

Grow'Well

AZOTOVIT® & PHOSPHATOVIT®

Microbial Biofertilizers — 2023 Field Trial Results

Prepared for our partners in Vietnam

Field data from Georgia (almond, blueberry, grape) with supporting agronomic rationale for microbial nitrogen and phosphorus-potassium nutrition.

2023 · Trial Reports & Agronomic Overview

How Azotovit & Phosphatovit Work

Living rhizosphere bacteria — nitrogen fixation, phosphate & potassium solubilization, and phytohormone production

Azotovit®

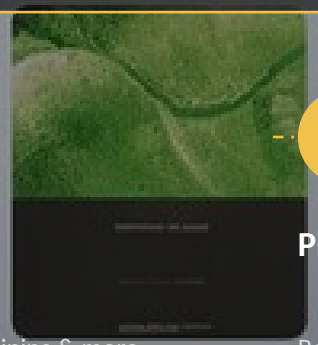
Beijerinckia fluminensis

Fixes atmospheric nitrogen (N2), converting it into plant-available ammonia in the root zone.

Phosphatovit®

Paenibacillus mucilaginosus

Solubilizes fixed phosphate and potassium into forms plants can absorb directly.



1 — Colonization

Bacteria establish in root-zone soil within days

2 — Nutrient conversion

N fixed to ammonia; P & K solubilized

3 — Phytohormones

Auxins, gibberellins, cytokinins & more

4 — Plant response

Better roots, uptake, and yield

Phytohormones & vitamins produced:

- Auxins
- Gibberellins
- Cytokinins
- ABA
- Ethylene
- Brassinosteroids
- Strigolactones
- Jasmonates
- B-vitamins

Results That Speak for Themselves

2023 Georgia field trials — yield increase vs. control, by crop

+107%

Almond

Marneuli, Georgia

+47.8%

Grape (Kisi)

Saguramo, Georgia

+28%

Blueberry

Zugdidi, Georgia

Based on matched treated vs. control plots across three crops, soils, and microclimates — consistent gains in every trial.

Key Agronomic Benefits

A sustainable input built for modern agriculture

Improved Nutrient Use Efficiency

Biological N-fixation and P/K-solubilization reduce reliance on and losses from synthetic fertilizer.

Soil Microbiome Restoration

Reintroduces beneficial rhizosphere bacteria, supporting long-term soil biological health.

Enhanced Nutrient Uptake

Phytohormone production stimulates root growth, increasing the plant's capacity to absorb nutrients and water.

Sustainable Agriculture

Organic, non-GMO agro-input that builds soil organic matter and reduces agriculture's CO_2 footprint.

The rhizosphere cycle these benefits are built on:

Root exudates feed bacteria → Bacteria fix N & solubilize P/K → Nutrients absorbed by roots → Stronger plant, more soil carbon

Almond — Marneuli

+107% seed yield vs. control · harvested 16 October 2023

Trial Details

Location: Marneuli, Georgia

Soil: Clay loam

Density: 500 plants/ha

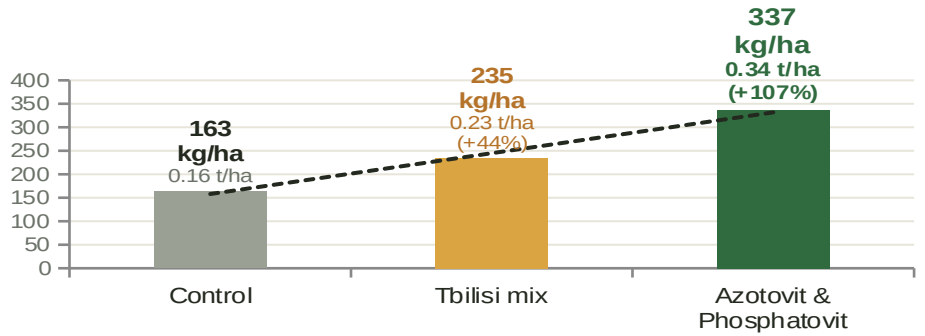
Treatment: 40 mL Azotovit + 40 mL Phosphatovit / 10 L water; 5 L/plant

