



LIFT FARM TYPOLOGY-TOOL

USER GUIDE

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Access to the tool: <https://agroecology.app.inrae.fr/>

LIFT website: <https://www.lift-h2020.eu/>



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1. Background of the LIFT typology-tool

1.1. Context

The LIFT typology-tool materialises the LIFT farm typology developed in the LIFT project. The LIFT farm typology is “a classification system applied to individual farms, based on identified key characteristics of their farming management strategies and adopted farming practices” (Rega et al., 2021). The LIFT farm typology identifies six farming systems (or ecological types): standard farming, conservation agriculture, low-input farming, integrated (circular) farming, organic farming, and agroecological farming. Two types of protocol were developed to assign a farm to a farming system in practice: a protocol based on the secondary data from the European Union's Farm Accountancy Data Network (FADN)¹, and a protocol based on the primary data collected in LIFT through the LIFT large-scale farmer survey. Due to the lack of specific information in the FADN data, the FADN-based protocol considers only four ecological types: standard farming, low-input farming, integrated (circular) farming, organic farming.

The LIFT typology-tool makes use of the FADN-based protocol. It is a free and user-friendly tool that was built using the programming language R and in particular the R-package “shiny”². Users can apply the tool on their own data that they input in the tool. The tool's comprehensive glossary, and the access to all parameters underlying the model utilised, make the tool very transparent and offer the possibility for further development and customised adaptations.

The main objective of the LIFT typology-tool is to assign a farm to one of the four ecological types. Further, the LIFT typology-tool enables to compare the performances of farms belonging to different ecological types, taking into account bioregions and production types of farming. Thus, the LIFT typology-tool assigns, on the one hand, a farm to an ecological type based on user-provided input data and, on the other hand, benchmarks the performances of this farm – with regard to various dimensions – against those of a defined peer group. Stakeholders were involved in the design of the tool through stakeholder workshops during which preliminary versions of the tool were presented. This consultation helped adjust the tool to stakeholders' needs.

This user guide describes the interface of the LIFT typology-tool with its different functionalities, and then explains how to use it. A video tutorial is available, with an example of application to practice with the tool.

1.2. Objectives of the LIFT typology-tool

The LIFT typology-tool is a free and user-friendly tool that can be applied to primary or secondary data, which are inputted in the tool by the user.

The tool has two key objectives:

1) First of all, the tool allows for classifying farms into ecological types, based on farm-level input data provided by the user through the dedicated interface or through a file upload, using the FADN-based protocols as described in LIFT Deliverable 1.4 (Rega et al., 2021). As an output, the tool provides a

¹ https://ec.europa.eu/info/food-farming-fisheries/farming/facts-and-figures/farms-farming-and-innovation/structures-and-economics/economics/fadn_en

² <https://agroecology.app.inrae.fr>

graphical snapshot of the current situation of the farm. In addition, the tool offers the possibility to explore the impacts of changing input variables.

2) The second objective of the tool is to enable the user to benchmark the evaluated farm against a peer group, on several performance indicators covering the economic, social and employment, as well as environmental dimensions, taking into consideration the ecological type of the evaluated farm.

The targeted users of the LIFT typology-tool are mainly researchers, policy makers and professionals, in particular farm advisory services, as well as students.

2. Interface and functionalities of the LIFT typology-tool

The tool has been designed as a website with an interface to upload data and show the results of the analysis.

The graphical user interface of the tool ([Figure 1](#) & [Figure 2](#)) consists in a side panel on the left-hand side and a main panel on the right-hand side. The side panel contains all functionalities related to up- and down-loading files, whereas the main panel is subdivided into several tabs, allowing either to entering input data or to viewing output results. The main panel also includes a glossary and the possibility to look up for a bioregion, defined on the basis of NUTS3³ regions and altitude. Both panels are described in detail below in the sections 2.1.1. and 2.1.2.

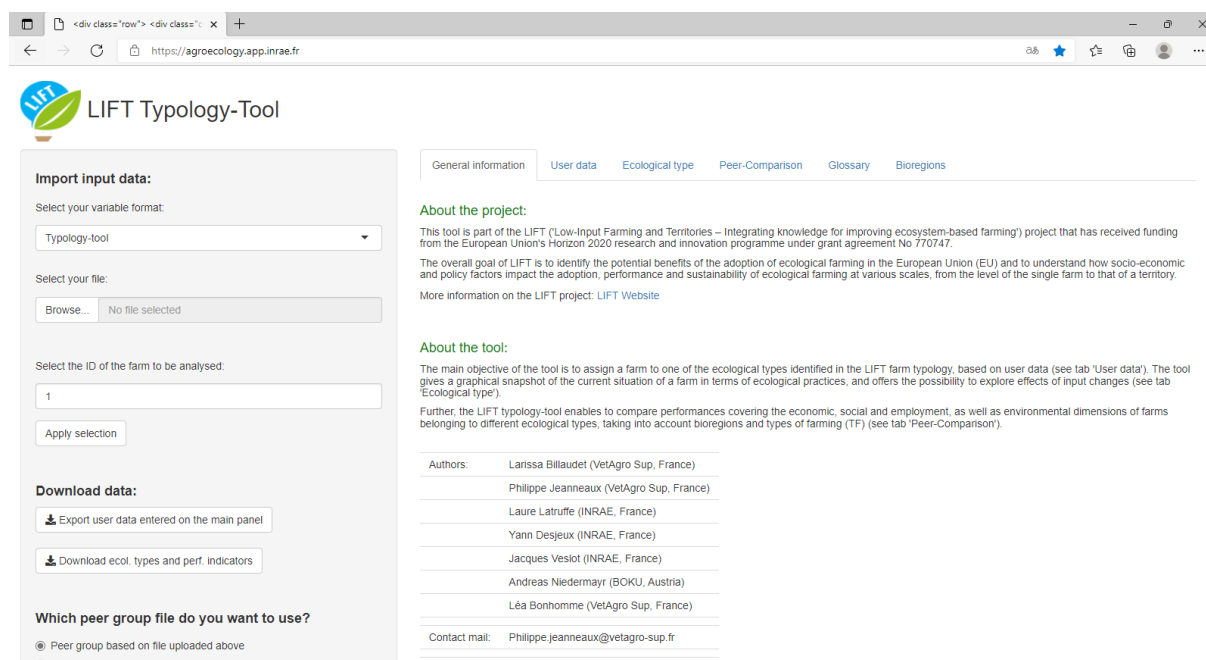


Figure 1: Graphical User Interface with the side panel on the left-hand side and the main panel on the right-hand side of the tool part 1

³ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Nomenclature_of_territorial_units_for_statistics_\(NUTS\)](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Nomenclature_of_territorial_units_for_statistics_(NUTS))

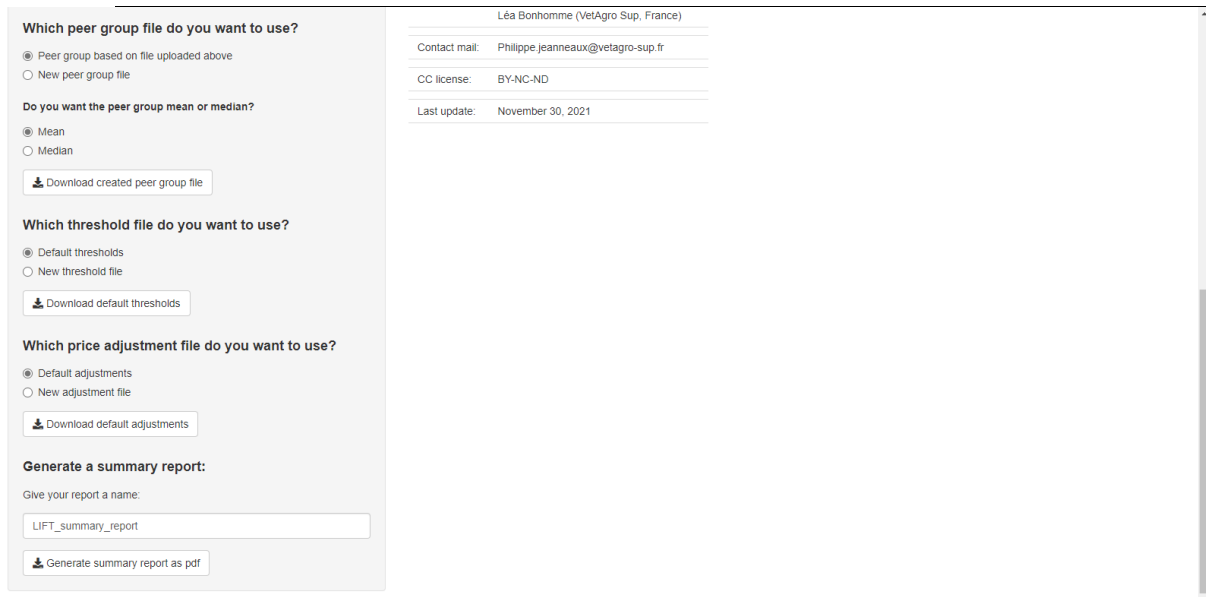


Figure 2: Graphical User Interface with the side panel on the left-hand side and the main panel on the right-hand side of the tool part 2

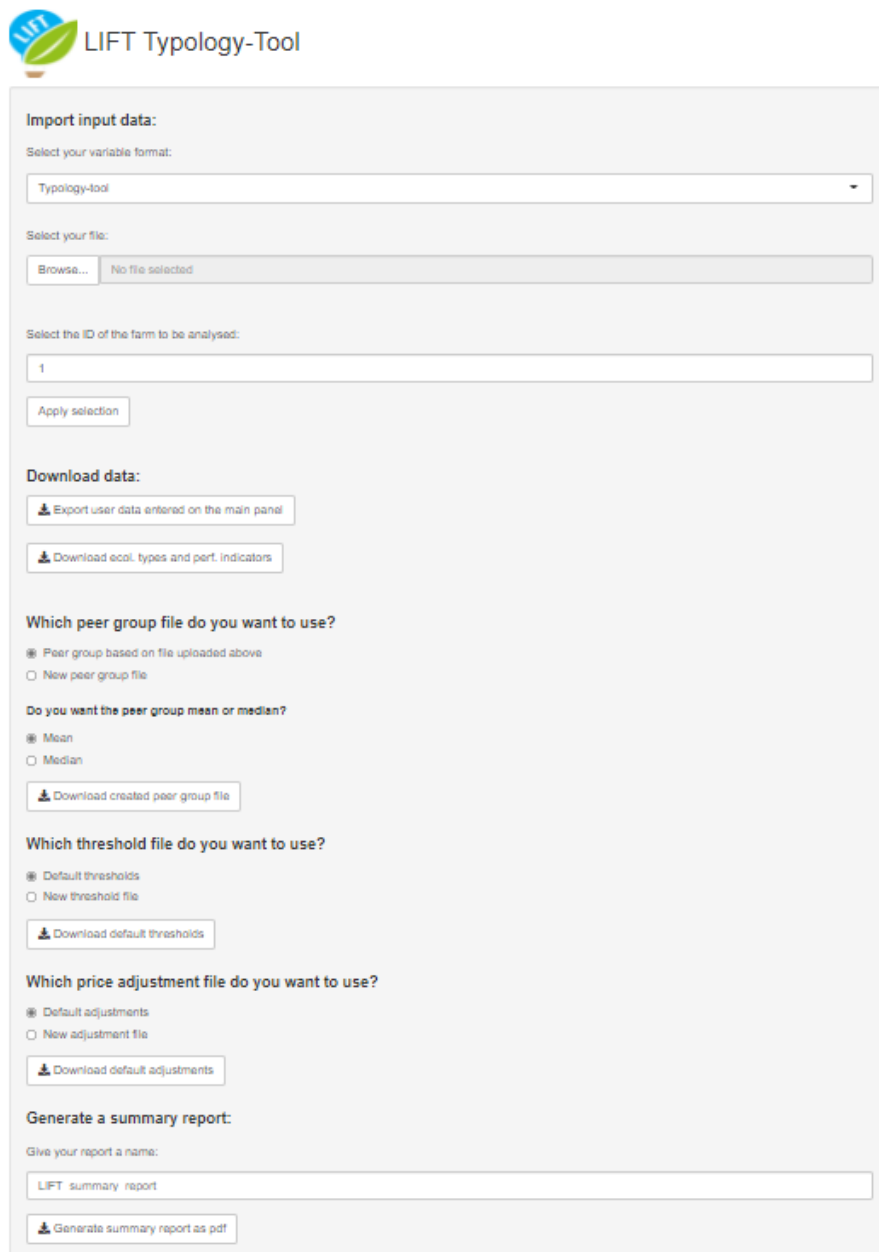
2.1. Side panel (left)

The side panel is the setting panel where a lot of information is filled in.

2.1.1. General description of the side panel

On the side panel ([Figure 3](#)), the user can:

- Import and export input data
- Select the peer group data the user wants to use for benchmarking performance
- Select the threshold and price adjustment data to be used in the ecological type model (these thresholds and adjustment coefficients are part of the typology protocol, see Rega et al., 2021), and download a summary report ([Appendix 1](#)).
- Generate a summary report of the data analysis



LIFT Typology-Tool

Import input data:

Select your variable format:

Typology-tool

Select your file:

Browse... No file selected

Select the ID of the farm to be analysed:

1

Apply selection

Download data:

Export user data entered on the main panel

Download ecol. types and pert. indicators

Which peer group file do you want to use?

☒ Peer group based on file uploaded above

☐ New peer group file

Do you want the peer group mean or median?

☒ Mean

☐ Median

Download created peer group file

Which threshold file do you want to use?

☒ Default thresholds

☐ New threshold file

Download default thresholds

Which price adjustment file do you want to use?

☒ Default adjustments

☐ New adjustment file

Download default adjustments

Generate a summary report:

Give your report a name:

LIFT summary report

Generate summary report as pdf

Figure 3: Side panel

2.1.2. Input data

The user can import a file containing the data related to the farm(s) that the user wants to analyse with the tool. The uploaded file is a comma-separated CSV file whose columns correspond to all the input variables required by the tool, and whose rows represent one farm each.

Therefore, before importing an input file, the user must specify the format of the variables. As the default, the tool uses a specific “typology-tool” variable format. Currently, the “FADN”-variable format is also implemented. In future versions, other formats, e.g. variable names from frequently used accounting software, could be added.

If FADN-data are used, the user has to select “FADN” in the drop-down list under “Select your variable format” (Figure 3). As the file-size is restricted, only a subset of FADN-data can be uploaded. The required variables are: "id", "COUNTRY", "YEAR", "TF14", "NUTS3", "ALTITUDE", "ORGANIC", "SE025", "SE071", "SE030", "SE085", "SE090", "SE095", "SE100", "SE105", "SE285", "SE290", "SE295", "SE300", "SE315", "SE325", "SE340", "SE360", "IWATR_V", "IHFULS_V", "IFULS_V", "IELE_V", "GRAZDAYS",

"ONRGPRD_SV", "SE131", "SE275", "SE370", "SE375", "SE380", "SE436", "SE485", "ILNDRNT_V", "SE532", "SE605", "ALNDAGR_CV", "SE010", "SE020", "SE016", "SE021", "WPRM_W1_TOT", "WPROTH_W1", "WPCCA_W1", "WPROTH_P", "WPCCA_P", "WPCCA_Y1", "IVET_V", "IGRFEDCNCTRPUR_V", "IGRFEDCRSPUR_V", "IPIGFEDPUR_V", "IPLTRFEDPUR_V", "SE296", "SE297", "SE298".

