

## Using Serenade® Optimum in Grapes

### Frequently asked questions

#### 1. Does Serenade Optimum colonize the space so Botrytis cannot infect?

- No. Serenade Optimum acts as a contact fungicide. It does contain live resting endospores, but these do not survive in UV light for very long. However these endospores will survive when applied to soil and will colonize plant roots.
- Serenade is manufactured using fermentation and the strain of *Bacillus subtilis* is named QST713. In this process, a number of Biological compounds called “Lipopeptides” are produced. It is these compounds (Agrostatins, Iturins, Surfactins) that provide contact protectant activity. Contact fungal control derives from synergistic combination of these 3 classes of Lipopeptide chemistry. Lipopeptides disrupt the cell membrane, the cell wall is penetrated, causing the pathogen to die.
- It is the level of these Lipopeptides produced from the QST713 strain that make Serenade Max unique from other biological products.
- Additionally in the fermentation process natural anti – bacterial compounds (Difficidins and Marcolactins) are also produced – these have contact activity against bacterial pathogens (eg; sour rots).
- Serenade also can stimulate plant defense – natural compounds produce an induced systemic response that switches on the plants natural defence system.

#### 2. Are CFU's (colony forming units) a good indicator of efficacy?

- Regulators require active ingredient on the label. The only way to do this is to express as CFU's.
- In Serenade Optimum – % dry weight of the endospores in the dried product is reported. However some product express as a wet weight, so a direct comparison is difficult.
- As Serenade does not rely on the live endospores to colonize space, a comparison cannot be made.

#### 3. Does Serenade Optimum have any curative activity?

- No, Serenade Max is contact only and should be used as a protectant fungicide/bactericide.

#### 4. How often should it be applied?

- Depending on weather conditions and period until harvest, a weekly cycle can be used. (5-7 days). After a significant rainfall, reapplying immediately after would be beneficial to protect against any other predicted infection periods.
- Apply Serenade Optimum as close as possible prior to any predicted infection period.

#### 5. What Rates should be used?

- Use 125 – 200 g/100 L (1.25 – 2 kg/ha) water as a full dilute to the point of run off application. If concentrate spraying adjust the rate accordingly. Generally the lower rate is sufficient as a protectant application. Use the higher rate in high disease pressure situations.

#### 6. Is there a risk of Resistance?

- Serenade Optimum is designated by FRAC (Code 44) as novel and low risk of resistance development.
- No resistance reported. Assumed to be low risk based on mode of action of non-specific membrane disruption.

#### 7. What Water rate should be used?

- Use a water rate that will ensure complete coverage for the canopy you have. Correct sprayer set up for the canopy is also of paramount importance to ensure application is effective.

#### 8. Can Surfactants be used?

- Yes, it is recommended to use adjuvants such as Du Wett or Bond Xtra to maximize coverage on bunches. We recommend speaking to a merchant rep for advice on getting the best from these or any adjuvants.

#### 9. Does Serenade Optimum control powdery mildew?

- Serenade Optimum has useful suppression activity against powdery mildew. However if targeting powdery mildew exclusively it is recommended to tank mix Serenade Optimum with a specific powdery mildew fungicide.

[www.cropscience.bayer.co.nz](http://www.cropscience.bayer.co.nz)

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For more information on Serenade Optimum, contact:

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