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offers excellent garden performance throughout the year in Florida and throughout the growing season in more northern climates.

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ROOTS OF A DIFFERENT KIND—HOW VARIOUS FOLIAGE PLANTS ENTERED THE UNITED STATES TRADE

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Abstract. Tropical foliage production in Florida is approximately 326 million dollars per year, with domestic production exceeding \$500 million. Most of that production is confined to about 40 plant genera, with numerous species and cultivars. How these various foliage varieties were introduced into the United States market is not well documented. Information on the origins of various foliage varieties has been traced and compiled, and is presented here on a plant by plant basis.

Introduction

Tropical foliage plants were produced commercially in the United States on a limited basis as early as the late 1700's. The industry took off rather slowly however, as Victorian homes in the northeast and midwest were not well lit nor well heated in winter. The advent of good quality, inexpensive glass for windows and more efficient heating systems gave the early American horticulturist a better opportunity to maintain foliage plants in the home.

The industry of course expanded, and house plants were fairly common in the United States by the 1880's. Discovery of new plant varieties and growing techniques have steadily helped the foliage industry to grow. Most foliage growers today have very little knowledge of how the foliage varieties they are producing were introduced and popularized in this country. An attempt has been made by the author to establish and document the origins of foliage plants in the U.S. trade. The information was compiled from written references, as well as numerous interviews with veterans and pioneers in the U.S. foliage industry. It should be noted that recollections of historical events can vary somewhat. Further expansion and documentation on this topic is anticipated in the future.

Plant Varieties

African Violets

Baron Von St. Paul of Germany was walking along a river bank in Tanzania in 1926, when he discovered these delicate, beautiful flowering plants. He sent seeds back to Germany. The plant was ultimately named *Saintpaulia ionantha*, after the Baron. African Violets spread quickly from there, and by the 1960's African Violets were very popular in the U.S. Major breeding efforts were conducted by Arnold Fischer of Hannover, Germany, who developed the Ballet series of violets.

Aglaonemas

Commonly called Chinese Evergreens, Aglaonemas were first introduced via the Missouri Botanical Gardens in the 1930's. The importation was helped by cooperation with the U.S. Embassy in Shanghai. Silver Queen, the most popular variety, is a cross between *A. curtisii* and *A. treubii*, first made by Nat DeLeon of Miami in the early 1960's. Silver Queen was intensively propagated and popularized by Bob McColley of Bamboo Nurseries in Orlando. *Aglaonema* Emerald Beauty (Maria) was found growing wild on Palauan Island in the Philippines. The Variety Abidjan was discovered on the Ivory Coast by Jim Vosters in 1974.

Anthuriums

The most popular *Anthurium* for potted plants, Lady Jane, was first observed by Ray Oglesby of Hollywood, Florida in 1978. Nurseryman Bob Wilson had three small plants of what would become Lady Jane in a corner of his greenhouse. One of the plants went to Fairchild Gardens, one went to a collector, and Ray Oglesby got one of the plants. Oglesby put the plant in tissue culture, and today it is one of the major foliage plants in the trade.

Araucaria

Two hundred year old stock plants of Norfolk Island Pine can be found in European greenhouses. The Monkey Puzzle tree, *Araucaria araucana* was first imported from Chile to England in 1795. The Monkey Puzzle was a popular foliage plant in Europe and the U.S. in the 19th Century. The Norfolk Island Pine, *Araucaria excelsa*, was not popular as a foliage plant until the 1890's.

Aspidistra

Cast Iron plants were very common in American homes in the late 1800's. The variegated *Aspidistra* was commonly called the Barber shop plant, as it was found almost ubiquitously in barber shops during the 19th century. The plant is much less popular in the trade today than it was a century ago.

Begonias

The Rex Begonias were originally introduced to the United States from India in 1856. Many hybrids of foliage-type Begonias developed from there.

Cacti

The first Cacti grown for house plants were imported into Europe from Mexico in the 1830's. These Cacti varieties later made it to the U.S. in 1850. There was a Cactus craze around 1890 in the U.S., where collecting and propagating Cacti grew to be an extremely common hobby. The Christmas Cacti began to appear in the U.S. nursery trade in the late 1800's.