Once the command-button “Apply selection” (Figure 4) is clicked, the input fields on the “User data” tab in the main panel (see section 2.1.2.) are updated. These input fields can be overwritten manually at any time.

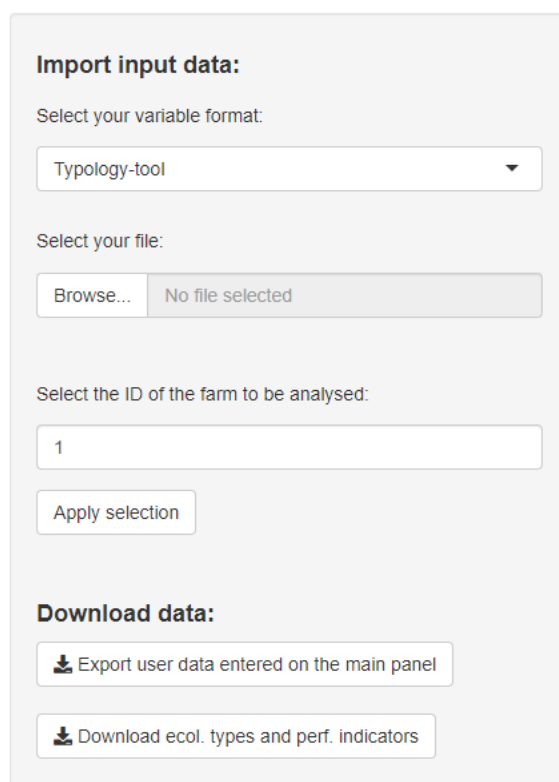


Figure 4: Input data section in the main panel

Then, the farm to be analysed can be selected by indicating its ID-number as defined in the file.

The user can export the current data of the input fields as a CSV file by selecting the button “export user data entered on the main panel” (Figure 4). Note that only one farm –the one that is evaluated– is present in the downloaded file. There is no possibility to add farms to an existing file. However, outside the tool the user can concatenate individual files from several farms; then, care must be taken that the column-names remain unchanged and that each row represents a farm.

The CSV file is composed by one row with the variables’ names and one row with the corresponding information on the farm selected (Figure 5). The downloaded file can, thus, also be used as a template for any input file created outside the tool.

Figure 5: CSV file with current data

USER GUIDE FOR THE LIFT TYPOLOGY-TOOL

To choose the option, the user has to select the desired radio-button. If option 1 is selected, the user has the possibility to download the default adjustment coefficients. If option 2 is chosen, a browser appears where the user can select the file to be uploaded.

2.1.6. Report

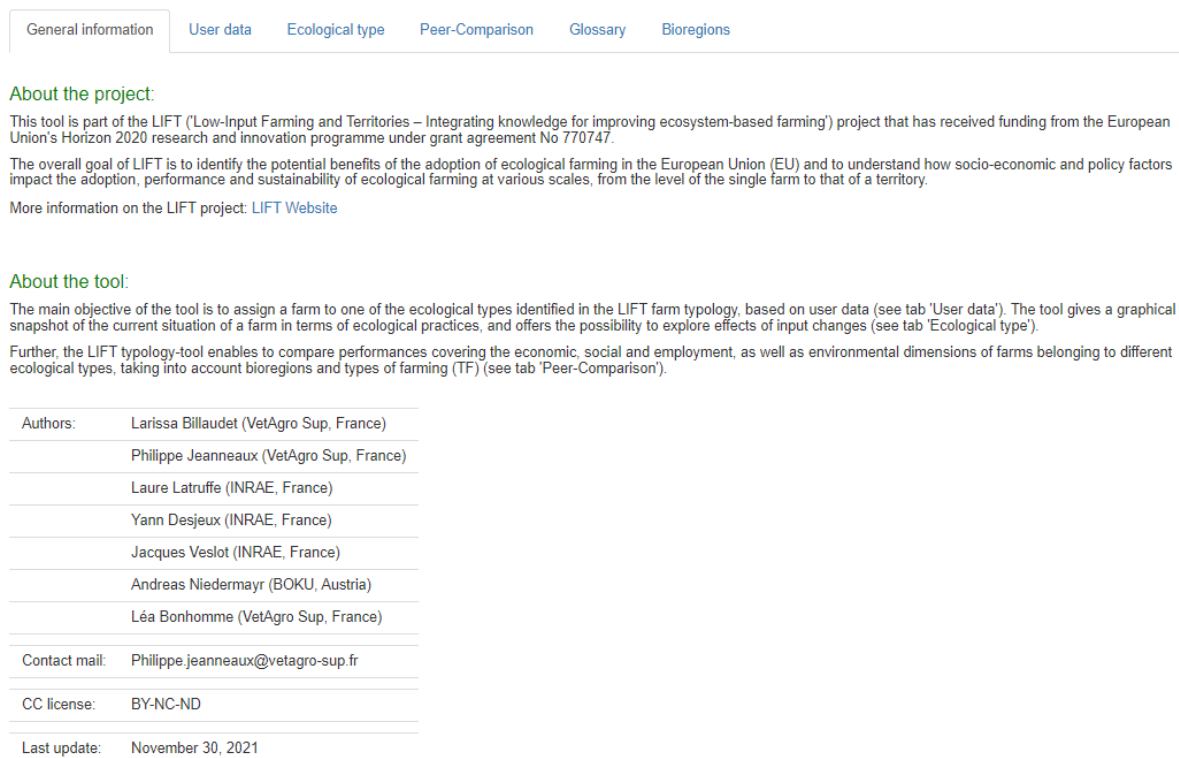
The tool offers the possibility to download a summary report as a PDF file. An example of such report can be found in [Appendix 1](#).

2.2. Main panel (right)

In the main panel, information and results about a farm can be found.

2.2.1. General description of the main panel

The main panel is subdivided into several tabs allowing the user to either enter input data, view output results, look up definitions in the glossary, visualise bioregions in maps, and get some general information about the tool and LIFT project ([Figure 6](#)). There are two output tabs: the typology classification and the performance comparison.



The screenshot shows the 'General information' tab selected. It contains the following content:

About the project:
 This tool is part of the LIFT ('Low-Input Farming and Territories – Integrating knowledge for improving ecosystem-based farming') project that has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 770747.
 The overall goal of LIFT is to identify the potential benefits of the adoption of ecological farming in the European Union (EU) and to understand how socio-economic and policy factors impact the adoption, performance and sustainability of ecological farming at various scales, from the level of the single farm to that of a territory.
 More information on the LIFT project: [LIFT Website](#)

About the tool:
 The main objective of the tool is to assign a farm to one of the ecological types identified in the LIFT farm typology, based on user data (see tab 'User data'). The tool gives a graphical snapshot of the current situation of a farm in terms of ecological practices, and offers the possibility to explore effects of input changes (see tab 'Ecological type').
 Further, the LIFT typology-tool enables to compare performances covering the economic, social and employment, as well as environmental dimensions of farms belonging to different ecological types, taking into account bioregions and types of farming (TF) (see tab 'Peer-Comparison').

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Last update:	November 30, 2021

Figure 6: Main panel

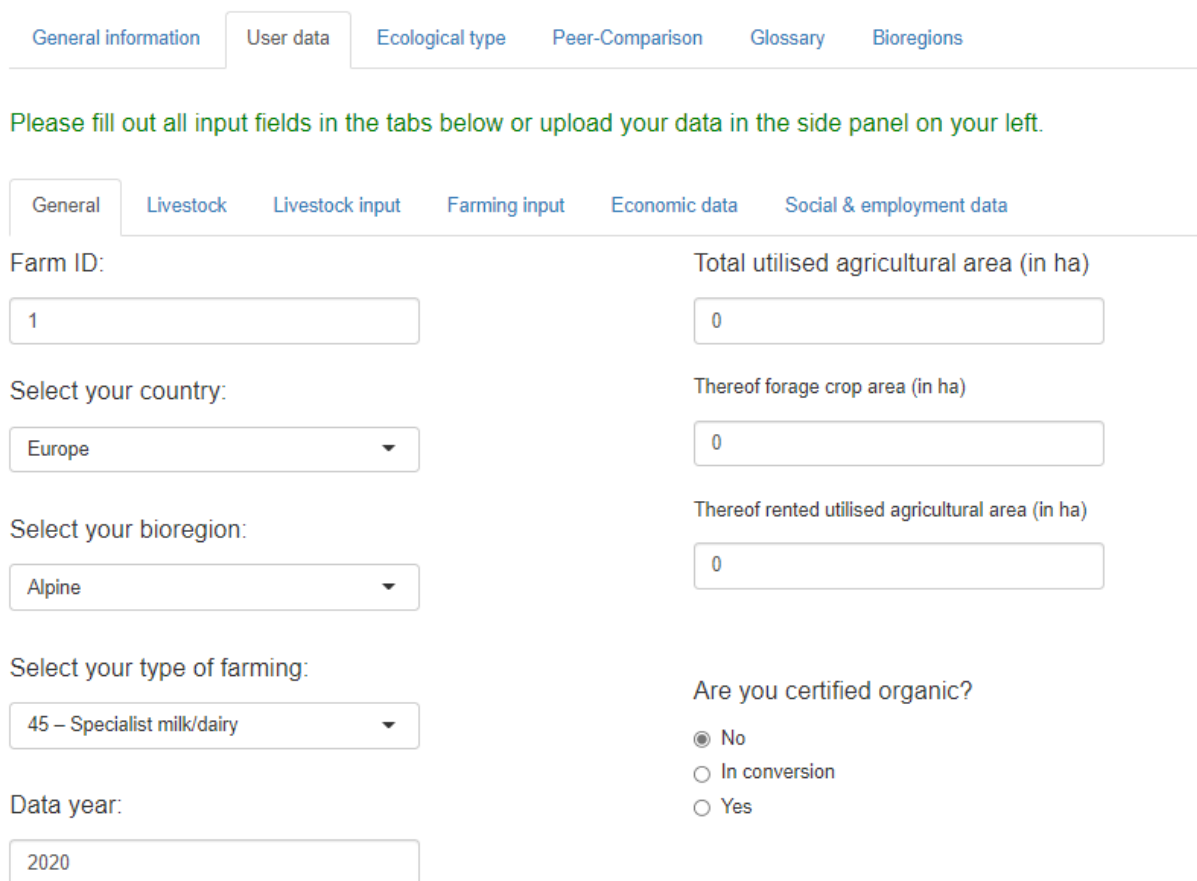
2.2.2. The general information tabs

On the "General information" tab, a brief summary of the LIFT project can be found, as well as the major objectives of the tool ([Figure 6](#)). Further, information on authors, contact mail, license and last update are given.

2.2.3. The « User data » tab

The “User data” tab relates to the input data and is subdivided into several sub-tabs ([Figure 7](#)). The corresponding fields either are automatically filled if the user provided an input file and selected one particular ID, or they have to be filled by hand if no input file is uploaded.

The “General” sub-tab ([Figure 7](#)) deals with general information about the farm, such as an identification number, the bioregion, the country, the type of farming, the data year, whether the farm is organic or not, the total UAA, the forage crop area and the rented UAA. The definition of each variable can be found in [Appendix 2](#).



General information User data Ecological type Peer-Comparison Glossary Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General Livestock Livestock input Farming input Economic data Social & employment data

Farm ID:

Select your country:

Select your bioregion:

Select your type of farming:

Data year:

Total utilised agricultural area (in ha)

Thereof forage crop area (in ha)

Thereof rented utilised agricultural area (in ha)

Are you certified organic?

☒ No

☐ In conversion

☐ Yes

Figure 7: General information sub-tab in the user data panel

On the “Livestock” sub-tab, the user can choose whether to enter livestock data in livestock units ([Figure 8](#)) or in numbers of animal by type ([Figure 9](#)). Regarding the animal types, the livestock categories correspond to the Eurostat classification. Based on the animal numbers and types entered, the tool calculates livestock units (grazing, pigs and poultry, total) using the weights in the Eurostat classification (

[Appendix 3](#)).

General information
User data
Ecological type
Peer-Comparison
Glossary
Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General
Livestock
Livestock input
Farming input
Economic data
Social & employment data

How do you want to enter your livestock data?

☒ in livestock units (LU)
☐ in animal numbers

Livestock units

Grazing livestock units	Pigs & poultry livestock units	Other livestock units
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

Total livestock units: 0

Figure 8: Livestock sub-tab

The “Livestock input” sub-tab (Figure 9) contains information about inputs used in the production process specifically related to livestock, such as feed, grazing days, veterinary expenses. The definition of each variable can be found in [Appendix 4](#).

General information
User data
Ecological type
Peer-Comparison
Glossary
Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General
Livestock
Livestock input
Farming input
Economic data
Social & employment data

Feed for grazing (in EUR) Purchased concentrated feedstuffs for grazing stock <input type="text" value="0"/>	Feed for pigs and poultry (in EUR) Purchased feedstuffs for pigs <input type="text" value="0"/>	Veterinary expenses (in EUR) <input type="text" value="0"/>
Purchased coarse fodder for grazing stock <input type="text" value="0"/>	Purchased feedstuffs for poultry and other small animals <input type="text" value="0"/>	
Feed for grazing livestock home-grown <input type="text" value="0"/>	Feed for pigs and poultry home-grown <input type="text" value="0"/>	

Grazing days

Figure 9: Livestock input sub-tab

The “Farming input” sub-tab ([Figure 10](#)) deals with inputs used in the crop production process: fertilisers, crop protection, seeds and plants, water use, energy (fuels and lubricants use, electricity use and own produced energy (excess energy)), machinery and buildings current costs, and total physical assets depreciation. The definition of each variable can be found in [Appendix 5](#).

[General information](#)
[User data](#)
[Ecological type](#)
[Peer-Comparison](#)
[Glossary](#)
[Bioregions](#)

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

[General](#)
[Livestock](#)
[Livestock input](#)
[Farming input](#)
[Economic data](#)
[Social & employment data](#)

Fertilisers (in EUR) <input type="text" value="0"/>	Crop protection (in EUR) <input type="text" value="0"/>	Energy (in EUR) Heating fuels use <input type="text" value="0"/>	Machinery & buildings current costs (in EUR) <input type="text" value="0"/>
Fertilisers N <input type="text" value="0"/>	Seeds and Plants (in EUR) Total <input type="text" value="0"/>	Motor fuels and lubricants use <input type="text" value="0"/>	Total physical assets depreciation (in EUR) <input type="text" value="0"/>
Fertilisers P <input type="text" value="0"/>	Thereof home-grown <input type="text" value="0"/>	Electricity use <input type="text" value="0"/>	
Fertilisers K <input type="text" value="0"/>	Water use (in EUR) <input type="text" value="0"/>	Own produced energy (excess) <input type="text" value="0"/>	

[Figure 10: Farming input sub-table](#)

The “Economic data” sub-tab ([Figure 11](#)) registers the information needed to calculate financial and economic performance indicators. The definition of each variable can be found in [Appendix 6](#).

