

STORAGE OF PHILODENDRON AND POTHOS CUTTINGS

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Abstract. Three tests were conducted at 12 week intervals, for one year to determine influence of storage duration and temperature of *Philodendron scandens oxycardium* (Schott) Bunt and *Epipremnum aureum* (Linden & Andre) Bunt 'Marble Queen' unrooted cuttings on subsequent fresh weight production. Test I involved a 3 x 4 factorial of 4, 8 or 12 days storage at 50, 55, 60 or 65°F. Cuttings of Test II were stored for 24 hours at ambient, 65, 70, 75, 80 or 85°F, and Test III cuttings were stored at ambient temperature for 1, 2, 3, 4 or 7 days. Control plants were immediately placed in the mist beds. After storage, cuttings were kept under mist until rooted and then placed in the greenhouse. Fresh weight of new growth was determined after 3-4 months. Results were variable, but in general plants stored longer had less fresh weight. Storage temperature within ranges tested was not a factor.

The gross wholesale value of foliage plants for Florida in 1987 was \$300 million. Florida growers paid \$30 million for unfinished plants and cuttings. Most of these unfinished plants and cuttings originated in the tropics near the Caribbean basin where they are usually harvested the last of the week and arrive in Florida the first of the next week. Research has been conducted to determine effects of bottom heat, hormones, propagation medium, type of cuttings, and mist and light intensity on rooting of foliage cuttings (1,2,3,4,6,7). Climatic requirements for shipping cuttings of tropical foliage plants have not been well defined (5). The purpose of this research was to determine the effect of storage duration and temperature on propagation of *Philodendron scandens oxycardium* and *Epipremnum aureum* 'Marble Queen'.

Material and Methods

Cuttings from stock plants growing in the tropics were obtained Monday morning at 12 week intervals for one year. The cuttings had been harvested the last day of the preceding week. Fifty cuttings were planted immediately into Vergro potting medium on a mist bench. Additional cuttings were used for storage duration and temperature studies. Three tests were conducted to determine influence of storage time and temperature on fresh weight production of the cuttings.

Test I involved a 3 x 4 factorial of 4, 8 or 12 days storage at 50, 55, 60 or 65°F. Cuttings of Test II were stored for 24 hours at ambient, 65, 70, 75, 80 or 85°F, and Test III cuttings were stored at ambient temperature for 1, 2, 3, 4 or 7 days. While in storage, cuttings were in plastic bags. Cuttings were kept under mist until rooted, then potted into 4-inch pots and placed in the greenhouse. Fresh weight of new growth was determined after 3-4 months. Temperature and light intensity during propaga-

tion and growing varied between 70 and 95°F and 750 and 2000 foot-candles, respectively, depending upon season.

Results and Discussion

Philodendron s. oxycardium.

Test I. Fresh weight of shoots from cuttings stored for 4, 8 or 12 days decreased linearly with storage duration (Fig. 1), although all pots were salable at the time fresh weight was taken. Fresh weights of new growth were not significantly different for cuttings stored at 50, 55, 60 or 65°F. Control data are shown in all figures, far left of each group, but were not used to determine linearity.

Test II. When philodendron cuttings were stored for one day at temperatures from 65-85°, fresh weight of new growth had only slight variation, indicating that cuttings could be left at these temperatures for at least one day without serious detrimental effects (Fig. 2).

