

Tech Note

Using Serenade Optimum for fire blight control in apples and pears.



WHAT IS SERENADE?

Serenade is an optimised fermentation product of a unique microbial strain: the QST713 strain of *Bacillus subtilis*.

WHY IS SERENADE DIFFERENT TO OTHER BIOLOGICAL PRODUCTS?

Serenade outperforms other leading *Bacillus* strains. The unique strain in Serenade products produces patented biological chemistry, responsible for its disease control activity.

- **Importance of the strain:** There is a tremendous difference between *Bacillus* strains. QST713 is unique and different from other *Bacillus* in the types and amounts of biological chemistry that it can produce.
- **Importance of the production expertise:** Our highly optimised and well controlled fermentation process results in a consistent product. Each batch of Serenade contains a standardised viable spore count of the QST713 strain of *Bacillus subtilis*, as well as standardised levels of biological chemistry. The production method has been optimised to ensure that our strain produces the compounds that make up our unique biological chemistry at the right levels to ensure efficacy against a wide range of crop diseases.

SERENADE OPTIMUM MODE OF ACTION ON FIRE BLIGHT

Unlike other biological products, Serenade Opti has 2 modes of action against fire blight:

1. **Direct Contact:** due to antibacterial biological chemistry
 - Difficidin group: inhibition of cell division, protein and cell wall synthesis
 - Macrolactin group: Blocks protein synthesis and cell division

2. Antagonistic colonisation:

- Niche exclusion of bacteria. QST713 is able to grow and colonise the flower blossom and exclude growth of *Erwinia**
- *In situ* antibacterial biological chemistry production

IS SERENADE OPTIMUM STABLE?

YES. The WG formulations of QST713 have a shelf life of 5 years from date of manufacture when stored correctly, i.e. cool dry conditions. Temperature extremes should be avoided. There is no need to refrigerate the product.

WILL SERENADE OPTIMUM GIVE THE SAME LEVEL OF CONTROL AS STREPTOMYCIN?

NO. Because of its systemic nature, streptomycin remains the benchmark for fire blight control.

If streptomycin is a permitted input in your production system, then Serenade should be used in a programmed approach with streptomycin, and used in lower pressure situations as a preventative application only.

COMPATIBILITY – WHAT CAN I MIX WITH SERENADE?

Serenade is extremely robust and can be used in a tank mixed with most commonly used fungicides and insecticides. This includes streptomycin. There is no need to apply it separately. This makes it an extremely versatile option for disease control.

LENGTH OF ACTIVITY

Peak colonisation occurs 24 hours after application. Thereafter, if required, we recommend reapplying after 7 days under low pressure, and 3 days under higher disease pressure (See next page).

* Flower colonisation with Serenade Optimum will only occur on the flowers of apples and pears.



Directions for use

Serenade should only be used preventatively. It has no curative activity.

Timing will depend on weather conditions, risk of infection and stage of bloom, i.e. more bloom equals greater risk.

In general terms – if the risk of fire blight infection is extreme – streptomycin should be used as the first choice product.



Rate

- Apply Serenade at 1.25 – 2.5 kg/ha using a water rate that achieves complete coverage.
- The addition of an adjuvant to ensure complete coverage of flowers is essential.

We recommend

EARLY BLOOM LOWER RISK	Apply Serenade from early flowering and repeat at 3 – 7 day intervals as a programmed application to maintain colonisation of flowers. This can be tank mixed with a fungicide spray if required. If forecast infection risk becomes extreme, apply streptomycin according to label directions.
LATER BLOOM HIGHER RISK	If forecast conditions are for an extreme event, apply streptomycin as a first application as per label directions. Follow up with Serenade 3 to 7 days later, depending on disease risk.
POST FLOWER	Apply at 7 day intervals to protect from fire blight infection to damaged foliage.

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