



# Users' guide for Serenade® Prime in Potatoes



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prime

## 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 early in the crop. Serenade Prime has consistently resulted in significant benefits to plant establishment and early growth. In potatoes, better size grading and skin finish are often evident at 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 *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 dominant coloniser strain and consistently gives improved nutrient uptake. The benefits show as better establishment and early growth often continuing through to tuber quality and uniformity differences at the end of 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>	In-furrow bands sprays, irrigation injections, band sprays
<b>Application placement</b>	Serenade Prime needs to be within about 13 cm of actively growing root 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>	First application at or about planting/transplanting. If application methods are available, a repeat application may be a practical option to “top-up” the beneficial effect on new roots in the crop
<b>Interval</b>	Retreat at about 3-4 weeks if methods are available
<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>Compatibility</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>	Serenade Prime benefits plants when new root tissue is colonised very early after formation. Consequently it is best used to prime plants for EARLY GROWTH. In potatoes the initial in-field application at planting/transplanting is the most important. Repeat after about 3-4 weeks if possible
<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