

EVALUATION OF CHRYSANTHEMUM CULTIVARS GROWN AS CENTER-DISBUDDED PLANTS IN CONTAINERS

GARY J. WILFRET
IFAS, University of Florida
Gulf Coast Research & Education Center
Bradenton, FL 34203

Additional index words. B-nine, SADH, *Chrysanthemum morifolium*, daminozide.

Abstract. Twenty chrysanthemum (*Chrysanthemum morifolium* Ramat.) cultivars were grown in 6-inch diameter containers on raised beds in a polypropylene shade house (25%) during 1984. The 10 best cultivars from 1984 plus 20 new cultivars were grown in 1985 under similar conditions. Cultural procedures included planting 4 rooted cuttings per pot, night lighting for 10 days, manually pruning the plant tips, lighting an additional 7 days, and then applying 1-3 weekly applications of daminozide (B-Nine) as 2500 ppm foliar sprays. Data were collected on date of first flowering, marketable date, plant height, diameter, growth habit, and flower characteristics. The best cultivars, by color, were: White—'Echo,' 'Surf;' Yellow—'Pert,' 'Sunlight;' Orange—'Cir-bronze,' 'Firebrand;' Pink—'Circus;' Rose/Lavender—'Excel,' 'Fascination;' and Red—'Spark,' 'Stoplight.'

Production of multiplant potted chrysanthemums (*Chrysanthemum morifolium*), after declining in Florida in the late 1970s, has increased to a \$7.3 million industry, with almost 3 million pots sold in 1984 (1). This constitutes a 46% increase in number of units sold from 1981 to 1984. Most of these units consisted of 4 or 5 plants grown in 6- or 6.5-inch diameter pots and were sold locally in florist shops and chain stores or were exported to northern markets. Plants were grown either as center-disbudded to produce multiple flowers per lateral (spray type) or side-disbudded to allow 15-20 large terminal flowers to develop (standard type). The increase in production has been accompanied by an increase in new cultivars. Many of the cultivars recommended in previous publications (2) no longer exist or have been replaced by ones with brighter colors or novelty-type florets, e.g. spider or spoon types. Recent work has shown that many of the new cultivars can be grown in small containers for mass-market sales (3, 4), but little information is available on how they perform when grown as multiple plants in a larger container in a polypropylene shade house.

The objective of this research was to evaluate a selection of available commercial chrysanthemum cultivars which could be center-disbudded to produce a spray-type product.

Materials and Methods

General. Four rooted chrysanthemum cuttings were planted per 6-inch diameter plastic container (RT600) in a medium of Florida Peace River peat, coarse white buil-

ders' sand, coarse vermiculite, and perlite (5:3:3:1, v/v). Medium amendments in lbs./yd³ of soil were 13.9 Osmocote 18-5-5.2 (NPK), 1.5 6-5-2.6 dry fertilizer, 15.0 dolomite, 10.0 granular calcium carbonate, 4.0 hydrated lime, 6.0 superphosphate, and 1.5 Micro-Max (a minor element mixture). Plants were grown in a shade house covered with black polypropylene (25% shade) under ambient temperature and humidity. Pots were set on 6-inch high raised beds which were covered with 1.5 mil white on black polyethylene mulch. Pots were spaced on 16-inch centers, with 3 rows of pots down each bed. Plants were hand watered on demand and weekly fungicide and insecticide applications were provided. Data were collected on date the first flower opened, date of marketability (1/3 flowers open), flower diameter, plant height and diameter, number of laterals, and number of floral buds per lateral. The experimental design was a randomized complete block and each cultivar contained 3 replications of 6 pots each.

Spring 1984. Twenty chrysanthemum cultivars (Table 1) were planted on 2 Mar. and were soft pinched (terminal pruned) on 12 Mar. Supplemental night lighting was provided from 10 PM to 2 AM from 2 Mar. through 19 Mar. Foliar applications of 2500 ppm daminozide (B-Nine, SADH) were applied on 27 Mar. and 5 and 11 Apr. (when needed), with a volume of 0.85 oz (1.5 quarts/100 ft²) per container. Chemical was applied using a pressurized sprayer at 40 psi.

Spring 1985. Thirty chrysanthemum cultivars (Table 3) were planted on 28 Feb. and were soft-pinched on 8 Mar. Supplemental night lighting was provided from 28 Feb. through 15 Mar. Foliar applications of 2500 ppm daminozide were applied on 20 and 26 Mar. with a 28 volume of 0.85 ounces per pot.

