

***Pseudomonas syringae* strain ESC-10 (006441)**

***Pseudomonas syringae* strain ESC-11 (006451)**

Fact Sheet

Summary

These two strains of naturally occurring bacteria are extremely similar in their composition and characteristics. They are used for preventing various fungal diseases that occur after harvest on apples, pears, and certain citrus fruits. Based on extensive testing and the methods used in applying the bacteria to the fruit, these bacterial strains are not expected to harm either humans or the environment when used in pesticide products. Furthermore, these fungicides have the potential to decrease the use of other, more toxic fungicides that they may replace.

I. Description of the Active Ingredient

Pseudomonas syringae strain ESC-10 and *Pseudomonas syringae* strain ESC-11 are natural strains of bacteria that occur on many kinds of plants throughout the world. They were originally isolated and identified from apples. They are applied to certain fruits before storage in order to protect the fruits from several fungal diseases. Although the exact method of disease control is unknown, these harmless bacteria probably outcompete the fungi for space and nutrients on the fruit, thereby preventing the fruit from rotting before it can be used.

II. Use Sites, Target Pests, and Application Methods

- **Use sites:** Pesticide products are applied to apples, pears, lemons, oranges, or grapefruit after the fruit is harvested.
- **Target pests:** Various molds and rots that attack the indicated fruits during storage.
- **Application methods:** After the fruit is harvested and cleaned, its surface is exposed to a solution containing the ESC-10 or ESC-11 bacterium. The pesticide applicator can apply the solution by spraying, or by dipping the fruit into the solution. These applications are considered indoor uses, since they take place in enclosed areas.

III. Assessing Risks to Human Health

Whether or not a substance poses a risk to humans or other organisms depends on two factors: how toxic the substance is, and how much of it an organism is exposed to. Therefore, the EPA considers both toxicity and exposure data in determining whether to approve a pesticide for use

Various studies show that *Pseudomonas syringae* strain ESC-10 and *Pseudomonas syringae* strain ESC-11 do not cause adverse effects in mammals when the bacteria are ingested, inhaled, or put on skin. Furthermore, the bacteria cannot survive at

temperatures above 32° C (90° F), and therefore cannot grow in humans or birds, whose body temperatures are considerably higher. For example, normal human body temperature is 37° C, (98.6° F). No health risks to humans are expected from use of these bacterial strains in pesticide products when label directions are followed.

IV. Assessing Risks to the Environment

These bacteria are not expected to cause harm to the environment. Because the fruits are treated in an enclosed area, exposures to the environment, including wildlife, soil, and water, are not expected.

V. Regulatory Information

Pseudomonas syringae strains ESC-10 and ESC-11 were initially registered (licensed for sale and distribution) in 1995. As of April 2000, there were 3 end products containing ESC-10 and 2 end products containing ESC-11.

VI. Producer Information

EcoScience Produce Systems Division
PO Box 3228
Orlando, FL 32802-3228

VII. VII. Additional Contact Information:

[Ombudsman, Biopesticides and Pollution Prevention Division](#) (7511P)
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460