

AGRONOMY SEMINAR SERIES

FALL 2025

MONDAY, NOVEMBER 3, 2025

2:30 P.M.

LILY 2-425

This is an in-person only seminar. No Zoom link will be available.



Bryan Runck is a Senior Research Scientist in the GEMS Informatics Center and Principal Investigator of the Realtime Geoinformation Systems Lab at the University of Minnesota. His research focuses on integrating geospatial science, artificial intelligence, and real-time data systems for agriculture.



Agronomy

BRYAN RUNK, PhD

SENIOR RESEARCH SCIENTIST

UNIVERSITY OF MINNESOTA

HOST: DR. DIANE WANG

Large-language Models and Agentic Systems in Agroinformatics: Applications to Plant Breeding, Data QA/QC, and Sensor Fleet Management

Agricultural informatics spans the full pipeline from field data collection to data integration, storage, analysis, and decision support. As in other domains of computer and information science, large language models (LLMs) are reshaping and extending fundamental workflows in agroinformatics. In this talk, I will describe our research on ensuring correctness and reproducibility in systems that incorporate LLMs and AI agents.

Applications include:

- Breeding decision support, particularly the identification of gene bank accessions for population improvement
- Spatial data quality assurance and control, where AI agents support scalable data harmonization; and
- Large-scale sensor fleet management, where agentic systems automate monitoring and maintenance workflows.

Across these cases, we have found that LLMs embedded in semi-autonomous AI systems can yield transformative efficiencies for scientists and practitioners. However, ensuring correctness, reproducibility, and interpretability at scale remains a central research challenge.