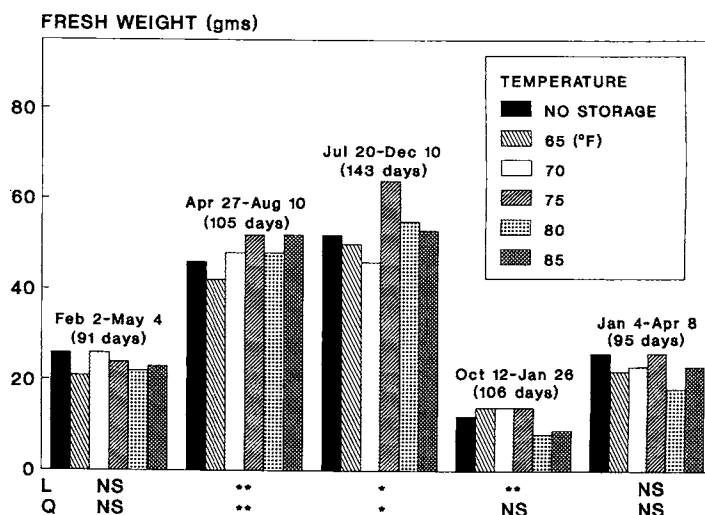


Fig. 1. Effect of storage duration of *Philodendron scandens oxycardium* cuttings on fresh weight of subsequent growth.

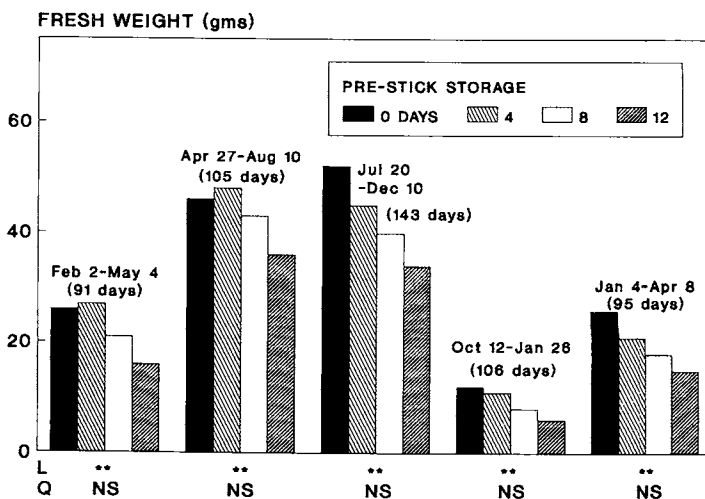


Fig. 2. Effect of one day storage at various temperatures on fresh weight of subsequent growth of *Philodendron* cuttings.

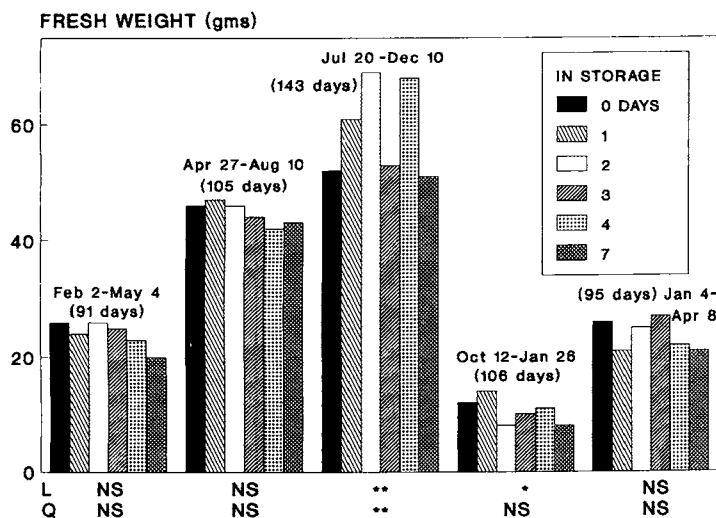


Fig. 3. Effect of storage duration at ambient temperature on fresh weight of subsequent growth of *Philodendron* cuttings.