Applied: 2 May 2023, early green fruit, 15–23°C

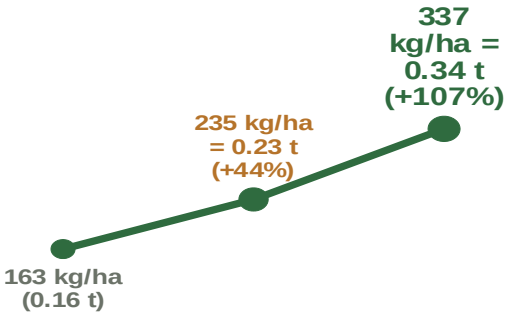
Design: 10 treated trees vs. 10 control trees

	Yield of seeds (kg/ha)	Difference vs. control
Control	162.9	—
Azotovit & Phosphatovit	336.8	+107% (+173.9 kg/ha)

Yield by treatment (kg/ha)



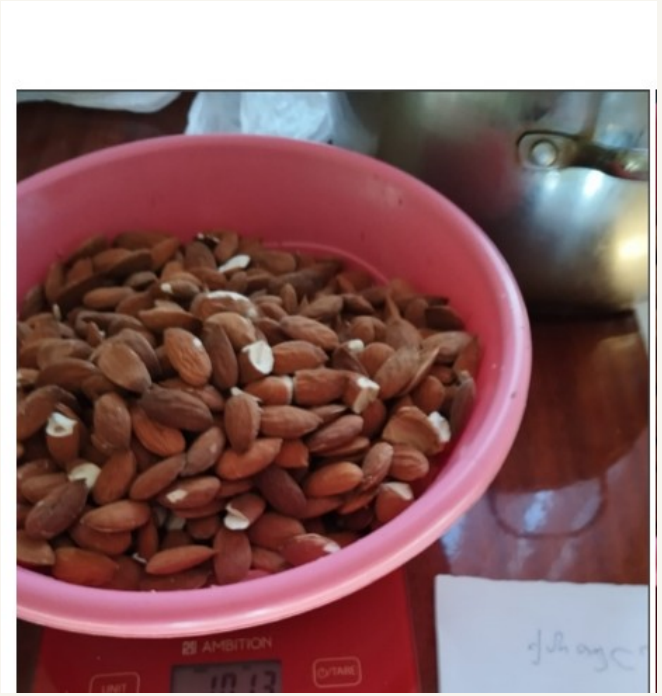
Growth trend



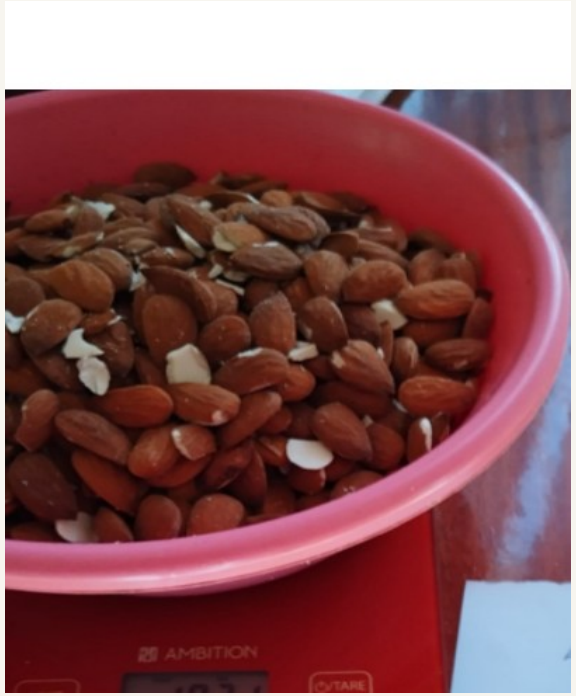
Yield increase driven by more fruit per tree and greater weight per fruit. Deshelling yield also improved: 34.4% vs. 31.3% for control (+9.7 pts). A third plot using a Tbilisi-market mix reached only +44% — Azotovit & Phosphatovit still leads.

