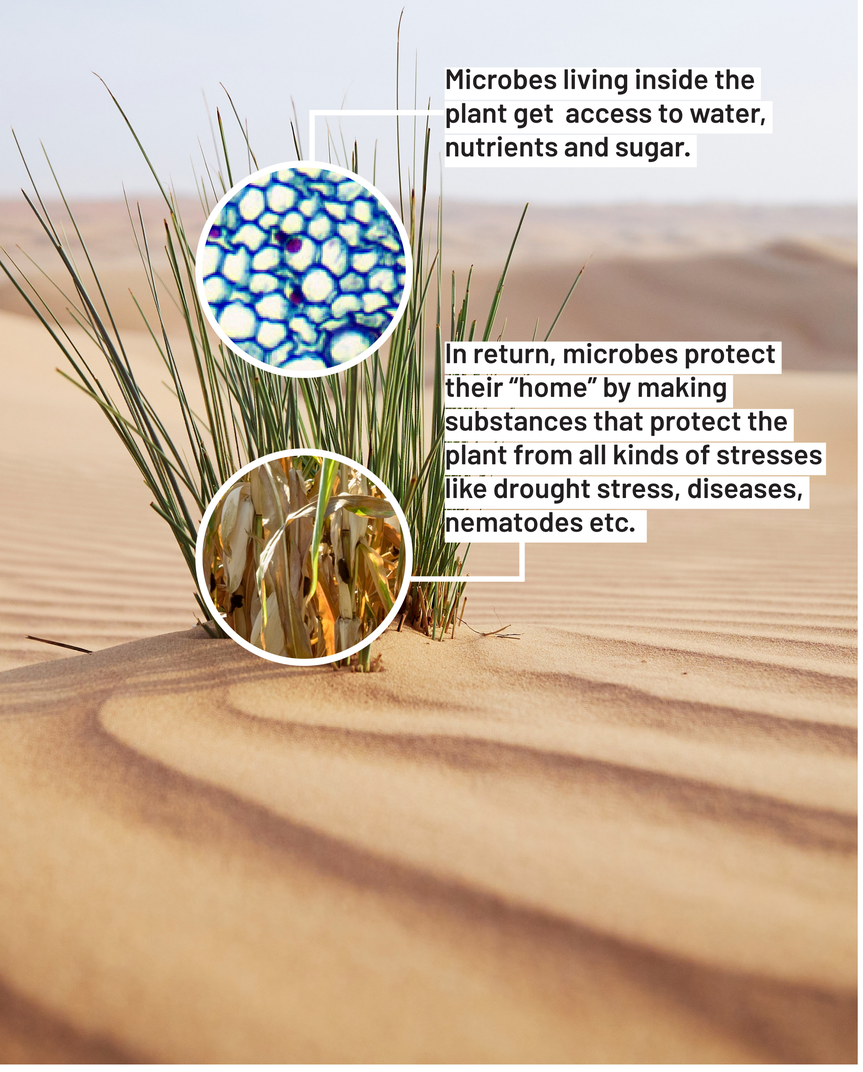
biotrinsic® Microbial Technology Effectively Manages Water Stress

- Indigo has a unique portfolio of microbial products designed specificaly to combat drought stress.
- These products have demonstrated significant yield increases across multiple crops and geographies.
- Formulation: all are produced as flowable powders that can be easily applied on top of seed coatings, some can be formulated as liquids.
- These products contain unique strains of *bacillus simplex*, *bacillus subtilis*, *cladosporium tenuissimum*, *cladosporium oxysporum*, *acremonium egyptiacum* and *coniochaeta nivea*

PLANTS & MICROBES

HOW DO PLANTS GROW IN THE DESERT?

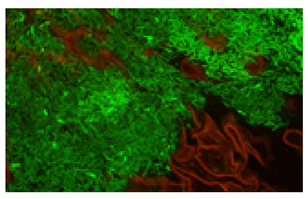
Found on leaves, soil and inside the plant itself, plant microbiomes play a vital role in plant health and productivity. They enable plants to thrive in stressful environmental conditions - including drought stress in the desert.



