

‘Donglin Jiayan’: A New *Iris sanguinea* Cultivar

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Iris sanguinea is a perennial herbaceous plant in the *Iris* family (*Iridaceae*). It has been widely used in landscaping due to the beautiful flowers and strong resistance to disease and cold. It is also cultured as an ornamental plant and cut flower in many countries. Recent years have seen the development of many new *I. sanguinea* varieties with different flower colors and patterns, including ‘Zi Meiren’ (Chen et al. 2019) and ‘Donglin Zi’ (Yang et al. 2022) with purple outer perianth and dark purple spots and stripes, ‘Xiao Feidie’ (Liu et al. 2023) with white outer perianth and an overall flower shape similar to a small flying saucer, and ‘NEFU-1’ with new flower colors showing a characteristic two-color pattern in the outer perianth and inner perianth (Qi et al. 2020).

Selection of new varieties is still a key area in the field of *I. sanguinea*, for which variations in flower colors and patterns are abundant in the natural populations. Such genetic variations can be used to breed flowers of novel phenotypes. In 2017, a new variety of *I. sanguinea*, ‘Donglin JiaYan’, was created by breeding *I. sanguinea* and *I. sanguinea* f. *albiflora*, two species with distinct flower colors. The resulting ‘Donglin JiaYan’ showed unique flower colors. The outer perianths are elliptic, light pink-purple (RHS N82D), drooping and rolling when in full bloom. The inner perianth (RHS N82D) is obovate. The style arm is purple (RHS76D), and the midrib is violet-blue (RHS81B), with purple-violet (RHSN82B) veining and dotting.

Origin

Seeds of *I. sanguinea* and *I. sanguinea* f. *albiflora* were obtained from Shenyang Botanical Garden and planted in the nursery of Maershan Experimental Forest Farm of Northeast Forestry University in Spring 2003. Eight

years after planting, seeds from open-pollinated plants of both species were collected in 2011. They were sown in the same nursery in Spring 2012.

In 2017, one plant of the resulting F1 population was identified based on the unique light pink-purple color in the outer perianth and inner perianth. This plant was propagated in 2017–20 to establish a clonal population using the method of ramet. The plants grew healthily, and the unique phenotype in flower color was consistent and stable. It was named ‘Donglin Jiayan’ and registered in the American Iris Association in 2022 with the registration number of 22-0583.

Description

A completely randomized block design was used to plant ‘Donglin Jiayan’ and its parents, *I. sanguinea* and *I. sanguinea* f. *albiflora*. Three repeated random blocks were made, each of which contained 20 plants of each species. In 2020, 30 plants were randomly selected from each block, with a total of 90 plants for phenotyping. Recorded parameters included plant height, leaf length, leaf width, leaf length/width, bract length, bract width, bract length/width, flower diameter, length and width of inner perianth, inner perianth length/inner perianth width, length and width of outer perianth, outer perianth length/outer perianth width, flower color, flowering period and fruit period. The color of flowers was recorded according to the color chart of the Royal Horticultural Society (RHS 2007). SPSS

22.0 software (Lenovo, Beijing, China) and a two-way analysis of variance were used for data analysis (Table 1).