Almond — Field Documentation

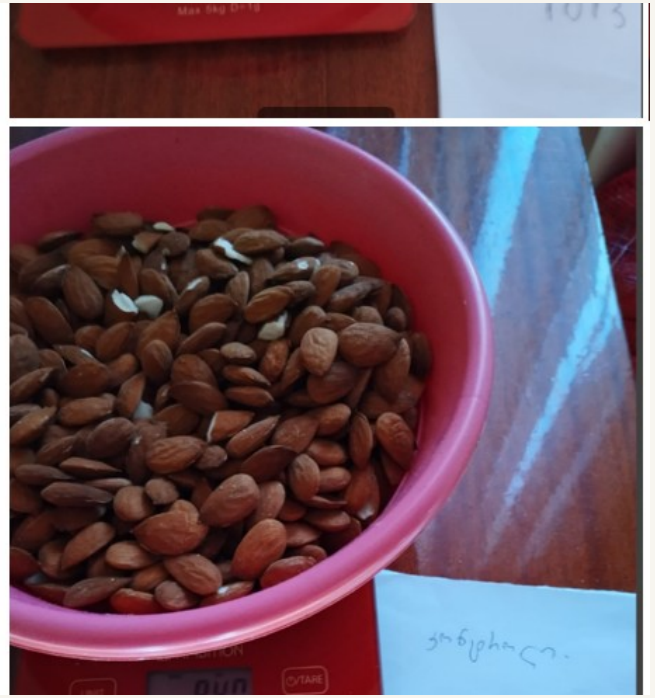
In-shell almonds weighed on-site at harvest, Marneuli



Sample weighed: 1,013 g



Sample weighed: 1,031 g



Sample weighed: 940 g

Photos: almond harvest samples from the Azotovit & Phosphatovit treated plot, Marneuli, October 2023.

Blueberry (var. Legas) — Zugdidi

+28% yield vs. control · 3-step harvest, June–July 2023

Trial Details

Location: Zugdidi, Tsaishi — LLC "Nuts and Crops"

Soil: Clay loam

Plant age: 3 years; 3,000 plants/ha

Treatment: 7 mL Azotovit + 7 mL Phosphatovit / 2 L water, root drench

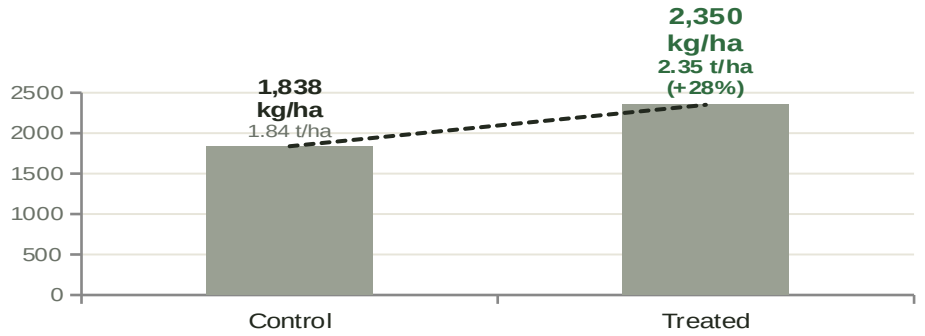
Applied: 3 May 2023, early green fruit, 15–23°C

