GLOXINIA*

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The Gloxinia (Sinningia speciosa), is a crop with good consumer appeal. This Gesneriad can be grown year-round with no requirement for lighting, disbudding, or pinching. There are few disease/pest problems and labor is minimal.

The earliest Gloxinias imported from Brazil to Europe had nodding flowers. By 1845, breeders had produced the upright flower most common today. Double-petalled cultivars were bred in Belgium by 1873. There are now four flower forms available along with a wide range of colors (Katzenberger, 1975). New cultivars are constantly being created since Gloxionias can be easily hybridized.

Gloxinias can be propagated in several ways: from seed, tubers, cuttings, and leaf explants (tissue culture). Since the seed is very fine, it may be mixed with sand and sprinkled evenly on the surface of a growth medium such as a peat-like mix. Gloxinias do not have a vigorous root system so a loose, well-aerated medium produces best results. Seed flats are placed under intermittant mist with a 70°F (21°C) night temperature for rapid germination and transplanted at about three months. A large, flowering plant can be produced in 6-7 months.

If planting tubers, place the rounded side down and cover with one inch of medium. If a tuber sends up more than one stem, all but the most vigorous may be removed. Excess shoots removed at the base can be propagated as cuttings which will mature almost simultaneously with the original (Katzenberger, 1975). Some gloxinias are also propagated by apical cuttings and leaf sections or explants. Explants yield the largest number of clones (Johnson, 1978).

Although Gloxinias are relatively pest-free, a water mold, Pythium debaryanum, may attack tubers causing a reddish-brown rot in shallow lesions. Infected specimens may not sprout, or if they do, the shoots die. Disease control consists of discarding infected tubers, planting healthy ones in disinfested soil and applying fungicidal drenches. Other common problems are spider mites, cyclamen mites, and loopers (Kimmins, 1980).

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Light intensity for Gloxinias is optimum at 2000 to 2500 footcandles. Sunlight is required, but too much sun may burn the foliage. Lack of sufficient light causes spindly growth and delays flowering. Research shows that night lighting along with CO_2 injection speeds growth and flowering. With lights from 5:00 p.m. to 8:00 a.m. using 400 watt mercury vapor lamps at 500 footcandles, plants flowered in 4 months (Sydner, 1972). Heat build-up from lights is averted by air movement such as with horizontal air flow.

Gloxinias require high humidity and even moisture levels in the soil. Capillary mats are beneficial to this crop by fulfilling both of the above conditions, in addition to promoting root growth. The growth medium should not be allowed to dry out betwen waterings if overhead watering is used.

Fertilizer is best applied in small quantities at frequent intervals. Gloxinias are not heavy feeders, so that injury from overfertilization may be more prevalent than nutrient starvation. Overfertilization can cause stunting of growth. The optimum pH for Gloxinias is 6.0. Micronutrient deficiency is not usually a problem, especially if some soil/compost is added to the growth medium.

Gloxinias have been noted to have an adverse reaction to fertilizers high in ammonium nitrogen especially during the winter months or under low light conditions. The use of calcium and potassium nitrates averts this problem. During high light periods, boron deficiency may occur. The symptoms are leaves with curled or "chewed" edges. If complete fertilizers with micro-nutrients are not used, apply Borax (or Solubor) at 2 oz/100 gallons once after plants are established.

Growth Regulators are often used to improve Gloxinia production. If insufficient light is available, 1-2 applications of daminozide (B-Nine) at .25% may be applied 2-3 weeks after potting to prevent spindly or leggy growth. The use of daminozide may delay flowering but produces a more attractive plant with more chlorophyll and thicker leaves. In addition, the flowers of treated plants are darker which enhances the attractiveness of pinks and reds.

Premature budding of Gloxinia will occur under any stress condition such as delayed potting, excess fertilization, or excess summer heat. A related problem common to this crop is bud blast, the senescence and drop of flower buds before they open. Blast is believed to be caused by water stress or by air pollutants. In winter, incomplete

combustion of fuel by in-house heaters may result in the production of ethylene (Shalit, 1980). Ethylene is a plant hormone responsible for senescence causing the buds to age prematurely.

In order to promote uniform and longer flowering, remove the first two flower buds at the base. Defoliation is also recommended for an increased flower count (Irons, 1982). When the plants have 8-10 leaves, begin removing new leaves as they form. Do this every few days to keep up with new growth until a satisfactory bud set is obtained. The resultant plants should produce 50 or more flowers.

Although not commercially feasible, Gloxinias may be grown a second season. After they have flowered, allow a "rest" period which follows the natural cycle of the tuber. This crop originated in Brazil where there is a rainy season for growth and a dry season for rest (Katzenberger, 1975). The dormant tubers should be watered about once a month until a new shoot appears, then repotted.

Although the Gloxinia is easily saleable once seen by customer, its production is limited due to shipping difficulties related to the large, often brittle foliage. This problem may be averted by growing smaller-leaved cultivars with more flexible leaves or growing smaller plants in small pots. This allows more plants per square foot and faster turnover of valuable greenhouse space.

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