

# Harpin Pro

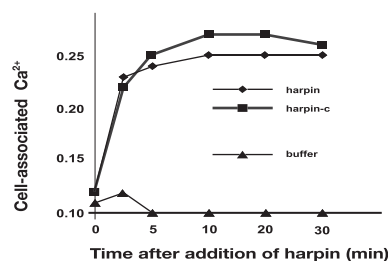
## INCREASED PLANT HEALTH AND STAMINA



- New improved formulation Harpin Pro.
- Induces a calcium flux with in minutes allowing high levels of calcium to flow into cells.
- Strengthens plant immune system and improves fungicides efficacy to suppress disease.
- Increased nutrient uptake.
- Cell-wall expansion.
- Stress and frost protection.

**Harpin  $\alpha\beta$  protein (Harpin Pro)** is one of the most researched compounds of the twentieth century. Bacterial plant pathogens naturally produce **harpin protein**: they release the protein as a method to find host plants. Plants' leaves have harpin receptors in their cell membranes. The receptors act as an early warning system. When the biologically active **Harpin  $\alpha\beta$  proteins** bind to the receptors in a plants' leaves, the receptors respond by sending a signal - or message - throughout the plant known as SAR. This signal initiates a multi-faceted sequence of physiological and biochemical reactions.

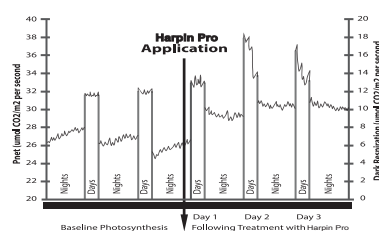
### CALCIUM



Harpin Pro has demonstrated that it can increase bound calcium levels in the call wall and cell membrane by over 50%.

Calcium levels outside the plant cell are typically 1000 times higher than inside the cell. Harpin Pro can induce a calcium flux within minutes after application, allowing higher levels of calcium to flow into the cell. Normally a plant only induces this response when under attack. Harpin Pro is unique in its ability to active calcium movement.

### PHOTOSYNTHESIS



When a plant is sprayed with Harpin pro, it quickly increases its photosynthesis. This is a natural defence response against attacks by bacterial pathogens, the process which Harpin Pro mimics, tricking the plant into activating its defences.

The plant increases its photosynthesis to have extra energy to fight off disease. The response occurs within 24 hours and up to 5 days.

**Application rates** depend on the stage of crop development. In general, bigger and older crops require higher rates. We recommend that **Harpin Pro** be used as part of a specifically designed nutritional program based on reliable soil and tissue analysis.

Sugarcane New Plantings	100 grams	1st Application: apply during new plantings directly onto plant-set before closing soil. 2nd Application: apply as a foliar application at 45 - 60cm plant height. 3rd Application: apply 4 - 5 weeks before harvest.
Sugarcane Ratoon	100 grams	1st Application: apply as foliar application at 45 - 60cm plant height. 2nd Application: apply 4 - 5 weeks before harvest.

Group 2 Fertilizer Reg No B 5677 Act 36 of 1947

**DUX** AGRI  
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