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A New *Rhododendron* Cultivar: YuRui

Mengxuan Liu, Hao Zhang, and Yuqing Cao
Genomics and Genetic Engineering Laboratory of Ornamental Plants, College of Agriculture and Biotechnology, Zhejiang University, No. 866 Yuhangtang Road, Hangzhou 310058, Zhejiang, China

Bing Liu
Department of Plant Pathology, Washington State University, Pullman, WA 99163, USA

Zhiyue Lv
Haiyan Senzhi Biotechnology Co., Ltd., No. 333, Beituan Village, Haiyan County, Jiaxing 314303, Zhejiang, China

Xiuyun Wang, Yiping Xia, and Hong Zhou
Genomics and Genetic Engineering Laboratory of Ornamental Plants, College of Agriculture and Biotechnology, Zhejiang University, No. 866 Yuhangtang Road, Hangzhou 310058, Zhejiang, China

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Rhododendron represents the largest genus within the Ericaceae family and encompasses a wide array of species distinguished by their vibrant floral displays (Yang et al. 2024; Zhu and Zhou 2023). This genus is celebrated for its remarkable biodiversity, hybridization potential, extensive geographic reach, and ornamental attributes, such as appealing size, form, structure, and flowers, which have solidified its prominent position in the international horticultural market (Rawat et al. 2024; Zhang et al. 2023). They can be evergreen or deciduous shrubs or trees. Among them, *Rhododendron pulchrum* and *Rhododendron mucronatum*, and their various forms, hybrids, and cultivars are noteworthy for their wide use in urban greening in Asian cities (Wang et al. 2021). In general, these evergreen or semievergreen plants exhibit a tall, robust form with hairy and sometimes rough leaves. They bloom from April to May, producing large, funnel-shaped single flowers, occasionally with double petals. Most of the new leaves emerge after flowering (Wang et al. 2018). They like partial shade environments, show strong adaptability, and are easy to cultivate. They can be grown in pots or the ground and serve as excellent rootstocks for grafting other azaleas. Common cultivars such as Zihudie, Yuhudie, and Baihudie are popular in landscaping as flowering shrubs (Fang et al. 2023).

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H.Z. is the corresponding author. E-mail: lilyzhou@zju.edu.cn.

'YuRui' was developed through hybridization between *R.* ×*pulchrum* types. It produces funnel-shaped white flowers tinged with light purple at the edge of the corolla lobes. Pink pistils and stamens create an extraordinarily noticeable and elegant appearance from a distance. This variety has high potential use worldwide in landscaping, home gardening, and cut flowers.

Origin

Controlled crosses of *R.* ×*pulchrum* 'Baihudie' (female parent) × *Rhododendron* 'Miyo-no-Sakae' were made in Apr 2014, and seedlings germinated in 2015. They were potted individually in Mar 2016 at Perennial Flower Nursery in Zhejiang University and accessioned as 14-41, indicating they were seedlings resulting from the 41st cross combination in 2014. In Apr 2018, a few hybrid offspring first flowered, including 'YuRui'. All the seedlings were then transplanted to the commercial nurseries in Haiyan County (Zhejiang Province) in Nov 2018 under partial shade. It was evaluated as 2-19-4, indicating it was planted in field 2, row 19, and plant 4. From 2019 to 2022, we propagated using semihardwood stem cuttings. During this time, commercial nurseries evaluated its propagation and production characteristics, and how well it maintained its ornamental traits. In 2023, we named it 'YuRui' for the appearance of pink stamens, and applied for new plant cultivar rights in China (application ID 20230932).

Description

'YuRui' is an evergreen shrub that grows in an upright manner. The average stature of 'YuRui' stands at 136.83 ± 11.65 cm, which is comparable to the average height of its male parent *Rhododendron* 'Miyo-no-Sakae' at 136.33 ± 11.37 cm, and is notably shorter than its female parent *R.* ×*pulchrum* 'Baihudie', which reaches up to 163.67 ± 10.01 cm (Table 1). 'YuRui' exhibits an annual growth increment of ∼15 to 20 cm. The leaves of 'YuRui' exhibit an elliptical shape, characterized by a rounded apex and a cuneate base. They possess a delicate, papery texture and are edged with a continuous, smooth margin. The leaf length ranges from 4.5 to 5.5 cm, and the width varies from 1.6 to 1.9 cm. The color of leaves and flowers was assessed using the Royal Horticultural Society (RHS) color chart (Royal Horticultural Society 2019). Young leaves emerge with a strong yellow-green coloration (RHS 142A), which is initially pubescent but becomes increasingly smooth as the leaf matures. In its fully developed state, the leaf takes on a moderate olive green (RHS 137B). The petioles, measuring 4 to 6 mm in length, are adorned with a covering of coarse hairs.

