**FERTIMANURE**
Innovative nutrient recovery from secondary sources – Production of high-added value **FERTI**lisers from animal **MANURE**

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# D8.2
# DATA MANAGEMENT PLAN

FERTIMANURE

This project has received funding from
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FERTIMANURE

# Deliverable

**Project Acronym:** FERTIMANURE

**Project full name:** Innovative nutrient recovery from secondary sources – Production of high-added value FERTIlisers from animal MANURE

**Grant Agreement No.** 862849

# D8.2 – Data management plan

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FERTIMANURE

## Document History

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## Abbreviations

**DMP** Data management plan

**GA** Grant Agreement

**WP** Work Package

**PMT** Project management team

**PTC** Project Technical Committee

**PMB** Project Management Board

**PC** Project Coordinator (institution)

**IPR** Intellectual property rights

# Contents





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# 1. Introduction

The Data Management Plan is a deliverable for project management, within the Project Management Work Package (8), and establishes procedures and plans for handling data generated through the FERTIMANURE project. Its intended is use is internal by the FERTIMANURE consortium, though it is in fact a public deliverable. Its first version is issued in M6, with subsequent releases in M16, M32, and M48.

## 2. Objectives

The Data Management Plan (DMP) sets out the procedures and plans for handling data generated through the FERTIMANURE project, and is intended to be a manual for guiding and facilitating general data management and data storage needs for FERTIMANURE consortium members. This document also aims to clarify the obligations that beneficiaries have in terms of data standards, storage and protection, during the project and beyond with the objective of facilitating the exploitation of the results. It is intended to be a continuously evolving document, and hence can be adapted as the project progresses. This adaption will allow for any developments that have not been foreseen at the project start, and will be facilitated through review by the consortium members via the consortium meetings (Project Management Board).

The expectation is that the project will produce 5 types of data, which include:

1) Documents generated for project analyses or deliverables
2) Schematics and P&IDs of the different FERTIMANURE on-farm pilots
3) Experimental, including:
    a. Data collected on pilot operation and processes
    b. Data on the properties and quality of products obtained from the pilot plants
    c. Experimental data collected in the agronomic trials
4) Data collected for undertaking the LCA and sustainability analyses
5) Software tools

Due to the particular nature of these data types, the way each are generated, and the limitations for sharing and publication of each, the following sections outline the ways these data will be gathered, maintained, shared, and published.

## 3. Dataset types and description guidelines

The FERTIMANURE project is likely to generate a number of different types and sets of data that have been classified into different categories by the project management team (PMT) and project technical committee (PTC). Data types are always associated with deliverables, and some deliverables are expected to be associated with different data types which have different data management, collection, and privacy procedures (sensitive data).

The expected data sources and types are summarized in the following table, and the following sections provide a brief description of these data types. Data type abbreviations are as follows: Document (D), Schematics (S), Experimental (E), Sustainability data (LCA), or software (W).



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Table 1. FERTIMANURE Deliverables and associated generated data.

| | **Deliverable description** | **Data type** | **Public** |
|---|---|---|---|
| 1.1 | Report on the flow assessment, logistics and characterisation of animal manure and byproducts | D | |
| 1.2 | Report on the market landscape analysis and end-user preferences in the project participating EU states | D | X |
| 1.3 | Report on the BBF Regulatory Framework in the EU and CELAC countries | D | X |
| 1.4 | Report on the nutrient imbalances analysis | D | X |
| 2.1 | Processes and technologies specification and set up to produce rawproducts/fertilizers from animal manure | D, S, E | |
| 2.2 | Raw fertilizers production and characterization vs. time (list, average composition and composition variability) | E | |
| 2.3 | Mass and energy balance of the on-farm pilots to WP5 | E | |
| 3.1 | Processes and technologies specification and set up to produce On-farm TMFs from animal manure | S | |
| 3.2 | Product specification practical criteria to produce TMFs for selected crops | D, E | |
| 3.3 | Logistics aspects for BBFs and TMFs to supply regional markets | D | |
| 3.4 | Synthesis of FERTIMANURE contributions to standardisation procedures | D | X |
| 3.5 | Report on the suitability of the FERTIMANURE end-products for organic farming | D | X |
| 4.1 | Report on agronomic performance of the obtained BBFs and TMFs | D, E | X |
| 4.2 | Report on agronomic and environmental performance in field trial experiences | D, E | X |
| 4.4 | Homogenised procedures to assess agronomic performance in pot tests and field trials | D | X |
| 5.1 | Sustainability reports for LCA, LCC and SCLA. **Potentially sensitive data* | D, LCA | X |
| 5.2 | FERTIMANURE Decision Support System | W | X |
| 6.3 | Inventory of stakeholder groups relevant for BBFs and market uptake | D | X |
| 6.4 | Business plans for 3 types of end-products | D | |
| 6.5 | Business models for farmers and fertilisers companies | D | |
| 6.6 | Policy proposals and guidelines for successful market uptake | D | X |
| 6.7 | Report on FERTIMANURE replication potential in CELAC region | D | X |



