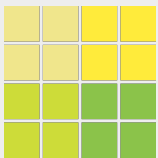**AgroEco Research app**
http://sautiyawakulima.net/agresearch

User's manual

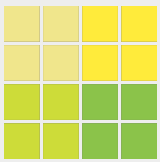**Developed by Eugenio Tisselli**
cubo23@yahoo.com

DOWNLOADING AND INSTALLING.

The AgroEco Research app works on most phones with Android operating system version 3.0 (Honeycomb) or higher.

1. Make sure that your phone allows you to install applications from "unknown sources" (that is, from sources different from Google Play)... to check whether you can do this, go to Settings >> Security, and check the "Enable unknown sources" check box. If you can't find that option there, you can try in Settings >> Applications.

2. Connect your phone to the Internet and navigate to **http://sautiyawakulima.net/agresearch** using your phone's browser.

3. Enter your login data (user alias and password)

4. You will see the main menu of the AgroEco Research web application. Choose 'Download app'.

5. A new screen will appear, with the logo of the app. Press the button labeled 'Download' found just below the logo.

6. The app should start downloading. On most Android phones, you can check the status of your download by sliding your finger from the top to the bottom of the screen... if this doesn't work, please check your phone's manual.

7. After the app has been downloaded, select it from the downloads section. Once you agree to grant the necessary permissions for the application, it will be installed on your phone.

CONFIGURATION.

You should be connected to the internet in order to configure the AgroEco Research app. You need to configure the app before you can start using it.

1. When you open the AgroEco Research app, you will be asked to enter the URL of the server to which the app will connect. Please enter the following URL, carefully avoiding typing mistakes:

http://sautiyawakulima.net/agresearch

2. You will then be asked to login. Please enter your login data (user name and password)

3. Once you've logged in, you will see the Main Menu. Since the catalogs containing the research framework data have not been downloaded yet, you will only see a few options. To download the catalogs, choose 'Settings'
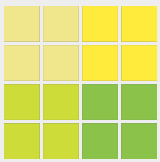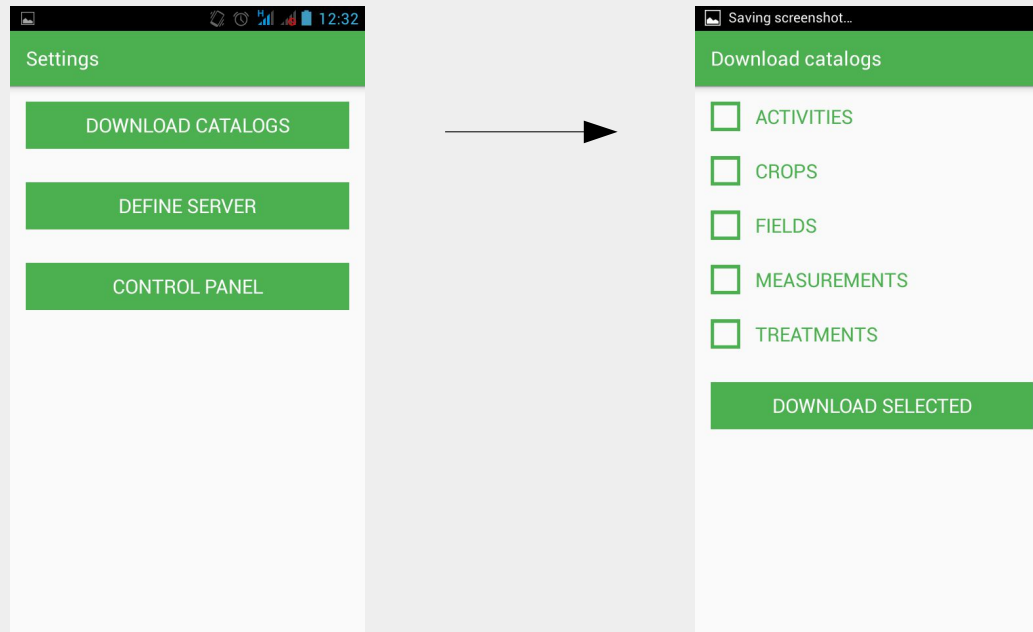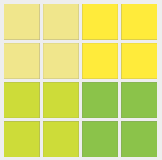
CONFIGURATION.

4. On the Settings screen, choose 'Download catalogs'. You will see the following screen:


5. Make sure that all the catalog names are checked, and that you are still connected to the internet. Press 'Download selected' to download the catalogs. Once they have been downloaded, you can start using the AgroEco Research app.

GENERAL STRUCTURE OF THE APP.

