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# Cultural Guidelines for Commercial Production of Interiorscape *Philodendron* [1]

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The name *Philodendron* is known to almost everyone familiar with interior plants, but only knowledgeable nursery growers and interiorscapers know the diversity within the 250 or so species that comprise the genus. Although the genus name means tree lover in Latin and many *Philodendron* species are herbaceous tree climbing vines, the genus also includes woody-stemmed plants that may reach 15 feet in height. Native to tropical regions of North, South, and Central America, *Philodendron* plants have been used in interiorscapes since the 1880s. The genus can be divided into three groups: vining, self-heading, and erect or tree-like. Leaves of the three groups exhibit great variability. Some species have small, heart-shaped leaves while others have large lobed leaves that may exceed 4 feet in length. In addition to great differences in leaf size, leaves of recently developed cultivars vary in color from dark red-black to light orange. The diversity in leaf shape, size, color, and growth habit makes *Philodendron* cultivars suitable for use as desk plants, hanging baskets, totems, or floor plants. This article describes common *Philodendron* species and cultivars in the foliage plant industry (See Table 1), provides guidelines on their culture and interior use, and lists physiological problems encountered in both production and in the interiorscape (See Table 3).

## Cultural Guidelines

1. Propagation

Commercially, most named self-heading *Philodendron* plants are propagated via tissue culture. *Philodendron scandens oxycardium* is normally propagated using 1-1 1/2 inch stem cuttings with a node and an attached leaf. Buds break in 3-5 weeks and rooting occurs in 4-6 weeks. If larger leafed cuttings are desired for totems, stock plants are grown on a pole or similar support and tip cuttings are used. The tree philodendrons, *P. bipinnatifidum* and *P. selloum*, and some of the self-heading philodendrons may be propagated using commercially packaged seed. Viability is very limited unless the seed is properly processed and vacuum-packed. Successful seed germination and early seedling growth require specially equipped facilities, and most plant finishers buy seedlings from propagation specialists.

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2. Production

Sphagnum peat, pine bark, vermiculite, or perlite can be volumetrically combined to formulate media for most container sizes. Three-foot and taller totems should have 10-20% coarse sand to keep plants from wind tipping. Media should have good moisture holding capacity and aeration, soluble salts of 1-2 dS/m, and a pH of 6.0 to 6.5.

*Philodendron* plants should be grown in a shadehouse with temperatures between 70 and 90$^{o}$F and a relative humidity of 60 to 100%. Plant quality and growth rates begin to decline when day temperatures routinely exceed 95$^{o}$F or night temperatures drop below 65$^{o}$F. Controlled-release or water-soluble fertilizers or a combination of both can be used for *Philodendron* production. Use a fertilizer with an N:P:K ratio of 3:1:2 or 3:1:3. The suggested application rate is 3 lb N per 1,000 sq. ft per month. Table 2 provides a guide for determining if philodendrons are appropriately fertilized based on leaf analysis.

The plants listed in Table 1, excluding *P. selloum*, should be grown with shade levels of 80–88% (1500-2500 fc) to produce the best plants for interiorscapes. *Philodendron selloum* should be grown under 40-76% shade (3000-5000 fc).

## Shipping and Interior care

Philodendrons should be shipped at a temperature of 55-65$^{o}$F. Once plants are placed indoors, it is advisable not to re-pot or fertilize for about four weeks because plants do not need additional stresses. Plants should not be fertilized if soluble salts are 2.0 dS/m or more. If soluble salt levels are higher than 3.0 dS/m, percolation of media with water may help reduce potential leaf necrosis or damage to the root system. For best growth indoors, media should be kept moist. Most philodendrons will tolerate light levels as low as 75 fc but light levels of 150 fc or more will maintain color and leaf size. Temperatures of 70 to 80$^{o}$F are recommended.

**Table 1.** A listing of *Philodendron* species and cultivars available in Florida as of 2003.

| Species | Cultivar or Common Name | Characteristics |
|---|---|---|
| *P. bipennifolium* *(P. panduriforme)* | Fiddle-Leaf Philodendron | A thick-stemmed, vining *Philodendron* with olive green, fiddle-shaped leaves up to 1 foot long. Often grown as a totem. |
| *P. bipinnatifidum selloum* | Lacy-Tree Philodendron; 'Hope' | A cold-resistant, woody-stemmed *Philodendron* that attains heights of 15 feet. Leaves may be up to 4 feet long, waxy green, and bi-pinnately compound. Mature specimens will tolerate temperatures slightly below freezing for brief periods. Use in high light interiorscape locations. The cultivar 'Hope' reportedly withstands shipping stress better than the species. |
| *P. pinnatifidum* | Pinnatifidum | This self-heading *Philodendron* has metallic green lobed leaves with red spotted petioles. Usually used as a low floor plant in heights of 1-3 feet. |
| *P. scandens micans* | 'Micans' | The heart-shaped leaves of this thin-stemmed vine are velvety green on the upper leaf surface and a dark copper color on the lower leaf surface. This color pattern has made 'Micans' a popular choice where a small leafed, distinctive plant is needed. Botanically classified as the juvenile form of *P. scandens oxycardium*, it tolerates less environmental stress than the adult form. |
| *P. scandens oxycardium* | Cordatum; Heart-leaf Philodendron | The most commonly encountered vining *Philodendron*. Cordatum leaves are an appealing olive-green and perfectly heart-shaped. Its tolerance to a wide range of interior conditions has made this plant a perennial foliage favorite for over 60 years. |
| *P. squamiferum* | Red Bristle Philodendron | A self-heading *Philodendron* with long, red bristled petioles and medium green, deeply lobed, 18-inch-long leaf blades. |
| *P.* 'Autumn' | 'Autumn' | A hybrid, self-heading *Philodendron* very similar to 'Prince of Orange'. The elliptical leaves are an attractive reddish orange when immature and turn olive green as they age. Requires high interior light levels to maintain color and continued growth. |

