NDSU COMPUTER SCIENCE | NDSU Agricultural Data Analytics | Microsoft

Field Research
Submission Tool

LEVERAGING TECHNOLOGY TO TRANSFORM HOW FIELD RESEARCH TRIALS ARE SUBMITTED

Seth Arvila, Anthony DeFoe, Nathan Hanson, Josh Heeren, Gavin Kestner

2025 CAPSTONE

VISION

Over 24,000 crop producers across North Dakota work with Research Extension Centers to participate in field research trials. Historically, these trials have been communicated using paper, email, phone, and more. This lead to slow and unclear communication. The Field Research submission tool is designed to be a single application that will streamline communication across the entire submission process.

EXECUTION

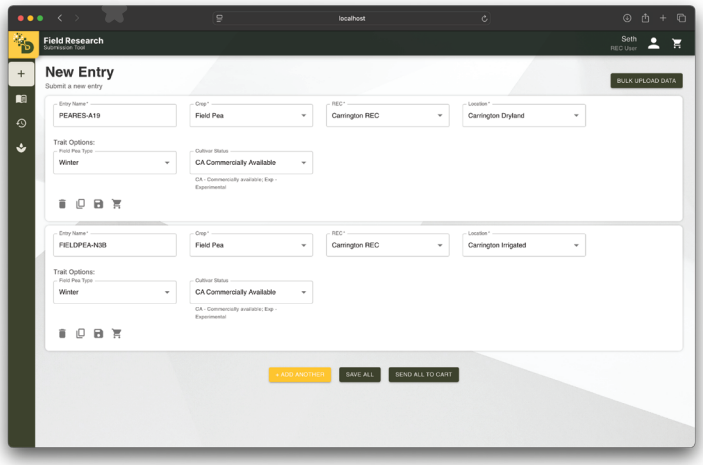
In partnership with Microsoft and the NDSU Agricultural Data Analytics Team the capstone team accomplished four key goals, modern and secure authentication using Google OAuth, bulk data upload support using Microsoft Excel, a refreshed and modern user interface to improve user experience, and significant code-level improvements to make for an improved developer experience.

STATEWIDE IMPACT

8 RESEARCH EXTENSION CENTERS

250 INDUSTRY PARTNERS

24,000 NORTH DAKOTA PRODUCERS



AUTHENTICATION
Allow users to securely sign in without needing to create an account

BULK DATA UPLOAD
Upload data into the system to create a better experience for power users

MODERN DESIGN
Modern and adaptable design that will allow for future improvements and features

DEVELOPER IMPROVEMENTS
Significant code-level improvements that will help future developers

DESIGNED TO
ADAPT. REUSE. MODIFY.

The system has been built from the ground up to be modular, adaptable, and easy for future developers to understand and to be used as a foundation for future projects.

REACT | NODE JS | **MODERN TOOLING** | MS SQL | DEV OPS