

# ‘Donglin Ziwan’: A New *Iris sanguinea* Cultivar

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*Iris sanguinea* is a perennial herbaceous plant in the Iridaceae family. It features bright and beautiful flower colors, unique phenotypic characteristics, and high ornamental value. In addition, it has strong disease resistance and is an excellent landscaping material for cold regions. In recent years, multiple *I. sanguinea* cultivars have been developed and released. For example, ‘Yise Ziqun’ (Xu et al. 2024) and ‘Donglin Shuying’ (Wang et al. 2024) have new flower colors, ‘Zi Meiren’ (Chen et al. 2019) and ‘King’ (Zhang et al. 2019) have new flower shapes, and ‘Hanxu’ (Wan et al. 2019) has a novel plant shape.

In 2017, a new variety ‘Donglin Ziwan’ was selected from a cross of *I. sanguinea* and *I. sanguinea* f. *albiflora*. Compared with its parents, the outer perianth of ‘Donglin Ziwan’ is purple (RHS N87B) (Royal Horticultural Society 2007) with white edges. The inner perianth is white (RHS 91C), covered with purple stripes. The style branch has a white center and purple edges (RHS 76D), and displays blue ribs (RHS 82B).

## Origin

In 2003, seeds of *I. sanguinea* were received from Shenyang Botanical Garden and cultivated in the Maoershan Experimental Forest Farm nursery at Northeast Forestry University. Open-pollinated *I. sanguinea* seeds were collected in 2011 and replanted in the same nursery in Spring 2012. Hybrid offspring seeds from open pollination were gathered in Fall 2014 and sown there in Spring 2015.

In 2017, a unique plant within the F<sub>1</sub> generation was identified, characterized by distinctive color, with the outer perianth exhibiting a purple hue delineated by white edges and a white inner perianth with purple markings. From 2017 to 2020, one extraordinary plant was propagated through the ramet method to establish a strain. This plant, showing robust growth and consistent floral traits, was dubbed ‘Donglin Ziwan’. It was officially registered

with the American Iris Association in 2023 (no. DBLYDX-DLZW-2019-01).

## Description

‘Donglin Ziwan’ and its parents, *I. sanguinea* and *I. sanguinea* f. *albiflora*, were grown in Northeast Forestry University’s Harbin nursery. In 2020, 90 plants of ‘Donglin Ziwan’ and its parents were arranged in a randomized block design, with 30 plants per block. The color cards of the Royal Horticultural Society (2007) were used to document the flower colors. Phenotypic data were collected from 15 random plants per block. IBM SPSS Statistics v. 26.0 was used for statistical evaluation with one-way analysis of variance (Table 1).

The morphological traits of ‘Donglin Ziwan’, *I. sanguinea*, and *I. sanguinea* f. *albiflora* are detailed in Table 1. ‘Donglin Ziwan’ exhibits a notable increase in height, reaching  $65.33 \pm 1.53$  cm, which is substantially taller than those of its parents, with *I. sanguinea* at  $56.50 \pm 0.50$  cm and *I. sanguinea* f. *albiflora* at  $57.71 \pm 0.82$  cm. ‘Donglin Ziwan’ has longer leaves than its parents; however, the leaf width, as well as the length and width of the bracts, show no significant distinction compared with those of its parents.

Compared with its parents, ‘Donglin Ziwan’ exhibits distinctive colors and larger blossoms. The flower diameter of ‘Donglin Ziwan’ is notably larger ( $10.33 \pm 0.25$  cm) compared with those of *I. sanguinea* ( $6.73 \pm$

$0.21$  cm) and *I. sanguinea* f. *albiflora* ( $6.70 \pm 0.10$  cm), which enhances its ornamental value. Furthermore, the inner perianth of ‘Donglin Ziwan’ (length,  $6.60 \pm 0.10$  cm; width,  $3.13 \pm 0.06$  cm) is significantly longer and wider than that of *I. sanguinea* (length,  $4.22 \pm 0.10$  cm; width,  $1.28 \pm 0.10$  cm) and *I. sanguinea* f. *albiflora* (length,  $4.58 \pm 0.13$  cm; width,  $1.52 \pm 0.07$  cm). The outer perianth of ‘Donglin Ziwan’ is  $6.60 \pm 0.10$  cm long and  $5.01 \pm 0.10$  cm wide, which is significantly longer and wider, respectively, than *I. sanguinea* ( $4.91 \pm 0.11$  and  $1.50 \pm 0.11$  cm) and *I. sanguinea* f. *albiflora* ( $4.94 \pm 0.15$  and  $2.43 \pm 0.12$  cm) (Table 1).

