



# Users' guide for Serenade® Prime in tomatoes



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prime

## The biological link between soil and plant root systems.

Serenade® Prime contains the beneficial bacteria *Bacillus subtilis* (also known as *Bacillus amyloliquefaciens*) strain QST713 delivered as viable dormant spores. This type of beneficial bacteria lives on plant root surfaces and in the soil around the plant root system in a zone called the rhizosphere. QST713 is an extremely vigorous strain of this bacteria which colonises roots very rapidly and tends to dominate on young plant root surfaces. When the bacterial colonies on the roots are active they function as a dynamic biological link between the soil and the plant roots.

This means that resources required for growth such as nutrients and water become more available, particularly during the early growth stages of the crop. Serenade Prime has consistently resulted in significant benefits to plant establishment and early growth across a range of crops. In tomatoes, better fruit quality and shelf life are often evident after harvest.

Serenade Prime is designed to be applied early as a colonising agent to kick-start the soil/root/microbe inter-relationships in the rhizosphere to a highly activated state early in the crop.

## NUTRIENT UPTAKE CAPABILITIES

Colonising the soil-root interface with QST713 beneficial bacteria provides a dynamic biological link which enables better access to nutrients from the surrounding soil. Applying Serenade Prime from the start of the crop allows this specifically selected strain of *Bacillus subtilis* to prime the young plants for efficient utilisation of key nutrients early in crop establishment.

The live microbial colonies around fine roots and root hairs are fundamental to the complex uptake reactions between the roots and the nutrients in the soil. Serenade Prime is a very dominant colonising strain and consistently assists in improved nutrient uptake. The benefits across a range of crops are shown as better establishment and early growth continuing through to positive fruit quality and uniformity differences throughout the crop cycle.



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## Serenade Prime at a glance

<b>Active organism</b>	<i>Bacillus subtilis</i> ( <i>Bacillus amyloliquefaciens</i> ) strain QST713
<b>Formulation</b>	A suspension concentrate formulation of dormant viable <i>B.subtilis</i> strain QST713 spores plus associated biochemicals
<b>Application target</b>	Apply to the soil targeting the root zone
<b>Application method</b>	Plant hole drench methods, in-furrow band sprays, trickle irrigation injections
<b>Application placement</b>	Serenade Prime needs to be applied within about 13 cm of actively growing roots for spore germination and colonisation to occur
<b>Irrigation</b>	Care should be taken not to wash the bacterial spores out of the root zone for one to two days after application
<b>Timing</b>	Apply the first application at or about planting/transplanting. One or two repeat applications are practical options to “top-up” the beneficial effect on new roots in the crop
<b>Interval</b>	Retreat at 3-4 week intervals
<b>Rate</b>	Apply 5-7 L/ha
<b>Speed of effect</b>	Complete in 2-3 days
<b>UV stability</b>	Generally very stable
<b>Compatibility</b>	Compatible with most pesticides and fertiliser products
<b>Withholding period</b>	Not required when used as directed

### CRITICAL FACTORS TO GET RESULTS

#### Timing

Serenade Prime is most beneficial to plants when new root tissue is colonised very early after formation. Consequently it is best used to prime plants for EARLY GROWTH. In tomatoes, the first in-field application at planting/transplanting is the most important. Repeat at 3-4 week intervals

#### Placement

Do not apply outside the root zone. If microbes do not sense the biochemical root exudates which are the signal for root colonisation, then they will not be attracted to root structures and successful colonisation will not occur