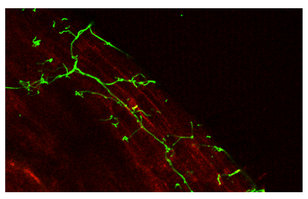
MODE OF ACTION

1 COLONIZATION

biotrinsic® microbes colonize the plant's roots as soon as the treated seeds are planted.

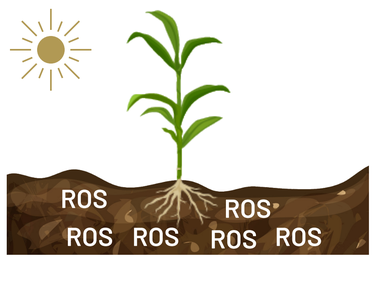


Example of *Bacillus simplex* (green) colonizing corn roots (red)

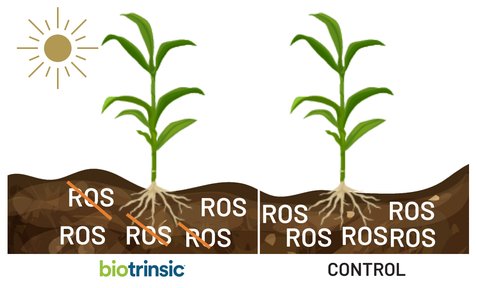


Example of *Coniochaeta nivea* (green) colonizing corn roots (red)

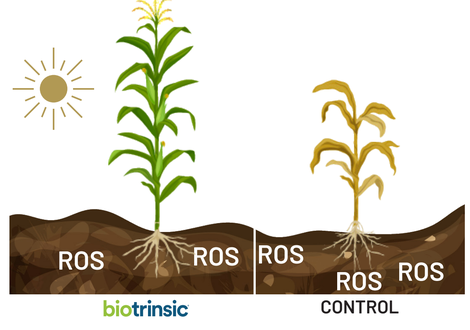
2 WATER STRESS RESISTANCE



Drought stress creates osmotic imbalance within the plant and excess Reactive Oxygen Species (ROS) which can lead to plant cell damage and death.



biotrinsic® technology:
- produce enzymes to neutralize ROS
- produce osmoloytes to balance osmotic pressure



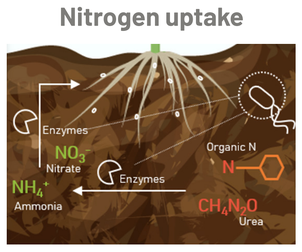
Metabolic activities and plant growth continue uninterrupted, alleviating the effect of drought stress on the plant.

3 NUTRIENT UPTAKE

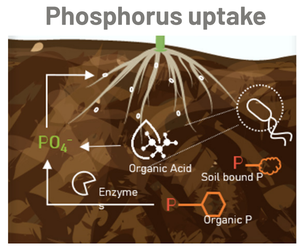
Many nutrients are present in the soil in a fixed form, biotrinsic products help to release these nutrients and facilitate their uptake into the plant using multiple mechanisms:

