



Field to Market®

Standard Operating Procedure for Governance of the Research Database

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FIELD TO MARKET VISION & MISSION

Our Vision: To champion solutions for tomorrow's safe, accessible, and nutritious food, fiber and fuel in thriving ecosystems.

Our Mission: To meet the agricultural challenge of the 21st century by providing collaborative leadership that is transparent; grounded in science; focused on outcomes; open to the full range of technology choices; and committed to creating opportunities across the agricultural supply chain for continuous improvements in productivity, environmental quality, and human well-being.

1.0 Introduction

Field to Market, the Alliance for Sustainable Agriculture, is a collaborative multi-stakeholder non-profit organization comprised of a diverse group of organizations collaborating to design and implement a program to define, measure, and promote sustainability in U.S. agricultural production. The mission of the alliance is to promote, define and measure the sustainability of food, feed, fuel and fiber for U.S. agriculture in an effort to maximize productivity while helping producers improve the management of their natural resources. Field to Market has developed a Supply Chain Sustainability Program and a Process Based Standard to advance this mission by providing a measurement and benchmarking Platform, resources for driving continuous improvement in environmental outcomes, and a verification program for documenting participation and progress.

Quantitative measurement of sustainability is done through the Fieldprint Platform, which collects field-level data and calculates metric outcomes. Farmers enter their field data through a Field to Market maintained web interface or through a data management platform of a Qualified Data Management Partner (QDMP). The Platform allows producers to calculate eight sustainability metrics for each field, and benchmark their performance relative to regional, state, and national benchmarks. Users of the Platform retain ownership of their data, as governed by the Platform Data Privacy Policy, and may opt to share their information with Project Administrators in order to participate in sustainability partnership projects. Users may additionally opt-in to include their data in a Research Database to be used in advancing the science of sustainable agriculture. This SOP describes the

process for governing management of and access to the Research Database.

2.0 OPTING-IN TO THE RESEARCH DATABASE

Individual users of the Platform will be prompted to respond to a Yes/No question on whether they would like to share their data with qualified and approved research projects. If they select “Yes” then their data will be stored according to the database management privacy and security policies of Field to Market, with the addition of a data flag indicating that all fields and years for that user are to be included as part of the Research Database. If they select “No” then their data will be treated in accordance with standard Field to Market data policies.

Information stored in the database for each opt-in user will include all data inputs and metric outputs EXCEPT for field boundary and geographic coordinates; user name; field name; and the optionally entered field identifiers. In addition, for each opt-in field, the connected soil information and weather information pulled from public databases and required to run the Fieldprint Metrics will be stored along with the user data entries and metric outputs. A detailed listing of information stored in the Research Database can be found in the Appendix.

User account information will include their response to the Research Database opt-in question which will be considered final for the year at the time of Project Reporting (currently April 30). Maintaining a static database in a given year is necessary to provide some guidance to researchers on the character and size of available data through the catalogue. Users can elect to change their answer at any time; however, such changes would be effective only as of April 30 of the year the change was made (the next time that a catalogue of available data is produced).

In accordance with Field to Market policies to provide a standard experience and opportunities to all farmers engaged in the program, the Research Database opt-in should be made equally available to all users of the Fieldprint Platform, including those entering data through Qualified Data Management Partners. Field to Market staff will work with each QDMP partner on any additional technical or legal requirements.

3.0 MANAGEMENT OF THE RESEARCH DATABASE

The Research Database will be managed by Field to Market staff and contractors. Users who opt-in will be flagged as such in the database maintained for the Platform. In the case of data from QDMP partners, field-level data marked as “Final” for the year will be captured and added to the database annually thru an upload to the platform by the QDMP.

All identifying information will be removed from the data records in the Research Database. Usernames, field boundaries, geographic coordinates and any other identifying information will be removed. The field will be labeled according to an anonymous grower id, anonymous field id, state, crop and year. All the rest of the inputs and outputs will be a part of the database, including soil properties and weather data from public databases that are currently used to run the metrics. This will enable researchers to account for the environmental conditions of the field without compromising the privacy of the owner or operator of the farm. Thus, no researcher requesting access will receive identifying information. A list of the information included for each field catalogued in the Research Database can be found in the Appendix.

