

Volume

1

FARMERS' FIELD BOOK

Tan Lam Company

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PPP Project Improvement of Coffee Quality and Sustainability of Coffee
Production in Vietnam

Farmers' Field Book Manual

TAN LAM EXTENSION GROUP

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PPP PROJECT “IMPROVEMENT OF COFFEE QUALITY AND SUSTAINABILITY OF COFFEE
PRODUCTION IN VIETNAM”

Farmers’ Field Book Manual

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Foreword

The Farmers' Field Book (FFB) is a multi-dimensional tool for registration of activities by farmers and for analysing labour efficiency, nutrient flows and household economics in coffee. It gives project staff, extension workers, researchers and farmers easy access to analysed field data on which to base technical or economical interventions in coffee farming systems.

Reasons to apply it are:

1. to make farmers aware of costs and benefits
2. to enable comparison of different farmers/crop management to find out better ways of farming

This is done through:

1. Calculating financial results of farm activities
costs (of inputs) and benefits (from selling products)
2. Evaluating physical input - output relations
e.g. relation between Nitrogen input and yield
3. To compare performance with other farmers
what can I learn from 'better' farmers?
4. Analysing sensitivity of farming system to changes
e.g. what if the price of labor goes up 20%

The FBB consists of a guide book and two software components:

1. Data entry module
2. Data processing and report generation module

The data entry module recognises the most commonly used inputs in coffee (fertilizers, compost, pesticides, etc), activities (pruning, fertilising, harvesting, pruning shade trees, etc), labour inputs (household adult, household child and hired labour) and equipment. Any additional inputs or activities that are not specified in the original version can be added by the user at any given time.

The data processing module analyses the registered activities and produces several pre-defined figures and tables on either per field, per tree or per hectare basis. All figures and tables are open for editing.

The entire software package is Excel based and can be used in 4 languages (Vietnamese, English, Spanish and Dutch). Analysed data presented in the form of charts and tables is presented in the language used for data input.

Although originally designed for coffee, the FBB can be adapted for use in multiple cropping systems.

The first chapter deals with the setup of the FFB. This entails selection of participants, setup of the software and input of general information for each participant. The second chapter discusses data collection methods and the input of data using the FFB software. The third chapter details adding activities and products not yet listed in the software's database.

Throughout this manual two symbols are frequently used:

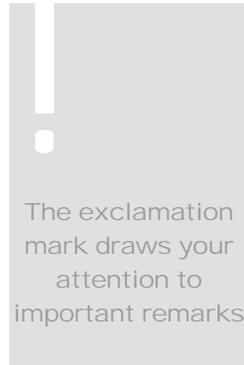


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Selection of participants

This chapter discusses considerations that have to be taken when selecting participants for the FFB.

The selection of participants for the FFB depends on the objectives of the implementing organization. Organizations that want to have an insight in average production costs will have to select different participants than an organization that would like to specifically target resource poor farmers. An organization that uses the FFB to generate training inputs for an extension program will have different participants than an organization that would like to evaluate the results of new technologies implemented by farmers (Table 1).

Table 1: Selection considerations

Selection considerations	Remarks
Small groups of farmers in large area; or	Gives good view of geographical performance differences of analyzed crop
Large group in small area?	Gives good view of local cultivation practices
Do we want to see differences resulting from agro-ecological factors?	If so, the geographical consideration has to be taken into account
Do we expect differences in cultivation practices between sexes?	Think about the ratio between male/female participants
Do we test for new technologies?	Do we evaluate new technologies on-farm or inter-farm?

Besides the content-oriented considerations from Table 1 staff capacity for data collection and entry also influences the scope of implementation. Typically, one full-

time experienced staff is roughly capable of implementing and maintaining up to 50 FFBs.

Another important issue is the whether you want to have a fully representative view of cultivation practices in a given area or an overview of as many different management styles for the same crop as possible? For a group of extension workers the second option might be more useful. It will allow them to discern more and different management styles of farmers. This in turn leads to a more varied discussion on the merits and drawbacks of management styles as practiced by different farmers. Allowing farmers that participate in extension programs where the FFB is used to evaluate a wide range of alternative strategies as practiced by their colleagues.

Setup and installation

This chapter will explain in detail how to install the FFB software

Fbb software is custom designed for its task. Although installation and setup is relatively straightforward it does require some attention. Firstly we should check if your computer system has the correct system requirements and software.

The FFB software can run on any windows based system, from windows 98 upwards. The FFB software is Microsoft Excel based, version 9 or later is needed. Especially the analysis part of the software is very memory intensive. For smooth operation it is therefore recommended that you set the working memory (RAM and virtual memory) of the computer to maximum.



How to set RAM to maximum?

