

# **ESSTENCE**

From Biological Circularuty to Measurable Value

## **COMPANY PROFILE   INTERNATIONAL B2B PARTNERSHIPS**

European Circular Economy Hotspot Budapest 2026

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## **At Ste.Tech,**

we develop a biological technology platform that connects linear agricultural and organic material flows into regenerative circular systems.

### **The challenge**

Agriculture, livestock production, organic residue management and sewage sludge treatment currently operate largely as separate technological systems. Biologically, however, they are part of the same material, nutrient and carbon cycles. Soil condition determines plant development; plants become feed; livestock production generates manure, which we return to production as a source of nutrients and organic matter after appropriate treatment.

We place this interconnected system at the centre of our development work. We address challenges at individual points in the production chain as part of the complete biological cycle.

### **Our answer**

#### **We respond to biological problems with biological solutions.**

Biological problems require biological answers.

With Esstence technology, we improve the biological environment in which a problem develops. Beyond addressing the symptom, we support the conditions that enable beneficial microbial and biochemical processes to function. We combine more than two decades of development and practical experience with application expertise adapted to local conditions.

### **The platform**

#### **SOIL → PLANT → FEED → ANIMAL → ORGANIC RESIDUES → BIOLOGICAL TREATMENT → SOIL**

We build on a single biological and organo-mineral technology base, intervene at multiple points and work across the entire cycle. We integrate Esstence into existing production and treatment processes. We focus on retaining the nutrients, organic matter, carbon and economic value already present in the system.

#### **One biological platform. Multiple intervention points. One circular system.**

## From scientific foundations to measurable value

### We work with a complex biological system

Esstence is based on a biologically active organo-mineral medium derived from vermicompost. We treat the microbial community, organic matter matrix, humic substances and mineral components as interacting elements, both with one another and with the application environment.

Alongside microbial diversity, we examine functional relationships: organic matter transformation, nutrient availability, pH, oxygen conditions and interdependent biological processes. We define the value of our technology through these interactions and their measurable effects on the system.

### Four interconnected technological functions

**Supporting biological balance.** We support operating conditions in which beneficial microbial and biochemical processes reinforce one another.

**Nutrient cycling and mobilisation.** We focus on the availability, more efficient utilisation and continued circulation of nutrients already present in the system.

**Organic matter transformation and value retention.** We treat organic residues as sources of carbon, energy and nutrients. We combine the transformation of problematic fractions with the retention of usable value.

**Risk reduction and recirculation.** We assess nutrient value, pathogen load and undesirable organic components together. We improve the conditions for safer recirculation.

### We organise practical results within a measurement framework

In our documented applications, we have observed improved feed efficiency and production indicators. In our manure and sewage sludge treatment studies, we have recorded favourable changes in nutrient and carbon parameters, alongside reductions in pathogen load and certain pharmaceutical residues, chemical residues and toxins.

We interpret our results in the context of each study. For new applications, we evaluate change using controls, baseline measurements and operational data. We verify nutrient and carbon retention through material balances, and metal-related processes through mobility and bioavailability assessments.

## From biological change to business value

We evaluate biological change together with its production, economic and environmental outcomes. For each intervention, we track system performance, resource utilisation and the value created. This connects scientific assessment with operational decision-making.

### Biological change → Production outcomes → Economic and environmental value

**At the biological level,** we examine nutrient availability, microbial status and organic matter quality.

**At the production level,** we measure yield, quality, feed efficiency and the value of treated residues.

**At the economic and environmental level,** we evaluate inputs and costs per unit of output, recirculated nutrients and avoided losses.

### We connect to the circular system through four application areas

**Crop production and soil.** We focus on soil biological function, nutrient mobilisation and utilisation, plant development, yield and quality.

**Feeding and livestock production.** We work on feed efficiency and production performance through applications connected to drinking water and feeding systems.

**Manure and organic residues.** We combine the retention of nitrogen, phosphorus and organic carbon within the system with pathogen load reduction.

**Wastewater and sewage sludge.** We develop organic matter transformation, nutrient recirculation and the conditions for use as secondary raw materials.

### From waste management to biological resource management

We treat organic residues as resources for the next production cycle. Alongside recirculation, we focus on avoided losses: we track the nutrients and organic carbon retained in the system, input use and the quality of the treated material.

We assess value retention and risk reduction together. For sewage sludge, we combine the evaluation of nutrient and organic matter content with the assessment of biological and chemical factors that limit its use. We base recirculation decisions on measured results and the requirements of the intended application.

### We see organic residues as resources for the next production cycle.

From waste management to biological resource management.

## We build circular systems with our partners

We are looking for partners to validate, integrate and scale biological circular economy solutions across agriculture, organic resource management and environmental technologies.

### We build cooperation with five partner groups

**Industrial implementation partners.** We launch pilots and reference projects with agricultural businesses, livestock farms, food processors and organic resource management facilities.

**Environmental technology and engineering partners.** We work with developers and integrators of wastewater, sludge and manure treatment, composting and nutrient recovery systems.

**Research and validation partners.** We seek universities, research institutes and accredited laboratories for the independent assessment of biological, agronomic and environmental effects.

**International commercial partners.** We develop local implementation and market entry with distributors, technology integrators and regional partners.

**Circular economy & climate partners.** We seek companies and institutions working on material circularity, nutrient recovery, organic carbon management, regenerative agriculture and Scope 3 emissions reduction. Together, we place measurable environmental performance at the centre of our cooperation.

