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‘Victory Flag’: A New Cut Anthurium Cultivar

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Anthurium (*Anthurium andraeanum* Hort.), a tropical herbaceous perennial, is one of the most important cut-flower crops in the global floriculture industry. It produces a showy, brightly colored, and modified bract (spathe), and a stalk-like inflorescence (spadix), which are carried on a long, slender peduncle. Cut anthuriums are also known for their especially long vase life, depending on the variety, season, and cultivation conditions (Elibox and Umaharan, 2010; Farrell et al., 2012; Paull et al., 1992).

Anthuriums grow best when the maximum daytime temperatures range from 26 to 32 °C in advanced greenhouses equipped with temperature and humidity controls. However, in many tropical areas located far from their original habitat, they are also grown in simplified, shaded greenhouses to reduce production costs, and therefore often suffer heat stress (>32 °C) in summer and cold stress (<16 °C) in winter, which reduces productivity, and impacts spathe coloration and other quality traits negatively. Although some commercial cultivars have been released and are grown extensively, many more with novel colors and shapes, high-stress tolerance, long-lasting vase life, and so on, are still urgently needed in the anthurium industry.

In the early 2000s, the Tropical Crops Genetic Resources Institute, Chinese Academy of Tropical Agricultural Sciences (TCGRI-CATAS) launched breeding programs to develop new cut anthurium cultivars adapted to the South China climate. ‘Victory Flag’, presented here, is a promising hybrid that meets current market and regional industry standards.

Origin

Anthurium × ‘Victory Flag’ originated from a cross between *A. andraeanum* ‘Tropical’ (the most popular commercial cultivar in China with a red spathe) as the female parent and *A. andraeanum* ‘Choco’ (which has a brown spathe) as the male parent. Four spadices bearing mature stigmas were pollinated artificially in Dec. 2011 and each produced 75.5 seeds on average after 5 months. A total of 241 offspring seedlings were transplanted in the greenhouse for cultivation in Aug. 2012, which then flowered in 2014. Two seedlings, ‘Aa12064-2’ and ‘Aa12064-66’, were selected and reproduced asexually using immature leaves and petioles beginning in Mar. 2015 at TCGRI-CATAS in Danzhou, China. Plantlets were planted in a substrate consisting of 3:1 (v:v) of composted coco blocks and coarse peat (pH, 5.5–6.5). After an evaluation for various attributes, including growth, flower characteristics, and yield, for a period of 3 years (2017–19), ‘Aa12064-2’ was finally selected as a promising cultivar and was designated as ‘Victory Flag’ in 2020 (Fig. 1).

Description and Performance

Morphological characteristics are described according the distinctness, uniformity and stability (DUS) test guidelines for anthurium (TG/86/5 Corr.) (International Union for the Protection of New Varieties of Plants, 2008), based on observations and measurements conducted on 30 to 50 plant samples grown in a 70% shaded greenhouse with 70% to 80% relative humidity in Danzhou, China (lat. 19°35′N, long. 109°42′E). The samples were ≈18 to 24 months old from transplanted tissue-cultured plantlets (Fig. 2A). The color of the spathe is described according to the Royal Horticultural Society (RHS) Color Charts (Royal Horticultural Society, 2007). Time to spadix necrosis was selected as the main criterion for vase life assessment (Elibox and Umaharan, 2008; Favero et al., 2020).

Spathe. ‘Victory Flag’ anthurium has a medium-size heart-shaped spathe (length, 11.4 ± 1.1 cm; width, 10.5 ± 0.3 cm), with basal lobes slightly or free to touching (Supplemental Table 1, Fig. 2B). The spathe is moderately concave and the attitude is slightly upward at an average angle of 30° from the horizontal. When fully opened, the adaxial surface is red (nearest to RHS 46A) and is slightly darker than the female parent ‘Tropical’ (nearest to RHS 46B), whereas the abaxial surface is nearest in color to RHS 45C and is slightly lighter than ‘Tropical’ (RHS 45B).

Spadix. ‘Victory Flag’ produces cylindrical spadices that are 6.1 ± 0.5 cm in length and 0.8 ± 0.1 cm in width, with an obtuse apex that is weakly incurved and ≈30° from the spathe (Supplemental Table 1, Fig. 2C). The spadices are held on peduncles, which are brown–green, 62.4 ± 2.9 cm in length, and hold the inflorescences above the leaf canopy. The spadix with an unfurled spathe is green; it turns yellow when opening and then changes to white when fully opened.

