'Forest Fairy': A New *Iris sanguinea* Cultivar

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Irises are one of the world's famous perennial flowering plant species. At present, there are ≈300 recognized species of *Iris* which are mainly distributed in the northern temperate regions. There are ≈60 species, 13 variants, and 5 forms in China (Shi and Gao, 2010). *Iris sanguinea* grows in swamps, swampy meadows, or sunny slopes, with ornamental and medicinal functions (Shang and Wang, 2014). It breeds easily and has strong resistance to diseases, pests, and cold. Rhizomes can survive in low temperature frozen soil down to –30 °C (Cai et al., 2016). The flower of *I. sanguinea* comes mainly in blue violet (RHS N88A) (Wang and Wang, 2017). In 2017, a new light violet (RHS 85C) *I. sanguinea* cultivar Forest Fairy resulted from the hybridization of *I. sanguinea* × *I. sanguinea* f. *albiflora* which was crossed in 2007. Flowers of 'Forest Fairy' were large and its outer and inner perianths have conspicuous brown reticulate veins on yellow claw at the base, and spoon-type parts of outer and inner perianths open horizontally and spread outward.

Origin

'Forest Fairy' was selected from progeny of the cross *I. sanguinea* × *I. sanguinea* f. *albiflora* in experimental nursery of Northeast Forestry University in 2017. The seeds of *I. sanguinea* and *I. sanguinea* f. *albiflora* were introduced from Shenyang Botanical Garden and sown in experimental nursery of Northeast Forestry University in the Spring of 2005. A cross between *I. sanguinea* and *I. sanguinea* f. *albiflora* was made in 2007. In 2009, a unique plant (NEFU-17) was observed from the population of the progeny. The plant had larger flowers, and flower color was light violet, compared with its violet female and white male parents. Its top of inner and outer perianths were spoon-type and spread nearly horizontally, whereas outer perianths of its parents curve downward and narrower

inner perianths extend upward. After 6 years of propagation and observation, the promising clone was propagated and planted at the Mao-Er-Shan Forest Farm and Forest Zoo in Harbin, China, respectively in 2015. It showed stable and consistent morphological traits in the following 2 years. The new cultivar was officially authorized to be released as 'Forest Fairy' by The American Iris Society in Sept. 2017 with an accession No.17-0518.

Description

'Forest Fairy' and its parents were planted in a 50 m² nursery of Northeast Forestry University, Harbin, China, for data collection from 2015 to 2017. Ninety plants each of 'Forest Fairy' and its parental plants were arranged in a randomized experiment with three replications. A total of 30 plants (10 plants in each replication) were selected randomly for evaluation of following morphological traits: plant height, leaf length, leaf width, leaf length/width, bract length, bract width, bract length/width, flower diameter, inner perianth length, inner perianth width, inner perianth length/width, outer perianth length, outer perianth width, outer perianth length/width, flower period, and fruit period. The data were analyzed by one-way analysis of variance using the software SPSS 19.0 (SPSS Inc., Chicago, IL).

The plant height of 'Forest Fairy' was 70.19 cm, which was higher than both *I. sanguinea* (56.53 cm) and *I. sanguinea* f. *albiflora* (55.84 cm). The leaf length and width of 'Forest Fairy' was larger than *I. sanguinea* and *I. sanguinea* f. *albiflora*. The ratio of leaf length/width of 'Forest Fairy' was less than both female and male parents. Its bracts were shorter than *I. sanguinea* and *I. sanguinea* f. *albiflora*. Bracts were wider than both parents. The ratio of bracts length/width of 'Forest Fairy' was less than two parents (Table 1).

The flower of 'Forest Fairy' has three falls and three standards, similar to both *I. sanguinea* and *I. sanguinea* f. *albiflora*. However, the flower color was different from its parents. The flower color of 'Forest Fairy' was light violet (RHS 85C) comparing with *I. sanguinea* blue violet (RHS N88A) and *I. sanguinea* f. *albiflora* white (RHS N155C) (Fig. 1). Flower diameter (9.70 cm) was bigger than both parents. The length and width of inner and outer perianth of 'Forest Fairy' were larger than the parents. The ratio of inner and outer perianth length/width of 'Forest Fairy' was less than both female and male parents (Table 1). The base of three outer perianths of 'Forest Fairy' has dark brown reticulate and yellow stripes, and is claw wedge-shaped with central subsidence into ditch. The top of outer perianths are spoon-typed and open horizontally when blooming, comparing with the drooped outer perianths in two parents. The base of three inner perianths of 'Forest Fairy' has same color strips and shape, and the top of inner perianths open horizontally but slightly above the three outer perianth lobes. The three inner perianths of two parents stand upright during the blooming (Fig. 1). The flowering and fruiting periods of 'Forest Fairy' are similar to both parents, with flowering time from 5 June to 25 July and fruiting time from 10 Aug. to 20 Sept.

