plastic, and reduced costs of handling and shipping the finished plants. Packs will accept seeds, seedlings, unrooted or rooted cuttings, liners, and air layers to be grown to finished or prefinished sizes.

REVIEW OF LITERATURE

Nurserymen and flower growers have grown plants in a variety of containers made from a number of materials such as wood, clay, steel, plastic, asphalt-impregnated papers, wood composition, and peat. The rigid container has been and continues to be the standard of the industry. In recent years several plastic-film bags offering a range of features have been introduced to the nursery industry. Although the rigid or semi-rigid plastic and metal containers are still the most popular, there is a limited trend toward use of plastic film bags as growing containers for ornamental plants.

Development and use of improved propagation and growing media for container systems has been concurrent with the changes in container technology. Peat-lite mixes are now being formulated and marketed by several companies on a nationwide basis. Many large nurseries now purchase their potting media preblended to specifications. This trend has been pronounced during the past 5 years and is expected to continue.

The concept of combining a tough plastic film with a high

quality peat-lite mix to form prepackaged units for plant production was initially proposed in the United States in 1966 by Boodley and Sheldrake (1). They indicated that cut chrysanthemums could be grown in 4- or 6-in. diameter polyethylene tubs filled with Cornell peat-lite mixes. In 1967 Henly (2) described growing cut chrysanthemums in a peat-lite mix contained in mat-like packages fabricated from 4-mil, black polyethylene film perforated on the top for insertion of cuttings and at the bottom for drainage of excess irrigation water.

In 1982 the term "Poly-Pot-Pack" (PPP) was coined to describe units of high quality peat mix, prepackaged in plastic film, and tailored to fit containers of specific shape and size (4). Use of the PPP for plant production has been demonstrated to be feasible for production of *Dieffenbachia* (3) and *Ficus* (4) of commercial quality. Weight of a 2-gal. polypropylene copolymer pot (C-20) was 7.37 ounces while the weight of 4-mil polyethylene film used to fabricate a PPP that fit a C-20 container was 0.67 ounces, or only 9% of the plastic used in the conventional container (4). Production of *Dieffenbachia* in 6-in. PPP irrigated with drip irrigation used approximately 40% less water than plants in conventional 6-in. standard plastic pots due to the mulch-like cover over the soil surface (3). Due to the light weight of finished plants and the soft flexible film covering over the rootball of plants grown in the PPP, plants were packed tighter than was possible with plants in conventional pots (4). This was especially true if plants were grown with very large tops in relation to the rootball size.

DISCUSSION

The concept of utilizing the PPP begins with packs containing growing medium completely sealed in plastic film. These would be purchased by potted plant growers. The film cover is perforated at the bottom for drainage and the top surface is slit for insertion of seeds, seedlings, cuttings, liners, layers or other plant propagules. The packs are then placed in supporting containers, plant material is inserted, and drip irrigation tubes are placed in the top of each pack. Plants are watered and fertilized through a drip irrigation system. At the time plants reach salable size, they are removed from the supporting pots and shipped to wholesale buyers with the film package in place. The rigid supporting containers are left for reuse at the nursery. Plants can be handled at the consumer level in several ways. Interior plants can be placed directly in ornamental containers that approximately conform to the PPP dimensions, or the plants can be placed in the large containers. When stepping plants up to larger containers, the pack sidewall can be slit vertically on 3-to 4-in. centers to permit

root penetration into the surrounding fill, or the film packaging can be removed prior to repotting. The latter two options are feasible when considering plants to be planted in the ground, indoors or out.

A summary of the potential benefits of growing plants in the "Poly-Pot-Pack" are:

1. Use of the PPP virtually eliminates all soil mixing and soil handling operations prior to potting plant material.

2. The medium in the PPP remains dry and free from contamination until it is used for plant production.

3. The PPP is a moisture conserving device with its self-mulching cover, which reduces moisture evaporation from the soil surface.

4. The self-mulching feature of the pack also excludes most weed growth during production.

5. The moisture-deflecting feature of the pack permits only a small amount of additional water from rainfall to enter the root zone and leach nutrients, thus reducing the quantity of fertilizer needed for plant production.

6. Medium in the pack tends to retain optimum aeration levels during periods of high rainfall due to the moisture-deflecting feature on the mulch.

7. The PPP requires approximately 10% of plastic used in conventional pots used for plant production.

8. Plants can be packed tighter for shipping because of reduced container bulk, flexible cover, and light weight of the finished plants.

9. The light-weight PPP-grown plants reduce labor and equipment required as plants are prepared for shipping.

10. Plants grown as prefinished items, with large tops in relation to rootball size, provide a savings during shipment because of reduced bulk and, in some cases, reduced amount of packing material needed.

11. Interiorscape contractors have the convenience of lighter weight plants that save labor and equipment requirements for plant installation.

Use of the "Poly-Pot-Pack" for production of certain container-grown foliage and flowering plants has potential. It can find most rapid acceptance when used with interior foliage plants produced for interiorscape contractors interested in cutting their shipping costs, which can amount to one-third or more of their total plant cost. Reduction of transportation cost would be especially helpful with shipments to Europe and other distant markets. The professional interiorscaper is con-

fronted with difficult logistical problems with large plants grown with the traditional heavy mixes. Use of PPP-grown plants would eliminate many of the problems presently encountered during installation of large plants indoors. Since both production and installation of large plants for interiorscapes are rather specialized professions, it is reasonable to assume that people in these professions would accept a new concept of plant production in a relatively short time.

One of the most serious obstacles to the use of the PPP with large plants is devising some systems of plant support during production. The heavy mixes now being used greatly assist in keeping large plants from tipping over in shadehouses and open field situations where wind is a factor. With a little effort effective support systems can be designed to prevent plants from tipping over in the nursery.

Acceptance of the PPP system of plant production rests with proper introduction of the concept to selected specialized producers and users of the product. Ultimate acceptability of the system is dependent upon economics of manufacturing the PPP and getting one or more of the potting media blending companies to package the product in units of the most desirable shapes and sizes.

LITERATURE CITED

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AN OLD ROOTING BENCH REVISITED

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In 1972 Morrison's Farm and Nursery began as a hobby-type operation with the construction of a shade arbor for the rooting of plant material and a hot-house for the growing of foliage plants. We were originally in the chicken business and still do have two houses in production. From this meager beginning blossomed the present operation, which encompasses an area of 80 plus acres of production.