BAYER

SERENADE® prime

Application through fertigation equipment in bananas.

Building root system resilience.

The soil around roots is the rhizosphere where myriads of soil microbes interact and influence crop growth. The plant-beneficial bacteria, *Bacillus amyloliquefaciens* strain QST 713 contained in Serenade® Prime, can rapidly colonise the rhizosphere of bananas forming a symbiotic relationship with the plant playing a crucial role in making nutrients available for a larger, more resilient root system.

Certified Allowed Input
ACO CERT. NO. 13029

Early colonisation is critical to gain the beneficial effects of Serenade Prime. This is driven by the release of exudates from the roots. The QST 713 bacterium utilises these exudates as food to grow and multiply, building a dense film around the plant roots, which symbiotically acts to modify soil nutrients, to make them more available to the plant *(Figure 1).* Serenade Prime acts as a bridge between the roots and the soil to both improve nutrient availability (form) and uptake.

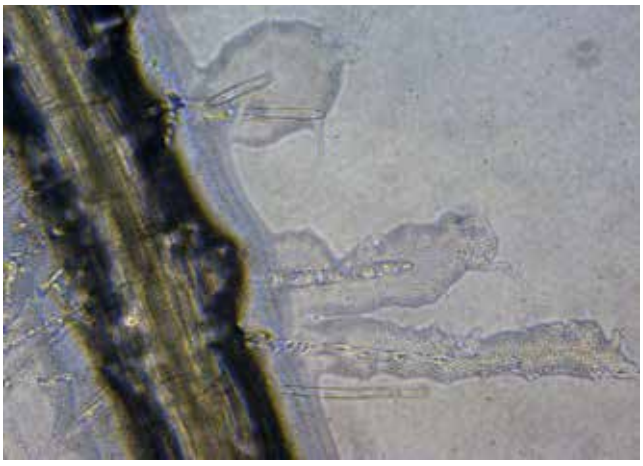

Figure 1. Serenade Prime builds a dense biofilm around the root.

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Building root system resilience.

Phosphorous is 'fixed' as either calcium, iron or aluminum phosphate and requires organic acids to mobilise into a plant available form. Serenade Prime has been shown to increase phosphorus uptake (+12%), calcium (+12%) and boron (+20%) in young bananas in a replicated trial, which is critical to root cell strength and crop resilience *(Figure 2)*. Local trials have shown a dramatic increase on root growth on young tissue cultured bananas *(Figure 3)*.

Figure 2. Improved nutrient uptake at 3 months after application. Bayer Biologics Division, West Sacramento 2020.

Figure 3. Root growth in tissue cultured bananas, 3 months after application. QLD 2021

Guide for application through fertigation equipment in bananas

Serenade Prime contains a liquid suspension of the spores of *Bacillus amyloliquefaciens* strain QST 713. The spores can be delivered to the root zone through micro-sprinklers on plant or ratoon crops. It has been shown to colonise young ratoon followers for up to 3 months, following an application through micro-sprinklers over trash. As the spores are highly stable, they can be applied through fertigation equipment along with commonly used tank mixtures of fertilisers and organic amendments provided the mixture is between pH 4.5-8.5.

Crop	Product Rate	Application method	Recommended timing
Plant – bits	5 mL/plant	Fertigation equipment	Soon after leaf emergence when root growth is active. A second application may be beneficial 3 months later.
Plant – tissue culture seedlings	5 mL/plant	Fertigation equipment	Within a week of transplanting. A second application may be beneficial 3 months later.
Ratoon	3 mL/plant	Fertigation equipment	As ratoon crops have followers at different stages, it's important to apply on a regular program aimed to colonise young root systems. Application would be suggested every 3 months.