

Yinzhan: A New *Gardenia jasminoides* Cultivar

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Gardenia jasminoides Ellis is a flowering plant belonging to the Rubiaceae family. Due to its beautiful white flower and rich fragrance, it is often used as a cut flower and ornamental plant (Chuenboonngarm et al. 2001; Wilkins 1986). In addition, the fruit of *G. jasminoides*, which is reputed to be effective in the treatment of inflammation, headache, jaundice, edema, hepatic disorders, fever, and hypertension (Lelono et al. 2009), is a traditional Chinese medicine and is used as a folk medicine in many other Asian countries as well (Debnath et al. 2011; Zhou et al. 2017).

Recently, a new cultivar, Yinzhan, selected from *G. jasminoides* by Jiangxi Academy of Forestry, was granted a patent by the State Forestry and Grassland Administration of China (Authorization No. 20210598). This new cultivar enriches the germplasm resources of *Gardenia* and has tremendous application prospects. Here, we reported the origin, characteristics, cultivation technique and application of *G. jasminoides* ‘Yinzhan’.

Origin

Seeds of *G. jasminoides* were collected at Xihe Town, Xiaogan, Hubei, China, and sown in 2008. The seedlings were planted in the field plot of laterite with 1.5 × 2.5 m spacing at Jiangxi Academy of Forestry and watered once a week. In May 2014, an individual with large leaves and cup-shaped corollas was found. The mature fruits of this individual were vivid reddish orange (RHS Orange-Red N30B) and smaller than the other individuals. The phenotypes of this individual plant remained stable from 2015 to 2017. In Spring 2018, 50 cuttings from this individual were propagated. The phenotypes of leaves, flowers, and fruits of these

cuttings were consistent with the original plant. According to the unique flower pattern, the new cultivar was named ‘Yinzhan’.

Description

The cultivars Yinzhan, *G. jasminoides*, and *G. jasminoides* Jinfu Shuizhi were planted in Jiangxi Academy of Forestry nursery in Nanchang, China. Under the same site conditions, morphological observation and data were collected on 30 flowering asexual individuals from each variety. The Royal Horticultural Society Color Chart (Royal Horticultural Society 2015) was used to record flower and fruit color. One-tailed *t* test was used in the testing the differences in morphological characteristics among ‘Yinzhan’, ‘Jinfu Shuizhi’, and *G. jasminoides* (Table 1). Statistical analysis was conducted with SPSS 17.0 software.

The tips of the petals roll inward, forming cup-shaped corollas when the flowers are fully opened (Fig. 1B). By contrast, the petals of ‘Jinfu Shuizhi’ and *G. jasminoides* are almost flat or slightly curled (Fig. 1G and H). The

corolla lobe of ‘Yinzhan’ is shorter (2.79 ± 0.13 cm) and thinner (1.81 ± 0.1 cm) than that of ‘Jinfu Shuizhi’ (3.69 ± 0.29 cm and 2.31 ± 0.27 cm) and *G. jasminoides* (4.14 ± 0.9 cm and 1.95 ± 0.55 cm). Compared with ‘Jinfu Shuizhi’ (12.2 ± 1.42 cm in length and 5.17 ± 0.59 cm in width) and *G. jasminoides* (6.93 ± 2.69 cm in length and 3.12 ± 0.27 in width), the leaves of ‘Yinzhan’ (9.46 ± 0.9 cm in length and 5.07 ± 0.59 in width) are shorter than ‘Jinfu Shuizhi’ but longer and wider than *G. jasminoides*. The mature fruit of ‘Yinzhan’ is subglobose and vivid reddish orange (RHS Orange-Red N30B) (Fig. 1C and D), which is different with ‘Jinfu Shuizhi’ [ellipsoid; dark reddish orange (RHS Grey-Orange 173A)] (Fig. 1I and J) and *G. jasminoides* [ovoid, subglobose, or ellipsoid; strong orange yellow (RHS Grey-Orange N163C)]. The fruit size of ‘Yinzhan’ is shorter (2.01 ± 0.17 cm) and thinner (1.91 ± 0.21 cm) than that of ‘Jinfu Shuizhi’ (4.39 ± 0.18 cm in length; 2.71 ± 0.12 cm in width) but shorter and wider than that of *G. jasminoides* (2.89 ± 0.66 cm in length; 1.5 ± 0.34 cm in width). In addition, the height of the fruit longitudinal ridge of ‘Yinzhan’ (0.18 ± 0.02 cm) is between ‘Jinfu Shuizhi’ (0.28 ± 0.02 cm) and *G. jasminoides* (0.12 ± 0.06 cm).

Habit and branching. The cultivar is an evergreen shrub with a broadly obovate crown (Fig. 1A), reaching 1.9 m in height and 2.5 m × 2.5 m of crown size. The branching is cylinder-shaped with brownish grey color (RHS Brown N200B). In addition, the tender branches have sparse, short hairs.