General information
User data
Ecological type
Peer-Comparison
Glossary
Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General
Livestock
Livestock input
Farming input
Economic data
Social & employment data

Total assets	Total output	Interest paid	Estimated average interest rate
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Agricultural land (closing value)	Total subsidies - excluding on investments	Wages paid	Estimated average labour costs per hour
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Total liabilities	Total intermediate consumption	Rent paid	
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	
Cash flow / farm total capital		Thereof rent paid for land	Estimated average rental costs per ha
<input type="text" value="0"/>		<input type="text" value="0"/>	<input type="text" value="0"/>

Figure 11: Economic data sub-table

The “Social & employment data” sub-tab ([Figure 12](#)) gathers information needed to calculate social and employment performance indicators. The definition of each variable can be found in [Appendix 7](#).

General information
User data
Ecological type
Peer-Comparison
Glossary
Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General
Livestock
Livestock input
Farming input
Economic data
Social & employment data

Total labour (in AWU)	Manager paid (in AWU)	Manager paid (in persons)
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Thereof paid labour (in AWU)	Other labour paid (in AWU)	Other labour paid (in persons)
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
	Casual labour paid (in AWU)	Casual labour paid (in persons)
Unpaid labour (in hours)	<input type="text" value="0"/>	<input type="text" value="0"/>
<input type="text" value="0"/>		
Paid labour (in hours)		
<input type="text" value="0"/>		

Figure 12: Social and employment data sub-tab

2.2.4. The « Ecology type » tab

This tab reports the results from the typology classification. The tool assigns the farm that is evaluated into an ecological type as defined by the LIFT typology. The algorithms underlying the classification carried out in the LIFT typology-tool, follow the FADN-based protocol as described in Deliverable 1.4 (Rega et al., 2021).

The FADN protocol includes the four following ecological types: “Standard”, “Low-Input”, “Integrated (circular)” and “Organic”. A farm can belong to several ecological types, except for “Standard”, which is mutually exclusive with any other ecological type. Note that the type “Organic” is not based on an algorithm but solely on the information provided whether the farm is organic, in conversion or not organic.

The resulting ecological type appears at the top of the tab “Ecological type” (Figure 13 & Figure 14). Below this information, the panel is subdivided into the tabs “Low-Input farming” (Figure 13) and “Integrated (circular) farming” (Figure 14). Each tab provides a graphical snapshot of the scores for each variable relevant to determine the weighted average score for the respective ecological type. To be qualified as “Low-Input” and “Integrated (circular)”, respectively, the evaluated farm must achieve a minimum weighted average score of 3 (out of 4) for the respective ecological type; the weighted average score appears at the top-left of the circular bar plot. Further, each tab includes sliders to allow simulating input changes for the relevant variables. The changes are expressed as relative increases or decreases (in percent). The sliders can be reset to zero by activating the reset-button.

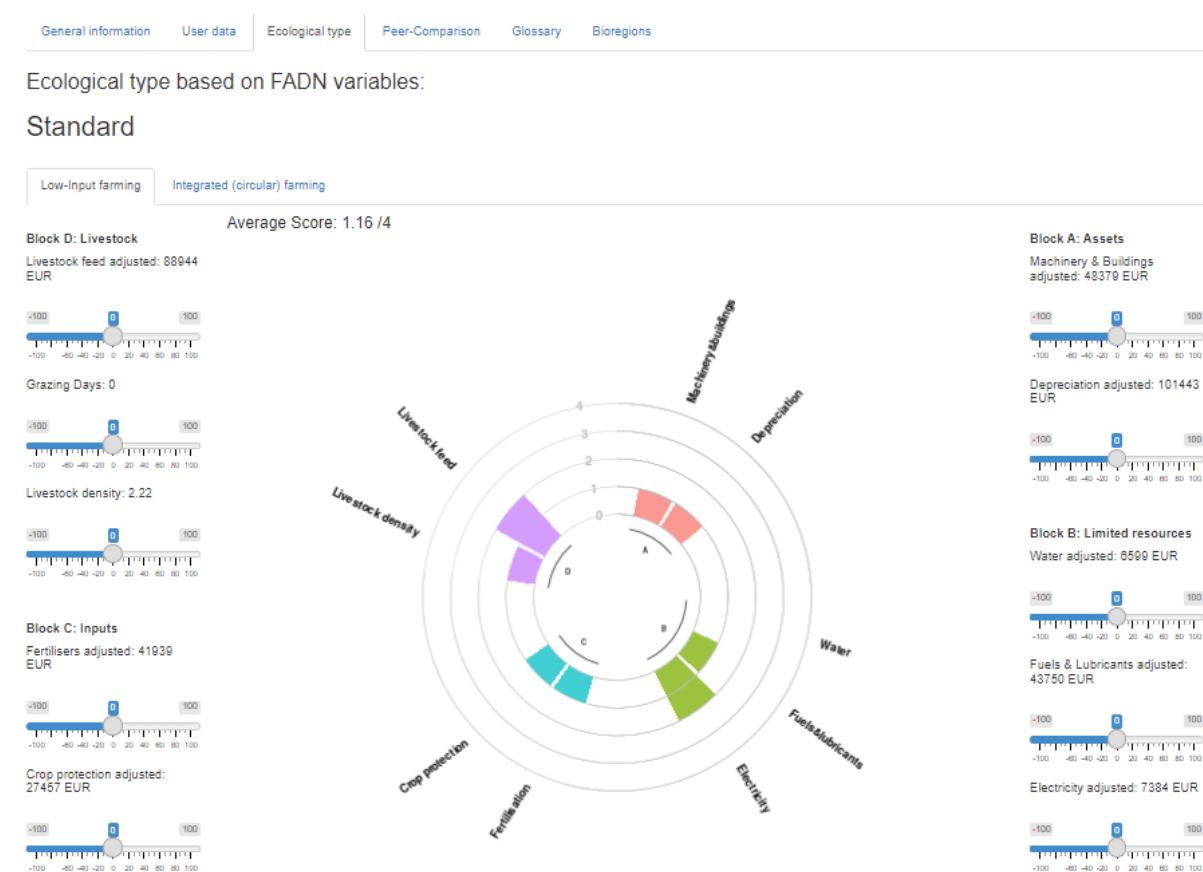


Figure 13: Low-input sub-tab in the ecological type tab

Ecological type based on FADN variables:

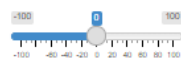
Standard

Low-Input farming Integrated (circular) farming

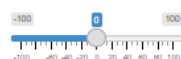
Average Score: 1.73 /4

Block E: Autonomy

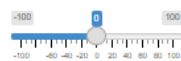
Own feed adjusted: 13197 EUR



Own seeds adjusted: 1442 EUR



Own energy adjusted: 0 EUR

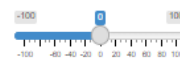


Reset



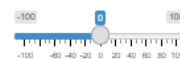
Block C: Inputs

Fertilisers adjusted: 41939 EUR



Block D: Livestock

Livestock feed adjusted: 88944 EUR



Livestock density: 2.22

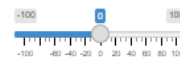


Figure 14: Integrated (circular) sub-tab in the ecological type tab

2.2.5. The « Peer-comparison » tab

On the “Peer-Comparison” tab, the evaluated farm can be benchmarked to the selected peer group (for peer group selection, see section 2.1.3). At the top of the tab, the peer group can be modified with respect to the farm bioregion and type of farming (TF) thanks to two drop-down lists. Below, there are four sub-tabs for the different subsets of indicators. Each subset is composed of several bar plots, with one bar plot per indicator, where the bars represent the mean- or median values of the peer group by ecological type. A red square represents the value of the evaluated farm.

The first subset relates to financial and economic indicators (Figure 15). Their exact definition can be found in Appendix 8.

[General information](#)
[User data](#)
[Ecological type](#)
[Peer-Comparison](#)
[Glossary](#)
[Bioregions](#)

Bioregion:

Continental

Farm type:

45 – Specialist milk/dairy

Ecological type:

Standard

[Economic indicators](#)
[Social & employment indicators](#)
[Environmental indicators I](#)
[Environmental indicators II](#)

Peer group typology distribution

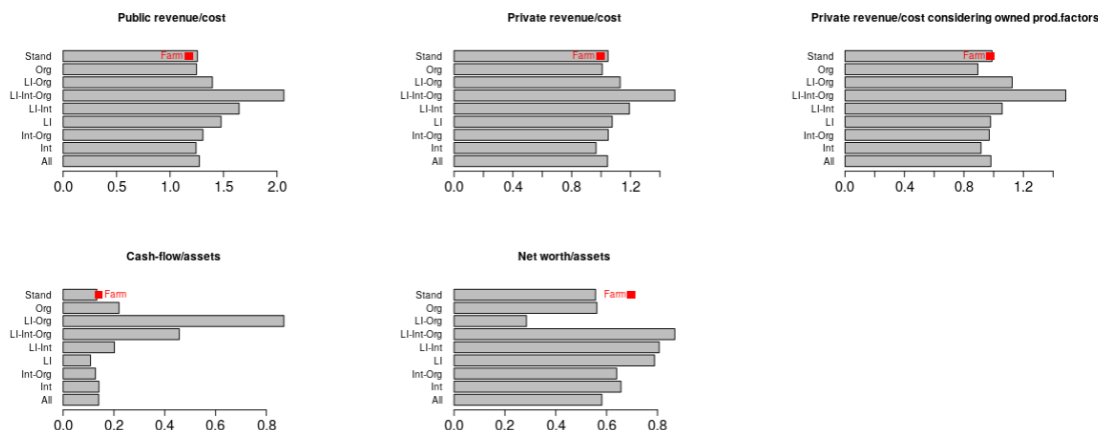


Figure 15: Economic indicators sub-tab example

The second subset relates to social and employment indicators (Figure 16). Their exact definition can be found in [Appendix 9](#).

[General information](#)
[User data](#)
[Ecological type](#)
[Peer-Comparison](#)
[Glossary](#)
[Bioregions](#)

Bioregion:

Continental

Farm type:

45 – Specialist milk/dairy

Ecological type:

Standard

[Economic indicators](#)
[Social & employment indicators](#)
[Environmental indicators I](#)
[Environmental indicators II](#)

Peer group typology distribution

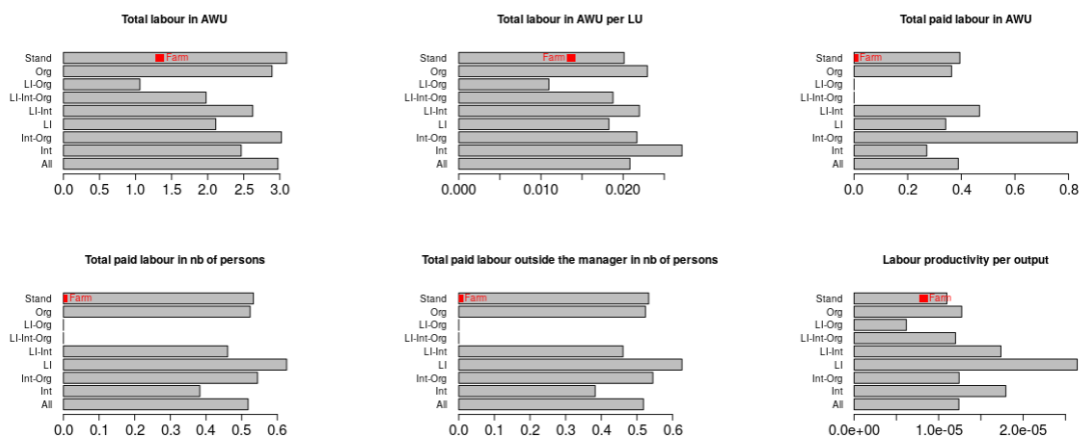


Figure 16: Social and employment indicators sub-tab example

The third and fourth subsets relate to environmental indicators (Figure 17&Figure 18). Their exact definitions can be found in Appendix 10. The information about quantity of N, P or K is not provided in the FADN data. Therefore, the farm is located on the zero bar but it must be interpreted as missing data.

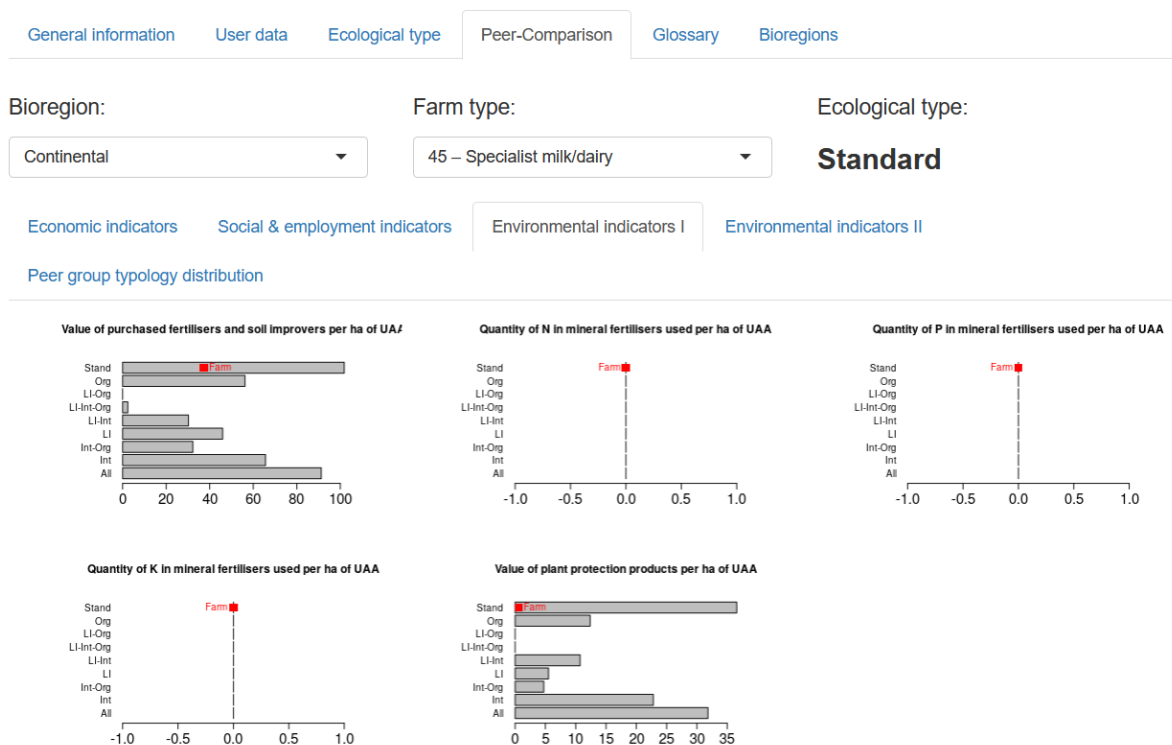


Figure 17: Environmental indicators sub-tab example part 1

Bioregion:

Continental

Farm type:

45 – Specialist milk/dairy

Ecological type:

Standard

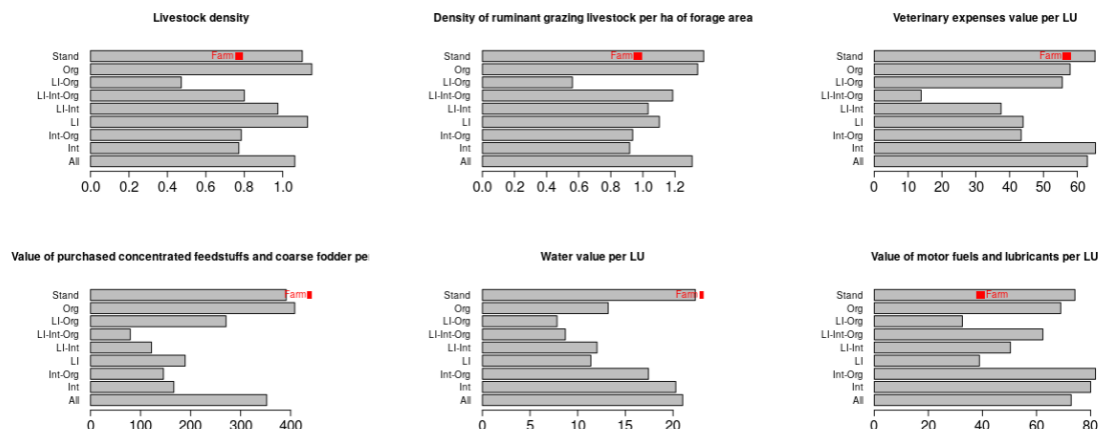
[Economic indicators](#)
[Social & employment indicators](#)
[Environmental indicators I](#)
[Environmental indicators II](#)
[Peer group typology distribution](#)


Figure 18: Environmental indicators sub-tab example part 2

In addition, there is a fifth tab called “Peer group typology distribution” (Figure 19). This tab gives a graphical representation of distribution of the ecological types in the peer group based on the imported input file (see option 1 in section 2.1.1.3). This tab does not appear if a new peer group file has been up-loaded (see option 2 in section 2.1.1.3) as this file has only aggregated data.