The following diagram illustrates the workflow of the AgroEcoResearch app. Please note that, at any point, you can go back to the previous screen by pressing the 'Back' button on your phone. You can also navigate to different sections of the app by using the menu. Depending on your phone's model, the menu may be located on the upper right corner of the screen, or may be accessed by pressing the menu button on the lower left corner of your device.
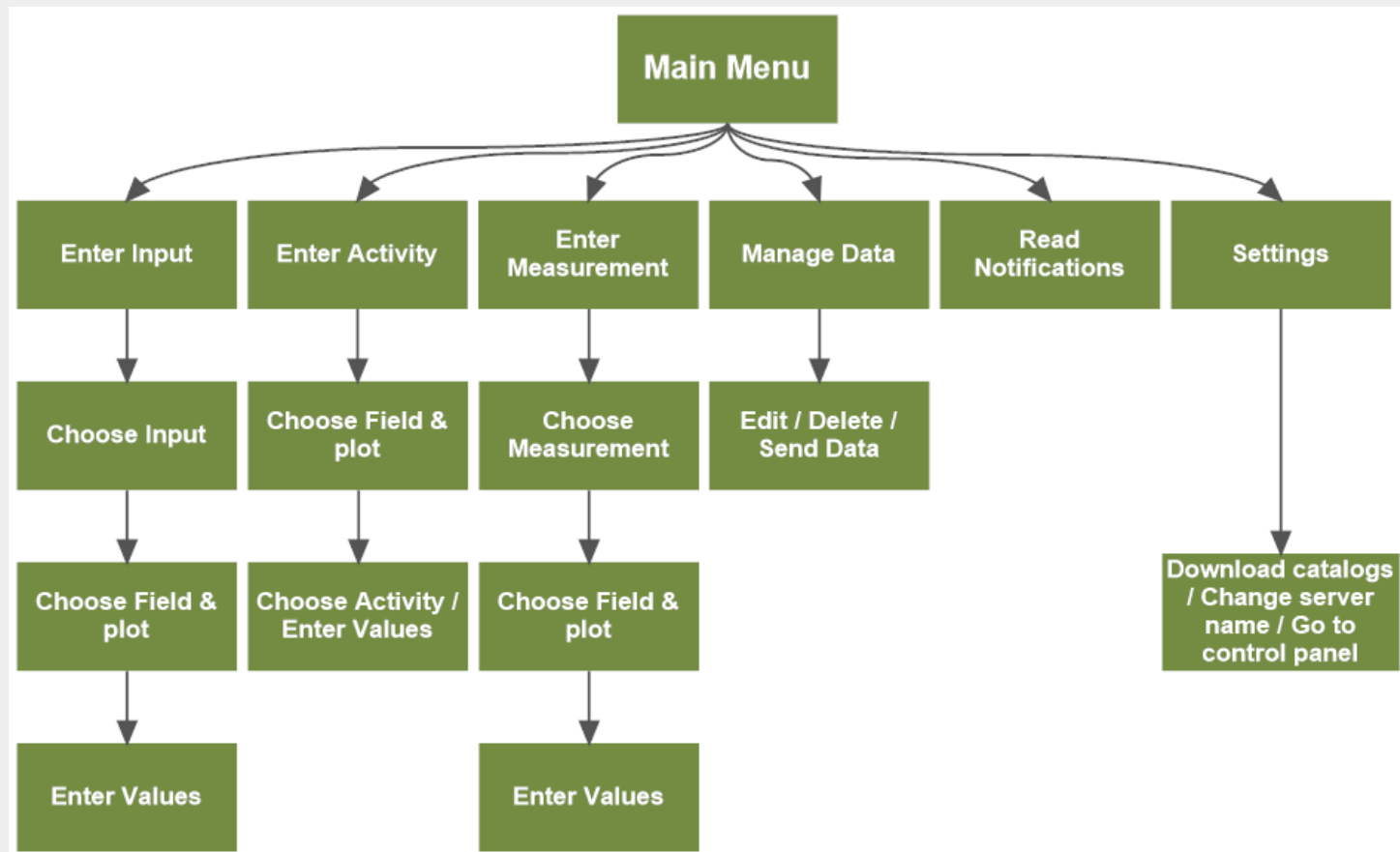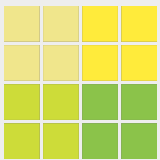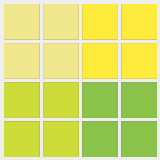
ENTERING AN INPUT.

