GROWING CHRISTMAS CACTUS

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There is a distinction between the Christmas cactus and the Thanksgiving cactus. Schlumbergera (formerly Zygocactus) bridgesii, the Christmas cactus, has rounded lobes on the upper margin of the phylloclades (leaves), and blooms naturally in mid December. Schlumbergera truncata, which blooms naturally in middle to late November, is the Thanksgiving cactus. While S. truncata can be easily identified by the two to six serrate projections of its phylloclades, it has often been mistakenly called Christmas cactus (1).

The Christmas cactus grows as an epiphyte on the branches of trees and decaying bark in its native habitat of Brazil. For this reason, the growing medium should contain a high percentage of organic matter, with the addition of good drainage for commercial growing. Schlumbergera should be grown moist but not overwatered to avert disesase problems during months of low light intensity and low temperatures. The pH of the root medium should be 5.5 to 6.2. Fertilizer applied at the rate of 200-300 ppm nitrogen from 20-10-20, 15-16-17 (1), or 20-20-20 (2), every two weeks is generally sufficient. Osmocote has also been effective for large pots applied at 1/2 the recommended rate. In order to prevent iron deficiency, cupping of new growth and marginal chlorosis, apply chelated iron at 4 oz. per 100 gallons water 2 or 3 times during the growing period. Stop fertilization in August or September 1 to 2 months before the start of flower bud initiation (1). In mid August, start to withhold some water. This is not to encourage flower bud development as previously thought. Instead, this slows the plant metabolism so that carbohydrates are stored in the plant instead of being used for more new growth (2). While withholding some water, the plants should not be put under excessive water stress. Water should not be withheld when buds become visible since this may cause bud abortion or undersized flowers (2).

Propagation may start as soon as select stock plants, free of disease and other problems, have finished flowering. Cuttings of one to three phylloclades can be twisted off at the joints. Bottom heat of 70°F should be used. These cuttings will begin rooting in 2 to 3 weeks at which

time light fertilization may begin (1). Propagation begins in late December and is generally completed in February. The cuttings made in late December will be for larger pots (2).

Low temperature and/or short days induce flower bud initiation in the fall. Thus, there are several ways in which to induce flower initiation. First, flowering will take place below 55°F night temperature, no matter what the day length is, but flowering is not uniform. Temperatures less than 50°F prevent flower initiation. Flowers are readily initiated at temperatures of 59-68°F with nights of 12 hours or more. Twenty to twenty-five long nights are adequate for flower initiation. After this time, the photoperiod will not affect the development of the flowers. At a night temperature of 52°F flowering should occur in nine or ten weeks after initiation (1). Thus, to ensure a Christmas crop, at 55°F with nine hour days, begin using black cloth about September 15 (2).

As reported by Heins et. al. (5), 100 ppm benzylamina purine will increase flower bud numbers by forty percent when applied two weeks after the start of short days. Also, when applied during the vegetative growth period,the phylloclades increased by as much as one hundred fifty percent (5).

Environmental stresses such as high temperature and low light intensity during shipping of Schlumbergera cause a C_2H_4 (ethylene) build up within the plant. The ethylene in turn has caused as much as thirty percent bud and flower drop during shipping. It has been noted that silver nitrate prevented C_2H_4 - induced abscission in plants. However, its use is limited because of poor mobility in the plant and phytotoxic effects (4). Veen and Van de Geijn (3) found that silver thiosulfate (STS) was mobile.

Various tests have been conducted with STS on a variety of plants including Schlumbergera by Cameron and Reid in 1981 (4). Some of their tests showed that cactus pretreated with 4mM silver thiosulfate (STS) spray kept ninety percent of their flowers and eighty percent of their buds after having been exposed to 0.5 uL/liter ethylene for a seven day period. The 4mM was made by mixing silver nitrate with sodium thiosulfate in a molar ratio of 1:4. In comparison the control plants lost all flowers and dropped eighty-five percent of their buds. When using this treatment caution must be exercised. They found that the 4mM spray did cause some blistering of phylloclades that left dark pits. However, they did find that 2mM sprays** also provided the same protection from ethylene, but without any appreciable

phytotoxicity. Lower STS concentrations gave decreasing protection. In another test Schlumbergera held at 26°C in the dark for four days dropped all their buds and flowers, due to ethylene build up within the plant. However, plants sprayed with 4mM STS lost few of their flowers and buds when sprayed at 2, 3, or 4 weeks ahead of storage (simulated shipment). The cost of STS was figured to be less than 0.1 cents per plant at 1981 prices (4).

After consideration of these tests, it is easy to see how advantageous it would be to use 2mM STS before shipping. However, silver thiosulfate is not currently registered for use as described herein. Check with your local extension agent for the up to date information on STS usage in your area.

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* Presented as a term paper in a greenhouse crop production course.

**A 2mM spray is made by dissolving 680 mg silver nitrate in a liter of water and 4 g sodium thiosulfate in another liter of water. The silver nitrate solution is slowly stirred into the sodium thiosulfate solution to make 2 liters of 2mM spray. Note that this concentration is about 7 times as concentrated as the STS spray recommended for seed type geraniums.

References

1. Dosser, Amy. 1982. Holiday Cacti Growing Tips. North Carolina Flower Growers Bul. 26(6):5-9 Dec.

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3. Veen, H., and S. C. Van de Geijn. 1978. Mobility and Ionic Form of Silver as Related to Longevity of Cut Carnations. Planta 140:93-96.

4. Cameron, A., and Michael Reid. 1981. The Use of Silver Thiosulfate Anionic Complex as a Foliar Spray to Prevent Flower Abscission of Zygocactus. HortScience 16(6):761-762.

5. Heins, R. D., A. M. Armitage, and W. H. Carlson. 1981. Influence of Temperature, Water Stress and BA on Vegetative and Reproductive Growth of Schlumbergera truncata. HortScience 16(5):679-680.