HortScience 60(12):2250–2251. 2025. https://doi.org/10.21273/HORTSCI18966-25

‘Yi Xian Qian Ying’: An Ornamental *Lycoris longituba* Cultivar

Fengjiao Zhang, Ning Wang, Xiaochun Shu, and Zhong Wang

Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, Nanjing 210014, China; Jiangsu Key Laboratory for Conservation and Utilization of Plant Resources, Nanjing 210014, China; and Nanjing Botanical Garden Mem. Sun Yat-Sen, Nanjing 210014, China

Keywords. bulbous flower, gradient color tepals, *Lycoris longituba*, new cultivar

Lycoris (Amaryllidaceae) is a genus of perennial bulbous plants endemic to East Asia, comprising more than 30 species primarily distributed in China, Japan, and Korea. Among these, China is the most diverse, particularly in subtropical areas south of the Yangtze River (Ji and Meerow 2000). *Lycoris* species are valued for their ornamental appeal, with a variety of floral traits such as trumpet-shaped or non–trumpet-shaped flowers in colors including red, yellow, white, and pink. In addition, *Lycoris* species are also notable for their medicinal properties because the bulbs contain bioactive Amaryllidaceae alkaloids, which exhibit antiviral, antitumor, and neuroprotective activities. These compounds have attracted attention for potential applications in the treatment of neurodegenerative diseases (Cahlíková et al. 2020). *Lycoris* flowers from July to September in China, and the remarkable floral diversity of *Lycoris* species has served as a basis for breeding and cultivar development. Among them, *L. longituba* stands out for its high potential for hybridization and sexual reproduction, often resulting in novel floral traits such as changes in flower color and morphology. For example, the newly developed cultivars, Yi Xian Chun Tao (Zhang et al. 2022) and Yi Xian Fen Zhuang (Shu et al. 2024), which exhibit unique pinkish flower tones, demonstrate the breeding potential and significant ornamental value of the genus. These innovations not only enrich the genetic diversity of *Lycoris* but also enhance its commercial value in the floriculture industry.

Origin and Development

Frequent natural hybridization in *Lycoris* has generated considerable cytogenetic complexity, resulting in diverse chromosome numbers and ploidy levels (Shu et al. 2025). Many hybrid-derived species are polyploid or aneuploid and often exhibit reduced fertility or sterility, restricting further sexual reproduction (Quan et al. 2024) In contrast, several diploid species, such as *L. longituba*, *L. chinensis*, and *L. sprengeri*, maintain stable meiosis and fertility, providing valuable genetic resources for breeding. At the Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, we have established a national and provincial *Lycoris* germplasm bank encompassing wild species, natural hybrids, and cultivated accessions. Our breeding program focuses on developing superior ornamental cultivars through 1) artificial hybridization of compatible species to create novel trait combinations and 2) selection of individuals with distinctive phenotypes from natural populations. Several cultivars previously released by our team, including *L. longituba*, *L. chinensis*, and *L. straminea*, display diverse floral morphologies and colors (Wang et al. 2023; Zhang et al. 2022, 2024). In this study, we identified a striking individual from a natural population of *L. longituba*, named ‘Yi Xian Qian Ying’. This individual retains the species’ characteristic long perianth tube but exhibits a rare flower color gradient: bright yellow at opening, fading to pale yellow, and finally to creamy white (Fig. 1A). This dynamic and multiphase coloration greatly enhances the visual appeal and horticultural value of the plant. Owing to its unique phenotype and stable performance, the new cultivar ‘Yi Xian Qian Ying’ was officially registered with the Royal General Bulbgrowers’ Association (2023) under the Edibulbcode 601050.