Inputs can be crops or treatments used in the research field. To enter an input, select 'Enter input' on the main menu, choose an input from the list and then select the plots to which the input corresponds.
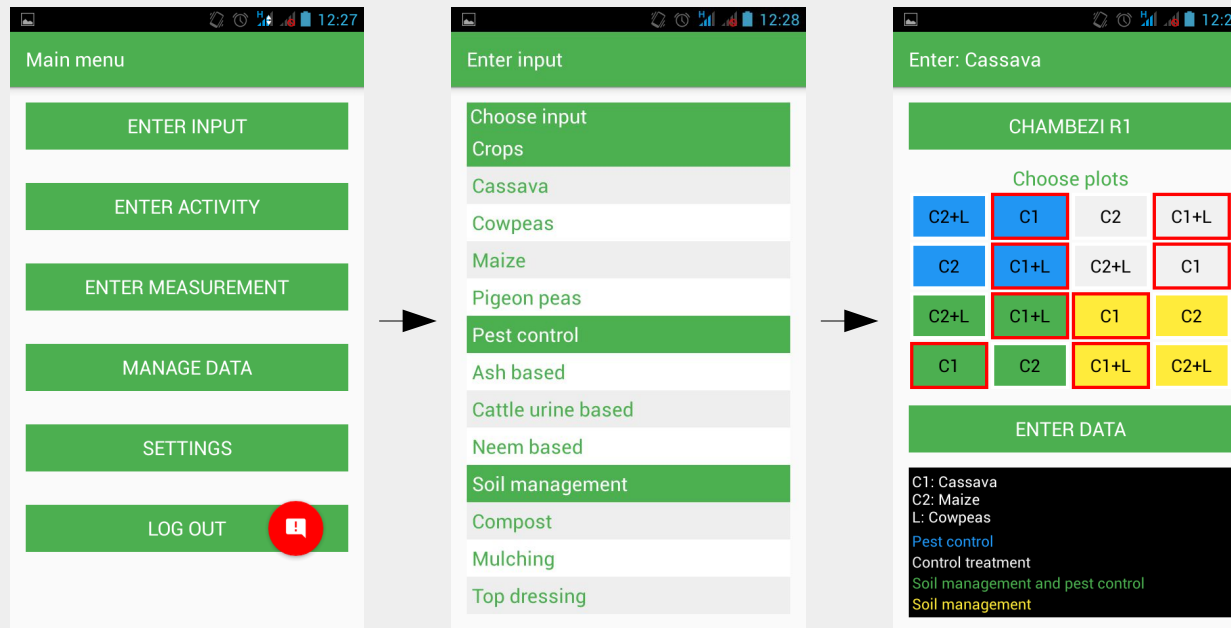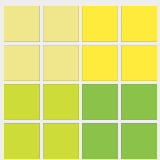

Only relevant plots may be selected. For example, if you chose to enter 'cassava', only the plots in which cassava is planted will be selectable. When a plot is selected, it will be shown with a red border.

ENTERING AN INPUT.

If you selected a crop input, you will see the following screen, in which the values **date***, **age (in days)**, **origin**, **variety**, **units***, **total quantity***, **total cost (in TZS)** and **comments** must be entered (only the values marked with * are mandatory). These values reflect the total for all the selected plots.
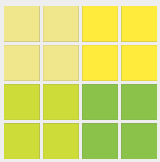
ENTERING AN INPUT.

On the other hand, if you selected a treatment input, you will see the following screen, in which the values **date***, **ingredients***, **preparation method**, **total cost (in TZS)** and **comments** must be entered (only the values marked with * are mandatory). These values reflect the total for all the selected plots.

To enter the ingredients, you must use a table. In each row, you will specify the name of the ingredient, its quantity and the units. For example, 'urine', '10' and 'liters'. To add an ingredient, press the 'Add ingredient' button. To delete an ingredient, press the red cross found at its left.

ENTERING AN ACTIVITY.

Activities are all sorts of labor carried out in the research field. To enter an activity, select 'Enter activity' on the main menu, select the plots affected by the activity, and enter the activity's data. You will enter the following values: **date**, **activity**, **units**, **total value**, **total number of laborers**, **total cost (in TZS)** and **comments** (only the values marked with * are mandatory). These values reflect the total for all the selected plots.

Only an activity that is related to the selected plots may be chosen.

ENTERING A MEASUREMENT.

