HortScience 55(8):1395–1396. 2020. https://doi.org/10.21273/HORTSCI15065-20

‘Cao Mei Tang’: A New Pink Candy Lily (*Iris* ×*norrisii*) Cultivar

Jingli Gao
College of Horticulture, Shenyang Agricultural University, Shenyang 110866, China

Fengyang Yu
Shanghai Botanical Garden, Shanghai 200231, China

Wenji Xu
School of Advanced Agriculture and Bioengineering, Yangtze Normal University, Fuling 408100, China

Yuee Xiao
Shanghai Botanical Garden, Shanghai 200231, China

Xiaoying Bi
College of Horticulture, Shenyang Agricultural University, Shenyang 110866, China

Additional index words. flower opening time, interspecies cross, iris, *Iris dichotoma*, *Iris domestica*

Candy Lily is the common name of *Iris* ×*norrisii*, which is a hybrid between the Vesper Iris (*I. dichotoma*) and the Blackberry Lily (*I. domestica*). Not only do the flowers of Candy Lily display an astonishing range of colors, but also, interestingly, after the blossoms wither, its petals twist themselves into tight little spirals that add fun and a beauty of their own, extending the ornamental display in the garden. Its common name, Candy Lily, comes from the resemblance of these spirals to a candy cane. It flowers in long midsummer days when no other irises are in bloom, and produces more buds per plant than any other species. It is easy to grow and is tolerant of drought and barren conditions (Xu et al., 2017; Zheng et al., 2017). Because of these characteristics, it is widely grown in horticulture (Whitehouse, 2011) and has become more and more attractive as a new floricultural crop since it was first raised by Samuel Norris in 1967 (Bi et al., 2012; Lenz, 1972; Xu et al., 2017). There are 60 Candy Lily cultivars registered in The American Iris Society (2020). ‘Cao Mei Tang’ is a Candy Lily cultivar developed by Shenyang Agricultural University in China to provide an attractive, summer-blooming pink iris for the dry and barren conditions in this hardiness zone.

Received for publication 14 Apr. 2020. Accepted for publication 15 June 2020.
Published online 21 July 2020.
This study was supported by the Shanghai Botanical Garden (project no. 201803).
X.B. is the corresponding author. E-mail: xiaoyingbi@syau.edu.cn.

Origin

In 2012, the hybrid fruit were obtained from the cross of *I. dichotoma* × *I. domestica*, and then the seeds were sown in the middle of September at the Iris Germplasm Repository, Shenyang Agricultural University. In 2013, 65 of the surviving seedlings (F_1) flowered and were used as the female parent to backcross with *I. domestica*. In the next year, 207 of seedlings of the backcross population bloomed. Plant shape, flower size and color, flower opening and closure time, and flowering period of the 207 backcross seedlings were investigated with *I. dichotoma*, *I. domestica*, and F_1 as controls in the open field of Shenyang Agricultural University. Of those seedlings, ‘2012-49’ performed well and showed promise. It was propagated by tissue culture and observed continuously from 2015 to 2017. The characteristics of this line remained stable and consistent. It was registered as ‘Cao Mei Tang’ (no. 17-0993) by The American Iris Society in 2017.

Description

All plant materials were planted at a distance of 30 × 40 cm at the Iris Germplasm Repository, Shenyang Agricultural University, Liaoning. Morphological characteristics, including plant height, leaf length and width, length and width of falls, length and width of standards, and flower diameter, were evaluated for a randomized sample of 30 plants (3 replications × 10 plants). The flower opening time and closure time were observed and recorded from 0600 to 2300 HR. The flowering period was recorded from the first blossom to the last one in a group. The color description was based on the Royal Horticultural Society (RHS) Color Chart (Royal Horticultural Society, 2007) and designated as RHS numbers. All data were analyzed by one-way analysis of variance using the software SPSS 21.0 (SPSS, Inc., Chicago, IL).

‘Cao Mei Tang’ is compact, and shorter than *I. domestica* and F_1. It has wider and longer leaves. In contrast to the folded falls of *I. dichotoma* and F_1, the sets of falls and standards of ‘Cao Mei Tang’ are both flat. With smaller fall length, standard length, and the ratio of standard length to width, the flower diameter of ‘Cao Mei Tang’ is less smaller than that of *I. domestica* and F_1. However, its flower is rounder. One of the novel and charming traits of ‘Cao Mei Tang’ is its flower color. Both falls and standards of ‘Cao Mei Tang’ are deep purple-pink (RHS, N66C) with red (60A) spots. Other important traits include its flower opening time and flowering period. It opened around 0630 HR and closed at about 1925 HR, staying open for 12 to 13 h, which is similar to *I. domestica*, but longer than *I. dichotoma*, which only stays open about 6 h. Its flowering period lasted for 47 d, from 9 July to 25 Aug. in 2017, which was slightly different from *I. dichotoma* and *I. domestica* (Table 1, Fig. 1).

In summary, in addition to its ability to thrive in dry conditions and its long flowering period in the hot summer season, the new cultivar Cao Mei Tang is a compact plant

Table 1. Morphological characteristics of *I. dichotoma*, *I. domestica*, F_1, and ‘Cao Mei Tang’.