**Table 1.** A listing of *Philodendron* species and cultivars available in Florida as of 2003.

| Species | Cultivar or Common Name | Characteristics |
|---|---|---|
| *P.* 'Black Cardinal' | 'Black Cardinal' | A patented, self-heading *Philodendron* hybrid with dark reddish black elliptical leaves. |
| *P.* 'Emerald Duke' | 'Emerald Duke' | A patented, self-heading *Philodendron* hybrid with bright green elliptical leaves. |
| *P.* 'Green Emerald' | 'Green Emerald' | A hybrid, self-heading *Philodendron* with deep green elliptical leaves. |
| *P.* 'Imperial Green' | 'Imperial Green' | A patented, self-heading *Philodendron* hybrid with bright green petioles, broadly ovate leaves and green leaf blades. |
| *P.* 'Imperial Red' | 'Imperial Red' | A patented, self-heading, hybrid *Philodendron* with deep red leaves. |
| *P.* 'Moonlight' | 'Moonlight' | A hybrid, self-heading *Philodendron* with light almost neon green, elliptical leaves. |
| *P.* 'Prince of Orange' | 'Prince of Orange' | A patented, self-heading *Philodendron* hybrid with elliptical leaves. Immature leaves are orange. Requires high interior light levels to maintain color and continued growth. |
| *P.* 'Red Emerald' | 'Red Emerald' | A hybrid, self-heading *Philodendron* with deep red immature elliptical leaves. With age, the leaves become a dark green. Requires high interior light levels for best color development. |
| *P.* 'Red Empress' | 'Red Empress' | The only patented, self-heading *Philodendron* hybrid with colored lobed leaves. The leaves are dark red when immature and age to a dark reddish green. Requires high interior light levels for best color development. |
| *P.* 'Wind-Imbe' | 'Wind-Imbe' | The large, heart-shaped leaves of this self-heading *Philodendron* are waxy green with petioles marked with red and reddish veins on the lower leaf surface. |
| *P.* 'Xanadu' | Pertusum Philodendron; 'Xanadu' | A patented hybrid developed in Australia. The leaves are lobed, medium green and look like smaller versions of Lacy Tree *Philodendron*. Maximum height is about 3 feet, making 'Xanadu' an ideal selection for many locations. |

**Table 2.** Nutrient concentrations in *Philodendron* leaves.

| Nutrient | Low | Medium | High |
|---|---|---|---|
| Nitrogen (%) | <2.5 | 2.6-4.5 | >4.5 |
| Phosphorus (%) | <0.2 | 0.2-0.5 | >0.5 |
| Potassium (%) | <2.0 | 2.0-3.5 | >3.5 |
| Calcium (%) | <1.0 | 1.0-2.5 | >2.5 |
| Magnesium (%) | <0.25 | 0.25-0.50 | >0.5 |
| Sulfur (%) | <0.2 | 0.2-0.5 | >0.5 |
| Iron (ppm) | <60 | 60-200 | >200 |
| Manganese (ppm) | <40 | 40-200 | >200 |
| Zinc (ppm) | <25 | 25-100 | >100 |
| Copper (ppm) | <10 | 10-100 | >100 |
| Boron (ppm) | <20 | 20-50 | >50 |

**Table 3.** Causes and effects of various physiological problems.

| Symptoms | Cause | Treatment |
|---|---|---|
| Chlorosis of lower leaves. | Exposure to 33-40$^{o}$ F for several hours. | Avoid low temperatures. |
| During production phase, petioles become excessively long and plant has an open appearance. | Light levels are too low. | Grow plants under higher light levels. |
| Leaf color fades or looks bleached out. | Production light levels may be too high, or fertilizer rates are too low. | Check production light levels and fertilizer rates. Adjust as necessary. |
| Older leaves have V-shaped chlorosis which spreads from the petiole attachment to the leaf margins. Midrib remains green. | Magnesium deficiency. | Apply magnesium sulfate ($MgSO_4$) at a rate of 3-5 lbs/100 gallons water. |
| Leaves have a wrinkled line dotted with chlorotic or necrotic spots in the basal portion of the leaf lobe. | Pesticide phytotoxicity or burn from drying liquid fertilizer in the leaf roll. | Apply liquid fertilizer at rates of 2 lb 20-20-20/100 gallons of water or less. Use labeled pesticide at suggested rates. |
| New leaves of hybrid philodendrons are slightly twisted or distorted. | Calcium deficiency. | Increase calcium levels in liquid fertilizer or apply chelated calcium. |

**Table 3.** Causes and effects of various physiological problems.

| Symptoms | Cause | Treatment |
|---|---|---|
| New leaves are purplish and twisted, and may appear torn or have purplish spots. | Manganese toxicity. | Increase soil pH to 6.5. Avoid spraying fungicides containing manganese. Top dress with dolomite. |
| Margins of older leaves turn brownish, and discoloration spreads toward the midrib. | Potassium deficiency. | Increase potassium levels in liquid feed or in media. |
| Irregular patches of leaf margins become necrotic. | Water stress combined with high light. | Maintain soil moisture levels and reduce light levels. |
| Chlorosis and reduced leaf size. | Nitrogen deficiency. | Apply granular, high- nitrogen fertilizer. |
| Leaf scorch on tips of older foliage. | Sodium toxicity. | Apply extra potassium, top dress with gypsum, and switch to a less saline water source. |
| Burned patches in the centers and tips of foliage. | Sunburn. | Increase irrigation frequency and move to a lower light area. |
| Bronzed edges. | Light levels or temperatures are too high. | Move plant to an area that provides a better cultural environment. |