

Cultural Guidelines for Commercial Production of Interiorscape *Syngonium*¹

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Introduction

Syngonium is a perennial, evergreen, herbaceous vine of the family Araceae. Linnaeus originally classified *Syngonium* sp. as *Arum auritum* in 1763. Schott changed the name to its modern genera in 1829. Thirty three species are recognized and all are hemiepiphytic and native to moist, elevated forests of Mexico, Panama, El Salvador, Guatemala, Brazil, and Honduras.

Syngonium podophyllum (Figure 1), also known as arrowhead plant, nephthytis, African evergreen, and goosefoot plant, is the most commonly produced species in the foliage plant industry (Chen et al., 2005). It is recognized by its juvenile leaves, which are simple, alternately arranged, saggitate to hastate in shape, approximately 3–7 inches (7.5–17.5 cm) long and somewhat velvety. The common name, arrowhead plant, reflects the botanical leaf description. Mature leaves are dramatically different: they are compound with 3–11 elliptic leaflets, and the center leaflet may attain a length of 1 foot (19 cm) with a 2-foot (38 cm) petiole. The shape and color of the juvenile leaves is frequently used to name the cultivars that are commercially available. In most environments, each node sports adventitious roots. Flowers are a typical aroid spathe and spadix, white or cream colored with red or violet highlights, and are unremarkable.



Figure 1. *Syngonium podophyllum*, also known as arrowhead plant, nephthytis, African evergreen, and goosefoot plant.

This article is intended to describe common cultivars in the foliage plant industry, provide guidelines for their culture and interior use, and list physiological problems that may be encountered during production and interiorscape use.

Cultivars

Commercial cultivars are largely from *S. podophyllum*. Tissue culture propagation of this species has produced many new cultivars (Chen et al., 2006). Some of them are listed in Table 1.

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Cultural Guides

Propagation

Syngonium propagation is easily done via nodal cutting, tip cuttings or air layers (Chen and Stamps 2006). The simplest method is to cut sections of the vine into single node or single eye (a single node with an attached leaf and adventitious roots) and place it directly into a rooting medium under mist. Air temperatures between 75°F and 95°F are recommended with bottom heating beneficial if the root zone is kept between 70°F and 75°F. Shade of 80% (2500 fc) is required for rooting. Some cultivars are propagated by seed. However, almost all commercial production has shifted to tissue culture liners.

Production

Liners, rooted cuttings, or seedlings are transplanted in 4-, 6-, or 8-inch pots and grown in shadehouses or shaded greenhouses. Commercial media formulated by combination of peat, pine bark, vermiculate, and/or perlite with pH of 5.5 to 6.5 and soluble salts of 1 to 2 dS/m are suitable for *Syngonium* production. Plants should be grown under 80% shade, in relative humidity of 60 to 100%, and in temperatures between 70°F and 90°F (Chen et al. 2005). If plants are fertigated via drip or ebb-and-flow irrigation, a nutrient solution with N at 150 ppm can be used. This solution can be made using a water-soluble fertilizer with N-P₂O₅-K₂O at a 3-1-2 ratio, such as a 24-8-16 or 18-6-12 with micronutrients. If a controlled-release fertilizer with the N-P₂O₅-K₂O ratio of 3-1-2 is used, apply it at rate of 6.5 lb N per 1,000 square feet on a quarterly basis or 26 lbs N/1000 sq. ft annually. Potting media should be kept moist but not wet when controlled-release fertilizers are used in production. Growers are strongly recommended to monitor the nutrient status of potting media by checking soluble salts levels biweekly using an electrical conductivity (EC) meter. Media solution can easily be extracted using the pour-through method. If EC readings fall below 1.0 dS/m, additional fertilization is needed; whereas if EC readings are above 3.0 dS/m, growers should reduce either the frequency or amount of applied fertilizer. It is recommended that fertilizer applications be reduced or eliminated one month before plants are shipped. Table 2 provides a general guide for determining if *Syngonium* is appropriately fertilized based on leaf analysis.

See Table 2.

Shipping and Interior Care

Shipping sleeves are recommended for transporting finished *Syngonium*. Recommended temperature range

for shipping is 55°F to 60°F as exposure to a temperature below 55°F may cause chilling injury. Irrigate the media thoroughly the day before shipping to reduce stress during transportation.