‘Donglin Jiayan’ was selected from open-pollinated progeny of *I. sanguinea* and *I. sanguinea* f. *albiflora*. The plant height of ‘Donglin Jiayan’ is 68.27 ± 0.17 cm, which is taller than that of the parents (57.45 ± 0.37 cm for *I. sanguinea* and 57.27 ± 0.68 cm for *I. sanguinea* f. *albiflora*). The leaf length and width of ‘Donglin Jiayan’ are 65.47 ± 0.25 cm and 1.13 ± 0.08 cm, respectively, which are higher than those of *I. sanguinea* (58.46 ± 0.71 cm and 1.25 ± 0.04 cm, respectively) and *I. sanguinea* f. *albiflora* (56.37 ± 0.64 cm and 1.21 ± 0.04 cm, respectively). The ratio of leaf length to width is 57.93 ± 0.35 cm in ‘Donglin Jiayan’, which is greater than that of its parents. The bract length of ‘Donglin Jiayan’ (6.78 ± 0.14 cm) is ~ 0.5 cm longer than that of the parents, and the bract width (1.17 ± 0.13 cm) is slightly wider than that of its parents (~ 0.1 cm, nonsignificant). With longer and wider bracts in general, the bract length to width ratio of ‘Donglin Jiayan’ (5.79 ± 0.06 cm) is lower than the parents (*I. sanguinea*: 6.07 ± 0.36 ; *I. sanguinea* f. *albiflora*: 6.38 ± 0.29 cm). The flower diameter of ‘Donglin Jiayan’ is 6.73 ± 0.23 cm, compared with 6.21 ± 0.33 cm in *I. sanguinea* and 6.78 ± 0.11 cm in *I. sanguinea* f. *albiflora*. The length of inner perianth segment of ‘Donglin Jiayan’ (4.94 ± 0.07 cm) is not significantly different from that of its parents. By contrast, the inner perianth segment of ‘Donglin Jiayan’ is wider (2.32 ± 0.11 cm) than that of its parents, giving a smaller ratio of length to width compared with its parents. Similarly, the outer perianth of ‘Donglin Jiayan’ is also wider than its parent. The most prominent feature of ‘Donglin Jiayan’ lies in the light pink-purple of the inner and outer petals (Fig. 1A and D), compared with a white color of *I. sanguinea* f. *albiflora* (RHS N155C) (Fig. 1B and E) and a blue-purple color of *I. sanguinea* (RHS N88A) when in full bloom (Fig. 1C and F).

For the style arm, it is light-purple for ‘Donglin Jiayan’ (RHS 76D, Fig. 1A), blue-violet for *I. sanguinea* (RHS N88A, Fig. 1C), and white for *I. sanguinea* f. *albiflora* (RHS N155C, Fig. 1B). The anther is violet for

Table 1. ‘Donglin Jiayan’ and the morphological characteristics of its parents.

Traits	‘Donglin Jiayan’	<i>I. sanguinea</i>	<i>I. sanguinea</i> f. <i>albiflora</i>
Plant height (cm)	68.27 ± 0.17 a	57.45 ± 0.37 b	57.27 ± 0.68 b
Leaf length (cm)	65.47 ± 0.25 a	58.46 ± 0.71 b	56.37 ± 0.64 b
Leaf width (cm)	1.13 ± 0.08 b	1.25 ± 0.04 a	1.21 ± 0.04 a
Leaf length/width	57.93 ± 0.35 a	46.77 ± 1.07 b	46.59 ± 1.84 b
Bract length (cm)	6.78 ± 0.14 a	6.32 ± 0.39 b	6.21 ± 0.03 b
Bract width (cm)	1.17 ± 0.13 a	1.04 ± 0.12 b	1.02 ± 0.03 b
Bract length/width	5.79 ± 0.06 b	6.07 ± 0.36 a	6.09 ± 0.29 a
Flower diameter (cm)	6.73 ± 0.23 a	6.21 ± 0.33 b	6.78 ± 0.11 a
Inner perianth length (cm)	4.94 ± 0.07 a	4.87 ± 0.15 ab	4.84 ± 0.07 b
Inner perianth width (cm)	2.32 ± 0.11 a	1.69 ± 0.13 b	1.78 ± 0.08 b
Inner perianth length/width	2.13 ± 0.31 b	2.88 ± 0.14 a	2.72 ± 0.16 a
Outer perianth length (cm)	5.27 ± 0.08 a	4.79 ± 0.20 b	4.81 ± 0.04 b
Outer perianth width (cm)	2.08 ± 0.06 a	2.04 ± 0.08 b	2.15 ± 0.06 a
Outer perianth length/width	2.53 ± 0.16 a	2.35 ± 0.14 b	2.24 ± 0.07 b
Flower period	5 Jun–25 Jun	5 Jun–25 Jun	5 Jun–25 Jun
Fruit period	10 Aug–20 Sep	10 Aug–20 Sep	10 Aug–20 Sep

Data were collected in 2020–22. Different letters in the same row denote significant differences ($P < 0.05$).

