

Case Study

USDA IR-4 Program Leverages iAdvantage eStudy Platform to Modernize Scientific Field Research

Customer

USDA Interregional Research Project No. 4 (IR-4 Program)

Challenge

The USDA IR-4 Program plays a critical role in supporting specialty crop agriculture by generating the scientific data required for EPA pesticide registration and label expansion decisions. Because specialty crop markets are often too small to justify the cost of regulatory studies by agrochemical manufacturers, IR-4 conducts and coordinates research across USDA laboratories, universities, research stations, and industry partners.

USDA Stewardship Role: IR-4 is a federally supported USDA-linked research program established to help specialty and minor-use crop growers gain legal access to safe and effective pest-management tools by generating the field, residue, efficacy, and quality-assured data required to support EPA pesticide registrations and tolerances.

Managing these studies requires:

- Distributed field data collection across multiple locations
- Good Laboratory Practice (GLP) compliance
- Consistent data standards and quality controls
- Auditability and traceability of research results
- Rapid access to study information for stakeholders and decision makers
- Efficient coordination among researchers, laboratories, and regulatory partners

Traditional paper-based processes and disconnected spreadsheets can create delays, increase administrative burden, and introduce risks to data quality and integrity.

Solution

The **iAdvantage eStudy Platform** provides a secure, cloud-based research management environment that supports the collection, management, and reporting of scientific field-study data. IR-4's October 2024 article, [IR-4 Implements Electronic Field Data Book](#), describes how IR-4 moved from paper field data books to a customized electronic field

data book (eFDB) approach as part of its broader Path Forward 2.0 effort to streamline operations.

Article Summary: The IR-4 article explains that the program fully implemented electronic field data books in 2024 to replace long-standing paper field data books used in field trials. The effort originated from IR-4's Path Forward 2.0 initiative and focused on creating a customized, user-friendly electronic system that could meet GLP requirements for residue field trials. After evaluating software options, IR-4 selected iAdvantage because it offered established functionality aligned with EPA data requirements. The article describes a multi-year rollout that included internal piloting, input from experienced Field Research Directors, researcher training, a large-scale 2023 pilot, and broader 2024 implementation across IR-4 field research operations.

Within the USDA IR-4 ecosystem, eStudy Platform supports:

✔ **Electronic Field Data Collection**

Researchers can capture study data electronically from distributed field locations, reducing reliance on paper processes and enabling standardized data collection across sites.

✔ **Real-Time Study Management**

Program managers gain immediate visibility into study progress, data completeness, and operational status across geographically dispersed research activities.

✔ **GLP-Compliant Research Support**

The platform helps support Good Laboratory Practice requirements through structured workflows, controlled data management, and standardized processes.

✔ **Purpose-Built eFDB Implementation**

The IR-4 article notes that IR-4 evaluated multiple software options and selected iAdvantage because it provided established, off-the-shelf functionality aligned with GLP magnitude-of-residue field trials and EPA data requirements.

✔ **Data Integrity and Auditability**

The eStudy Platform provides traceability, audit trails, version control, and quality controls needed to support scientifically defensible datasets used in regulatory decision-making.

✔ **Centralized Reporting and Collaboration**

Researchers, program managers, and stakeholders can access consistent, up-to-date information through a centralized environment that supports collaboration across USDA, university, and industry participants.

Results and Benefits

The use of the eStudy Platform helps the IR-4 Program improve operational efficiency while strengthening confidence in the quality and integrity of research data.

Benefits to USDA IR-4 include:

- Faster and more efficient field data collection
- Reduced paper usage and administrative overhead
- Improved data accuracy and standardization
- Enhanced visibility into ongoing research activities
- Strengthened compliance with GLP requirements
- Greater confidence in data submitted to support EPA regulatory decisions
- Improved collaboration across research partners nationwide

Feedback associated with the program has highlighted the value of **real-time access to research data**, helping ensure proper study execution while reducing manual paperwork and transcription activities.

The article also highlights IR-4's phased implementation approach: internal piloting began after the March 2022 decision to move forward with iAdvantage, followed by researcher training, a large-scale 2023 pilot, and broader 2024 implementation across field trials.

Strategic Impact

The IR-4 Program serves as a powerful federal proof point for iAdvantage because the research it manages directly supports EPA pesticide registration decisions. This creates a unique connection between USDA research operations and EPA regulatory outcomes.

Through its support of the IR-4 ecosystem, the eStudy Platform demonstrates its ability to:

- Operate in federally funded scientific research environments
- Support high-quality, compliance-driven data collection
- Enable GLP-aligned study management practices
- Deliver trusted data used in regulatory decision-making

Looking Ahead

The successful application of the eStudy Platform within the USDA research environment provides a strong foundation for broader adoption across federal organizations with similar field-research, compliance, and data management requirements, including:

- EPA Office of Pesticide Programs (OPP)
- EPA laboratories and scientific programs
- USDA Agricultural Research Service (ARS)
- NIFA-funded research initiatives
- Other federal field-data collection and environmental research organizations

About iAdvantage

iAdvantage's eStudy Platform is a cloud-based research data management solution designed to streamline field-study operations, improve data quality, support regulatory compliance, and provide real-time visibility into scientific research programs.

Outcome: By helping modernize the IR-4 Program's research and data management processes, the eStudy Platform enables USDA researchers to generate reliable, defensible scientific data that supports critical EPA regulatory decisions and benefits U.S. specialty crop agriculture.

Conclusion

IR-4's impact extends beyond technology adoption: it serves as a critical steward of federally supported field research that helps specialty and minor-use crop growers access safe, effective pest-management tools. By modernizing field data collection through iAdvantage's eStudy Platform, IR-4 strengthens the quality, consistency, and traceability of scientific data used to support EPA regulatory decisions. This transformation reduces administrative burden, improves collaboration across USDA-linked research partners, and helps ensure that specialty crop agriculture continues to receive the research infrastructure needed to protect crops, expand production options, and support growers nationwide.

Reference: Raven E. Baez, ["IR-4 Implements Electronic Field Data Book,"](#) IR-4 Project, October 21, 2024.