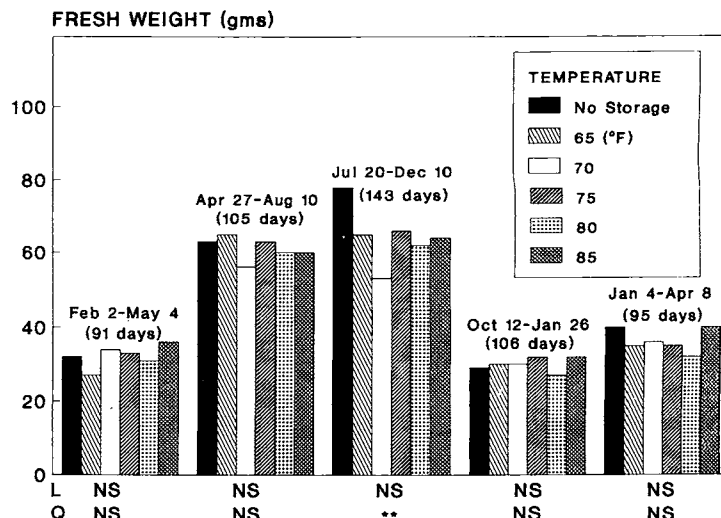


Fig. 6. Effect of one day storage at various temperatures on fresh weight of subsequent growth of *Pothos* cuttings.

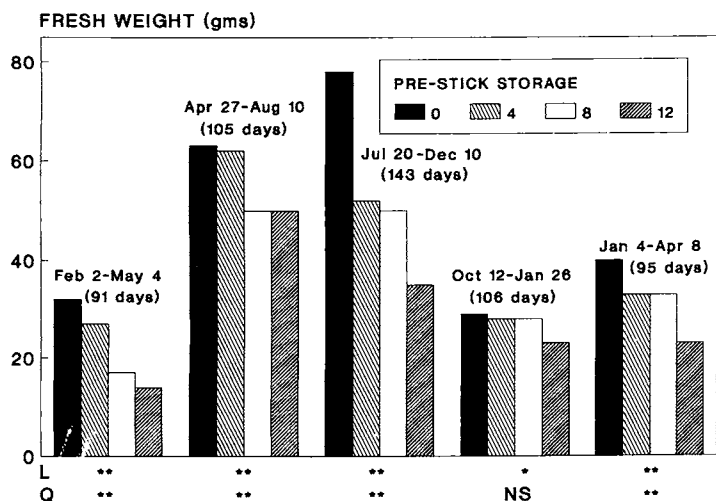


Fig. 4. Effect of storage duration of *Epipremnum aureum* 'Marble Queen' cuttings on fresh weight of subsequent growth.

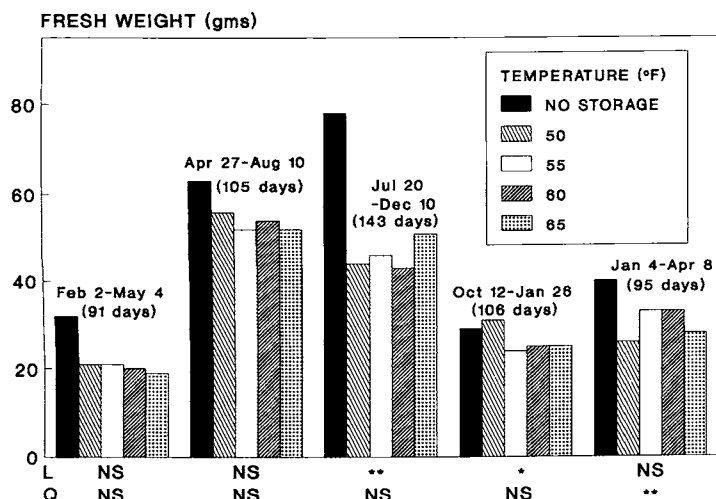


Fig. 5. Effect of storage temperature on fresh weight of subsequent growth of *Pothos* cuttings.