The mature flowers of 'YuRui' are funnel-shaped, mirroring the floral structure of its parent species, with a diameter of 7.1 to 7.9 cm and a length of 3.6 to 4.3 cm. The corolla lobes of 'YuRui' feature undulating margins, a trait it shares with 'Miyo-no-Sakae', whereas 'Baihudie' exhibits a less pronounced undulation (Fig. 1). Flower buds are characterized by a strong purplish pink color (RHS 73B) (Fig. 1B), which open to reveal a predominantly white interior (RHS NN155C), and is adorned with very light–purple margins (RHS 76B), a combination likely inherited from its parent plants (Fig. 1A). The dorsal lobes of 'YuRui' span a width of 2.8 to 3.3 cm, with a white base (RHS NN155C) and very light–purple margins (RHS 76B), highlighted by strong yellowish green spots (RHS N144A). This feature distinguishes it from its parents. In contrast, 'Baihudie' has yellowish white dorsal lobes (RHS N155D) with nearly imperceptible spots (Fig. 1C). At the same time, 'Miyo-no-Sakae' features white interiors (RHS NN155C) and strong purplish pink margins (RHS 68B) with strong yellowish green spots (RHS N144A) (Fig. 1D). Each flower contains 10 stamens, with anthers that are light orange (RHS 26C) and filaments that are deep purplish pink (RHS N66C). The pistil, also deep purplish pink (RHS N66C), extends beyond the corolla, featuring strong yellowish green stigmas (RHS N144A). The pedicels, which are strong yellow-green (RHS N144C), measure 7 to 9 mm in length (Fig. 1A). 'YuRui' flowers typically emerge in pairs or small clusters at the stem tips, blooming from early to mid-April, with individual flowers that last 4 to 5 d, similar to *R.* ×*pulchrum* (Wang et al. 2022).

Cultivation

The cultivation of 'YuRui' takes place in Haiyan County (lat. 30.41°N, long. 120.78°E), located at the southern edge of the northern subtropical zone. This region benefits from abundant sunshine and a plentiful water supply, and is characterized by a mild and consistently humid climate throughout the year. Because of its proximity to Hangzhou Bay,

Table 1. Morphological traits of *Rhododendron* ×*pulchrum* 'Baihudie', *Rhododendron* 'Miyo-no-Sakae', and *Rhododendron* 'YuRui'.

Trait	*R.*×*pulchrum* Baihudie	*Rhododendron* Miyo-no-Sakae	*Rhododendron* YuRui
Plant height (cm)	163.67 ± 10.01 a	136.33 ± 11.37 b	136.83 ± 11.65 b
Leaf length (mm)	43.59 ± 4.16 a	31.29 ± 2.32 b	42.79 ± 1.58 a
Leaf width (mm)	13.77 ± 2.11 a	14.80 ± 1.17 b	17.56 ± 1.11 b
Leaf length/width	3.23 ± 0.55 b	2.12 ± 0.15 c	2.44 ± 0.15 a
Leaf color	RHS 137B	RHS 137A	RHS 137B
Corolla diameter (mm)	73.89 ± 1.04 a	74.99 ± 4.61 a	75.16 ± 2.57 a
Corolla length (mm)	39.53 ± 2.59 a	40.41 ± 5.48 a	39.81 ± 2.28 a
Dorsal lobe width (mm)	31.36 ± 0.99 b	36.22 ± 3.49 a	30.76 ± 1.80 b
Corolla lobe	Weak undulation of margin	Undulation of margin	Undulation of margin
Flower shape	Funnel	Funnel	Funnel
Petiole length (mm)	6.94 ± 1.32 b	6.36 ± 1.02 a	5.005 ± 0.71 a
Stamen no.	10	10	10
Pistil/stamens in length	>1	>1	>1
Flower color	RHS N155D	RHS 68B	RHS NN155C
Dorsal lobe color	RHS N155D	RHS N155C at base, RHS 68B at margins	RHS NN155C at base, RHS 76B at margins
Spots on the dorsal lobe	Almost invisible	RHS N144A	RHS N144A
Flower period	5–20 Apr	15 Apr–5 May	5–20 Apr

RHS = Royal Horticultural Society. Lowercase letters indicate significant differences, $P < 0.05$.

this region avoids extreme heat in the summer and severe cold in the winter.