ENZYMES | ORGANIC ACIDS | K-TRANSPORTERS | IRON SIDEROPHORES

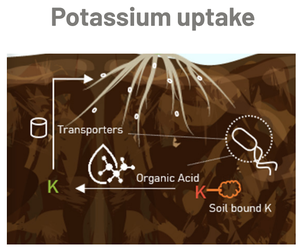
Nitrogen uptake



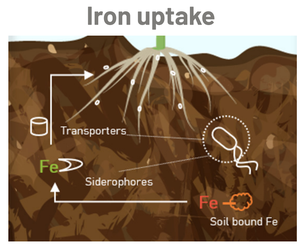
Phosphorus uptake



Potassium uptake



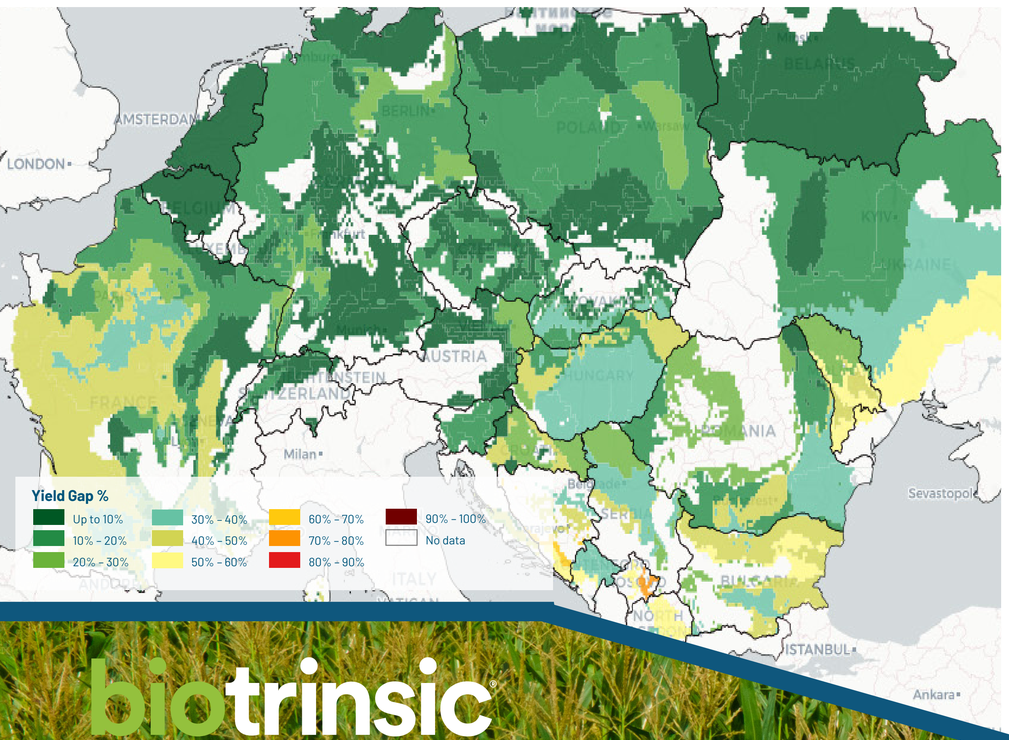
Iron uptake



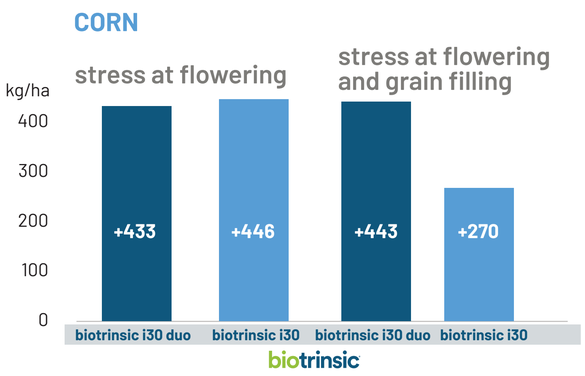
RESULTS

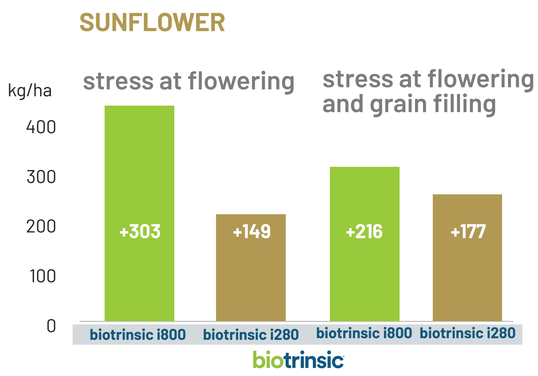
Water deficiency leads to a yield gap of 3 t/ha (48%), biotrinsic® technology can help compensate for this gap

On average, farmers in Europe could produce an additional 3 ton/ha or 48%* more corn than what is produced today if water would not be a limiting factor.



Yield increase with biotrinsic® vs. control, 2022 Romania and Bulgaria trials





CONTROL biotrinsic

CONTROL biotrinsic

CONTROL biotrinsic

* Global Yield Gap and Water Productivity Atlas. Available URL: www.yieldgap.org. average taken from: Bulgaria, Croatia, Czech Republic, France, Germany, Hungary, Montenegro, Poland, Romania, Slovakia, Ukraine.

biotrinsic® by indigo