CYCLAMEN PRODUCTION PROBLEMS

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This article concerns *Cyclamen persicum* 'Giganteum' — a highly bred and large flowered form of cyclamen which has become very popular as a winter flowering pot plant. Unfortunately it is proving a difficult plant to grow of recent years and one is seeing its demise at a steady rate. It is also, unfortunately, an expensive crop to produce with a high input rate of skill, cost and maintenance, and is at the stage of pricing itself beyond consumer acceptance. This is unfortunate because far more goes into the preparation of a good 15 cm cyclamen than a good conifer, and both return the same — so perhaps the problem is one of grower and retailer attitudes, and one of consumer education.

In order to give the problems of production some meaning, I would like to move through the production stages and relate some of the difficulties experienced at these stages.

Planting. Basically there is one rule, "Cleanliness and the avoidance of extremes in all aspects is essential". A standard long-term cyclamen plant commences existence in December. It is essential to get the best seed. A few extra cents at this stage is nothing when compared with the frustration at the other end of the production cycle with a weak and tatty flowering line. The trend of the moment is to short-term cyclamen plants, using selected strains of F_1 hybrids, but we are only using these seriously just this season and cannot really compare results. There is quite a difference in the price being asked for this seed. We have always had difficulty locating good seed, being a small user. We find it impossible to relate the look of seed to the actual crop it produces, but nice plump clean seed does appeal.

For sowing we use a standard U.C. mix with the nitrogen cut to about two-thirds (all mixes are sterilized). We scatter the seed, but with the advent of the Robinson Vacuum Planter, this could be avoided and the planter used to our advantage. With hand sowing, spaced planting in terms of labor and results is not justified. We never soak the seed — fresh seed never needs it, but if you suspect the seed to be old, it would be wiser to soak. Boxes are watered in with thiram and the seed covered with No. 2 vermiculite. Boxes are stacked in the coolest draught free spot you can find in your shed. Weekly hosing down of the stack is enough for boxes to remain moist during germination.

After three weeks one needs to watch the stack carefully as

once the first shoots start to emerge, the boxes need spreading out and re-watering. At times an extra cover with vermiculite is needed to keep the now-forming tubers anchored. By now it is mid-summer and the hottest time of the year — so the coolest house is best.

We plant a second batch of seed in mid-autumn, thus avoiding the hottest months and an even later batch of short term in early winter. Both these later batches receive bottom heat 15 to 18°C for the first six weeks after germination. I read somewhere that this aids early flowering and our trials support this.

Boxing. We have in the past potted to 8 to 10 cm at this stage but unless facilities are available to keep up night temperaures, growth doesn't really come on well until spring. Once plants are big enough to handle they are pricked out into seedling trays (about 20 to a tray). We find it better to use trays from a space point of view, and also the medium is easier to control over the difficult winter period. By eliminating the 10 cm potting stage we eliminate a serious stage of infection. If any old pots are used they are soaked in Mancozeb. Trays are also washed and dipped, but new ones used if possible. Night temperatures below 10°C are best avoided. The mix used for this stage is basically the mix recommended by Massey University, only we reduce Osmocote and use both long term and short term.

Per Mix/m^3: 742 gm short-term Osmocote
1.7 kg long-term Osmocote
1.5 kg superphosphate
3.0 kg dolomite lime
75 gm F.T.E.
250 gm Terrazole
150 gm Benlate

Only seedlings that have germinated regularly and have a good firm leaf are used. It is far cheaper to rogue at this stage than throw out at the 15 cm stage. There are few problems at this stage apart from the regular fungicidal and aphid spray. However, by using the tray method, one loses control of the spacing factor and potting to final pots can be as early as October. With pots, it is November-December. If one is behind schedule, as often happens in the nursery, the plants can become overcrowded and leggy. Humid conditions in the spring encourages mildew to set in. The crowded plants also become difficult to water. We find at whatever stage they are at, three fortnightly drenches with DDT 50% are necessary to eliminate the black vine weevil. This pest can be devastating, particularly in autumn when the plants are budding and being finished.

