Foliage Production

Mel Sawaya
Fernlea Flowers
Delhi, Ontario

Foliage house plant production has become a very important field in the plant industry in the last few years. This is due to the fact that many home owners like to have plants in their living rooms, kitchen windows, or bathrooms. Some even go so far as to have plants in each corner of the house. That is in addition to all window shop displays, hotels, banks, and the lobbies of apartment buildings, as well as the apartments themselves.

Flowering plants, on the other hand, are primarily reserved for infrequent holidays and for the outdoor season, which is very short. Therefore, people turn to green plants to give their homes life during the dry, cold winters.

PROPAGATION

The most important aspect of foliage production is propagation, which can be divided into two main classifications: sexual or seed propagation and asexual propagation, or propagation from cuttings. Before we go any

deeper into these two classes, let's talk a little about the facilities and conditions that are needed for propagation. First of all, we need a good planting medium which holds water yet provides good drainage and aeration. A satisfying medium can be made up of equal ratios of peat moss perlite to vermiculite, and sand to turface. Secondly, in order to assure a high propagation percentage, a bench is necessary for providing good drainage and air movement. It is also the easiest method for providing bottom heat. Thirdly, the soil temperature has to be 70 degrees F. Fourth, light intensity should be anywhere from 500 to 1000 ft. candle, and thus can be controlled by shading during the sunny summer months. Fifth, high humidity is very important. Sixth, the requirement of high humidity also increases the possibility for disease, so a fungicide is a must. Seven, ventilation is one of the most important factors in disease control. During the winter, when Botrytis is a big problem, it becomes the most inexpensive method of disease control. By simply running the fans for a few hours during the day, ventilation proves to be as effective or better than spraying the greenhouse with any fungicide. Eight, a preemergence fungicide is invaluable for propagation, even if we are propagating in a soiless mix. Last but not least, sanitation is the most important aspect in plant propagation. We will be discussing these 9 points in greater detail as we discuss each class separately.

PROPAGATION BY SEED

The first class is sexual propagation, or propagation by seed. Foliage propagation by seed is both the cheapest and the most expensive method. It is the cheapest because the principle cost of seed is relatively low, and labour-wise, it is reasonably efficient. On the other hand, it is the most expensive for 2 main reasons: First, we should have a greenhouse that is especially designed for seed propagation — with more heat lines, extra ventilation, and multiple heat controls. Secondly, a great deal of time is involved, since 6 to 10 weeks is needed to produce a fairly small shippable pot.

Let me explain this further. We need the extra heat lines for constant, even high temperature, while the ventilation is needed for disease prevention control. The temperature controls are needed for a strong, healthy seedling. For example, suppose we seeded a section of the greenhouse today and 3 or 4 weeks later seeded a second section. At that time, the first section would need a much lower temperature than the newly-seeded section. This is because we require a higher temperature only at the time of germination. Once seedlings emerge, temperatures can be lowered. Therefore, if we don't have multiple heat controls we have two options: either keep the temperature high and the advanced seedling will stretch and grow spindly, resulting in a poor quality seedling, or turn the temperature down and have good seedlings from the first crop, but a second set of seedlings that will take forever — if they ever germinate at all.

PROPAGATION FROM CUTTINGS

The second class of green plant propagation is asexual, or propagation by cuttings. This class is much more important than seed propagation, covering about 75% of foliage productio. There are five methods of asexual propagation, including: terminal stem, stem and stem segment, bud cuttings, leaf blade and petiole, leaf piece, cutting leaf veins, and leaf sections; spores; runners and stolons; air layering; and division.

All of these propagation methods can be grouped under three cultural methods.

Mist Propagation: The cuttings are put in the soil medium and drenched with a fungicide or a combination of fungicides. A combination of Benlate and Dexon is very satisfactory for control of such diseases as Botrytis, Pythium, Phytophthora, and Rhizoctonia. Automatic mist lines that come on every 30 min. for 10 seconds work well. The key to this method is to know when to reduce the frequency of misting and when to shut it off. The cuttings must stay turgid and not oversaturated, which is as bad as being dehydrated, for it makes the cutting a good host for disease.

Tent Propagation: The cuttings are stuck into a soaked soil medium, the fungicide is applied, and the entire bench is covered with a sheet of plastic. This method saves labour, but it is risky and requires a lot of attention for 2 main reasons: First, since tent propagation works on the principle of evaporation condensation, bottom heat must be on for a longer period of time than needed in mist propagation. Second, if a disease is started inside the tent, it can spread much easier and is much harder to control.