Caladiums

The first hybrid Caladiums similar to those in the trade today were made in 1867. By 1910, Dr. Henry Nehrling of Orlando had over 2,000 varieties.

Calatheas

Calathea zebrina, known in the 1800's as *Maranta zebrina*, was a popular foliage plant in the late 1800's. It was introduced about that time from Europe.

Chamaedoreas

Curiously, the common *Chamaedorea seifrizii* in the trade today was not named scientifically until 1938. Its origins are still unclear, but Ray Oglesby remembers collecting *C. seifrizii* seed in the Yucatan as a youngster. Dr. Henry Donselman found *Chamaedorea cataractarum* growing by the side of a stream in the late 1970's. He brought back seed and introduced it to the trade, calling it the cat palm.

Cissus

The Grape Ivy varieties *C. antartica* and *C. rhombifolia* were introduced to the U.S. trade from Denmark in the early 1940's. The popular cultivar Ellen Danica was discovered in Odense, Denmark in 1965.

Cordylines

The *Cordylines* were initially introduced to the U.S. trade from France. As early as the 1860's, one grower in Versailles had over 6,000 Cordylines for sale in his nursery.

Crotons

Crotons were originally discovered by the Dutch governor H. A. Van Rheede in 1669. The plants were studied by Dutch naturalist Rumphius prior to 1690. Crotons were first imported to England in 1804, and finally to Philadelphia in 1871. The Royal Palm Nursery in Oneco, Florida was growing Crotons for sale as early as 1886. In 1901, Philadelphia nurseryman Robert Craig bought a collection of Crotons in Paris. After returning with the plants to Philadelphia, the heating system failed in the greenhouse one night. The plants got very cold and dropped all of their leaves. Thought to be dead, the plants were clustered and placed in a corner of the greenhouse, where they soon flowered profusely. The plants cross pollinated, and the seed were planted to reveal new Croton varieties. The Robert Craig Nursery had over 400 varieties by 1913.

The most popular foliage cultivars today, Norma and Petra were crosses originally by Wolfgang Bock at his nursery in Italy. Petra was named after his nursery manager's daughter, whereas Norma was named after his dog. Incidentally, Norma and Petra were introduced to the U.S. trade by Kraft Gardens of Deerfield Beach, Florida.

Dieffenbachia

Dieffenbachias were first collected from the wild, probably in Colombia, by Alexander Von Humboldt in the early 1800's. The variety *D. amoena* was collected from Colombia in quantity in 1952, and grown at Mr. Layler's Nursery in Miami. The popular Tropic Snow cultivar appeared as a sport in a planting of *Dieffenbachia amoena* at Chaplin's Nursery about 1965.

Dracaena deremensis

The Dracaenas in general were first noticed by horticulturists about 1820. They were reasonably common as house plants by the late 1800's. Janet Craig originated as a sport of Warneckii at the Robert Craig Company Nursery in Santurce, Puerto Rico. Mr. Craig named the plant after his daughter Janet.

Dracaena fragrans

Dracaena cane was grown in England during the 1870's at Rochford's Greenhouses. Massangeana cane was sold from Trinidad as early as 1905. Paul Oskierko of Homestead, Florida was producing tip cuttings of Massangeana in 1926. Sylvan Hahn of the Pittsburgh area was perhaps the first to grow *Dracaena fragrans* varieties as staggered, upright cane plants. Nurserymen Lex Ritter was instrumental in popularizing Dracaena cane to the mass market.

Dracaena marginata

The Robert Craig Company of Philadelphia introduced *Dracaena marginata* to the foliage trade. Curiously, *Dracaena marginata* is known as the money tree in Hawaii, as the first ones in the islands were planted around the bank of Hawaii. The variety Colorama came originally from Tokyo in 1970. Lex Ritter gave Colorama its name.

