Impact

Integrated Modelling Platform for Mixed Animal-Crop Systems

User’s manual

M. Herrero, E. González-Estrada, P. K. Thornton and G. Hoogenboom

Edited by D. K. Kirby and C. Quirós
Based on the publication:

Software developed by:
Quiros C.
cquiros@qlands.com
www.qlands.com

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A number of studies have attempted to understand the impact of cropping and livestock activities on the livelihoods of smallholder farmers. In particular, research has been focused on how farmers' choices are shaped and constrained by the socio-economic, environmental, and socio-political characteristics of the ecoregion they live in. Although standard datasets have been established for components of systems (crops, livestock, or soil), little effort has been made to produce standard system-level datasets. In light of this, **Impact** was created to provide a unifying framework for collecting system-level information in a standard format for any tropical farming system. In addition, **Impact** was developed to provide standard input files and data exchange protocols to run and link models for assessing the impacts of alternative management or policy interventions on tropical smallholder farming systems.

**Impact** can be used by anyone who wishes to characterise a tropical farming system in such a way that they can then better and more clearly understand how the system works. By characterising a farming system, a user will be able to test within **Impact** the effects of different management scenarios on the system and to understand how they impact on a number of aspects of the farm, e.g., food security, income. At a simpler level, **Impact** also enables a user to see clearly the effects of an existing management strategy on a farming system.

This manual was designed with the objective of taking any user through the process of characterising a farming system using **Impact**. The manual is intended to give the user an understanding not only of how to use **Impact**, but also of the rationale behind collecting and using the different types of data that **Impact** asks for. For this reason it is important the you, as a user, follow each of the subsequent sections in turn, reading carefully the explanation given for each step. The outline given below explains the steps you need to follow. Following this the manual takes you through each process in a step by step guide. Even if you have no or very little experience of using computers, you will be able to use **Impact** if you follow the instructions carefully.
This manual is organised into three parts. PART 1 explains how to install the software and how to understand the format of the Impact software and manual. It is organised into three sections:

PART 1: THE BASICS OF IMPACT

I. Installing the Impact software
II. Understanding the layout and commands of the Impact software
III. Understanding the way in which Impact organises its data

Once you have seen how Impact is set up you need to carry out two initial tasks in order to ensure that Impact is set up correctly for you. PART 2 takes you through these two preliminary steps:

PART 2: PRELIMINARY STEPS

IV. Accessing Impact’s Database Manager and organising your database(s)
V. Reviewing Impact’s Data Tables

Once these preliminary steps have been completed, PART 3 describes how you can use the following tools in/software with Impact:

PART 3: WORKING WITH IMPACT

VI. System Characterisation
VII. Analysis Tools
VII. Duplicating Data
IX. Add-ins
PART 1:
THE BASICS OF *IMPACT*
I. INSTALLING THE IMPACT SOFTWARE

System requirements

PC with 300 MHz or higher processor clock speed recommended; 233 MHz minimum required (single or dual processor system); Intel Pentium/Celeron family, or AMD K6/Athlon/Duron family, or compatible processor recommended.

128 megabytes (MB) of RAM or higher recommended (64 MB minimum supported; may limit performance and some features)

60 megabytes (MB) of available hard disk space.
Note: More free disk space may be required depending on the number of agricultural systems present.

MS Windows 98 SE, ME, 2000 or XP.

CD-ROM or DVD drive.

Super VGA (1024 x 768) or higher-resolution video adapter and monitor.

Mouse or other pointing device.
CD-ROM installation

Insert the \Impact cd into the CD-ROM or DVD drive. Windows will auto-run the Impact setup.

Proceed following the installation instructions.

Installing \Impact

By default the \Impact directory is c:\Program Files\Impact\. You can install \Impact in a different location.
The setup process will copy all the necessary files to your PC. Once the setup is completed, Impact will be ready to use.
II. **IMPACT’S LAYOUT AND COMMANDS**

Before starting to work with *Impact* you must know how the software is laid out, and it is important that you understand the basic commands *Impact* uses. This section gives you a guide to the layout of the *Impact* software and explains the basic commands in the *Impact* software and manual.

On initially opening *Impact* a window will be displayed suggesting that you duplicate the ILRI database with your own. Section IV of this manual shows you how to do this. After reading the message displayed click on the **Close** button. *Impact*’s basic window will be displayed showing the main menus.

**The main menus**

*Impact*’s basic window contains the program’s principal menus. These are:

- Database Manager
- Data Tables
- System Characterisation
- Analysis Tools
- Add-ins

Any of these components can be accessed by clicking on the drop-down menu or, for faster access, on the appropriate icon.
8 Impact’s layout and commands
Basic commands within *Impact*

The windows in *Impact* have a basic set of command buttons that perform different actions. These are the same in every window. In addition, many of the windows display lists of items, which you can amend as necessary. The meanings of the basic command buttons and the icons associated with the lists are shown in the following diagram.

- **New**
  Creates a new item on the list and sets the input areas ready for data input.

- **Delete**
  Marks the current record to be removed from the list.

- **Apply**
  Commits all the changes made in the table. New items are added, those marked as deleted are removed from the database and any change to current data is also applied.

- **Cancel**
  Annuls any changes made to the list that have not been applied.

- **Input area**
  Where information related to an item in the table is allocated.

- **List**
  Shows all the items available in the database. An item can be in three different states:
  - The item is new and will be added to the database.
  - The item is marked as deleted and will be removed.
  - The item has been modified and the changes will be applied.

Clicking on the Apply button will transform these states to neutral.
Following instructions in *Impact*

In this manual there are a number of symbols and marks in the text that are designed to make using the manual as simple as possible. This page explains what these symbols and marks mean and how to use them.

'Left-click' and 'right-click' mean clicking either the left- or right-hand button of your mouse on the appropriate area of the computer screen. The instruction “click” always means click the left-hand button of your mouse.

Definition boxes are given to aid you in understanding exactly what is meant by a particular phrase or expression. The phrase or expression is covered by a blue rounded box, indicating that there is a definition box nearby.

Instructions given in pale blue to select an item mean that you should left-click on it so that it is highlighted like this.

Instructions given in pale blue to input data values (either numbers or words) into a table or cell within a table mean that you should left-click on that cell until it is highlighted and then press the F2 key on your keyboard. You can then input the data you wish to before clicking on the Apply button.

The names of buttons found in *Impact* are given in **Bold**. The names of tables and boxes found in *Impact* are **Underlined**. The names of windows found in *Impact* are given in **Bold violet**.

The symbols ◊, ◊, ◊, ◊, ◊ and ◊ frequently appear in the text. These are there as a guide to the user of where to repeat instructions to and from, and can be skimmed over when reading the text.

A combo box is this: ComboBox
III. THE STRUCTURE OF IMPACT’S INFORMATION

This section explains how the information within Impact is arranged, and the procedure you must follow when using Impact.

Impact holds a large amount of information that it uses to help you characterise a farming system. This information is held in a Database. Your first task will be to create your own personal database based on the default ILRI database that is provided with the software. Section IV explains how to do this.

Impact operates by collecting a large amount of information about a farming system and then aggregating that information to produce a meaningful description of how the system is functioning and performing. Impact collects this information by asking you to work systematically through all the windows in a component of the software called System Characterisation. You are asked to fill in the information boxes that are provided with details of the farming system. However, instead of asking you to provide raw information about every detail within the farming system, Impact maintains a large amount of basic information in a number of Data Tables. This information, which is shown in lists and combo boxes, enables Impact to offer you a choice of responses in the System Characterisation, meaning that you can simply select one or more of the options offered. Not all of the information Impact requires can be given in this way and Impact also asks that you provide raw data for some details in the System Characterisation.

In summary:
Impact characterises a farming system by asking you to input data into the System Characterisation windows. The inputted data come from two sources:

- Data Tables
- Raw data inputted in the System Characterisation process

The Data Tables contain basic information which helps to characterise any farming system. The System Characterisation data are specific to a particular farming system and are inputted by the user. All of this information is then saved to a Database.

Once you have supplied all the information that Impact asks for you can use the Analysis Tools to carry out a number of analyses relating to the farm and household.
Data tables

There are 16 Data Tables in Impact pertaining to 16 categories of data. This information includes soil types, fertiliser types, livestock types and household activities. It is essential that you ensure that all the basic information you will need to characterise a farming system is present in the Data Tables. Thus, the first step towards System Characterisation is to access the Data Tables and ensure that the information present is up-to-date for your system. If information is missing you can update it for 12 of the Data Tables with your own additional variables via the Data Table menu or icons on the Impact toolbar. This information is then saved in your Database. Section V explains how to access these tables and check that all the information you require is present.

System characterisation

Once you have checked and amended the Data Tables, you can start the process of characterising a farming system. The System Characterisation component of Impact takes you through a number of windows relating to different aspects of the farming system. It is essential that you complete as much of the information as possible. Even though you are initially only interested in using a part of Impact you may find that having completed one section you then want to investigate the next stage of the system. It is much more efficient to collect all the data that are required at the same time so that you do not have to make repeat data collections. Section VI gives a detailed description of how to use the System Characterisation component of Impact.

Analysis tools

The analyses that Impact can carry out fall into the followings four categories:

- Economics
- Food security
- Nutrient flows
- Labour

Section VII describes the use and relevance of the various analyses that Impact can perform and gives a systematic guide to carrying out the analyses and understanding the results that are produced.

Section VIII explains how you can duplicate specific parts of data within Impact.

Section IX gives a brief description of the Add-ins that can be used with Impact.
PART 2:
PRELIMINARY STEPS
IV. THE DATABASE MANAGER

*Impact* can store a number databases with different Data Table and System Characterisation data but can only use one database at any one time. The **Database Manager** controls which database is selected and used. *Impact* is distributed with a default ILRI Database, which contains the Data Table information and some examples of System Characterisation data. You can browse this information by going directly to the Data Table or System Characterisation menus. However, before starting to work on your own systems, it is highly recommended that you create your own custom database based on a duplicate of ILRI’s. This is done in the **Database Manager**.

The remainder of this section gives you a step by step guide on how to use the **Database Manager**.

To access the **Database Manager**, click on the DB Manager button on *Impact*’s toolbar. The **Database Manager** displays all the *Impact* databases available in your computer, followed by the directory where they are stored. It will by default show ILRI’s Database. You can highlight any of the Database names in order to execute any of the six commands associated with the **Database Manager**. These are described on the following pages.

![Database Manager screenshot](image.png)
**Duplicate database**

This process makes a complete copy of the database that is highlighted. It is highly recommended that you go through this process before starting work on your farming systems. To create a duplicate database, select a database name. If you are using **Impact** for the first time, the database name you should select is 'ILRI'. **Impact** prompts you for a new name for the database and the directory to save it to. By default, the database name is set to 'Personal' and the directory is set to \\My Documents\\My Impact. You can type a different database name if you wish, and change the directory location by clicking on the ***button. Click on the Duplicate database button. Once you have chosen a new name and directory for the database you should then choose to 'Use' this new database (see following paragraph). Click on the Close button.

![Duplicate database](Image)

**Use database**

*Select* a database name and click on the Use database button. The database will become active. The name of the active database is displayed on the top right-hand side of the **Impact** tool bar. When you make changes to information in the Data Tables and/or System Characterisation they will only be made in the active database. Click on the Close button.

![Use database](Image)
Compress database

It is often important to share databases with other users. The compress database process will copy an *Impact* database file into a compressed file with the extension ‘tar.gz’. This file type occupies less space than the original so is useful for backup or data-sharing purposes, e.g. emailing. To compress a database select the database name you want to compress and click on the Compress database button. Choose the destination directory and name for your compressed file (remembering to note where you have saved it). Click on the Save button. Click on the Close button. A ‘tar.gz’ file can be opened and saved through the Add database facility (see following paragraph) or by a standard compression program such as Winzip.
Add database

This action has two functions:

1. It can locate a directory in which an (uncompressed) database is stored and make that database available in the Database Manager window. This can be needed when you have a database that is not compressed but you have added to your computer from an external source, e.g., from a disk.

2. It can add a compressed database to the Database manager. This may be needed if you have a file that has come from someone else and has the ‘tar.gz’ ending.

To carry out either of these functions, click on the Add database button. Check one of the options for the Source type:

1. Directory: If you want to locate a directory and add an (uncompressed) database from that directory to the Database Manager, check the Directory box. Type the new name for the database in the Database name box, and specify the source of the directory or browse for the location using the ... button. Click on the Add button. The database will now be shown in the Database Manager window. Click on the Close button.

2. Compressed: Check the Compressed file box if, for example, you have received a compressed file from another Impact user. Type the new name for the database in the Database name box. In the Compressed file source box type the path where the ‘tar.gz’ file (compressed database) resides or browse for the location using the ... button. In the Target directory box type the path where the database will be uncompressed or browse for the location using the ... button. (e.g., \My Documents\My Impact). Click on the Close button.
Remove database

This command will delete any database that is highlighted from your system. To remove a database select a database in the Database Manager window and then click on the Remove database button.

