

SASA WOODRUFF/BOISE STATE PUBLIC RADIO PHOTOS

Firefly petunia is a beautiful plant by day and unveils mesmerizing luminescence after dusk.

# Firefly petunia

**Q**uestion: I recently read about a new “glow in the dark” petunia. How is this possible?

**A**nswer: You may think you’ve fallen down a rabbit hole into Wonderland when you first see a firefly petunia – but these glow-in-the-dark flowers are real. These magical-appearing plants come from years of experimentation by scientists. A beautiful plant by day, it unveils mesmerizing luminescence after dusk.

In the daytime, there’s nothing remarkable about it – just an ordinary, white-flowered petunia. But once the sun goes down, the difference is unmistakable. The petals slowly start lighting up with a greenish, white glow. Not “glows” in the way that we usually use the word to describe how white flowers reflect moonlight.

These flowers don’t reflect the light. The leaves and

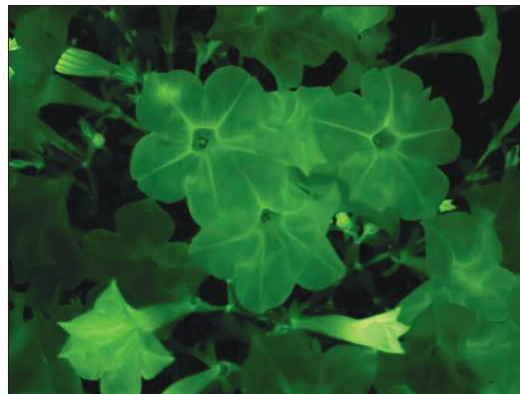


**Chris Rusch**  
Master Gardener

flowers of this plant have been bred to emit the light.

Plants have never quite cracked the evolutionary riddle that allows insects, fish and fungi to glow. But researchers have now found a way to make plants radiate green light thanks to a few genes from a type of bioluminescent mushroom called *Neonothopanus nambi*.

The secret behind the plant’s ability to glow is the addition of the genetic material from this mushroom. Fungi glow because of a natural reaction between enzymes and chemicals called luciferins, including a type called caffeic acid that is found in all plants.



By inserting the mushroom genes into the petunia, researchers made it possible for the plant to produce enzymes that can convert caffeic acid into the light-emitting molecule luciferin and then recycle it back into caffeic acid – enabling sustained bioluminescence.

While the firefly petunia is USDA-approved, there is still some concern surrounding

its safety since it is genetically engineered. The environmental risk of luminescent petunias depends on how widely these are grown. The concerns include the possible disruption to insect behavior due to the unnatural light they emit. These concerns were addressed in the application to the USDA, stating that these plants are primarily grown in private

yards or indoors. Also, this type of petunia is not native to North America and is not considered an invasive species. Therefore, it was concluded that the chances of the modified genes spreading into native plants and disrupting ecosystems should be minimal.

The firefly petunia can be grown in pots, baskets, or gardens, quickly attaining about 8 to 10 inches in size with abundant white flowers. Promoting vigorous growth will produce a brighter glow. Here’s how:

Most petunia varieties like full sun, meaning at least six hours of direct sunlight on most days. In the heat of summer, partial shade (especially from the strong afternoon sun) will help to keep them refreshed and blooming better. Petunias prefer a light, fertile soil with good drainage and a slightly

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# FIREFLY

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acidic pH.

Plant petunias outside after the threat of frost has passed, as the soil must be warm and workable. Plants should be spaced roughly a foot apart. Like many flowering annuals, petunias don't like to be dry for long periods. In general, it's sufficient to soak your flower beds weekly with 1 to 2 inches of water when you don't have rainfall.

Additionally, some spreading types of petunias and petunias in pots typically need more frequent and deep watering. Try not to let the soil dry out more than 2 inches down. In contrast, they don't like to sit in soggy soil, which can rot their roots. In addition, too much water can result in leggy plants

with few flowers.

Feed petunias at the time of planting with a balanced fertilizer. It's also helpful to work some compost into the soil. Then, starting in July and continuing until the plants decline in the fall, fertilize every two to three weeks with a liquid fertilizer made for flowering plants. When planting young petunias, pinch back the stems to encourage more branching and a fuller plant.

Petunias can be propagated via stem cuttings. Gardeners often do this if they want to save a particular variety – especially one that's hard to find at nurseries – and cultivate it indoors over winter until it can be planted outdoors after frost ceases in the spring. Take the cutting from a healthy plant in the fall prior to any frost.

Whether as a thoughtful gift or a unique addition to your garden, the Firefly petunia is sure to ignite feelings of wonder and amazement. The magic of this bioluminescent plant will spark curiosity and interest in nature and science, especially in children. By hands-on exploration of a living plant designed to emit light, young learners are introduced to the stimulating world of biotechnology.

The Firefly petunia is more than a visual delight; it's a living example of the marvels of scientific achievement.

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*Do you have a gardening question? Please email, call, or visit the Douglas County Master Gardener Plant Clinic at [douglasmg@oregonstate.edu](mailto:douglasmg@oregonstate.edu), 541-672-4461, or 1134 S.E. Douglas Ave., Roseburg*