Ferns

More than one version of the origin of Boston ferns exists. One account indicates that the Soar Brothers of Miami col-

lected native ferns, including *Nephrolepis exaltata* in the Florida Keys in 1897. Another version indicated that the Robert Craig Company of Philadelphia shipped 100 Sword Ferns, (*N. exaltata*) to Cambridge, Massachusetts. Upon receipt, the buyer noticed one of the Ferns had broader, more feathery foliage. This cultivar was ultimately named *Bostoniensis*. The foliage industry in Florida began more or less in 1912, when Harry Ustler and Mr. Powell began producing Boston Ferns near Lake Eola in Orlando. They moved their operation to Apopka in 1917.

Ficus benjamina

Some species of *Ficus* plants appeared in the U.S. nursery trade around 1940. Lex Ritter introduced *Ficus benjamina* to the U.S. trade in October, 1946.

Ficus elastica

Ficus elastica was very common as a parlor plant in the 1920's. On a visit to Holland in 1954, Jim Vosters of Miami discovered *Ficus elastica* Decora in a Dutch Nursery. He brought nine plants back with him, and introduced the improved rubber plant to the trade.

Ficus lyrata

Early accounts show the Fiddle leaf fig being grown in Oneco, Florida by Arthur James around 1915.

Hedera

Hedera become popular as house plants in the 1870's. They are commonly called English ivy, as they were brought to America by English visitors and settlers.

Heliconias

The common foliage varieties Andromeda and Golden Torch were discovered in Barbados about 1978 by Dr. Al Will of Fort Lauderdale, Florida. The varieties were discovered growing in Andromeda Gardens on that Caribbean island.

Howeas

Kentia palms were listed in Practical Floriculture magazine in 1887 as among the best interior palms. They became even more popular by the 1920's. Kentia's rise to popularity was helped by early nurserymen Roy F. Wilcox and two California nurserymen named Bassett and Washburn.

Maranta

Red Maranta (*Maranta leuconeura*) entered the nursery trade in the U.S. when nurseryman Jim Vosters of Miami received three to four cuttings of the plant in the mail from Santa Catarina, Brazil. The year was 1968. It was ultimately realized that the plant grew better with the non-alkaline irrigation water of the Apopka area, as opposed to the rather alkaline irrigation water in Dade County, Florida.

Peperomias

Details are sketchy, but this plant has been in the foliage trade since the 1930's.

Philodendrons

The most popular hanging basket Philodendron, *Philodendron scandens oxycardium*, is commonly known in the trade

as *Philodendron cordatum*. This plant was introduced from Bogota, Colombia by the Missouri Botanical Gardens in 1926. It was grown in St. Louis as early as 1928. During prohibition it was said to have been imported with illegal shipments of liquor from Puerto Rico in rum runner boats. The Philodendron vines were used to cover the boxes of booze. *Philodendron panduriforme* was first imported to the United States when soldier Hans Stimpfle was returning from World War II. He stopped by Kew Gardens in London, and traded the guard a bottle of scotch in exchange for some cuttings. *Philodendron selloum* was first imported as seed from Brazil by John Massik of John's Dewkist Nursery in Apopka, Florida, in late 1951 or early 1952. He began selling the plant under the name of *Philodendron Johnsii* in 1953 once pollination techniques were developed.

Pittosporum

This cut foliage variety was first introduced from England by Peter Henderson in 1789.

Ravenea

The Majesty Palm was discovered in Madagascar by Dr. Henry Donselman, now of California, around 1980. It was first grown about that time in California by Mr. Don Hodel. Later in the 80's the palm was introduced to the Florida nursery trade.

Rhapis

Lady Palms have been in cultivation since the 1600's, when they were collected in China for the Japanese elite. *Rhapis excelsa* was described by Botanist Aiton in 1789. It has been used in the interior since the 1850's. It was introduced to European interiors in 1874. *Rhapis humilis* was brought to California in the early 1900's. The original specimens can still be viewed at Huntington Botanical Gardens.

Sansevieria

The Robert Craig Company of Philadelphia is said to have introduced *Sansevieria* to the trade, perhaps in the early 1900's. *Sansevieria laurentii* was brought to the U.S. by the Macaw Brothers of Norwood, Pennsylvania in 1926. Sylvan Hahn introduced the variety Hahnii in 1939.