Measurements are data generated by the different agroecological processes that take place in the test fields. To enter a measurement, select 'Enter measurement' on the main menu, select the measurement category an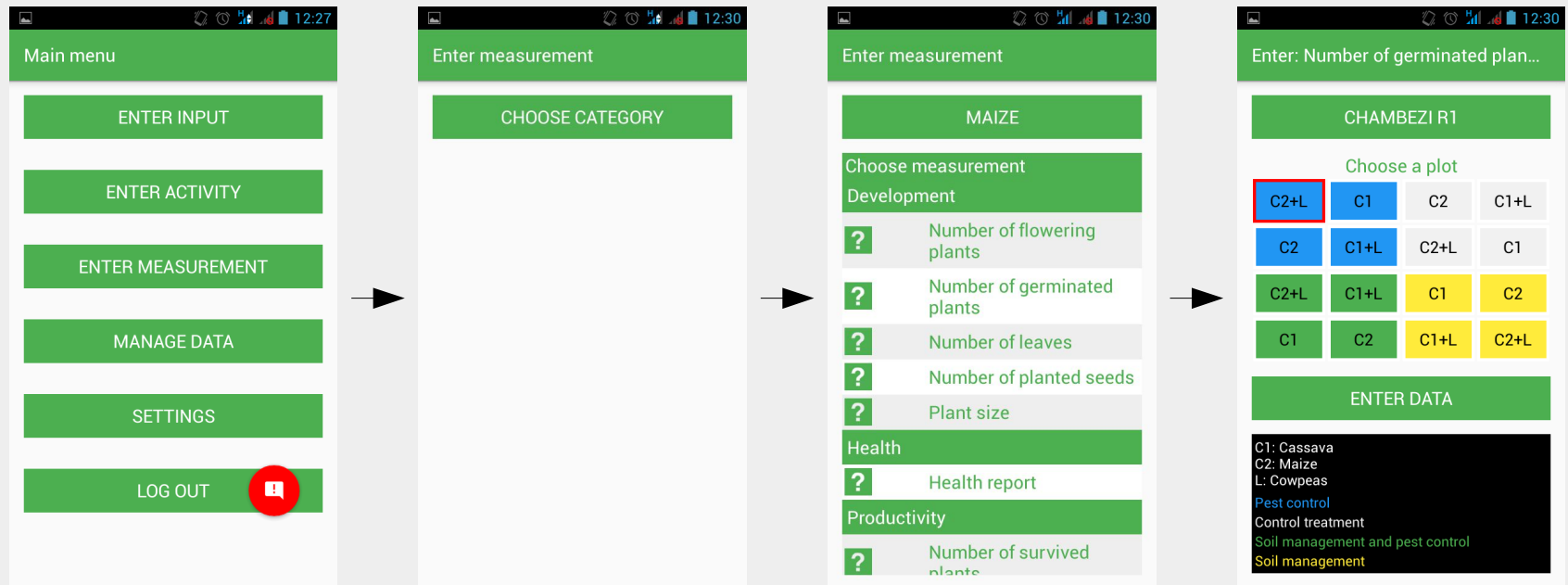d the measurement, and the plot in which the measurement will be taken. Unlike inputs and activities, measurements always refer to a single plot.

When choosing a measurement, you can read about it by pressing the question mark located at its left.

Only relevant plots may be selected. When a plot is selected, it will be shown with a red border. If a plot is shown with a black border, it means that the chosen measurement has already been entered for that plot, and therefore it will not be selectable.

ENTERING A MEASUREMENT.

There are two types of measurements: quantitative and qualitative. Any of these types may or may not need multiple samples. The following screen shows an example of a qualitative measurement, 'number of germinated plants (category: maize)' that does not require multiple samples:

In this case, you need to enter the date and the numeric measurement. Comments are not mandatory.
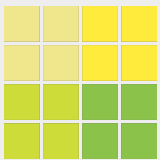
ENTERING A MEASUREMENT.

The following screen shows an example of a quantitative measurement, plant size (category: maize) that requires multiple samples:

For each sample, you have to enter a sample number (automatically generated, but may be modified) and the numeric value. To add a sample, press the 'Add sample' button. To delete a sample, press the red cross at its left. Comments are not mandatory.

Please note that sample taking can be a time consuming task and that, depending on your phone's RAM capacity, data may be lost when this task is interrupted (ie. when receiving a phone call). Therefore, it is advisable to save the data often, even if the entering of the samples has not been completed. It can be completed later by accessing the measurement from the data manager (see page 14).
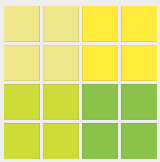
ENTERING A MEASUREMENT.

There is a special kind of measurement, 'health report', in which a complete health report form has to be filled up for each plant sample in the selected plot:

For each sample, you have to enter a sample number (automatically generated, but may be modified) and the health report. To add a sample, press the 'Add sample' button. To delete a sample, press the red cross at its left. Comments are not mandatory.