Design: Treated: plants 1–10, row 1. Control: plants 11–31, row 1

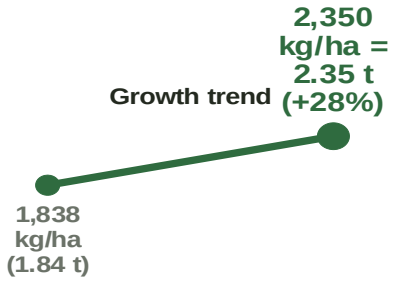
Applications: 2, 14-day interval

	Yield (kg/ha)	Berries per 5 plants
Control	1,838.4	1,516
Azotovit & Phosphatovit	**2,349.6**	**2,161**

Yield by treatment (kg/ha)



Growth trend



Yield gain driven by 43% more berries per plant (better fruit retention) — equivalent to +511 kg/ha, or +170 g per plant. Weight of 1,000 berries was similar between plots, confirming the gain came from fruit set, not size.

Grape (var. Kisi) — Saguramo

+47.8% yield vs. control · harvested 9 October 2023

Trial Details

Location: Saguramo — Sevsamora Winery

Soil: Clay loam

Plant age: 6 years; 2,700 plants/ha

Fertilizer/pesticide: None used on trial rows

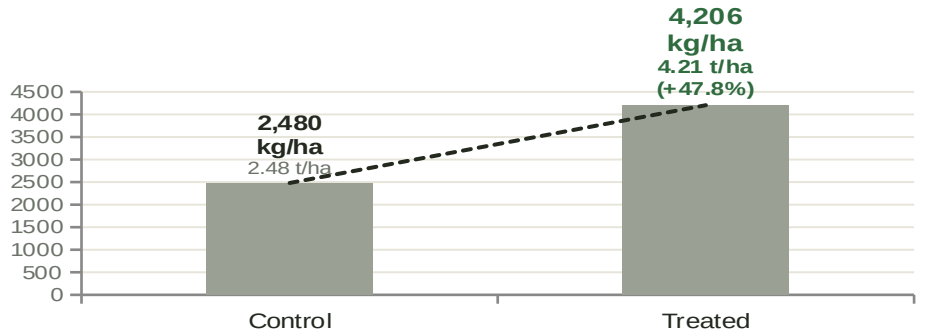
Treatment: 26 mL Azotovit + 26 mL Phosphatovit / 27 L water; 1 L/plant

Applied: 1 May 2023, early green fruit, 15–23°C

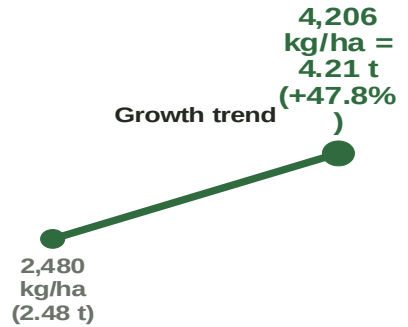
Design: Treated: row 25. Control: rows 19–23

	Yield (kg/ha)	Difference vs. control
Control	2,480	—
Azotovit & Phosphatovit	**4,206**	**+47.8% (+1,726 kg/ha)**

Yield by treatment (kg/ha)