Scheffleras

This plant was introduced to the foliage trade by Robert Scully Sr. Apopka nurseryman Mr. Hogshead was the first to grow it commercially from seed. Sylvan Hahn of Pittsburgh may have been the first to grow Schefflera as an indoor plant. The Amate cultivar originally came from Johnny Mastler of California. Ray Oglesby of Oglesby Nursery put the variety into tissue culture. The first seeds of *Schefflera arboricola* were imported by Ron Huroff of California around 1966 or 1967. The plants were originally used to feed goats in Taiwan.

Spathiphyllum

Species of *Spathiphyllum* were in culture in the late 1940's, but it was only in the 1970's that breeding efforts produced some of the species and selections currently in the trade today. Johnny Mastler of South Florida Nursery brought a selection of *Spathiphyllum* Mauna Loa to Ray Oglesby. Ray

put it into tissue culture, and named it Supreme. *Spathiphyllum* Sensation came from a cross between St. Mary and Supreme, made by Jim Georgusis. Lynise came from a cross from Bond Caldwell of Babylon Nursery. Robert DeNeve, now of Hawaii also introduced several varieties to the industry.

Strelitzia

The Bird of Paradise, *Strelitzia reginae* was grown as early as 1790 by Englishman D. Landreth. He produced Bird of Paradise commercially in Philadelphia at that time.

Syngoniums

White Nephthytis, as it was known then, was originally introduced in 1949. It is now known as White Butterfly. Pink Allusion came later, followed by Bob Allusion, which originated from Donaldson's in Zellwood, Florida. Lemon-Lime and Pixie were selected and named by Mark Poorbaugh of Prolific Plants in Apopka, Florida.

Yucca

Nurseryman Lex Ritter, originally from New Jersey, popularized *Yucca elephantipes* as a foliage plant in the U.S. He and his son collected Yucca cane from coffee plantations in Nicaragua and the Guanacaste region of Costa Rica in the mid 1970's.

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Proc. Fla. State Hort Soc. 110:107-110. 1997.

A LIGHT AND SCANNING ELECTRON MICROSCOPE STUDY OF BENT-TIP IN *AGLAONEMA* 'SILVER QUEEN'

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Additional index words. Light microscopy, meristem, leaf primordium.

Abstract. *Aglaonema* 'Silver Queen' is a popular foliage plant widely used in homes and commercial interiorscapes. During production, particularly periods of rapid growth, leaf tips may emerge bent, folded and deformed thereby reducing plant

quality. The "bent-tip" can first be observed when the newest leaf emerges from the petiole sheath of the preceding leaf and appears to be limited to *Aglaonema* 'Silver Queen'. Leaf tips and apical meristems were excised from shoot apices and examined with a dissecting microscope, a compound light microscope and a scanning electron microscope. Crushed and distorted cells were observed in sections of bent leaf tips examined with a compound light microscope, and flattening, bending and folding were observed when leaf primordia were examined using a scanning electron microscope. Deformation of leaf tips occurs when growth rates of emerging primordia apparently exceed the rate of elongation of preceding petioles which results in the tips of leaf primordia coming into contact with the leaf bases of preceding leaves. Increased light, temperature and fertilization as well as fluctuations in light and temperature appear to be the cause of the "bent-tip" syndrome. Maintaining uniform light levels, reducing temperature fluctuations and following the cultural guidelines provided by Henny et al. (1992) is recommended to minimize the occurrence of "bent-tip" in *Aglaonema* 'Silver Queen'.

Aglaonema 'Silver Queen' is a popular foliage plant widely used in homes and commercial interiorscapes (Fig. 1). It is free-branching, tolerates low light and humidity and has few pests. *Aglaonema* 'Silver Queen' contributes an estimated \$4,000,000 to the State economy annually (Florida Department of Agriculture and Consumer Services Division of Marketing and Agricultural Facts Bureau of Education and Consumer Facts. 1996 Agricultural Statistics; McConnell et al., 1989). Of the nurseries listed in the Florida Foliage Locator, 34 specifically listed *Aglaonema* 'Silver Queen' as one of the crops produced. An additional 24 nurseries listed *Aglaonema*