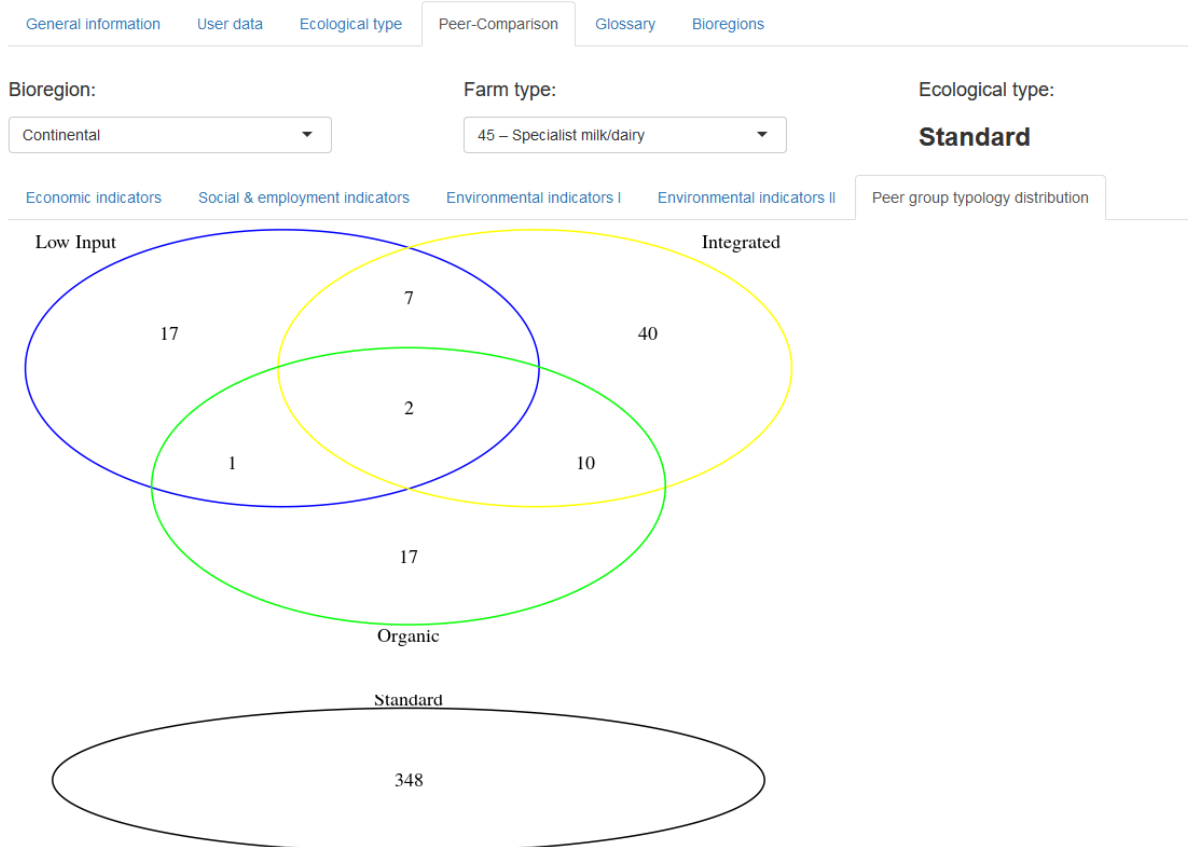


Figure 19: Peer group typology distribution sub-tab

2.2.6. The « Glossary » tab

On the “Glossary” tab, an extensive glossary is provided. The user can look up the definitions of all the variables used in the tool. To find the desired definition, the user needs to go to the sub-tab named as the tab where the term that is looked for is; there is no interactive glossary (Figure 20).

The glossary also shows the name of the variables as used in the input and peer group files with respect to both the nomenclature specific to the tool (“Typology_tool_name”) and to FADN (“FADN_name”). It also allows downloading template files for the peer group comparison.

General information

User data

Ecological type

Peer-Comparison

Glossary

Bioregions

To find the desired definition, go to the sub-tab named as the tab where the term you are looking for is.

General

Livestock

Livestock input

Farming input

Economic data

Social & employment data

Ecological type

Performance indicators

Term	Definition	Unit	Typology_tool_name	FADN_name
Farm ID	ID of the farm. Each farm ID must be unique in the dataset and a numeric.		ID	id
Bioregion	See bioregions by country in the "Bioregions" tab. In the input-file, "All" = 0, "Alpine" = 1, "Atlantic" = 2, "Boreal" = 3, "Continental" = 4, "Mediterranean" = 5, "Pannonian" = 6		BioRegion	defined on the basis of NUTS3 and ALTITUDE
Country	Countries covered by the tool are: Austria (OST), Belgium (BEL), Bulgaria (BGR), Croatia (HRV), Czech Republic (CZE), Denmark (DAN), Estonia (EST), Finland (SUO), France (FRA), Germany (DEU), Greece (ELL), Hungary (HUN), Ireland (IRE), Italy (ITA), Latvia (LVA), Lithuania (LTU), Luxembourg (LUX), Netherlands (NED), Poland (POL), Portugal (POR), Romania (ROU), Slovakia (SVK), Slovenia (SVN), Spain (ESP), Sweden (SVE), United Kingdom (UKI). For the input-file, use the abbreviations in brackets.		Country	COUNTRY
Type of farming	Nomenclature used by FADN, which defines 14 types of farming (TF14). In the input-file, "0 - All"=0, "15 - Specialist COP (cereals, oilseeds and protein crops)"=15, "16 - Specialist other field crops"=16, "20 - Specialist horticulture"=20, "35 - Specialist wine"=35, "36 - Specialist orchards - fruits"=36, "37 - Specialist olives"=37, "38 - Permanent crops combined"=38, "45 - Specialist milk/dairy"=45, "48 - Specialist sheep and goats"=48, "49 - Specialist cattle"=49, "50 - Specialist granivores"=50, "60 - Mixed cropping"=60, "70 - Mixed livestock"=70, "80 - Mixed crops and livestock"=80		TF14	TF14
Data year	Year of input data.		Year	YEAR
Total utilised agricultural area	Total utilised agricultural area of holding. Does not include areas used for mushrooms, land rented for less than one year on an occasional basis, woodland and other farm areas (roads, ponds, non-farmed areas, etc.). It consists of land in owner occupation, rented land, land in share-cropping (remuneration linked to output from land made available). As from 2014, it includes kitchen gardens.	ha	UAA	SE025
Forage crop area	Fodder roots and brassicas (mangolds, etc.), other fodder plants, temporary grass, meadows and permanent pastures, rough grazing.	ha	ForageCropArea	SE071
Rented utilised agricultural area	Utilised agricultural areas rented by the holder under a tenancy agreement for a period of at least one year (remuneration in cash or in kind).	ha	RentedUAA	SE030
Certified organic	Organic certification as delivered by an accredited institution in your country.		Organic	ORGANIC

Figure 20: Glossary tab

2.2.7. Bioregions tab

The "Bioregions" tab offers the possibility to look up the bioregions for the European countries covered by the tool. The map of the country selected on the sub-tab "General" in the tab "User data" (see section 2.1.2.3) appears automatically ([Figure 21](#)).



Figure 21: Bioregion tab (no data selected)

3. Application

In order to illustrate what has been presented above, an example from a dataset is presented in this section. You are invited to repeat this exercise alongside this guide to better understand and handle the tool.



The dataset used for this application contains fake data. The real data from FADN are confidential and can be used in the tool only upon agreement with the FADN. Therefore, in order to make real comparison between farms, a real database needs to be used in the tool. It is possible to import one or create one as explained in section 2.1.2.

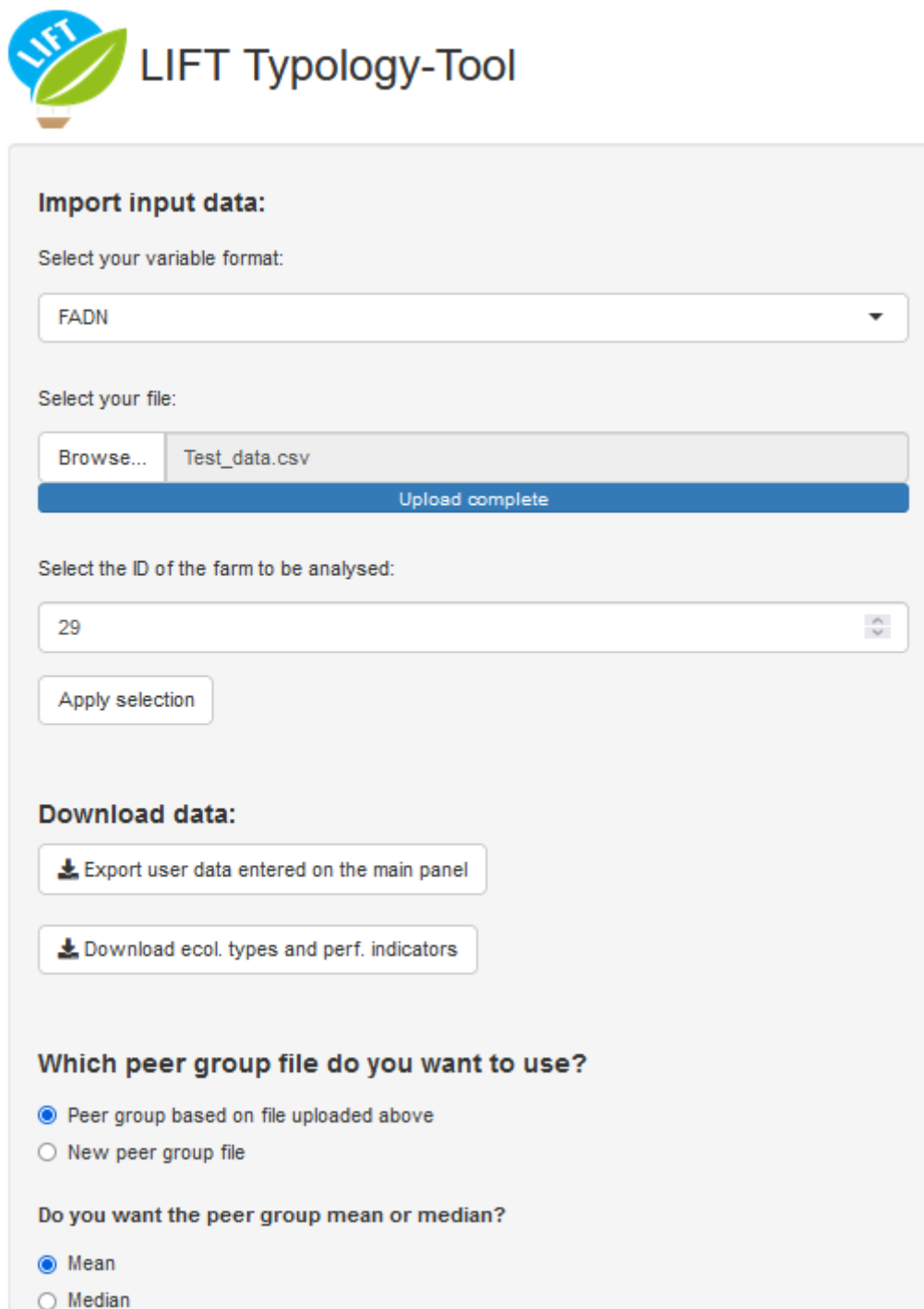
There are multiples way to analyse a farm:

- A dataset containing the farm can be uploaded as explained in section 2.2. and then the user should enter its ID.
- It is also possible to fill in information of a farm manually in the user data tab and then compare the farm to others from the dataset.

- Also, as explained in section 2.1.2., it is possible to select a farm ID and then download the data in a CSV file in order to get the template to fill in with farms information. Once the CSV file download and filled in, you can upload it as a dataset in order to use the tool on these specific farms.

Once the dataset is uploaded, select the variable format as FADN ([Figure 22](#)).

In order to give an example, we choose the farm with ID to evaluate number 29.



LIFT Typology-Tool

Import input data:

Select your variable format:

FADN

Select your file:

Browse... Test_data.csv

Upload complete

Select the ID of the farm to be analysed:

29

Apply selection

Download data:

Export user data entered on the main panel

Download ecol. types and perf. indicators

Which peer group file do you want to use?

☒ Peer group based on file uploaded above

☐ New peer group file

Do you want the peer group mean or median?

☒ Mean

☐ Median

Figure 22: Side panel once the dataset is loaded and a farm ID is selected

3.1. Belonging to a type

Once the « Apply selection » button has been pressed, the results are displayed on the main panel. It automatically shows the ecological type of the farm.

