NDSU NORTH DAKOTA AGRICULTURAL EXPERIMENT STATION

SBARE Testimony

NDSU Microbiolgical Sciences

We are not asking for a new initiative. **In alignment with NDAES leadership, we are asking SBARE to make NDAES operating support the top priority for the 2025-2027 biennium.**

Operating Support Powers Microbiome Innovation for North Dakota Agriculture

NDSU's Department of Microbiological Sciences has been a core engine for microbiome-driven solutions in crop and livestock systems. Legislative investment in Agribiome scientists, combined with operating support, has positioned NDSU Agriculture to be a national leader and to deliver solutions for North Dakota producers. Operating support is the priming fuel that activates this research capacity.

Operating Dollars Turn Faculty Lines Into Impact

2019 Agribiome Initiative - Crop and Livestock Microbiomes

- Three faculty positions focused on crop and livestock microbiomes, supported by NDAES operating dollars.
- Seventy external grants and gifts secured, totaling over $10 million in external funding.
- Field research conducted in 51 of 53 North Dakota counties, in partnership with all seven NDSU Research Extension Centers.
- Strong collaborations across the main station: Plant Pathology, Plant Sciences, School of Natural Resource Sciences and Animal Sciences.

Operating funds provided the startup packages, technical support, equipment access and field capacity that turned these positions from potential into productivity and impact.

Operating Dollars Build Shared Infrastructure

From lab technology to field impact

The Agribiome Initiative was made possible by advances in laboratory technology. Modern microbiome research depends on next-generation DNA sequencing and high-throughput sample processing to find the "needle in a haystack" across thousands of soil, plant and animal samples. We hired world-class microbiome faculty, but NDSU did not yet have the infrastructure those researchers needed. NDAES operating dollars allowed us to close that gap.

Dr. Thomas Glass Biotech Innovation Core

We used operating support, in conjunction with university investment and philanthropy, to help establish the Dr. Thomas Glass Biotech Innovation Core as a centralized facility, rather than duplicating capacity across multiple locations.

Today, the Biotech Innovation Core provides region-leading, shared microbiome capabilities:

- **DNA sequencing at scale** – instruments that can read the genetic "fingerprints" of millions of microbes in a single run, allowing us to track how microbial communities respond to management practices.
- **High-throughput sample processing** – automated systems that can handle thousands of soil, root, plant and animal samples, making it possible to see real patterns across farms, years and treatments instead of snapshots from a few dozen hand-processed samples.

Since the Agribiome Initiative began, we have added more than $2 million in shared microbiome research equipment to NDSU Agriculture. Annual service contracts and maintenance for this equipment now total more than $100,000 — costs that must be covered to keep these state assets operational.

The Biotech Innovation Core has now reached a self-sustaining model, with service contracts and routine operating costs supported through fee-for-service work for researchers, producers and industry partners. This is a win for the state: an initial operating investment helped build infrastructure that now sustains itself while multiplying the impact of every research program it touches.

On-the-ground impacts

- **Lilac Agriculture:** A startup company incubated in the Biotech Innovation Core, translating NDSU microbiome science into microbial tools that enhance crop production.
- **Rhizobia quantification assay:** An assay, developed by Dr. Barney Geddes with Precision Agriculture Initiative support and now offered through the Biotech Innovation Core, that quantifies nitrogen-fixing rhizobia in fields, helping growers decide when soybean inoculants will pay off.

For more information: Dr. John McEvoy, Head
Department of Microbiological Sciences | 701-231-8530 | John.Mcevoy@ndsu.edu