

# Technology Snapshot



## EcoFite: Microbial Formulation for Resilient Crop Performance

A versatile microbial consortium that enhances plant productivity and stress tolerance across greenhouse and field applications

### Applications

**Sectors:** agriculture, regenerative systems, bio-inputs

**Areas:** greenhouse production, field crops, sustainable agriculture

**Industries:** specialty crops, organic farming, precision agriculture

**Markets:** microbial biostimulants, biological seed coatings, sustainable crop enhancement, water-limited farming systems

### Partnership Opportunities

Los Alamos National Laboratory is seeking partners in agricultural biotechnology, crop input systems, or sustainable farming to advance field validation and support commercialization. Ideal partners include seed producers, biostimulant developers, or integrated agri-input providers.

### Technology Readiness Level 5-6

EcoFite is being validated in active greenhouse and field trials on tomatoes, lettuce, and sorghum in northern New Mexico and western Texas.

### IP Information

This technology is patent pending and PCT filed.

### Contact Information

For inquiries, contact FCI at [licensing@lanl.gov](mailto:licensing@lanl.gov).



Lettuce grown with EcoFite microbial formulation shows enhanced biomass and leaf vigor compared to untreated controls. Photo taken during active greenhouse trials at LANL.

### Overview

Modern agriculture faces persistent challenges including declining soil fertility, extreme weather, and rising input costs. EcoFite is a biologically based alternative that addresses these issues using a consortium of beneficial bacteria to promote plant growth, improve nutrient access, and enhance resilience to stressors like salinity and drought.

Designed for flexible application, EcoFite can be delivered as a seed coating or foliar spray. Current trials include lettuce, sorghum, and tomatoes under both greenhouse and field conditions, with promising early results across diverse crop types.

## Advantages

- Enhances crop yield, stress tolerance, and growth consistency
- Reduces reliance on chemical fertilizers and pesticides
- Improves nutrient use efficiency beyond nitrogen-based inputs
- Increases tolerance to drought, salinity, and temperature fluctuations
- Promotes healthier soil microbiomes and soil carbon sequestration
- Compatible with organic agriculture practices and application systems
- Enables growers to apply via multiple delivery methods for operational flexibility and ease of use

## Technology Description

EcoFite is a curated microbial consortium developed using LANL's rational design platform for microbial communities. The selected endophytes colonize internal plant tissue and promote performance through multiple mechanisms including enhanced nutrient uptake, stimulated growth, immune system activation, accelerated/synchronized flowering, and the release of plant metabolites that enrich soil microbial activity.

The formulation is compatible with organic systems and can be adapted to meet crop-specific needs. Its ability to operate across soil types and plant species supports wide adoption for both conventional and regenerative agricultural systems.

## Market Application

EcoFite addresses the growing need for scalable, biologically based crop support tools.

The formulation can benefit:

- greenhouse growers looking to maximize space and resource efficiency;
- open-field producers seeking to reduce chemical inputs and water use;
- organic farmers needing multi-pathway biostimulants compatible with certified systems; and
- seed companies and input providers aiming to expand their microbial product portfolios.

## Next Steps

Los Alamos is continuing field and greenhouse trials to validate efficacy under variable growing conditions. Ongoing work includes formulation optimization and shelf-life testing.

LANL is seeking partners to:

- support field deployment across additional crop types and geographies;
- scale production methods for commercial volumes; and
- co-develop market-ready applications with integrated delivery systems.