

Syntopa Secures NSF SBIR Phase I Grant to Advance Microbial Carbon Removal for Agriculture

NSF funds Syntopa to develop microbe-mineral tech that enhances soil health, boosts yields, and reduces inputs—driving next-gen sustainable agriculture.

ALAMEDA, CA, UNITED STATES, May 19, 2025 /EINPresswire.com/ -- Syntopa, Inc., a biotechnology startup developing breakthrough solutions for climate mitigation and sustainable agriculture, announced today that it has been awarded a Phase I Small Business Innovation Research (SBIR) grant from the National Science Foundation (NSF). The grant funds development of a new microbial optimization platform designed to accelerate carbon dioxide removal (CDR) through enhanced rock weathering (ERW)—a nature-based solution that boosts soil fertility and farm productivity.

This NSF funding supports Syntopa's work to improve the ability of beneficial soil microbes to break down silicate rock dust. This process releases nutrients and draws down atmospheric carbon, storing it in the soil as stable minerals. Syntopa's approach has the potential to double the rate of natural mineral weathering and create a commercially viable agricultural input that strengthens U.S. food systems and builds climate resilience.

"We're honored to receive NSF support for technology that makes carbon removal more scalable, sustainable, and economically viable," said Hans E. E. Holtan, CEO and co-founder of Syntopa. "This work brings us closer to deploying regenerative tools that help farmers and the planet."

Bridging Climate Science and Agriculture

This SBIR Phase I effort focuses on creating a biological soil amendment that combines optimized microbes with mineral rock dust to improve both environmental and economic outcomes for farmers. Syntopa's approach builds on the natural capacity of certain soil bacteria to break down silicate rock—a process that removes atmospheric COI and improves soil quality by reducing acidity and increasing nutrient availability.

The work begins with characterizing a diverse library of soil microbial isolates to evaluate their

natural rock weathering activity and genetic tractability. A promising strain will be selected as a host for a series of targeted optimizations designed to enhance biological functions that drive mineral dissolution.

All optimized microbes will be tested for their ability to accelerate silicate weathering, with the project's goal being a twofold increase in weathering performance over the natural baseline in a single growing season.

The result will be a novel microbial product that enhances the function of rock dust as a soil amendment—capturing CO^I, enriching soil, and reducing reliance on synthetic fertilizers

Delivering Economic and Environmental Value

The broader impact of this work lies in its ability to deliver clear, measurable benefits to farmers. The engineered microbial product is designed to:

□ Improve soil fertility and reduce soil acidity

Enhance crop resilience and yields

Decrease chemical input requirements

I Generate new on-farm revenue through carbon removal credits

These co-benefits make the technology both attractive and financially accessible to farmers, offering a pathway for large-scale adoption across U.S. agriculture. Additionally, the use of mineral rock dust—sourced from domestic mining operations—has the potential to create new jobs in distribution and logistics across American farmlands.

"The need for carbon drawdown and regeneration of land is increasingly urgent. Syntopa's technology is a step-change for enhanced rock weathering (ERW) projects and can turbo-charge project economics while providing nature-positive outcomes for landowners and operators. Transforming project payback timelines in this way is particularly relevant in attracting more capital to scale ERW projects." said Chloë Payne, Investor, Ponderosa Ventures

About Syntopa

Syntopa, Inc. is an innovative biotechnology startup based in Alameda, California, focused on advancing sustainable and economically viable agriculture through cutting-edge microbial and biological technologies. The company develops products that enhance natural rock weathering,

improve soil health, and promote stable carbon fixation—providing farmers with practical, costeffective tools to reduce dependence on synthetic fertilizers, improve yields, and lower input costs.

By integrating synthetic biology with plant, microbial, and soil sciences, Syntopa delivers regenerative solutions that build long-term soil vitality and support resilient, low-input farming systems. These innovations not only contribute to environmental goals like carbon sequestration but also deliver clear financial and agronomic benefits to growers.

With a strong commitment to farmer success, economic resilience, and ecological stewardship, Syntopa is helping shape a future where agriculture is both more profitable and more sustainable.

For more information, visit: <u>www.syntopa.com</u>

Graham Anderson Syntopa Inc. +1 970-556-3698 graham.anderson@syntopa.com Visit us on social media: LinkedIn

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