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## 2.1 Documents

The majority of FERTIMANURE data sources comprises documents. Documents are generated from the large number of project deliverables over the project lifetime. Some of these may include parts or all of other specific data sets or types described below, but not in all cases. Documents also include scientific papers generated by project activities and data, which will be made available in open repositories as stipulated in the Grant Agreement.

## 2.2 Pilot plant schematics, designs, and piping and instrumentation diagrams (P&IDs)

The design and demonstration of innovative pilot plants is a key activity of FERTIMANURE, and the proper documentation of these pilots is important for dissemination and propagation of the project concept and results. The type of documentation of the plants will include records of the technical requirements for production of the pilot plants demonstrated during the FERTIMANURE project. They are likely be graphics in PDF, JPEG or CAD format in each case and will be used on an internal basis by the consortium members. However, in principle, FERTIMANURE P&DIs of pilot plant operation will only be available to consortium partners, thus the detailed P&DIs of the plants may or may not be made available publicly. However, simplified schematics can be made public, so that their operation can be understood by all. Therefore, in the Project Technical Committee (PTC) meeting on 6-4-2020, it was discussed that partners responsible for pilot plants should provide/produce basic schematics of pilot plant operation, since the technical details of the processes may be proprietary information of the partners.

## 2.3 Experimental data

### Pilot plant monitoring and operation data

On one hand, pilot plant monitoring and operation data will be associated with the pilot plants, since their monitoring is key for both optimizing their operation, reaching conclusions about their functionality, and decision-making on their operation. This data is likely to be gathered in a data sheet format. The data is mainly gathered in Tasks 2.2 and 2.3. The data will be collected individually by the partners in a coordinated and standardized manner. Part of this data will be also included as part of the deliverables produced.

### Fertilizer quality and characteristics

The bio-based fertilisers and tailor-made fertilisers created during the project will be thoroughly analysed for their chemical, physical, and biological properties, as well as contaminants. This information will be gathered and stored in data sheets. The data is mainly generated in Task 3.1 “Quality assessment of products generated.” The data will be collected individually by the partners in a coordinated and standardized manner.



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### Agronomic experiment data

This data will derive from experimental activities of FERTIMANURE, including Tasks 4.1, 4.2, 4.3. The data will be collected individually by the partners in a coordinated and standardized manner.

## 2.4 LCA and sustainability analysis data

The LCA and sustainability analysis data comprises of a large variety of data encompassing environmental, economic, and social aspects of manure and fertilizer management. The data can include environmental data (increases or decreases environmental contamination), data used to calculate the environmental footprint (e.g. $CO_2$ emitted by tractors), product prices, costs of production, etc., in order to arrive at a balance of costs and benefits generated in a wide variety of environmental and economic indicators. This data will be gathered among the consortium in a standardized and coordinated manner.

## 2.5 Software tools

FERTIMANURE includes the creation of one software tool, developed in WP5, consisting of a Decision Support System (DSS). The tool will be made for distribution to external users, as a product of the project for improvement in the management of manure resources. The DSS coding data will only be accessible and used by specific consortium members.

