HortScience 60(10):1775–1776. 2025. https://doi.org/10.21273/HORTSCI18778-25

‘Xuan Zi’: A New *Lagerstroemia* Cultivar with Red Trunk and Purple Flowers

Bo Lu, Yucheng Jiang, Ting Zhou, Xinran Chong, Xiaoqing Lu, Yunlong Li, Chuanyong Wang, and Xiaolong Cai
Institute of Botany, Jiangsu Province and Chinese Academy of Sciences (Nanjing Botanical Garden Memorial Sun Yat-Sen), Nanjing 210014, China

Donglin Zhang
Department of Horticulture, University of Georgia, Athens, GA 30602, USA

Hong Chen
Institute of Botany, Jiangsu Province and Chinese Academy of Sciences (Nanjing Botanical Garden Memorial Sun Yat-Sen), Nanjing 210014, China

Keywords. flower color, germplasm resources, hybridization, ornamental plant, trunk color

Crape myrtles (*Lagerstroemia* spp.) are important ornamental woody plants, highly valued for their diverse growth habits, prolonged midsummer flowering, and rich floral coloration (He et al. 2014; Roy et al. 2015). Crape myrtles are distributed naturally across eastern and southeastern Asia, as well as northern and southern Australia, comprising 55 species and at least 500 named cultivars (Cai et al. 2011; Qin et al. 2021). However, the common gray or gray-brown trunk of most crape myrtles limits further enhancement of their ornamental appeal. Since the 1960s, extensive breeding programs for crape myrtles have been implemented both domestically in China and abroad, concentrating primarily on enhancing disease resistance, tree architecture, flower and leaf color, and flower shape (Hu et al. 2019; Li et al. 2015; Wang et al. 2013). However, relatively little effort has been devoted to the improvement of trunk coloration traits.

As a perennial woody ornamental, the crape myrtle’s trunk color represents a crucial selection criterion, with distinctive bark coloration enhancing its market value and landscape performance significantly (Hao et al. 2025; Pooler 2006). Therefore, it is of great importance to breed new *Lagerstroemia* cultivars with attractive trunk colors. ‘Xuan Zi’, a hybrid new cultivar derived by crossing *L. fauriei* and *L. indica* ‘Tuscarora’, was selected and released in 2024 by the Institute of Botany, Jiangsu Province and Chinese Academy of Sciences (Nanjing Botanical Garden Memorial Sun Yat-Sen). This cultivar has gained much attention for its distinctive red trunk, enriching the availability of ornamental *Lagerstroemia*, and substantially enhancing its value. To date, no serious pests or diseases have been observed. The cultivar is suitable for urban landscaping applications, including park installations, civic plazas, streetscapes, and residential courtyards.

Received for publication 12 Jun 2025. Accepted for publication 24 Jul 2025.
Published online 8 Sep 2025.
The research was supported by the Germplasm Repository of Native Landscape Tree Species in Jiangsu Province.
H.C. is the corresponding author. E-mail: chenhong@cnbg.net.

Origin

In Summer 2014, *L. fauriei* (tree form, ♀ seed parent; selected for superior cold hardiness, disease and pest resistance, and drought tolerance) was crossbred with *L. indica* ‘Tuscarora’ (tree-form cultivar, ♂ pollen parent, chosen for desirable floral morphology and vibrant blossom coloration) at Nanjing Botanical Garden, Jiangsu Province, China (lat. 32°03′N, long. 118°49′E). More than 500 cross-pollinated seeds were collected in November for dry storage. In Spring 2015, seeds were sown in a seedbed (width, 1.5 m; length, 50 m; depth, 8.0–10.0 cm). After germination, seedlings were transplanted into the field with a 20.0- × 20.0-cm spacing. In Spring 2018, an individual plant with fragrant and red-purple (RHS 77B) (Royal Horticultural Society 2015) flowers was observed and selected for further evaluation. After 2 years of softwood/hardwood cutting (2018–19) and 5 years of successive observations (2018–22), more than 100 young cuttings produced the exact morphological characteristics of the mother (donor) plant, confirming their phenotypic stability. The young trees grew vigorously and exhibited good adaptation to high (37 to 40 °C) and low (4 to 6 °C) temperatures in Jiangsu (lat. 32°03′N, long. 118°49′E; US Department of Agriculture plant hardiness zones ∼9b/10a). Throughout 5 years of breeding and field cultivation (2018–22) under natural conditions, no detectable pest or disease damage was observed. These findings occurred in the absence of artificial pathogen inoculation; rigorous resistance validation will be addressed in future studies. This cultivar was named Xuan Zi and authorized by the Forest Variety Certification Committee of China in 2024.

