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'Florida Blizzard'—A White Fancy-leaved Caladium for Large Pots or Shady Landscapes

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Caladiums [*Caladium bicolor* (Ait.) Vent., syn. *Caladium ×hortulanum* Birdsey, Araceae Juss.] are tropical foliage plants possessing a diversity of leaf colors and shapes found in few cultivated plants. Their popularity is increasing because of their ability to tolerate summer heat and to grow in shaded locations (Harbaugh and Tjia, 1985). The general color groupings in caladium are white, red, and pink, with accents such as spots and blotches possible within each group. Leaf shapes are grouped as strap, lance, and fancy (heart-shaped). A recent survey (Bell and Wilfret, 1998) revealed that white fancy-leaved cultivars are the most commonly grown group, accounting for 28% of the commercial tuber production acreage.

'Candidum' and 'White Christmas' are the most important caladium cultivars, based on acreage. Although these cultivars have been reliable producers for many years and perform well as landscape plants, especially in partial sun or shaded conditions, their performance in containers could be improved. 'Florida Blizzard' (Fig. 1), when compared with major white-fancy cultivars, has demonstrated the potential to produce a superior number of leaves and to produce an attractive 10-cm container plant when buds are excised (Evans et al., 1992). The unique leaf color of 'Florida Blizzard' is complementary to 'Candidum' and 'White Christmas', offering an attractive addition to the white-fancy segment of caladiums.

Origin

'Florida Blizzard', derived from a cross between the popular white heart-shaped leaf caladium cultivars Aaron and White Christmas, initially was evaluated in 1993 as GC93-715. 'Aaron' was selected as the female parent because of its vigor, tuber yield, and excellent sun tolerance. 'White Christmas' was selected because of its attractive foliage with green veins and large white blotches in interveinal areas, as well as its vigor and tuber yield. Tubers were propagated on fumigated Eaugallie fine sandy soils at the Gulf Coast Research and Education Center (REC)–Bradenton and were hot-water treated for nematode control (Rhodes, 1964).

Description

Descriptions of color (e.g., RHS 147A) for plant parts are based on comparison with the Royal Horticultural Society's color chart (Royal Horticultural Society, 1986).

'Florida Blizzard' plants grown for 7 months were 81–97 cm tall. Jumbo tubers are multi-segmented, 6.4–8.9 cm in diameter, bearing 7–9 dominant buds. Tuber surfaces are brown (RHS 200C) with the cortical area yellow (RHS 8B). Leaves are peltate, sagitate-cordate, 26–30 cm long and 18–20 cm wide, with white (RHS 155C) penniform venation. The upper surface has dark-green (RHS 137A) margins of variable width. Interveinal areas are green (RHS 137A) with large white (RHS 155C) blotches. A thin greyed-purple line (RHS 185A), 1 mm wide, occurs along the basal leaf valley and at the petiole apex. The undersurface is greyed-green (RHS 191A) along margins and primary veins, with white (RHS 155C) veins and interveinal blotches. Petioles are 3–6 mm in diameter and yellow-green (RHS 147A).

Plants used for describing color were grown in 15-cm containers in a 40% shaded greenhouse from 2.54-cm-diameter tubers. The foliar color pattern of 'Florida Blizzard' represents a unique design in caladium fancy-leaf selections. 'White Christmas' is a popular white fancy-leaf cultivar closest in appearance, but differs sharply in having prominent dark-green veins compared with the white veins of 'Florida Blizzard'.

Performance

'Florida Blizzard' was evaluated for tuber production at the Gulf Coast REC–Bradenton, Fla., during 1998, 1999, and 2000. The soil was an Eaugallie fine sand with ≈1% organic matter and a pH of 6.2. Plants were grown in a plastic-mulched raised-bed system maintaining a constant water table with seep irrigation (Geraldson et al., 1965). Ground beds were fumigated 3 weeks before planting with a mixture of 67% methyl bromide and 33% chloropicrin (by volume) at 392 $kg \cdot ha^{-1}$. The beds were 91 cm wide and 20 cm high with 2.54-cm caladium seed pieces planted 15 cm apart in three rows spaced 15 cm apart. Osmocote 18N–2.6P–10K 8–9 month controlled-release fertilizer (Osmocote 18–6–12,

Fig. 1. Caladium 'Florida Blizzard' forced in a 15-cm container using three No.1 (≥3.8<6.4 cm) tubers. Dominant buds were not excised from tubers before planting.

