

# RICE S300 Powder Biostimulant

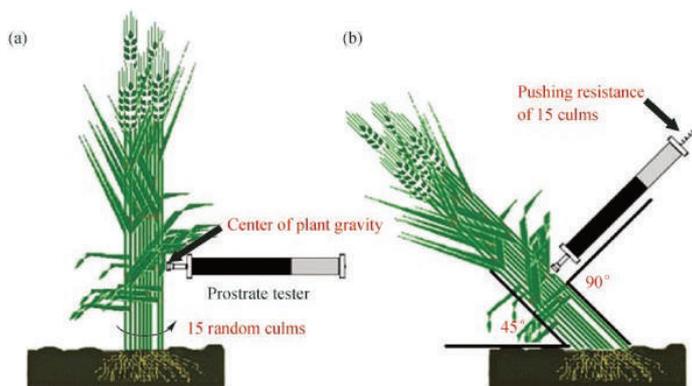


## VULNERABILITIES OF RICE

For most crops, biostimulants increase yield by helping the plants optimize the use of their metabolic energy, resist and recover from biotic and abiotic stresses and moderate their responses to pests and pathogens.

Rice, however, along with most monocots (grains and grasses) suffer far more from wind and weather damage due to its tall slender structure and the bending forces exerted on the culms (stems) during a typical season.

When permanent displacement from the vertical position due to environmental stresses is called "lodging" and in severe cases results in cell rupture, breaking of stems and even root damage. Lodging is recognized as a major cause of reduced yields and many farmers are resorting to special "dwarf" varieties with larger diameter culms and a higher resistance to lodging. Many of these however, have lower yields than taller varieties.



The above diagram shows how resistance to bending can be measured by pushing a sheath of fifteen culms around their centre of gravity and measuring their combined resistance to the applied force. Weakness of the lower internodes is a major cause of lodging.

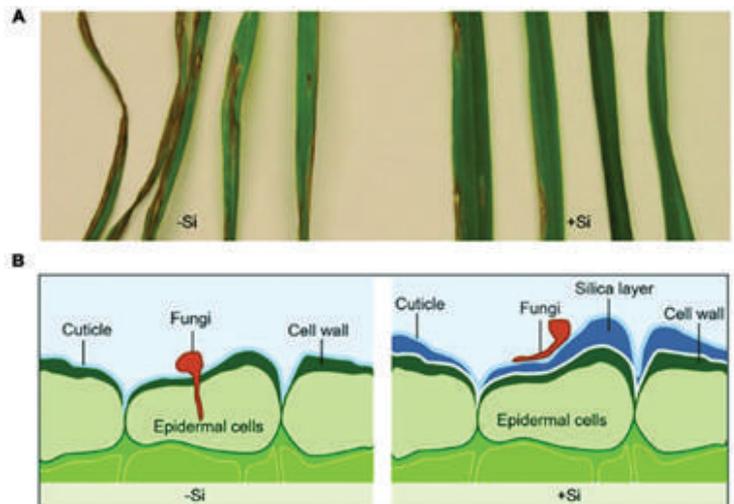
## ECOSTIM SOLUTION

Antioxidants, photosynthesis enhancers, stress moderators, enzymes and growth hormones provided by EcoStim complex biostimulant products all help to boost overall plant health and so produce more robust stems, but EcoStim have added powerful supplementary ingredients to its biostimulant complex for rice. These physically reinforce the cell walls of both the culms and the roots with a 3 to 4 micron film of bioactive silicon.

Rice plants can take up significant amounts of silicon from the soil, amounting to 10 to 12% of their weight. The problem is that only one form of soluble bioactive silicon exists and even in silicon rich soils it is present only in miniscule amounts. In rice paddies bioactive silicon tends to be in even shorter supply because of its exhaustion by many previous seasons of rice crops.

As well as making rice culms stronger silicon acts to make epidermal attack more difficult for pathogens by acting as a cell wall barrier. See the diagram below.

The coating of silicon platelets prevents the fungi from penetrating the cell wall.



# RICE

## S300 Powder Biostimulant



### THE ECONOMICS

The recommended application regime for EcoStim S300T for rice production is to apply two kilos per hectare at the time of planting and make a second identical application one week later. Three more identical applications are then made at monthly intervals.

For each application the S300T powder is first dissolved in water at the rate of 1 kilo in 200 litres of water. One hectare of rice paddy is then treated with 400 litres of this solution.

Rice yields vary significantly across the World, but yields of around 2 tons of per hectare are quite achievable in most environments where minimum temperatures of 24 degrees centigrade can be expected and it is possible to do much better than this.



Brazil, for instance, has increased its rice yield from 5.5 to 8 tons per hectare by more fertiliser usage and better management over the last ten years. It is now expected that most growers will be able to produce average yields of over 10 tons per hectare by the combined use of NPK fertiliser and S300T Biostimulant Complex.

### CASE STUDY

- A Small Farm Case Study
- Location: Watawale, Sri Lanka, 1.4 Hectares
- Season: Sept 2016 to March 2017 (Maha Season)

The same fertilizer treatments used in previous seasons were applied to both the test area and the control area prior to planting and during the trial.

Only the test area received treatments of EcoStim S300T Biostimulant Complex. Each application involved 2.8 kilos of S300T dissolved in 280 litres of water which was sprayed evenly over the 1.4 hectare test area. This equated to an application rate of 2 kilos of S300T per hectare. Five applications were made during the growing season with the first immediately after planting, the second one week later and then one month apart.

The total crop yields from the Test and Control areas were harvested and weighed at the end of the Maha Season at the end of March 2017.

### RESULTS AND SUMMARY

- Control Area: 4.300 metric tons per hectare
- Test Area: 5,608 metric tons per hectare
- Increased Yield: 1.832 Metric tons

The farmer produces two crops per year of a variety of rice called Suwandel that has a relatively long six month growing season so he is limited to only produce two crops per year. However, any extra yield, less the cost of the S300 product, is virtually all profit so the small farmer who carried out the trial has now seen that he can increase his yield by 30% on his 5.2 hectares of rice paddies and this will more than double his net profit for each growing season.

**USING ECOSTIM RESULTED IN A 30 PERCENT INCREASE IN YIELD POTENTIALLY DOUBLING THE FARMERS NET PROFITS IN THE FUTURE**