Lazy Grower Method: The last cultural method is what I call the "Lazy Grower Method" because it requires no mist, no tents, or anything else. All we have to do is stick the cuttings in a soil medium, drench them with a fungicide, and forget about them for 3 or 4 days. After that, keep the cuttings moist by watering them whenever the soil drys out. This method is economical and very good for unequipped greenhouses. In addition, it covers a good portion of foliage production.

No matter which cultural method is followed, there are a few points to be aware of. We have to keep in mind that healthy stock plants give healthy cuttings, resulting in more healthy plants. However, cuttings from diseased stock plants will not get any better and most probably will infect the healthy ones. The amount of moisture in the stock-plant cutting is also a determining factor as to whether the cutting will be successful or not. Therefore, plants should be well watered at least a day before cuttings are taken.

In addition, an application of a fungicide on the stock plants before cuttings are taken will give good immunity against disease. This is especially true of systemic fungicides which can get into the system of the plant. Close attention and the knowledge of how to properly take a cutting is very important.

Now the question comes to mind, should we propagate our own plants or not? Before making a decision, we have to ask ourselves these questions: Can we spare the room necessary for successful propagation? Do we want to invest the money for setting up a propagation area and installing all the facilities? Do we want to hire more employees to do the propagation? Can we provide room for all the stock plants that we need? Is this program financially feasable?

If the answer is yes to the previous questions, we should then ask which we can propagate economically ourselves, and which ones we should buy. To answer this question the grower must know which pot size his market demands, since pot size determines the size of the plant and that, in turn, determines the growing time. Almost all sizes up to 5" pots and some 6" pot varieties can be propagated economically, since the time involved to make a 5" pot or smaller can fit into other crop programs. However, 8" and 10" pot sizes are more time consuming and take up a large area of the greenhouse. Therefore, it is difficult to start your own 8" or 10" pots from seed or from your own cuttings. (I have to emphasize here that it is difficult only for growers who have to fit the foliage production within their holiday crop and bedding plant schedules.)

There are three ways to grow these two sizes within a reasonably economical time: 1) Take a 4" pot and transfer it into a 8" pot. Very few varieties are able to make 10" tropicals. 2) Get prefinished 8" and 10" pots and grow them until suitable for shipping. 3) Get finished pots, climatize them, and then ship.

Let me give you an idea of the growing time for some 10" pots. An Areca Palm takes 18-24 months from seed. Schefflera, Arboricola, and Benjamina will take anywhere from nine to twelve months. Selloum is one of the fastest crops, and it takes at least 6-9 months.

Who, then, can afford to grow only one crop or a crop and a half per year, knowing that an acre of greenhouse has a heating cost of $25,000 to $30,000 per year? I don't think there is any northern grower who can afford this. Only the southern states can afford to grow such crops because of the free heat, the ample sunshine, and the lack of greenhouse costs, since crops are grown outdoors.

Now the grower who doesn't want to go to the trouble of propagating and likes to get two or three crops out of the greenhouse between his holiday crops has several options:

1) Buying unfinished plants that are still small and growing them to a shippable size in the same pot size.
2) Buying small-sized pots and moving them into larger pots.
3) Buying cuttings that require minimum propagation facilities, such as most succulents, peperomias, wax ivy, spider runners, etc.
4) Buying cell packs and transferring them into 3", 5", and even some 6" pots.

You can get a crop of 3" or 3½" from cells in 3

to 4 weeks, and a 4'' or 5'' crop in 6 weeks.

SHIPPING

Finally, I would like to give the advantages and disadvantages of shipping plants from such places as Florida or Europe. The advantages are that you can obtain a few more varieties, you can get three to five foot tropicals which are almost impossible to grow here (in Canada), and you can keep in touch with some very knowledgeable people in the foliage industry.

The disadvantages are that gas is not getting any cheaper so shipping costs will have no limit, two different climates make it difficult for plants to adjust, and when plants are grown outside in Florida, there are some diseases that don't show up in the plants until they get into our greenhouses. Furthermore, after a journey of 1500 miles, the plants need a minimum of 4 to 5 weeks to make them of shippable quality.

The climatic conditions are vastly different between Canada and Florida or Europe. Therefore, much time is required to climatize these plants.

Another thing we discovered is that any rooted plant with a certain soil medium will have a rough time when planted into a different soil medium. With this disadvantage plants are more susceptible to disease, and you may lose a good percentage of your shipment.

Finally, if you receive some damaged foreign plants it is very difficult to send them back, whereas more local produce can easily be returned to the supplier.

For my last two cents worth, I would say that anything home grown in 100% better quality.

Taken from a talk presented at the Canadian Greenhouse Conference.