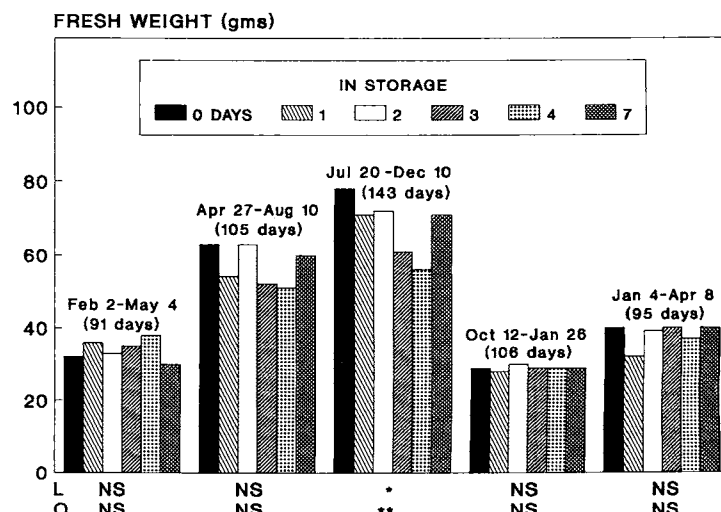


Fig. 7. Effect of storage duration at ambient temperature on fresh weight of subsequent growth of *Pothos* cuttings.

Test III. This test also shows that philodendron cuttings left in most packing sheds for as much as 7 days would still initiate roots and shoots as well or better than cuttings planted immediately (Fig. 3).

Epipremnum aureum 'Marble Queen'.

Test I. Fresh weight of new growth of 'Marble Queen' from stored cuttings was also less than fresh weight of new growth cuttings planted immediately, but again all pots had vegetative growth, and were salable (Fig. 4). There was only slight variation among fresh weight of subsequent growth of 'Marble Queen' cuttings stored at temperatures between 50-65°F (Fig. 5).

Test II. Storage temperature between 65-85°F for one day caused insignificant differences in fresh weight of new growth at termination of production in 4-inch pots (Fig. 6).

Test III. Cuttings of 'Marble Queen' stored for 7 days at ambient temperatures ranging from 55°F to 90°F, except during the very hottest time of the year, produced as much vegetative growth as cuttings propagated immediately (Fig. 7).

While some retardation of growth may occur with storage, *P. scandens oxycardium* and *Epipremnum aureum* 'Marble Queen' cuttings can be kept for 12 days at various temperatures and produce healthy, salable plants.

Literature Cited

1. Conover, C. A. 1976. Postharvest handling of rooted and unrooted cuttings of tropical ornamentals. HortScience 11:9-10.
2. Henny, R. J. 1984. Increasing rooting of Aglaonema 'Fransher' cuttings with hormones and bottom heat. ARC-A Research Report RH-84-6.
3. Marlatt, Robert B. 1969. Propagation of Dieffenbachia. Economic Bot. 23:385-388.
4. Poole, R. T. 1969. Rooting response of four ornamental species propagated in various media. Proc. Fla. State Hort. Soc. 82:393-397.
5. Poole, R. T. and C. A. Conover. 1988. Propagation of single eye cuttings of *Philodendron scandens oxycardium* after storage. Acta Hort. 2(226):587-590.
6. Poole, R. T. and Will E. Waters. 1971. Soil temperature and development of cuttings and seedlings of tropical foliage plants. HortScience 6:463-464.
7. Rauch, Fred D. 1981. The influence of shading and mist on rooting of selected foliage plants. The Plant Propagator 27:8-9.

Proc. Fla. State Hort. Soc. 101:315-316. 1988.

