AZOFIX Plus

FOR NITROGEN FIXATION

ECOCERT – Registered
FIBL – Registered

BIO ENERGY LT

LABORATORY CERTIFICATE QUALITY CONTROL

APPROVED FOR ORGANIC FARMING

Introduction

Nitrogen is the most important element in plant mineral nutrition, which determines the yield and quality of agricultural plants. This element is important for many processes in plant cells. Nitrogen is also the main element in chlorophyll, which carries out one of the most important processes on earth – photosynthesis. Nitrogen is also a major component of amino acids, RNA and DNA. Plants can absorb nitrates and ammonium ions, but atmospheric molecular nitrogen is not available to plants.

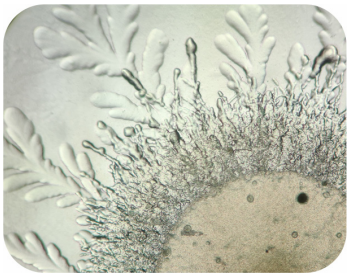
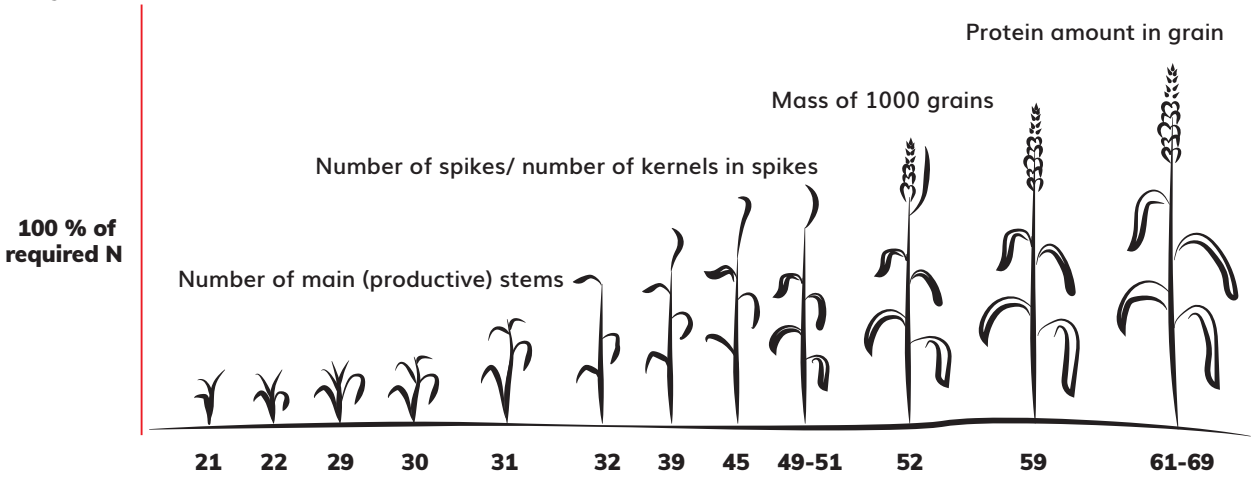


Figure 1.



Role of Nitrogen at Different Stages of Cereal Growth

Challenges

Intensive tillage, increased mineral fertilizer rates and non-compliance with scientific advice lead to soil erosion and reduced fertility. Excessive use of nitrogen fertilizers leads to changes in the nitrogen cycle, pollutes groundwater and contributes significantly to the greenhouse effect. It is known that only about 30-60% of mineral nitrogen is used in plant nutrition. Today, the challenge is to solve the nitrogen problem in agro-ecosystems by minimizing environmental damage, reducing the use of mineral nitrogen and improving the absorption of atmospheric N.

Solution

Azofix Plus, a microbiological biostimulator for plants, for efficient atmospheric nitrogen fixation and ensuring the nutritional needs of plants.

Registration information and certificates
Suitable for: cereals, rapeseed, corn, sugar beet, vegetables, fruit trees, fruit bushes, berries.

Mode of action

During the nitrogen fixation phase, nitrogen enters the soil from the atmosphere. The earth's atmosphere contains large amounts of nitrogen gas (N_2), but this nitrogen is "not available" to plants because plants cannot absorb gaseous nitrogen. In order for plants to absorb atmospheric nitrogen, the N_2 must be transformed by nitrogen fixation. During fixation, atmospheric nitrogen is converted to a form that is available to plants.