Results and Discussion

Spring 1984. Cool weather during the first 2 weeks delayed plant development and necessitated extension of the date pinching from the normal 7 days to 10 days after planting. Normal weather conditions prevailed after 15 Mar. and very warm, dry weather occurred at the time of flowering. Descriptions of the flowers are recorded in Table 1. Color-mix of the 20 cultivars contained 5 white, 5 yellow, 3 orange, 2 pink, 2 lavender, and 2 red or bronze. The high light intensity and warm weather faded the floret color of several of the lavender and red-bronze cultivars, e.g. 'Luv,' and 'Torch.' Although the description of 'Yellow Torch' indicates it is a yellow, the floret color in May was more orange than yellow. 'Cirbronze,' 'Circus,' 'Pert,' and 'Songster' had very intense color that didn't fade quickly. Eight of the cultivars had a decorative flower type and 8 had a standard daisy type. Florets of 'Echo' were spoon shaped while those of 'Quills' and 'Stripes' were quill-shaped. 'Songster' had very frilly spider-type florets, which often burned on the tips. Some of these novelty types are needed to add diversity to the product-mix.

Days to first flowering ranged from 57.1 to 74.2, represented by 'Quills' and 'Always Pink,' respectively. Seven

Florida Agricultural Experiment Stations Journal Series No. 6890. Appreciation is expressed to Yoder Bros. of Fla. and Ball Pan Am for providing the chrysanthemum plants used in this study.

Table 1. Flower characteristics and pot value of 20 chrysanthemum cultivars grown in 6-inch containers (Spring, 1984).

Cultivar	Flower color	Flower type	Flower diameter (inches)	Days to flower	Days to marketability	Pot value (1-5) ^y
Alert	Med. orange w/yellow disc	Daisy	1.7 e ^x	69.0 a-d	75.9 abc	3.2 c
Always Pink	Med. lavender-pink	Decorative	2.5 b-e	74.2 a	78.3 a	4.3 b
Cirbronze	Med. orange w/yellow center	Daisy	1.9 de	61.3 e-i	66.2 efg	5.0 a
Circus	Dark pink w/yellow center	Daisy	1.9 de	64.9 def	70.0 c-f	5.0 a
Echo	White w/yellow center	Spoon	1.9 de	65.5 de	72.0 a-e	4.8 ab
Excel	Med. rose-lavender	Decorative	2.0 cde	64.5 d-g	67.9 efg	5.0 a
Fiesta	Lemon yellow w/dark center	Daisy	2.4 b-e	65.5 de	69.2 d-g	4.5 ab
Garland	Cream w/yellow center	Daisy	2.6 bcd	71.6 ab	76.6 ab	2.1 d
Luv	Med. rose-lavender	Decorative	2.6 bcd	68.2 bcd	74.5 a-d	3.5 c
Pert	Butter yellow	Daisy	2.1 cde	66.4 cde	69.4 d-g	5.0 a
Puritan	Cream-white	Decorative	3.0 ab	68.2 bcd	76.5 ab	3.1 c
Quills	White w/yellow center	Quilled	3.6 a	57.1 i	63.3 g	4.5 ab
Ritz	Med. yellow	Daisy	2.1 cde	71.7 ab	77.6 ab	5.0 a
Songster	Dark yellow	Spider	2.4 b-e	59.4 ghi	65.2 fg	4.7 ab
Spark	Med. red w/yellow center	Daisy	1.7 e	59.7 f-i	64.5 fg	5.0 a
Stripes	Butter yellow	Quilled	3.0 ab	62.8 e-h	68.3 d-g	4.8 ab
Surf	White	Decorative	2.8 abc	57.8 hi	63.7 fg	5.0 a
Surfine	Lemon yellow	Decorative	2.6 bcd	59.6 ghi	65.4 fg	4.7 ab
Torch	Med. orange-bronze	Decorative	2.8 abc	73.4ab	78.4a	3.0c
Yellow Torch	Orange-yellow	Decorative	2.5 b-e	71.0 abc	76.8 ab	4.3 b

^zMarketability was determined when approximately 1/2 of flowers were open.

^y1 = poor; 5 = excellent.

