

Research on the New Camellia Variety "Four Seasons Treasure" and Its Applications

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ABSTRACT

This research paper details the development and characteristics of a new camellia cultivar, 'Four Seasons Treasure'. Bred through artificial hybridization using the robust red camellia 'Jinpan Lizhi' as the female parent and the unique Camellia azalea Wei as the male parent, this new variety exhibits desirable and stable traits. 'Four Seasons Treasure' is an evergreen shrub with a semi-open form, obovate leaves, and medium-sized, double-petaled pink flowers. A key characteristic is its extended flowering period, beginning in July and lasting for approximately six months, which helps bridge the summer-autumn blooming gap common in traditional camellias. The paper describes the cultivar's morphological characteristics, outlines optimal cultivation techniques for both potted and ground planting, and discusses its application potential in urban greening and Chinese flower arrangement. The development of 'Four Seasons Treasure' represents a significant step in Sichuan camellia breeding, contributing to efforts aimed at creating more adaptable, long-blooming varieties for wider use in urban landscapes.

KEYWORDS

Camellia; 'Four Seasons Treasure'; New Variety Breeding; Camellia azalea Wei; Ornamental Plant; Urban Greening

1. INTRODUCTION

China is the home of camellia. The vast majority of its native species are naturally distributed in Yunnan, Sichuan, Guizhou, Guangxi, Guangdong, Fujian, Hubei, Hunan, Zhejiang, Hainan, Taiwan, and Hong Kong. Camellia is a world-famous flower and one of my country's ten famous flowers. Based on existing Chinese camellia cultivars and the rules and conventions of the international camellia community, Chinese camellia varieties are divided into five major groups: red camellia, cloud camellia, golden camellia, hybrids, and camellia sasanqua. Sichuan camellia, a key member of the red camellia group, was designated the city flower of Chongqing in July 1986. As early as 1,800 years ago, during the Three Kingdoms period (1644-1911), Zhang Ling's book "Flower Classic" used a "Nine Grades and Nine Fates" scale to evaluate many cultivated ornamental flowers and trees, with camellia being included in the "Seventh Grade and Three Fates" category. First, Sichuan camellia had already entered the stage of cultivation from its wild state. Second, Sichuan camellia had become a recognized famous flower at the time. Third, the history of Sichuan camellia cultivation mirrors the history of camellia cultivation in China, dating back at least 1,800 years. In the 300 years since camellias were introduced to Western countries in the 18th century, over 15,000 camellia varieties have been successfully cultivated abroad. Compared to these, camellia breeding in my country has lagged behind. Over the past 30 years, the cultivation of new camellia varieties has continued to advance, with over 1,000 new varieties currently in China. Chongqing Nanshan Botanical Garden

currently cultivates over 500 species (including varieties) of camellia and preserves over 150 traditional Sichuan camellia varieties.

Camellia azalea Wei, also known as azalea tea, four-season tea, four-season azalea camellia, or "false big-headed tea," has flowers resembling camellia and azalea, earning it the nickname "the giant panda of the plant kingdom." Camellia azalea Wei plants grow 1–2.5 meters tall, currently reaching up to 5 meters. They thrive in shade or semi-shade conditions and have a long flowering period, blooming year-round under suitable conditions. While ordinary camellias typically bloom from October to April, Camellia azalea Wei fills the gap between summer and autumn, offering significant advantages. Camellia azalea Wei is primarily found in Yunnan, Guangxi, Guangdong, and Sichuan, and its wild population is scarce. These advantages make Camellia azalea Wei an excellent parent material for camellia breeding. This article independently develops a new variety, "Four Seasons Treasure," using Camellia azalea Wei as a parent. The new variety, "Four Seasons Treasure," is described, along with its morphological characteristics, cultivation, care, and application, aiming to contribute to new research in the selection and breeding of new Sichuan camellia varieties in Chongqing.

2. BREEDING AND CHARACTERISTICS OF THE NEW SICHUAN CAMELLIA VARIETY "FOUR SEASONS TREASURE"

2.1. Breeding Techniques

The robust red Camellia cultivar 'Jinpan Lizhi' was selected as the female parent, and the Camellia genus's original species, *Camellia edulis*, was used as the male parent. Hybrid seedlings were obtained through conventional artificial hybridization methods, including emasculation, bagging, and pollination. After flowering, observation and comparison revealed distinct characteristics of this variety: semi-open plants, obovate leaves with a tapering tip and finely serrated margins, a yellow-green leaf surface, and single-color flowers with a dominant pink inner petal color. The flowers are medium-sized, double-petaled, with obovate petals and three-parted stigmas. The male and female stamens are nearly equal in height. Flowering begins in July and lasts for six months. Cultivation observations confirmed consistent and stable characteristics of the individual plant and the propagated plants, resulting in the variety being named 'Four Seasons Treasure'.



Figure 1. Shows the front of the lychee flower on the mother's principal plate



Figure 2. Shows the front of the flowers of the father's Rhododendron Camellia

'Four Seasons Treasure' is an evergreen shrub with a semi-open plant. Its young shoots are yellow-green, with a solitary terminal bud and reddish-brown branches. The leaves are medium dense, arranged in a nearly spiral pattern, and are medium in size, 7.5-11.3 cm long and 2.9-4.2 cm wide. They are medium-textured and thick, obovate, with no hairs on the underside, moderately visible veins, and a medium gloss. The leaves are yellow-green in color, flat in cross section, with finely serrated margins, cuneate leaf bases, and acuminate tips. The petioles are short, 0.8-1.1 cm long. Flower buds are axillary and terminal. The sepals are yellow-green or green, ovate, and arranged in a shingle-like pattern. The flowers are medium-sized, 7.0-9.0 cm in diameter. The petals are double, medium-thick, slightly concave at the apex, entire at the margin, obovate, moderately wrinkled, and the veins are visible. The flowers are monochromatic, with the inner petals primarily pink. There are no stamens, with petalized anthers and filaments. The stigma is deeply trilobed, and the stamens and pistils are nearly equal in height. It blooms multiple times a year, with a late, long flowering period. In Guangdong, flowering begins in July, peaks in October and November, and ends in December. In Chongqing, Zhejiang, and Shaanxi, flowering is generally 25-35 days later.