The Azofix Plus bacteria derive energy from plants and in return it fixes the nitrogen in a form that is accessible to the plant. The fixed nitrogen is transferred to other parts of the plant and used to form plant tissue, allowing the plant to grow and exploit its genetic productivity. Bacteria live freely in the soil and control the nitrogen fixation process.

Figure 2.

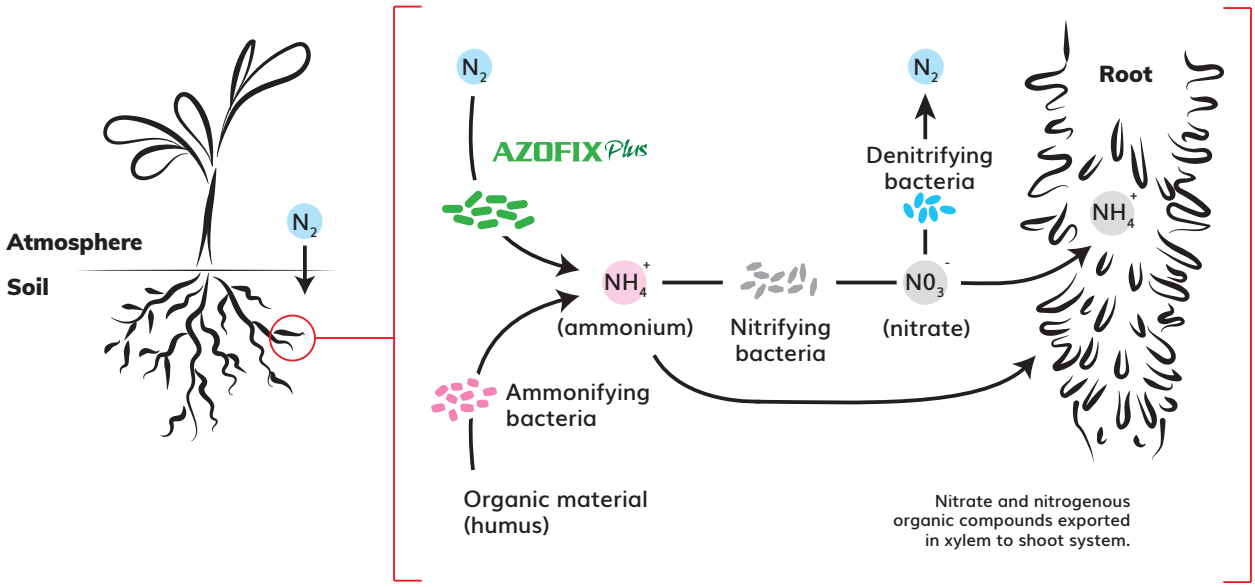
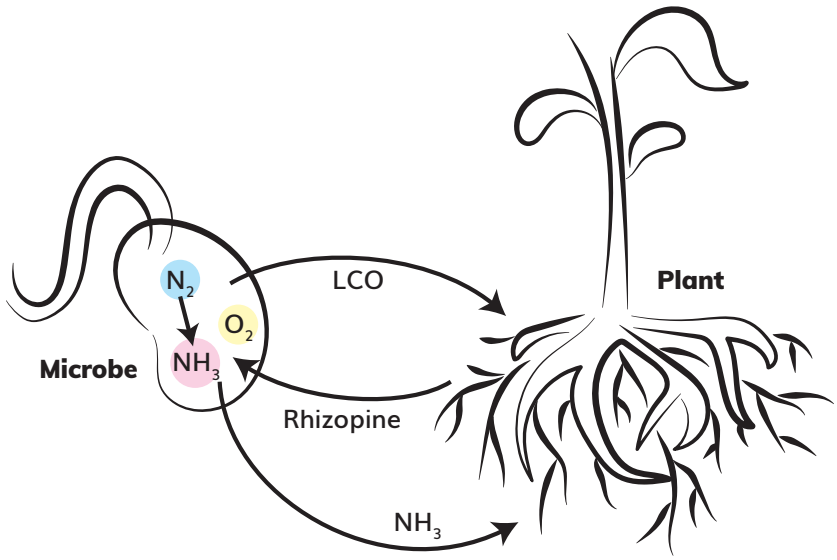