^xMean separation within columns by Duncan's multiple range test, 5% level.

Table 2. Plant characteristics and flower potential of 20 chrysanthemum cultivars grown in 6-inch containers (Spring, 1984).

Cultivar	No. of daminozide applications ^z	Plant height (inches)	Plant diameter (inches)	Number laterals per cutting	Number buds per lateral	Flower potential ^y
Alert	3	14.2 b ^x	14.6 b-f	7.7 ab	8.1 b-e	62.4
Always Pink	2	12.0 cde	15.2 a-e	6.1 b-f	6.9 b-f	42.1
Cirbronze	3	11.1 ef	14.7 b-f	6.2 b-e	7.9 b-e	49.0
Circus	3	10.8 ef	13.7 def	5.8 d-g	6.2 c-f	36.0
Echo	3	12.4 cde	15.5 a-e	8.2 a	9.8 ab	80.4
Excel	2	10.9 ef	13.4 ef	6.2 b-e	9.1 a-d	56.4
Fiesta	3	10.0 f	13.9 c-f	5.1 efg	6.1 c-f	31.1
Garland	3	16.1 a	17.3 a	4.2 g	7.2 b-f	30.2
Luv	1	10.0 f	14.2 b-f	5.9 c-g	6.9 b-f	40.7
Pert	2	11.4 ef	15.6 abc	4.9 efg	9.2 abc	45.1
Puritan	2	11.7 de	15.0 b-e	7.0 a-d	8.8 a-d	61.6
Quills	3	13.4 bc	17.2	6.0 b-f	5.1 ef	30.6
Ritz	2	11.2 ef	12.8 f	5.2 efg	6.3 c-f	32.8
Songster	3	12.2 cde	16.2 ab	7.6 abc	9.7 ab	73.7
Spark	2	11.1 ef	14.1 b-f	6.6 a-e	12.0 a	79.2
Stripes	3	13.1 bcd	14.4 b-f	4.4 fg	7.1 b-f	31.2
Surf	2	11.3 ef	15.9 abc	5.4 d-g	5.9 d-f	31.9
Surfine	2	11.3 ef	15.4 a-e	6.0 b-f	6.0 c-f	36.0
Torch	2	12.2 cde	12.8 f	5.0 efg	4.2 f	21.0
Yellow Torch	2	12.2 cde	13.5 def	5.2 efg	4.4 f	22.9

^zDaminozide applied at 2500 ppm with 0.85 ounces/pot of 4 cuttings.

^yProduct of number of laterals/cutting and number buds/lateral.

^xMean separation within columns by Duncan's multiple range test, 5% level.

of the cultivars would be classed in the 8-week response group, 8 were in the 9-week group, and 5 were 10-week types. Flower development of 'Torch' and 'Yellow Torch' was delayed by the warm days and the florets appeared to develop abnormally, with curled margins and shriveled tips. Days to marketability was generally from 3 to 6 days after initial flowering. 'Echo' and 'Puritan' had a few florets open early on each plant but the plants were not marketable until 7 to 8 days later. An 8- or 9-week cultivar would be more desirable for maximum utilization of bench space.

Plant height, which was partially influenced by number of daminozide applications during the first 3 weeks follow-

ing the terminal pinch, ranged from 16.1 to 10.0 inches, represented by 'Garland' and 'Luv,' respectively (Table 2). Ideal height of the plants was determined to be from 11 to 13 inches above the pot rim. Thirteen of the cultivars were within this range. 'Garland' and 'Alert,' even after 3 daminozide applications, were much too tall. Daminozide also had an adverse effect on floret color of 'Garland,' changing the normal white florets to a cream or pale yellow.

Number of laterals which developed following the pinch and number of floral buds per lateral determined the flower potential of each plant. 'Echo' produced the

Table 3. Flower characteristics and pot value of 30 chrysanthemum cultivars grown in 6-inch containers (Spring, 1985).

