

‘Siyu’: A New *Iris lactea* var. *chinensis* Cultivar

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Iris lactea var. *chinensis* belongs to the genus *Iris* and has blue flowers, unlike *I. lactea* that has white flowers. It is a highly adapted flowering groundcover with high ornamental value and is widely distributed in the salt prairies of northeastern China (Meng et al. 2003). The root system of *I. lactea* var. *chinensis* is well developed, dense, and distributed in an umbrella shape; therefore, it has a strong ability to bind soil and conserve water (Zhang 2006). It is also drought tolerant, resistant to pollution, and has a strong resistance to diseases and pests (Ni et al. 2021). As a result of these characteristics, *I. lactea* var. *chinensis* is widely used in landscaping. Until now, no cultivars from *I. lactea* var. *chinensis* have been released. In 2013, a new *I. lactea* var. *chinensis* cultivar was selected from an open-pollinated progeny population of *I. lactea* var. *chinensis*. In 2021, this new cultivar was registered as Siyu. ‘Siyu’ has violet-blue and larger flowers than the parent material. The inner perianth of ‘Siyu’ has a unique in shape, which is filiform and feather-like.

Origin

In 2003, the seeds of *I. lactea* var. *chinensis* were planted in the experimental field in the nursery of Northeast Forestry University, Harbin, China. The open-pollinated seeds of *I. lactea* var. *chinensis* were collected in Fall 2009 and planted the following spring in the same nursery with their parents. A unique plant was selected for further observation in 2013. Compared with *I. lactea* var. *chinensis*, the inner perianth lobes of ‘Siyu’ are filiform, feather-like, and slender at the base. Clones were propagated vegetatively from ‘Siyu’ from 2013 to 2017 for evaluation, and they consistently produced a feather-like inner perianth. From 2018 to 2020, the plants were replanted to a new research location, where the plants showed consistent morphological characteristics (Table 1). In 2021, the new cultivar was assigned as

‘Siyu’ and was authorized by the American Iris Society (No. 21-0393).

Description

‘Siyu’ flowers are violet-blue (Fig. 1A). Their outer perianth is light violet-blue [Royal Horticultural Society (RHS) N87A] with yellow-green stripes, and the inner perianth is violet-blue (RHS N88B). The outer perianth of ‘Siyu’ is ovate, narrow at the base, and vertically downward at full bloom. The inner perianth of ‘Siyu’ is filiform, feather-like, and vertically upward in full bloom. Each flower has three inner perianths, three outer perianths, and three stamens. Style branches are flat and the top transitions into a rounded shape. The edge of the bract is membranous (Fig. 1B).

From 2018 to 2020, the field performances of ‘Siyu’ and *I. lactea* var. *chinensis* were recorded in the experimental nursery in Northeast Forestry University, Harbin, China. The experimental field was arranged in a randomized complete block design with three replications, with each containing 20 plants of ‘Siyu’ and *I. lactea* var. *chinensis*. Thirty plants of ‘Siyu’ and *I. lactea* var. *chinensis* (10 plants \times 3 replications) were assigned randomly to collect data regarding the following morphological characteristics: plant height, flower diameter, leaf length, leaf width, inner perianth length, inner perianth width, outer perianth length, outer perianth width, bract length, bract width, flower period, and fruit period. The physiological characteristics of ‘Siyu’ and *I. lactea* var. *chinensis* were compared and the data were analyzed using SPSS 22.0 (IBM Corp., Chicago, IL) (Table 1). All references to color numbers are from the RHS color chart (Voss 1992).

The plant height of ‘Siyu’ was 79.00 ± 2.45 cm, which was similar to that of *I. lactea*

