Hawaii Cooperative Extension Service

HORTICULTURE DIGEST

HITAHR · College of Tropical Agriculture and Human Resources
U. S. Department of Agriculture Cooperating

Department of Horticulture
University of Hawaii at Manoa

In This Issue: FLOWER AND NURSERY INFORMATION
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INTERSPECIFIC ANTHURIUM HYBRIDS AS FLOWERING POTTED PLANTS

Three small-flowered *Anthurium* species, *A. amnicola* Dressler, *A. antrophyoides* Killip and *A. antioquiense* Engler were acquired relatively recently and used in our breeding program. Two crosses, *A. antrophyoides* x *A. antioquiense* and *A. antioquiense* x *A. amnicola*, were made in February 1984. Flowered seedlings were evaluated for their potential as flowering potted plants by a cooperator in East Hawaii specializing in potted anthuriums. Both hybrids performed reasonably well. Upon the recommendation of the cooperator, we have released some plants to the Hawaii Anthurium Industry Association for possible propagation and dissemination.

Anthurium antioquiense x *A. amnicola* (Cross 729)

Table 1 presents some characteristics of this hybrid and its two parents. The color of spathe is pale lavender and the spadix is violet-purple. Flowers are small. The dark green leaves are similar to those of *A. antioquiense*. The main growth produced 8.5 ± 0.7 flowers per year, and since each plant produced suckers freely, several flowers were produced at any given time (Fig. 1). This hybrid has been named *A.* x Amni-oquiense by combining anmi from *A. amnicola* and oquiense from *A. antioquiense*.

Fig. 1. *Anthurium* x Amni-oquiense

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Table 1. Characterisitcs of *Anthurium amnicola*, *A. antioquense*, *A. antrophyoides*, *A. antiquiense* x *A. amnicola*, and *A. antrophyoides* x *A. antioquiense*.

Species and Hybrids	Spathe Color	Spathe Length (cm)	Spathe Width (cm)	Spadix Color	Spadix Length (cm)	Leaf Length (cm)	Leaf Width (cm)	Leaf Shape
A. amnicola	Lavender	4.3	2.0	Violet-Purple	1.1	13.0 ± 1.0	2.8 ± 0.5	Elliptic-Lanceolate
A. antioquiense	Pale Lavender	8.6	2.1	Violet-Purple	4.6	25.1 ± 1.7	6.0 ± 0.4	Elliptic
A. antrophyoides	White	9.2	3.8	White	4.6	21.7 ± 0.5	13.5 ± 0.6	Trullate
A. antioquiense x *A. amnicola*	Pale Lavender	7.2 ± 0.8	2.7 ± 0.2	Violet-Purple	3.3 ± 0.2	22.0 ± 0.6	5.9 ± 0.5	Elliptic
A. antrophyoides x *A. antioquiense*	White	7.4 ± 0.5	2.7 ± 0.1	White or Pale Lavender	4.5 ± 0.4	23.9 ± 1.7	10.7 ± 1.1	Trullate

Fig. 2. *Anthurium* x Antro-oquiense

***Anthurium antrophyoides* x *A. antioquiense* (Cross 724 and the reciprocal cross 727)**

The cross between the pale lavender *A. antioquiense* and white *A. antrophyoides* produced white flowered offspring (Table 1, Fig. 2). The spadix segregated into white and pale lavender. The dark green, attractive leaves are broad (trullate), and resemble those of the A. *antrophyoides* parent. The main growth produced 8.2 ± 0.5 flowers per year. This hybrid has been named *A.* x Antro-oquiense by combining antro from *A. antrophyoides* and oquiense from *A. antioquiense*.

H. Kamemoto
Surawit Wannakairoj
Joanne S. Imamura

AVAILABLE PUBLICATIONS

Dr. Arnold H. Hara, Entomologist with Cooperative Extension, UH–Manoa, with assistance from his associates in the Entomology Department, has prepared a series of publications on insect and mite control on ornamental crops. These are designed to provide information on the registered chemicals, application rate, and special remarks for each pest. The following list gives the available publications:

HITAHR Brief No.	Topic
004	1987 Guide to Chemical Control of Insect and Mite Pests of Orchids
005	1987 Guide to Chemical Control of Insect and Mite Pests of Leatherleaf Fern
007	1987 Guide to Chemical Control of Insect and Mite Pests of Protea
008	1987 Guide to Chemical Control of Insect and Mite Pests of Anthurium
009	1987 Guide to Chemical Control of Insect and Mite Pests of Chrysanthemum
014	1987 Guide to Chemical Control of Insect and Mite Pests of Pikake
062	1987 Guide to Chemical Control of Insect and Mite Pests of Poinsettias
066	1987 Guide to Chemical Control of Insect and Mite Pests of Ti Plants
067	1987 Guide to Chemical Control of Insect and Mite Pests of Roses
068	1987 Guide to Chemical Control of Insect and Mite Pests of Aglaomena
069	1987 Guide to Chemical Control of Insect and Mite Pests of Brassaia
070	1987 Guide to Chemical Control of Insect and Mite Pests of Dieffenbachia
071	1987 Guide to Chemical Control of Insect and Mite Pests of Palms

Single copies of these publications are available from your county Extension office or by contacting the Agriculture Publications and Information Office, CTAHR, University of Hawaii, 3050 Maile Way, Gilmore 119, Honolulu, Hawaii 96822.

COLORED HYBRID CALLA LILIES, A Potential New Pot Plant and Cut Flower for the United States

Hybrid calla lilies (*Zantedeschia* spp.), developed, bred, and propagated presently through

tissue culture labs, have potential to be grown in the United States both as greenhouse-grown pot plants and for field-grown cut flower production where winter temperatures are not severe (i.e., California and Florida). Observations and experiments at the Univ. of Florida have shown that the hybrid colored calla lilies can be grown as greenhouse pot plants and can be scheduled and flowered almost year-round. Tubers can be greenhouse-grown in the fall, winter, and spring, and flowers mature 60 to 70 days after planting.

Each flowering-size tuber produces up to three flowers from a single growing point. Tubers with multiple growing points can produce more than three flowers. Growth regulators, such as gibberellic acid, applied as a tuber dip prior to planting, assure flowering. Growth regulators, such as paclobutrazol, are effective in controlling height when tubers are grown as a flowering pot plant. In Florida, production of tubers in the field is feasible since they are similar in cultural practice and soil requirements to caladiums (both belong to the aroid family). Production can be easily adapted to caladium-producer practices. Hybrid colored callas grow well under high organic soils with moist conditions. Plants are very tolerant to herbicides, and flowers do not deteriorate rapidly in the field despite heavy rain showers.

Benny Tjia
Univ. of Florida
HortScience, Vol. 22(1), February 1987

'ARCS' ANTHURIUM®

A new anthurium with purple, upright spathe (Fig. 1) has been named 'ARCS' in recognition and appreciation of the Honolulu Chapter of ARCS Foundation, Inc. (Achievement Reward for College Scientists). ARCS has generously supported the graduate program of the Department of Horticulture, University of Hawaii, by providing scholarships to its students. This purple, tulip-type anthurium is the first of its kind developed by the University of Hawaii. 'ARCS' yields slightly over 7 flowers per plant per year. It is resistant to anthracnose and appears to be tolerant to the bacterial blight. 'ARCS' is now undergoing micropropagation under aseptic culture, and plantlets will be released through the Hawaii Anthurium Industry Association as soon as they become available. In the meantime, a few plants propagated through cuttings have been distributed to the Honolulu Chapter of ARCS Foundation, Inc. and the Hawaii Anthurium Industry Association.

'ARCS' has four species in its pedigree (Fig. 2). The white cultivar, 'Uniwai' (*Anthurium andraeanum*), was crossed in 1971 to a greyed-purple *A. kamemotoanum*, a species native to Panama. The resultant pink-flowered hybrid (Selection RS1249-9) was crossed in 1974 to another Panamanian species, *A. formosum*, which has large, creamish flowers with lavender blush. A selected offspring with dark-pink spathe and dark purple spadix (Selection 392-42) was crossed in 1980 to a third Panamanian species, *A. amnicola* with small lilac-flowers, to produce 'ARCS' (Selection UH1068).