Check/upgrade database

The database manager can check if the current database is valid for the version of Impact that you are running. By upgrading a database, the database manager will apply any necessary changes to the database in order to make it compliant with the requirements of your Impact version. To check or upgrade a database select a database in the Database Manager window and then click on the Check/upgrade database button.
V. DATATABLES

*Impact* holds default information in 12 principal Data Tables and four sub-Data Tables, each one relating to a particular aspect of farm characterisation (shown below). This information appears in the lists and combo boxes in the System Characterisation process. The data can be amended in eight of the principal Data Tables and all four of the sub-Data Tables. *It is imperative that all the information you require to characterise a farming system is present. You must check the Data Tables to ensure that all the information you will need is available. This section takes you through each Data Table in turn and explains how to use it.*

**Data tables that can be appended**

- System Types Data Table
- Crops Data Table*
  - Products Data Table
  - Forage Products Data Table
- Pastures Data Table
  - Products Data Table
  - Forage Products Data Table
- Activities Data Table
  - Activity Methods Data Table
  - Activity Units Data Table
- Fertilisers Data Table
- Livestock Data Table
  - Livestock Products Data Table
- Purchased Feeds Data Table
- Household Consumption Products Data Table

**Data tables that cannot be appended**

- Countries Data Table
- Soil Type Data Table
- Drainage Data Table
- Marketing Outlets Data Table

* Can also be accessed through: System Type Data Table

*Each of the windows for these Data Tables can be opened either by clicking on the correct icon on the toolbar or by clicking on the 'Data Tables' drop-down menu and selecting the Data Table that you need.*
1. SYSTEM TYPES DATA TABLE

To aid identification, Impact asks you to describe the farming system based on its one main crop and/or one main livestock type. This description is then used as the name of the system and is described in the General Characteristics window of System Characterisation.

To create a system type name for the farm you are characterising, open the System Types Data Table. Click on the New button and write the name type in the System type box in the upper left of the window. Click on the Apply button. Check one box for the main crop and/or livestock type that are on the farm. (Further crops and livestock will be added at a later stage.) Click on the Apply button.

If the crop or livestock type that best characterises the farm is not in the list, click on the relevant Edit list button. This will take you directly to either the Crops Data Table or the Livestock Data Table. See the relevant sections in this manual for how to add and edit information in these tables.
2. CROPS DATATABLE

Impact divides the farming system into different plots. Each plot can be devoted to CROPS or PASTURES, either of which can yield both PRODUCTS and FORAGES. Crops can be clumped together in a VEGETABLE ORCHARD.

Impact provides a list of possible crops which will be used for the farm system characterisation. It links any crop to its products and forages and provides space to input the nutritional values of these products. These data are used both in the initial naming of the farming system and later in the characterisation process.

To specify the crop products that are associated with the crops present in the system open the Crops Data Table. Select a crop that is produced on the farm from the Crops list. If the crop can be grown in a vegetable orchard, check the box. In the Products that can be harvested from this crop, check the tick boxes for each product that is produced from that crop.
You can also input data values into the table relating to the following three aspects of the crop products you specified:

- **Nutrients**
  - N (%): Nitrogen content (percent)
  - P (%): Phosphorus content (percent)
  - K (%): Potassium content (percent)
  - C (%): Carbon content (percent)

- **Nutritional information for human consumption**
  - Ener.(MJ/kg): Energy (megajoules per kilogram)
  - Prot. (g/kg): Protein (grams per kilogram)

- **Nutritional information for livestock feeding**
  - DM (%): Dry matter content (percent)
  - CP (%): Crude protein content (percent)
  - NDF (%): Neutral detergent fibre content (percent)
  - Dig. (%): Digestibility (percent)
  - M.E. (MJ/kg): Metabolised energy (megajoules per kilogram)

Once you have specified all the products for your selected crop and inputted any data values relating to them, click on the **Save list changes** button. If you do not wish to make these changes, click on the **Undo list changes** button. [N.B. Once you have clicked on the **Save list changes** button you cannot apply **Undo list changes**.]

If there is a product that is harvested that is missing from the **Products Data Table**, click on the **Edit list** button. This will take you to the **Products Data Table**. To add a new product to the Data Table, click on the **New** button and fill in the appropriate name for that product in the **Product** box. Repeat for as many new products as you wish to add. To delete a new product that you have added, select it and then click on the **Delete** button. Click on the **Apply** button. Click on the **Close** button. Repeat from **Edit** to **Close** for the new products you have just added.

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**Forage**
A FORAGE is a main item that is generally produced by a PASTURE (and less often by a CROP). For example, a pasture of **napier grass** produces a product that is **grass**; a pasture that is a **tree** produces a product that is **leaves**. Forages tend to be bulky and to have a high fibre content.

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**Product**
A PRODUCT is a main item that is generally produced by a CROP (and less often by a PASTURE). For example, a crop of **tomato** produces a product that is a **vegetable**; a crop of a **cereal** produces a product that is a **grain**. Products tend to have a low fibre content.

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**Vegetable orchard**
A VEGETABLE ORCHARD is a plot of land that is managed with a multiple and complex association of crops. The intercropping of this plot is so complex that it is not possible to identify the management of each crop individually but rather all of them are managed together. In a vegetable orchard there is a high number of crops (tomatoes, cabbage, carrots, potatoes, herbs, onions, etc.), but the management is relatively uniform. In a vegetable orchard, the plot is generally (but not necessarily) relatively small and intensively managed.
Repeat from ★ to ★ for the Forages that can be harvested from this crop table. When you have added all the information for one crop that you wish to add to the table, click on the Apply button.

Repeat from ★ to ★ for all the crops in the farming system.

If there is/are (a) crop(s) present in the farming system that is/are missing from the Crops list, click on the New button. Write the name of the crop in the Crop box and click on the Apply button. The new crop will be added to the Crops list. Repeat for as many new crops as you need to add. Repeat from ★ to ★ for all the new crops you have added to the Crops list.

**Intercropping**

When characterising your system, Impact gives you the option to specify intercropping in your cropping calendar. However, if you are going to describe an intercrop as a mix of a pasture species with a crop, you must add the pasture species to the Crops Data Table as a new crop, following the instructions in the previous paragraph.
3. **PASTURES DATA TABLE**

*Impact* provides a list of possible pasture species which will be used for the farming system characterisation. It links these species to their products and forages and provides space for you to input the nutritional values of these products. These data are used both in the initial naming of the farming system and later on in the characterisation process.

To specify the pasture species and their products and forages that are present in the farming system open the Pastures Data Table. Select a species that is present in the farm’s pastures from the Pasture species list. In the Products that can be harvested from this pasture table, check the tick boxes for each product that is produced with this pasture species. As for the Crops Data Table you should also input data relating to: i) Nutrient values; ii) Nutritional information for human consumption; iii) Nutritional information for livestock feeding. Once you have checked all the products for that species and inputted any data values, click on the Save list changes button. If you do not wish to make these changes, click on the Undo list changes button. [N.B. Once you have clicked on the Save list changes button, you cannot apply Undo list changes.]

<table>
<thead>
<tr>
<th>Pasture species</th>
<th>Products that can be harvested from this pasture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
<td>Product 1</td>
</tr>
<tr>
<td>Product 1</td>
<td>Ticked</td>
</tr>
<tr>
<td>Product 2</td>
<td></td>
</tr>
<tr>
<td>Product 3</td>
<td></td>
</tr>
<tr>
<td>Product 4</td>
<td></td>
</tr>
</tbody>
</table>

**Detail**
You can manage pastures as a mixture of species. *Impact* prompts for the detail in the Pasture plots window of the System Characterisation.

**Harvesting**
A harvest can produce products and forages, each of which can have different characteristics.

**Undo list changes**
Annuls any changes made to the forages or harvested products list.

**Save list changes**
Commits any changes made to the forages or harvested products list.

**Edit list**
Products and forages can be updated.
If there is a product that is harvested that is missing from the **Products that can be harvested from this crop table**, click on the **Edit list** button. As with the **Crops Data Table** window this will take you to the **Products Data Table**. Add or delete new products as you did for the **Crops Data Table** window.

Repeat from 1 to 4 for the new products you have just added.

Repeat from 1 to 4 for the **Forages that can be harvested from this crop table**. When you have added all the information for a crop, click on the **Apply** button.

Repeat from 1 to 4 for all the species in the **Pasture species** list that are in the system. Add or delete new products as you did for the **Crops Data Table** window.

**Ask for detail check box**

If your pasture is a complex mix of species, you do not need to specify these individual species and their products at this time. Instead, you can select a species name from the **Species** list that covers the variety of species that are in the pasture, e.g. Acacia sp. Or, if the species mixture you need is not given in the **Species** list, you can create your own species group name and add it to the **Species** list. You can then check the **Ask for detail** box and then later on **Impact** will allow you to set the botanical composition information in the **Pastures plots** characterisation window.

To create your own species group name, click on the **New** button. Write the name of the species group, for example **Mixed Kenyan grasses**, in the **Species** box and click on the **Apply** button. The new species group will be added to the **Species** list in alphabetical order. Select the species group name from the **Species** list, and check the **Ask for detail box**. Repeat from 1 to 4 to add information for this species group.
4. ACTIVITIES DATATABLE

An activity is a task relating to land management that is carried out on the farm. Each activity you define can be given different parameters specific to the farming system. Use this window to ensure that all the land management practices employed are specified correctly. This information will be used in the Land management windows in the system characterisation process.

The Activities Data Table is set up in three stages:

1. An activity is created or selected and the type of land management associated with it is specified;
2. The methods used for this activity are specified;
3. The units of measurement used for these methods are specified.

To specify an activity carried out on the farm open the Activities Data Table. Select an activity from the Activities list or create a new activity by clicking on the New button. In the Type of management box check one of the three options for whether the activity is crop- or livestock-related or other.
Options for management

You have the option to check one of three boxes for Options for management. Check Ask for plant density if the activity involves the use of any planting material. Check Ask for fertilisers if the activity involves the application of fertiliser. Otherwise check the N/A box.

If you created a new activity click on the Apply button.

If the method used for this activity is not in the Available methods for this activity box, click on the Add new methods button. You will be taken to the Activity Methods Data Table. To add a new method to the Data Table, click on the New button and input the appropriate name for that method in the Description box. Repeat for as many new methods as you wish to add. To delete a new method that you have added, select it and then click on the Delete button. Click on the Apply button. Click on the Close button. The new methods will now be shown in the Available methods for this activity box in the Activities DataTable.
In the **Units used by this activity** box check the tick box which is most appropriate the selected activity. To add a new unit to the Data Table, click on the **Edit list** button. You will be taken to the **Activity Units Data Table**. To add a new unit click on the **New** button and input the appropriate long and short descriptions for that unit. Click on the **Apply** button. Click on the **Close** button.

Click on the **Apply** button in the **Activities Data Table**, or **Cancel** button if you do not wish to make these changes.

Repeat from **to** for **all** the activities carried out on the farm.
5. FERTILISERS DATA TABLE

*Impact* provides a set of possible fertilisers to be included with the activities that require fertiliser in the System Characterisation. If a fertiliser that is used in the farming system is not present you should add it to this DataTable.

To add a new fertiliser open the **Fertilisers Data table**. Click on the **New** button and then complete the **Description** box and the mineral composition information. If the fertiliser is a manure check the **Manure** box.

Repeat from the to for all new fertilisers.
6. LIVESTOCK DATA TABLE

*Impact* provides a list of possible livestock types which will be used in the *Species and purpose* window when you are characterising the farming system. *Impact* links any livestock type to its products, and provides space to input the nutritional values of these products. These data are used later in the *Household consumption* and *Mineral concentration of products* windows in the System Characterisation process.

To specify the livestock products that are present in the system, select a livestock that is present in the farming system from the Livestock list. Check the type of animal it is in the Type box. In the Products that can be obtained from this livestock table, check the tick boxes for each product produced from the livestock type.
You should also input data values into the table relating to two aspects of the livestock products you specified:

- **Nutrients**
  - N (%): Nitrogen content (percent)
  - P (%): Phosphorous content (percent)
  - K (%): Potassium content (percent)
  - C (%): Calcium content (percent)

- **Nutritional information for human consumption**
  - Ener. (MJ/kg): Energy (megajoules per kilogram)
  - Prot. (g/kg): Protein (grams per kilogram)

Once you have specified all the products for the selected livestock type and inputted any data values relating to them, click on the `Save list changes` button. If you do not wish to make these changes, click on the `Undo list changes` button. [N.B. Once you have clicked on the `Save list changes` button, you cannot apply `Undo list changes`.