Summer plantings are ready to pot in early spring and autumn plantings in early summer. It helps from a potting viewpoint to have this barrier behind one for the holiday season. I am not so sure it helps from a plant point of view as the plants go into mid-summer with a full head of stems and it is at this point when trouble can often hit.

Potting. We pot on to 15 cm and sometimes with late plants, 10 cm. Seedlings of 15 cm size produce good-sized plants that should be capable of flowering through to the spring without any additional nutritional needs apart from a sea-based liquid feed. The final mix used is the Standard U.C. (with Mancozeb, Benlate Terrazole additives) (Massey University).

We have trialed many mixes and are still doing so. The price of products, once they gain universal acceptance, mysteriously increases with the result that they often become uneconomic to use. In general one can grow good cyclamen plants in most balanced mixes. The essential requirement is that the mix must be light and spongy with *excellent plus* drainage and remain well-aerated. Our trials with bark mixes have been good. The only plants to really come through last summer well were in bark, peat, soil and pumice mixes. Cyclamen seems to tolerate higher feeding levels than writers indicate, provided the above routines are observed. Cyclamen is a crop that suggests it is not what one puts them in that counts but what one "does and when" that matters.

Once plants are settled and new growth becomes apparent one must be meticulous about spacing. Good sturdy plants can best be produced by full spacing — 450 mm × 450 mm to start with.

Watering becomes a major problem with freshly potted plants. Hot days plus a period (mid-summer) when tropical downpours follow potting, is common. If hygiene has slipped at any previous stage by late summer you will know it. Plants during this stage must not be stressed. They need good light and cool conditions with overhead misting but with the medium not kept too wet.

Soft rot (*Nectria radicicola*) or summer wilt, as I call it, is devastating. A yellowish leaf, usually an older leaf, is the first sign. This usually starts at about the stalk area; if one plucks the leaf out there will be darkening of tissue on the scar of the corm. If present, the plant will often: a) die within two or three days, or b) die within two or three weeks — or it might even hang on for months. The result is inevitable. The plants will certainly not bud up and, if already in bud, will have only one batch of flowers with little or no follow up. A most frustrating disease. The plants have a beautiful intact root system but with

nowhere for the sap to go.

As a means of combating the wilt disease, Massey University suggested concrete floors as a possible solution — I concreted my 450 sq metre house and this proved a disaster — whole rows became infested after the appearance of a few wilted plants. The year before I used raised beds with the plants sitting on black polythene and this was far better, as surplus water drained directly clear of other plants.

Leaf Spot fungi can cause problems under "Sarlon" (shadecloth)-grown stock. It seldom occurs in plants grown under glass or Duralite-grown stock. Ferbam can be useful for control but we try to pick it up at its early stage and destroy infected leaves. Aphids and mites are sometimes a pest, especially aphids Metaxystox/Thioan/Orthene and Pyrox can be used for treatment.

Other problems strike at this stage. *Botrytis* is always waiting to rear it's ugly head, especially if one has not been regular about picking over the natural regeneration of leaves that takes place at intervals. Thiram, Euparen, Saprol, Ronalin, Dithane, Z78 and Benlate can be used in various combinations.

Growing Structures. Cyclamen plants do best under cool conditions. Also they grow best in conditions where extremes are kept to a minimum. Due to their water content they are susceptible to fungus diseases. They are easily upset by sprays and damage to leaves is very easily done. They respond negatively to unusual temperature variations, especially autumn night temperatures. One of the contradictions that I find fascinating is their ability to come through winter frosts, an occurrence best avoided if possible.

As we see it, structures to cater for these needs must have:

1. Floor and air heating with good light (autumn, winter, spring)
2. Light airy situation with controlled night temperatures (shut up) (spring to early summer)
3. Uncovered airy cool "Sarlon" type conditions (60%) with good humidity (early summer to autumn)
4. Controlled light, controlled night temperature (glasshouse) (autumn to late winter)

Ideally one could add to this a capillary or microtube watering system with benched or raised plants coupled with a good preventative spray programme and one cannot help but produce good cyclamen plants.