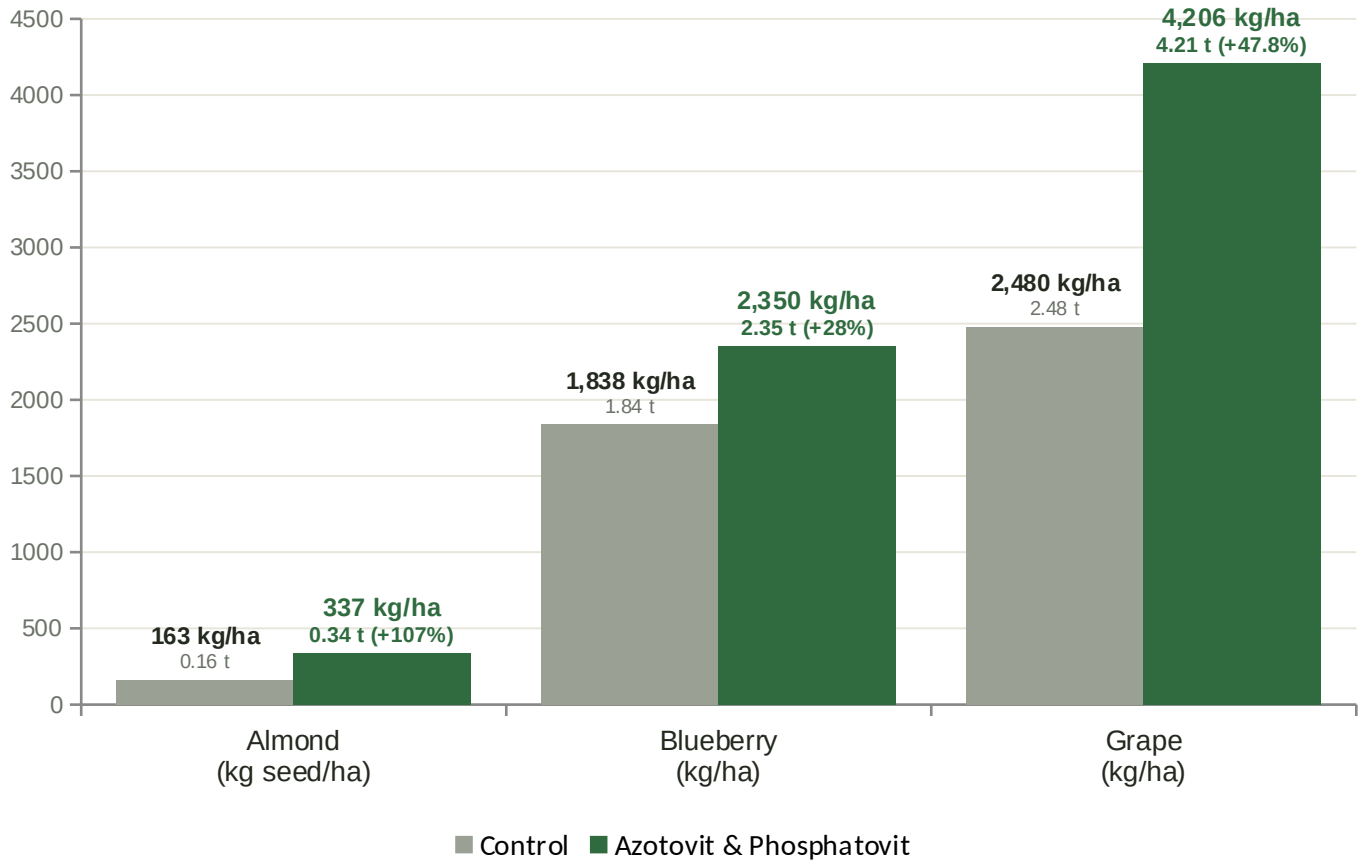
Growth trend



Achieved with no chemical fertilizer or pesticide on the trial block — isolating the microbial treatment's contribution. Gain driven by more fruit clusters per vine and higher berry weight.

Consistent Gains Across Crops and Regions

Three different crops, soils, and climates in Georgia — one consistent direction of effect



What stays consistent across all three sites:

- Yield increase in every trial — no site showed a neutral or negative result
- Gains driven mainly by more fruit set per plant, not just larger individual fruit
- Effective at low, cost-efficient dose rates (7–40 mL product per plant)
- Performs on clay loam soils under varied irrigation and fertilization regimes
- Applied once, at early green-fruit stage, with a single mixed spray/drench

Documented Trial Protocols on Record

Every result in this deck is backed by a dated, signed field protocol

Almond — Marneuli

Clay loam, 500 trees/ha, 10 treated vs. 10 control. Also beat a Tbilisi-market mix (+44%) — our result was +107%.