If there is a product that the livestock type produces that is missing from the `Livestock Products DataTable`, click on the `New` button and input the appropriate name for that product in the `Product` box. These products will be displayed in the System Characterisation so you must specify here how they are to be marketed or used. Select a product and check the `Ask for quantity` box if the product is produced and sold in litres or kilograms. Check the `Ask for other unit` box if the product is an entire animal, then check either `Ask for unit's weight` if the product is to be sold by its weight but not in kilograms, or `Sold by herd structure category`, if the criterion for selling an animal is linked to an age group in the herd this will be reflected in the `Sale of products` window. Repeat from to for as many new products as you wish to add. To delete a new product that you have added, select it and then click on the `Delete` button. Click on the `Apply` button. Click on the `Close` button. Repeat from to for the new products you have just added.
When you have added all the information for one livestock type to the **Livestock Data Table**, click on the **Apply** button.

Repeat from \( \text{Product information} \) to (a) for all the livestock types in the farming system.

If there is/are (a) livestock type(s) present in the farming system that is/are missing from the **Livestock list**, click on the **New** button. Write the name of the livestock in the **Livestock** box and click on the **Apply** button. The new livestock will be added to the **Livestock list**. Repeat for as many new livestock types as you need to add. Repeat from (a) to (e) for all the new livestock types you have added to the **Livestock list**.

- **Ask for quantity**  
  Check this option if the new product is produced in kilograms or litres.

- **Ask for units weight**  
  Check this option if the new product is specified by weight.

- **Ask for other unit**  
  Check this option if the new product is an entire animal.

- **Used for household consumption**  
  Check this option if the new product is consumed by the household.

- **Sold by herd structure**  
  Check this option if the product is sold by the herd structure category. For example, if the farmer is selling cattle, the price can vary from a young animal to an adult animal.

- **Ask for quantity**  
  Check this option if the new product is produced in kilograms or litres.

- **Ask for units weight**  
  Check this option if the new product is specified by weight.

- **Ask for other unit**  
  Check this option if the new product is an entire animal.

- **Used for household consumption**  
  Check this option if the new product is consumed by the household.

- **Sold by herd structure**  
  Check this option if the product is sold by the herd structure category. For example, if the farmer is selling cattle, the price can vary from a young animal to an adult animal.
7. PURCHASED FEEDS DATA TABLE

*Impact* provides a set of possible feeds for livestock which will be used in the *Stall feeding* window when you are characterising the farming system. If a purchased feed that is used in the farming system is not present you can add it to this Data Table.

To add a new purchased feed, click on the **New** button and then complete the **Description** and **Type** boxes and the mineral composition and nutritional information.

Repeat from **New** to **New** for all new purchased feeds you wish to add to this Data Table.
8. HOUSEHOLD CONSUMPTION PRODUCTS DATA TABLE

Impact provides a list of possible household consumption products which will be used in the Household dietary pattern window when you are characterising the farming system. If a product that is consumed by the household is not present you can add it to this DataTable.

To add a new product, click on the New button and then complete the Description and Type boxes and the nutritional information.

Repeat from to for all new products you wish to add to this Data Table.
9. **DATA TABLES THAT CAN NOT BE APPENDED**

The following four Data Tables are available for you to view by clicking the appropriate icon on *Impact's* main toolbar or selecting them from the 'Data Tables' drop-down menu, however, you cannot append them.

**Countries Data Table**

This Data Table displays countries available for selection in the *General characteristics* window, along with their currencies and abbreviated symbols.

**Soil Type Data Table**

This Data Table displays the soil types available for selection in the *Crop plots* and *Pasture plots* windows.

**Drainage Data Table**

This Data Table displays the drainage mechanisms available for selection in the *Crop plots* and *Pasture plots* windows.

**Marketing Outlets Data Table**

This Data Table displays the marketing outlets available for selection in the *Sale of products* windows.
PART 3:
WORKING WITH \textit{IMPACT}
VI. SYSTEM CHARACTERISATION

After you have checked and amended the Data Tables as necessary you can move onto the process of System Characterisation. In the System Characterisation part of Impact all the data about the farming system you are characterising are collected. Impact asks you to provide detailed information on a number of different aspects of the farming system. By working through each of the data collection sections you can characterise a farming system to a highly specific and individual level. For most data collection windows, once the information has been inputted, Impact provides a summary so that you can view and check the information. Impact will then use this information to carry out a number of analyses. Do not be tempted to miss out any part of the System Characterisation process as all the information you supply will be used in later analyses made by Impact. This section of the manual gives you a step-by-step guide on how to complete the characterisation of a farming system.

The principal System Characterisation window can be opened either by clicking on the correct icon on the toolbar or by clicking on the ‘System Characterisation’ drop-down menu. The window comprises four separate screens as shown in the following diagram. These are:

- Systems list
- User log
- Data collection
- Navigation tree
Systems list
The list is organized by code. Move from one system to another by left-clicking on the chosen item.

User log
Impact keeps track of any user changes.

Navigation tree
All eight System Characterisation sections are organized in a tree. To move between windows, left-click on an item in the tree. You can also move forward or backwards one level with the Previous level and Next level buttons.

Data collection
Impact shows the data collection screen relevant to the section selected in the navigation tree.
The **Systems list** screen shows you a list of all the farming systems that have been characterised and saved in the Database you are working in. You can move between systems by left-clicking on any one of the systems in this screen.

The **User log** screen shows which user last made changes to the system selected in the Systems list and when those changes were made.

The Data collection window is where all the data for the System Characterisation process are inputted. There are eight principal data collection sections, each of which may have more than one window. These are:

- Climate
- Household
- Land
- Livestock
- Labour
- Farm inputs and outputs
- Household dietary pattern
- Organic mineral information

In addition, there is an initial data collection window entitled **General characteristics**, which asks for general information about the ownership and location of the farm. **Impact** uses this information to create an identity for the farming system.

The **Navigation tree** screen displays the different data collection sections and sub-sections present in the System Characterisation process. This screen is the basic 'map' that guides you through the System Characterisation process. **You will use this screen to move between data collection windows in the System Characterisation process.** This screen enables you to see which data collection window you are currently using by marking it with a > symbol. It also allows you to move between the different data collection windows of the System Characterisation process, either by clicking on a data collection window name or using the **Previous level** and **Next level** buttons.

The remainder of this section takes you in a step by stop process through each of the data collection screens.
General characteristics

The **General Characteristics** window (shown below) creates an identity for a particular farming system and must be completed before the System Characterisation process can proceed. Following the International Consortium for Agricultural Systems’ Applications (ICASA) standard, **Impact** generates a unique ‘System code’ for each farming system based on the information supplied in this window.

![General Characteristics Window](image)

- Blue fields represent required data. These fields will generate the system code.
- Each system must have a system type.
- Click on the button for information.
- The exchange rate should be the value at the time that the data were collected.
To start the System Characterisation process for a new farming system, click on the **New** button. To create the ‘System code’ for the farming system, you are required to complete the five information boxes that are shown in blue in the **General characteristics** window. These are:

1. **Date:** Insert today’s date.
2. **Data owner abbr.:** Fill in an abbreviation of the data owner’s name.
3. **Country:** Select from the combo box the country in which the farming system is located.
4. **State abbr.:** Fill in an abbreviation of the state or region in which the farming system is located.
5. **System type:** Check one system type from the list. More items can be added to the list via the **System Type Data Table**.

In addition you are asked to fill in the following fields:

1. **Farm description:** Fill in a description of the farm to help you identify it, e.g., Nairobi maize and beans. This will be shown in the **Systems list** screen along with the System code, and at the top of every data collection window.
2. **Grazing only:** Check this box if the farming system is only for livestock grazing and no crops are grown.
3. **Principal data owner:** Fill in the name of the principal data owner.
4. **Farmer’s name:** Fill in the name of the farmer who is in charge of the farming system you are characterising.
5. **State or Region:** Fill in the name of the state or region where the farm is located.
6. **Location:** Fill in the location, e.g., village or town, of the farm.
7. **Sub-location:** Fill in a more precise description of the location of the farm, e.g., bottom of valley 2 miles north of village.
8. **Latitude/longitude:** Fill in the latitude and longitude of the farm’s location using the check boxes for north or south, east or west.
9. **Elevation:** Fill in the height in ‘metres above sea level’ of the farm’s location.
- **Exchange rate:** If economic analyses are to be carried out you can fill in the local exchange rate to US dollars. [N.B. If you are unsure whether you will use the Economic Analysis tool or you do not know the exchange rate you can return to this screen at any time to complete this information.]

- **Notes:** Fill in here any additional notes you have about the farming system.

Once you have filled in all the information boxes, click on the **Apply** button. The new farming system will be shown in the Systems list screen. If you wish to cancel the information you have filled in, click on the **Cancel** button. [N.B. Once you have clicked on the **Apply** button you cannot employ the **Cancel** button.] To delete a farming system from the Systems list, **select** that farming system then click on the **Delete** button.

Once you have completed the **General characteristics** screen you can move onto the remainder of the System Characterisation process. Click on the **Next level** button in the Navigation tree to move to the next data collection window.
1. CLIMATE

1.1 Climatic characteristics

*Impact* collects four types of information describing the climate of the region where the system being characterised is located. These are:

1. **Season:** The year can be divided into two (dry or wet) or four (spring, summer, autumn, winter) seasons. This is useful for describing some management practices or system parameters that occur on a seasonal basis.

2. **Monthly rainfall:** This is a basic agro-climatological variable that is useful for linking *Impact* to simulation models at later stages.

3. **Monthly temperature:** This is a basic agro-climatological variable that is useful for linking *Impact* to simulation models at later stages.

4. **Monthly solar radiation:** This can be given as one of four different levels: sun, some clouds, many clouds, fully cloudy. This is required to obtain an approximation of the number of sunshine hours in each month. It is useful for linking *Impact* to simulation models at later stages.
To allocate seasonal data for a farming system, check 'two' or 'four' in the Seasons check box depending on whether the seasons are divided into 'wet' and 'dry', or 'spring', 'summer', 'autumn' and 'winter'. In the Distribution row of the Weather calendar click on a month to allocate a season to it. Continue clicking on that month until the correct season type is displayed. Repeat for all the months of the year.

In the Weather calendar input the information for rainfall (in millimetres) for each month and the number of rainy days per month.

In the Weather calendar input the minimum, maximum and average temperatures for each month.

In the Solar radiation row of the Weather calendar click on a month to allocate a level of solar radiation to it. Four different levels are possible: sun, some clouds, many clouds, fully cloudy. Continue clicking on that month until the correct solar radiation is displayed. Repeat for all the months of the year.

Click on the Apply calendar button. Click on the Next level button in the Navigation tree to move to the next data collection window.
2. HOUSEHOLD

One of the primary objectives of Impact is to understand the effects of different management and policy interventions on the lives of smallholder farmers and their families. Impact collects information about the number of household members in a smallholder system, and their age and sex. This information, together with the knowledge of their dietary preferences, monthly consumption of food items and expenditure on food (asked for later in the System Characterisation process) is used to compute the family’s needs for energy and protein. The Household window asks for information about the household members and any hired labour that is used in the farm. A description of each individual person is asked for.

2.1 Household size

In this window you should add to the Household size table all the household members present in the farming system plus any hired labour that is used. This information is used in the Land management windows. Once the information has been inputted, Impact gives a summary description of the household and calculates the daily energy and protein requirements of each household member and of the entire household. These requirements are based on the World Health Organisation’s recommended values of nutritional intakes, and vary according to the age, sex and working status of an individual.

To add a new household member click on the Add household member button and choose and input the appropriate descriptions for that member (if the description name does not suit you then you can type a name of your choosing in the Description box). Check the Works on the farm box if the individual spends any time working on the farm. Click on the Add button. If you want to add other members, repeat from ○ to ○. When all the household members have been added, click on the Close button.

To change the description of a household member, select that member then click on the Edit current member button and choose and input the appropriate descriptions for that member. Click on the Modify button. If you do not want to make any changes, click on the Close button.

To add hired labour click on the Add hired labour button. No other changes can be made to this selection.

To delete a household member or hired labour, select the individual then click on the Delete member/hired labour button.

When you have made all the changes you wish to make in the table, click on the Apply button.
For household members, **Impact** asks for their description, age, gender and work status.

Click on the **Summary** button to see a summary of the household’s energy and protein requirements.

An item can be in one of four different states:
- New item
- Deleted item
- Modified item
- Applied item

Click on the **Summary** button to obtain a summary of the daily energy and protein requirements of each household member and the entire household. Click on the **Close** button to close this window.
3. LAND

*Impact* collects data regarding two principal areas of the farming system's land: land use and land management.

### 3.1 Land use

#### 3.1.1 Plot areas and distributions

*Impact* handles the land of a farming system in individual **PLOTS**. Each plot is given an identity, and its area, distance from the household, type of holding (owned or rented), and land use (crop or pasture) are recorded. The **Plot areas and distributions** window allows you to input these data. GPS (Geographical Positioning System) data for spatial analysis or future reference can also be added if it is available to you.