2.1 To increase available RAM go to:

2.2 My computer in the desktop;

Right click on the My Computer symbol; and

2.3 Select properties from the menu.

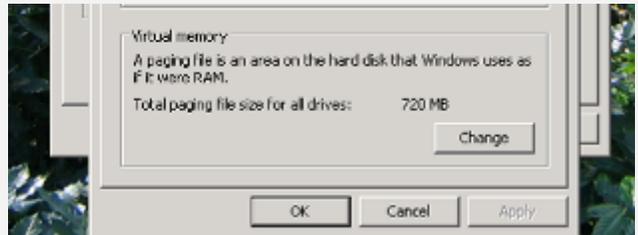


2.4 Now click on the Advance tab; and



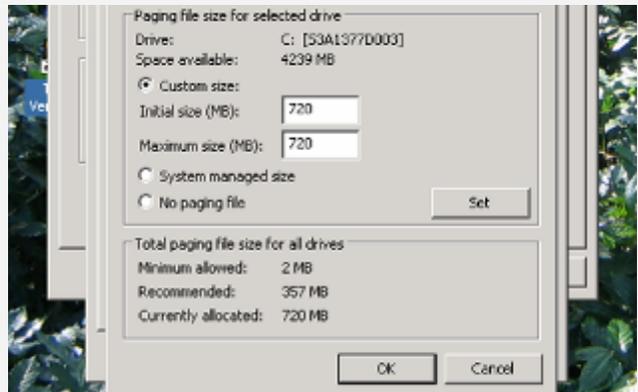
2.5 In the first box, called Performance click on Settings

2.6 Click on the Advanced tab; and



In the third box called Virtual Memory click on Change

2.7 Go to the box called Initial Size (Mb) and type the number that is mentioned in the box below called Maximum Size (Mb);



Click OK and close the remaining windows

With the computer's working memory set to maximum we can start installing the software. Insert the CD-Rom in the drive of your computer. If AutoRun is enabled on your computer the contents of the CD-Rom will appear in your screen automatically. If not, you'll have to open the contents manually.

Double click on My Computer and double click on whichever drive your CD-Rom is in (usually drive D).

The FFB software uses several mini-programs or components that are an integral part of windows. However, for the software to function as intended you have to check if

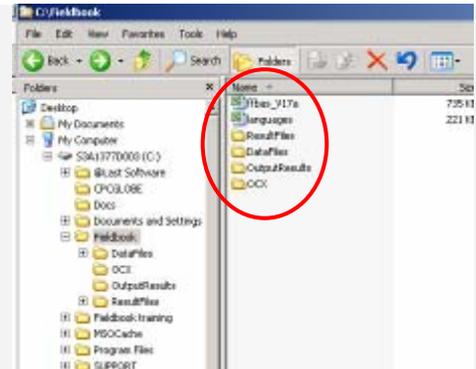
you have the latest versions of these components and replace and activate some of these as needed.



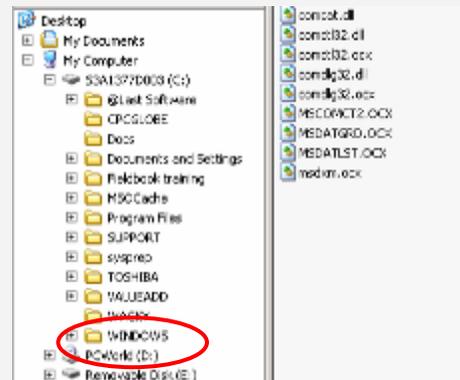
2.8 First open the CD-Rom, you will see four folders and two files

