



**Nunatak Biotech**

# YAMANA<sup>®</sup> TERRA

Nunatak Biotech's first dual-action biosolution



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## Yamana<sup>®</sup> Terra at a glance

Yamana<sup>®</sup> Terra is a microbial biological input designed to enhance crop growth, resilience, and productivity while remaining fully compatible with conventional farming systems.

**Plant Growth Promotion (PGPR):** Improves root architecture and early vigor, increasing early biomass (+8.6% in wheat and barley) and boosting forage growth even under saline stress.

**Strong performance in adverse soils:** Increases plant biomass in poor soils (+43%), maintains higher dry weight under salinity (+20%), and improves growth under cold conditions (+14%).

**Biocontrol activity:** Exhibits antifungal effects against key pathogens such as *Fusarium* spp., *Bipolaris sorokiniana*, and *Rhynchosporium*.

**Herbicide carry-over mitigation:** Reduces phytotoxic stress from residual herbicides (Atrazine, Diflufenican, Pyroxasulfone), improving germination and root vigor.

**Agronomic compatibility:** Works alongside fertilizers, micronutrients, humic/fulvic acids, and common seed-treatment fungicides without disrupting existing practices.

**Industrial scalability:** Successfully scaled to 10,000 L fermentation with stable concentrations of  $1 \times 10^9$  CFU/mL and at least 6 months of shelf life.

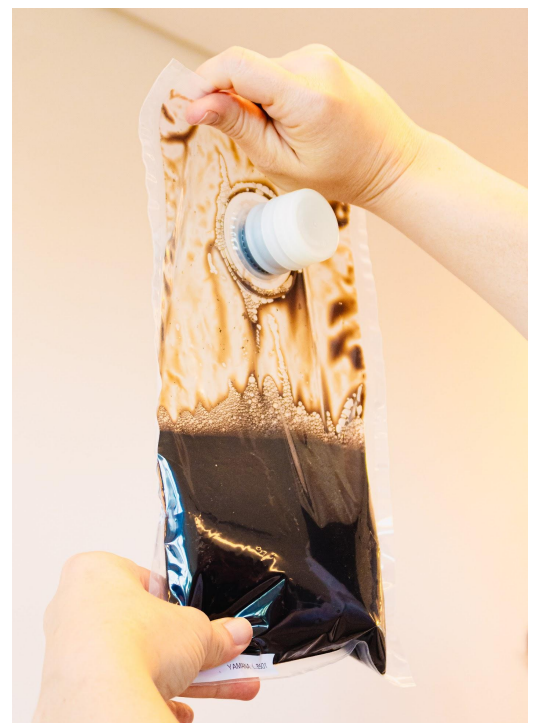
**Low-dose efficiency:** Requires only 100 mL per 100 kg of seed, lowering transport, storage, and application costs compared to many standard biofertilizers.

## Who is it for and how we sell it

Ag-input companies, distributors, and food companies working directly with growers.

Commercialized in Argentina through local partners and scaled globally via partnerships and licensing.

With Yamana<sup>®</sup> Terra, Nunatak Biotech is setting a benchmark for the future of regenerative agriculture:



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[www.nunatakbio.com](http://www.nunatakbio.com) [info@nunatakbio.com](mailto:info@nunatakbio.com)

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### Biofertilizer and biostimulant | Liquid seed treatment

Simple integration and compatible with crop protection and biological products. Works under stress conditions.

## TRIPLE ACTION

### Extreme microbial consortia

#### Shared traits of the consortium:

- Plant growth promotion and protection
- Nutrient acquisition and root colonization
- Phosphate solubilization
- Biofilm formation
- Biological nitrogen fixation
- Biocontrol of fungal phytopathogens

#### Strain *P. fluorescens* NB01

Outstanding performance in agronomic environments, high IAA production.

#### Strain *Pseudomonas sp.* NB03 (*nunatakensis*)

Specialized in saline environments, high tolerance to salinity and abiotic stress.

