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Nitrogen fixation at scale — US & Canadian trials start for biggest global agri breakthrough in 70 years

IN A NUTSHELL

EL-I Tech™ is the biggest global agricultural breakthrough in 70 years — a biological engine that delivers nitrogen to crops with zero energy drain on the plant, replacing up to 220 lbs of conventional fertilizer per acre with 0.1 lb of EL-I Tech™ and significantly improving biomass and yield, with US and Canadian trials starting now.

Treated (right) vs untreated (left) maize trial · GPS-verified

Summary of key points

- **Plant-Independent Nitrogen Fixation:** EL-I Tech™ is the first technology globally to achieve scalable, continuous nitrogen fixation that does not rely on the host plant, representing the most significant agricultural advancement in decades.
- **Massive Cost Savings & Efficiency:** A single 0.1 lb per acre application of EL-I Tech™ can replace up to 220 lb of conventional fertilizer, stabilizing input programs and lowering transport costs.
- **Proven Performance:** The technology has been validated across more than 1,000,000 acres globally and delivers outcomes such as a 75% profit increase in corn, 54% profit increase in sunflowers, and a 35–38% yield increase in citrus.
- **Triple-Action Benefits:** Beyond yield, it converts greenhouse gases into plant-available nitrogen, improves soil structure, and enhances crop resilience.
- **Seamless Integration:** The technology is 100% natural, non-GMO, and integrates effortlessly into existing fertilizer systems — including liquid, granular blending, and seed-coat mixes — with no new equipment required.

Full release

EL-I Tech™, the first technology globally to achieve plant-independent nitrogen fixation at scale, represents the most significant agricultural advancement in the last few decades. It offers a strategic opportunity for agricultural input manufacturers seeking to strengthen fertilizer portfolios, improve nitrogen efficiency and deliver measurable, market-shifting value to growers.

U.S. and Canadian trials for EL-I Tech™ are now underway, giving early adopters the opportunity to evaluate a technology already proven across more than 400,000 hectares (1,000,000 acres) under real-world farming conditions.

Developed by a biotechnology company with 25 years of innovation expertise, EL-I Tech™ is powered by a perfected symbiosis between autotrophs and diazotrophs. This unique microbial partnership enables continuous, plant-independent nitrogen fixation with zero energy drain on the plant. For manufacturers, this provides a reliable, science-backed biological engine that enhances the performance of existing fertilizer products while also functioning as a highly effective standalone solution.

A single 0.1 lb per acre application of EL-I Tech™ replaces up to 220 pounds of conventional fertilizer per acre, improving nitrogen-use efficiency, stabilizing input programs, lowering transport costs and reducing risk for both manufacturers and growers.

The technology has been validated across multiple continents, seasons, climatic conditions, soil types, and production systems — including hydroponics — with consistent success in corn, soybeans, sunflowers, citrus, potatoes, peanuts, blueberries and wheat.

Performance results include

- 75% profit increase in corn
- 54% profit increase in sunflowers
- 35–38% yield increase in citrus
- 13% yield increase in potatoes
- 30% biomass increase and 10% chlorophyll increase in wheat
- 100% nitrogen satisfaction in hydroponic blueberries, with excess nitrogen fixed in the substrate
- A 300-hectare (740 acre) dryland wheat trial producing 4.5 tons/ha (66.9 bushels/acre) vs. the regional average of 2 tons/ha (28.75 bushels/acre)

These outcomes translate into stronger product differentiation, higher customer retention and greater portfolio resilience in a market increasingly shaped by nitrogen volatility, regulatory pressure, as well as demand for sustainable, high-performance solutions.

Beyond yield, EL-I Tech™ converts greenhouse gases into plant-available nitrogen, improves soil structure, and enhances crop resilience. Its triple-action biological performance includes:

- Plant-independent nitrogen fixation (EL-I Tech™)
- Phosphorus and potassium liberation (sParK Tech)
- Hydrocarbon remediation (Carbon Crushers)

The technology is 100% natural, non-GMO, biologically safe and poses no risk to soil microbiology, crops, humans, or animals. It is engineered for scalability, with extremely low application volumes, a 24-month shelf life in dormant form, and activation within minutes once in the soil.

EL-I Tech™ integrates seamlessly into existing fertilizer systems and can be used as a nitrogen enhancer, extender, or replacement — including liquid integration, granular blending and coating, water-soluble integration, compost enrichment, wetttable powders, and seed-coat mixes. No new equipment is required, and manufacturers retain full compatibility with UAN, urea, ammonium systems and precision-ag programs.