The most prominent feature of ‘Donglin Ziwan’ is the distinctive colors of the inner and outer perianths when in full bloom. When in full bloom, the outer perianths are purple (RHS N87B) with white margins, and the inner perianths are white (RHS 91C) covered with purple markings (Fig. 1A). This is in contrast to the inner and outer perianths of its parents, which are blue-violet (RHS N88A) and white (RHS N155C) (Fig. 1D and G).

The style branches of ‘Donglin Ziwan’ are white with purple (RHS 76D) margins, whereas *I. sanguinea* and *I. sanguinea* f. *albiflora* are blue-violet (RHS N88A) and white (RHS N155C), respectively (Fig. 1A, D, G). The anthers of ‘Donglin Ziwan’ are white, contrasting with the violet-blue (RHS N92C) anthers of *I. sanguinea* and yellow (RHS 15A) anthers of *I. sanguinea* f. *albiflora* (Fig. 1A, D, G). There is no fragrance when ‘Donglin Ziwan’ and its parents are blooming. The flowering and fruiting periods of ‘Donglin Ziwan’ are similar to those of both parents, with flowering from 5 to 25 Jun and fruiting from 10 Aug to 20 Sep.

Overall, ‘Donglin Ziwan’ has taller plants, larger flowers, and unique flower colors compared with its parents, which endows it with excellent ornamental value. In addition, ‘Donglin Ziwan’ is an excellent source for cut flowers, which further enhances its potential for development and extensive use.

Table 1. Morphological traits of ‘Donglin Ziwan’, *Iris sanguinea*, and *I. sanguinea* f. *albiflora*.

Traits <sup>i</sup>	‘Donglin Ziwan’	<i>I. sanguinea</i>	<i>I. sanguinea</i> f. <i>albiflora</i>
Plant height (cm)	$65.33 \pm 1.53$ a <sup>ii</sup>	$56.50 \pm 0.50$ b	$57.71 \pm 0.82$ b
Leaf length (cm)	$65.60 \pm 1.82$ a	$57.92 \pm 1.15$ b	$56.83 \pm 0.61$ b
Leaf width (cm)	$1.21 \pm 0.11$ a	$1.26 \pm 0.06$ a	$1.24 \pm 0.03$ a
Leaf length/width	$54.99 \pm 5.83$ a	$45.89 \pm 2.23$ b	$45.97 \pm 1.01$ b
Bract length (cm)	$6.10 \pm 0.11$ b	$6.73 \pm 0.25$ a	$6.22 \pm 0.12$ b
Bract width (cm)	$1.02 \pm 0.10$ a	$1.04 \pm 0.05$ a	$1.10 \pm 0.10$ a
Bract length/width	$6.04 \pm 0.64$ a	$6.46 \pm 0.39$ a	$5.65 \pm 0.44$ a
Flower diameter (cm)	$10.33 \pm 0.25$ a	$6.73 \pm 0.21$ b	$6.70 \pm 0.10$ b
Inner perianth length (cm)	$6.60 \pm 0.10$ a	$4.22 \pm 0.10$ c	$4.58 \pm 0.13$ b
Inner perianth width (cm)	$3.13 \pm 0.06$ a	$1.28 \pm 0.10$ c	$1.52 \pm 0.07$ b
Inner perianth length/width	$2.11 \pm 0.07$ b	$3.30 \pm 0.20$ a	$3.01 \pm 0.19$ a
Outer perianth length (cm)	$6.60 \pm 0.10$ a	$4.91 \pm 0.11$ b	$4.94 \pm 0.15$ b
Outer perianth width (cm)	$5.01 \pm 0.10$ a	$1.98 \pm 0.11$ c	$2.43 \pm 0.12$ b
Outer perianth length/width	$1.32 \pm 0.01$ c	$3.27 \pm 0.19$ a	$2.04 \pm 0.06$ b
Flower period	5–25 Jun	5–25 Jun	5–25 Jun
Fruit period	10 Aug–20 Sep	10 Aug–20 Sep	10 Aug–20 Sep

<sup>i</sup> Data were collected from 2020 to 2023 and analyzed using IBM SPSS Statistics v. 26.0 with one-way analysis of variance.

<sup>ii</sup> Different letters in the same row denote significant differences ( $P < 0.05$ ).

