APPLICATION METHOD

It is suitable for all crops. Apply by foliar spraying at the initial growth stages of the crops or whenever growth stimulation is required.

Wheat, Barley, Oat, Rye, Hop

Growth stage 10-20 cm.

1.5-5 l per hectare

Maize

Growth stage 15-20 cm.

2.5-5 l per hectare

Cotton

30-40 days after sawing

2.5-5 l per hectare

Energy crops

When there is adequate leafage to absorb the spray

2.5-5 l per hectare

Alfalfa, Clover, Fodders

When there is adequate leafage to absorb the spray

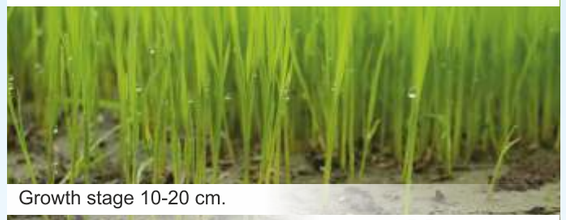
2.5-5 l per hectare

Medicinal herbs

Growth stage 10-20 cm.

2.5-5 l per hectare

Rice



Growth stage 10-20 cm.

1.5-5 l per hectare

Potato

Growth stage 10-15 cm.

1.5-5 l per hectare

NitroStim

Produced by HUMOFERT

NitroStim

Microbial Growth Biostimulant for field crops

bio Suitable for organic agriculture

It contains leaf-endophytic nitrogen-fixing bacteria at a population of 1x10^{12} cfu per liter
(cfu: colony forming units)

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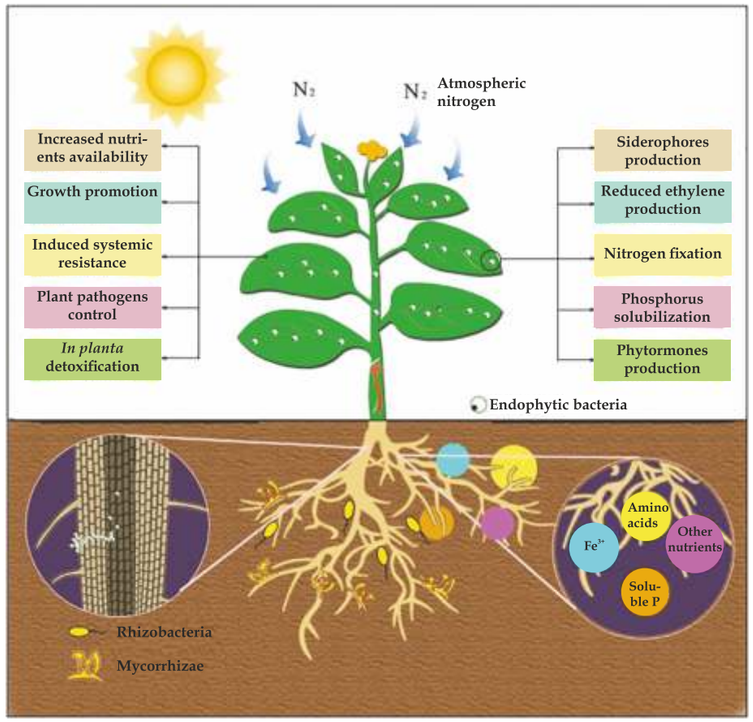
NitroStim

What are nitrogen-fixing bacteria?

Nitrogen-fixing bacteria fix atmospheric nitrogen and convert it into a form which is absorbable and assimilable by plants thanks to special enzymes they possess. These bacteria usually live freely in the soil and the rhizosphere or in symbiosis with the roots of certain plant species, while some species of nitrogen-fixing bacteria can enter and colonize the plant body, becoming endophytes. Endophytic bacteria colonize the inter-cellular spaces of roots, shoots, leaves, flowers and seeds.

What are the benefits of nitrogen-fixing bacteria that become leaves endophytes?

When the endophytic phase is met in leaves, where atmospheric air circulates constantly, nitrogen fixation takes place unhampered and fixed atmospheric nitrogen enters directly the metabolic processes of the plant, favouring it in various ways. First of all, plant growth is promoted because photosynthesis becomes more effective and plant hormones are composed, which play a decisive role in plant pathogens control and in systemic resistance acquisition. In cases of biotic or abiotic stresses, endophytic bacteria hamper increased ethylene production which provokes symptoms of premature ageing of plant. Moreover, endophytic bacteria of leaves increase the availability of many nutrients to the plant, such as of iron through siderophores production and of phosphorus via phosphorus solubilizing enzymes, while they contribute to plants detoxification from harmful minerals.