Characteristics	*I. dichotoma*	*I. domestica*	F_1	Cao Mei Tang
Plant height (cm)	73.00 ± 9.27 a[z]	86.80 ± 8.01 b	86.30 ± 6.67 b	78.33 ± 9.27 a
Leaf length (cm)	25.71 ± 2 0.74 a	39.10 ± 3.87 b	40.79 ± 3.60 b	37.74 ± 3.08 b
Leaf width (cm)	2.91 ± 0.29 a	3.68 ± 0.41 b	3.80 ± 0.48 b	3.55 ± 0.30 b
Leaf length/width	8.89 ± 1.10 a	10.77 ± 1.83 b	10.90 ± 1.81 b	10.71 ± 1.43 b
Fall width (cm)	1.10 ± 0.12 a	1.28 ± 0.13 b	1.45 ± 0.08 c	1.47 ± 0.10 c
Fall length/width	2.74 ± 0.18 c	2.41 ± 0.20 b	2.46 ± 0.13 b	1.94 ± 0.20 a
Standard length (cm)	2.45 ± 0.20 a	2.85 ± 0.17 b	2.99 ± 0.19 b	2.50 ± 0.16 a
Standard width (cm)	0.99 ± 0.12 a	1.15 ± 0.10 b	1.07 ± 0.05 b	1.04 ± 0.07 a
Standard length/width	2.49 ± 0.18 a	2.48 ± 0.14 a	2.8 ± 0.17 b	2.41 ± 0.15 a
Flower diameter (cm)	4.72 ± 0.63 a	5.73 ± 0.46 b	5.93 ± 0.75 b	4.82 ± 0.50 a
Flower opening time	15:30 ± 00:18 d	07:08 ± 00:27 b	10:40 ± 00:27 c	06:30 ± 00:15 a
Flower closure time	21:37 ± 00:28 b	21:00 ± 00:31 b	20:33 ± 00:23 b	19:25 ± 00:20 a
Flower opening duration	06:06 ± 00:36 a	13:51 ± 00:39 d	09:53 ± 00:13 b	12:55 ± 00:33 c
Flowering period	12 July–14 Aug.	4 July–16 Aug.	13 July–3 Sept.	9 July–25 Aug.

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

Fig. 1. The flowers of (**A**) *I. dichotoma*, (**B**) *I. domestica*, (**C**) F_1, and (**D**) 'Cao Mei Tang'.

with lovely pink flowers in a unique round shape that open early in the morning and last all day. It is easy to grow in landscapes and may also be valuable in breeding *I.* ×*norrisii*.

Reproduction

'Cao Mei Tang' can be propagated by division (Bi et al., 2013; William, 1998) or tissue culture. The young, soft flowering stems were chosen as explants for tissue culture when their buds were still inside the bracts. The soft stems were rinsed in 75% alcohol for 20 s, then incubated in 0.1% mercury chloride with two drops Tween-80 for 6 min and washed five times with sterile water. The disinfected explants were cut into 0.5-cm pieces and put in standard Murashige and Skoog (MS) medium (Murashige and Skoog, 1962) with 0.5 mg·L^{-1} BA (benzyl adenine), 0.1 mg·L^{-1} IBA (Indole-3-butyric acid), 30 g·L^{-1} sucrose, and 3.0 g·L^{-1} agar, which was also optimal for shoot proliferation after the adventitious shoots were regenerated. The rooting medium was 1/2 MS with 0.2 to 0.5 mg·L^{-1} IBA and 30 g·L^{-1} sucrose. The entire in vitro culture was carried out in a light intensity of 25 µmol·m^{-2}·s^{-1} at a 14-h photoperiod and at 24 ± 1 °C.

Availability

'Cao Mei Tang' is available for researcher trials, and requests for samples of cloned plants may be addressed to Dr. Bi (E-mail: xiaoyingbi@syau.edu.cn), College of Horticulture, Shenyang Agricultural University, China. The patent application has been submitted to the Plant Variety Protection Office of the Ministry of Agriculture and Rural Affairs of the People's Republic of China.

Literature Cited

Bi, X.Y., H. Li, Q. Luo, and Y. Zheng. 2012. Studies on inter-generic compatibility of *Iris dichotoma* and *Belamcanda chinensis* and their hybrids identification. Acta Hort. Sin. 39(5): 931–938.

Bi, X.Y., W.J. Xu, H. Li, and Y. Zheng. 2013. Iris cultivars 'Azure Pinwheel' and 'Chic Leopard'. Acta Hort. Sin. 40(12):2551–2552.

Lenz, L.W. 1972. An intergeneric hybrid between *Belamcanda chinensis* and *Pardanthopsis dichotoma* (= *Iris dichotoma*). J. Systematic Evol. Bot. 7(4):405–407.

Murashige, T. and F. Skoog. 1962. A revised medium for rapid growth and bioassays with tobacco tissue cultures. Physiol. Plant. 15(3):473–497.

Royal Horticultural Society. 2007. Royal Horticultural Society color chart. Royal Horticultural Society London, UK.

The American Iris Society. 2020. Iris register database. <http://emembers.irises.org/irisregister/checksrch.cgi>.

Whitehouse, C.M. 2011. Recombination of *Iris* × *norrisii*. Hanburyana 5:67.

William, S. 1998. The gardener's iris book. Taunton Press, Newtown, CT.

Xu, W.J., F.Y. Yu, Q.X. Jia, G.J. Luo, and X.Y. Bi. 2017. 'Sweet Princess': A new summer ornamental iris cultivar. HortScience 52:1832–1833.

Zheng, Y., T.F. Meng, X.Y. Bi, and J.J. Lei. 2017. Investigation and evaluation of wild *Iris* resources in Liaoning Province, China. Genet. Resources Crop Evol. 64(5):967–978.