# 3. Reuse of existing data

## 3.1 Partner data

For some activities, deliverables, and products of FERTIMANURE, the consortium members will be asked to provide data from their activities and/or institutional experience to feed models, data-driven analysis, and software tools. Specifically, these activities are mainly related to tasks of Work Package 5, the Sustainability Assessment. In Task 5.1, an integrated data-gathering tool based on questionnaires and databases will be developed to ensure data quality collection for tasks 5.2, 5.3 and 5.4. In this way, the same set of data will be used in the three-fold assessment and it minimizes the required capacity of other WPs to collect and deliver data. To perform all the analyses of WP5 a huge amount of data is necessary, sometimes sensitive or even confidential data. The task leader will explore among all partners the willingness/possibility to provide data, and the involved participants will adapt their work to the data available.

During project execution, the partner responsible for collection of sensitive data will guarantee the use of this data in a wholly confidential manner. Data feeding the DDS will remain totally anonymous once introduced into the software, preventing any manner of tracing to its source or identity of its owner. In the case that such data is provided and the owner wishes to assure



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legal confidentiality, bi-lateral non-disclosure agreements (NDA) will be signed between the data owner and the partner responsible for developing the project technical product.

Partner data is also used in the preparation of deliverables within WP1. Specifically, this data may consist of laboratory analyses of animal manures, cartography generated by partners, or data from projects in which partners are associated. In all cases, the data sources will be duly cited.

### 3.2 Public data

FERTIMANURE does make some use of publicly-available data. For instance, this use of public data is foreseen in WP1 in the European and regional-scale analyses of stocks and flows of manures and nutrients. In this case, publicly-available European data and cartographic products are used. In all cases, the data sources will be duly noted and referenced in the text.

## 4. Data use and sharing guidelines

Two main platforms are to be used for sharing data and information, either publicly (PU) or confidentially (CO, within the consortium). PU data is to be shared on the project website in the Documentation Section for communication and dissemination purposes. On the other hand, all project documents, public and confidential, are hosted on the cloud server service used solely by the consortium (Google Drive). Confidential data described in this document will be uploaded and organized appropriately on the server. The server is accessible by username and password that will be provided by the Project Coordinating institution, accessible to all consortium members. FERTIMANURE consortium members are all aware that it **is strictly prohibited to share these access credentials to anyone outside of the consortium.** The credentials will be changed periodically during project execution to assure the security of these data.

### 4.1 Documents

#### Project documents and deliverables

The FERTIMANURE deliverables, as shown in Table 1 above, include a large number of documents generated during the project. Many of these documents are public, intended for wide, open distribution. The level of dissemination is indicated in Table 1. The public deliverables will be published in the project website as well as on the Biorefine Cluster Europe (BCE wwww.biorefine.edu) website and partners will be able to use them for dissemination purposes. Public deliverables will be advertised on project media channels. In case of non-public deliverables, they will only be available for project partners. Any communication/dissemination of the results available in non-public deliverables will need to be previously discussed among partners in the PTC and/or PMB.



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### Scientific publications

As stated in the FERTIMANURE consortium agreement, each beneficiary must ensure open access (free of charge online access for any user) to all peer-reviewed scientific publications relating to its results, and will mentioned the project as a funding source. In particular, it must:

a) As soon as possible and at the latest on publication, deposit a machine-readable electronic copy of the published version or final peer-reviewed manuscript accepted for publication in a repository for scientific publications. Moreover, the beneficiary must aim to deposit at the same time the research data needed to validate the results presented in the deposited scientific publications.
b) Ensure open access to the deposited publication — via the repository — at the latest: (i) on publication, if an electronic version is available for free via the publisher, or (ii) within six months of publication (twelve months for publications in the social sciences and humanities) in any other case.
c) Ensure open access — via the repository — to the bibliographic metadata that identify the deposited publication.

The bibliographic metadata must be in a standard format and must include all of the following:

- the terms “European Union (EU)” and “Horizon 2020”;
- the name of the action, acronym and grant number;
- the publication date, and length of embargo period if applicable, and
- a persistent identifier.

## 4.2 Pilot plant schematics, designs, and P&ID

As discussed above, partners will be encouraged to elaborate pilot plant schematics in a simplified format which can be made available publicly. However, due to potential interest of intellectual property rights or proprietary information, it will not be necessary that detailed technical P&ID be made available either to the consortium or publicly, though if the partner wishes, these can be made available on the Google Drive for consortium members.

