‘Sweet Princess’: A New Summer Ornamental Iris Cultivar

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Iris is the largest genus in the family Iridaceae and comprises about 300 species of perennial plants around the world with a cultivation history dating back to 2000 BC (Jeknić et al., 2014; Wilson, 2011; Zheng et al., 2017). It is widely used in landscaping because of its large, colorful, and novel flower (Lian et al., 2016). Up to now, there have been about 60,000 iris cultivars in the world. However, few of them bloom in the hot summer from the middle of July to the end of August (Luo et al., 2016). *Iris dichotoma* and *Iris domestica* are native to China, flower in the summer, and exhibit strong tolerance to drought, cold, and barren (Ruan et al., 2017). The newly purple-colored (RHS N82A) ornamental iris cultivar ‘Sweet Princess’ was selected in 2014 from the hybrids of *I. dichotoma* × *I. domestica* crossed in 2008. It exhibited attractive, big flowers and could bloom from the middle of July to the end of August in Shenyang City, Northeast China.

Origin

The new ornamental iris cultivar ‘Sweet Princess’ was selected from the cross of *I. dichotoma* × *I. domestica* at Iris Germplasm Repository in Shenyang Agricultural University. The female parent *I. dichotoma* was collected from Fushun City, Liaoning Province, and the male parent *I. domestica* was collected from Shenyang Botanical Garden, Liaoning Province. In 2008, 37 flowers were pollinated in the cross of *I. dichotoma* × *I. domestica* and 31 hybrid fruits (which contained 1087 hybrid seeds) were obtained, then the hybrid seeds were sown in the middle of September. In 2009, all 427 surviving seedlings flowered. The best promising hybridization combination has been evaluated in the open experimental field in Shenyang Agricultural University, until it was officially authorized to release as ‘Sweet Princess’ by The American Iris Society in 2014.

Description

The experimental plot was located in Shenyang Agricultural University in Shenyang

City. The new cultivar ‘Sweet Princess’ and its male and female parents were planted 300 plants (3 plots × 100 plants), respectively. The plants were planted at a distance 30 × 40 cm apart in the experimental field and were irrigated by spraying. All the plants stayed in the field without any protection in winter. Morphological characteristics including plant height, leaf length and width, leaf number, flower diameter, inner perianth length and width, outer perianth length and width, flower number per plant, flower period, and intraday flower opening and closure time were evaluated on a randomized sample of 30 plants (3 replications × 10 plants). The data were analyzed by one-way analysis of variance using the software SPSS 18.0.

Compared with flowering from April to June for most irises, the flowering season of ‘Sweet Princess’ was from middle July to the end of August and enriched the summer landscape. The flowering season of female parent *I. dichotoma* was from 10 July to 20 Aug. and that of male parent *I. domestica* was from 12 July to 21 Aug. On the other hand, the single flower of ‘Sweet Princess’ was open at 9:00 AM and close at 6:30 PM, lasting about 9.5 h, which was similar to the male parent (*I. domestica*, open at 7:00 AM and close at 5:30 PM, lasting about 10.5 h), but quite different from the female parent (*I. dichotoma*, open at 4:00 PM and close at 7:00 PM, lasting only 3 h). The short blooming time (opening in the afternoon and closure in

the evening) is the main limiting factor in landscaping for *I. dichotoma* (Bi et al., 2012). Hence, the extension of single flower opening time is also an important breeding objective for *I. dichotoma*.

The plant height of ‘Sweet Princess’ was 123.17 cm, which was higher than *I. domestica* (101.97 cm) but lower than *I. dichotoma* (126.13 cm). Its leaf length was similar to *I. domestica* but higher than *I. dichotoma*. Its leaf width was similar to *I. dichotoma* and higher than *I. domestica*. For the ratio of leaf length/width, ‘Sweet Princess’ was higher than the female parent (*I. dichotoma*) but lower than the male parent (*I. domestica*). Its leaf number per plant was more than both parents (Table 1).

The flower color of ‘Sweet Princess’ was attractive purple (RHS N82A). Its flower structure was three falls and three standards, similar to *I. dichotoma*, but different from *I. domestica* which had six perianth segments arranged in one plane. The stigma of ‘Sweet Princess’ was divided half-way into three branches, different from *I. dichotoma* and *I. domestica* which were fully divided into three independent petaloid branches and only slightly divided into three lips at the apex, respectively (Fig. 1). Its flower diameter was bigger than *I. dichotoma* and *I. domestica*. The number of flowers per plant of ‘Sweet Princess’ was 67.93, which was higher than the male parent *I. domestica* (60.13).

In summary, ‘Sweet Princess’ exhibits lovely flowers and long flowering duration in hot summer. That makes it a promising summer flowered iris cultivar for landscaping as well as a parent for further breeding.

Availability

‘Sweet Princess’ is available for research or trial and requests for samples of cloned plants may be addressed to Dr. Bi (E-mail: bixiaoyingyuan@163.com) from the College of Horticulture, Shenyang Agricultural University, China.

Table 1. Morphological characteristics of *I. dichotoma*, *I. domestica*, and cultivar ‘Sweet Princess’.

Characteristics	<i>I. dichotoma</i>	<i>I. domestica</i>	Sweet Princess
Plant height (cm)	126.13 ± 0.66 a ²	101.97 ± 0.67 c	123.17 ± 0.91 b
Leaf length (cm)	31.80 ± 0.45 b	38.17 ± 0.38 a	38.40 ± 0.43 a
Leaf width (cm)	4.24 ± 0.03 a	3.02 ± 0.03 b	4.22 ± 0.03 a
Leaf length/width	7.53 ± 0.14 c	12.65 ± 0.11 a	9.09 ± 0.08 b
Leaf number	8.23 ± 0.08 c	9.73 ± 0.13 b	10.47 ± 0.16 a
Flower diameter (cm)	5.28 ± 0.03 b	4.60 ± 0.02 c	5.53 ± 0.03 a
Inner perianth length (cm)	2.90 ± 0.02 b	2.34 ± 0.01 c	3.10 ± 0.02 a
Inner perianth width (cm)	1.10 ± 0.02 b	0.96 ± 0.01 c	1.22 ± 0.02 a
Inner perianth length/width	2.65 ± 0.04 a	2.46 ± 0.03 c	2.55 ± 0.03 b
Outer perianth length (cm)	3.70 ± 0.03 a	2.54 ± 0.02 c	3.51 ± 0.02 b
Outer perianth width (cm)	1.50 ± 0.03 a	1.20 ± 0.01 b	1.54 ± 0.02 a
Outer perianth length/width	2.48 ± 0.05 a	2.12 ± 0.02 c	2.29 ± 0.02 b
Number of flowers per plant	82.60 ± 0.82 a	60.13 ± 0.73 c	67.93 ± 0.62 b
Flower period	10 July–20 Aug.	12 July–21 Aug.	14 July–23 Aug.
Date of 50% flowering	17 July	18 July	20 July
Flower opening	4:00 PM	7:00 AM	9:00 AM
Flower closure	7:00 PM	5:30 PM	6:30 PM

²Means followed by the different letters in the same row are significantly different ($P < 0.05$).

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Fig. 1. The flowers of *I. dichotoma* (A), *I. domestica* (B), and 'Sweet Princess' (C).

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