Description

Among the existing *Lagerstroemia* germplasm, ‘Xuan Zi’ resembles ‘Ning Xiang 1’ most closely, which was released by the Nanjing Botanical Garden in 2022 (Chen et al. 2022). ‘Ning Xiang 1’ is characterized by red-purple (RHS N74C) flowers that bloom from green buds, whereas green buds and purple (RHS 77B) flowers are presented in ‘Xuan Zi’. In addition, ‘Xuan Zi’ exhibits undulating leaf margins, whereas ‘Ning Xiang 1’ does not (Supplemental Table 1). The specific characteristics of ‘Xuan Zi’ (Table 1) are described in the following sections.

Tree. The ‘Xuan Zi’ tree exhibits an arborescent form with a red (RHS 179B) trunk and branches. Its semiupright canopy can reach up to 3.0 m in height, with a 1.5-m spread at 4 years of age.

Twigs and foliage. The twigs are four edged and densely covered with short wings, exhibiting low-density pubescence. The mature leaves are papery and elliptical (8.2–8.9 cm in length × 5.2–5.5 cm in width), attached by short petioles (0.5–0.6 cm). The leaf blades are green (RHS NN137A), with low-density pubescence present on the abaxial surface (Fig. 1B).

Flower. The flowering time of ‘Xuan Zi’ (10% bloom opening) is relatively early, around mid June in Jiangsu, China, with a flowering period lasting over 4 months (June–September). The flower buds are green and red, cylindrical (moderate in length and width), featuring slightly raised sutures and apical protuberances. The conical inflorescence consists of numerous purple flowers (RHS 77B) measuring 2.5 to 3.0 cm in diameter, with wrinkled petals and abundant stamens (n = 25–30) (Fig. 1D). The slender, clawlike calyx connects to the petals and displays a red–purple color (RHS 73D).

Fruit. The fruit of ‘Xuan Zi’ are brown, elliptical, and of medium size. Both the apex and base of the fruit lack depressions.

Cultivation

‘Xuan Zi’ is regenerated mainly by softwood cuttings (July–August) or hardwood cuttings (late March to early April, before sprouting). For softwood cuttings, semilignified branches should be selected and trimmed to ∼10 cm in length, retaining two to three half leaves at the apex. For hardwood cuttings, thick annual branches should be selected and cut into segments 10 to 15 cm in length, and planted at a depth of ∼8 to 13 cm. Cuttings were prepared and the basal ends were dipped in a 2000-ppm solution of indole-3-butyric acid for 5 to 10 s. The treated cuttings were then inserted immediately into the prepared seedbed. Postcutting management involved thorough irrigation, followed by covering the seedbed with plastic

Table 1. *Lagerstroemia fauriei* 'Xuan Zi' phenotypic characteristics.

Phenotypic traits	Description	No.	Phenotypic traits	Description	No.	Phenotypic traits	Description
Plant growth habit	Semiupright	14	Sepal edge	No	27	Claw length	0.85 ± 0.02 cm
Plant life type	Arbor	15	Dense, hairy, sepals	No	28	Claw color	Red-purple (RHS 73D)
Trunk color	Red (RHS 179B)	16	Bud length	0.83 ± 0.05 cm	29	Flower with petaloid stamen	No
Four-edged twigs	Yes	17	Bud width	0.87 ± 0.04 cm	30	Fruit shape	Oval
Twig pubescence density	Low	18	Bud shape	Conical	31	Color of fruit	Brown (RHS 200A)
Leaf length	8.53 ± 0.37 cm	19	Bud color	Green and red	32	Fruit vertical diameter	1.26 ± 0.32 cm
Leaf width	5.36 ± 0.16 cm	20	Bud with raised suture	Weak	33	Fruit horizontal diameter	1.17 ± 0.27 cm
Leaf shape	Elliptical	21	Bud with appendage	No	34	Fruit with depressed base	No
Leaf color	Green (RHS NN137A)	22	Bud with apical protuberance	Yes	35	Fruit with depressed apex	No
Leaf surface covered with golden spots	No	23	Flower diameter	2.78 ± 0.23 cm	36	Sprout stage	Early April
Undulated leaf margins	Yes	24	Flower with multiple colors	No	37	Early flowering stage	Mid June
Leaf pubescence density in the subsurface	Low	25	Flower color	Purple (RHS 77B)	38	Flowering phase	June to August
Sepal length	0.42 ± 0.08 cm	26	Petal surface wrinkled	Yes	39	Defoliating period	Mid to late November

RHS = Royal Horticultural Society.