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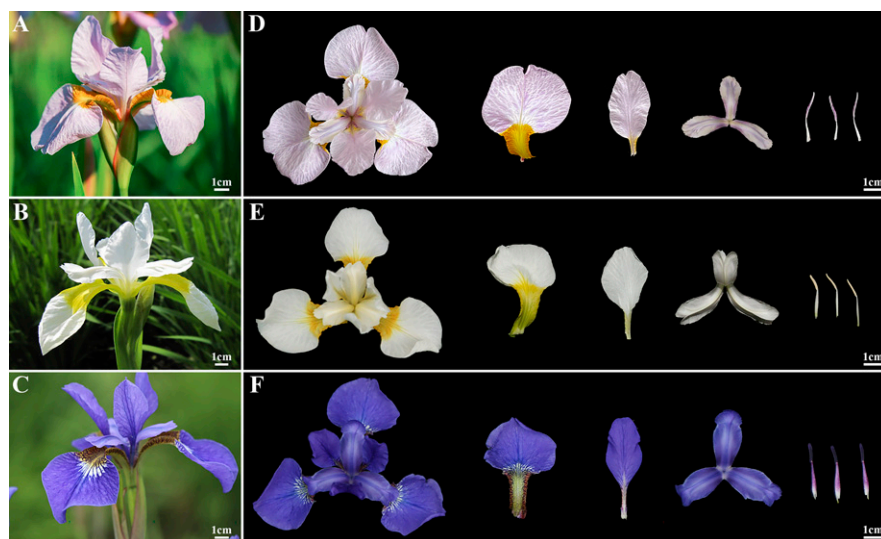


Fig. 1. Anatomical structures of 'Donglin Jiayan' flowers. (A–C) Flowers of 'Donglin Jiayan', *I. sanguinea*, and *I. sanguinea* f. *albiflora*, respectively, during full blossom. (D–F) Flower anatomical structures of 'Donglin Jiayan', *I. sanguinea*, and *I. sanguinea* f. *albiflora*, respectively. Note the differences in outer perianths, inner perianths, style arms, and stamens.

'Donglin Jiayan' (RHS N78A, Fig. 1D), violet-blue for *I. sanguinea* (RHS N92C, Fig. 1F), and yellow for *I. sanguinea* f. *albiflora* (RHS 15A, Fig. 1E). The flowering and fruiting periods of 'Donglin Jiayan' are similar to its parents with flowering time from 5 Jun to 25 Jun, and fruiting time from 10 Aug to 20 Sep. No pest or disease damage was observed during the trial and all plants have fragrance-free flowers.

Compared with its parents, 'Donglin Jiayan' has brighter colors, giving a unique appearance. It can be used for landscaping in cold regions and as a rare cut flower.

Cultivation Techniques

'Donglin Jiayan' can be propagated by splitting in spring, summer, or early autumn. When dividing plants, two or three bud points should be reserved and planted spaced at 40 × 40 cm. Generally, no fertilization is required, and diseases and pests rarely occur. Little management is needed after planting except for regular weeding.

Habit and Application

'Donglin Jiayan' has strong cold tolerance and disease resistance. It can overwinter in

the open field in the Heilongjiang Province, China. It likes light and humidity. Suitable growth habitats include wet grassland, waterside wetland, and sunny slope. In addition, 'Donglin Jiayan' can be used for cut flowers and urban greening in cold regions. Because of its unique color, 'Donglin Jiayan' can be planted together with *I. sanguinea* and *I. sanguinea* f. *albiflora* to extend the overall flowering time of *Iris*.

Availability

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

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