An annual catalogue of available information from the Research Database will be produced each year within one month of the Project Reporting deadline (currently April 30th). This catalogue will include the number of fields and number of acres per state and per crop, and by year. The catalogue will be made publicly available so that interested researchers can gauge the potential relevance of the database to their work prior to submitting an application for access.

4.0 GRANTING ACCESS TO THE RESEARCH DATABASE

A standardized request and approval process governs access to the Research Database in accordance with the criteria list below. The Field to Market Science Advisory Council, supported by staff, is responsible for granting access. They may elect to consult external peer-reviewers from the scientific community when necessary. The process is based on

scientific journal review where peer reviewers submit recommendations, but the ultimate decision is up to the editor, in this case the designated Field to Market staff person responsible for the database management. The responsible staff person will be designated by the Board of Directors.

Field to Market staff will also have access privileges to use the data in the Research Database for analysis of sustainability trends and other research directly related to program development and reporting.

4.1 Criteria for approved projects

- Request must be related to a specific research question.
- Research has received or is applying for funding from an educational, non-profit, governmental, farmer-supported or philanthropic organization that requires dissemination of research results to the public (through peer-reviewed literature or reports/presentations posted to a public web site). Plans for making research results public must be detailed in the application for access.
- Research must focus on elements of interest to the Field to Market program, including: development of metrics for evaluating environmental impacts; understanding of conservation practice impact; development of guidelines for farmers on conservation practice adoption related to crop yield and environmental impact; understanding sustainability status, trends and drivers; and related work.
- The database cannot be directly used in the development of proprietary or for-profit software, tools or programs (no commercial use).
- Researchers must specify the crops, regions and data of interest and will be provided only with the subset of the database that is necessary to address their research question(s).
- Researchers must commit to objective and fair use of the data, and to remain objective in publications and communications of results. Research products will be subject to review by Field to Market staff and selected peer-reviewers to ensure compliance.
- Researchers agree to acknowledge Field to Market's Research Database in publications resulting from its use. Publications arising from analysis with the research database will not be considered Field to Market verified "claims".

- Researchers granted access to the database will be considered Research Members of Field to Market, with associated member dues and program contribution expectations as established by the Board of Directors.

4.2 Review and Approval Process and Timeline

Request: Interested researchers will consult the data catalogue and complete Request for Database Access form. They will submit this form, along with a draft or final copy of the full research proposal that would make use of the Research Database.

Review: Staff will receive and review each request for completeness. It will then be sent to two members of the Science Advisory Council for review. The reviewers will receive the application as well as the Application Evaluation form and will be asked to complete the review within 10 days. Reviewers will be tasked specifically with evaluating how the field level data will advance research in areas of relevance for Field to Market. The reviewers will have the options to approve, decline, or request that the application be reviewed by additional experts or the full Science Advisory Council.

Approval and Access: Once approved, Field to Market will notify the requesting researchers of the decision and ask them to sign the Researcher Agreement form.

If a letter of support for a proposal was requested, it will be provided by Field to Market staff within one week.

If the Database was requested, staff and contractors will develop and execute a custom query that meets the researchers specific request for crops, regions and years. The extracted data will then be provided to the researcher in a password protected data file. This will be done within one month of the request approval.

Verification: Approved Research Members will be contacted once a year with a request for an update on use and anticipated forthcoming publications and research products. Research results will be submitted to Field to Market for review prior to publication or presentation.

Staff will receive each publication review request and send it to two members of the Science Advisory Council for review. The reviewers will be asked to complete the review within 10 days and will be tasked specifically with evaluating whether the use of the data in the research is appropriate, and whether the results and conclusions adhere to the requirement for fair and objective use. The reviewers will have the option to approve the publication, or to make editorial requests of the researchers. If any concerns are identified, they will be documented for review by the Science Advisory Council. If a researcher is found in violation of any part of the Researcher Agreement, legal counsel will be consulted on the appropriate next steps.