var. *chinensis* (76.83 ± 2.08 cm) (Table 1). The bract length and width of ‘Siyu’ were 6.21 ± 0.12 cm and 0.96 ± 0.02 cm, respectively, and were less than that of *I. lactea* var. *chinensis*. The flower of ‘Siyu’ was 7.78 ± 0.63 cm in diameter, which was greater than that of *I. lactea* var. *chinensis* (6.88 ± 0.03 cm) (Fig. 1A and C). Similar to *I. lactea* var. *chinensis*, the color of the inner perianths and outer perianths of ‘Siyu’ is violet-blue (RHS N87A) and light violet-blue (RHS N88B). The inner perianth length of ‘Siyu’ (5.54 ± 0.20 cm) and *I. lactea* var. *chinensis* (5.29 ± 0.06 cm) were similar, whereas the width of the inner perianth of ‘Siyu’ (0.83 ± 0.42 cm) was significantly narrower than that of *I. lactea* var. *chinensis* (1.27 ± 0.07 cm) (Table 1, Fig. 1B and D). The inner perianths of ‘Siyu’ were filiform, slender at the base, and shaped like a feather. However, the inner perianths of *I. lactea* var. *chinensis* were elliptic (Fig. 1B and D). The outer perianth width of ‘Siyu’ (1.22 ± 0.11 cm) and *I. lactea* var. *chinensis* (1.20 ± 0.04 cm) was comparable, whereas the outer perianth of ‘Siyu’ (5.14 ± 0.07 cm) was significantly longer than that of *I. lactea* var. *chinensis* (4.80 ± 0.20 cm) (Table 1, Fig. 1B and D). The fruiting period of ‘Siyu’ and *I. lactea* var. *chinensis* were the same (June–September), whereas the flowering period of ‘Siyu’ (19 May–15 Jun) was shorter than that of *I. lactea* var. *chinensis* (20 May–20 Jun) (Table 1).

In conclusion, the primary differences between ‘Siyu’ and *I. lactea* var. *chinensis* are flower diameter and shape. Compared with *I. lactea* var. *chinensis*, ‘Siyu’ has larger flowers and a unique inner perianth shape. The inner perianths of ‘Siyu’ are filiform, slender at the base, and shaped like a feather. ‘Siyu’ has an extraordinary appearance for landscaping and great potential for the development of new cultivars.

Cultivation Techniques

‘Siyu’ was propagated asexually in spring, autumn, or after flowering. The upper leaf portion should be cut off, leaving about 15 cm of leaf with more than two buds per cluster. ‘Siyu’ grows well at a 30 cm spacing. The rhizome should then be covered with soil and watered (Wang et al. 2022). During the growing season, it needs weed control.

Table 1. Morphological traits of ‘Siyu’ and *Iris lactea* var. *chinensis*.

Traits ⁱ	Siyu	<i>Iris lactea</i> var. <i>chinensis</i>
Plant height (cm)	79.00 ± 2.45 a ⁱⁱ	76.83 ± 2.08 a
Leaf length (cm)	77.00 ± 2.10 a	74.20 ± 1.25 a
Leaf width (cm)	1.25 ± 0.07 a	1.21 ± 0.04 a
Bract length (cm)	6.21 ± 0.12 b	6.49 ± 0.06 a
Bract width (cm)	0.96 ± 0.02 b	1.30 ± 0.10 a
Flower diameter (cm)	7.78 ± 0.63 a	6.88 ± 0.03 a
Inner perianth length (cm)	5.54 ± 0.20 a	5.29 ± 0.06 a
Inner perianth width (cm)	0.83 ± 0.42 b	1.27 ± 0.07 a
Outer perianth length (cm)	5.14 ± 0.07 a	4.80 ± 0.20 b
Outer perianth width (cm)	1.22 ± 0.11 a	1.20 ± 0.04 a
Flower period	19 May–15 Jun	20 May–20 Jun
Fruit period	Jun–Sep	Jun–Sep

ⁱ Data were collected and averaged for 2018–20.

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

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Fig. 1. Single flower of new cultivar Siyu (A) and *Iris lactea* var. *chinensis* (C). The flower anatomic structure of 'Siyu' (B) and *I. lactea* var. *chinensis* (D), including outer perianths, inner perianths, filaments, and anther (from bottom to top), and style branches.

Habit and Application

'Siyu' is well adapted to growing in full sun in well-drained sandy loam or light clay soils. It

can overwinter outside without protection in Harbin, China. Because of its beautiful flowers and strong resistance to stress, 'Siyu' is a high-quality groundcover. It can be planted in parks,

street green spaces, flower beds, or under trees on the roadside. In addition, 'Siyu' has a well-developed root system and is ideal for conserving soil and water resources while reducing soil erosion on slopes.

Availability

Inquiries about research or request for plant materials can be made to Dr. Ling Wang (e-mail: wanglinghlj@126.com) at the College of Landscape Architecture, Northeast Forestry University, Harbin, China.

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