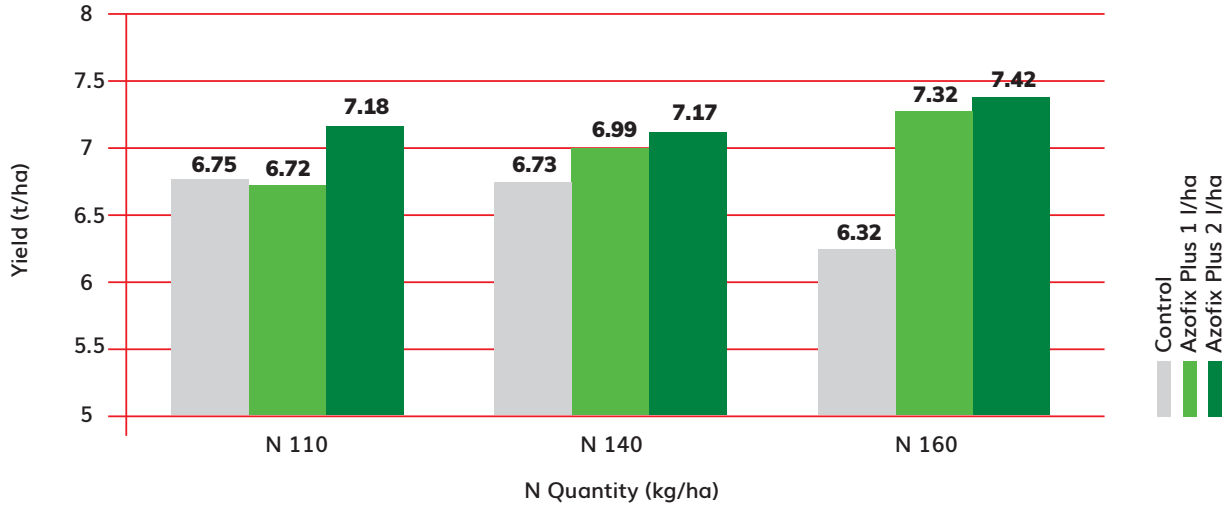
Figure 3.



Benefits and Results

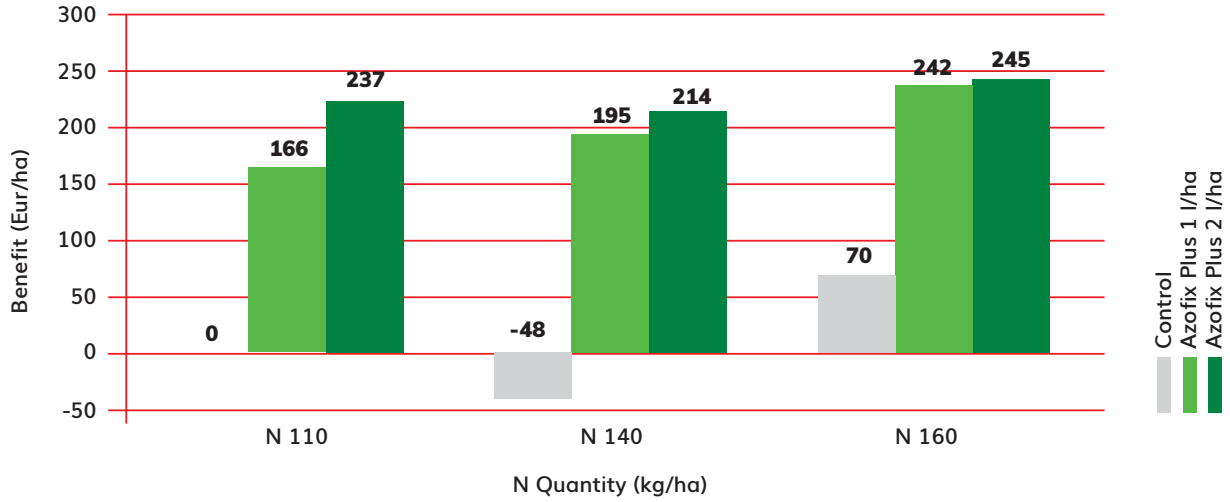
- Reduction of mineral nitrogen fertilizers by up to 50 kg/ha of active ingredient;
- Synthesizes plant growth hormones and B vitamins;
- Reduce nitrate yield;
- Better quality yield;
- Promotes the biological activity of soils;
- Improves soil structure and sorption, water and air regimes in the soil;
- Can be used on organic farms.

Figure 4.