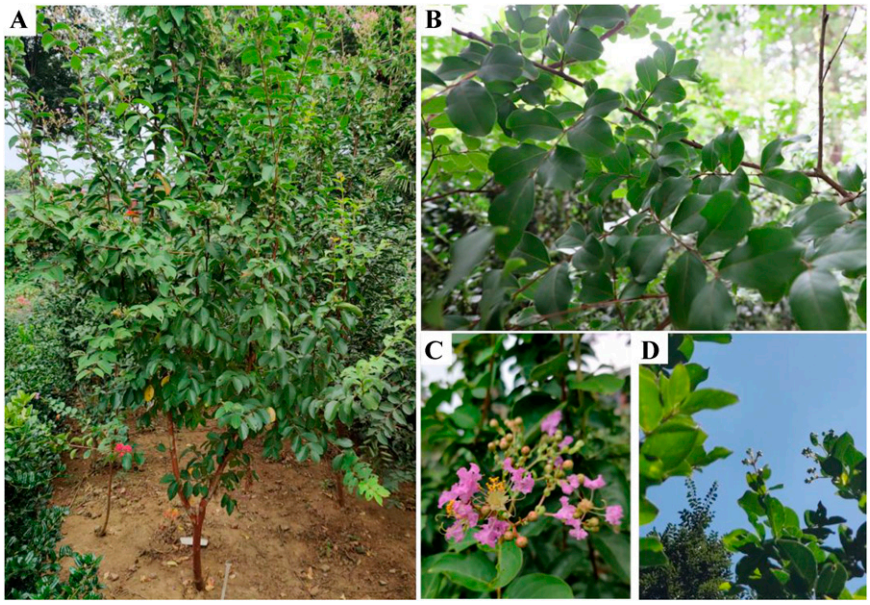

Fig. 1. 'Xuan Zi' phenotypic characteristics. (**A**) Semiupright growth habit. (**B**) Leaves with undulated leaf margins. (**C**) Purple (RHS 77B) flowers. (**D**) Budding branches.

film to maintain humidity and temperature, complemented by shade net installation. Rooting typically occurred within 15 to 20 d. After film removal, while retaining the shade net, with proper irrigation during the growth period, new shoots can attain ~70 cm in length within the same year.

Availability

The relevant plant material (including clonal germplasm) and research information of 'Xuan Zi' can be obtained from H.C. at the Institute of Botany, Jiangsu Province and Chinese Academy of Sciences, accompanied by an official phytosanitary certification confirming compliance with China's plant quarantine regulations (GB/T 28068-2011) and negative pathogen screening.

References Cited

Cai M, Pan HT, Wang XF, He D, Wang XY, Wang XJ, Zhang QX. 2011. Development of novel microsatellites in *Lagerstroemia indica* and DNA fingerprinting in Chinese *Lagerstroemia* cultivars. Sci Hortic. 131:88–94. https://doi.org/10.1016/j.scienta.2011.09.031.

Chen H, Chong X, Wang C, Zhou Y, Zhang F, Zhang D, Zhou T. 2022. 'Ning Xiang 1': A new *Lagerstroemia* cultivar with fragrant red–purple flowers. HortScience. 57(12):1600–1601. https://doi.org/10.21273/HORTSCI16865-22.

Hao SW, Zhang DL, Wen YF. 2025. Customers' preferences for crape myrtle (*Lagerstroemia* L.) across geographical regions: Evidence from China. Horticulturae. 11(1):61. https://doi.org/10.3390/horticulturae11010061.

He D, Liu Y, Cai M, Pan HT, Zhang QX. 2014. The first genetic linkage map of crape myrtle (*Lagerstroemia*) based on amplification fragment length polymorphisms and simple sequence repeats markers. Plant Breed. 133(1):138–144. https://doi.org/10.1111/pbr.12100.

Hu L, Zheng TC, Cai M, Pan HT, Wang J, Zhang QX. 2019. Transcriptome analysis during floral organ development provides insights into stamen petaloidy in *Lagerstroemia speciosa*. Plant Physiol Biochem. 142:510–518. https://doi.org/10.1016/j.plaphy.2019.08.012.

Li Y, Zhang ZY, Wang P, Wang SA, Ma LL, Li LF, Yang RT, Ma YZ, Wang Q. 2015. Comprehensive transcriptome analysis discovers novel candidate genes related to leaf color in a *Lagerstroemia indica* yellow leaf mutant. Genes Genom. 37(10):851–863. https://doi.org/10.1007/s13258-015-0317-y.

Pooler MR. 2006. 'Arapaho' and 'Cheyenne' *Lagerstroemia*. HortScience. 41(3):855–856. https://doi.org/10.21273/HORTSCI.41.3.855.

Qin B, Sun K, Huang X. 2021. The complete chloroplast genome of *Lagerstroemia balansae*, an endangered species of genus *Lagerstroemia* native to China. Mitochondrial DNA B Resour. 6(2):684–685. https://doi.org/10.1080/23802359.2021.1882352.

Roy R, Khuraijam JS, Singh S. 2015. Landscaping *Lagerstroemia* for urban landscapes in India. Int J Sci Res. 4:164–165. https://doi.org/10.31220/osf.io/zw2uj.

Royal Horticultural Society. 2015. The Royal Horticultural Society colour chart. Royal Horticultural Society, London, UK.

Wang JF, Liu XH, Chen ZM. 2013. Research progress in breeding of *Lagerstroemia* plant. Acta Hortic Sin. 40:1795–1804. https://doi.org/CNKI:SUN:YYXB.0.2013-09-017.