5.0 DISSEMINATION AND USE OF RESEARCH RESULTS

The primary objectives of the Research Database are to develop stronger collaborations with the scientific community and facilitate additional research in scientific areas that are relevant to Field to Market program development and implementation. Research communications and relevant findings will be communicated to the relevant Field to Market staff and Committees and will be used by the Science Advisory Council in periodic assessments of research gaps in sustainable agriculture. In addition, a public-facing web page on the Field to Market website will be developed that links to all the publications and presentations arising from use of the Research Database.

6.0 REVIEW, APPROVAL AND AGREEMENT FORMS

The following forms have been developed to guide the review and approval process outlined in section 3 above.

6.1 Application for Research Use

For any questions prior to application, please contact science@fieldtomarket.org. Please submit a copy of the draft proposal (for a letter of support) or final approved proposal with this form and allow up to three weeks for a response.

Submit to: science@fieldtomarket.org

1. Principal investigator:

2. Collaborators:

3. Project title:

4. Project Abstract/Summary:

5. Funding Agency/Organization:

Has funding been secured?

Do you require a letter of support for a proposal?

Does the funding request include support for Field to Market?

6. Data Request Details

Please consult the annual data inventory at www.fieldtomarket.org for currently available data and specify the region, crops and years to which you are requesting access.

Description of research questions that this specific data set will be used to inform:

Description of how the data will be analyzed, and other data sources to be used in the project:

How will this research advance understanding of one or more of the environmental outcomes in Field to Market's program:

7. Have you read and do you accept the Field to Market Data Privacy Policy?

Link

8. Have you read and agreed to the Researcher Agreement for use of this database?

Link

6.2 Application Evaluation

For use by the Science Advisory Council reviewers

Is the application complete?

Does the application require user contact information for social science research?

Please evaluate for the following criteria:

- Has the research received funding from an educational, non-profit, governmental, farmer-supported or philanthropic organization that requires dissemination of research results to the public?
- Does the research focus on elements of interest to the Field to Market program? Indicate what specifically is of value to the program:
- Does the research adhere to the no commercial use requirement?
- Does the research adhere to the fair-use requirement?
- Does the application identify the specific data request and articulate how the data will advance the research?

Indicate any concerns with this application:

Is additional review by subject matter experts or the Science Advisory Council necessary?

Do you recommend this application for the data access requested?

6.3 Researcher Agreement

I, _____, confirm that I have read and understand the Field to Market Data Privacy Policy governing use of the Research Database. I commit to adhering to the following requirements:

- Data will be used solely for the purposes described in the application for access.
- Data will be used only by individuals named in the funded proposal for which the data are provided.
- Data will not be shared with other individuals for any research or other purpose.
- Field to Market will request an annual update on use of the database and anticipated publications and communications arising from the research.
- Data have been subject to minimal quality control; the user assumes the risks associated with use of such data in their research.
- The research arising from the use of this data will be communicated in an objective and fair manner.
- Any publications (papers, posters, presentations) arising from use of the data will be submitted for Field to Market staff review prior to publication or presentation, with at least 30 days provided for review.
- Publications will include acknowledgement of Field to Market's Research Database.

I commit to ensuring that I and any other researchers involved in this study will comply with the above guidance. I understand that failure to do so could result in loss of access to the Research Database.

Signature:

Date:

Name:

Title:

Institution:

Project title:

7.0 Appendix: Information Included in the Research Database

7.1 Data Inputs

- Anonymized Identifiers
 - Data Source: Fieldprint Calculator or QDMP
 - Grower ID (anonymized)
 - Farm ID (anonymized)
 - Field ID (anonymized)
 - State
 - Crop Year
 - Crop
 - Last modified on
 - Metric version

- Site Characteristics
 - Slope (%)
 - Slope Length (ft)
 - Surface Soil Texture Class
 - WEPS Climate Station ID
 - WEPS Climate Station Name
 - WEPS Climate Station State

- Crop Rotation
 - Previous crop
 - Residue burning
 - Previous yield
 - Amount residue left on field
 - Predominant crop rotation practice
 - Use of cover crops
 - Cover crop species
 - Cover crop establishment timing