Description

The bulb of *L. longituba* ‘Yi Xian Qian Ying’ is roughly egg-shaped and covered with a black skin, measuring ~6 to 8 cm in diameter. The leaves emerge in early spring and remain photosynthetically active until early summer, at which point it senesces. The leaves are linear-strap-shaped, reaching lengths of 50 to 70 cm and widths of 1.5 to 2.0 cm. Like typical spring-foliage-emergent *Lycoris* species, the leaves dieback completely before the onset of flowering. The floral scape emerges in late July or early August and typically grows upright to a height of 50 to 60 cm. Each inflorescence (umbel) bears five to seven large, funnel-shaped flowers, each measuring 8 to 10 cm in diameter. The perianth consists of six tepals that are moderately recurved at the tips. A key distinguishing trait of this cultivar is its dynamic flower color change during anthesis. The flowers initially open as bright yellow (RHS 008C), then gradually fade to pale yellow, and finally to a creamy, yellowish white (RHS 155A) as the flower matures (Fig. 1A). This progressive color transition creates a visually striking contrast, clearly differentiating it from the pure white flowers of the typical *L. longituba* (Fig. 1B). The stamens are creamy-white and slightly shorter than the tepals. Stigma is light rose red and subequal to petal. The floral tube is elongated (4 to 6 cm), consistent with the taxonomic characteristics of *L. longituba*. The flowering period of ‘Yi Xian Qian Ying’ typically spans from late July to early August. In field trials, the cultivar has demonstrated stable flowering performance across consecutive years, strong adaptability to subtropical climates, and moderate tolerance to common pests (e.g., aphids, thrips) and soil-borne diseases (e.g., basal rot) under well-drained soil conditions.

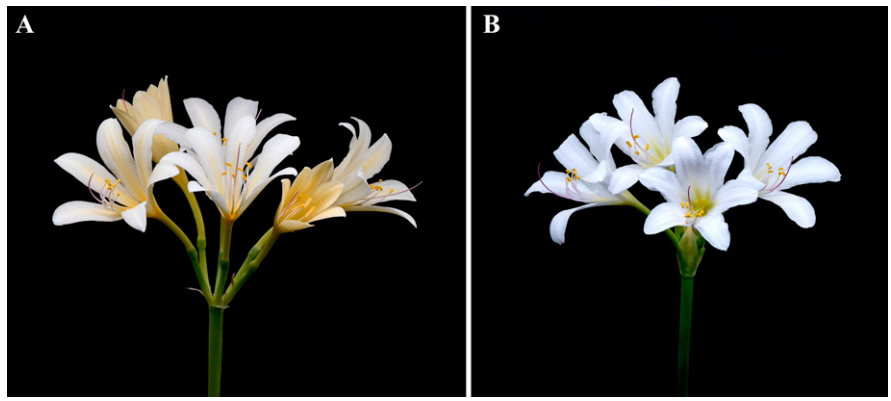

Fig. 1. Flower characteristics of (**A**) *Lycoris longituba* new cultivar Yi Xian Qian Ying and (**B**) *Lycoris longituba.*

Received for publication 28 Aug 2025. Accepted for publication 22 Sep 2025.
Published online 20 Oct 2025.
This research was funded by the Research Fund of Nanjing Botanical Garden Men. Sun Yat-Sen (JSPKLB202519); Forestry Science and Technology Popularization Demonstration Project of the Central Finance [Su(2024)TG06]; and Jiangsu Provincial Crop Germplasm Resource Bank (*Lycoris*) (JS-ZW-K04).
Z.W. is the corresponding author. E-mail: wangzhong19@163.com.

Propagation and Cultivation

Effective propagation and cultivation techniques are essential for the conservation, breeding, and large-scale commercialization of *Lycoris* cultivars. *Lycoris* species can be propagated through both sexual and asexual methods, each serving distinct purposes in breeding and production. Sexual propagation by seeds plays a fundamental role in breeding programs because it facilitates the recombination of genetic material and the development of novel phenotypic traits. Seed-derived progeny often exhibit significant variation in flower color, shape and blooming period, making them valuable for selecting new cultivars. Seed propagation has several limitations, however, such as a long juvenile phase (usually 3 to 5 years before first flowering), low seed set (especially in sterile or triploid cultivars), and genetic instability of traits in subsequent generations. These limit the utility of seed propagation in large-scale production of elite lines. For successful seed germination, freshly harvested seeds should be sown immediately in well-drained sandy loam or loose soil at 20 to 25 °C. Seedlings usually emerge within 1 to 2 months. Therefore, asexual propagation is the primary method for maintaining and multiplying clones of new cultivars. The most commonly used method is bulb division, which exploits the natural ability of mature bulbs to produce 1 to 3 offsets per year under optimal growing conditions. These offsets can be separated and replanted to increase population scale. In commercial production, bulb cutting is another effective method for large-scale asexual propagation gradually. The basal plate of the bulb is longitudinally incised and air-dried in a cool, ventilated area for 1 to 2 d to promote callus formation, then planted in a substrate such as a mixture of peat and perlite. Maintaining substrate and ambient humidity at ∼50% is crucial for adventitious bulb development. Within 2 to 3 months, small bulblets typically form at the wound sites and can be transplanted after rooting. This technique is simple, cost-effective, and suitable for small- to medium-scale propagation. For rapid and large-scale multiplication, plant tissue culture is the most efficient approach. Despite requiring significant initial investment and technical expertise, micropropagation can achieve a multiplication rate several hundred times higher than traditional methods. Key factors influencing success include proper explant sterilization, optimization of growth regulator concentrations in the culture medium (e.g., auxin-to-cytokinin ratio), and environmental control of light, temperature, and humidity (Mehbub et al. 2022).