### Micronutrition

High bioavailability

Controlled release

Synergy with microbial strains

**Zn:** auxin synthesis and cell elongation

**B:** cell division and cell wall integrity

**Mo:** key cofactor in N assimilation

### Organic amendment

#### Humic and fulvic acids

Seed priming (enzymatic activation)

Root elongation via hormonal signaling

Early stress tolerance (antioxidant response)

Microbiota recruitment



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## OUR FIRST PRODUCT: FROM LAB TO THE FIELD

### 1. Research in extreme environments

Leveraging knowledge from Antarctic environments, we went to Tierra del Fuego in search of microorganisms adapted to cold, salinity, and abiotic stress.

### 2. Identification of key traits

Selection of strains capable of: Plant growth promotion, Stress tolerance, Root colonization and nutrient acquisition

### 3. Functional consortium design and stacking with nutrition and organic amendment

We combined biotechnology + bioinformatics to build a consortium compatible with nanoparticles and humic and fulvic acids.

### 4. Progressive agronomic validation

Controlled condition trials → Stress trials → Multi-location field trials.

## TRIAL NETWORK

### 2025

#### Wheat and barley

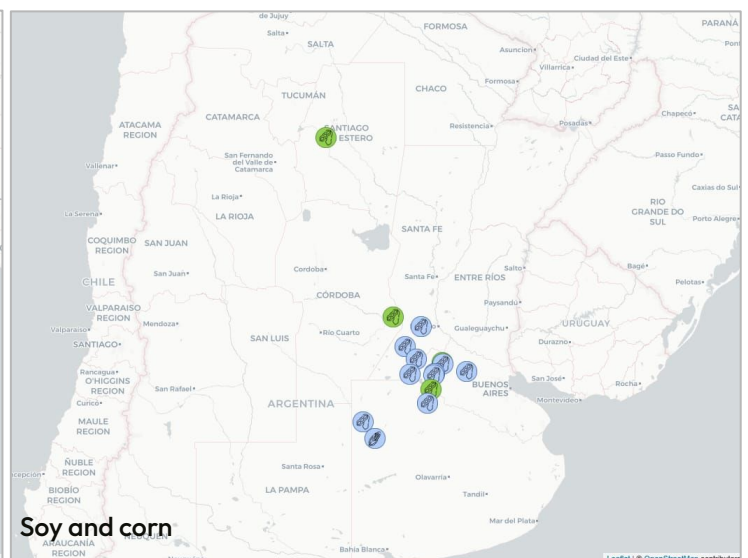
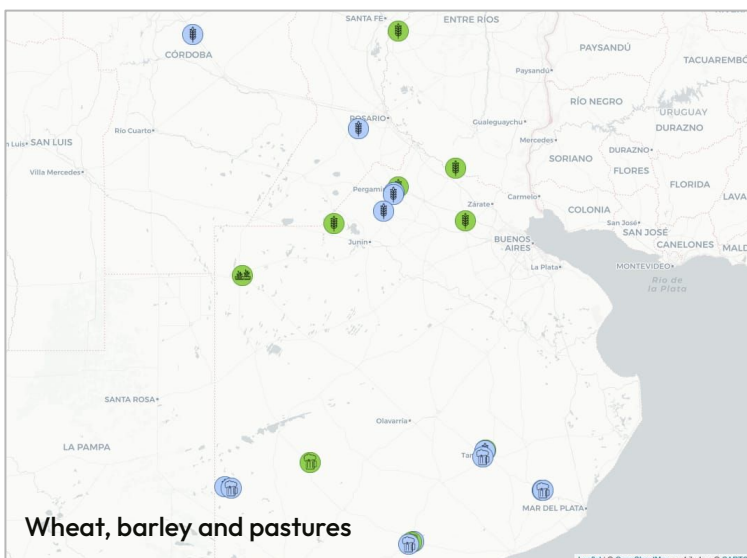
→ **NUNATAK TRIALS**, 7 trials in wheat

→ **FIELD TRIALS WITH COMPANIES**, Pilots with 4 agtech (wheat, soy and pastures) companies and 1 food industry partners (malting barley)