PHYTOTOXICITY OF MANCOZEB TO *TAGETES PATULA* 'LEMONDROP'

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Abstract. Phytotoxicity tests were conducted on the dwarf French marigold 'Lemondrop' (*Tagetes patula* L.) in the greenhouse using the recommended rate (2.45g a.i./liter) and twice the recommended rate (4.9g a.i./liter) of Mancozeb. Varietal response to the chemical was also tested by treating *T. erecta* L. 'Apollo', 'Doubloon', 'First Lady', and *T. patula* 'Lemondrop' with the recommended rate. 'Lemondrop' was damaged by both the recommended rate of Mancozeb and twice the recommended rate when applied in July, 16 days after emergence. Damage appeared 3-5 days after application and was most evident on fully expanded leaves. These leaves had irregular and sunken areas that were tannish in color. No damage by Mancozeb (2.45g a.i./liter) was observed on *T. erecta*, 'Apollo', 'Doubloon', or 'First Lady'.

A sample of the Dwarf French Marigold 'Lemondrop' with phytotoxic symptoms was submitted to the clinic at Clemson University in 1984. Damaged areas on the leaves were irregular, sunken and tannish in color. No pathogens were isolated from the leaves, stems or roots. Grower records indicated that only Mancozeb had been applied. Mancozeb, which is a coordination product of zinc ion with manganese ethylene bisdithiocarbamate formulated as a 80% wettable powder, is registered for many field crops, vegetables, fruits, nuts, and ornamentals (3). Mancozeb was recommended in 1983 for control of *Alternaria*, *Cercospora* and *Septoria* on marigolds (2). This was the first time that apparent phytotoxic symptoms had been observed on marigolds treated solely with Mancozeb.

The purpose of this investigation was to conduct phytotoxicity tests on 'Lemondrop' in the greenhouse using the recommended rate (1X) and twice the recommended rate (2X) of Mancozeb. Varietal response to the chemical was also tested on *T. erecta*, 'Apollo', 'Doubloon', 'First Lady', and *T. patula* 'Lemondrop' at the (1X) rate.

Materials and Methods

Marigold cultivars used were 'Apollo', 'Doubloon', and 'First Lady', and *Tagetes patula* - 'Lemondrop'. Seed was supplied by Geo. W. Park Seed Company in Greenwood, South Carolina. During July 1984, all cultivars were direct seeded into number 1 nursericans (Lerio Corporation, Valdosta, Georgia) containing Redi-earth Peat Lite Mix (W. R. Grace and Company, Cambridge, Massachusetts). Approximately one week after emergence, plants were thinned to three to five plants per pot. Pots were placed in the greenhouse in a randomized complete block design. Both the phytotoxicity and varietal tests were repeated twice. Duncan's Multiple Range Test was used for data analysis.

Mancozeb phytotoxicity to 'Lemondrop' was tested by applying the recommended (1X) rate (2.45g a.i./liter) and the twice the recommended (2X) rate (4.9g a.i./liter). Varietal response was tested at the 1X rate. Foliar sprays to runoff were applied using a Polysprayer ASL Airflow hand sprayer (Geiger Corporation, Harleysville, Pennsylvania) 16 days after emergence.

Damage was evaluated using a visual rating system. The scale was as follows: 0 - no damage, 1 - less than 10% of leaf surface damaged, 2 - greater than 10% but less than 50% damage with withered tips, 5 - leaf dead. Compound leaves at the second node above the cotyledons were rated 5 days after application. At 16 days all cultivars except 'Lemondrop' were in the vegetative growth stage. 'Lemondrop' was in the flower bud stage.

Leaf miner control in the phytotoxicity test was maintained using five evenly spaced Sticky Strips (Olson Products, Medina, Ohio). In the varietal test 10% Oxamyl granules (Miller Chemical and Fertilizer Corporation, Hanover, Pennsylvania) at a rate of 0.16g per pot was used. Ortho Bug-Geta (Metaldehyde 3.25%) was used for slug control in both tests.

Results and Discussion

Symptoms of phytotoxicity were observed on 'Lemondrop' at both the recommended rate and the 2X rate when applied 16 days after emergence (Table 1). Injury occurs on 'Lemondrop' where residue accumulates on the leaf, usually on blades and especially along the veins and on the V-Shaped petiolules. Damaged areas were irregular, sun-