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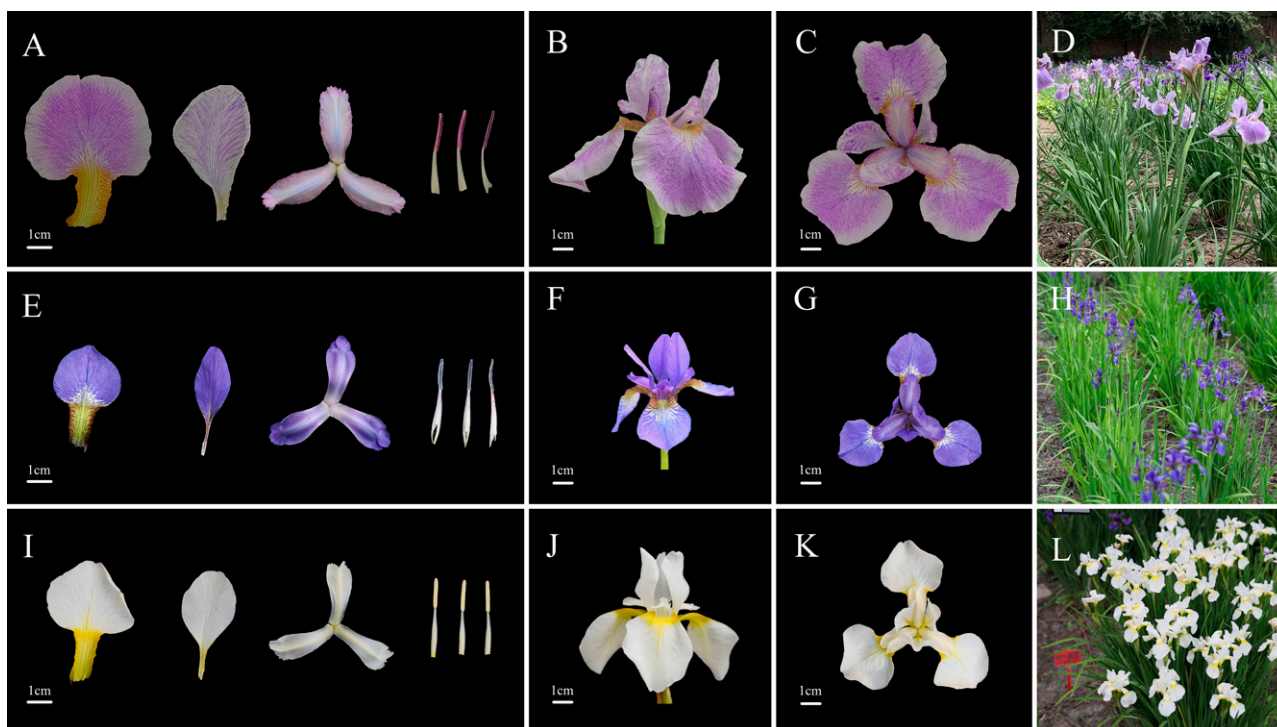


Fig. 1. Anatomic structures of ‘Donglin Ziwan’, *Iris sanguinea*, and *I. sanguinea* f. *albiflora*. (A) Flower anatomy of ‘Donglin Ziwan’. (B) Flower horizontal view of ‘Donglin Ziwan’. (C) Flower top view of ‘Donglin Ziwan’. (D) Photo of ‘Donglin Ziwan’ in a landscape setting. (E) Flower anatomy of *I. sanguinea*. (F) Flower horizontal view of *I. sanguinea*. (G) Flower top view of *I. sanguinea*. (H) Photo of *I. sanguinea* in a landscape setting. (I) Flower anatomy of *I. sanguinea* f. *albiflora*. (J) Flower horizontal view of *I. sanguinea* f. *albiflora*. (K) Flower top view of *I. sanguinea* f. *albiflora*. (L) Photo of *I. sanguinea* f. *albiflora* in a landscape setting. Flower anatomic structures (from left to right) include outer perianth segment, inner perianth segment, style branches, and stamens.

### Cultivation Techniques

‘Donglin Ziwan’ can be propagated by division in spring, summer, or early fall, with three to four buds per clump, planted 40 × 40 cm apart. Typically, no fertilization is required, and pests and diseases are rare.

### Habit and Application

‘Donglin Ziwan’ has strong cold tolerance and disease resistance. It can overwinter in the open field in Heilongjiang Province, China. The suitable growth environment is wet grassland, waterside wetland, etc. ‘Donglin Ziwan’ has great ornamental value and can be used

as cut flowers and urban landscaping in cold areas.

### Availability

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

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