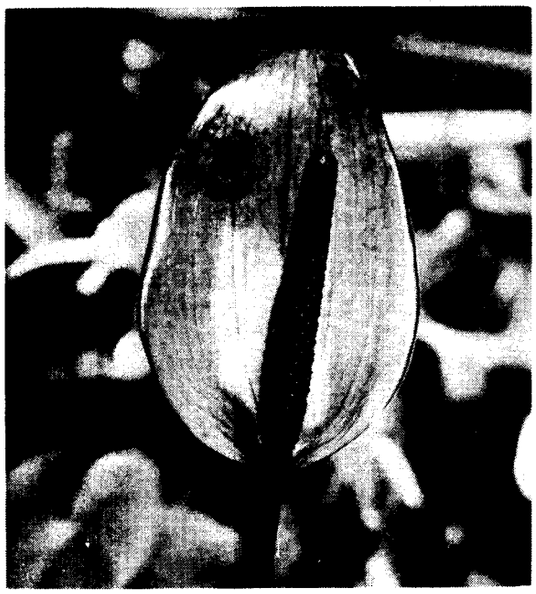

Fig. 1. 'ARCS' Anthurium

H. Kamemoto
J. T. Kunisaki
S. Wannakrairoj
T. Higaki
M. Aragaki

The Description of this new cultivar is as follows:

Spathe	
Size	Up to 13 cm. (5 in.) long, 7 cm. (2-3/4 in.) wide
Shape	Upright, cupped when newly open, often reflexing with maturity
Color	Red-purple (R.H.S. Colour Chart 72A)
Spadix	
Size	Up to 8.5 cm. (3¼ in.) long, 1.3 cm. (½ in.) in diameter
Shape	Cylindrical, upright
Color	Purple (R.H.S. Colour Chart 79A)
Anthracnose	Resistant
Peduncle	Up to 35 cm. (18 in.) long, 0.6 cm. (¼ in.) in diameter
Leaf	
Blade	Up to 27 cm. (10½ in.) long, 0.5 cm. (3/16 in.) in diameter

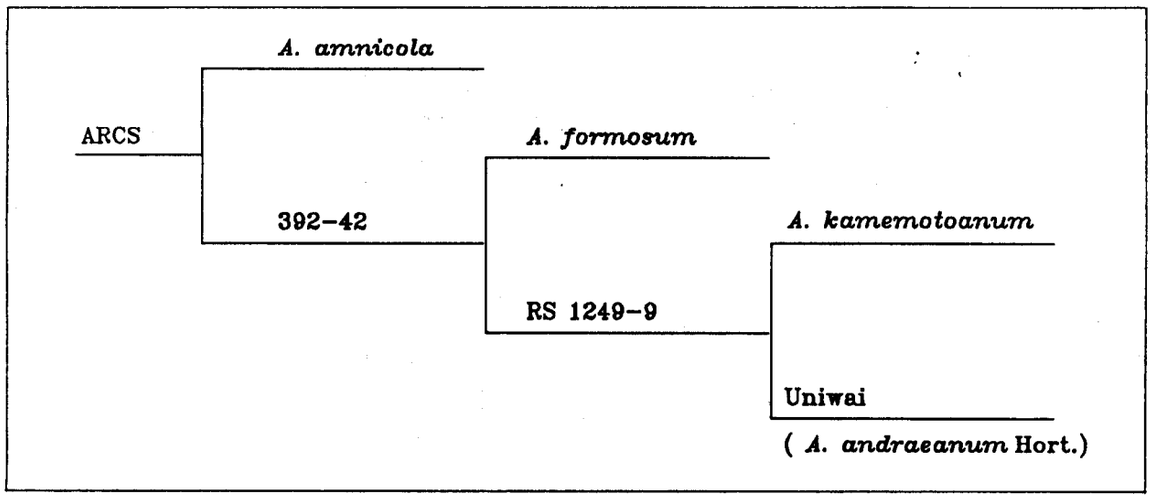

Fig. 2. Pedigree of 'ARCS' anthurium

Petiole	Up to 30.5 cm. (12 in.) long, 0.5 cm. (3/16 in.) in diameter
Yield	7.3 flowers per plant per year

NURSERY NOTES

Did You Know????

That when you say, "May I help you?" to a customer in your shop, that you are providing him (or her) with the perfect opportunity not to buy anything?

It's true, according to Dave Yoho Associates in Virginia, specialists in video training programs for the small business. Yoho explains that the commonly first-asked question turns people off psychologically, and makes it easy for that potential customer to just say "no".

Instead, you should make that customer feel welcome in your shop by saying, "Good morning, and welcome to "XYZ" shop; How may I help you?" Make that customer feel appreciated, then the "how" in the question forces him to make a statement of why he came into the shop in the first place. Then you know in what direction to guide him; thus, the ultimate sale. He will feel appreciated, so you can count on repeat business.

NYSFI Bulletin
No. 195, Oct. 1987

Gene Transfer in Petunias Creates Tolerant Varieties

A U.S. Department of Agriculture breakthrough in genetic engineering could make your petunia and other ornamentals tougher in times of drought.