#### Soy

→ **NUNATAK TRIALS 10 trials** in agronomic and saline soil in soy

→ **FIELD TRIALS WITH COMPANIES**, 4 Pilots with agtech companies



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## SECTION 1: Yamana<sup>®</sup> Terra as biological enhancer for seed treatment chemicals

### CHEMICAL CONTROL:

Vibrance Gold (2.5 g Difenoconazole, 2.5 g Fludioxonil, 5 g Sedaxane)  
(250 mL / 100 kg seed) | USD 23 / 100 kg seed (ha)

### YAMANA<sup>®</sup> TERRA:

Chemical Control + Yamana<sup>®</sup> Terra  
(100 mL / 100 kg seed) | USD 23 + USD 6 | USD 29 / 100 kg seed (ha)

**7 LOCATIONS:** Casilda, Rojas, Pergamino, Tres Arroyos, Darregueria, Balcarce and Tandil

#### YIELD

↑ **4%**

+235 kg average

Average of 7 locations  
Core region up to ↑10%

#### WINRATE

**5/7**

locations

71% of sites outperformed

#### ROI

**7:1**

return

Wheat at USD 190/ton\*  
USD 6 invested → USD 35 return

\*Price per ton calculated based on the producer's net price.

Add Yamana<sup>®</sup> Terra to your seed treatment: for only USD 6 more, enhance the protection you already have.

### Agronomic Hypothesis | [Link to MOA](#)

The three components of Yamana<sup>®</sup> Terra act synergistically during critical establishment stages:

Greater vigor → Better establishment → Higher biomass → Better weed competition → Greater radiation interception → More spikes → Higher yield

Stand (+5.4%), biomass (+5.7%), spikes (+3.9%) and yield (+3.8%) confirm the effect.

### Compatibility with chemical seed treatment

The product is compatible with more than 35 commercial seed treatment fungicides widely used in Argentina and globally. These include formulations based on key active ingredients such as carbendazim, thiram, fludioxonil, metalaxyl/mefenoxam, sedaxane, fluxapyroxad, and fluopyram, present in leading seed treatment brands from BASF, Syngenta, Bayer and UPL. This broad compatibility enables seamless integration into existing seed treatment programs.

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## SECTION 2: Yamana<sup>®</sup> Terra a biological enhancer for other biologicals

### TREATMENTS

Commercial biological pack I (*Trichoderma* + *Azospirillum* + microbial protectant)

Commercial biological treatment + Yamana<sup>®</sup> Terra

Commercial biological pack II (*Trichoderma* + microbial protectant) + Yamana<sup>®</sup> Terra

**3 LOCATIONS:** Areco, Paraná and Tandil

**Yield increase:** Between **0.7 and 1.6%** in pack I and **1.7 %** in pack II.

**Compatible with main biologicals used:** *Trichoderma*, *Azospirillum* y *Bradyrhizobium*

## SECTION 3: Yamana<sup>®</sup> Terra a foliar growth promoter for pasture

### TREATMENTS

First foliar application of Yamana<sup>®</sup> Terra (250, 500 and 1000 mL/ha), followed by cutting and yield measurement. Second foliar application of Yamana<sup>®</sup> Terra (250, 500 and 1000 mL/ha), followed by final cutting and yield measurement.

**LOCATION:** Villegas (Buenos Aires, Argentina)

**YIELD INCREASE:** **8.9%** after the first cut (236 kg dry matter/ha) and **11.9%** after the second cut (295 kg dry matter/ha).

## CONCLUSIONS

**Yamana<sup>®</sup> Terra establishes a new standard for biological inputs:**

- **Higher yields and stronger early vigor** in wheat and pastures. Potential with other intensive and extensive crops.
- **High adaptability** across diverse soils and climates.
- **Seamless compatibility** with chemical and biological inputs.
- **Efficient scalability** with cost-competitive production.

With Yamana<sup>®</sup> Terra, Nunatak Biotech is setting a benchmark for the future of regenerative agriculture:

**PERFORMANCE + EFFICIENCY + SUSTAINABILITY**