Leaves. The leaves of ‘Yinzhan’ are opposite or rarely ternate with adaxially grayish olive green (RHS Green NN137B) and abaxially strong yellow green (RHS Green 143B). The leaf size is ~5.0 to 9.5 × 3.2 to 5.0 cm. The leaf apex gradually acuminate, and the

Table 1. Comparison of morphological characters of ‘Yinzhan’ with ‘Jinfu Shuizhi’ and *G. jasminoides*.

Characteristics	<i>G. jasminoides</i> ‘Yinzhan’	<i>G. jasminoides</i> ‘Jinfu Shuizhi’	<i>G. jasminoides</i>
Leaves			
Leaf length (cm)	9.46 ± 0.9 ⁱ b ⁱⁱ	12.2 ± 1.42 c	6.93 ± 2.69 a
Leaf width (cm)	5.07 ± 0.59 b	5.17 ± 0.59 b	3.12 ± 0.27 a
Leaf shape	Ovate	Elliptic	Oblong-lanceolate, obovate-oblong, obovate, oblanceolate, or elliptic
Flowers			
Corolla lobe width (cm)	1.81 ± 0.1 a	2.31 ± 0.27 b	1.95 ± 0.55 a
Corolla lobe length (cm)	2.79 ± 0.13 a	3.69 ± 0.29 b	4.14 ± 0.9 c
Flower shape (fully open)	Tips of petals curl inward to form a cup-shape	Petals flattened or slightly curled	Petals flattened or slightly curled
Fruits			
Fruit shape	Subglobose	Ellipsoid	Ovoid, subglobose, or ellipsoid
Fruit length (cm)	2.01 ± 0.17 a	4.39 ± 0.18 c	2.89 ± 0.66 b
Fruit width (cm)	1.91 ± 0.21 b	2.71 ± 0.12 c	1.5 ± 0.34 a
Fruit longitudinal ridge width (cm)	0.18 ± 0.02 b	0.28 ± 0.02 c	0.12 ± 0.06 a
Fruit color	Vivid reddish orange	Dark reddish orange	Strong orange yellow

ⁱ Values are means ± SD (n = 15).

ⁱⁱ Different letters in the same line indicate significant differences for the same characters among ‘Yinzhan’, ‘Jinfu Shuizhi’, and *G. jasminoides* based on analysis of variance by one-tailed *t* test (*P* < 0.05). Data were analyzed by SPSS 17.0 (IBM, Armonk, NY, USA).

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Fig. 1. Morphological characteristics of *Gardenia jasminoides* 'Yinzhan' (A–F) and 'Jinfu Shuizhi' (G–J). (A) Whole plant of 'Yinzhan'; (B) full-bloom flower of 'Yinzhan'; (C and D) mature fruits of 'Yinzhan'; (E) flower anatomy of 'Yinzhan'; (F) leaf variants of 'Yinzhan'. (G) Whole plant of 'Jinfu Shuizhi'; (H) full-bloom flower of 'Jinfu Shuizhi'; and (I and J) mature fruits of 'Jinfu Shuizhi'.

base is broadly cuneate (Fig. 1F). The secondary veins of 'Yinzhan' are six to eight pairs that are adaxially conspicuous and abaxially prominent.

Flowering. The corolla of 'Yinzhan' is cup-shaped, reaching 5.5 to 6.0 cm in diameter, with five to seven petals, usually six

petals (Fig. 1E). The color of the flower is white (RHS White NN155D).

Cultivation Techniques and Application

'Yinzhan' has the characteristics of drought and barren resistance. Therefore, it can grow

well in barren hilly areas or mountains without irrigation. It prefers moist conditions and is sensitive to saline-alkaline soils. It is best suited to well-drained, loose, fertile red or yellow soils with slightly acidic to neutral pH. It can be widely cultivated in most areas of low mountains, hills, and plateaus in the south of the Yangtze River area. Cultivation can be conducted on cloudy or rainy days in November and February to April with 1.5×2.5 m plant spacing and 30 cm in depth. For the first 3 years after cultivation, weeding and soil loosening should be done twice a year in conjunction with fertilization. To promote the growth of branches and buds, urea fertilizer (total nitrogen $\geq 45.0\%$) is required once in spring for the mature 'Yinzhan'. In late June, compound complete fertilizer should be applied once.

'Yinzhan' can be used for landscape ornamentation and cut flowers for ornamental values. In addition, the fruit of 'Yinzhan' can be used for medicinal and dye-producing purposes (Jin et al. 2023).

Availability

The owner of *G. jasminoides* 'Yinzhan' is Jiangxi Academy of Forestry (Jiangxi, China). Please contact Shaoyong Deng (E-mail: jxforestry@163.com) for inquiries.

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