Cultivar	Flower color	Flower type	Flower diameter (inches)	Days to flower	Days to marketability	Pot value (1-5) ^y
Alert	Med. orange w/yellow disc	Daisy	1.8 f*	69.8 cd	73.1 cd	2.2 lm
Candlelight	Med. orange w/green disc	Daisy	2.6 bcd	82.6 a	87.6 a	2.4 k-n
Cirbronze	Med. orange w/yellow center	Daisy	2.4 de	59.7 f-i	64.3 f-j	4.7 abc
Circus	Dark pink w/yellow center	Daisy	2.4 de	61.3 e-h	66.4 e-h	4.8 ab
Echo	White w/yellow center	Spoon	2.4 de	60.9 e-i	64.6 f-i	4.7 abc
Excel	Med. rose-lavender	Decorative	2.4 de	63.9 efg	67.5 d-g	4.8 ab
Fascination	Lt. rose w/yellow center	Daisy	2.7 bcd	55.7 ij	58.9 jk	4.5 a-d
Fiesta	Lemon yellow w/dark center	Daisy	2.8 a-d	61.2 e-h	64.1 f-j	4.1 a-f
Firebrand	Lt. orange w/yellow center	Daisy	3.0 abc	62.7 efg	65.7 e-i	4.2 a-e
Firelight	Lt. orange w/yellow center	Daisy	2.6 bcd	57.2 hij	59.8 ijk	3.7 d-i
Free Spirit	Crreamy-white	Decorative	2.9 a-d	74.2 bc	78.7 bc	3.5 e-j
Frosty	White w/yellow center	Anemone	1.7 f	56.4 hij	60.9 hij	3.3 f-j
Hopscotch	Med. yellow w/dark center	Daisy	3.3 a	61.4 e-h	63.9 g-j	4.0 b-g
Illini Harvest	Lt. red w/yellow center	Daisy	2.6 bcd	57.2 hij	62.2 g-j	2.4 k-n
Illini Prairie	Med. yellow w/dark center	Quill	3.1 ab	64.6 def	70.1 def	3.1 h-k
Illini Sparkler	White w/yellow disc	Quill	2.8 a-d	55.8 ij	60.6 hij	2.7 j-m
Illini Summer	Lt. yellow w/dark center	Daisy	1.6 f	55.6 ij	60.2 ij	2.1 mn
Illini Sunset	Med. red w/yellow center	Daisy	2.6 bcd	51.3 j	54.2 k	1.8 n
Illini Windmill	White w/yellow disc	Daisy	2.9 a-d	58.8 ghi	64.1 f-j	2.8 j-m
Limelight	Cream w/yellow disc	Daisy	2.6 bcd	74.4 bc	78.9 bc	3.0 i-l
Pert	Butter yellow	Daisy	2.5 cde	64.1 efg	66.6 e-h	4.8 ab
Powerhouse	White w/cream center	Decorative	2.5 cde	75.3 b	78.5 bc	4.2 a-e
Songster	Med. yellow w/dark disc	Spider	3.1 ab	66.3 de	70.9 de	4.1 a-f
Spark	Med. red w/yellow disc	Daisy	2.0 ef	57.2 hij	60.7 h-j	4.9 a
Stoplight	Med. red w/dark yellow disc	Daisy	2.7 bcd	64.1 efg	67.6 d-g	4.3 a-e
Sunburst Spirit	Lt. yellow w/dark center	Decorative	3.0 abc	75.4 b	80.9 b	3.9 c-h
Sunlight	Med. yellow w/green disc	Daisy	2.6 bcd	66.2 de	70.2 def	4.4 a-d
Surf	White w/cream center	Decorative	3.1 ab	59.2 f-i	62.3 g-j	4.7 abc
Twilight	Lt. rose w/yellow disc	Daisy	2.7 bcd	61.7 e-h	65.7 e-i	3.2 g-k
Ultralight	Dk. lavender w/yellow disc	Daisy	2.8 a-d	63.9 efg	67.4 d-g	3.8 d-i

*Marketability was determined when approximately 1/3 of flowers were open.

^y1 = poor; 5 = excellent.

*Mean separation within columns by Duncan's multiple range test, 5% level.

most laterals (8.2) while 'Garland' had the least (4.2). 'Spark' had 12 floral buds per lateral while 'Torch' only had 4.2. 'Echo' also had the greatest flower potential (80.4) while 'Torch' had the least (21.0). Cultivars that displayed the best pot value, which was a subjective rating based upon plant height, floret color, and plant confirmation, were 'Cirbronze,' 'Circus,' 'Excel,' 'Pert,' 'Ritz,' 'Spark,' and 'Surf.'