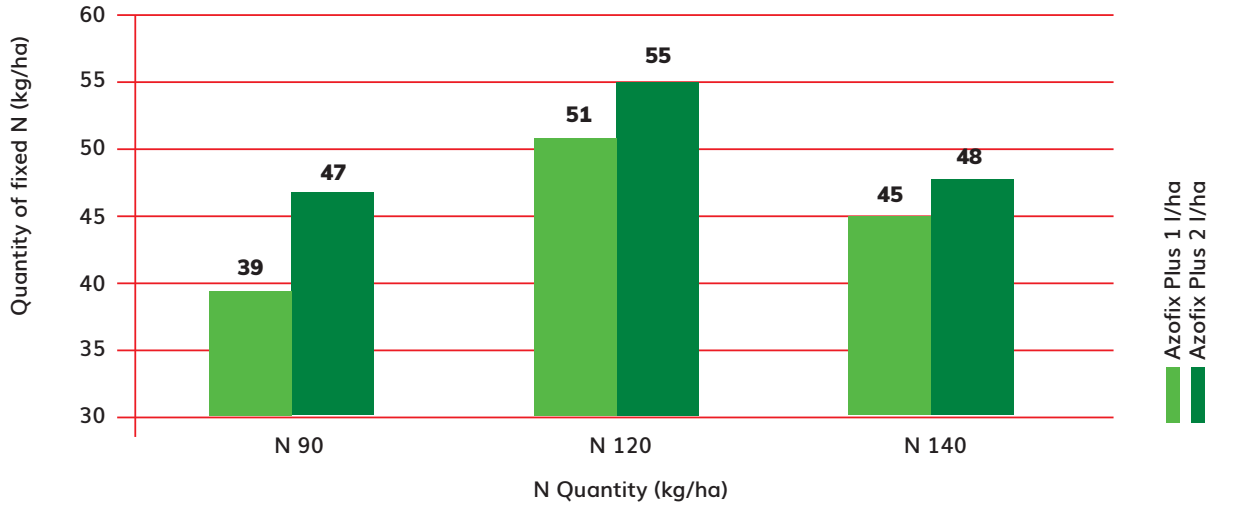
ASU Experimental Center, W. Wheat, 2018

Figure 5.



October, 2018. W. Wheat Market Price 187 Eur/t

Figure 6.



ASU Experimental Center, W. Wheat, 2018

Application rate, technology

Application rate: cereals: 1-3 l/ha – BBCH 01-30; rapeseed: 1-3 l/ha – BBCH 01-30; corn: 1-5 l/ha – BBCH 01-16; sugar beet: 1-3 l/ha – BBCH 01-16; vegetables: 1-5 l/ha – BBCH 01-40; fruit trees: 1-4 l/ha – BBCH 01-59, on the soil before planting before flowering; fruit bushes: 1-4 l/ha – BBCH 01-59, on the soil before planting before flowering; berries: 1-3 l/ha – BBCH 01-59, on the soil before planting before flowering.

Application requirements: the sprayer pressure must be 1-10 bar or 15-145 psi; nozzle size is at least 50 µm.

Safety and storage: product can be mixed with all kinds of fertilizers and pesticides unless the manufacturer of fertilizer or pesticide states otherwise. May contain natural sediments. Storage at high temperature above 30 °C must be avoided. Use Azofix Plus as soon as possible after opening or store in the refrigerator (4 °C) once it is opened and use it within 72 h. Contamination of the product may occur at any time after opening and the manufacturer takes no responsibility for opened and unused product.

Product is non-toxic and has no irritating compounds. There is no risk to humans, animals and the environment. After contact with the skin or eyes, wash with running water. Microorganisms may have the potential to provoke sensitising reactions.

Specifications

Composition: *Paenibacillus polymyxa* MVY-024 (1.2×10^{12} CFU/l); B group vitamins: B1, B3, B6 and microelements: Cu, Co, Fe, Mn, Mo, Zn (max 0.02%); K-7140 mg/l; Na-1880 mg/l; Ca-1500 mg/l; S-1170 mg/l; P-278 mg/l; Mg-275 mg/l.

Packaging: 20 l; 10 l; 5 l; 1 l.

- **Biological activity:** biological fixation of atmospheric nitrogen; free-living microorganism;
- **Physical state:** liquid biological product;
- **Viability, shelf life:** 12 months. The manufacturer does not recommend storing the product above 30 °C.
- **Working conditions:** 5-39 °C soil temperature; 4 to 9.5 pH;
- **Chemical parameters:** dry matter, 7.7%; pH, 6.5; organic matter, 70.9%;
- **Physical parameters:** colour from dark brown to black; density 1.03 g/cm^3.

Manufacturer: "Bioenergy LT", Staniunu str. 83/1, LT 36151 Panevezys, Lithuania.

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