Philodendron scandens ssp. *oxycardium* 'Frilly Philly'

Richard J. Henny^{1,4}, Jianjun Chen², and T.A. Mellich³

University of Florida, Institute of Food and Agricultural Sciences, Mid-Florida Research and Education Center, 2725 Binion Road, Apopka, FL 32703

Additional index words. heartleaf philodendron, aroid, foliage plant, foliage plant production, plant breeding

Philodendron scandens ssp. *oxycardium* (Araceae family), referred to as heartleaf philodendron, has been one of the most economically important ornamental tropical foliage plant crops since the 1930s (Chen et al., 2005; Smith and Scarborough, 1981). It is an evergreen, herbaceous vine with heart-shaped leaves often used for potted plants, totem poles, and hanging baskets. Currently, three heartleaf philodendron cultivars are grown commercially. These include the standard green-leafed cultivar, a dark green and yellow-leafed cultivar named Brasil (PP 12956), and a cultivar with uniform chartreuse leaves called Lemon Lime. Cultural requirements for heartleaf philodendron have been well documented previously (Conover and Poole, 1974). Heartleaf philodendron is normally propagated asexually by single eye cuttings. Vines do not develop secondary branches; growers stick multiple eyes per container to obtain a full appearance in the final product. Mature plants rarely flower; therefore, no reports of hybridization exist for this species or its cultivars.

Origin

Because of the commercial importance of heartleaf philodendron to the foliage plant industry and the difficulty in its hybridization, we initiated a program at the Mid-Florida Research and Education Center (MREC) in Apopka, FL, to induce mutations for this crop. *Philodendron* 'Frilly Philly' is a selection from that program.

Philodendron 'Frilly Philly' is a mutation selected from a standard green heartleaf philodendron vine (*Philodendron scandens* ssp. *oxycardium*) that was irradiated a single time with 6.5 gray of gamma rays from a Cesium 137 source that emitted 9.18 gray/min. The 'Frilly Philly' mutation appeared as a single uniform stem mutation 9 months after exposure to the gamma rays. The mutant was isolated and asexually increased by tip cuttings

for 2.5 years to produce stock plants for further evaluation. During this process, it was determined that the novel growth habit and appearance were stable and that philodendron 'Frilly Philly' was suitable for introduction as a new cultivar.

Description

The appearance of philodendron 'Frilly Philly' is dramatically different from the original heartleaf philodendron plant that was irradiated (Fig. 1). The small lanceolate-shaped leaves of 'Frilly Philly' average 7.0 cm long × 1.5 cm wide compared with a standard heartleaf plant whose cordate leaves average 12 cm length and 8 cm wide. New leaves are held strongly upward giving the plant an erect and clumping form. *Philodendron* 'Frilly Philly' vines produce secondary lateral branches as they mature, a trait no other heartleaf philodendron displays. Leaves, petioles, and stems of philodendron 'Frilly

Performance

Philodendron 'Frilly Philly' stock plants maintained in a shaded greenhouse at MREC, Apopka, FL, were used as a cutting source for two experiments to evaluate growth and performance of the new cultivar.

Test 1. In July 2007, 1-tip cuttings 3 to 5 cm long were stuck directly into 0.6-L pots containing Fafard 2 Mix (Conrad Fafard, Inc., Agawam, MA; 55% Canadian peat : 25% : perlite : 20% vermiculite). Cuttings were rooted in a high-humidity propagation chamber (maximum irradiance of 80 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$) within a shaded greenhouse (maximum irradiance of 125 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$) under natural photoperiod within a temperature range of 15 to 34 °C. Cuttings rooted in 4 weeks and were removed from the propagation chamber and then fertilized with Nutricote (18N–2.6P–6.6K; 140-d formulation; Chisso-Asahi Fertilizer Co., Ltd., Tokyo, Japan) at 2.0, 2.5, or 3.0 g per 0.6-L pot. Plants were set on raised benches in a completely randomized experimental design with five replications and hand-watered as needed. Data recorded after 12 weeks of growth included pulled-up height, canopy height and width, and length and width of the largest leaf.

Test 2. In Dec. 2007, tip cuttings 3 to 5 cm long were harvested from MREC stock plants and stuck directly into 0.6-L pots in the same potting mix as Test 1. Individual pots received five, 10, or 15 cuttings per pot. Plants were rooted and removed from the propagation chamber after 5 weeks. All pots received

Fig. 1. *Philodendron scandens* subsp. *oxycardium* 'Frilly Philly': (A) grown in a 0.6-L pot for 12 weeks with 15 cuttings per pot; (B) grown as a hanging basket; (C) grown on a totem pole.

Received for publication 10 Mar. 2010. Accepted for publication 24 Mar. 2010.

¹Professor.

²Associate Professor.

³Biologist.

⁴To whom reprint requests should be addressed; e-mail hennyrtjz@ufl.edu.

Table 1. Pulled-up height, canopy height, and width and largest leaf length and width of heartleaf philodendron 'Frilly Philly' after 12 weeks of growth in 0.6-L pots containing 10 tip cuttings.

