

BIOPHYSICAL STIMULATION & MONITORING APPLIED TO PLANT AND ANIMAL MATERIAL

Bio Top România | Applied research and scale-up update | September 2026

Bio Top România coordinates the **Bio Top Growth Performance (BTGP)** applied-research program. Its priorities are poultry, aquaculture and vegetable production, with industrial crops also offering opportunities for further research and validation.

Our next step is to replicate trials across different ecosystems and production conditions, assess the consistency and economic value of the results, and prepare future commercial deployment.

Who we are and how we work

Through its emerging **Biophysical Agrifood Living Lab**, BTR connects commercial farms, scientific partners and operational testing environments. Romanian scientific partners include ASAS, USAMV Bucharest and the Nucet Research and Development Station for Fish Culture. International network is available, BTR being in contact with Universities or Research Institutes from **more than 30 countries**.

Pre-production treatments are applied to seeds, hatching eggs or other biological material without adding a chemical substance. Controlled electromagnetic exposure is being investigated for its potential effects on development, uniformity, stress tolerance and biological resilience. Water-treatment applications are investigated separately within the wider production system.

The following results describe individual trials or trial summaries. Percentage changes are relative to the control unless stated otherwise. They are not additive; statistical validation and independent replication remain priorities.

Poultry

Results at a glance | 18.0% lower mortality | 3.46% higher final body weight | 3.15% higher average daily gain

The reported industrial trial involved approximately **22,000** treated hatching eggs. Fertility and hatchability showed smaller relative increases of **0.29%** and **0.41%**, respectively.

Indicator	Treated	Control	Relative change
Fertility	93.51%	93.24%	+0.29%
Hatchability	88.74%	88.38%	+0.41%
Cumulative mortality	3.28%	4.00%	-18.0%
Average daily gain	—	—	+3.15%
Final body weight	—	—	+3.46%

Next validation step: complete statistical analysis, extend monitoring to slaughterhouse indicators, and replicate across additional batches, farms and production conditions.

Aquaculture

Common carp

Results at a glance | 10.9% higher final weight | 19.4% higher production per hectare

In the **2026** Nucet trials, common carp reached a final weight of **71 g** compared with **64 g** in the control. Production was approximately **4.3 t/ha** compared with **3.6 t/ha**.

Paddlefish *Polyodon spathula*

Results at a glance | 11.7% higher survival | 10.2% higher final weight | 23.1% higher final biomass

In the **2026** Nucet trials, survival reached **86%** compared with **77%** in the control: an increase of **9** percentage points, or **11.7%** relative. This is equivalent to a **39.1%** relative reduction in mortality, from **23%** to **14%**.

Final weight reached **292 g** compared with **265 g**, while final biomass per system reached **25.11 kg** compared with **20.40 kg**.

Next validation step: complete statistical analysis and controlled replication across batches, species and production environments, using standardised protocols.

Vegetable production

Cucumber

Results at a glance | 50% higher yield in the 2025 season

The reported cucumber trials recorded a **50%** yield increase in **2025**. Further replication was reported in **2026**.

Tomato

Results at a glance | 15% higher yield in 2026

The reported tomato trials recorded a **15%** yield increase in **2026**. The next step for both vegetable crops is to standardise comparisons and reporting across farms, seasons and growing conditions.

Industrial crops

Sunflower

Results at a glance | Up to 4.1 t/ha under rain-fed conditions

Reported **2026** yields ranged from **3.6** to **4.1 t/ha** across farms with different crop-protection conditions. The reported premium-farm trial reached **4.1 t/ha** without insecticide or fungicide treatment. A matched control yield is required to calculate a relative percentage gain.

Next validation step: complete multi-location comparisons, document crop-protection practices consistently and collecting farmer feedback. Validation in industrial crops also remains a promising research opportunity.

Aquaspin in commercial broiler production

BTR works with H. Preiss GmbH / Aquaspin to investigate biophysical water-treatment applications in poultry, aquaculture, irrigation and other livestock systems.

Aquaspin in a broiler farm | 22% lower mortality than the control group

In a commercial broiler farm using Aquaspin for water treatment, the monitored flock recorded **22%** lower mortality than the control flock, expressed as a relative reduction. Further controlled replication will assess consistency across farms and production cycles, as well as economic value.

What we ask from European partners

Commercial testing and replication

Access to farms, scientific partners and operational production conditions for comparative trials across farms, batches, species and seasons. Our Living Lab approach links research with practical validation across several agrifood sectors.

Structured experimental datasets

Treated-versus-control datasets from poultry, aquaculture, vegetables and field crops can support further structuring and interoperability work, with potential applications in decision support systems, artificial intelligence and predictive modelling.

International cooperation

BTR is developing replication links in Albania, the Republic of Moldova, Greece and Türkiye, alongside further research contacts in Europe, South America and Canada.

Priorities for 2026 and 2027

- Complete statistical validation of industrial poultry trials and extend monitoring to slaughterhouse indicators.
- Prioritize replication in poultry, aquaculture and vegetables across different ecosystems, climates and production conditions.
- Standardize protocols, datasets and reporting to support technology transfer and interoperability.
- Develop European partnerships through Living Labs, Testing and Experimentation Facilities (TEFs), European Digital Innovation Hubs (EDIHs) and AgData ecosystems.
- **2027 research focus:** extend biophysical treatment trials to semen from bulls, rams and boars, assessing sperm quality, motility, viability and fertilizing capacity. The aim is to evaluate potential improvements in reproductive performance in cattle, sheep and pigs through controlled comparisons and species-specific protocols.
- Assess repeatability, implementation costs and economic outcomes to prepare future commercial activities, while continuing to explore industrial-crop validation opportunities.

Invitation to collaborate

We invite farmers, cooperatives, research institutions and technology providers to jointly design replication trials, agree with measurable outcomes and assess practical adoption under local conditions. The objective is to establish credible pathways from experimental evidence to standardization and commercial deployment.

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