To enter the health report for a specific sample, press the button labeled 'Good' at its right ('good' means that, by default, the sample plant is in good health). You will see a new screen, the health report form, with different health categories. To enter an item, choose its category by clicking on the corresponding check box, and then select the corresponding value by pressing the button that will appear at its right.
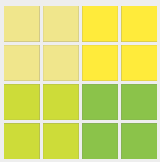
MANAGING DATA.

The data manager allows you to review, edit, delete and send the data you have registered. To access the data manager, select 'Manage data' on the main menu.
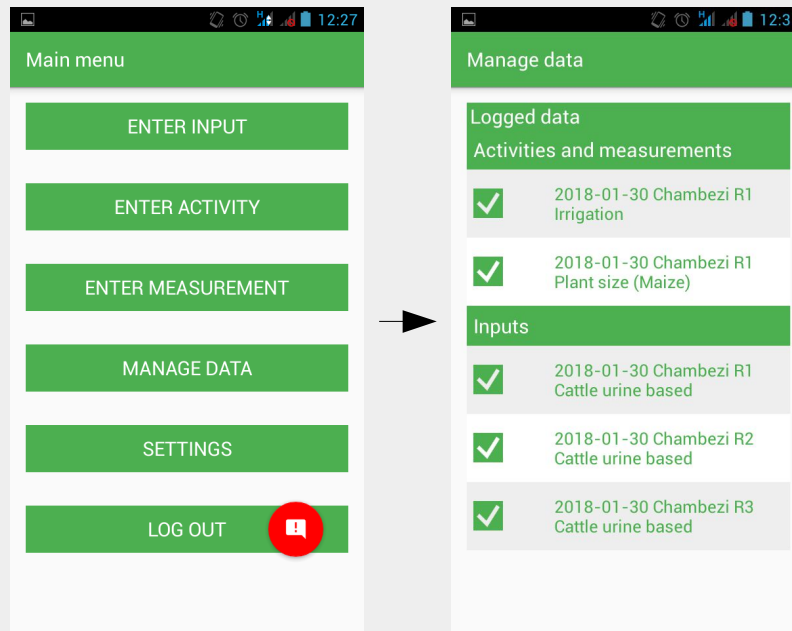
To review or edit a data item, simply select it. If you want to review it, you can go back to the data manager by pressing the 'back' button on your phone. To edit the data item, change the desired values and press the 'edit' button that will be located at the bottom of the screen.

To delete one or several data items, select them by activating the check boxes at their left, and then select the option 'Delete' on the menu. Be careful, this operation is irreversible.

To send one or several data items, select them as described above and choose the option 'Send' on the menu. You must be connected to the Internet to perform this operation. Depending on the speed of your connection, sending data may take a while.

READING NOTIFICATIONS.

If you see a red icon at the bottom of the main menu, it means that another member of the research team sent you a notification. To read your notifications, simply press that icon.
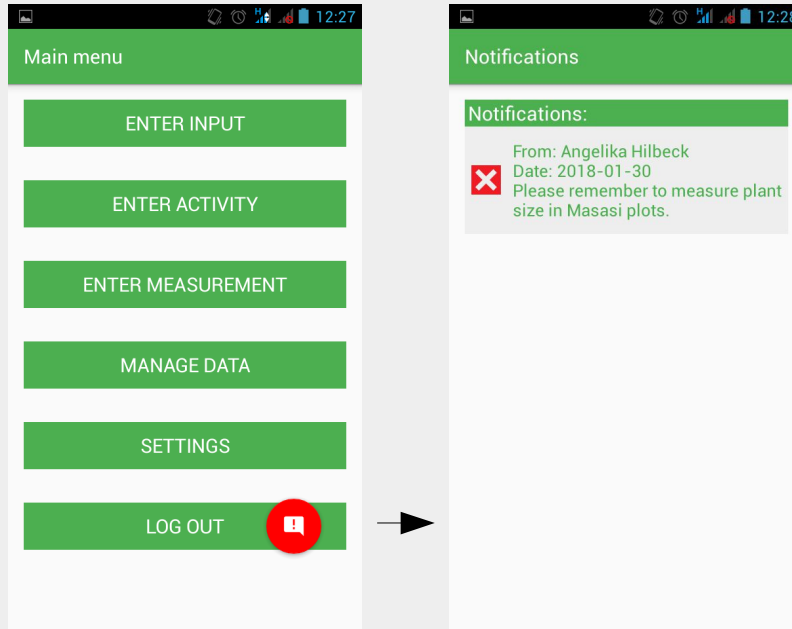
To delete a notification, press the red cross at its left.
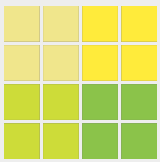
SETTINGS.