Spring 1985. This season started by being fairly normal but ended with one of the hottest and driest months of April and May on record. The excessive heat led to excessive fading of many of the darker colored cultivars, e.g. 'Illini Sunset,' 'Illini Harvest,' 'Fascination,' and 'Twilight.' Cultivars which did not fade were 'Circus,' 'Hopscotch,' 'Pert,' 'Stoplight,' 'Sunlight,' and 'Ultralight.' 'Echo' had a tendency to pink on the floret tips when mature, 'Illini Summer' had white tips, and 'Songster' had dehydrated, brown tips of the spider-like florets. Days to flower (Table 3) ranged from 51.3 to 82.6, represented by 'Illini Sunset' and 'Candlelight,' respectively. Number of cultivars in the 7-, 8-, 9-, 10-, and 11-week response groups were 1, 15, 8, 5 and 1, respectively. Cultivars generally flowered 3 to 5 days earlier in 1985 than in 1984, and days to marketability was less in 1985.

Plant height ranged from 9.0 ('Illini Summer') to 18.4 ('Alert') inches (Table 4). Although most of the cultivars received at least 2 daminozide applications, the hot days and nights caused excessive internodal elongation, which produced plants taller than desired. Only 15 of the 30

cultivars were in the 11- to 13-inch range but an additional 5 were between 13 and 14 inches tall. An additional daminozide application would have retarded these plants enough to be in the acceptable height range. Only 'Firelight' and 'Illini Summer' were too short to be marketable. Plant diameter, which is an indication of the overall growth habit of the plants, ranged from 13.8 to 18.9 inches. Cultivars tall but with little spread ('Alert') looked thin and not full, while short plants with large diameter ('Illini Sunset') generally had weak stems and were of poor quality.

Number of laterals per cutting ranged from 4.1 ('Illini Windmill') to 8.7 ('Alert'), with the majority of the cultivars in the 5.5 to 7 range. At least 5 laterals should develop to give the appearance of a full plant. 'Illini Summer' produced the most floral buds per lateral (11.3), while 'Candlelight' only had 5.3. The cultivars averaged 8.4 buds per lateral. Flower potential was greatest with 'Echo' (88.1) and least with 'Firebrand.' Although the ideal floral display is determined by both flower number and flower size, cultivars which had a flower potential less than 40 appeared sparse. Only 10 of the cultivars had a flower potential lower than 40.

Cultivars which were more adaptable to culture in a shade house in central Florida were white: 'Echo' and 'Surf,' yellow: 'Pert' and 'Sunlight,' orange: 'Cirbronze' and 'Firebrand,' pink: 'Circus,' rose-lavender: 'Excel' and 'Fascination,' and red: 'Spark' and 'Stoplight.' Production of these plants to their optimum potential requires the proper use of growth retardants and utilization of good horticultural practices in the shade house.

Table 4. Plant characteristics and flower potential of 30 chrysanthemum cultivars grown in 6-inch containers (Spring, 1985).

