‘Zhizun Qianban’: A Recognition of an Obscure Lotus (*Nelumbo*) Cultivar with an Interesting Legend

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Lotus, often confused with botanical *Lotus* Linn. in the legume family, is the common name of *Nelumbo* Adans. (Nelumbaceae), which has only two species, *Nelumbo nucifera* Gaertn. native to Asia and *N. lutea* Willd. native to America and the Caribbean sea region. As a result of its diverse germplasm and a long history of lotus cultivation and breeding activities, China has bred the greatest number of lotus cultivars in the world (Tian and Tilt, 2010). In the past 30 years, many cultivars have been recognized or rediscovered, particularly in the suburbs and rural regions. *Nelumbo nucifera* ‘Zhizun Qianban’ is a newly named cultivar discovered in southern China in 2009 and registered by the International Waterlily and Water Garden Society in 2010. It is a large-sized lotus with a double pink flower composed of up to 1650 petals. It can be planted in ornamental ponds, containers, or grown potentially as a cut flower.

Origin

‘Zhizun Qianban’ (‘至尊千瓣’ in Chinese characters), which means “ultimate thousand-petals,” was discovered and named by Dr. Daike Tian at the South China Botanical Garden (SCBG), Chinese Academy of Sciences (CAS) in 2009. In Chinese, “Zhizun” means the highest position, the most honorable, or a synonym of the King, and “Qianban” means thousand-petals. The name can be translated into “ultimate thousand-petals” in English. This lotus grows in a pond of SCBG and was introduced by an aquatic plant researcher, Dr. Lei Chen, in 2008 from a small nursery owned by Mr. Changxin Chen in the suburb of Guangzhou. According to Mr. Changxin Chen’s recall (during an interview with Dr. Daike Tian), he bought a rhizome shoot at the price of 2 RMB (\$0.30 U.S.) from an unnamed owner in Daliang of Shunde in ≈1981. It is more interesting that the former

owner informed Mr. Changxin Chen that this lotus luckily survived through a tragedy resulting from the Great Proletarian Cultural Revolution in China from 1966 to 1976. During this event, private gardens were not permitted and the Chinese people were not allowed to own plants. Therefore, the ornamental plants of the former owner were almost completely destroyed. Fortunately, one plant of this lotus survived because it was planted in a traditional hard-to-break stone ponder (a large mortar-like utensil used for grinding rice, corn, and other food). Mr. Changxin Chen does not know the exact name of this lotus but calls it “Qianceng Mudan” (thousand-layer tree peony), “Xuri Dongsheng” (morning sun rising in the east) and “Dahong Mudan” (big red tree peony). This cultivar has not been documented, and to date, the true history, creator, original owner, and name of this cultivar are unknown. Therefore, it was given a new name based on morphological traits. ‘Zhizun Qianban’ was probably derived and preserved as a natural mutation from the wild. It more closely resembles the cultivar Zhongshan Hongtai (Zhongshan duplicate red; Wang and Zhang, 2005). It is often difficult for novice gardeners to readily distinguish between both of these cultivars. However, close examination clearly shows that ‘Zhongshan Hongtai’ has fewer petals, some stamens, and a nearly normal receptacle, whereas a trained observer will easily note that ‘Zhizun Qianban’ has increased petals, no stamen, and extremely degenerated receptacle. There is a possibility that these two cultivars are closely related. Future basic molecular analysis is necessary to decode if ‘Zhizun Qianban’ is derived from ‘Zhongshan Hongtai’. ‘Qianban Lian’, another thousand-petaled lotus, can be traced at least back 1500 years based on Chinese literature, *Shi Yi Ji* (Wang, 317–394 A.D.) in the East Jin Dynasty; thus, it may be possible that ‘Zhizun Qianban’ has a much longer history than that currently known. Its complete story remains a challenge for further exploration of the literature and the use opportunities and resources available through molecular biology.

‘Zhizun Qianban’ was a new trial name first published in *The Picture Album of SCBG 80th*

(Wu et al., 2009). Lotus growers, researchers, and enthusiasts have suggested that ‘Zhizun Qianban’ was the best and most honorable thousand-petal lotus ever found in the world.

Description and Performance

Flower color descriptors were derived from the scientifically recognized standard references from the Royal Horticultural Society (RHS) Colour Chart (Royal Horticultural Society, 2007). Petal colors were measured in the morning of the third day of the flower’s peak opening. Lotus flowers normally bloom for 4 to 5 d, but this cultivar may last as long as 7 d.