In addition, the technology also shows immense potential in environmental remediation, wastewater remediation, turf and landscaping, as well as forestry.

EL-I Tech™ is actively engaging with U.S. and Canadian regulators, researchers, manufacturers, distributors and growers. Comprehensive scientific data, safety documentation and independent analyses are available on the EL-I.tech website.

To contact the EL-I Tech™ team, and for more information, case studies, partnership opportunities, and access to exclusive U.S. and Canadian trials, visit el-i.tech and follow EL-I Tech™ on X and LinkedIn. You can also follow the team: Gerhard Vermaak (Inventor), Paul Vermaak (Operations) and Isolde Viljoen (Lead Scientist) on X and LinkedIn.

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Why EL-I Tech™ is perfectly timed for U.S. and Canadian markets

NOTES TO EDITORS

Agriculture across the United States and Canada is undergoing one of the most complex transitions in modern history. Input costs remain volatile, nitrogen programs are under pressure, international tensions could impact nitrogen supply, labor shortages are reshaping operations and growers are being asked to produce more with fewer passes, fewer people and tighter margins.

At the same time, manufacturers and retailers are navigating rising expectations around sustainability, environmental responsibility, data-driven management and product performance, while ensuring reliability for their customers.

We track these shifts daily. From precision agriculture and autonomy to biological adoption, climate variability and soil-health concerns, the trends shaping North American agriculture are clear: government is incentivizing R&D, innovation and documented improvements, farmers want efficiency, manufacturers want portfolio resilience and the entire value chain wants solutions that reduce risk rather than introduce it and technologies that boost cash flow without adding complexity.

Our research, technology development, partnerships, and support systems are built around these realities — grounded in data, aligned with real-world economics, and designed to strengthen the best of traditional systems while building a more resilient future.

What makes the EL-I Tech™ website an agri game changer

The EL-I Tech™ website gives agriculture input manufacturers and other agriculture professionals a clear, intuitive entry point into a fully digital, scientifically solid and user-friendly field-trial ecosystem.

They can onboard in minutes through secure invitations, access a mobile-first dashboard that joins them in the field, and follow step-by-step, protocol-driven trial workflows that remove all guesswork — from planning, to preparation, to planting to harvest and documentation.

Every action — from mapping control and treatment strips to uploading soil analyses, sap results and field photos — is effortlessly captured, GPS-verified and stored in one place, creating a clean, credible evidence trail.

At harvest, the platform automatically calculates yield and protein differences, presents results in a visual dashboard and ensures every data point is scientifically validated.

For Agri Input Manufacturers (AIMs), the Mission Control dashboard provides real-time visibility across all trials, farmer management tools, data-verification workflows and portfolio-level performance metrics that strengthen sales, regulatory submissions and commercial confidence.

Together, this system secures EL-I Tech™ as a category-defining partner: a seamless blend of patented nitrogen-fixing biologicals, rigorous scientific protocols and a sleek digital system that proves efficacy at scale.

About Custom Chemistry and EL-I Tech™

Custom Chemistry, a South African biotechnology company specializing in the practical application of microorganisms, has developed what many analysts consider the most significant agricultural breakthrough in 70 years. Its technologies are already in extensive use across Southern Africa and are now expanding globally. The company is the only licensed EL-I Tech™ manufacturer in the world and ensures a reliable supply of high-quality active ingredients on behalf of EL-I Tech™.

Nitrogen fertilizer remains the primary driver of high-yield agriculture worldwide. EL-I Tech™'s patented technology leverages a unique patented symbiosis between diazotrophs and autotrophic organisms to fix significant, crop-available nitrogen at levels previously unattainable through biological means.

This technology is supported by rigorous scientific validation, independent analyst reviews, and large-scale commercial performance. The future of agriculture is here, and it's available through Custom Chemistry.

About Gerhard Vermaak

Gerhard Vermaak has spent most of the past decade advancing the practical application of microorganisms across waste management, hygiene, bioremediation, and agriculture. His developments include full ranges of bioremediation products, cleaning solutions, and biological soil remedies.

His technologies are widely used across Southern Africa and are now entering global markets.

Press inquiries: altus@el-i.tech · el-i.tech/media · Patented biological nitrogen fixation for commercial-scale agriculture