### Our cooperation offer

**VALIDATE.** We verify the results of local applications through independent measurement and scientific assessment.

**INTEGRATE.** We integrate Esstence applications into existing technological processes.

**DEMONSTRATE.** We deliver pilot projects and industrial reference projects.

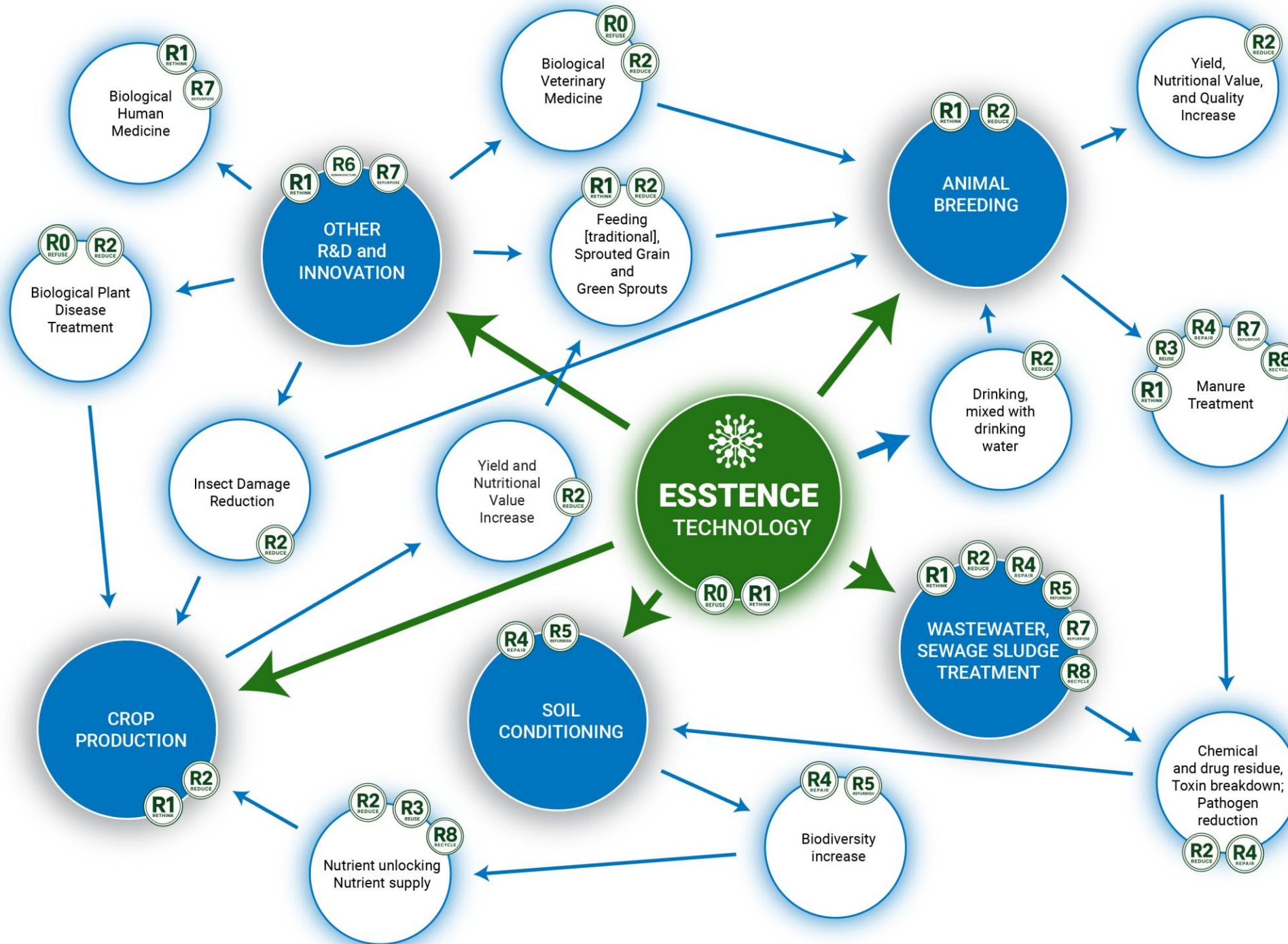
**SCALE.** We build international deployment on validated results, local adaptation and knowledge transfer.

**MEASURE.** We quantify biological, economic and environmental effects throughout our cooperation.

We provide technology, know-how, development and training. We base our joint work on a specific challenge, an application site and measurable success criteria.

## Our goal is to transform biological side streams from an environmental burden into resources for the next production cycle.

We are looking for partners to validate, integrate and scale biological circular economy solutions across agriculture, organic resource management and environmental technologies.



- R0 REFUSE**  
Strengthening natural biological processes reduces and partially or entirely replaces the use of certain external inputs.
- R1 RETHINK**  
Previously isolated, linear production processes become interconnected as a mutually reinforcing, unified biological cycle and value-creating system.
- R2 REDUCE**  
Specific input use, production losses and GHG emissions decrease, while production efficiency and profitability improve.
- R3 REUSE**  
Properly treated organic by-product streams become valuable production resources that can be used repeatedly.
- R4 REPAIR**  
The treatment supports the restoration of the functionality and balance of impaired biological processes.
- R5 REFINISH**  
The biological functioning of degraded production systems is renewed regeneratively while retaining the existing physical systems.
- R6 REMANUFACTURE**  
Existing biological raw materials are transformed through controlled processing into new, consistently high-quality and higher-value products.
- R7 REPURPOSE**  
Materials previously considered an environmental burden become higher-value agronomic resources with a new function.
- R8 RECYCLE**  
The nutrients, organic matter and beneficial microbial components of recovered and properly treated organic by-product streams enter new production cycles.