In this data collection window you must describe the land in the farming system by adding and describing all the plots that are present in it to the **Plots areas and distributions** table. To add a new plot, click on the **Add new plot** button. In the identity box write a name or number that identifies that plot (maximum three letters or digits), and then fill in the appropriate data for the **Area** and **Distance to household** boxes. Choose the appropriate descriptions for the plot from the **Type** and **Crop/pasture** combo boxes. Click on the **Add** button. If you want to add other plots, repeat from **Add** to **Add**. When all plots have been added, click on the **Close** button.

Each plot must have an identity and size. The type of holding and land use must also be specified.
To change the description of a plot, select that plot then click on the **Edit current plot** button and choose the appropriate descriptions for that plot. Click on the **Modify** button. If you do not want to make any changes, click on the **Close** button.

To delete a plot, select that plot then click on the **Delete plot** button. When you have made all the changes you wish to make in the table click on the **Apply** button.

**GPS information for plots**

To add GPS information to a plot, select that plot then click on the **Set GPS information** button. Click on the **Add new point** button and fill in/choose the appropriate descriptions for that plot. Click on the **Add** button. If you do not want to make any changes, click on the **Close** button. If you want to add other points, repeat from to . To edit or delete any points, follow instructions from to for **Plot areas and distributions** but with points rather than plots. Click on the **Close** button.
**Impact** provides a summary of the plot areas and distributions in three different pie charts:

- Land distribution by plot identify;
- Land distribution by plot type (owned/rented);
- Land distribution by use (crop/pasture).

To obtain these pie charts, click on the **Summary** button and then on the appropriate sheet title at the top of the worksheet.
3.1.2 Crop plots

The variety of cropping choices employed by smallholder farmers is one of the main elements adding complexity to their systems. Apart from the multiple crop types that may be planted (maize, beans, vegetables, etc.), farming systems can also have a variety of different GROWING SEASONS for each plot. In addition, in each growing season, farmers may also decide to plant single crops or intercropped crops. In the case of intercropping, the area of land coverage of each crop will vary. This variety has previously been difficult to capture in a simple manner but in the Crop plots windows within Impact all of this information is collected in a basic format and is then used in the Crop management and Vegetable management windows.

The Crops plots window allows you to allocate crop species and their growing seasons to each of the crop plots that you defined in the Crop areas and distributions window. You can also specify soil and drainage characteristics for each plot.

Crops species are added to crop plots in three stages:

- The number of growing seasons that occur in a year for every plot is stated;
- The relevant crop species are added to each growing season and their percentage land covers defined;
- The months of the growing season are specified for each crop.

The plots with crops you specified in the Plot areas and distributions window are already shown in the Crop plots window. You must now specify how many growing seasons per year there are in each plot. To add a growing season to a crop plot, select that plot then click on the Add growing season button. Click on the Apply button. (If you do not wish to add the growing season, click on the Cancel button). The growing season will be named Empty season.

To delete a growing season from a plot select that growing season then click on the Delete growing season button. Click on the Yes button and then on the Apply button.
Add growing season

Impact checks if it is possible to add a new season to a plot. It is only possible to create a new season if there are months available.

A single crop, intercropping, a vegetable orchard or a fallow can be allocated to a season.

Land cover should sum 100% in the intercropping seasons.

You must now add to the growing season the crops that are grown in it. For each growing season you can specify whether it contains:

- a crop, or
- multiple crops as intercropping, or
- a vegetable orchard, or
- a fallow period.

If the growing season contains multiple crops you must specify the percentage land cover of each crop. If the growing season comprises a single crop, a vegetable orchard or a fallow period, Impact automatically allocates the percentage land cover. Impact describes the type of growing season you have defined in the growing seasons table.

To add crop species to the growing season, select the Empty season you have just created in the table and click on the Add crop button. A list of crops will be shown in the Add crops window. These crops were defined in the Crops Data Table. Select a crop or crops from the Crops list. (You can simultaneously select multiple crops by holding down the CTRL key on your computer's keyboard whilst you click on all the items you wish to select. To de-select an item, click on it again.) Click on the Add to season button. The crop or crops will be added to the Season calendar.
You can set a period of time for growing vegetables in an orchard. Only vegetable crops can be used in an orchard. When you create a vegetable orchard the season calendar turns green.

**Land cover**

If you have added multiple crops to the *Season calendar* for one growing season you must state the percentage land cover of each crop. The total land cover for all the crops must sum 100%. Land cover is an estimate of the proportion of each crop that is being producing. For example, an intercrop of maize, beans and carrots could be with maize and beans each comprising 40% of the total land cover and carrots 20%. This would give a total of 100%. Input your estimate into the *Land cover (%)* column for each crop in the *Season calendar*. It is not necessary to define the land cover for growing seasons that are single crops, vegetable orchards or fallows as *impact* does this automatically.
Vegetable orchard

If you wish to define the growing season as a vegetable orchard select the Empty season you have just created in the table and click on the Add crop button. In the Add crops window check the Only show vegetables box. Select a crop or crops from the Crops list and then click on the Add into a vegetable orchard button. The Season calendar will be shown in green for that growing season, indicating that the season has been defined as a vegetable orchard.

When you have added all the necessary crops (and their land covers if necessary) for the growing season to the Season calendar, click on the Apply button. If you do not want to make these additions, click on the Cancel button.

To allocate a fallow period to a growing season, select the empty season and then click on the Add fallow button. You can not make a growing season fallow once you have added crops to it. If you want to make this change, click on the Apply button. The growing season will be assigned as fallow and no other additions can be made to it. Otherwise click on the Cancel button.

To delete a crop or fallow from a growing season, select the crop or fallow from the Season calendar and then click on the Delete crop/fallow button. If you want to make these changes, click on the Apply button. Otherwise click on the Cancel button.

Impact divides each growing season into monthly intervals, thus any one month in a year can only be assigned to one growing season. You must specify the months which comprise each growing season.

To specify the duration of each growing season for each crop or fallow, make sure that the plot and growing season are selected. For each crop or fallow period in the Season calendar click each month that you wish to assign to the growing season. The month will be displayed by a ✓. Clicking again on the month will remove the ✓. [N.B. Available months for any growing season are shown in bold type. Once all available months in the Season calendar have been allocated to a growing season, another growing season cannot be allocated to them.] When the number of months in the growing season have been defined, click on the Apply button. If you do not wish to make these changes, click on the Cancel button. You have now defined the growing season and its crops. Repeat from 1 to 2 for each growing season you wish to add to the plot. Repeat from 1 to 2 for each crop plot in the farming system.
**Intercropping with trees**

If there is intercropping with trees that are permanently present in the plot (e.g. coconuts or bananas), you must add the tree species to each growing season but only for the months that the other crops in the growing season are present. You must NOT add trees for all 12 months in one growing season as this will mean there are no months available for you to allocate to another growing season. For example, if you have apple trees present for the whole year in a plot and you intercrop these with aubergines from March to September, and potatoes from October to February, you must state two growing seasons: Season 1 will have apples and aubergines from March to September and Season 2 will have apples and potatoes from October to February. Season 1 will NOT have aubergines from March to September and apples from January to December.

**Soil and drainage information**

Soil and/or drainage characteristics can be added to each crop plot. To add these characteristics, select that crop plot then click on the **Set/view soil type** button. Soil type and drainage information are shown in the **Soil information** window. This information is taken directly from the **Soil Type Data Table** and **Drainage Data Table**. The information is defined following DSSAT v.4.0. (Decision Support System for Agrotechnology Transfer) and cannot be amended. Select the appropriate soil and/or drainage types from the combo boxes and complete the other data boxes. If you want to add this information to all your crop plots, click on the **Apply to all plots** button. If you only want to add it to the crop plot you selected, click on the **Apply** button. Repeat from  to  for all crop plots. Click on the **Close** button when you have finished with this window.
To see a summary of the Crop plots' growing season data, click on the Summary button in the Crop plots window. Click on the Close button to close this window.
3.1.3 Pasture plots

The Pasture plots window allows you to allocate plant species to each of the Pasture plots that you defined in the Plots areas and distributions window. Each pasture plot can be subdivided into paddocks for which the soil and drainage characteristics, area and plant species can be specified.

The plots with pastures you specified in Plots areas and distributions window are already shown in this window. To add a paddock to a pasture plot, select the plot then click on the Add paddock button. The paddock will be named Empty paddock. To specify a plant species for the paddock, click in the box in the Species column to show the Select species window. Select a species and click on the Add to paddock button. [N.B. You can only allocate one plant species name to each paddock. If you wish to add multiple plant species to a paddock, see the Mixed Species section on the following page.]

For plant species that are used as a cut and carry crop, click in the box in the Cut and carry column. The plant species crop will be displayed with a ✓. Clicking again in the box will remove the ✓.

To create a paddock, select a plot and then click on the Add paddock button.
**Land cover**
If you add more than one paddock to a plot you must state the percentage land cover of each paddock. Land cover is an estimate of the proportion of each paddock in the plot. The total land cover for all the paddocks must sum 100%. For example, a plot could be 30% Trifolium (Paddock 1) and 70% Pennisetum (Paddock 2). To specify the percentage land cover for each paddock, input the land cover in the Land cover (%) column.

Click on the **Apply** button. Repeat from to for each paddock you wish to add to a plot. Repeat from to for each plot in the farming system.

To delete a paddock from a pasture plot, select that paddock then click on the **Delete paddock** button. Click on the **Apply** button.

**Mixed species**
Names in the Add species window shown in blue are those which were created in the Pastures Data Table. You can therefore choose one of these names to simplify the data input on the Pasture plots window. If you wish to define the species that are present under this heading, right-click on the name when it is in the Pasture plots window and then left-click on the Set botanical composition button. You can then add and delete species and their percentage land cover as you did for adding species directly to a paddock.
**Soil and drainage information**

Soil and/or drainage characteristics can be added to each crop plot as in the previous **Crops plots** section. To add these characteristics, select that crop plot then click on the **Set/view soil type** button. Soil type and drainage information are shown in the **Soil information** window. This information is taken directly from the **Soil Type Data Table** and **Drainage Data Table**. The information is defined following DSSAT v.4.0. (Decision Support System for Agrotechnology Transfer) and cannot be amended. **Select** the appropriate soil and/or drainage types from the combo boxes and complete the other data boxes. If you want to add this information to all your crop plots, click on the **Apply to all plots** button. If you only want to add it to the crop plot you selected, click on the **Apply** button. Repeat from **1 to 3** for all crop plots.
To see a summary of the pasture plot data, click on the **Summary** button in the **Pasture plots** window.
3.2 Land management

This section collects data on the management and harvesting activities related to the crop and pasture plots specified in section 3.1. The data are collected according to the year’s cropping calendar. Information is collected for crop, vegetable and pasture management. In addition, Impact asks you to provide information on the labour used in relation to activities, the quantities of inputs used in activities, the fertilisers used (when relevant), and the yield and uses of harvested products. This information is then used in the Sales of products screens, Purchased inputs screens, and Household consumption screen.

3.2.1 Crop management

Having defined crops into plots and growing seasons, Impact asks you to input monthly information about:

- The management activities applied to each crop;
- The harvesting activities for each crop.

You must supply all of this information so that Impact can use it in the Sales of products screens, Purchased inputs screens, and Household consumption screen.

To input data on the management activities associated with a crop, select the crop/season/plot and then check all the relevant items that appear in the Activity table. These activities were defined in the Activities Data Table. In the Activities calendar, the months for the growing season for that crop are shown in bold. For each crop, left-click each month to mark every activity associated it. Click on the Apply button, or the Cancel button if you do not wish to make these changes.

For each month’s activity Impact also asks you to input information on:

- Labour;
- Quantities and methods;
- Fertilisers.
The full list of crops by plot and season is available for the user. To manage a crop, select it from the list.

**Crop activities**
Checked items appear in the Activities calendar.

**Harvested products**
Checked items appear in the Harvesting calendar.

The months of the growing season of a crop are shown in **bold**.

A harvested item can be a Product or a Forage, as defined in the **Crops Data Table**.

**Activities calendar**
Left-click to assign a month to an activity.

**Harvesting calendar**
Left-click to indicate when the harvest takes place.

**Apply button**
Commits any change in the calendars. **This button will not save monthly information like labour.**

**Cancel button**
Annuls any changes made to the calendars.

**Monthly information**
Right-click on the month to set additional information.
To set labour information for each month, ensuring that the crop/season/plot is still selected, right-click on the month and then left-click on the Set labour button. The Labour information window will open. To allocate a household member or hired labour to a particular activity for that month, check the tick box for that individual and then add the information regarding the frequency, hours per day and, if appropriate, cost of labour in the boxes at the bottom of the table. [N.B. You cannot add this information directly to the table.] If you wish to apply this information for all the months of the growing season of this crop, click on the Apply to all months button. Repeat from step 1 for all members of the household and then click on the Close button. Repeat from step 1 to step 7 for all months in the Activities Calendar that have a tick.
To set quantities and methods information for each month for each activity, ensuring that the crop/season/plot is still selected, right-click on the month and then left-click on the **Set quantities and methods** button. The **Quantities and methods** window will open. Choose a method for that activity from the **Method** combo box. (N.B. Quantities and methods can only be set for those activities that have a physical input, e.g., amount of planting material in the activity 'planting', or amount of chemical in the activity 'pest control'. Quantities and methods does not include labour.) If relevant you can fill in the quantities of a product used in an activity. The product can come from any or all of the three following sources:

- **On farm** (if the product is sourced from the farming system);
- **Exchange** (if the product is obtained through an exchange of goods);
- **Purchased** (if the product is purchased).