- Tillage Practices

- Tile Drainage System

- Land Conversion
 - Type of land conversion
 - Converted area (acres)

- Seeding Rate and Seed Treatments
- Irrigation
 - Water source
 - Water applied (acre_inch / acre)
 - Pumping energy
 - Enter exact energy amount
 - Pumping pressure (psi)
 - Pumping depth (ft)
 - Energy source
 - Electric amount (kwh)
 - Fuel type
 - Fuel amount
 - Water conservation methods
- Crop Protectants and Harvest Aids
 - Total herbicides
 - Total insecticides
 - Total fungicides
 - Total growth regulators
 - Total fumigant
 - Total harvest aids
 - Timing
 - Method
- Nutrient and soil amendment applications
 - Fertilizer
 - *Nitrogen applied*
 - *Nitrogen carryover (lb / acre)*
 - *Phosphorus applied*
 - *Phosphorus soil test*
 - *Phosphorus tears applicable*
 - *Total N (lb / acre)*
 - *Total P2O5 (lb / acre)*
 - *Total K2O (lb / acre)*
 - *Number of fertilizers*
 - *Fertilizer type*
 - *Fertilizer rate*
 - Manure
 - *Number of manure applications*
 - *Timing*
 - *Method*
 - *Manure type*
 - *Manure amount*

- Lime
 - *Year applied*
 - *Estimated number of years lime will be applicable*
 - *Lime amount (ton / acre)*
 -
 - Harvest
 - Number of harvests / cuttings
 - Entered yield
 - Estimated non-Irrigated yield
 - Drying
 - Energy source
 - Electric amount (kwh)
 - Fuel type
 - Fuel amount
 - Transportation to 1st Point of Sale
 - Distance from field to point of sale (miles)
 - Load back-haul
 - Transportation fuel type
 - NRCS Conservation Practices
 - Crop-Specific Inputs
 - Rice
 - Alfalfa
 - Cotton
 - Sugar Beet
 - Peanut

7.2 Metrics Outputs

- Land Use Score (acre / yield units)
- Soil Conservation Score (ton / acre / year)
 - Water Erosion (ton / acre / year)
 - Wind Erosion (ton / acre / year)
- Soil Carbon (Soil Conditioning Index)
- Irrigation Water Use Score
- Energy Use Score (btu / yield units and acre)
 - Application - seed treatment energy
 - Application - fertilizer energy
 - Application - lime energy
 - Manure loading energy

- Seed energy
- Irrigation energy
- Post-harvest energy
- Transportation energy

- GHG Score (lbs CO₂e / yield units and acre)
 - Application energy emissions
 - Application - seed treatment energy emissions
 - Application - fertilizer energy emissions
 - Application - protectant energy emissions
 - Application - field operations energy emissions
 - Application - lime energy emissions
 - Manure loading energy emissions
 - Seed energy emissions
 - Irrigation energy emissions
 - Post-harvest energy emissions
 - Transportation energy emissions
 - Nitrous oxide energy emissions
 - Rice methane energy emissions
 - Residue burning energy emissions

- Water Quality Score (STEP)
 - Subsurface phosphorus field sensitivity score
 - Surface nitrogen field sensitivity score
 - Subsurface nitrogen field sensitivity score
 - Surface phosphorus risk mitigation score
 - Subsurface phosphorus risk mitigation score
 - Surface nitrogen risk mitigation score
 - Subsurface nitrogen risk mitigation score
 - Surface phosphorus pathway ratio
 - Subsurface phosphorus pathway ratio
 - Surface nitrogen pathway ratio
 - Subsurface nitrogen pathway ratio
 - Surface phosphorus pathway mitigation
 - Subsurface phosphorus pathway mitigation
 - Surface nitrogen pathway mitigation
 - Subsurface nitrogen pathway mitigation

- Biodiversity Score (Total % Realized HPI)

8.0 VERSION HISTORY

Version/Date	Change	Link
1.0	Initial Publication	Version 1.0
1.1	Various minor edits and revisions made after completion of the grant period.	Version 1.1
1.2	Updated contact information and addition of appendix listing data included in catalogue	Version 1.2