What is NitroStim?

NitroStim is a microbial solution which stimulates plants growth thanks to the activity of specific beneficial nitrogen-fixing bacteria, which are capable of penetrating into the above-ground plant parts (phyllosphere) and of becoming endofytes. Nitrogen-fixing phyllosphere endofytes fix atmospheric nitrogen and convert it into a readily assimilable by plants form, ensuring a fast, vivid and balanced growth. In addition, they produce phytohormones intracellularly, which stimulate plant cells functions and unlock the productivity potential of the plant, which is encrypted in its DNA. The combination of nitrogen fixation and biostimulation provoked by **NitroStim** results finally in an impressive increase of field crops yield, at low cost and with environmental safety.

BENEFITS

- ✧ It promotes growth.
- ✧ It increases crops productivity.
- ✧ It reinforces plants against adverse environmental factors, such as drought, salinity etc.
- ✧ It increases plants resistence against biotic stress factors.
- ✧ It decreases the use of nitrogen fertilizers.
- ✧ It contributes to limiting environmental pollution with nitrates deriving from chemical fertilizers application.

MODE OF ACTION

The nitrogen-fixing endophytic bacteria of **NitroStim**:

1. Provide plants with an internal nitrogen production source, which produces readily available to plant tissues nitrogen.
2. Continuously provide plants with nitrogen, as the process of nitrogen fixation from the atmosphere can continue throughout the biological cycle of plants.
3. Produce growth hormones (e.g. auxines) which promote growth.
4. Increase nutrient uptake by the foliage.

TRIALS RESULTS

The effect of **NitroStim** on yields increase has been tested on corn cultivation in Greece. The first experiment was performed on a healthy crop during a year of low yields expectations due to drought and the second experiment on a crop suffering from a severe infestation by corn rootworms (*Diabrotica virgifera*). **NitroStim** was applied once by foliar spraying (2.50 l/he) at the growth stage of 20-30 cm height.

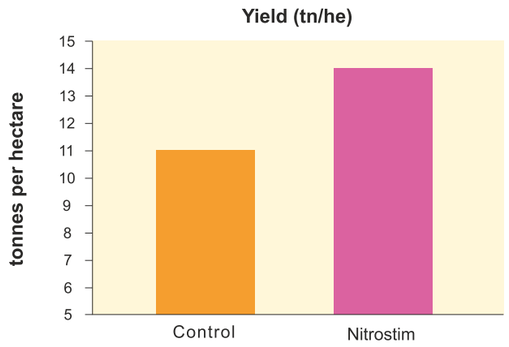


Figure 1: Application **Nitrostim** on corn crop led to a 27% increased yield per hectare, proportion corresponding to a higher yield by 3 tn/he in comparison with the control.

In the first experiment, the application of **NitroStim** resulted in a 27% increase of yield per hectare. More precisely, the yields of **NitroStim**-treated plots reached 14 tn/he, in contrast to the untreated ones, which yielded 11 tn/he. (Figure 1).

In the second experiment, where the crop was severly damaged by corn rootworms attack, application of **NitroStim** resulted in a 30% increase of the yield per hectare. So, while the control yielded 6 tn of seed per hectare, **NitroStim**-treated plots yielded 7.8 tn/he. (Figure 2).

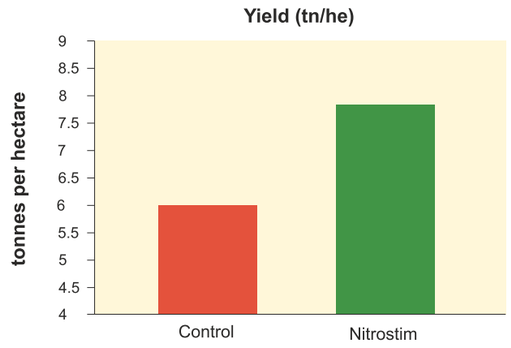


Figure 2: Application of **Nitrostim** on corn crop under severe corn rootworm attack, led to a 30% increased yield per hectare, proportion corresponding to a higher yield by 1.8 tn/he in comparison with the control.