Using a hair-thin class needle, Dr. Robert J. Griesbach, geneticist for the USDA's Agricultural Research Service, was able to inject more than 30 genes–making up a chromosome–from a wild, dry weather petunia into single cells of a commercial petunia.

Petunias grown from these cells were 40 percent more drought tolerant than commercial flowers in greenhouse experiments and will be ready for the market within three years.

This is the first time in seven years of experimentation and research that cells were transferred and expressed. ARS will continue to experiment for tolerance to stresses such as salt, weather and insects.

MarketLetter
August, 1987

Retail Stores Have Problems

Retailers are victims of a labor shortage which will worsen during the next decade, according to a study by the National Retail Merchants Association. A report on demographic developments and labor forecasts in retailing through 1995 showed the 16 to 24-year old population has been declining since 1980. Predictions point to a continuing decline of half a million yearly in the market availability of young workers for the next six or seven years.

Flower Market Information
CES, Penn. State, July 1987

Too Much of a Good Thing?

Rapid increases in world flower and plant production have led to an oversupply in international markets, according to the New Zealand Flower Report. According to the report, "after many years of rapid growth in flower consumption, and growers being able to sell almost everything they produce, the situation is rapidly changing for several lines where supply now exceeds demand".

The publication warns growers that they need to pay more attention to quality, timing of production, and marketing. The varieties that are most difficult to sell for "fast-changing lines" are carnations, roses and chrysanthemums, according to the report.

MarketLetter
July, 1987

Tax Pamphlet Available from SAF Growers Division

A pamphlet on tax planning and how to follow the new regulations of the Tax Reform Act of 1986 is now available from the Society of American Florists' Growers Division.

Written by a tax attorney, the pamphlet compares the old laws and the new, making it possible for growers to complete their tax planning and evaluate their tax status in light of the changes which came about as a result of the Tax Reform Act of 1986. Business decisions which were once clear-cut are now complicated by a new tax liability variables. The Tax Reform Act made significant changes in such areas as depreciation and the investment tax credit. The purpose of this publication is to identify some tax decisions facing growers in the floral industry and to help as they plan for 1988 and beyond.

For information and/or orders, call Art Gasparik at SAF headquarters, 800-336-4743.

NYSFI Bulletin
No. 193, July 1987

Petunia Purchase Promises

The Virginia Gardener is advising readers to not limit themselves to buying plants in bloom. Petunias that bloom in the pack are often rootbound or overgrown and have to adjust to transplant shock, it says. Plants without blossoms will grow better and bloom sooner.

Brochure List Air Shipping Rates

Cargo Development Group, the air cargo handling and shipping subsidiary of Continental Airlines, has produced a shipping guide.

The brochure details the company's rates and services for air shipment of flowers and nursery stock to and from its cargo handling facilities at 79 U.S. air terminals.

For a copy, contact Elizabeth Reed, Cargo Development Group, 2777 Allen Parkway, Suite 1400, Houston, TX 77019 (713) 630-6931.

Opportunities for Aussies

Australia is filling the gap left when Dutch flower auctions banned South African imports, reported The New Zealand Flower Report. "The Dutch exporter is looking for an alternative source for Proteaceae and wild flowers, and is obtaining increasing quantities from Australia."

Growers in Australia have been increasing their production to meet the European challenge.

DENDROBIUM KAREN NISHIMOTO

The success in producing seed-propagated dendrobium cut flower cultivars has spurred the development of seed-propagated flowering potted plant cultivars. *Dendrobium* Lynne Horiuchi represents the first seed-propagated potted plant cultivar released by the University of Hawaii.

A cross (UH 785) between triploid *Dendrobium* Purple Gem and diploid *D. bigibbum* var *compactum* produced a relatively uniform tetraploid progeny with attractive white edged purple flowers (Fig. 1). This cross was registered as *D.* Karen Nishimoto, and the repeat cross has been released as a potted plant cultivar to dendrobium growers' associations in Hawaii.

The origin of *D.* Karen Nishimoto is unique, for the parents are triploid *D.* Purple Gem and diploid *D. bigibbum* var *compactum.* Triploids are often sterile or of low fertility. However if successfully crossed to diploids, they are expected to yield tetraploids. The unreduced triploid eggs from triploid *D.* Purple Gem fertilized by normally reduced haploid pollen of *D. bigibbum* var *compactum* results in tetraploid *D.* Karen Nishimoto.