Nutricote ^z (g)	Pulled-up ht (cm)	Canopy ht (cm)	Canopy width (cm)	Largest leaf	
				Length (cm)	Width (cm)
2.0	23.8	10.0	25.2	6.6	1.5
2.5	20.8	9.8	24.4	6.2	1.5
3.0	20.8	8.8	26.6	6.5	1.5
Significance ^y	NS	NS	NS	NS	NS

^zNutricote 140-d slow-release fertilizer (18N-2.6P-6.6K) applied as g/pot/3 months.

^yNS = nonsignificant.

Table 2. Canopy height and width, largest leaf length and width longest vine, and visual quality of heartleaf philodendron 'Frilly Philly' after 12 weeks growth in 0.6-L pots with 5, 10, or 15 cuttings.^z

No. of cuttings	Canopy ht (cm)	Canopy width (cm)	Largest leaf		Longest vine length (cm)	Quality after 3 months indoors	
			Length (cm)	Width (cm)		Quality ^y	
5	10.5	15.0	7.0	1.9	12.4	2.1	2.6
10	11.5	20.3	6.6	1.9	12.5	4.3	3.7
15	11.9	19.0	6.8	1.8	12.0	4.8	4.2
Significance ^x	NS	Linear** Quadratic**	NS	NS	NS	Linear*	Linear*

^zA visual quality rating after 3 months in a simulated indoor environment is also included.

^yVisual quality rating in which 1 = dead, 2 = fair, 3 = acceptable (saleable quality), 4 = good, and 5 = excellent quality.

^xNS, *, ** = Nonsignificant and significant at $P = 0.05$ and 0.01 , respectively.

2.5 g of Nutricote (18N-2.6P-6.6K; 140-d formulation) and were placed on raised benches in a completely random design with 10 replications per treatment. Data taken after 12 weeks included canopy height and width, length and width of the largest leaf, length of the longest vine, and a visual plant quality rating in which 1 = dead, 2 = fair, 3 = acceptable (saleable quality), 4 = good, and 5 = excellent quality. Once final growth data were collected, plants from both experiments were moved to an interior growth room with a light level of $25 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ for 12 h daily at a constant 24°C to test for ability to tolerate the low light levels of interiorscape environments. Three months later, plants were removed and evaluated again for visual quality. Data from tests were analyzed using analysis of variance procedures of SAS (SAS Institute Inc., Cary, NC).

Results

Philodendron 'Frilly Philly' grew well and remained phenotypically stable in both tests. In Test 1, cuttings rooted in 4 weeks and produced a saleable-quality 10-cm pot plant 12 weeks later. There was no significant difference in canopy leaf size among fertilizer levels (Table 1). In Test 2, number of cuttings per pot did not affect canopy height, leaf size, or length of the longest vine (Table 2). Canopy width measurements showed a significant linear and quadratic effect as width increased at 10 cuttings compared with five but decreased slightly at 15 cuttings per pot treatment. Visual plant quality increased linearly as the number of cuttings per pot increased. Vines did branch with maturity. The branching closely followed the original direction of the mother vine. Any widening

effect resulting from branching was minimized by the overall small plant size and the strongly erect growth habit. These results indicate that philodendron 'Frilly Philly' should be grown with multiple cuttings per pot. The actual number of cuttings per pot will depend on container size and grower preference, but at least 10 to 15 cuttings per 10 cm pot should be used to achieve a full appearance in a commercial product. After 3 months in simulated indoor conditions, plant quality was rated good to excellent with 15 cuttings per pot but was reduced in pots containing fewer cuttings (Table 2).

Availability

Philodendron 'Frilly Philly' is intended for commercial producers growing finished ornamental tropical foliage plants. Trademark and Plant Patent Rights issued through the U.S. Patent and Trademark Office will be assigned to the University of Florida, Board of Trustees. Stock plants will be released to licensed Florida growers for propagation. Inquiries regarding licensing may be sent to Florida Foundation Seed Producers, Inc., P.O. Box 110200, Gainesville, FL 32611. Plants for research purposes may be obtained directly from the authors.

Literature Cited

- Chen, J., D.B. McConnell, D.J. Norman, and R.J. Henny. 2005. The foliage plant industry. Hort. Rev. (Amer. Soc. Hort. Sci.) 31:47-112.
- Conover, C.A. and R.T. Poole. 1974. Influence of shade and fertilizer source and level on growth, quality and foliar content of *Philodendron oxycardium* Schott. J. Amer. Soc. Hort. Sci. 99:150-152.
- Royal Horticultural Society. 1995. The Royal Horticultural Society's colour chart. 3rd Ed. Royal Hort. Soc., London, UK.
- Smith, C.N. and E.F. Scarborough. 1981. Status and development of foliage plant industries, p. 1-39. In: Joiner, J. (ed.). Foliage plant production. Prentice-Hall, Englewood Cliffs, NJ.