To access the app's settings, press 'Settings' on the main menu.
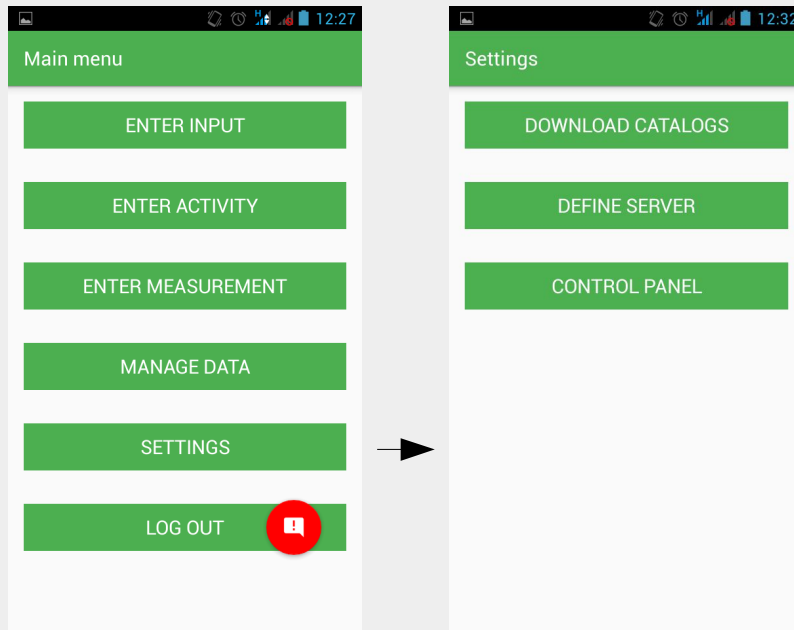
The Settings screen will allow you to perform the following tasks:

- Download catalogs: Data framework catalogs must be downloaded in order to enable the data collection tasks. This is normally done at the beginning of the process, as explained on p. 5. However, it is possible to download the catalogs again at any point in the process, in case the data framework has been updated.
- Define server: The server name (or URL) is defined at the beginning of the process, right after the application has been installed. However, it is possible to change it if needed.
- Control panel: This option allows you to access the web control panel of the AgroEcoResearch project, by opening your phone's web browser and navigating to the control panel's URL.

AgroEco Research – web application
http://sautiyawakulima.net/agresearch
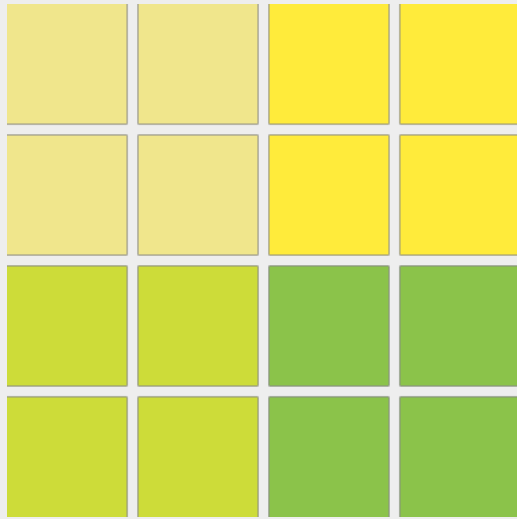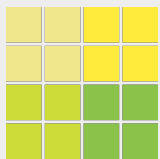
WEB APPLICATION.

The AgroEco Research application has a web component that allows you to perform the same data gathering and data management tasks of the mobile app, and also features a module for statistical analysis (in progress). The web component is accessible at **http://sautiyawakulima.net/agresearch**. To enter, use your login data (user alias and password).

You will see the main menu, from which you will be able to access the following sections:

- **Manage data:** Review, filter, add, edit and delete research data generated in the test fields. (see page 19)

- **Download app:** As described on page 2 of this manual, this option allows users to download the mobile app. To do so, they must access it via their mobile browser.

- **Notifications:** This option allows users to send notifications to other users. These notifications will be received via the mobile app, as described on page 15. For a detailed description of how to send notifications, please refer to page 30.

- **Analysis tools:** This option will give users access to the statistical analysis tools. These tools are still under development, and therefore are not yet accessible.

- **Macho Sauti:** When users choose this options, they will be redirected to the website of Macho Sauti, an audiovisual, farmer-driven complement of the AgroEco Research app. Macho Sauti can be accessed at **http://machosauti.or.tz/**

MANAGING DATA ON THE WEB.