If machinery is used in the activity, check the **Machinery used** box. Fill in the quantities asked for. Click on the **Apply** or **Apply to all months** button or the **Cancel** button if you do not wish to make those changes. Click on the **Close** button.

Repeat from 1 to 3 for all months in the **Activities Calendar** that have a ✓ and which are associated with activities that have a physical input.
Fertiliser information can only be set for activities that have the Ask for fertilisers box checked in the Activities Data Table. Each fertilising activity can use one or more fertilisers, each of which can have different characteristics. To set fertiliser information for any month, right-click on the month with the ✓ and then left-click on the Set fertiliser button. Complete the Fertiliser information window as for the Quantities and methods window.

Repeat from ✓ to ✓ for all months in the Activities Calendar that have a ✓ and require that fertilising information is set.
To complete data on harvesting activities of a crop, ensure that the crop/plot/season is still selected in the Crops list and check the relevant items that appear in the Harvested products list. In the Harvesting calendar the months of the growing season of the crop are shown in bold. For each crop, left-click to mark each month in which harvesting activities occur. Click on the Apply button or Cancel button if you do not wish to make those changes.

For each month’s harvesting Impact also gives you the opportunity to input information on:

- Labour (set as you did for the Activities calendar);
- Quantities and methods (set as you did for the Activities calendar);
- Yields and uses.

Impact allocates the yields of harvested products for further use in the Stall feeding, Human consumption and Sale of produce/Crops, vegetables and pasture windows. To set the distribution of yields for each harvested product for any month, right-click on the month with the ✓ and then left-click on the Set yields and uses button. The Yields and uses window will open. Input the total yield of the crop (in kilograms per plot) in the Yield box. Check the relevant boxes to define where the product’s yield is distributed, and then fill in the distribution of its use (in percentages). You can apply one set of data for all months (click on the Apply to all months button) or apply for that month only and then repeat for all other months with ✓.

[N.B. All the crop, pasture and forage yields recorded in impact are expressed in kg per plot. Likewise, fertiliser doses and any other measurements linked to land areas refer to the size of each individual plot.]

Repeat from ✓ to ✓ for all crops in the Crops table.
To see a summary of the management activities and harvesting information, click on the Summary button. You can use this screen to check for possible errors in the management you have defined, e.g., checked months without any information.

3.2.2 Vegetable management

The structure and layout of this window is exactly the same as the Crop management window. Complete this window exactly as you did for the Crop management window.

3.2.3 Pasture management

The structure and layout of this window is the same as the Crop management window, with the exception that Harvested products are replaced with Cut and Carry products for the species you defined as cut and carry in the Pasture plots window. Complete this window exactly as you did for the Crop management window.
4. LIVESTOCK

Smallholder farming systems usually have several animal species within the farm. These different types of animals may have different purposes in the system: provision of food for the family; cash from product sales (e.g., milk, beef, eggs); capital assets (‘walking banks’); provision of manure for crops and pastures; fibre for clothes; traction for ploughing; transport. **Impact** collects information for each animal type in the farming system, thus permitting the definition of the complex roles of animals and their interactions with the other components of the farming system.

The **Livestock** windows collect information about the different animals and their characteristics present in the farming system. **Impact** also asks for detailed information about herd structure for large and small ruminants. For monogastric and avian species, only numbers of animals are collected (e.g., 30 pigs, 100 chickens), not age structures.

4.0.1 Species and purpose

In this window you must specify one by one all the livestock that are present in the farming system and provide details of their characteristics.

---

**Image**

To add a new livestock type, click on the **New** button. The **Add new livestock** window will appear. Select one or more livestock from the list and then click on the **Add livestock** button.

**Image**

To change the purpose of a livestock type, click in the box in the **Purpose** column. The **Purpose** window will appear. Select a purpose and then click on the **Apply purpose** button.
To provide data on a livestock type, click on the New button, choose the livestock type you want to specify from the Add new livestock window and click on the Add livestock button. Choose the function of the animals by clicking in the box in the Purpose column, checking the appropriate purpose in the Purpose window and then clicking on the Apply purpose button. Impact then asks you to provide information on a number of characteristics of the livestock but tailors the information asked for in accordance with the livestock type and purpose chosen. The following types of information can be asked for, but only those relevant to the specified livestock type and purpose will be available for information input (the others are faded to light grey).

- Milk production/lactation: Average number of litres produced per day per animal.
- Lactation length: Average number of days of lactation per animal.
- Milking frequency: Number of milkings per day.
- Number of lambings/kiddings per year: Average number of lambings/kiddings per animal per year.
- Number of offspring per calving/lambing/kidding: Average number of offspring per animal per birth.
- Calving/lambing/kidding interval: Average number of days between calving/lambing/kidding for each animal.
- Calving/lambing/kidding rate: Percentage of animals of flock/herd that give birth, i.e. the proportion of animals that bear live offspring during the year.

Complete all the information asked for in these categories and then click on the Apply button (or the Cancel button if you do not wish to make these changes). Repeat from \( \Rightarrow \) to \( \Rightarrow \) for all the livestock types present in the farming system.

[N.B. If you have the same livestock types but with different purposes you must input them separately in this window. For example if you have four cattle, of which two are only used for dairy and two are dual purpose (dairy and traction), you must input them separately: two dairy cattle and two dual purpose cattle. This enables the clear definition of the role of different animals species in the farming system.]

To edit information on a livestock type select the livestock, change the settings and then click on the Apply button.
4.0.2 Herd structure

This window allows you to add very specific information on your ruminant herds' structures. Select the herd you wish to add information to in the Large and small ruminants table and then complete the data boxes. The data asked for are differentiated by sex (male or female), and change depending on whether a large or small ruminant is selected:

- **Large ruminants**
  - **Number:** The number of individuals in each of four age classes.
  - **BW (kg):** The average body weight (kg) of an individual in the age class.
  - **Dry:** The number of dry adult females in the age class.
  - **Lactating:** The number of lactating adult females in the age class.
  - **Capital value:** The average monetary value of an individual in the age class.
  - **Mortality (%):** The death rate in the age class.
  - **Reproductive males:** The number of reproductive males and their weight. This is the sub-set of the number of males in the flock/herd, i.e., it is the ones that are used to service the herd.
  - **Female replacement management:** The age and weight at which lambs/kids/calves are weaned. The age and weight at which young female adults calve for the first time.

- **Large and small ruminants**
  - Select the herd type.

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Small ruminants

- **Number**: The number of individuals in each of four age classes.
- **BW (kg)**: The average body weight (kg) of an individual in the age class.
- **Fertility (%)**: The proportion of cycling females in the age class.
- **Milking (%)**: The proportion of lactating females in the age class.
- **Capital value**: The average monetary value of an individual in the age class.
- **Mortality (%)**: The death rate in the age class.
- **Reproductive males**: The number of reproductive males and their weight. This is the sub-set of the number of males in the flock/herd, i.e., it is the ones that are used to service the herd.
- **Female replacement management**: The age and weight at which lambs/kids/calves are weaned. The age and weight at which young female adults calve for the first time.
Fertility rates are calculated as:

\[
\frac{\text{Number of cycling females}}{\text{Total number of females}} \times 100
\]

For example, if there are 12 females in the 1-2 years category, nine of which are fertile, the fertility rate is:

\[
\frac{9}{12} \times 100 = 75\%
\]

Mortality rates are calculated as:

\[
\frac{\text{Number of deaths per year}}{\text{Total number of livestock in that category}} \times 100
\]

For example, if there are five females in the 0-1 years category and one dies in the year, the mortality rate is:

\[
\frac{1}{5} \times 100 = 20\%
\]

Input these values and then click on the Apply button.
Calving pattern
To enter or view information on the calving pattern of the livestock, click on the View/set calving pattern button. Input the number of calvings or lambings per month for each month for each age class, and then click on the Apply button (or the Cancel button if you do not wish to make those changes). Click on the Close button.

To see a summary of the livestock types, click on the Summary button.
4.1 Livestock feeding management

4.1.1 Feeding groups

After defining the livestock present in the farming system, you can create feeding groups for the livestock. Having various feeding groups allows you to allocate different feeding strategies to different animals. Defining the feeding groups is done in two stages:

- The herd structure is divided into different feeding groups by creating names for each group that has a different feeding regime, and allocating a defining type and criterion to the group;
- Individuals are allocated to each feeding group.

To create a feeding group for a livestock type, select a livestock type from the table and click on the New button. Select the New feeding group and input the name of the feeding group in the Feeding group column.[N.B. You may have to scroll down the table to see the New feeding group.] Click on the Apply button.

Press F2 to edit the feeding group name.

The type is a general description for the group.

Impact only allows you to input information relevant to the group criterion you specified. If the information boxes are not appropriate for the group criterion the text turns grey and you cannot input data.
**Group type**

*Impact* asks you to allocate a group type and group criterion to a feeding group to help you identify each feeding group.

Group type is a general description of the feeding group you are defining. If a feeding system is not specialised and all animals are fed equally, the group type should be named 'One group'. If the feeding system is more complex and there are a number of different feeding strategies being carried out, the group type should be labelled appropriately.

To allocate a group type to a feeding group, click in the *Group type* column in the row of the feeding group you have just created (as a default, this is named 'One group'). The *Group type* window will open. Check a group type and then click on the *Apply group type* button. This group type will be assigned to the new feeding group. Click on the *Apply* button in the *Feeding groups* window.

The group type can be changed in exactly the same way as it was first allocated.

**Group criteria**

Combinations of group type and group criteria become relevant when feeding practices are specialised, for example, in an intensive/commercial dairy farm. In this case, there may be several feeding groups which are all the same group type (e.g., production), but the group criterion will differentiate them into three levels, (e.g., low, medium, and high production). *Impact* asks you to specify one group criterion that is a defining factor for the feeding group. For example, if a feeding group is composed of cows in the milking stage, the group criterion will be either 'Production' or 'Milking phase'. *Impact* then asks you to define the range of livestock values for the criterion you checked, but tailors the information asked for in accordance with the criterion checked. For example, if you check the group criterion 'Production', *Impact* asks you to specify the range of milk yield of the cows included in that feeding group.

To allocate or change a group criterion to a feeding group, click in the *Criteria* column in the row of the feeding group you have just created (as a default this is named 'None'). The *Group criteria* window will open. Check a group criterion and then click on the *Apply group criterion* button. This group criterion will be assigned to the new feeding group. Specify the values asked for in the information boxes below the feeding groups table in the *Feeding groups* window. Click on the *Apply* button.

Repeat from to for as many different feeding groups as you want to add for this livestock type.
Click on the Livestock allocation button to open the Livestock allocation table. In this table you can allocate individual animals to particular feeding groups. The table shows the livestock you described in the Herd structure window. Livestock categories that are present in the herd but have not yet been allocated to a feeding group are highlighted in red. In the Groups column select a feeding group name then for each livestock category input in the Assign to this group column the number of animals that fall into this feeding group. Once you have assigned all the animals that you wish to to this feeding group, click on the Apply button or Cancel button if you do not wish to apply these changes. Once some or all individuals from a livestock category have been allocated to the feeding group you are currently working in, the livestock category is highlighted in blue.

Repeat from Step 1 to Step 4 for all the feeding groups you have created. Click on the Close button.

Repeat from Step 1 to Step 4 for all livestock types.

This list shows the available feeding groups for the current livestock type.

Press F2 to edit quantities.
N.B. Once some individuals from a livestock category have been assigned to a feeding group, the red highlighting disappears from this category. However, there may still be individuals in this category that are unassigned to a feeding group. Compare the Total and Assigned columns for each livestock category to check how many animals have not been assigned. Blue highlighting is for animals assigned to the current feeding group, thus when you move to another feeding group the highlighting will change or disappear.

To delete a feeding group, select it then click on the Delete button. Click on the Yes button, and then click on the Apply button.

Click on the Summary button to obtain a summary of the feeding groups' compositions.
4.1.2 Grazing management

The grazing management window allows you to assign feeding groups to the paddocks of the farming system.

[N.B. In this window Impact captures information on how the pasture plots are grazed by livestock. It refers to a grazing system that is intensively managed. Thus using this window for an extensive pastoral system requires special consideration.] The management unit is the paddock and this window requires that each paddock contains only one plant species. This is set in the Pasture plots window. Remember that a mixture of pasture species can be defined under one name, thus if grazing occurs in paddock with a high number of plant species the species mix should be declared under one name in the Pastures Data Table.