In short, the differences between 'Forest Fairy' and its parents mainly reflected by the flower color and size and leaf and bracts.

Table 1. Morphological traits were collected from 30 plants (10 plants/replication in 3 replications) of *Iris sanguinea*, *I. sanguinea* f. *albiflora*, and cultivar Forest Fairy which were planted in a randomized designed field in Northeast Forestry University, Harbin, China, from 2015 to 2017.

Trait ^z	Forest fairy	<i>Iris sanguinea</i>	<i>Iris sanguinea</i> f. <i>albiflora</i>
Plant height (cm)	70.19 ± 0.83 a ^y	56.53 ± 0.88 b	55.84 ± 0.82 c
Leaf length (cm)	61.38 ± 0.95 a	58.79 ± 0.84 b	58.02 ± 0.94 b
Leaf width (cm)	1.10 ± 0.65 a	1.00 ± 0.76 b	0.98 ± 0.67 b
Leaf length/width	55.92 ± 0.35 b	58.67 ± 0.43 a	59.17 ± 0.41 a
Bract length (cm)	5.86 ± 0.30 b	6.24 ± 0.23 a	6.18 ± 0.35 a
Bract width (cm)	1.11 ± 0.07 a	1.00 ± 0.04 b	0.98 ± 0.07 b
Bract length/width	5.28 ± 0.33 b	6.24 ± 0.31 a	6.29 ± 0.40 a
Flower diameter (cm)	9.70 ± 0.34 a	6.40 ± 0.27 b	6.43 ± 0.31 b
Inner perianth length (cm)	5.48 ± 0.12 a	4.52 ± 0.16 b	4.46 ± 0.15 b
Inner perianth width (cm)	2.68 ± 0.09 a	1.50 ± 0.32 b	1.50 ± 0.03 b
Inner perianth length/width	2.05 ± 0.09 b	3.00 ± 0.11 a	3.04 ± 0.10 a
Outer perianth length (cm)	5.58 ± 0.07 a	4.76 ± 0.14 b	4.67 ± 0.13 b
Outer perianth width (cm)	4.22 ± 0.06 a	1.77 ± 0.06 b	1.78 ± 0.05 b
Outer perianth length/width	1.32 ± 0.03 b	2.69 ± 0.12 a	2.63 ± 0.10 a
Flower period	5 June to 25 July	5 June to 25 July	5 June to 25 July
Fruit period	10 Aug. to 20 Sept.	10 Aug. to 20 Sept.	10 Aug. to 20 Sept.

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^zData were collected and averaged in 2015–17.

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

Fig. 1. Single flowers of *Iris sanguinea* (a), *I. sanguinea* f. *albiflora* (b), and 'Forest Fairy' (c) show differences in flower color, size, and shape. Compared with its parents, the flower of 'Forest Fairy' is bigger and its spoon-type parts of inner and outer perianths spread horizontally. The flower color is light violet, compared to its female parent *I. sanguinea*'s blue violet and male parent *I. sanguinea* f. *albiflora*'s white.

Compared with its parents, 'Forest Fairy' has light violet flower color, higher plant height, and larger flower size with horizontally spreading both tops of outer and inner perianths. Therefore, it is a valuable addition in the diversity of *I. sanguinea* species for ornamental use.

Cultivation Techniques

'Forest Fairy' is suitable for cultivation and application in Northern China. It is suited to growth in sandy loam or light clay which is rich in humus and has good permeability for gas and water exchange (Wang et al., 2016). Propagation of 'Forest

Fairy' is mainly through ramets harvested in spring and autumn. The two to three shoots are one plexus, and the planting distance is 25–30 cm. After the ramets recover growth, they need to be weeded on a regular basis and extensive management without fertilization.

Availability

Inquiries about research or use of 'Forest Fairy' plants can be addressed to Dr. Ling Wang (E-mail: wanglinghlj@126.com) at the College of Landscape Architecture, Northeast Forestry University, Harbin, China.

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