This is the main screen of the web data manager. From here you will be able to review, filter, add, edit and delete data.

Log

	Item	Date	Field	Description	Actions
☐	Measurement	2018-01-31	Chambezi R1	Number of flowering plants	Details || Edit
☐	Activity	2018-01-31	Chambezi R1	Pest control application	Details || Edit
☐	Input	2018-01-31	Chambezi R1	Cassava	Details || Edit
☐	Input	2018-01-31	Chambezi R1	Ash based	Details || Edit
☐	Measurement	2018-01-31	Chambezi R1	Health report	Details || Edit
☐	Measurement	2018-01-31	Chambezi R1	Plant size	Details || Edit
☐	Measurement	2018-01-26	Masasi R1	Health report	Details || Edit

Refresh   Delete selected   Filters

Enter input   Enter activity   Enter measurement

Menu

MANAGING DATA ON THE WEB.

The main screen of the web data manager shows a table in which every row is a data item. You can perform the following tasks:

- To **check for incoming data**, press the button labeled 'Refresh', located below the data table.

- To **delete** one or more data items, first select them by activating their corresponding check boxes, which are located at the left of each data item. The top check box, at the leftmost end of the table header, can be used to activate or deactivate all check boxes at once. Once the desired data items have been selected, press the button labeled 'Delete selected'. The selected items will be deleted only after confirming that you really want to delete them.

- To **filter** the data displayed on the table, press the button labeled 'Filters'. A new window will pop up, showing all the criteria by which you can filter the data (see page 21)

- To **return to the main menu**, press the button labeled 'Menu', at the bottom left of the screen.

MANAGING DATA ON THE WEB – FILTERING DATA.

This window shows the criteria that can be chosen to filter the data displayed on the web data manager. To activate any of them, check the corresponding check box, enter the desired values by which to filter the data and press 'Apply'. To deactivate, uncheck the corresponding check box or press 'Remove all'.

Filters

☑ Field

Chambezi R1

☐ Dates

Day	Month	2018
Day	Month	2018

☐ Activity

Compost application

☐ Measurement

Health report

☑ Crop

Cassava (All)

☐ Treatment

Ash based

Items per page

15

[Apply] [Remove all] [Close]

In this example, data will be filtered by 'field' and by 'crop'.
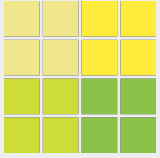
MANAGING DATA ON THE WEB – REVIEWING, EDITING AND ADDING DATA.

To review one of the data items shown in the table (page 19), click the link labeled 'Details' located at its right. A window will pop up, showing its full details.

You can edit an existing data item by clicking on the link labeled 'Edit', which located at its right as well. A window will pop up showing the appropriate fields and values for editing, depending on the type of data item (input, activity or measurement).

You can also add a new data item. First, you need to select the type of data item you wish to enter by pressing the appropriate button below the table: 'Enter input', 'Enter activity', or 'Enter measurement'. Then, a series of windows will appear to assist in the task of entering a new data item.

In the following pages, the processes of editing and entering data will be described jointly.

MANAGING DATA ON THE WEB – EDITING AND ADDING INPUTS.

The following window will allow you to edit or add a crop input. If you are entering a new crop input, this window will follow a previous one, in which you will select the field, replication and type of crop input you wish to add. Please press the 'Edit' (or 'Add') button when finished.

Add crop input

Registered by: Angelika Hilbeck
Field: Chambezi R1
Plots (click on a plot to remove): C1-L, C1-S

Add a plot:

Crop: Cassava

Date:

31   01   2018

Age (days):

25

Origin:

Bagamoyo

Units:

kg

Quantity:

100

Cost (local currency):

Image:

About plots: in general, to add a plot to a data item, you must select it from the drop-down list labeled 'Add a plot'. Only plots that are relevant to the selected data item may be chosen. To remove a plot from a data item, simply click on its label.

About images: please note that on the web application you can associate an image to a data item. Simply click on the button below the 'Image' field and choose the image file on your computer.

MANAGING DATA ON THE WEB – EDITING AND ADDING INPUTS.

The following window will allow you to edit or add a treatment input. If you are entering a new treatment input, this window will follow a previous one, in which you will select the field, replication and type of treatment input you wish to add. Please press the 'Edit' (or 'Add') button when finished.