In a traditional intensive grazing system, different feeding groups access the paddock at different times, e.g., feeding groups with high nutritional requirements have priority in the use of the paddock. In this window Impact allows you to specify the order and timing that feeding groups access a plot/paddock. Livestock feeding groups are allocated to paddocks in two stages:

1. All the feeding groups which feed in a paddock in a year are specified;
2. The order in which the feeding groups access the plot/paddock during the year is specified.

To allocate a feeding group to a paddock, select the desired paddock then check the feeding groups and click on the Apply button.

Press F2 to edit quantities.
To allocate livestock feeding groups to a paddock, select a plot/paddock and in the Livestock groups assigned to the plot/paddock table, check the livestock feeding groups that access that plot/paddock. Click on the Apply button (or the Cancel button if you do not wish to make these changes).

Impact divides the year into monthly intervals and asks that you specify which months each livestock feeding group accesses a paddock. To define the order that livestock feeding groups use a paddock ensure that the plot/paddock is selected and then select from the Livestock groups assigned to the plot/paddock table the feeding group that first accesses the plot/paddock. The Grazing calendar then asks for four types of information:

- **Timing:** The months in which the feeding group has access to the paddock.
- **Grazing period:** The number of days in that month that the feeding group is in the paddock.
- **Resting period:** The number of days in that month that the paddock is not utilised by any feeding group.
- **Instant availability:** The available grass yield (expressed in kg of dry matter per paddock) that is available for grazing just before the feeding group enters the paddock.

In the Timing row, click each month that the livestock feeding group is present in the paddock. The months will be displayed with a ✓. Clicking again on the month will remove the ✓. Input the other information asked for in the Grazing calendar and then click on the Apply calendar button. If you do not wish to make these changes, click on the Cancel calendar button.

[N.B. Differences in Instant availability reflect the order in which each feeding group accesses the plot/paddock. If more than one feeding group accesses the same plot/paddock repeat from select to select in order of the nutritional priority of the feeding groups you wish to add to the paddock.]

Repeat from select to select for each plot/paddock in the farming system.
Click on the Summary button to obtain a summary of the pattern of grazing use for the plot/paddocks.
4.1.3 Stall feeding

This window asks you to allocate feeds for stall feeding to the feeding groups you created in the Feeding groups window. Feeds are allocated on a monthly basis.

Allocation of feeds to feeding groups is carried out in two stages:

- All the feeds used for stall feeding are added to the Feeding calendar;
- The feeds in the Feeding calendar are allocated to the feeding groups.

There are two types of feeds available to add to the Feeding calendar:

- On-farm feeds, of which there are two different types:
  - Crop products (CrpPrd)
  - Crop forages (CrpFrg)
  These are composed of the yields that were allocated for livestock feeding in the Crop management/Yields and uses window. Impact automatically displays the on-farm feeds in the Feeding calendar of the Stall feeding window so you do not need to add them to the calendar.

- Purchased or gathered feeds. If stall feeding implies the use of purchased or gathered feeds, you must add them to the Feeding calendar. This will enable you to define the feeding pattern of these purchased/gathered feeds.

Feed type is either a Crop Product (CrpPrd) a Crop Forage (CrpFrg) or Purchased/gathered (Prch).
To add purchased or gathered feeds to the Feeding calendar click on the **Add/edit purchased feeds** button. This will access the **Purchased and gathered feeds** window. The displayed list of feeds comes from the **Purchased Feeds Data Table**. Check the feeds in the **Purchased feeds** list that you wish to add to the Feeding calendar in the **Stall feeding** window and click on the **Apply** button (or the **Cancel** button if you do not wish to make these changes). The checked feeds will rise to the top of the list. Select a checked feed. The **Purchased feeds calendar** then asks for the following information:

- **Availability**: The months that the feed was purchased or gathered;
- **Quantity**: The quantities of feed that were purchased or gathered each month;
- **Price**: The price at which the feed was purchased.

To use a purchased feed, check it and click on the **Apply calendar** button.

Click **F2** to edit quantities of feed purchased and price at which it was purchased.

Apply calendar Commits any changes made to the calendar.

Purchased feeds calendar
Left-click to assign a month to the purchasing of a feed.

Nutritional information
You can modify this if necessary.

Gathered Check this box if the feed was gathered rather than purchased.
In the **Availability** row, click each month that the feed is purchased or gathered. The months will be displayed with a ✓. Clicking again on the month will remove the ✓. **Input** the quantity and price of the purchased feeds for each month, and then click on the **Apply calendar** button. If you do not wish to make these changes, click on the **Cancel calendar** button.

The nutritional information for each feed is displayed below the **Purchased feeds calendar**. This information comes from the **Purchased Feeds Data Table** but you can modify it here if necessary. It will then be saved at the **System level not in the Purchased Feeds Data Table** (i.e., the data table will not be modified but the System you are working in will always display these values). **Input** new or changed nutritional data into the information boxes if necessary and check the **Gathered** box if the feed was gathered rather than purchased. Checking the **Gathered** box will help you differentiate between feeds that have not been given a price either because they are without a monetary value or because the information is not available. Click on the **Apply calendar** button. Repeat from ◙ to ◗ for all purchased or gathered feeds you wish to add to the **Feeding calendar** in the **Stall feeding** window. Click on the **Close** button. In the **Feeding calendar**, the added purchased feeds will be displayed with the type name 'Prch'.

**To allocate feeds to a feeding group**, click **select** a livestock type from the table and then **select** a feeding group. Check all the feeds in the **Feeding calendar** that are offered to the feeding group. For each feed in the **Feeding calendar** click each month that it is fed to the feeding group. The month will be displayed by a ✓. Clicking again on the month will remove the ✓. When all the months that the feeds are given in have been defined, click on the **Apply calendar** button (or the **Cancel calendar** button if you do not wish to make these changes).
To set a feed for a feeding group select a livestock type and then select a feeding group. Check the feeds from the list and click on the Apply calendar button.

You can add purchased feeds to the list through the Purchased and gathered feeds window.

The Feeding calendar indicates in which months the farmer feeds a feeding group a particular feed.

Click on the Summary button to obtain a summary of the stall feeding pattern.

Right-click to set monthly quantities for a feed.

[N.B. In the Qty available column of the Feeding calendar, Impact automatically enters the total quantities of feeds available per year. For Crop products and Crop forages the information comes from the Crop management/Yields and uses window. For Purchased feeds the information comes from the Purchased and gathered feeds window.]

For each ticked month in the Feeding calendar Impact asks you to input information on the quantity of feed given. This information is required in kilograms of fresh product given to the entire feeding group.
To set the feed quantity for a month right-click on the ✔ and left-click on the Set quantity button. Set the feeding quantity for that month and then click on the Apply button if you wish to set the quantity for that month only or the Apply to all months button if the feeding quantity is to be applied to all the checked months for that feed. Click on the Close button. Repeat for all the checked months in the Feeding calendar.

Repeat from ◉ to ◗ for each feeding group defined for that livestock type. ◗
Repeat from ◉ to ◗ for each livestock type in the farming system.

Click on the Summary button to obtain a summary of the stall feeding pattern.
5. LABOUR

Sometimes the activity choices made by smallholders are governed by household labour constraints. These present a considerable barrier to the modification of agricultural systems. It is therefore essential to describe in detail the tasks in which different members of farming households participate, and how they manage and allocate time to the different on-farm and off-farm activities. **Impact** collects information about the number of household members, their age, and their gender. These data contribute to the calculation of the family’s needs for energy and protein on the basis of the World Health Organization's human energy and protein requirements tables.

5.1 Livestock

This window allows you to allocate activities related to livestock management and to set monthly labour used for each activity. The activities that are displayed in the Activity list are those that were marked as 'Livestock activities' in the Activities Data Table.
To allocate labour activities to the livestock management, select a livestock type and then check the activities carried out with this livestock type. Click on the Apply button. The activities will then be shown in the Activities calendar. Indicate the months in which each activity takes place by clicking on each month. The months will be displayed with a ✓. Clicking again on the month will remove the ✓.

For each ticked month in the Activities calendar Impact asks you to input information on the labour used.

The labour information window
This window shows the household and hired labour information defined in the Household size window.

Apply to all months
Applies the current labour information to all the assigned months in the calendar.

To allocate a member to an activity, check the individual and then set the information about frequency, duration and cost of the activity.

To set the quantity of labour used for an activity in a month right-click on the ✓ and left-click on the Set labour button, the Labour window will open. Set the labour used for that month as you did for the Crop management window (Section 3.2 A) and then click on the Apply button if you wish to set the quantity for that month only or the Apply to all months button. Click on the Close button. Repeat for all the checked months in the Activities calendar.

Repeat from ✓ to ✓ for each livestock type in the farming system.
Click on the Summary button to obtain a summary of the livestock labour distribution.

5.2 Other labour

In this window you can allocate labour to general activities that take place on the farm. The activities that are displayed in the Activity list are those that were marked as 'Other' in the Activities Data Table.
To allocate labour activities, check all the activities carried out on the farm. Click on the Apply button. The activities will then be shown in the Activities calendar. Indicate the months in which each activity takes place by clicking on each month. The months will be displayed with a ✓. Clicking again on the month will remove the ✓.

For each ticked month in the Activities calendar Impact asks you to input information on the labour used.

The labour information window
This window shows the household and hired labour information defined in the Household size window.

Apply to all months
Applies the current labour information to all the assigned months in the calendar.

To set the quantity of labour used for an activity in a month right-click on the ✓ and left-click on the Set labour button. Set the labour used for that month as you did for the Crop management window (Section 3.2 A) and then click on the Apply button if you wish to set the quantity for that month only or the Apply to all months button. Click on the Close button. Repeat for all the checked months in the Activities calendar.

Repeat from ✓ to ✓ for any other activity in the farming system.
Click on the **Summary** button to obtain a summary of the labour distribution.
6. FARM INPUTS AND OUTPUTS

An important determinant of the overall well-being of smallholder systems resides in the transactions, in multiple ‘currencies’ (cash, labour, food, nutrients, stock and other assets), occurring between the farm household and the external environment. For example, if off-farm income substantially contributes to the total income of the family, this may be a disincentive to farmers from investing and devoting time to their farms since it is not their main source of revenue. On the contrary, however, additional cash may allow the household to buy more food or inputs for the farming activities.

The need to characterise the dynamics of farming systems in a range of currencies requires the detailing of the resources traded in the appropriate currency on a monthly or seasonal basis. In this section **Impact** asks for information on the economics of the farm: the sale of products and the purchase of inputs.

6.1 Sale of products

6.1.1 Crops, vegetables and pastures

The products that are displayed in the **Crops, vegetables and pastures** window come from **Yields and uses** windows in the **Crop management, Vegetable management and Pasture management** windows. Each crop and vegetable product can be allocated to a specific marketing outlet with different sales parameters.
To specify the sale of products, select a product, indicate the marketing outlet(s) of the product and click on the **Apply calendar** button.

With the product still selected, select a checked marketing outlet and input the data required in the **Sales calendar**. Click on the **Apply calendar** button. Repeat from ☞ to ☞ for all the marketing outlets for that product. ☞

Repeat from ☞ to ☞ for all products.

[N.B. If you wish to provide more information on how a product is marketed, you can check the **Use other unit** box. This refers to the specific way a product is sold, e.g., a bunch, a tin, a bundle, etc. Fill in the name of the unit and its weight equivalent. This does not change the way in which **impact** registers the information (which is always in kilograms).]

Click on the **Summary** button to obtain a summary of the sale of products.
6.1.2 Livestock

Livestock products follow the same approach as crop, vegetable and pasture products. The products that are displayed in the Livestock window come from the Livestock Products DataTable.

To specify the sale of livestock products select a livestock type, indicate the marketing outlet(s) of the product, and click on the Apply button.

Select a livestock type.

A livestock product can be sold by herd structure. Check one or more items. Apply and then select one item.

Left-click the calendar to indicate the month in which products were sold.

Press F2 to edit quantities.

Select one of the marketing outlets that you have checked, check the Product boxes for all the products that are sold in this marketing outlet and click on the Apply button. Select a product and complete the Sales calendar as for the Crops, vegetables and pastures window (Section 6.1.1). Repeat from to for all products for that marketing outlet.
Livestock products are defined in the Livestock Data Table as being marketed in one of two different ways:

1. Kilograms or litres;
2. Other units (piece or number of animals).

This information will determine the sales parameters that are displayed in the Sales calendar. If the product is to be marketed by kilograms or litres, the Sales calendar will prompt for the quantity and the price. If the product is to be marketed by Other Units, the Sales calendar will prompt for the number, weight and price of the unit. This is important because impact will ultimately calculate the price per kilogram of the product, and therefore the weight of the unit is required. To assist in this calculation the user can check the Use other unit box and use as in the Crops, vegetables and pastures window.