The original cross (UH 785) was made in March 1981, germinated in June 1981, compotted in January, 1982, transplanted into 2-inch pots in July 1982 and repotted into 5-inch plastic pots in Februrary 1983. First flowers were obtained in October 1983, only two and a half years after pollination. By November 1984, 45 months after pollination, 79% of the plants were considered saleable with at least two racemes (sprays) produced at the same time. Flowers were obtained throughout the year (Table 1). Plant height averaged only 15 inches in October 1984. The characteristics of UH 785 are as follows:

Natural spread of flowers (in.)	2.4 ± 1.1
Pedicel length (in.)	1.5 ± 0.1
Scape length (in.)	5.7 ± 0.1
Spray (raceme) length (in.)	11.7 ± 3.0
No. of flowers per spray	8.1 ± 3.9
Half life of sprays (days)	27.6 ± 4.5
Life of sprays (days)	40.1 ± 5.1
Plant height-October '84	15.3 ± 1.6

H. Kamemoto
Ruth S. Kobayashi

Fig. 1. *Dendrobium* Karen Nishimoto

Table 1. Monthly and annual spray yield and number of saleable plants of *Dendrobium* Karen Nishimoto (based on 38 plants).

Month	1984		1985	
	No. sprays	No. saleable plants[x]	No. sprays	No. saleable plants[x]
JAN	8	0	15	3
FEB	9	1	22	8
MAR	7	0	40	12
APR	7	0	10	1
MAY	8	2	16	5
JUN	9	0	16	3
JUL	24	6	39	10
AUG	11	1	51	11
SEPT	43	14	24	5
OCT	33	10	28	10
NOV	26	6	24	7
DEC	--[y]	--[y]	27	7
Total	185	30	312	82

[x] Saleable plants are those with at least two sprays per plant. The total number of saleable plants exceeds 38 because plants were saleable during more than one month.

[y] Data missing.

COMING EVENTS

Short Course

Preliminary planning is underway for the annual Fertilizer, Ornamentals and Vegetable Short Course to be held at the Maui Community College, March 21–23, 1988. One of the featured speakers will be Dr. Paul V. Nelson, Professor of Horticultural Science at North Carolina State University. He is the author of the book "Greenhouse Operation and Management" and will share his extensive knowledge of plant nutrition.

Plant Show

The annual HAN Plant Show and Sale is scheduled for the Neal Blaisdell Center in Honolulu for March 25–27, 1988.

HAWAIIAN GROWERS ANNOUNCE FORMATION OF CREDT ASSOCIATION

Hawaiian growers of flowers and nursery products have announced the formation of the Hawaii Flower and Nursery Credit Association. President of the new organization is Gardy Gamache, Mountainview Anthuriums, Mountainview.

"The basic objective of the association is to provide a credit cross-reference referral system. The association will publish a list of all bad debts incurred by members of the organization," says Gamache.

The association, organized through the efforts of David Matsuura, Orchid Isle Nursery, Hilo, and David Rietow, Puna Flowers and Foliage, Pahoa, will distribute monthly credit reference reports to all participating members.

The initial report was scheduled to be published on Feb. 1.

Leland Anderson, Polynesian Orchids and Anthuriums, Kurtistown, has been elected association vice president.

Rietown will serve as secretary, and Matsuura will fill the post of treasurer for this year.

Joining Gamache, Anderson, Rietow and Matsuura of the association's board to directors are Alan Kuwahara, Hawaiian Greenhouse, Pahoa; Tracey Lauder, Keum Soon's Anthurium Garden, Mountainview; and Robert Niimi, Hawaiian Flower Export, Mountainview.

Hawaii's tropical flowers and foliage industry has grown at an annual rate of 17 percent over the past 15 years and has represented the state's leading diversified agriculture segment for the past five years. Gross sales for 1985 totaled $44.2 million. The industry represents foliage, cut flowers, lei flowers, orchids and potted flowering plant production.

American Nurseryman
March 1, 1987

Food for Thought

"A real patriot is the fellow who gets a parking ticket and rejoices that the system works."

Bill Vaughan

A friend from Punjab got advice from his father– "There are two types of people, those who do the work, and those who take the credit for other people's work. Be one of the former, son, there's a lot less competition!"

"I like work, It fascinates me. I can sit and look at it for hours."

Jerome K. Jerome

NOTE: The use of trade names is for the convenience of readers only and does not constitute an endorsement of these products by the University of Hawaii, the College of Tropical Agriculture and Human Resources, the Hawaii Cooperative Extension Service, and their employees.

Fred D. Rauch
Extension Specialist in Horticulture