For example, what is the ecological type of this farm on [Figure 23](#)

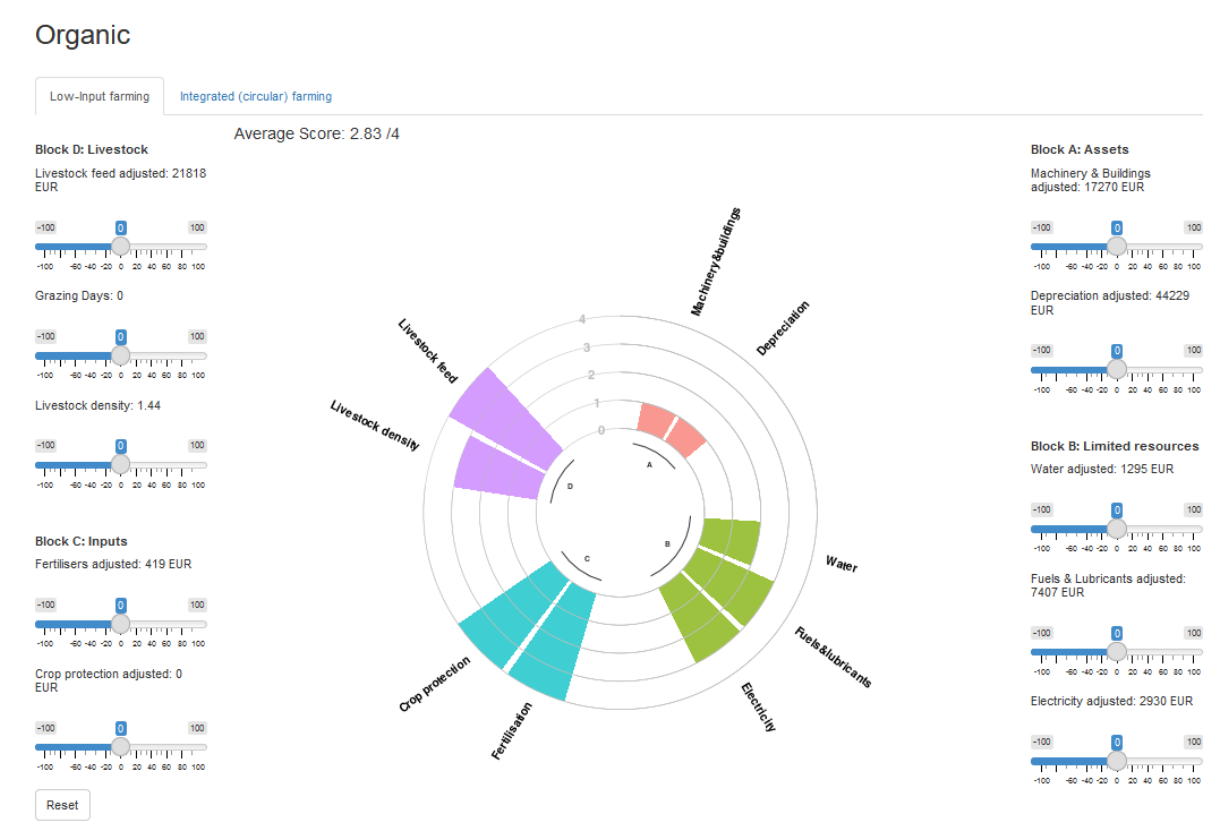


Figure 23: Ecological type of the farm with ID 29

The ecological type panel shows – above on the left – that this farm is an organic farm ([Figure 23](#)).



Farms in conversion to organic farming are considered organic in the tool.

[Figure 24](#) shows the general information about the farm. The farm used here to practice is a specialist milk and dairy farm located in the bioregion continental, and which actually is in conversion to organic.

General information
Tutorial to use the tool
User data
Ecological type
Peer-Comparison
Glossary
Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General
Livestock
Livestock input
Farming input
Economic data
Social & employment data

Farm ID:

Select your country:

Select your bioregion:

Select your type of farming:

Data year:

Total utilised agricultural area (in ha)

Thereof forage crop area (in ha)

Thereof rented utilised agricultural area (in ha)

Are you certified organic?
☐ No
☒ In conversion
☐ Yes

Figure 24: General information about the farm with ID 29

As explained above, each tab includes sliders to allow simulating input changes for the relevant variables. The sliders can, therefore, be moved in order to switch to another ecological type for the farm. The farm can therefore switch from standard to integrated approaches for example or from organic to organic and low input farming ([Figure 25](#)).

Ecological type based on FADN variables:

Low-Input and Organic

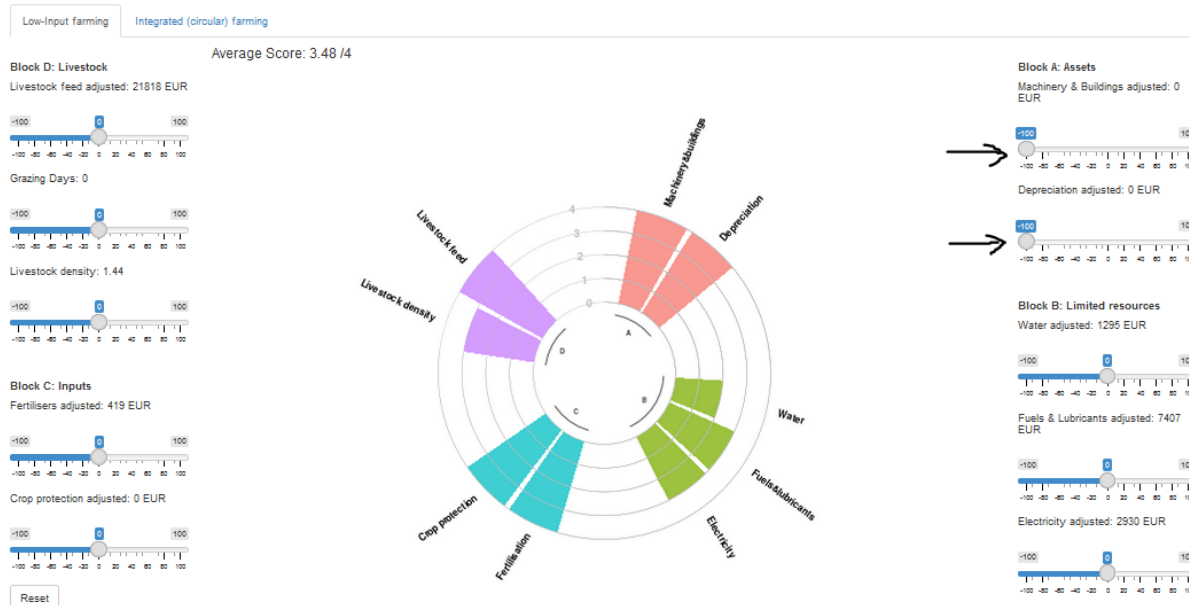


Figure 25: Ecological type of the farm with ID 29 after reducing the assets

But it is not possible to switch from standard to organic and vice versa. However, in the user data tab, it is possible to change the type of farm (standard or organic) in order to compare the farm performance under another type. As an example, with the farm ID 29, at the bottom right of the user data tab, the button “no” can be selected for the question “are you certified organic?”. Therefore, the farm becomes standard (Figure 26).

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General Livestock Livestock input Farming input Economic data Social & employment data

Farm ID: 29

Select your country: France

Select your bioregion: Continental

Select your type of farming: 45 – Specialist milk/dairy

Data year: 2015

Total utilised agricultural area (in ha): 117,3048005

Thereof forage crop area (in ha): 82,16996638

Thereof rented utilised agricultural area (in ha): 42,97503137

Are you certified organic?

☐ No

☒ In conversion

☐ Yes

Figure 26: User data tab and location of the switch bottom to organic type

Also, there are other ecological types existing as explained above. What is happening for the farm ID 29 if the sliders are moved as follow:

In the Assets, reduce the machinery and buildings by -100 and the depreciation by -100 as well.

Ecological type based on FADN variables:

Low-Input and Organic



Figure 27: Ecological type of the farm Id n°29 after reducing the assets

In addition to being organic, the farm is becoming low input as well (Figure 27).

In order to see other ecological types, the ID number will be changed. Enter the ID farm number 1214, what is the ecological type of this farm?

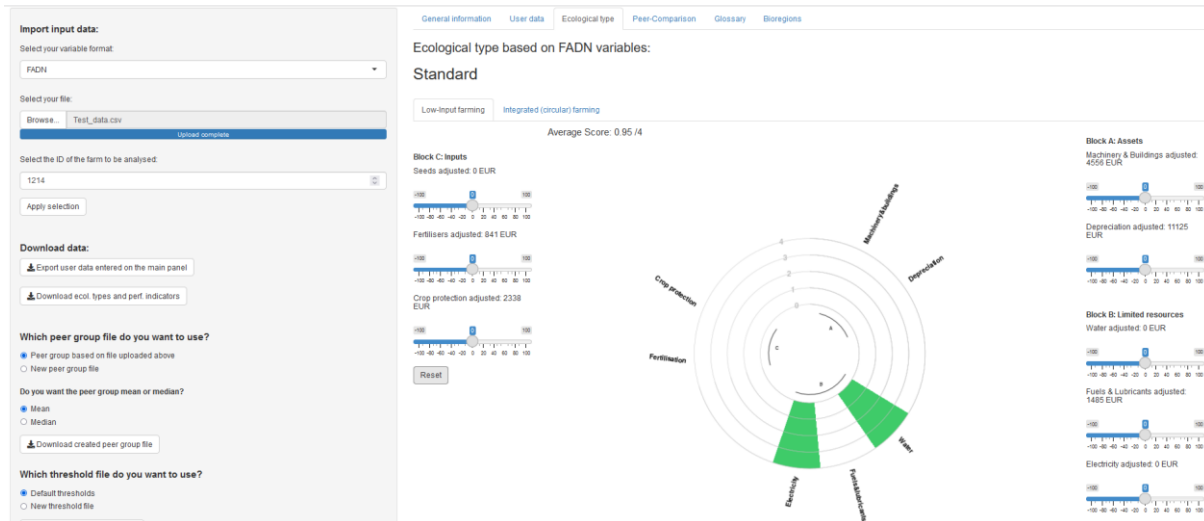


Figure 28: Ecological type of the farm ID n°1214

The ecological type panel shows that this farm is a standard type (Figure 28).

What are the range of thresholds (+/- 10) of each category of sliders for the farm to become integrated?

When the sliders are moved as illustrated in Figure 29, we see that reducing only the fertilisers between -85 and -95, the farm can become integrated.

Integrated

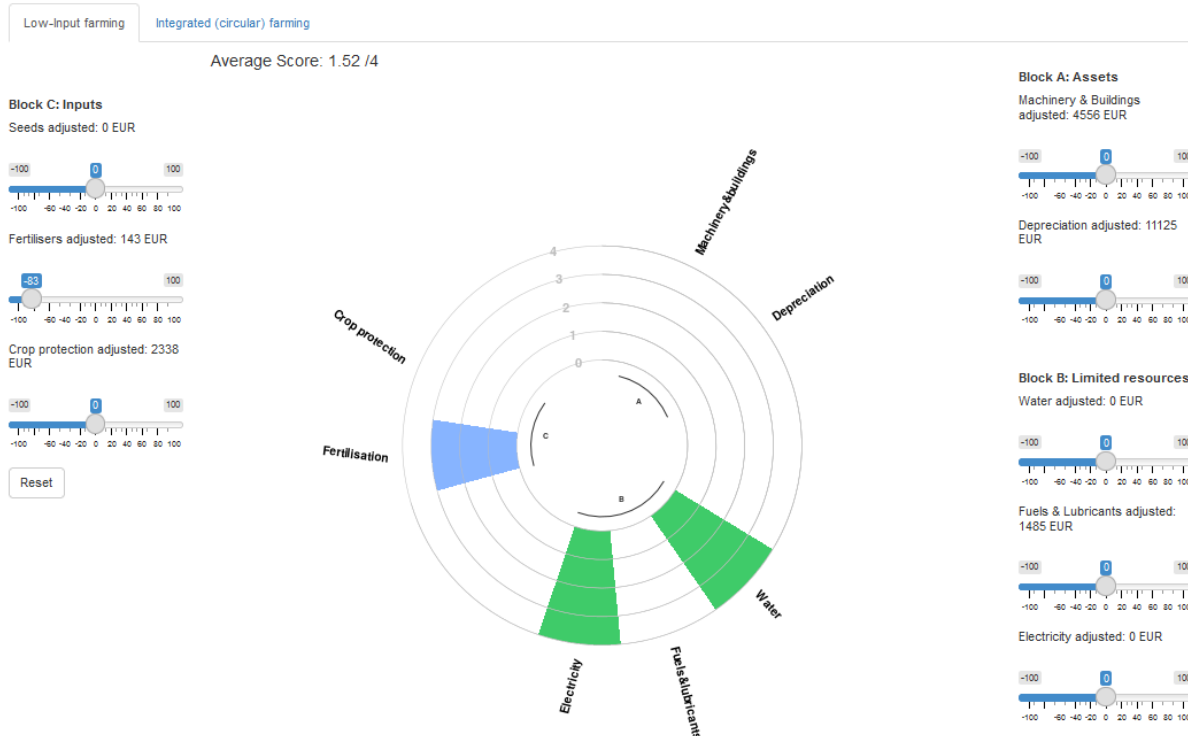


Figure 29: Ecological type of the farm ID n°1214 with fertilisers slider moved

In order to become low-input, reducing only the inputs is not enough. The limited resources need to be reduced as well. The diagram shows that the farm is already optimum in a matter of electricity and water consumption. Therefore, only the fuels and lubricants need to be reduced in the limited resources. Considering it is not enough to become low-input, the assets will be reduced too.

Thus, if the crop protection products, the fuels and lubricants and the assets are reduced by about -92 or more, the farm become low-input ([Figure 30](#)).

Ecological type based on FADN variables:

Low-Input

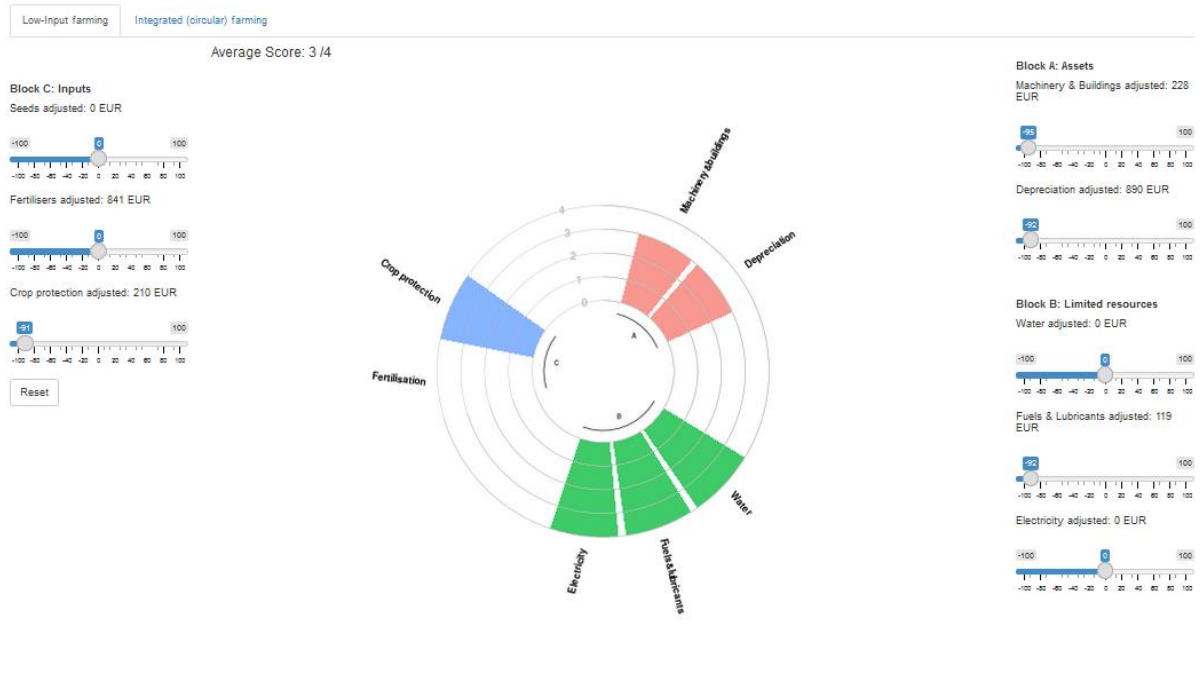


Figure 30: The farm ID n°1214 with sliders moved in order to become low input

In order to become low-input and integrated, the fertilisers need to be reduced as well from the last example.