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Scotts Co., Marysville, Ohio) was applied to the bed surface at the time of fumigation with N at 336 kg·ha^{-1}.

Plots were organized in a randomized complete-block design consisting of three replications. An analysis of variance combined over years was conducted in order to compare the performance of 'Florida Blizzard' to commercially important white fancy-leaf cultivars (Tables 1 and 2).

Marketable tuber weight and production index of 'Florida Blizzard' was similar to 'Candidum' and 'White Christmas', but greater than 'Candidum Junior'. The production index reflects the crop value as prices change from year to year or grower to grower, but the differences between grades usually remain constant (Harbaugh and Overman, 1983). The marketable number of tubers was similar for all cultivars. Marketable tubers of 'Florida Blizzard' were well distributed across grades with a similar number of jumbo and No. 1 tubers combining for 67% of its distribution. 'Florida Blizzard' produced a higher percentage of jumbo tubers than all cultivars and a similar percentage of mammoth tubers as 'Candidum Junior' and 'White Christmas'.

Landscape performance of cultivars grown under full-sun conditions was evaluated in 1998 and 1999 (Table 3) on the same plots used for evaluating tuber production. Plant height, number of leaves, and foliar characteristics were recorded ≈7 months after planting. 'Florida Blizzard', 'Candidum', and 'White Christmas' produced similarly tall, vigorous plants compared to 'Candidum Junior'. Number of leaves for 'Florida Blizzard' was greater than for 'White Christmas' and 'Candidum Junior' and similar to 'Candidum'.

'Florida Blizzard' tubers were forced in 10-cm containers and growth compared to commercial white-fancy cultivars in 1998 (Table 4) and 1999 (Table 5). The root medium contained 3 sedge peat : 1-1/2 coarse horticultural vermiculite : 1 sand (by volume) amended with (in kg·m^{-3}) 3 dolomitic lime, 3 calcitic lime, 3 single superphosphate, 0.6 micronutrient mixture (Micromax, Scotts Co.) and 1.8 14N–6.1P–11.6K 3–4 month controlled-release fertilizer (Osmocote 14–14–14, Scotts Co.). Both studies were conducted in a glasshouse with 40% light exclusion during the summer in Bradenton, Fla. Average daily temperatures were ≈32 °C day/21 °C night during the experiment. Plant height, number of leaves, and foliar characteristics were recorded 7 weeks after planting.

Leaf production of 'Florida Blizzard' from tubers with excised dominant eyes was superior to all cultivars in both years. Leaf production from intact tubers in 1999 was similar for 'Florida Blizzard' and 'White Christmas', but both cultivars produced fewer leaves than 'Candidum'. Excision of dominant buds of 'Florida Blizzard' resulted in significant reduction in plant height, leaf length, and leaf width, while increasing number of leaves. Also, bud excision resulted in a more compact plant for 'White Christmas', but not for 'Candidum'.

The unique foliar characteristics of 'Florida

Table 1. Tuber weights and the production index for caladium cultivars harvested in 1998, 1999, and 2000. Values presented are means of three replications with 30 propagules per 1.2-m^2 plot per year, averaged over 3 years.

	Tuber wt (g)				Production
Cultivar	Marketable	Seed	Total	Mean[z]	index[y]
Candidum	4728	227	4954	119	125
Candidum Jr.	3427	371	3798	80	107
Florida Blizzard	4571	158	4729	114	124
White Christmas	4500	73	4573	107	127
LSD (α = 0.05)	606	66	600	15	13

[z]Mean = Marketable weight/marketable number.
[y]The production index is an indicator of economic value of the crop calculated as: N (No. 2s) + 2N (No. 1s) + 4N (Jumbo) + 6N (Mammoth) + 6N (Super Mammoth); where N = number of tubers in each grade.