Cultivar	No. of daminozide applications ²	Plant height (inches)	Plant diameter (inches)	Number laterals per cutting	Number buds per lateral	Flower potential ¹
Alert	2	18.4 a*	16.8 a-f	8.7 a	8.0 b-g	69.6
Candlelight	2	13.8 c-h	14.8 efg	7.5 a-d	5.3 h	39.8
Cirbronze	2	13.7 a-h	16.2 a-g	6.6 b-f	7.3 d-h	48.2
Circus	2	14.4 b-g	15.7 c-g	6.6 b-f	7.0 e-h	46.2
Echo	2	15.1 b-e	17.4 a-e	7.8 abc	11.3 a	88.1
Excel	2	12.3 g-j	14.4 fg	5.8 d-h	8.3 b-f	48.1
Fascination	2	13.8 c-h	15.6 c-g	7.1 a-e	10.0 abc	71.0
Fiesta	2	12.8 d-i	16.4 a-g	5.6 e-h	7.7 c-h	43.1
Firebrand	2	13.5 c-h	15.6 c-g	4.2 h	7.3 d-h	30.7
Firelight	1	10.2 jk	14.8 efg	6.3 c-g	8.3 b-f	52.3
Free Spirit	2	12.1 g-j	15.5 d-g	5.7 d-h	7.7 c-h	43.9
Frosty	2	13.1 d-i	14.7 efg	4.8 fgh	10.3 ab	49.4
Hopscotch	2	15.6 bc	18.3 abc	5.6 e-h	6.7 e-h	37.5
Illini Harvest	2	15.1 b-e	17.4 a-e	7.1 a-e	9.7 a-d	68.9
Illini Prairie	2	14.1 c-g	12.4 a-e	5.0 fgh	10.0 abc	50.0
Illini Sparkler	2	11.4 h-k	15.6 c-g	6.2 c-g	8.3 b-f	51.5
Illini Summer	2	9.0 k	13.8 g	5.8 d-h	12.0 a	69.6
Illini Sunset	2	12.7 f-i	18.9 a	6.3 c-g	10.3 ab	64.9
Illini Windmill	2	13.0 d-i	16.7 a-f	4.2 h	8.7 b-e	36.5
Limelight	2	12.1 g-j	14.9 d-g	4.3 h	7.7 c-h	33.1
Pert	1	12.6 f-j	16.6 a-f	6.2 c-g	9.7 a-d	60.1
Powerhouse	2	11.1 ijk	14.8 efg	4.7 gh	7.3 d-h	34.3
Songster	2	15.2 bcd	18.5 ab	8.6 a	9.7 a-d	83.4
Spark	1	12.8 d-i	15.4 d-g	8.2 ab	10.3 ab	84.5
Stoplight	2	15.1 b-e	17.6 a-d	5.4 e-h	7.0 e-h	37.8
Sunburst Spirit	2	12.3 g-j	15.7 c-g	7.8 abc	8.3 b-f	64.7
Sunlight	2	12.8 d-i	16.1 b-g	5.5 e-h	8.0 b-g	44.0
Surf	2	12.5 f-j	17.2 a-e	5.5 e-h	5.7 gh	31.4
Twilight	2	14.9 b-f	15.5 d-g	4.9 fgh	7.7 c-h	37.7
Ultralight	2	16.8 ab	16.7 a-f	5.3 e-h	6.0 fgh	31.8

²Daminozide applied at 2500 ppm with 0.85 ounces per pot of 4 cuttings.¹Product of number laterals per cutting and number buds per lateral.

*Mean separation within columns by Duncan's multiple range test, 5% level.

Literature Cited

1. U. S. Dept. Agr. 1985. Floriculture crops. 1984 summary and intentions for 1985. U. S. Dept. Agr. Stat. Reporting Serv. SpCr 6-1 (85).
2. Waters, W. E. and C. A. Conover. 1969. Chrysanthemum production in Florida. Fla. Agr. Expt. Sta. Bul. 730.
3. Wilfret, G. J., F. J. Marousky, and J. C. Raulston. 1973. Evaluation of chrysanthemum cultivars as single-plant pots for mass market sales. Proc. Fla. State Hort. Soc. 86:391-395.
4. Wilfret, G. J. and B. K. Harbaugh. 1979. Minipot garden chrysanthemums: cultivar characteristics and consumer preferences. Proc. Fla. State Hort. Soc. 92:317-319.

Proc. Fla. State Hort. Soc. 98:127-130. 1985.

HYBRID CALLA LILIES: A POTENTIAL NEW CROP FOR FLORIDA

B. TJIA¹
Department of Ornamental Horticulture
IFAS University of Florida
Gainesville, FL. 32611

Additional index words. *Zantedeschia* spp.

Abstract. Hybrid calla lilies (*Zantedeschia* spp) developed in New Zealand have potential to be grown in Florida both as a field grown cut flower or as a pot plant. Limited observations and experiments have shown that the colored calla lilies can be effectively grown in the field in Florida. Tubers should

be planted in winter or early spring and flowers mature 60 to 70 days after planting. Each tuber produces up to 3 flowers in one season from a single growing point. Tubers with multiple growing points can produce more than 3 flowers each season. Paclobutrazol is effective in controlling height of calla lilies when grown as a flowering pot plant. Cultural suggestions, harvesting technique, and post harvest handling of the flower are discussed.

The Florida climate is unique in the continental U.S.A., having summers tropical in nature and winters similar to mild temperate regions. Although there are distinct disadvantages to this type of climate, it also has advantages for calla (*Zantedeschia* spp) culture. Callas have tremendous commercial value, but surprisingly have not been grown

Florida Agricultural Experiment Station Journal Series No. 6920.

¹Associate Professor

Proc. Fla. State Hort. Soc. 98: 1985.