Figure 3. Shows the front of the Four Seasons Treasure flower



Figure 4. Side view of the Four Seasons Treasure Flower



Figure 5. Four Seasons Treasure Leaves



Figure 6. The shape of the Four Seasons Treasure Tree

3. SUITABLE ENVIRONMENT AND CULTIVATION TECHNIQUES

3.1. Suitable Environment

Planting Area: Suitable for cultivation in Southwest China, East China, and South China. It can grow normally without shade in summer and can grow and bloom normally under shade in Zhejiang Province in winter.

Planting Environment: Fertile, loose, well-drained acidic soil is preferred. Optimal growing environment: Temperature: 20-30°C.

3.2. Cultivation Techniques

Potted Plants: Select slightly acidic, loose, and breathable red soil. Avoid waterlogging. Fertilize primarily with organic fertilizers, applying small amounts frequently. During the shoot-forming season, you can supplement with compound fertilizers. Avoid fertilizing during hot summers. Keep the potting soil moist and loose.

Ground Planting: The planting site should be well-drained, with the soil ball elevated above the ground and free of waterlogging. Fertilize primarily with organic fertilizers, applying small amounts frequently. During the shoot-forming season, you can supplement with compound fertilizers. Avoid fertilizing during hot summers. Water thoroughly during dry seasons to prevent dehydration. Young seedlings require shade. 3.2.3 Reproduction method: Asexual reproduction methods such as grafting and cutting can be used for propagation.

4. PROMOTION AND APPLICATION

Mr. Guo Moruo once praised the flower, saying, "Everyone says peonies are beautiful, but I say they are inferior to tea." Camellias have been widely cultivated since the Tang and Song dynasties. They grace imperial gardens, private courtyards, and ancient temples, often scattered along pavilions and ponds, along flower corridors and curved railings, or nestled among thin rockery and lattice windows, cultivating a unique camellia culture. As people's appreciation of camellias grew, their appreciation for their appearance evolved to include symbolic meaning. For example, Lu You's poem "Ode to Camellia" reads, "In the East Garden, rain and wind lash together, leaving peach and plum trees scattered and swept to the ground. Only camellias endure, and a few red branches bloom amidst the green bushes." Through poetic praise, camellia has been endowed with the resilient character of defying frost and snow and maintaining its authenticity.

Camellias are commonly used in urban landscaping, as potted plants and bonsai, and in flower arrangement. They can also be formed into hedges or flower walls, creating three-dimensional landscapes that are also beautiful. Small shrub camellias, known for their slow growth, beautiful shape, and vibrant flowers, are suitable for potted plants.

"Treasure of the Four Seasons" boasts a beautiful shape, large, vibrant flowers, and a peak bloom period of October and November. When used in urban greening, they can be planted singly at key landscape locations to highlight their individual beauty; they can also be planted in clusters of 2-5 to create a grouped beauty; and they can be planted in rows or rings to create a majestic and rhythmic atmosphere. Furthermore, in addition to ensuring the diversity and layering of small landscape communities, the planting of these communities should be coordinated based on the flowering periods of the various plants, creating a vibrant, seasonal spectacle of flowers. "Four Seasons Treasures" can be used in Chinese flower arrangement, fully embodying Chinese aesthetics. Chinese flower arrangement emphasizes the beauty of lines and artistic conception. The branches, leaves, and vibrant flowers of "Four Seasons Treasures" perfectly embody this aesthetic, creating a poetic and picturesque atmosphere and adding to the cultural ambiance of any interior. When arranging flowers, it's important to maintain appropriate temperature (20°C to 25°C), humidity (above 80%), and light conditions. Water the substrate regularly to keep it moist, but avoid excessive moisture to prevent rot. Regular ventilation can also reduce the growth of pathogens.

5. PROSPECTS FOR SICHUAN CAMELLIA BREEDING

Currently, as Chongqing's city flower, Sichuan Camellia varieties are primarily planted in botanical gardens and parks. However, they are rarely seen in urban public green spaces or along road greenbelts. This is due to factors such as its relatively poor tolerance to environmental conditions, high requirements for temperature, soil, and light, and a single flowering season. These factors have severely hindered the promotion and application of Chongqing's city flower, Sichuan Camellia, in urban landscapes. To promote the city flower, there is an urgent need to breed a number of Sichuan Camellia varieties with strong adaptability and a long flowering period. In recent years, the camellia breeding team of Nanshan Botanical Garden in Chongqing and the camellia breeding team of Palm Valley in Zhaoqing, Guangdong have jointly applied for a key project, using new heat-resistant and sun-resistant germplasm resources to carry out systematic hybridization with traditional camellias at home and abroad, and expect to obtain a series of four-season camellia varieties with high resistance and multi-season flowering. These varieties have the advantages of heat resistance, sun resistance, long flowering period, and diverse flower colors and shapes. They have been trial-planted and observed in Chongqing, and are growing well. If the trial planting of these varieties is successful, it will provide a very important scientific basis for the introduction of new germplasm resources for hybrid breeding and improvement of Chongqing Huachuan Camellia.

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