Table 2. Tuber grade distribution of caladium cultivars harvested in 1998, 1999, and 2000. Values presented are means of three replications of 30 propagules per 1.2-m^2 plot per year, averaged over 3 years.

	Marketable tubers by grade[z] (%)					
Cultivar	Super mammoth	Mammoth	Jumbo	No. 1	No. 2	Marketable tubers (no.)
Candidum	2	18	27	28	24	41
Candidum Jr.	0	9	20	38	33	44
Florida Blizzard	2	13	35	32	17	40
White Christmas	2	14	29	40	15	41
LSD (α = 0.05)	2	5	6	6	6	5

[z]Tubers graded by maximum diameter; super mammoth (≥11.4 cm); mammoth (≥8.9<11.4 cm); jumbo (≥6.4<8.9 cm); No.1 (≥3.8<6.4 cm); No.2 (≥2.5<3.8).

Table 3. Plant performance after 7 months for caladium cultivars grown in full sun from 2.5-cm tubers in 1998 and 1999. Values presented are means of three replications with three plants measured per plot per year, averaged over 2 years.

			Leaf	
Cultivar	Plant ht (cm)	Leaves (no.)	Length (cm)	Width (cm)
Candidum	85	15	31	21
Candidum Jr.	67	12	27	19
Florida Blizzard	89	17	28	19
White Christmas	85	12	32	20
LSD (α = 0.05)	7	4	2	2

Table 4. Plant performance after 7 weeks for caladium cultivars grown from No. 1 tubers in 10-cm containers in a 40% shaded glasshouse, 1998. Values presented are means of six plants with one No. 1 (≥3.8<6.4 cm diameter) intact tuber planted per container.

			Leaf	
Cultivar	Plant ht (cm)	Leaves (no.)	Length (cm)	Width (cm)
Candidum	43	26	16	16
Candidum Jr.	46	24	20	15
Florida Blizzard	44	34	21	15
White Christmas	40	26	21	16
LSD (α = 0.05)	7	7	5	3

Table 5. Plant performance after 7 weeks for caladium cultivars grown from intact or de-eyed No. 1 tubers in 10-cm containers in a 40% shaded glasshouse, 1999. Values presented are means of six plants produced from intact or de-eyed No. 1 (≥3.8<6.4 cm diameter) tubers planted individually per container.

	Plant ht (cm)		Leaves (no.)		Leaf length (cm)		Leaf width (cm)	
Cultivar	intact	de-eyed	intact	de-eyed	intact	de-eyed	intact	de-eyed
Candidum	58	56	25	36	35	24	25	16
Florida Blizzard	62	48	19	43	34	20	23	14
June Bride	32	34	6	13	21	20	14	13
White Christmas	53	42	16	22	25	20	17	14
LSD (α = 0.05)	8	6	6	6	8	4	6	3

Blizzard' make it an attractive addition to the white-fancy segment of caladium cultivars. Plants grown in 10-cm pots from tubers with excised buds produce compact plants with more leaves than 'Candidum' and 'White Christmas', and tuber production compares favorably with those important cultivars.

'Florida Blizzard' is intended for forcing in containers of 10- to 20-cm diameter and is best grown in partial-sun to shady locations in the landscape. Foliage color is enhanced when plants are grown with 40% to 50% light exclusion. Although extensive research and evaluations have been performed on small acreages of this cultivar, tuber producers are encouraged to plant only limited quantities of 'Florida Blizzard' until they have gained experience in production of this cultivar. Standard postharvest treatment of tubers is recommended (Harbaugh and Tjia, 1985) and preplant hot-water treatment of tubers is encouraged to prolong their life.

Availability

A patent has been applied for 'Florida Blizzard' by the Florida Agricultural Experiment Station and production of this cultivar is to be with a licensing agreement with the Florida Foundation Seed Producers, Inc., P.O. Box 309, Greenwood, FL 32443. Information on tuber availability and propagation agreements can be obtained from the Florida Foundation.

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