## 4.3 Experimental data

Experimental data is data which is gathered in pilot plant monitoring and operation (WP2), the analysis of bio-based fertilizer and tailor-made fertilizer properties and quality (WP3), and agronomic experiments (WP4). The gathering and organization of this data will be the responsibility of the WP leader in all cases. It is not obligatory that this data be shared either between consortium members or publicly unless specifically required by a project deliverable. Partners or WP leaders do not have any special right to ask for data generated outside of the requirements for WP. Data sharing agreements among partners are not regulated on the project level, but of course cooperation and collaboration is highly encouraged, both for the development of scientific publications in order to disseminate the FERTIMANURE results as widely as possible, and in the spirit of good cooperation and scientific advancement.

## 4.4 LCA and sustainability analysis data



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LCA and sustainability analysis data-gathering is defined within WP5 and led by the coordinator of that work package. During the development of the WP, the different types of data to be gathered will be explored with the partners. As a general rule, this raw data is wholly confidential, and will not be shared by the LCA task leader under any circumstances. The data is used for the creation of modelling tools and numerical analyses which are the end result deliverables. This data will be sent directly in private correspondence to the task leader, and will not be made available on the cloud server.

### 4.5 Software tools

The Software tool developed in WP5 will be created with data described in section 4.4 above. This data is confidential and not publicly available. However, the tool created will undergo a public distribution. This tool will be made available as a download from the FERTIMANURE website.

## 5. Methods for sharing within the consortium

Within the FERTIMANURE project, confidential data includes any data not explicitly required by the project deliverables. Distribution of any data gathered by partners to other parties or platforms is not to be allowed without the explicit consent of the partner responsible for gathering the data.

Regarding intellectual property, any confidential data will not be disclosed outside the consortium to avoid loss of IPR and damage to beneficiaries.

In terms of information sharing, the effective communication and sharing of information and documentation between partners within each WP and within the entire consortium will be facilitated the use of the online data server (Google Drive). The following information will be shared among partners using the online platforms. Some of the consortium-level documents available on the Drive include:

- Contractual documents, including the consortium Agreement and Grant Agreement, Description of Work.
- Administrative documents: financial reports, progress report.
- Technical documents: deliverables, reports.
- Other documents: dissemination material, templates, meeting minutes, contact details of all the participants.

As the project progresses, documents will be shared among all FERTIMANURE consortium partners via the online server. The project coordinator will facilitate all partners the username and password for gaining access to the server. The Google Drive will also be managed by partners, whereas all consortium members will have reading and writing rights on this server. This way they can share new information, provide reviews, and upload project materials. Each Work Package leader will be responsible for uploading any relevant data/files to the Google Drive. Once uploaded, only the Coordinator should delete obsolute files from the FERTIMANURE drive after having consulted the relevant Task or Work Package Leader.

## 7. Data security



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Access to the data stored on the FERTIMANURE Google Drive server will be restricted to invited participants only. The credentials for this cloud server will be changed during the project life to ensure data security.

With regards to the data gathered for WP5, any sensitive data collected by the task leader will be stored on secure local devices only accessible by the team members specifically involved in treating and analysing the data.

## 8. Ethical aspects

For ethical issues, the project has dedicated work package (WP9) to ensure that ethical requirements are met for all research undertaken in the project, including data management aspects, in compliance with H2020 ethical standards.

## 9. Intellectual property rights

As regarding the intellectual property rights of consortium members, it is not expected that this aspect is affected by data management procedures, since it is not foreseen that any privileged information sharing is required in the elaboration of the project deliverables, or will be requested by one consortium member to another.

## 10. Data maintenance

As set out in article 18.1 of the Grant Agreement, the beneficiaries must — for a period of five years after the payment of the balance — keep records and other supporting documentation in order to prove the proper implementation of the action and the costs they declare as eligible. Therefore, in order to assure unequivocal and maximum alignment with the obligations of the grant agreement, all documentation and data will be kept on the FERTIMANURE internet server (Google Drive) for a minimum of 5 years following project closure as described above. All other data generated during the project and not uploaded to the cloud server must be kept for the same period by each individual beneficially in an appropriate secure digital medium. For related matters and details, it is assumed that the beneficiaries respect all obligations specified in the Grant Agreement.



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