Syngonium is commonly used as hanging baskets. If upright growth is desired, a totem, trellis, or other support is needed. Otherwise, plants can be used for ground cover. Optimal light levels for *Syngonium* in interiorscapes range from 250 to 1000 ft, and plants maintain their aesthetic appearance better if relative humidity is maintained between 40% and 60%. Allow the surface of potting media to dry slightly before irrigating. During the winter, reduce watering frequencies but do not allow the plant to dry out. Temperatures should remain between 65°F and 80°F to maintain leaf colorings. Occasional pruning is necessary to maintain plant form, and misting with water and wiping the leaves with a lint-free cloth will keep plants dust free and reduce the probability of a pest infestation.

Pest Problems

Although aphids, spidermites, scale, and mealybug infestations occur, they are relatively rare if the relative humidity is properly maintained. Snails, slugs, thrips, and whitefly infestations have also been reported but usually occur when plants are maintained in ground beds with minimal care. Most diseases that infect *Syngonium* occur during production. These include *Erwinia*, *Pseudomonas*, *Xanthomonas*, *Myrothecium*, *Rhizoctonia* blight, and *Cephalosporium*.

Physiological Problems

See Table 3.

Literature Cited

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Table 1. Listing of most of the cultivars available in Florida as of 2004.

Cultivar	Characteristics
Pink Splash Allusion	Pale green leaves with light pink speckles.
Berry Allusion	Starting in the center of the leaves, white fades to green with light red veins.
Bold Allusion	Large, cordate leaves are cream-colored with splashes of olive at the margins and pink veins.
Confetti	Light green leaves have large, pink splotches and pink-white veins.
Glo-Go	Compact with limited vining; leaves are dark green with striking, light cream-colored veins.
Infra-Red	Young solid pink leaves mature into solid green.
Key Lime	Bright green leaves with bold, white veins.
Maria Allusion	Compact; leaves are dark green with a red-bronze tint and dark pink veins.
Bob Allusion	Compact; very similar to Bold Allusion except the olive coloring extends beyond the margins to the interior of the leaf blade.
Cream Allusion	Leaves are almost solid cream with bright pink veins and thin, dark leaf margins.
Emerald Gem	Solid green with undulating, glossy leaf blades.
Holly M	Compact; leaves are nearly solid white with small, dark, green speckles on the margins.
Lemon Lime	Cream-colored veins meet an interior margin of the same shade. The rest of the leaf is medium green.
Neon	Solid, bright pink leaves.
Pink Allusion	Light, olive-green leaves with deep pink veins.
Pixie	Compact; white radiates from the leaf veins abruptly into dark green.
Regina Red	Blushing red leaves with olive-green speckles on the margins.
Robusta	Broad, green leaves with white veins; reluctant to vine.
White Butterfly	Mostly white-yellow veins bordered with dark green. Considered to be the standard <i>Syngonium</i> .

Table 2. Nutrient concentrations in leaves considered low, medium, and high for *Syngonium* growth.

Nutrient	Low	Medium	High
Nitrogen	less than 2.5%	2.5–4.0%	greater than 4.0%
Phosphorus	less than 0.2%	0.2 - 0.8%	greater than 0.8%
Potassium	less than 2.0%	2.0–6.0%	greater than 6.0%
Calcium	less than 1.0%	1.0–2.0%	greater than 2.0%
Magnesium	less than 0.3%	0.3–0.8%	greater than 0.8%
Sulfur	less than 0.2%	0.2–0.5%	greater than 0.5%
Iron	less than 50 ppm	50–300 ppm	greater than 300 ppm
Manganese	less than 50 ppm	50–300 ppm	greater than 300 ppm
Zinc	less than 25 ppm	25–150 ppm	greater than 150 ppm
Copper	less than 10 ppm	10–50 ppm	greater than 50 ppm
Boron	less than 25 ppm	25–50 ppm	greater than 50 ppm

Table 3. Causes and effects of various physiological problems.

Symptoms	Probable Cause	Treatment
Plants are stretched with elongated internodes and weak.	Low light level.	Increase light levels to 2500 fc.
Portions of leaves or entire young leaves appear wet or water-soaked.	Water imbalance in plants (leaf tissue is warm but medium is still cold).	Maintain root temperature at 65°F or higher and increase air temperature slowly.
Old leaves tend to turn yellow.	N deficiency or media run to dry.	Apply N at 150 ppm weekly or maintain media moisture.
Water-soaked, irregularly shaped spots with their centers fallen.	Cold water damage in the winter.	Irrigate plants with water at the same temperature as the air. Reduce water condensation in greenhouses.
Reduced growth and necrotic spots on lower leaves.	Phosphorus deficiency.	Apply P into media by supplying a fertilizer with a 3-1-2 (N-P ₂ O ₅ -K ₂ O) ratio.