Leaf blade. The leaf blades of ‘Victory Flag’ are cordate and moderately concave. Juvenile leaves are brown and turn dark green (RHS G139A) when they mature (average length, 32.8 ± 3.5 cm; average width, 16.5 ± 2.6 cm) (Supplemental Table 1). The petioles have an average length of 49.6 ± 3.5 cm.

Vase life. Cut anthurium flowers were evaluated according to a modified procedure by Paull et al. (1992) (by spraying 100 ppm 6-benzylaminopurine) and showed a good keeping quality of 24 d total from harvest in summer (mean temperature, 30 °C). Vase life in winter extended to 32 d (mean temperature, 18 °C).

‘Victory Flag’ propagates quickly in tissue culture. Field performance data indicate

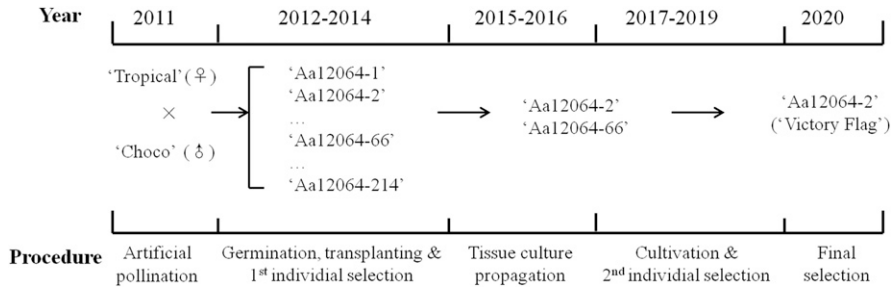

Fig. 1. Pedigree and timeline of breeding procedures used in the development of anthurium cultivar Victory Flag.

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Fig. 2. The characteristics of anthurium 'Victory Flag'. (**A**) Growth in shaded greenhouse. (**B**) Top view of the cut flower. (**C**) Side view of the cut flower.

that the yield potential of 'Victory Flag' is about seven flowers per stem per year. It retains vibrant color even when grown in hot summer conditions, and it exhibits little damage from heavy rain or mechanical injury. No specific susceptibility to pathogens or pests common to anthurium was observed under field conditions. In summary, the most distinguishing characteristics of 'Victory Flag' are 1) a unique red spathe with a shiny surface and 2) good performance in yield and quality within a broad range of temperatures (6 to 38 °C). 'Victory Flag' is highly distinct from other cultivars and promises to be a popular, novel cut anthurium cultivar.

Availability

'Victory Flag' was propagated by the tissue culture laboratory of TCGRI-CATAS in Hainan, China. Plants for research purposes may be obtained directly from the corresponding author (niujunhai2014@sina.com).

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Supplemental Table 1. Performance of anthurium cultivar Victory Flag in Danzhou, Hainan, China.

Characteristics	Test results
Spathe	
Adaxial color	Red, RHS 46A
Abaxial color	Red, RHS 45C
Length (cm)	11.4 ± 1.1
Width (cm)	10.5 ± 0.3
Shape	Heart, concave
Spadix	
Color (unopen/opening/open)	Green/yellow/white
Length (cm)	6.1 ± 0.5
Diameter (cm)	0.8 ± 0.1
Peduncle	
Length (cm)	62.4 ± 2.9
Diameter (mm)	3.7 ± 0.3
Color	Brown
Leaf blade	
Length (cm)	32.8 ± 3.5
Width (cm)	16.5 ± 2.6
Adaxial color	Dark green, RHS G139A
Petiole	
Length (cm)	49.6 ± 3.5
Diameter (mm)	3.5 ± 0.3
Cross-section	Round
Yield (flowers per year)	7
Vase life × (days in summer/winter)	24/32

Cut anthurium flowers were sprayed with 100 ppm 6-benzylaminopurine after harvest. Evaluations were performed at room temperature at 70% to 80% relative humidity on a 12-h light/12-h dark cycle. Water was replenished every 3 d.
RHS = Royal Horticultural Society.