3.2. Comparison

3.2.1. Peer group comparison

To explore the “User data” tab, we can choose another ID. Select the number 46.

For this ID number, what is the total utilised agricultural area of the farm? What type of farming is it?

General information
User data
Ecological type
Peer-Comparison
Glossary
Bioregions

Please fill out all input fields in the tabs below or upload your data in the side panel on your left.

General
Livestock
Livestock input
Farming input
Economic data
Social & employment data

Farm ID:
46
Total utilised agricultural area (in ha)
155,6176633

Select your country:
France
Thereof forage crop area (in ha)
108,4988316

Select your bioregion:
Continental
Thereof rented utilised agricultural area (in ha)
94,40625609

Select your type of farming:
45 – Specialist milk/dairy
Are you certified organic?
☐ No
☐ In conversion
☒ Yes

Data year:
2015

Figure 31: General information from the User data tab of the farm ID 46

Figure 31 shows that the total utilised agricultural area is 155.6 ha, and the type of farming is the specialist milk/dairy. In the other subpanel, more information can be found on the farm as presented in the section.

The ecological type of the farm is low-input and integrated and organic, which is not a common type and therefore interesting to analyse. In the Peer-comparison tab, the farm can be compared to others in the same production and bioregion as its. In the sub tab peer group typology distribution, you can find how many farms in the same bioregion and farm type exists in each ecological type.

How many farms of the similar production and bioregion are in the same ecological type as farm with ID 46?

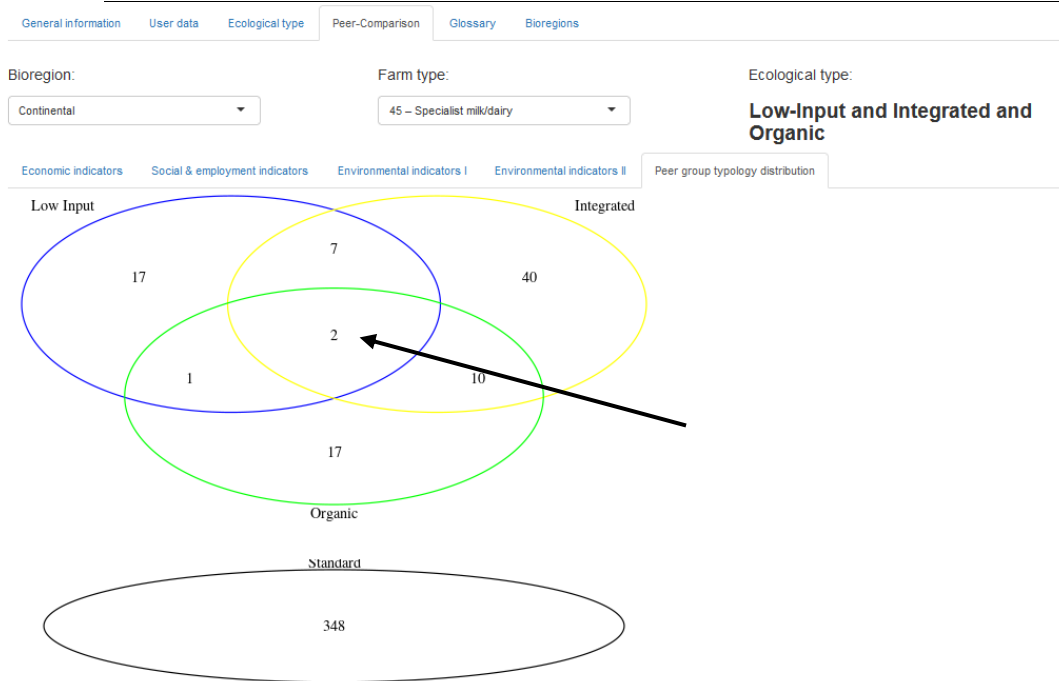


Figure 32: Peer-group typology distribution results for the farm ID 46

As [Figure 32](#) shows, there are only 2 farms – including the farm ID 46 – in the bioregion continental specialist milk/dairy and in a low-input, integrated and organic ecological type.

3.2.2. Performance comparison

In order to study indicators, the farm to analyse will be changed, considering that the farm with ID 46 can only be compared to one another farm. Therefore, select the farm with ID 3983.

Concerning the economic indicators, the [Figure 33](#) shows that, in a matter of public revenue/cost, the farm ID 3983 is located at the end of the bar, approximately 1.1. It means that this farm has a public rentability higher than the median farms in the same bioregion and farm type, and that its revenue is higher than its costs.

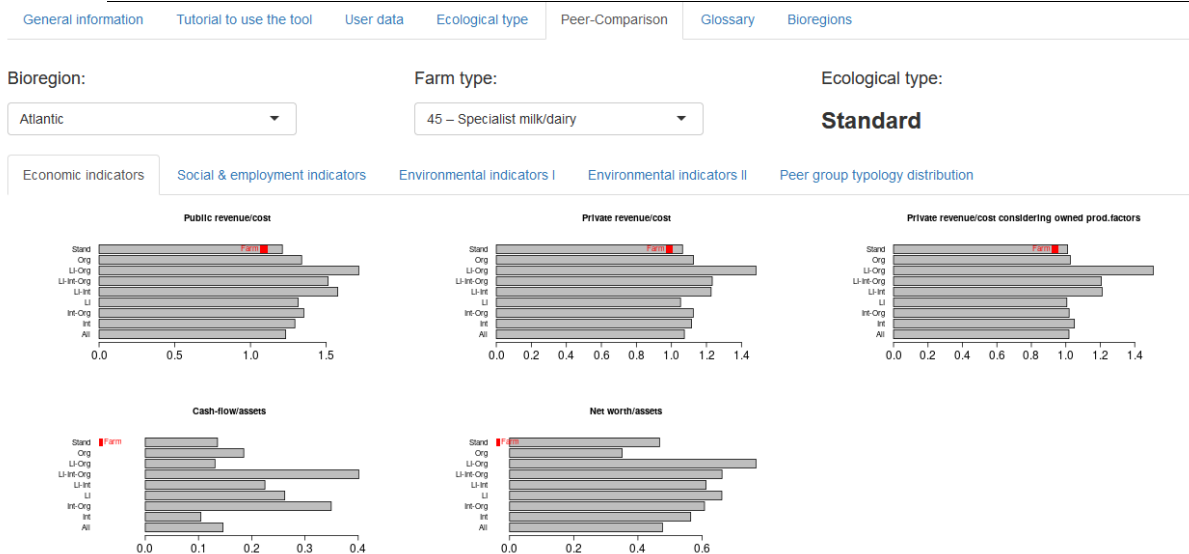


Figure 33: Economic indicators of farm with ID 3983

In a matter of social and employment indicators, the total paid labour in AWU graph shows that the farm is located way outside the bar (Figure 34). It means that for this indicator, the farm has employ more labour, approximately 3.5, than most farms in the same characteristics.

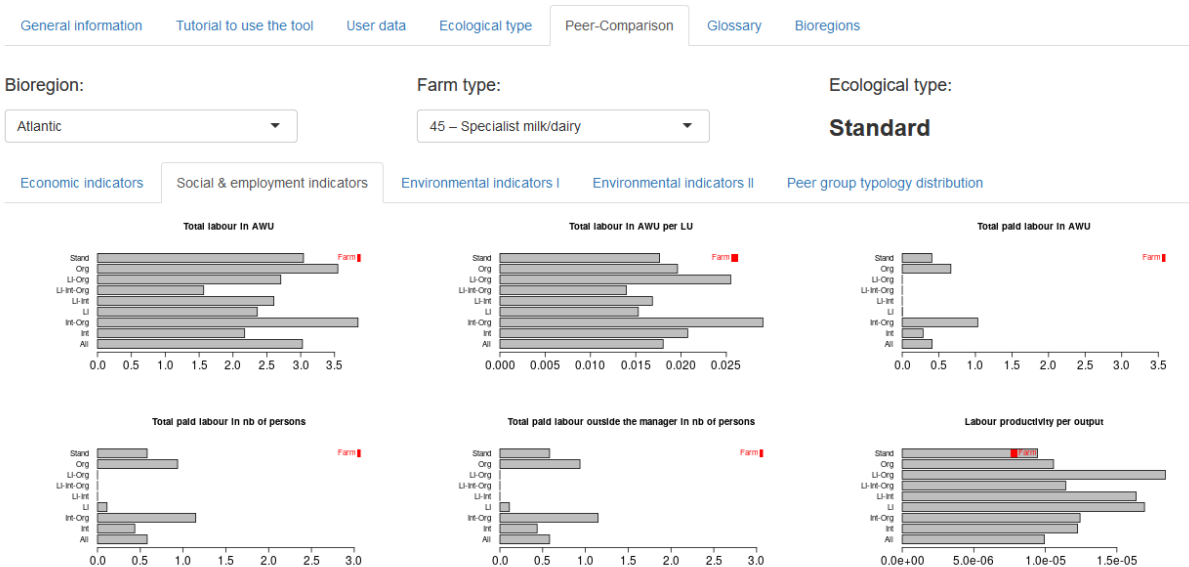


Figure 34: Social and employment indicators of the farm n°3983

In a matter of environmental indicators, Figure 35 shows that the farm is located before the median of the bar in the indicator water value per LU. It means that the farm is less efficient in a matter of water value per livestock unit than other farms.

Bioregion:

Atlantic

Farm type:

45 – Specialist milk/dairy

Ecological type:

Standard

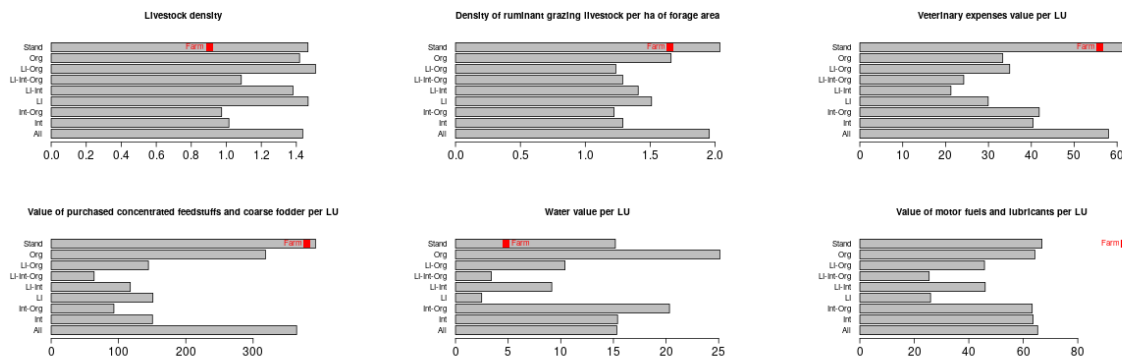
[Economic indicators](#)
[Social & employment indicators](#)
[Environmental indicators I](#)
[Environmental indicators II](#)
[Peer group typology distribution](#)


Figure 35: Environmental indicators of farm with ID 3983



The farm can also be compared to other bioregions and farm types by changing them in the drop-down menu.

3.3. Glossary

Finally, some definitions of the variables can be found in the glossary tab.

For example:

What is the name of the FADN variable with code SE025?

The glossary tab indicates that the FADN variable SE025 is the total used agricultural area ([Figure 36](#)).

General	Livestock	Livestock input	Farming input	Economic data	Social & employment data	Ecological type	Performance indicators		
Term	Definition						Unit	Typology_tool_name	FADN_name
Farm ID	ID of the farm. Each farm ID must be unique in the dataset and a numeric.						ID		id
Bioregion	See bioregions by country in the "Bioregions" tab. In the input-file, "All" = 0, "Alpine" = 1, "Atlantic" = 2, "Boreal" = 3, "Continental" = 4, "Mediterranean" = 5, "Pannonian" = 6						BioRegion		defined on the basis of NUTS3 and ALTITUDE
Country	Countries covered by the tool are: Austria (OST), Belgium (BEL), Bulgaria (BGR), Croatia (HRV), Czech Republic (CZE), Denmark (DAN), Estonia (EST), Finland (SUO), France (FRA), Germany (DEU), Greece (ELL), Hungary (HUN), Ireland (IRE), Italy (ITA), Latvia (LVA), Lithuania (LTU), Luxembourg (LUX), Netherlands (NED), Poland (POL), Portugal (POR), Romania (ROU), Slovakia (SVK), Slovenia (SVN), Spain (ESP), Sweden (SVE), United Kingdom (UKI). For the input-file, use the abbreviations in brackets.						Country		COUNTRY
Type of farming	Nomenclature used by FADN, which defines 14 types of farming (TF14). In the input-file, "0 - All"=0, "15 - Specialist COP (cereals, oilseeds and protein crops)"=15, "16 - Specialist other field crops"=16, "20 - Specialist horticulture"=20, "35 - Specialist wine"=35, "36 - Specialist orchards - fruits"=36, "37 - Specialist olives"=37, "38 - Permanent crops combined"=38, "45 - Specialist milk/dairy"=45, "48 - Specialist sheep and goats"=48, "49 - Specialist cattle"=49, "50 - Specialist granivores"=50, "60 - Mixed cropping"=60, "70 - Mixed livestock"=70, "80 - Mixed crops and livestock"=80						TF14		TF14
Data year	Year of input data.						Year		YEAR
Total utilised agricultural area	Total utilised agricultural area of holding. Does not include areas used for mushrooms, land rented for less than one year on an occasional basis, woodland and other farm areas (roads, ponds, non-farmed areas, etc.). It consists of land in owner occupation, rented land, land in share-cropping (remuneration linked to output from land made available). As from 2014, it includes kitchen gardens.						ha	UAA	SE025
Forage crop area	Fodder roots and brassicas (mangolds, etc.), other fodder plants, temporary grass, meadows and permanent pastures, rough grazing.						ha	ForageCropArea	SE071
Rented utilised agricultural area	Utilised agricultural areas rented by the holder under a tenancy agreement for a period of at least one year (remuneration in cash or in kind).						ha	RentedUAA	SE030
Certified organic	Organic certification as delivered by an accredited institution in your country.						Organic		ORGANIC

Figure 36: Glossary tab

3.4. Export results

The tool can generate a summary document with all the results for one farm. This option can be found at the bottom of the side panel ([Figure 37](#)). Select the farm ID and click on the "Generate summary report as pdf" button, and then open the pdf.

Export user data entered on the main panel

Download ecol. types and perf. indicators

Which peer group file do you want to use?