Grape (Kisi) — Saguramo

Sevsamora Winery, 6-yr vines, 2,700 plants/ha. Zero chemical fertilizer or pesticide on trial rows.

Blueberry (Legas) — Zugdidi

"Nuts and Crops" LLC, 3-year-old bushes, 3,000 plants/ha. 3-step harvest, June–July 2023, matched row-by-row control.

Available for Vietnam Review

Full signed protocols — plot layouts, dates, raw yield data — available on request.

Why these results can be trusted:

- Independent, matched control plots
- Real commercial farms, not a lab
- Consistent gain across 3 crop types
- Zero synthetic input on the Grape trial

Corn (cv. Maksalia) — Trial I: Pre-Sowing Application

+17.7% yield vs. control · Pristensky District, Kursk Region, 2023

Trial Details

Location: Pristensky District, Kursk Region, Russia

Crop: Corn (grain), cv. Maksalia — 2023

Carrier: KAC-28 nitrogen solution, 176 L/ha

Dose: 3 L/ha Phosphatovit

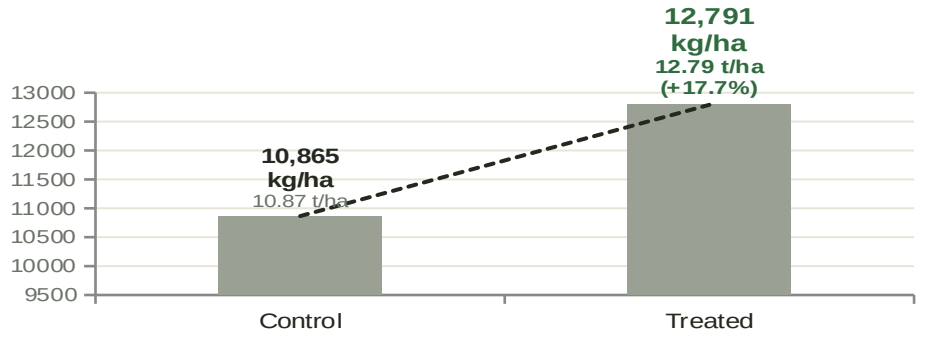
Treatment: Foliar spray with soil incorporation

Applied: Pre-cultivation / pre-sowing

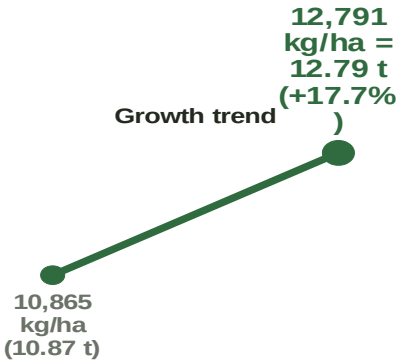
Design: Single application; treated vs. untreated control strips

	Yield (kg/ha)	Difference vs. control
Control	10,865	—
Phosphatovit & KAC-28	12,791	+17.7% (+1,926 kg/ha)

Yield by treatment (kg/ha)



Growth trend



Applied before sowing as a spray with soil incorporation alongside KAC-28. Additional net revenue of ₽21,099/ha after input costs (₽1,050/ha), based on corn valued at ₽11,500/t.

Corn (cv. Maksalia) — Trial II: Split Application

+15.7% yield vs. control · Pristensky District, Kursk Region, 2023

Trial Details

Location: Pristensky District, Kursk Region, Russia

Crop: Corn (grain), cv. Maksalia — 2023

Carrier: KAC-28 nitrogen solution, 88 L/ha (× 2 applications)

Dose: 1.5 L/ha Phosphatovit per application (3 L/ha total)