Herd structure

A special case of using 'Other Units' for the sale of animals is when the unit is the 'Number of animals' and the animals are sold by the 'Herd structure category' (e.g., age or sex). Those products will be highlighted in green in the Products box. If that product is selected, the herd structure will be displayed in the Herd structure box. This will help you to specify the category of animals that are sold.

If the Herd structure box is displayed, check the relevant category or categories of herd structure and then click on the Apply button. Select a category of herd structure and complete the required information in the Sales calendar. You will see now that the Sales calendar prompts for the number, weight and price of the animals. Repeat from to for each individual category of herd structure.

Repeat from to for all marketing outlets for a livestock type.

Repeat from to for all livestock types.
Click on the **Summary** button to obtain a summary of the sale of livestock products.

![Livestock products summary](image)

- **Summary**

<table>
<thead>
<tr>
<th>Livestock</th>
<th>Marketing outlet</th>
<th>Product</th>
<th>Category</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicken</td>
<td>Local</td>
<td>Chicken</td>
<td>AG</td>
<td>10000</td>
<td>20000</td>
<td>30000</td>
<td>40000</td>
<td>50000</td>
<td>60000</td>
<td>70000</td>
<td>80000</td>
</tr>
<tr>
<td>Livestock</td>
<td>Local</td>
<td>Fowl</td>
<td>0.1 year breeder</td>
<td>10000</td>
<td>20000</td>
<td>30000</td>
<td>40000</td>
<td>50000</td>
<td>60000</td>
<td>70000</td>
<td>80000</td>
</tr>
<tr>
<td>Livestock</td>
<td>Local</td>
<td>Fowl</td>
<td>0.1 year rooster</td>
<td>10000</td>
<td>20000</td>
<td>30000</td>
<td>40000</td>
<td>50000</td>
<td>60000</td>
<td>70000</td>
<td>80000</td>
</tr>
</tbody>
</table>

Figures are of total value of product sold in local currency.
6.2 Purchased inputs

This section asks for information on all the activities that were given in the Land management windows that require purchased inputs.

6.2.1 Crops, vegetables and pastures

All the inputs that you indicated in the Crop management, Vegetable management, and Pasture management windows are shown in this window, e.g., fertilisers, chemicals, and planting materials. The Product table indicates the plot, the season and the activity where the input is being used, as well as the quantity.

To define the inputs for crops, vegetables and pastures, select a product and input the required data into the Purchase calendar as for the Sales calendar in the Crops, vegetables and pastures window (Section 6.1.1). Impact prompts you for the time of purchase, quantity and price of the input. Click on the Apply calendar button. Repeat from to for all products.
6.2.2 Livestock

This section asks for information on the expenses associated with the livestock in the farming system. However, since all the expenses related to the purchase of feeds were captured in the Stall feeding window, those expenses are not to be included here.

To add the expense associated with a livestock type, select a livestock type and click on the Add expense button. Select the new item and input the name of the expense.

Click on the button to view examples of livestock expenses.

Click on the Add expense button. A new item will be added to the list.

Click on the Apply button. Repeat from to for all expenses for that livestock type. Select an expense in the Expenses box and complete the Expense calendar as for the Crop, vegetables and pastures window (Section 6.1.1). [N.B. There is no quantity in the Expense calendar since this table registers not only the purchase of inputs but also the payment, e.g., for services of building materials. The expenses are for the livestock type as a whole, (not for individuals or feeding groups).]

Repeat from to for all livestock types.
To delete an expense, select it and click the Delete button. Click the Apply button (or the Cancel button if you do not wish to proceed).

Click on the Summary button to obtain a summary of the livestock expenses.
6.3 Other household income and expenditure

6.3.1 Other household income

This window captures all the off-farm income that is brought into the household, e.g., income from a household member who works outside the farm, or income from subsidies. To add an income to the window, select the New item, input the name for the income type, and click on the Apply button. Select the income and input the data for the Income calendar: months when income is accrued and quantity received. Click on the Apply calendar button. Repeat from to for all incomes in the household.

To delete an income, select it and click on the Delete button. Click on the Apply button (or the Cancel button if you do not wish to proceed).
Click on the **Summary** button to obtain a summary of the other household income.

<table>
<thead>
<tr>
<th>Income</th>
<th>JAN</th>
<th>FEB</th>
<th>MAR</th>
<th>APR</th>
<th>MAY</th>
<th>JUN</th>
<th>JUL</th>
<th>AUG</th>
<th>SEP</th>
<th>OCT</th>
<th>NOV</th>
<th>DEC</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Name other household member</td>
<td>300</td>
<td>0</td>
<td>5000</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>3</td>
</tr>
</tbody>
</table>
6.3.2 Farm assets

This window asks you to list all the capital assets that are in the farming system. Capital assets are all the items in the farm excluding livestock that have a monetary value, e.g., machinery, implements, buildings. To add an asset to the window, click on the Add asset button, select the New item and input the name for the asset type. The table asks for the following information:

- **Initial cost**: The price paid for the asset when it was purchased.
- **Year of purchase**: The year in which the asset was purchased.
- **Years of service**: The number of years the asset has been used on the farm.
- **Disposal value**: The price of the asset if it were to be sold now.
- **Annual maintenance cost**: The annual cost of maintaining the asset.

Input these values and click on the Apply button.

Repeat from to for all assets in the household.

To delete an asset, select it and click on the Delete button. Click on the Apply button (or the Cancel button if you do not wish to proceed).
6.3.3 Other household expenses

This window captures all the other household expenses that are used by the household.

[N.B. Insert all the expenses made by the household that were not included in previous screens. However, do not consider the acquisition of food for the household. All the products bought for human consumption are to be included in the Household consumption window.]

To add an expense to the window, click on the Add expense button, select the New item, input the name for the expense and click on the Apply button. Select the expense and input the data for the Purchase calendar: months when expense is accrued and quantity spent. Click on the Apply calendar button. Repeat from to for all expenses in the household.

To delete an expense, select it and click on the Delete button. Click on the Apply button (or the Cancel button if you do not wish to proceed).
Click on the **Summary** button to obtain a summary of the other household expenses.
7. HOUSEHOLD DIETARY PATTERN

In this section, Impact asks for information about the dietary patterns of the household. This information can be analysed by the Food Security analysis tool.

7.1 Household consumption

Impact asks for information on the household’s dietary habits in three separate screens accessed through the tabs labelled:

- Crops, vegetables and pastures;
- Livestock;
- Other products.

The elements that are displayed in these windows are those marked as for Human consumption in the Yields and uses windows of the Crop management, Vegetable management and Pasture management windows.

The Crops, vegetables and pastures and Livestock tabs ask for information on the on-farm products consumed by the household.

1. Crops, vegetables and pastures
To define the on-farm crop, vegetable and pasture products consumed by the household, click on the Crops, vegetables and pastures tab. Select a product and complete the information asked for in the Consumption calendar. Click on the Apply calendar button.

You can directly input energy and protein values for each item.

Click on the button for further information about prices.

Click on Get nutritional values from database to retrieve default energy and protein values for the selected product.

Left-click to indicate months in which products are consumed.

Press F2 to edit quantities.

Apply calendar Applies the changes made to the calendar.

Cancel calendar Annuls any changes made to the calendar.
[N.B. The quantity asked for is the monthly consumption of that product for all the family. The cost of the product has already been accounted for in the production costs, registered in other windows, so the price asked for in this window represents what the family needs to pay if the product needs to be purchased.]

Click on the **Get nutritional values from database** button to retrieve the nutritional data for the selected product. **Impact** will retrieve the energy and protein values of that product stored in the **Crops Data Table, Vegetables Data Table and Pastures Data Table**. If these values are inappropriate, you can change them in the **Energy** and **Protein** boxes and the changes will be saved at the system level. 

Repeat from 1 to 4 for all on-farm products consumed by the household.

1. **Livestock**

To define the on-farm livestock products consumed by the household, click on the **Livestock** tab. Select a livestock type and check the boxes of all the products that are consumed. Click on the **Apply** button.
Then, select a product and complete the Consumption calendar for that product. Click on the Apply calendar button. Click on the Get nutritional values from database button to retrieve the nutritional data for the selected livestock product. Impact will retrieve the energy and protein values of that product stored in the Livestock Data Table. If these value are inappropriate you can change them in the Energy and Protein boxes and the changes will be saved at the system level.

Repeat from step 1 to step 3 for all on-farm livestock products consumed by the household.

Repeat from step 4 to step 5 for all livestock types.

Other products
To define other products that are consumed by the household, click on the Other products tab. Click on the Add product button, select the New item, input the product name and then click on the Apply button. Select a product and complete the Consumption calendar for that product. Click on the Apply calendar button.

Repeat from step 4 to step 5 for all other household consumption products in the household.

To delete a product, select it and click on the Delete button. Click on the Apply button (or the Cancel button if you do not wish to proceed).
Suggested nutritional values

Obtaining nutritional values for these products is carried out in a unique way by *Impact*. As there is an infinite variety of purchased products that a user can enter in this window, the products are not pre-defined as in the case of crop and livestock products. Thus, when you click on the Get suggested nutritional values from database button you will access the Household Consumption Products Data Table but in a different format from that shown earlier. Most of the information contained in this data table is from the United States Dept. of Agriculture (USDA) National Nutrient Database for Standard Reference, Release 17.

The Household Consumption Products Data Table can be filtered by the *Type* of foodstuff to help you to find a product that most closely resembles the one you are using. You can also find a product by typing a key word in the Find product like box and clicking on the Find button. Select the product that most resembles your product and click on the Apply button to add nutritional values to the Household consumption window. Click on the Apply calendar button in the Household consumption window.

You can filter the list by choosing a type.

To find a product, type in a word and click on the Find button. If you do not find the product, redefine the word you typed and try again.
Click on the Summary button to obtain a summary of the household nutritional intake. You can choose to show the nutritional intake in terms of energy or protein.
8. ORGANIC MINERAL INFORMATION

8.1 Mineral concentrations of products

This section asks for the nitrogen (N), phosphorus (P), potassium (K), carbon (C) and dry matter (DM) values of the farm’s outputs. This information can be analysed by the **Nutrient flows** analysis tool. **Impact** asks for information in two screens accessed by the tabs:

- Crops, vegetables and pastures;
- Livestock.

**Crops, vegetables and pastures**

The items in the **Product** list are differentiated into six **Types** (Crop products, Crop forages, Vegetable products, Vegetable forages, Pasture products and Pasture forages). If the product is a Crop product, Crop forage, Vegetable product or Vegetable forage, **Impact** will prompt for the nitrogen, phosphorus, potassium and carbon content (expressed as % dry matter), and the dry matter content. If the product is a Pasture product or Pasture forage, **Impact** will prompt for the same mineral and dry matter information but differentiated by the number of seasons present in the system.

---

**Products come from**

**Yields and uses of**

**Crop**

**management,**

**Vegetable**

**management and**

**Pasture**

**management windows.**

**Press F2 to edit quantities.**

**Click on Get values from database to retrieve default N, P, K, C and dry matter values for the selected product.**

**Apply**

Applies the changes made to the table.

**Cancel**

Annuls any changes made to the table.
To define the mineral and dry matter values, select a product and click on the Get nutritional values from database button. Impact will retrieve the N, P, K, C and DM values of that product from the Crops Data Table. If these values are inappropriate or not available they can be inputted directly into the table. The changes will be saved at the system level. Click on the Apply button.

[N.B. When you select a pasture that is not cut and carry, the nutritional values given are for 'Grass' from the Pastures Data Table.]

Repeat from to for all products.

Livestock

To define the mineral and dry matter values for livestock products, select a livestock product and click on the Get nutritional values from database button. Impact will retrieve the N, P, K, C and DM values of that product from the Livestock Data Table. If these values are inappropriate or not available they can be inputted directly into the table. The changes will be saved at the system level. Click on the Apply button.

Repeat from to for all products.
VII. ANALYSIS TOOLS

*Impact* is not just a data collection tool it is also able to analyse and compare data inputted in the System Characterisation process. *Impact* can proved analyses on four different aspects of the farming system:

- Economics
- Food security
- Nutrient flows
- Labour

The tools for these analyses are accessed through the corresponding buttons on *Impact*’s main toolbar.

1. Economics

In the economic analysis, data stored in the *Crop management* window, and the windows under *Farm inputs and outputs* are organised in such a way that the monthly incomes and expenses for the farming system can be computed. The economic analysis provides a complete summary of the income, expenses and balance of the farming system on a monthly basis. It can be expressed in the local currency, or in US dollars if an exchange rate has been indicated. The analysis is grouped into four sections using the following information:

- Crops, vegetables and pastures
  - Labour
  - Purchased inputs
  - Sales
- Livestock
  - Labour
  - Other livestock expenses
  - Sales
- Other incomes and expenses
  - Other household incomes
  - Other household expenses
- Total
Select a system from the System combo box and click on the Read economic values button. Check the Value is US dollars box to change the value to US dollars. The monthly income, expenditure and balance of the farming system is shown in the selected currency.

