Users' guide for Serenade® Prime in Cucurbits

SERENADE® prime

The biological link between soil and plant root systems.

Serenade® Prime is the beneficial bacteria *Bacillus subtilis* (also known as *Bacillus amyloliquifaciens*) 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 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 early in the crop. Serenade Prime has consistently resulted in significant benefits to plant establishment and early growth. In cucurbits, improved overall yields, more uniform sizing, and brix and taste differences 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 fruit quality and uniformity differences at the end of the crop cycle.

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SERENADE® prime

Serenade Prime at a glance

Active organism	*Bacillus subtilis (Bacillus amyloliquefaciens)* strain QST713
Formulation	A suspension concentrate formulation of dormant viable *B.subtilis* strain QST713 spores plus associated biochemicals
Application target	Apply to the soil targeting the root zone
Application method	Plant hole drench, in-furrow bands sprays, irrigation injections, band sprays
Application placement	Serenade Prime needs to be within about 13 cm of actively growing root for germination to occur
Irrigation	Care should be taken not to wash the bacterial spores out of the root zone for one to two days after application
Timing	First application at or about planting/ transplanting. Repeat once or twice depending on crop duration
Interval	Retreat at about 3-4 week intervals
Rate	Apply 5-7 L/ha
Speed of effect	Complete within 2-3 days
UV stability	Generally very stable
Compatibility	Compatible with most pesticides and fertiliser products
Withholding period	Not required when used as directed

CRITICAL FACTORS TO GET RESULTS	
Timing	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 cucurbits the initial in-field application at planting/ transplanting is the most important. Repeat after about 3-4 weeks
Placement	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

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