Lycoris species are adapted to warm-temperate to subtropical climates and perform best in well-drained, humus-rich soils. They prefer semishaded environments, such as beneath deciduous trees or along forest margins. Adequate drainage is essential because prolonged waterlogging can cause basal rot and bulb decay. Optimal soil pH ranges from 6.0 to 7.0. The genus displays distinct phenological types, which influence their management. Planting is typically conducted in early summer or early autumn, depending on the phenology of the species or cultivar (spring or autumn foliage emergence). Bulbs should be buried at a depth about 2 times their height (usually 10 to 15 cm), with 15 to 20 cm spacing between bulbs to allow room for growth and clump expansion. Routine field management includes moderate irrigation during the active growth phase, timely weeding, and light fertilization formulations. Fertilizer application should coincide with periods of active root and shoot development and should be minimized during dormancy to prevent nutrient leaching and bulb stress.

Availability

'Yi Xian Qian Ying' is available through Institute of Botany, Jiangsu Province and Chinese Academy of Sciences (Nanjing Botanical Garden Mem. Sun Yat-Sen). Contact Fengjiao Zhang (e-mail: zfjiao@yeah.net) for inquiries.

References Cited

Cahlíková L, Breiterová K, Opletal L. 2020. Chemistry and biological activity of alkaloids from the genus *Lycoris* (Amaryllidaceae). Molecules. 25(20):4797. https://doi.org/10.3390/molecules-25204797.

Ji Z, Meerow AW. 2000. *Lycoris*, p 266–269. In: Flora of China. Vol. 24. Missouri Botanical Garden Press, St. Louis, MO, USA; Science Press, Beijing, China.

Mehbub H, Akter A, Akter M, Mandal M, Hoque M, Tuleja M, Mehraj H. 2022. Tissue culture in ornamentals: Cultivation factors, propagation techniques, and its application. Plants (Basel). 11(23):3208. https://doi.org/10.3390/plants11233208.

Quan M, Jiang X, Xiao L, Li J, Liang J, Liu G. 2024. Reciprocal natural hybridization between *Lycoris aurea* and *Lycoris radiata* (Amaryllidaceae) identified by morphological, karyotypic and chloroplast genomic data. BMC Plant Biol. 24(1):14. https://doi.org/10.1186/s12870-023-04681-2.

Royal General Bulb Growers' Association (Koninklijke Algemeene Vereeniging voor Bloembollencultuur). 2023. Hillegom, The Netherlands. https://www.kavb.nl/kennisbanken/kavb-publicaties. [accessed 19 Aug 2025].

Shu X, Lu R, Heslop-Harrison P, Schwarzacher T, Wang Z, Qin Y, Wang N, Zhang F. 2025. Unraveling the evolutionary complexity of *Lycoris*: Insights into chromosomal variation, genome size, and phylogenetic relationships. Plant Divers. https://doi.org/10.1016/j.pld.2025.06.010.

Shu X, Qin Y, Wang Z, Wang N, Zhang F. 2024. 'Yi Xian Fen Zhuang': An ornamental *Lycoris longituba* cultivar. HortScience. 59(7):921–922. https://doi.org/10.21273/HORTSCI17863-24.

Wang Z, Shu X, Wang N, Cheng G, Zhang F. 2023. 'E Huang Xiao Ran': A new ornamental *Lycoris straminea* cultivar. HortScience. 58(1):105–106. https://doi.org/10.21273/HORTSCI-16925-22.

Zhang F, Shu X, Wang N, Wang Z. 2024. Jin Ling Tian Cheng: A new ornamental *Lycoris chinensis* cultivar. HortScience. 59(8):1106–1107. https://doi.org/10.21273/HORTSCI-17913-24.

Zhang F, Zhuo T, Guo Y, Shu X, Wang N, Wang Z. 2022. 'Yi Xian Chun Tao': An ornamental *Lycoris longituba* cultivar. HortScience. 57(4):548–549. https://doi.org/10.21273/HORTSCI16489-22.