☒ Peer group based on file uploaded above
☐ New peer group file

Do you want the peer group mean or median?

☒ Mean
☐ Median

Download created peer group file

Which threshold file do you want to use?

☒ Default thresholds
☐ New threshold file

Download default thresholds

Which price adjustment file do you want to use?

☒ Default adjustments
☐ New adjustment file

Download default adjustments

Generate a summary report:

Give your report a name:

LIFT_summary_report

Generate summary report as pdf

Figure 37: Generate a summary report location in the side panel

Can you find the total Livestock units in the pdf?

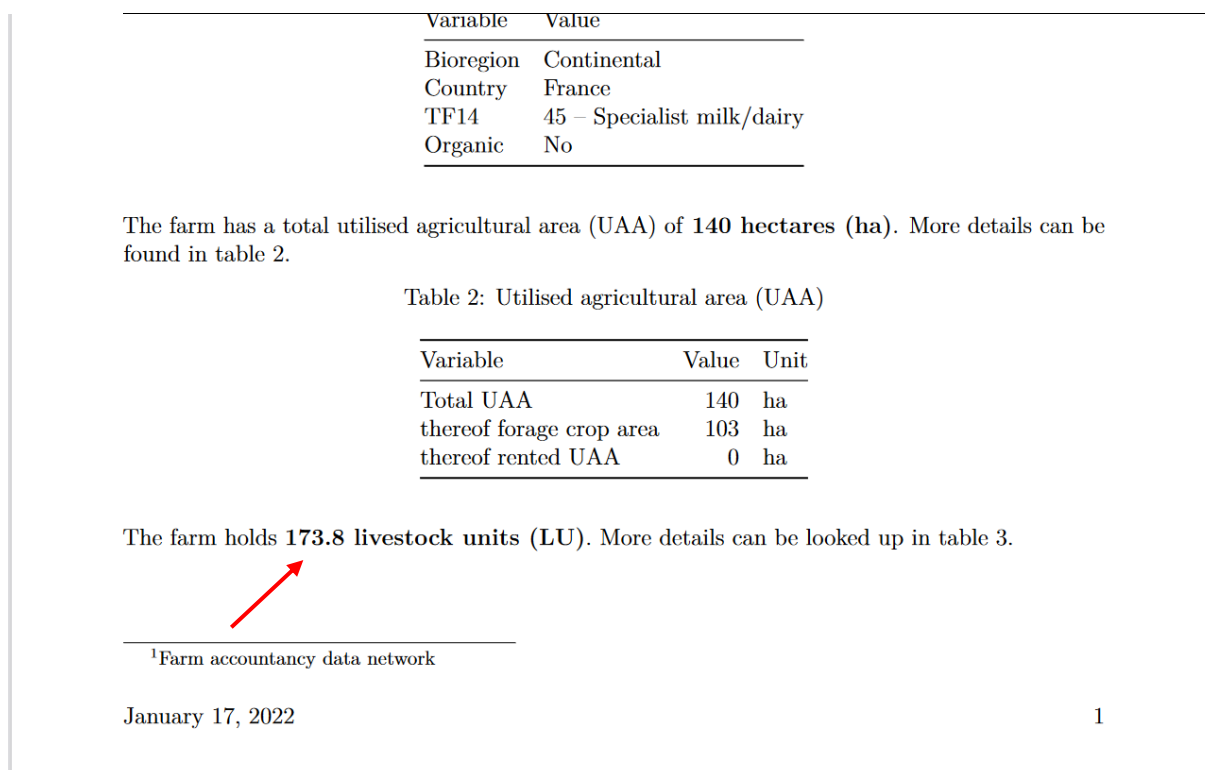


Figure 38: Location of the livestock units in the summary report

The answer is at the bottom of page 1: The farm holds 173.8 livestock units (Figure 38).

4. References

Chang W, Cheng J, Allaire JJ, Sievert C, Schloerke B, Xie Y, Allen J, McPherson J, Dipert A, Borges B (2021). shiny: Web Application Framework for R. R package version 1.6.0. <https://CRAN.R-project.org/package=shiny>

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Thompson B, Toma L, Barnes A, Latruffe L, Legras S, Zawalińska S, Krupin V, Gradziuk P, Jendrzewski B, Wojciechowska A, Lascano Galarza MX, Zavalloni M, Viaggi D, Kantelhardt J, Schaller L, Niedermayr A, Ryan M, Jin Y, Kilcline K, Jeanneaux P, Tzouramani E, Konstantidelli V, Chitea M, Rusu M, Bakucs Z (2021). Tool for ecological approaches' adoption projection. LIFT (Low-Input Farming and Territories - Integrating knowledge for improving ecosystem-based farming) project, Deliverable 2.5. https://sruc-lift.shinyapps.io/adoption_tool



5. Appendix

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Appendix 1: Summary report generated by the tool



LIFT - Low Input Farming and Territories

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 770747

Typology-tool report

Tool-link

Report name: LIFT_summary_report
Farm ID: 684
Year: 2015

User input data

The user has entered the following data as of 2015 for the farm with the ID-number '684'.

The farm is situated in the bioregion 'Atlantic' in France. With regard to the nomenclature used by FADN¹, which defines 14 types of farm (TF14), the farm is classified as '36 – Specialist orchards – fruits'. The farm is not labeled 'certified organic farming' (table 1).

Table 1: General information

Variable	Value
Bioregion	Atlantic
Country	France
TF14	36 – Specialist orchards – fruits
Organic	No

The farm has a total utilised agricultural area (UAA) of 50 hectares (ha). More details can be found in table 2.

Table 2: Utilised agricultural area (UAA)

Variable	Value	Unit
Total UAA	50	ha
thereof forage crop area	2	ha
thereof rented UAA	39	ha

The farm holds 0 livestock units (LU). More details can be looked up in table 3.

¹Farm accountancy data network

January 4, 2022

1



LIFT - Low Input Farming and Territories
This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 770747

Table 3: Livestock

Variable	Value	Unit
Grazing	0	LU
Pigs and poultry	0	LU
Other	0	LU
Total	0	LU

The inputs related to livestock are described in table 4.

Table 4: Input related to livestock

Variable	Value	Unit
Grazing days	0	LU days
Feedstuffs (grazing)	0	EUR
Coarse fodder (grazing)	0	EUR
Feed - home-grown (grazing)	0	EUR
Feedstuffs (pigs)	0	EUR
Feedstuffs (poultry)	245	EUR
Feed - home-grown (pigs and poultry)	0	EUR
Veterinary expenses	58	EUR

The other farming inputs are detailed in table 5.

Table 5: Farm input

Variable	Value	Unit
Fertilisers	1304	EUR
Crop protection	13656	EUR
Seeds - total	1369	EUR
Seeds - home-grown	0	EUR
Water	0	EUR
Heating fuels	0	EUR
Motor fuels and lubricants	2214	EUR
Electricity	2053	EUR
Own energy (surplus)	0	EUR
Machinery and building costs	16672	EUR
Depreciation	12897	EUR

In order to calculate financial performance indicators, the user entered the farm's financial data as presented in table 6.



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Table 6: Financial data

Variable	Value	Unit
Total assets	192859	EUR
Agricultural land	12831	EUR
Total liabilities	94805	EUR
Cash-flow / Total capital	0	

In order to calculate economic performance indicators, the user entered the farm's economic data as presented in table 7.

Table 7: Economic data

Variable	Value	Unit
Output	181142	EUR
Subsidies (except for investments)	9339	EUR
Intermediate consumption	121144	EUR
Paid wages	0	EUR
Paid rent	5831	EUR
thereof rent paid for land	4007	EUR
Paid interest	0	EUR

In order to calculate the costs of internal production factors, the user entered the estimated average costs for land, labour and capital as described in table 8.

Table 8: Estimated average costs for land rent, labour and capital

Variable	Value	Unit
Average labour costs	0	EUR/hour
Average rental costs	102	EUR/ha
Average interest rate	0	

In order to calculate social and employment performance indicators, the user entered the farm's social and employment data as specified in table 9.

Table 9: Social and employment data

Variable	Value	Units
Labour	1.69	AWU
Paid labour	0.00	AWU
Manager	0.00	AWU
Other paid	0.00	AWU
Casual paid	0.00	AWU

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Variable	Value	Units
Manager	0.00	nb persons
Other paid	0.00	nb persons
Casual paid	0.00	nb persons
Unpaid labour	2926.00	hours
Paid labour	0.00	hours

Ecological type

The tool assigns the farm into an ecological type as defined by the LIFT typology. The algorithms underlying the assignment follow the FADN-based protocol as described in Deliverable 1.4 (Rega et al., 2021²). The FADN protocol includes the four following ecological types: 'Standard', 'Low-Input', 'Integrated (circular)' and 'Organic'. A farm can belong to several ecological types, except for 'Standard', which is mutually exclusive with any other ecological type. To be qualified as 'Low-Input' and 'Integrated (circular)', respectively, the farm must achieve a minimum weighted average score of 3 (out of 4) for the respective ecological type. The scores for the different relevant variables, as well as the weights applied to calculate the average score, are presented in table 10. Note that the type 'Organic' is not based on an algorithm but solely on the information provided whether the farm is organic, in conversion or not organic.

Based on the inputs as described in the previous section, the farm is 'Low-Input'.

Table 10: Information on variables used to determine ecological type

Variable	Value	Score	LowInput_weight	Integrated_weight
Fertilisation	23.11	4	2.0	2
Crop protection	290.11	2	2.0	0
Water	0.00	4	1.5	0
Fuels&lubricants	57.32	4	1.5	0
Electricity	35.98	2	1.0	1
Machinery&buildings	324.63	1	1.0	0
Depreciation	251.12	3	1.5	0
Own feed	0.00	0	0.0	2

The graphical representation of the scores (figure 1 for 'Low-Input' and figure 2 for 'Integrated (circular)') may be used to identify practices for ecological improvements.

²Rega C, Thompson B, D'Alberto R, Niedermayr A, Kantelhardt J, Gouta P, Konstantideli V, Tzouramani I, Desjeux Y, Latruffe L, Billaudet L, Paracchini ML (2021). LIFT farm typology developed, tested and re-vised, and recommendations on data needs. LIFT project Deliverable D1.4.



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Figure 1: Scores for variables relevant to determine Low-Input type



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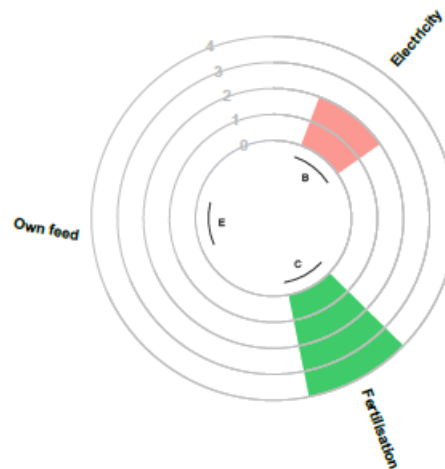


Figure 2: Scores for variables relevant to determine Integrated (circular) type

Peer group comparison

The user has specified a peer group by indicating the file to be used. Further, the user has chosen the bioregion 'Atlantic' and the type of farm (TF) '36 - Specialist orchards - fruits'.

Figure 3 gives an overview with regard to the distribution of ecological types within the selected peer group.

The farm is benchmarked to the peer group based on several performance indicators. The farm's performance appears in the following graphs as a red square and the label 'Farm'.

An economic benchmarking is presented in figure 4.

A social and employment benchmarking is presented in figure 5.

An environmental benchmarking is presented in figures 6 and 7.

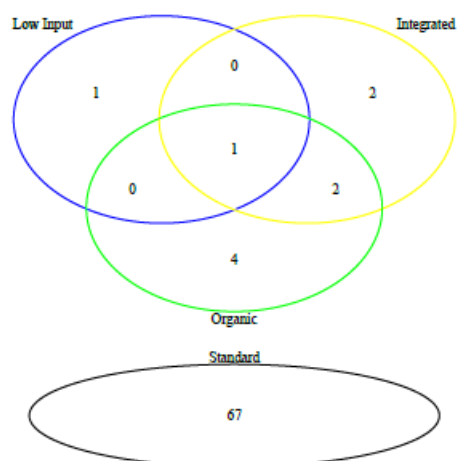


Figure 3: Distribution of ecological types for the bioregion 'Atlantic' and the type of farm '36 - Specialist orchards - fruits'



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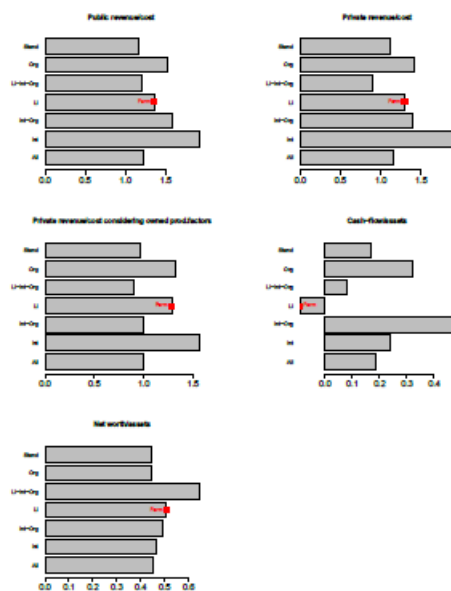


Figure 4: Economic performance comparison with a peer group having the bioregion 'Atlantic' and the type of farm '36 - Specialist orchards - fruits'



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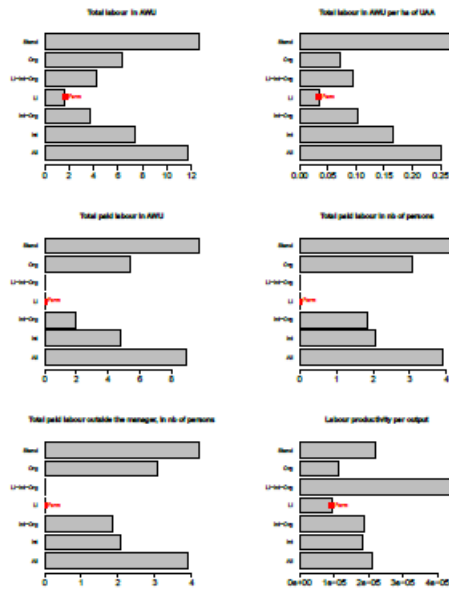
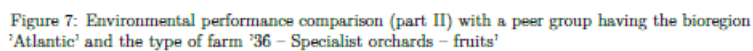
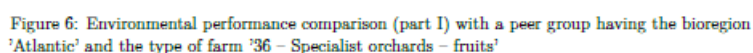


Figure 5: Social and employment performance comparison with a peer group having the bioregion 'Atlantic' and the type of farm '36 - Specialist orchards - fruits'



