



# Users' guide for Serenade<sup>®</sup> Prime in baby-leaf salad crops

## The biological link between soil and plant root systems

**Serenade Prime** is 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 very rapidly and tends to dominate 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.

**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 the highly effective QST713 strain of *Bacillus subtilis* to ameliorate the soil resources in the vicinity of the plant roots and set the plants up for early establishment and growth.

**Serenade Prime** is an extremely dominant colonising strain and consistently assists in providing measurable differences in nutrient uptake. The benefits generally show as better establishment and early growth continuing through to improved crop quality and uniformity at harvest.



# SERENADE<sup>®</sup> prime

## 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> QST713 spores plus associated biochemicals
<b>Application target</b>	Apply to the soil targeting the root zone
<b>Application method</b>	Broadcast sprays over beds, irrigation injections
<b>Application placement</b>	Serenade Prime needs to be placed within about 13 cm of actively growing roots for germination 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 at or soon after planting. A repeat application to "top-up" the beneficial effect on the crop may be feasible in multiple cut situations but may be unnecessary otherwise
<b>Interval</b>	Retreat after 3-4 weeks if feasible
<b>Rate</b>	Apply 5-7 L/ha
<b>Speed of effect</b>	Complete within 2-3 days
<b>UV Stability</b>	Generally very stable
<b>Compability</b>	Compatible with most pesticides and fertiliser products
<b>Withholding period</b>	Not required when used as directed

## CRITICAL FACTORS TO GET RESULTS

<b>Timing</b>	<b>Serenade Prime</b> 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. For baby leaf crops, the first in-field application just after planting is the most important. Repeat after 3-4 weeks if application is feasible e.g. multiple cut crops.
<b>Placement</b>	Do not apply outside 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.