For optimal cutting propagation, high-humidity conditions (>90%) are preferred, with temperatures maintained between 30 and 35 °C and a soil moisture content ranging from 40% to 60%. Propagation uses semihardened branches from the current year's growth of the mother plant, which are cut into sections measuring 3 to 5 cm in length, each retaining two to three halved top leaves. The propagation medium is a mix of peat and perlite in a 1:1 ratio, sterilized with a 0.5% solution of potassium permanganate. The cuttings are placed in a 72-hole tray, inserting them to a depth of about one half to two thirds of their length. After watering, the tray is covered with a film to ensure proper ventilation. A 70% to 80% shadecloth is used to protect the plants from direct sunlight. If temperatures exceed 35 °C, area is cooled by spraying it down. After a period of 3 to 4 weeks under the specified propagation conditions, ~85% of the cuttings are expected to establish roots successfully. After the cuttings have developed 3- to 5-cm roots, they are transplanted into 10- to 12-cm pots. The plant flourishes in soil with a pH of 5.5 to 6.5 that is well drained, loose, and consistently moist. Fertilizer is applied during the spring and autumn growth periods. The plant is pruned after it has finished flowering and before the onset of the rainy season (Kierpiec-Baran et al. 2014; Liu et al. 2024).

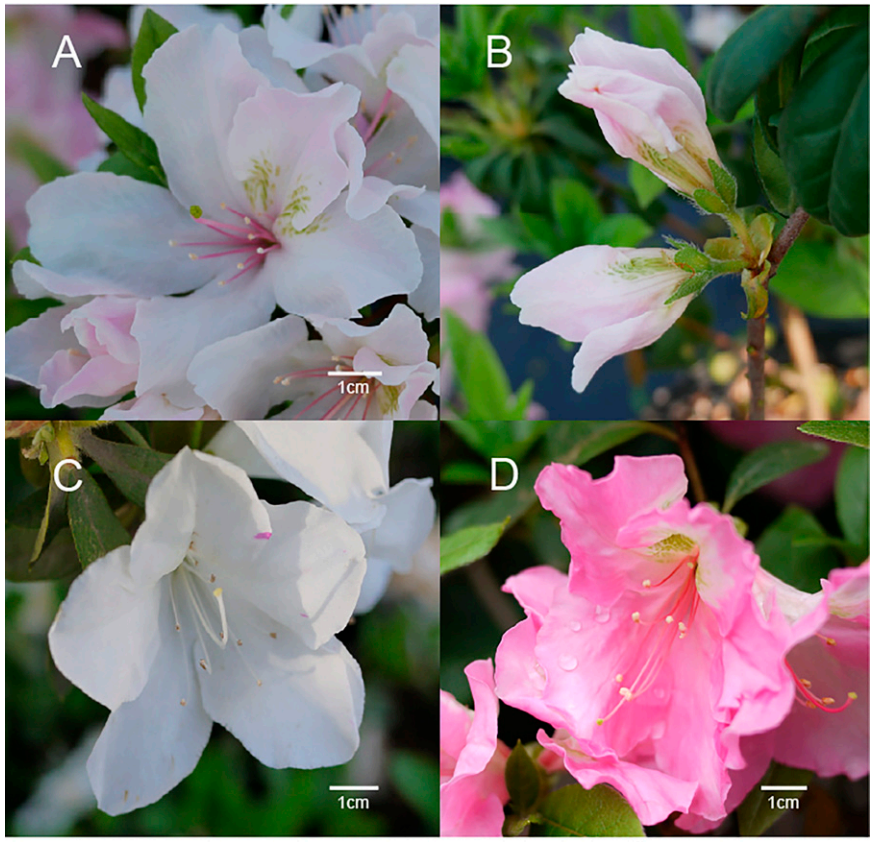

Fig. 1. The characteristics of 'YuRui', *Rhododendron* ×*pulchrum* 'Baihudie' (female parent) and *Rhododendron* 'Miyo-no-Sakae' (male parent). (**A**) Single flower characteristics of 'YuRui' with a primarily white (RHS NN155C) (Royal Horticultural Society 2019) mature flower that is light purple (RHS 76B) at the edges. (**B**) 'YuRui' buds are waiting to open. (**C**) Single flower characteristics of *R.* ×*pulchrum* 'Baihudie' with a primarily white (RHS N55D) mature flower without color around the edges. (**D**) Single flower characteristics of *Rhododendron* 'Miyo-no-Sakae' with a strong purplish pink (RHS 68B) mature flower without color around the edges.

Availability

Rhododendron 'YuRui' was developed jointly by Zhejiang University and Haiyan Senzhi Biotechnology Co., Ltd. It is available for research or trials. Limited quantities of unrooted cuttings are commercially available for the 2025 crop season. For more information, please contact Hong Zhou (lilyzhou@zju.edu.cn). US plant patent and European Union Community plant variety rights will be sought.

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