Users' guide for Serenade® Prime in plant cane

SERENADE® 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 during the early growth stages of the crop. Serenade Prime has consistently resulted in significant benefits to root growth and crop establishment.

Serenade Prime should be used 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 cycle. In plant cane, Serenade Prime should be used to invigorate the soil/root/microbe link with an application at planting to promote good early crop establishment.

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 the fine roots and root hairs are integral to the complex uptake reactions between the roots and the nutrients in the soil. Serenade Prime is a dominant colonising strain and consistently gives positive measurable differences in nutrient uptake. The benefits generally show as better establishment and early growth continuing through to improved crop quality and uniformity at the end of the crop cycle.

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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 planting furrow at planting
Application method	On planter. Serenade Prime is compatible with all registered plant cane fungicides
Application placement	In plant furrow
Irrigation	Care should be taken not to wash the bacterial spores out of the root zone for one to two days after application
Timing	At planting
Rate	Apply 5 – 7 L/ha. For dual row systems treat each row
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 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 sugar cane, an application to the plant furrow at planting ensures early colonisation of first roots as they form.
Placement	Apply to root zone. The microbes need to sense the biochemical root exudates as the roots form. These are the signals which attract the bacteria to the roots for colonisation.

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