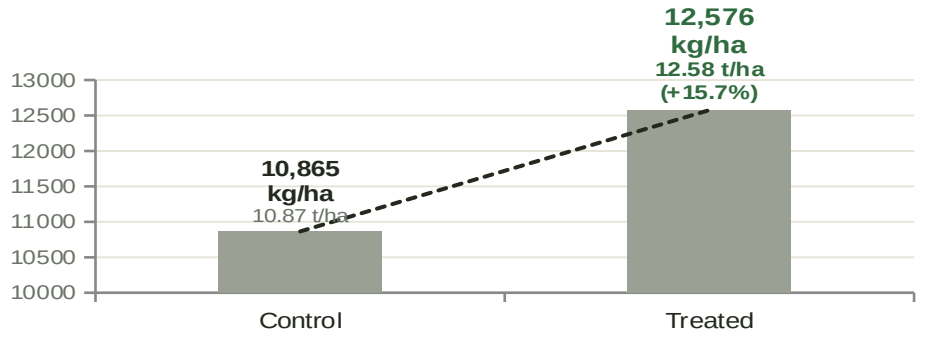
Treatment: Foliar spray + incorporation, then in-row (Liquilizer)

Applied: Pre-sowing, repeated at 3-leaf stage

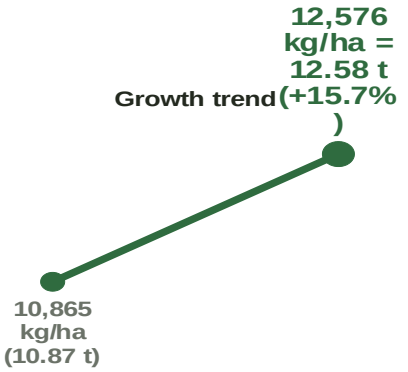
Design: Two-step application; treated vs. untreated control strips

	Yield (kg/ha)	Difference vs. control
Control	10,865	—
Phosphatovit & KAC-28	12,576	+15.7% (+1,711 kg/ha)

Yield by treatment (kg/ha)



Growth trend



Split into two smaller doses — pre-sowing and at the 3-leaf stage — for a smaller but still substantial gain. Additional net revenue of ₽18,626/ha after input costs (₽1,050/ha).

Corn (cv. Maksalia) — Trial III: In-Row (3-Leaf) Application

+20.6% yield vs. control · Pristensky District, Kursk Region, 2023

Trial Details

Location: Pristensky District, Kursk Region, Russia

Crop: Corn (grain), cv. Maksalia — 2023

Carrier: KAC-28 nitrogen solution, 176 L/ha

Dose: 3 L/ha Phosphatovit

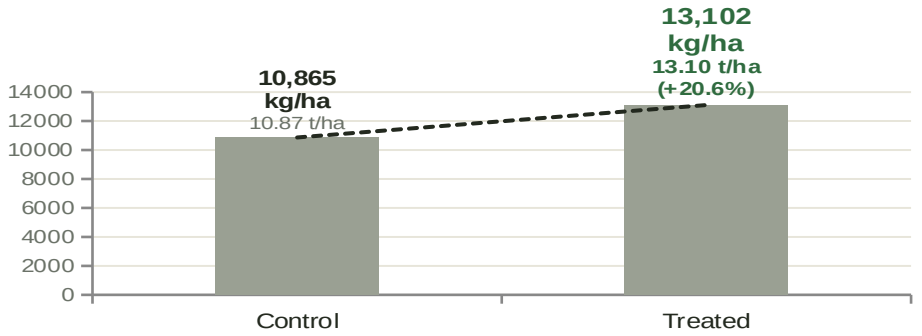
Treatment: In-row application via Liquilizer

Applied: 3-leaf stage

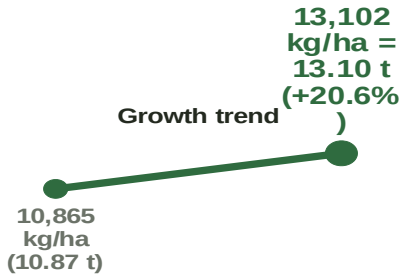
Design: Single application; treated vs. untreated control strips