‘Zhizun Qianban’ (Figs. 1–9). Lotus large, 156 to 207 cm tall. Leaf blade 42 to 76 cm long × 31 to 66 cm wide, surface rough slightly, veins usually 21 to 22, petioles 11 to 20 mm diameter. Juvenile floral bud widely conical (length larger than width), maturing to conical-ball shape 6.5 to 8 cm long × 8 to 11 cm wide as it approaches opening. Receptacles degenerated, 2 to 3.5 cm long × 2.2 to 5 cm wide. Flowers double, sterile, 8 to 12 cm diameter, often below leaf surface, floral stalk 9 to 15 mm diameter. Petals and petaloid stamens 1000 to 1650 when grown in a pond or large ditch, reduced to 550 to 1000 when planted in containers; outer petals 30 to 55, 6.6 to 9.5 cm long × 2.5 to 6 cm wide, inner petals 2.1 to 7.5 cm long × 0.3 to 2.5 cm wide (measured at widest point); middle-upper part of petals red-purple (outer RHS 70C and inner 68D), margins and tips deeper red-purple (RHS 158D-C). Stamens petaloid completely, anthers lacking. Carpels degenerated, tubular petal-like tissue 4 to 6 cm long and folded along one side; pistil absent.

The flower opens slowly, taking 3 to 4 d from the start of opening to full opening. A single flower may last for 1 week, much longer than the 4-d flowering duration for most cultivars. With a longer flowering time for a single flower, beautiful shape, and strong stalk, ‘Zhizun Qianban’ is an improved and excellent ornamental for decoration in either ponds or containers. Also, it has potential as a cut flower.

‘Zhizun Qianban’ is closest in similarity to ‘Zhongshan Hongtai’ (Fig. 10). However, both cultivars are easily distinguished by the three traits of petal number, stamen, and shape and morphology of the receptacle. Namely, the latter has stamens, receptacle and fewer petals. Also, ‘Zhizun Qianban’ is different from ‘Qianban Lian’ (another lotus cultivar with over 1000 petals) by smaller petioles and flower stalks, a long conical bud shape, more outer petals and tiny inner petals, and sometimes two to five “flowers” in one flower of the latter.

‘Zhizun Qianban’ is completely sterile as a result of the absence of stamens and a pistil. It can be propagated by rhizome-shoot division in spring or by running shoots during the growth season. Propagation of this cultivar by tissue culture has not been investigated but may be a possible alternative. It blooms from late May to August in southern China. The plant grown in a container can develop three to four flowers. Like other lotus, the young leaves

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Figs. 1–10. Morphology of *Nelumbo* ‘Zhizun Qianban’ compared with its closest cultivar, Zhongshan Hongtai. Fig. 1. Plant with leaf and flower bud in a pond. Fig. 2. Flower bud 3 d before opening. Fig. 3. Opening flower on the third day. Fig. 4. Fully open flower on the fifth day; three layers (A, outer petals; B, middle petals; C, carpel-derived tubular petals) are clearly separated. Fig. 5. Inner petals with a yellow–white lower part, carpel-derived tubular petals in the center, and degenerated receptacle. Fig. 6. Dissected inner petals (left seven) and carpel-derived tubular petals (right three). Fig. 7. Dissected receptacle with (A) carpel-derived tubular petals; (B) degenerated receptacle; and (C) slightly extended and expanded secondary receptacle compared with single-flower lotus. Fig. 8. The receptacle to develop into a seedpod has completely disappeared (also see in Fig. 5). Fig. 9. Expanded rhizome with shoots. Fig. 10. ‘Zhongshan Hongtai’ with (A) carpel-derived tubular petals; (B) nearly normal receptacle; (C) few stamens and much fewer petals compared with ‘Zhizun Qianban’.

of ‘Zhizun Qianban’ are susceptible to aphid damage, the larvae of the cotton leaf worm (*Spodoptera litura* Fab.), and yellow-tea thrips (*Scirtothrips dorsalis* Hood.), particularly in the southern region of China.

Availability

‘Zhizun Qianban’ is easily confused with ‘Zhongshan Hongtai’ (Fig. 10), therefore, and has probably been distributed across China by nursery producers under the name of ‘Zhongshan Hongtai’. It is an excellent plant material for study on development and evolution of double flowers of lotus. An un-

dergoing research project on molecular mechanism of double flowers in *Nelumbo* is conducted in Dr. Daike Tian’s laboratory at Shanghai Chenshan Plant Science Research Center, CAS, and Shanghai Chenshan Botanical Garden. Currently, a very limited number of the stock plants can be obtained by contacting Dr. Daike Tian (e-mail: tiandk09@gmail.com).

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