



Lilac Agriculture raises \$2.3 Mn to re-engineer Rhizobium inoculants for pulse growers

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Oversubscribed seed round backs Lilac's Guided Adaptation platform, which is designed to improve both nitrogen fixation and competitiveness of rhizobial strains in field soils



Lilac Agriculture has raised \$2.3 million in an oversubscribed Series Seed financing round as the agricultural biologicals company moves to commercialise a new generation of rhizobium inoculants designed around a longstanding weakness in pulse production: the inability of commercial strains to consistently compete with native soil bacteria. The round was led by Innova and closed more than 50 per cent above Lilac's original \$1.5 million target. 701 Fund, Ag Ventures Alliance, Evergreen Climate Innovations, North Dakota Development Fund, Pathway Ventures, Tall Grass Ventures and other investors also participated.

For Lilac, the financing represents more than a conventional early-stage capital raise. The company is attempting to apply the logic of crop breeding to microorganisms, selecting and adapting rhizobial strains for the specific crops and soil environments in which they need to perform. That distinction addresses a critical problem in biological nitrogen fixation. Peas, lentils and dry beans form symbiotic relationships with rhizobia, bacteria that colonise plant roots and convert atmospheric nitrogen into

forms the crop can use. Seed inoculation with rhizobial bacteria is already standard practice among pulse growers.

The challenge is that the commercial strain applied to seed does not necessarily become the strain that dominates the plant's root nodules. Native rhizobial populations can already be established in agricultural soils and may out-compete introduced strains for access to nodules. When that happens, an inoculant may contain a highly effective nitrogen-fixing strain but deliver less benefit in the field than its laboratory characteristics would suggest. Lilac is building its technology around this competitiveness problem.

Turning rhizobium development into a targeted adaptation process

The company's Guided Adaptation platform is designed to optimise two characteristics simultaneously: nitrogen-fixing efficiency and the ability of a rhizobial strain to compete for nodule occupancy under real soil conditions. Rather than relying on a single broadly deployed microbial strain, Lilac begins with a diverse collection of rhizobial strains licensed exclusively from North Dakota State University. It then applies systematic selection and adaptation to develop strains suited to the environments in which they will ultimately be used.

The approach is intended to create microorganisms that can both fix nitrogen efficiently and establish themselves successfully in the presence of native microbial populations. That could have direct implications for pulse productivity and input economics. A strain capable of more effective nitrogen fixation, while maintaining strong nodule occupancy, could improve the crop's nitrogen supply and potentially reduce dependence on synthetic nitrogen inputs.

Lilac is initially focused on pulses, but the company sees the underlying platform as applicable beyond peas, lentils and dry beans, including potentially other row crops.

Moving biological efficacy from the laboratory to the field

The company is positioning field performance as a central part of its development model. Dr. Natalie DiNicola, CEO of Lilac Agriculture, said the company's objective is to address the gap between the performance expected from an inoculant and its ability to establish itself in the soil where growers actually use it. The current financing will support an expanded field-trial programme, the company's research and development pipeline, broader deployment of its lead product PL11 and preparations for entry into Canada.

PL11 is already being used by pea and lentil growers across the Northern Plains. Early trials have reported strong colonisation of the target strain across multiple locations, while broader field testing is now underway to establish performance across a wider range of growing environments ahead of the next commercial season. For a biological product, that validation phase is strategically important. Microbial performance can be influenced by soil conditions, existing microbial populations, crop variety and environmental conditions, making consistency across locations a key commercial hurdle.

Lilac's strategy is therefore built around measuring what happens after the inoculant reaches the field, rather than relying solely on laboratory characteristics or generic claims of biological activity.

A large but underexploited microbial diversity

The company's scientific thesis rests on the diversity of rhizobial bacteria available for development. Dr. Barney Geddes, Chief Scientific Officer at Lilac Agriculture, said commercial rhizobial development has historically relied on a relatively narrow set of strains, leaving significant microbial variation unexplored.

Geddes grew up farming before developing a career as a rhizobium researcher and building an extensive laboratory programme at North Dakota State University. His experience underpins Lilac's effort to connect microbial discovery with field-level performance. The company argues that adapting strains to the specific crop and soil environment, while measuring nodulation under commercial field conditions, could provide a more reliable route to improving inoculant efficacy.

That approach also reflects a broader shift taking place across agricultural biologicals. The first phase of the sector was largely about identifying useful microorganisms and bringing them into commercial formulations. The next challenge is making those organisms more predictable, robust and effective across the variability of commercial agriculture.

Investor interest reflects the nitrogen-efficiency opportunity

Innova's investment marks its first move into agricultural biologicals. Dean Didato, Partner at Innova, said the firm was attracted to Lilac's focus on improving strains that growers already understand and use rather than requiring farmers to adopt an entirely unfamiliar production practice.

The investment thesis also extends beyond the company's initial pulse market. Lilac's platform has been designed with the potential to adapt microbial strains for additional crops, creating a pathway from a focused rhizobium business into a broader agricultural biologicals platform. That scalability is significant as growers and the agricultural industry look for ways to improve nutrient-use efficiency without simply increasing synthetic input use.

Canada becomes the next commercial frontier

Lilac is also preparing for expansion into Canada, where registration is underway. The market is strategically relevant because Canada is the world's largest producer and exporter of both peas and lentils. Establishing a product that can demonstrate consistent strain performance across Canadian growing conditions could therefore provide the company with a significant extension of its pulse business beyond the Northern Plains.

The Canadian registration effort will also test the portability of Lilac's strain-development approach across different production environments. The larger proposition is a shift in how microbial inoculants are developed: from selecting strains for broad utility to adapting them for the specific biological and soil environments in which they must compete. If Lilac can translate that approach into repeatable field performance, rhizobium inoculation could move closer to becoming a precision biological input rather than a largely standardised seed-treatment practice.