Right-clicking on the income and expenses rows in the calendars for Crops, vegetables and pastures, Livestock, and Other will allow you to click on the Details button and show details of these values.

You can switch the values from local currency to US dollars.

Information is expressed on a monthly basis.

Right-click to see detail.
2. Food security

The food security tool analyses the energy and protein requirements and intakes for the household. Data sorted in the Household consumption window are computed to show the household’s intake of protein and energy. The results are shown in two formats as two tabs in the Food security window:

- The average annual contribution of each product to the household’s demand for either protein or energy;
- The monthly nutritional status (of energy and protein) of the family throughout the year.

Impact also shows the minimum energy and protein requirements for the household using World Health Organization definitions.

Select a system from the System combo box and choose either the Contribution for each product or Nutritional status of household tab. Click on the Generate button. Checking the Protein or Energy buttons in the Show box will automatically produce figures for those values. Repeat for the second tab.

To zoom in on a graph, hold the cursor down and drag a box across the area of the graph you wish to magnify. To zoom in you must drag the box from left to right. To zoom out you must drag a box from right to left.

You can print the graph in the window by clicking on the Print button.

Select whether you wish to show energy or protein values.

Click on the Generate button to produce the analysis.

Results can be shown as the annual contribution of each product to the household’s demand, or the monthly nutritional status of household.
3. **Nutrient flows**

With this tool *Impact* computes nutrient balances according to the N, P, K and C concentrations of the farm’s inputs and outputs. It does not deal with any dynamics of nutrients, (i.e., it is only a static calculation), but simply computes what goes in and out of a plot or animal. The computations are based on the data that were inputted in the Crop management and Organic mineral information windows. *Impact* shows the nutrient balances at different levels of aggregations for both crops and livestock.

You can choose to analyse: the mineral content, and the resource.

- Available mineral contents are:
  - Nitrogen
  - Phosphorus
  - Potassium
  - Carbon

- Available resources are:
  - Plots
  - Plots and crops
  - Livestock
  - Livestock products
  - Crops
  - The whole system

![Nutrient flows](image)

To read the nutrient information of a system, select a system from the combo box and click on the Read nutrients button.

You can switch the minerals without re-doing the analysis.

You can analyse nutrients by different criteria.
The results are shown for four different areas:

- **Resources**
  There are two levels of aggregation. For crops, vegetables and pastures, Level I is the plot and Level II the individual crop, vegetable or pasture. For livestock, Level I is the livestock type and Level II the livestock product.

- **Inputs**
  For crops, vegetables and pastures, on-farm inputs are manure and crop residues, and off-farm inputs are fertilisers. For livestock, on-farm inputs are on-farm products or forages used for feeding, and off-farm inputs are purchased feeds.

- **Outputs**
  For crops, vegetables and pastures, outputs are differentiated by what is eaten by the family, what goes for livestock feeding, what is sold, and what is stored. They are expressed in kg/ha. For livestock, outputs are organised in the same way except that there is no item for livestock feeding. They are expressed in kg/TLU.

- **Balance**
  The balance is the total output subtracted from total input.

Select a system from the System combo box and choose the mineral and resource you wish to analyse. Click on the Read nutrients button. [N.B. This window takes some time to load.] Check a different mineral or resource to change the analyse.

[N.B. To make sense of this window you must be sure that all the N, P, K, C and DM values are completed in the Mineral concentrations of products window.]
4. Labour analysis

This function combines the data stored in all the labour information windows, and provides information on labour efficiencies per activity, and differentiated by gender. Select a system from the System combo box and click on the Run using local currency for calculations button or on the Run using US dollars for calculations button according to your preference.

The Use adult equivalent box allows you to carry out all the labour calculations transforming the current family structure to its respective adult equivalence. An adult equivalent is the amount of labour carried out by a non-adult converted into the amount that an adult would do, for any time period. Click on the View/edit adult equivalences button to view or change, in the Standard adult equivalences window, the standard adult equivalences used by Impact. If you want to use adult equivalences in the labour calculation, check the Use adult equivalences box before running the analysis.

The results are shown in three principal sections, each accessed though a tab:

- Labour applied
  This tells you the monthly labour input into crop, livestock and other activities, differentiated by family labour and hired labour.

Before running the analysis you can check the Use adult equivalences box.

Click on the View/edit adult equivalences button to view and change adult equivalences.

Click on the Export to Excel button to export the tables for the labour analysis to Microsoft Excel.
Labour efficiency

This tells you the economic return of labour invested in crop and livestock activities.

To see the results of the labour efficiency analysis, click on the tab. It is not necessary to click on the or button unless you have changed some parameters. You can choose to view three results, each under a different tab: Crops, Livestock, and Total. The Total tab gives the labour efficiency summed for crops and livestock.

Since Impact registered all the labour information at the plot level, this analysis is also carried out at the plot level. It takes into account all the products or forages that are marketed from each plot. On the left of the table the plot and the efficiency results are displayed. On the right-hand side, the products and their prices are listed. To calculate the product price, each product or forage must have a price per kilogram. Impact loads the price stored in the System Characterisation. If you wish to update or modify the price input it directly into the table and then click on the Calculate efficiency button.

- Press F2 to edit quantities.
- Click on the Export to Excel button to export the tables for the labour analysis to Microsoft Excel.
Efficiency is defined in two ways: as kg/man-day, which is the total number of kilograms of product obtained from the plot per man-day; and as currency/man-day, which is the net income obtained for each man-day of labour applied in every plot.

Gender applied
This screen is exactly the same as the Labour applied screen but the analysis is differentiated by gender rather than family.

Click on the Export to Excel button to export the tables for the labour analysis to Microsoft Excel.
VIII. DUPLICATING DATA

As you have already seen in Section IV, data in Impact are stored at two different levels: Data Tables, and as System Characterisations. These two levels of information are contained in a database. In Section IV we saw that users can share information with other users (i.e., export and import data) by sharing a whole database (i.e., share Data Tables and System Characterisations). This is done through the Database Manager.

However, it is also possible to share data by making copies of either:

1. Systems only; or
2. Data Tables only.

Before sharing systems or Data Tables, you should be aware of the way in which Impact accesses these two levels of information. When a farming system is characterised, Impact creates links between System Code and individual elements of the Data Tables. Thus, every time that the 'System characterisation' windows are open, these links are queried. For example, let us suppose that you have created a farming system in India with the code IN20051201AABBCC. In the crops section, you indicate that millet is used in the system. In the Crops Data Table millet has a unique invisible code 025. Thus, Impact creates the link between the system IN20051201AABBCC and the crop 025. You must realise that it is very important that all your systems have unique systems codes, and that proper care is applied when adding or deleting elements in the Data Tables.

[NB. All the Impact files that contain either systems or Data Tables in the export/import format have the extension *.cde].
1. Duplicating systems

Duplicating systems is an action that should be carried out ONLY in two circumstances:

- You wish to share your system with another user whose custom database has IDENTICAL DataTables to yours

There are some risks associated with exporting your system to be loaded in a different custom database. For example, following the explanation at the beginning of this section, if in your colleague’s database the item 'millet' was deleted and another crop e.g., 'peanut' created, in her custom database, and only in that one, the code 025 would refer to peanut, and not to millet. Thus, if the system IN20051201AABBCC is read in that database, it will show that the crop whose management is described, is 'Peanut'.

To export a system or systems, click on the **Export systems** button on the main toolbar.

Select one or several systems (by holding down the SHIFT key on your keyboard as you select) to export.

Click on the **Export** button to export one or more systems.
Click on the Export button. Choose a file name and the directory to export your information to. Click on the Save button. Impact will display the message: 'Export completed'. A file *.cde is created.

To import a system click on the Import systems button on the main toolbar.

Click on the Read systems from file button to access the file you want to import.

Select the system you wish to import.

Click on the Process selected systems button append the selected systems into Impact.

Click on the Read systems from file button. Choose the name and directory where the *.cde resides. Click on the Open button. The Import systems window displays the name of the systems contained in the .cde file in two sections: 'New systems' and 'Systems already present in Impact'. You can only import the 'New systems'. Highlight the desired new systems and click on the Process selected systems button.
You wish to duplicate systems within your custom database. This action is useful when you want to enter information on a new system that is very similar to an existing one. This could happen in the following cases:

- You are running a longitudinal analysis and want to enter information on the same farm but a year later;
- Your farm is in the same location as an existing one;
- You wish to change some parameters to create different analysis scenarios, but want to preserve your original information.

To export a system that you are then going to import into *Impact* with a new name, i.e. to duplicate a system, click on the **Export systems** button. Select only one system and click on the **Export system as** button.

The window **Export system as** is opened. All the fields that are used to form the unique SYSTEM CODE are marked in bold. You can modify any of those fields, or use the new field **Extra data** to create a new System Code. By default, the field **Extra data** is filled with the letter B.
Click on the **Restore original values** button to retrieve the original key values for the selected system.

To generate a new code, click on the **Create new code** button.

Click on the **Create new code** button. In the **New code** box the newly formed code is displayed. Click on the **Export** button and follow the steps from ◆ to ◆ in ◆.

To import the duplicates system back into **Impact** with a different code, follow the steps from ◆ to ◆ in ◆.
2. Duplicating data tables

Exporting and importing Data Tables is not a common task, and it is not advisable that you undertake this. If you need to share Data Tables is better to do it as part of the database sharing process (see Section IV, The Database Manager). The only case where Data Tables could be exported/imported is where a set of users are working with different farming systems, but adhering to the same set of Data Tables. For example, let us suppose that you and your colleagues are working in the same location in Bolivia, but each of you with different farms. You have planned that after each of you finish characterising your systems, all the data will be collated in a single database called Bolivia. To avoid each of you adding and deleting items in the Data Tables, only one person will be responsible for altering it. This individual will add new items to the Data Tables, and subsequently distribute the Data Tables to the rest of the group. In this way it is assured that all the users are accessing exactly the same set of data in the Data Tables.

To export Data Tables, click on the Export data table button on the main toolbar.

Click on the Add data table button to add the selected Data Table to the Task list.

Click on the Add all data tables button to add all the Data Tables to the Task list.

Click on the Process data tables button to copy the Data Tables to the destination file.
In the Export Data Table window type in the Destination file box the name of the file (*.cde) and the directory that the Data Table(s) is/are to be exported to (or click on the Open button, fill in the file name with a .cde ending and click on the Open button). You can add single Data Tables or several to the same .cde file. If you want to add only one Data Table, select it and click on the Add data table button. To add all the Data Tables, click on the Add all data tables button and all the Data Tables will be automatically selected. You will see that the Task list window displays the name of the selected Data Tables. If you want to remove a Data Table from the list at this stage, select it and then click on the Remove data table button. Click on the Process data tables button. Impact will copy the Data Tables in the Task list to the destination file you specified. The message 'Transfer completed' will be displayed. Click on the Close button.

To import Data Tables, click on the Import data button on the main toolbar. In the Import Data Table window check the boxes of the Data Tables that you wish to import.

You can change the import options for each Data Table.

Click on the Process all data tables from one file button to import all Data Tables from one .cde file.

Click on the Import button to import the Data Tables into Impact.
The window **Import option for data table** is displayed. In the **Source file** box, type the directory and name of the *.cde* file that contains the Data Tables to be imported, or click on the *** button. There are three ways to import a Data Table:

1. **Replace all data tables:** **Impact** will delete all current data from the Data Table and append all data from the source file.

2. **Add new records:** **Impact** will append only new data into the data table from the source file. **Impact** considers a record as new when its code is not found in the Data Table and,

3. **And update records:** **Impact** will add new records in addition will update from the source file all the existing records in the Data Table which are different from the source file.

Check the Replace all data table box if you want to change all its records. Check the Add new records box if you want just to add additional information to the Data Table. If you want to additionally update all the other existing records from data in the source file, click, in addition, the And update records box. Click on the OK button, followed by the Import button. **Impact** will display the message 'Transfer complete'.

[N.B. If all the Data Tables you wish to import are contained on one *.cde* file, the importing process is much simpler if you click on the **Process all data from one file** button rather than checking the boxes of the Data Tables that you wish to import.

The **Process all data from one file** window opens, where you should specify the name and directory of the *.cde* file where the Data Tables are located. By default, the options Add new records to data table and And update current records are selected. Click on the OK button. The window will close and you can then click on the Import button. **Impact** will display the message 'Transfer completed'. Click on the Close button.]
IX. ADD-INS

One of the most useful features of Impact is its connectivity with more complex analytical tools such as mathematical models. Impact was designed to be able to produce input data in the format required by such models. Models should have the necessary components to be able to 'talk' or 'interact' with Impact's database. The Models menu on Impact's main toolbar will show the models that are available to Impact. Please refer to the documentation of each individual model to learn more about how Impact communicates with them.
Notes