	Yield (kg/ha)	Difference vs. control
Control	10,865	—
Phosphatovit & KAC-28	13,102	+20.6% (+2,237 kg/ha)

Yield by treatment (kg/ha)



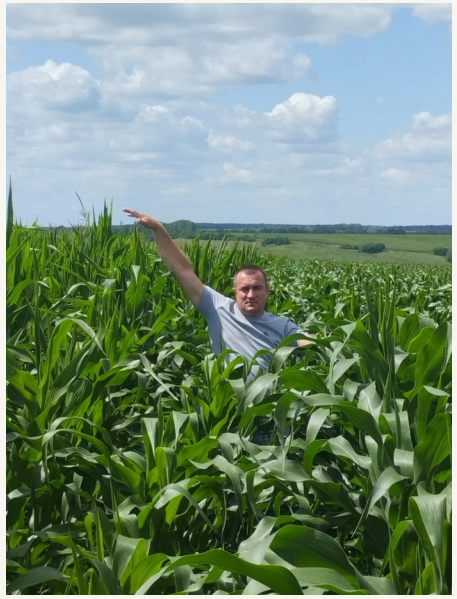
Growth trend



A single in-row application at the 3-leaf stage produced the strongest result of the three schemes. Additional net revenue of ₽24,675/ha after input costs (₽1,050/ha).

Corn — Field Documentation

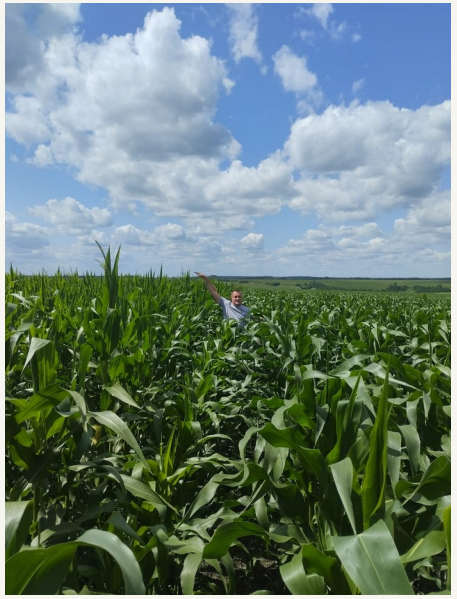
Field photos from the Phosphatovit-treated corn plot, Pristensky District, Kursk Region, 2023



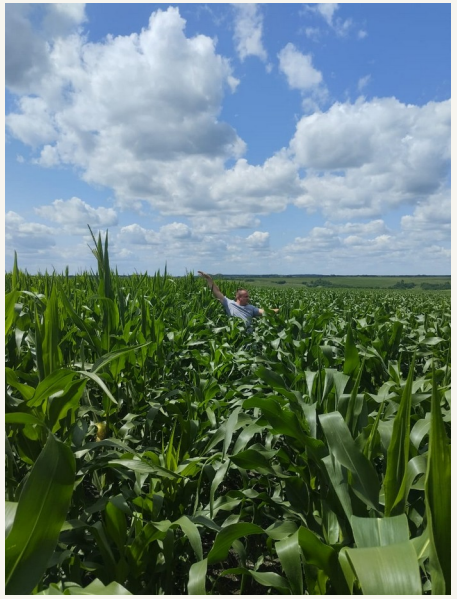
Canopy height check, treated plot



Row density, treated plot



Field walk-through, treated plot



Crop vigor, treated plot

Photos: corn canopy in the Phosphatovit-treated plot, Pristensky District, Kursk Region, growing season 2023.

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Next Steps

Extending validated results to Vietnamese growing conditions

1. Review detailed trial protocols and photographs (attached separately)
2. Identify priority crops and regions for a Vietnam pilot trial
3. Cereal-crop trial data from Russia (corn, Kursk Region) included in this deck
4. Align on trial design, timeline, and application logistics

Thank you — we look forward to your questions.