Producing more with less: Towards sustainable agriculture with microbial inoculants

Submission from Novonesis

The innovation.

Sustainable agriculture means producing more from less. The Danish biotechnology company Novonesis has developed the microbial seed inoculant Jumpstart® that can be used for crops such as soy, corn, wheat, and canola. JumpStart® inoculant contains Penicillium Bilaiae, a naturally occurring soil fungus which grows along plant roots, releases nutrients like phosphate bound in the soil, making them more available for the crop to use. This results in higher stress tolerance, ultimately leading to higher crop yields.

The benefits.

As global populations continue to rise, so does the demand for agricultural resources and land, potentially at the expense of deforestation and depletion of soils and natural resources. Improving efficiency in crops can boost yields without increasing land use.

Additionally, the improved use of the available nutrients by crops can lead to other beneficial aspects such as reduced need for fertilizer, reduced nitrogen runoff to the aquatic environment and reduced emissions of nitrous oxide to the atmosphere. The improved plant growth also results in a larger root system that allows for more carbon to be captured in the soil. Field tests suggest that if used on all US corn, Jumpstart® could potentially reduce greenhouse gas (GHG) emissions by 3.9 million tons of CO2 corresponding to annual emissions from 820,000 US passenger cars.