Appendix 2: Definition of the variables in the "General" sub-tab

Term	Definition	Unit	Typology_ tool_name	FADN_name
Farm ID	ID of the farm. Each farm ID must be unique in the dataset and a numeric.		ID	id
Bioregion	See bioregions by country in the "Bioregions" tab. In the input-file, "All" = 0, "Alpine" = 1, "Atlantic" = 2, "Boreal" = 3, "Continental" = 4, "Mediterranean" = 5, "Pannonian" = 6		BioRegion	defined on the basis of NUTS3 and ALTITUDE
Country	Countries covered by the tool are: Austria (OST), Belgium (BEL), Bulgaria (BGR), Croatia (HRV), Czech Republic (CZE), Denmark (DAN), Estonia (EST), Finland (SUO), France (FRA), Germany (DEU), Greece (ELL), Hungary (HUN), Ireland (IRE), Italy (ITA), Latvia (LVA), Lithuania (LTU), Luxembourg (LUX), Netherlands (NED), Poland (POL), Portugal (POR), Romania (ROU), Slovakia (SVK), Slovenia (SVN), Spain (ESP), Sweden (SVE), United Kingdom (UKI). For the input-file, use the abbreviations in brackets.		Country	COUNTRY
Type of farming	Nomenclature used by FADN, which defines 14 types of farming (TF14). In the input-file, "0 - All"=0, "15 - Specialist COP (cereals, oilseeds and protein crops)"=15, "16 - Specialist other field crops"=16, "20 - Specialist horticulture"=20, "35 - Specialist wine"=35, "36 - Specialist orchards - fruits"=36, "37 - Specialist olives"=37, "38 - Permanent crops combined"=38, "45 - Specialist milk/dairy"=45, "48 - Specialist sheep and goats"=48, "49 - Specialist cattle"=49, "50 - Specialist granivores"=50, "60 - Mixed cropping"=60, "70 - Mixed livestock"=70, "80 - Mixed crops and livestock"=80		TF14	TF14
Data year	Year of input data.		Year	YEAR
Total utilised agricultural area	Total utilised agricultural area of holding. Does not include areas used for mushrooms, land rented for less than one year on an occasional basis, woodland and other farm areas (roads, ponds, non-farmed areas, etc.). It consists of land in owner occupation, rented land, land in share-cropping (remuneration linked to output from land made available). As from 2014, it includes kitchen gardens.	ha	UAA	SE025
Forage crop area	Fodder roots and brassicas (mangolds, etc.), other fodder plants, temporary grass, meadows and permanent pastures, rough grazing.	ha	ForageCropArea	SE071
Rented utilised agricultural area	Utilised agricultural areas rented by the holder under a tenancy agreement for a period of at least one year (remuneration in cash or in kind).	ha	RentedUAA	SE030
Certified organic	Organic certification as delivered by an accredited institution in your country.		Organic	ORGANIC

Appendix 3: Livestock categories and livestock unit weights according to Eurostat classification

Animal_species	Description	LU_weight	Typology_tool_name
Bovine animals	Under 1 year old	0.4	OneYearBovine
	1 but less than 2 years old	0.7	TwoYearBovine
	Male, 2 years old and over	1	BovineMale
	Heifers, 2 years old and over	0.8	Heifers
	Dairy cows	1	DairyCows
	Other cows, 2 years old and over	0.8	Heifers
Sheep and goats		0.1	SheepGoats
Equidae		0.8	Equidae
Pigs	Piglets having a live weight of under 20 kg	0.027	Piglets
	Breeding sows weighing 50 kg and over	0.5	Sows
	Other pigs	0.3	OtherPigs
Poultry	Broilers	0.007	Broilers
	Laying hens	0.014	Hens
	Ostriches	0.35	Ostriches
	Other poultry	0.03	OtherPoultry
Rabbits, breeding females		0.02	Rabbits

Appendix 4: Definition of the variables in the "Livestock input" sub-tab

Term	Definition	Unit	Typology_tool_name	FADN_name
Grazing days	Livestock unit grazing days on common land.	days	GrazDays	GRAZDAYS
Purchased concentrated feedstuffs for grazing stock	Purchased concentrated feedstuffs (including mineral licks and preservatives) for grazing stock (equines, ruminants).	EUR	FeedstuffsGraz	IGRFEDCNCTRPUR_V
Purchased coarse fodder for grazing stock	Purchased coarse fodder for grazing stock (equines, ruminants).	EUR	CoarseFodderGraz	IGRFEDCRSPUR_V
Feed for grazing livestock home-grown	Marketable farm products (including milk other than suckled) used as feedingstuffs for grazing stock.	EUR	FeedGrazingHomeGrown	SE315
Purchased feedstuffs for pigs	Purchased feedstuffs for pigs.	EUR	FeedstuffsPigs	IPIGFEDPUR_V
Purchased feedstuffs for poultry and other small animals	Purchased feedstuffs for poultry and other small animals.	EUR	FeedstuffsPoultry	IPLTRFEDPUR_V
Feed for pigs and poultry home-grown	Marketable farm products (including milk other than suckled) used as feedingstuffs for granivores.	EUR	FeedPigsPoultryHomeGrown	SE325
Veterinary expenses	Veterinary expenses.	EUR	VetExp	IVET_V

Appendix 5: Definition of the variables in the "Farming input" sub-tab

Term	Definition	Unit	Typology_tool_name	FADN_name
Fertilisers	Purchased fertilisers and soil improvers (excluding those used for forests).	EUR	Fertilisers	SE295
Fertilisers N	Quantity of N in mineral fertilisers used.	q	FertQuantN	SE296
Fertilisers P	Quantity of P (P ₂ O ₅ in FADN) in mineral fertilisers used.	q	FertQuantP	SE297
Fertilisers K	Quantity of K (K ₂ O in FADN) in mineral fertilisers used.	q	FertQuantK	SE298
Crop protection	Plant protection products, traps and baits, bird scarers, anti-hail shells, frost protection, etc. (excluding those used for forests).	EUR	CropProtection	SE300
Seeds and Plants total	Relates to agricultural and horticultural crops. New plantations of permanent crops and woodlands are considered as investments.	EUR	Seeds	SE285
Seeds and Plants home-grown	Seeds and seedlings produced and used on the farm.	EUR	SeedsHomeGrown	SE290
Water use	Water use.	EUR	Water	IWATR_V
Heating fuel use	Heating fuel use.	EUR	HeatFuels	IHFULS_V
Motor fuels and lubricants use	Motor fuels and lubricants use.	EUR	MotorFuelsLubr	IFULS_V
Electricity use	Electricity use.	EUR	Electricity	IELE_V
Own produced energy (excess)	Own produced energy (excess energy).	EUR	OwnEnergy	ONRGPRD_S V
Machinery & buildings current costs	Costs of current upkeep of equipment (and purchase of minor equipment), car expenses, current upkeep of buildings and land improvements, insurance of buildings. Major repairs are considered as investments.	EUR	MachinBuild	SE340
Total physical assets depreciation	Depreciation of capital assets. Entry in the accounts of depreciation of capital assets over the accounting year. Valuation methods changed from 2014 accounting year. Concerns plantations of permanent crops (biological assets, estimated), farm buildings and fixed equipment, land improvements, machinery and equipment and forest plantations. There is no depreciation of land and circulating capital.	EUR	Depreciation	SE360

Appendix 6: Definition of the variables in the “economic input” sub-tab

Term	Definition	Unit	Typology_tool_name	FADN_name
Total output	Total value of output of crops and crop products, livestock and livestock products and of other output, including that of other gainful activities (OGA) of the farms. Sales and use of (crop and livestock) products and livestock + change in stocks of products (crop and livestock) + change in valuation of livestock - purchases of livestock + various non-exceptional products.	EUR	Output	SE131
Total intermediate consumption	Total specific costs (including inputs produced on the holding) and overheads arising from production in the accounting year. = Specific costs + Overheads (including machinery costs).	EUR	Intermediate-Consumption	SE275
Wages paid	Wages and social security charges (and insurance) of wage earners. Amounts received by workers considered as unpaid workers (wages lower than a normal wage) are excluded.	EUR	Wages	SE370
Rent paid	Rent paid for farm land and buildings and rental charges.	EUR	Rent	SE375
Rent paid for land	Rent paid for farm land.	EUR	RentLand	ILNDRNT_V
Interest paid	Interest and financial charges paid on loans obtained for the purchase of land, buildings, machinery and equipment, livestock, circulating capital, interest and financial charges on debts.	EUR	Interest	SE380
Total assets	Fixed assets + current assets. Only assets in ownership are taken into account. Capital indicators are based on the value of the various assets at closing valuation.	EUR	TotalAssets	SE436
Total liabilities	Value at closing valuation of total of (long-, medium- or short-term) loans still to be repaid.	EUR	TotalLiabilities	SE485
Cash flow / farm total capital	(Receipts - Expenditure for the accounting year)/(Fixed assets + current assets).	EUR	CFByTotalCapital	SE532
Total subsidies - excluding on investments	Subsidies on current operations linked to production (not investments), in €. Payments for cessation of farming activities are therefore not included. Entry in the accounts is generally on the basis of entitlement and not receipt of payment, with a view to obtain coherent results (production/costs/subsidies) for a given accounting year.	EUR	SubsidiesExInvest	SE605
Agricultural land (closing value)	Agricultural land closing value.	EUR	AgriLand	ALNDAGR_CV
Estimated average labour costs per hour	Estimated average labour costs per hour in your country.	EUR/hour	AvgLabourCosts	SE370 / SE021
Estimated average rental costs per ha	Estimated average rental costs per ha in your region.	EUR/ha	AvgRentalCosts	ILNDRNT_V / SE030
Estimated average interest rate	Estimated average interest rate on loans.		AvgInterestRate	SE380/SE485

Appendix 7: Definition of the variables in the “Social and employment input” sub-tab

Term	Definition	Unit	Typology_tool_name	FADN_name
Total labour	Total labour input of holding expressed in annual work units = full-time person equivalents.	AWU	Labour	SE010
Paid labour	Remuneration may be in cash or in kind.	AWU	HiredLabour	SE020
Manager paid	Manager paid in AWU.	AWU	ManagerAWU	WPRM_W1_TOT
Other labour paid	Other labour paid in AWU.	AWU	OtherPaidAWU	WPROTH_W1
Casual labour paid	Casual labour paid in AWU.	AWU	CasualPaidAWU	WPCCA_W1
Manager paid	Manager paid in number of persons. 1 if "Manager paid in AWU" not 0 and 0 otherwise.		ManagerP	1 if WPRM_W1_TOT > 0 0 if not
Other labour paid	Other labour paid in number of persons.		OtherPaidP	WPROTH_P
Casual labour paid	Casual labour paid in number of persons.		CasualPaidP	WPCCA_Y1/WPCCA_P
Unpaid labour	Time worked in hours by unpaid labour input (generally family) on holding.	hours	UnpaidLabourHours	SE016
Paid labour	Time worked in hours by paid labour input on holding.	hours	HiredLabourHours	SE021

Appendix 8: Definitions of the chosen indicators for farm economic performance

Name	Description	Typology_tool_name	FADN_codes
Public revenue/cost	(Revenue + subsidies) / (intermediate costs + depreciation + paid interest + paid labour + paid rent). Expresses ability of a farm to cover costs, not having to cover costs for owned production factors, with its private revenues and public subsidies.	Profitability1	(SE131 + SE605) / (SE275 + SE360 + SE370 + SE375 + SE380)
Private revenue/cost	Revenue / (intermediate costs + depreciation + paid interest + paid labour + paid rent). Expresses ability of a farm to cover costs, not having to cover costs for owned production factors, with its private revenues.	Profitability2	SE131 / (SE275 + SE360 + SE370 + SE375 + SE380)
Private revenue/cost considering remun. of owned prod. factors	Revenue / (intermediate costs + depreciation + capital * interest rate + labour in hours * wage per hour + land * rent. Expresses ability of a farm to cover all costs, including those for owned production factors with its private revenues.	Profitability3	SE131 / (SE275 + SE360 + (SE370 + SE016 * SE370 / SE021) + (SE375 + (SE025 - SE030) * ILNDRNT_V / SE030) + ((SE436 - ALNDAGR_CV) * SE380 / SE485)
Cash-flow/assets ratio	Cash-flow / total assets	Liquidity	SE532
Net worth/assets ratio	(Total assets – Liabilities) / total assets	Fin_stability	(SE436 - SE485) / SE436

Appendix 9: Definitions of the chosen indicators for farm social and employment performance

Name	Description	Typology_tool_name	FADN_codes
Total labour in AWU	Total labour input in AWU	Labour	SE010
Total labour in AWU per ha of UAA	Total labour input in AWU per ha of UAA	LabourPerUAA	SE010 / SE025
Total labour in AWU per LU	Total labour input in AWU per livestock unit	LabourPerLU	SE010 / SE080
Total paid labour in AWU	Total labour input who is paid in AWU	LabourPaidAWU	WPRM_W1_TOT + WPROTH_W1 + WPCCA_W1
Total paid labour in nb of persons	Total labour input who is paid in number of persons	LabourPaidP	(if WPRM_W1_TOT > 0 then 1, else 0) + WPROTH_P + WPCCA_P
Total paid labour outside the manager, in nb of persons	Total labour input who is paid outside the manager, in number of persons	LabourPaidExMgrP	WPROTH_P + WPCCA_Y1/(WPCCA_P*WPCCA_W1)
Labour productivity per output	Total labour input in AWU per Euros of output	LabourPerOutput	SE010 / SE131

Appendix 10: Definitions of the chosen indicators for farm environmental performance

Name	Description	Typology_tool_name	FADN_codes
Livestock density	Livestock density	LSDensity	SE080 / SE025
Density of ruminant grazing livestock per ha of forage area	Density of ruminant grazing livestock per ha of forage area	GrazLSDensity	SE120
Veterinary expenses value per LU	Veterinary expenses value per livestock unit	VetLU	IVET_V / SE080
Value of purchased concentrated feedstuffs and coarse fodder per LU	Value of purchased concentrated feedstuffs and coarse fodder per livestock unit	ConcentrLU	(IGRFEDCNCTRPUR_V + IGRFEDCRSPUR_V + IPIGFEDPUR_V + IPLTRFEDPUR_V) / SE080
Value of purchased fertilisers and soil improvers per ha of UAA	Value of purchased fertilisers and soil improvers per ha of UAA	FertUAA	SE295 / SE025
Quantity of N in mineral fertilisers used per ha of UAA	Quantity of N in mineral fertilisers used per ha of UAA	FertNUAA	SE296 / SE025
Quantity of P in mineral fertilisers used per ha of UAA	Quantity of P (P ₂ O ₅ in FADN) in mineral fertilisers used per ha of UAA	FertPUAA	SE297 / SE025
Quantity of K in mineral fertilisers used per ha of UAA	Quantity of K (K ₂ O in FADN) in mineral fertilisers used per ha of UAA	FertKUAA	SE298 / SE025
Value of plant protection product per ha of UAA	Value of plant protection products, traps and baits, bird scarers, anti-hail shells, frost protection, etc. (excluding those used for forests) per ha of UAA	CropProtectUAA	SE300 / SE025
Water value per ha of UAA	Water value per ha of UAA	WaterUAA	IWATR_V / SE025
Water value per LU	Water value per livestock unit	WaterLU	IWATR_V / SE080
Value of motor fuels and lubricants per ha of UAA	Value of motor fuels and lubricants per ha of UAA	MotorFLUAA	IFULS_V / SE025
Value of motor fuels and lubricants per LU	Value of motor fuels and lubricants per livestock unit	MotorFLLU	IFULS_V / SE080