Add treatment input

Registered by: Angelika Hilbeck
Field: Chambezi R1
Plots (click on a plot to remove): C2-P, C2-PSL, C2-PL, C1-P, C1-PL, C1-PSL, C1-PS, C2-PS

All plots added

Treatment: Ash based (Pest control)

Date:

31   01   2018

Ingredients (comma separated, use format: *ingredient: quantity units*):

ash: 10 kg, water: 10 liters

Preparation method:

Mixing

Cost (local currency):
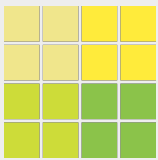
Image:

Browse... No file selected.

Comments:

Entering ingredients: please note that recipes for treatment inputs need to be entered following a specific format. Ingredients must be separated by commas, and each of them has to be expressed as follows:

ingredient: qty units

For example (as shown):

ash: 10 kg, water: 10 liters

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MANAGING DATA ON THE WEB – EDITING AND ADDING ACTIVITIES.

The following window will allow you to edit or add an activity. If you are entering a new activity, this window will follow a previous one, in which you will select the field, replication and type of activity you wish to add. Please press the 'Edit' (or 'Add') button when finished.

Add activity

Registered by:
Field: Chambezi R1
Plots (click on a plot to remove): C2-PL, C1-P, C2-P, C1-PL, C2-PSL, C1-PSL, C1-PS, C2-PS

All plots added

Activity: Pest control application (Pest control)

Date:

31   01   2018

Units:

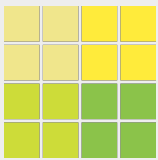applied amount

Value:

100

Number of laborers:

2

Cost:

Image:

Browse...   No file selected.

Comments:

MANAGING DATA ON THE WEB – EDITING AND ADDING MEASUREMENTS.

The following window will allow you to edit or add a measurement. If you are entering a new measurement, this window will follow a previous one, in which you will select the field, replication, measurement category and measurement you wish to add. Depending on the type of measurement, the new window will have different features. The following window is an example of a quantitative measurement with no samples. Please press the 'Edit' (or 'Add') button when finished.

Add measurement

Registered by:
Field: Chambezi R1
Plot (click on plot name to remove):

Add a plot:

Measurement: Number of flowering plants (Cassava)

Date:

31   01   2018

Units:

plants

Value:

Image:

Browse... No file selected.

Comments:

Add Close

About plots: when adding or editing a measurement, only a single plot can be selected per measurement.

MANAGING DATA ON THE WEB – EDITING AND ADDING MEASUREMENTS.

The following window is an example of a quantitative measurement with samples. Samples are shown separated by commas, and using the format *sample number:value* (see below). To edit the samples or add new ones, click the link 'Add/edit samples'. A new window will pop up for performing this task (see next page). Please press the 'Edit' (or 'Add') button when finished.

Add measurement

Registered by:
Field: Chambezi R1
Plot (click on plot name to remove): C1-PL

Plot added

Measurement: Plant size (Cassava)

Date:

31   01   2018

Values (sample:value in cm) 1:110, 2:120
Add/edit samples

Image:
Browse... No file selected.

Comments:

Add   Close

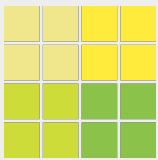# MANAGING DATA ON THE WEB – EDITING AND ADDING SAMPLES.

The following window allows you to edit the samples of the measurement you are adding or editing. To edit a sample, simply enter its number and value in the corresponding cells. To add a new one, press the button labeled 'Add sample' below the table. To delete a sample, press the button labeled 'Delete' at its right. Press 'Save' to register your changes, or 'Close' to exit without saving. Both actions will bring you back to the corresponding measurement (see previous page).

MANAGING DATA ON THE WEB – EDITING AND ADDING HEALTH REPORTS.

A health report is a special type of measurement. If you are editing a health report or entering a new one, you will see that the window features a summary of the health report, and also a link labeled 'Add/edit health report' that, when clicked, allows you to edit it. The following window will allow you to edit the health report:

Enter the sample number in the filed in the first column. Choose the desired values from the drop-down lists in the rest of the columns. If the desired value is not found on the list, choose the option 'Other'. You will then be allowed to enter the value.

To add a sample, press the 'Add sample' button below the table. To delete a sample, press the button labeled 'Delete' at its right.

SENDING NOTIFICATIONS.

This is the notifications screen. To send a notification to another user (or a reminder to yourself), choose the name of the receiver from the drop-down list, type your message in the field below, and press send. In the lower part of the screen, you will see a list of the notifications you have sent.

Notifications

From:
Angelika Hilbeck

To:

Select:

Message:

Send   Main menu

Previous messages sent by Angelika Hilbeck:

To: Eugenio Tisselli
Date: 2018-01-30
Message: Please remember to measure plant size in Masasi plots.
Received: Yes

To: Eugenio Tisselli
Date: 2017-10-01

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