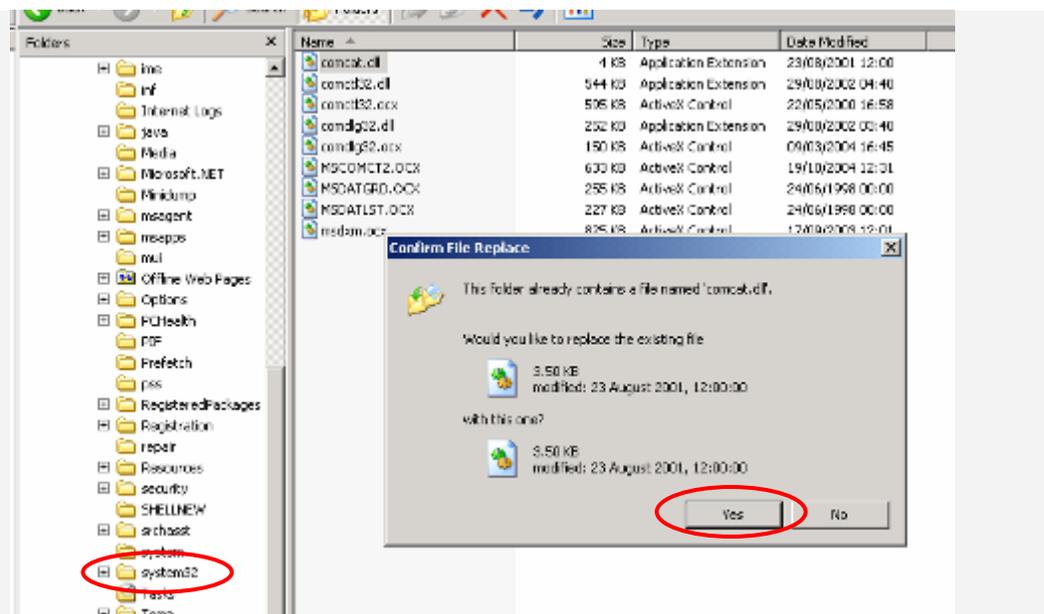
Double click on the folder OCX

All the files in this folder have to be copied to C:\WINDOWS\System32. This is best done one by one, so you can check whether the files you copy are of a later version than the ones you have already.



2.9 Copy the first file (comcat.dll) to the folder C:\WINDOWS\System32. If the computer asks you if you want to replace the file, check if the copied file is of a later date than the existing one. Press Yes if this is the case, else press No (see below). Make a note on which of the files in the OCX folder have been copied, you will need this in the next step





2.10 | Do this for all the files in the OCX folder

Now that the files in the OCX folder have been copied to C:\WINDOWS\System32 they need to be activated individually.



How to activate files from the OCX folder?



The *bold* part of the Regsvr32 line is the file name of the file that you are activating, this is the part that changes when you activate a new files

2.11 Go to Start in the windows taskbar and click on Run



2.12 In the Run window go the box called Open and type:

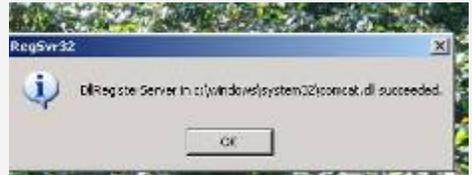
Regsvr32
c:\windows\system32\comcat.dll

Click OK



2.13 And click OK once more

The file is now activated



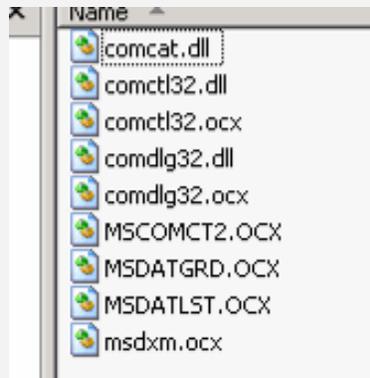
2.14 Do this for every one of the files from the list that you made while copying the files from the OCX folder to the System32 folder.

For the second file you would have to type:

Regsvr32
c:\windows\system32\comctl32.dll



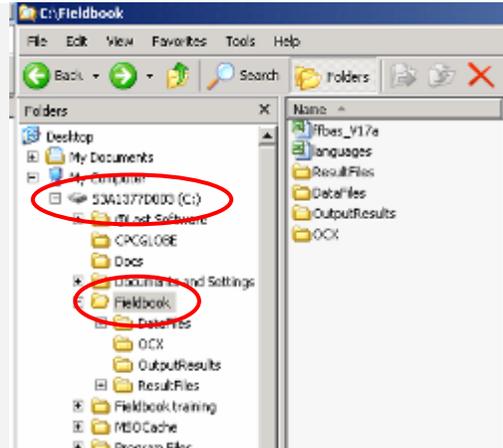
2.15 The complete list of OCXs and DLLs is:



With the windows components up to date, the FFB is nearly setup for running. The final step before actual use is to set up the filing structure. The filing structure is where the FFB software will save the data files of individual farmers. These data files will be used by the software not only to store the rough data, but also to calculate results.



2.15 First copy the contents of the CD-Rom to the hard disk, except the OCX folder. Easiest is go to the Folder called Fieldbook and copy this directly to the hard disk. In this example the folder is copied to C:\



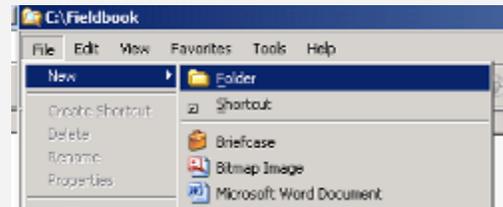
2.16 Now open the Fieldbook file on C:\ and then open the folder DataFiles. This folder is presently empty; we have to insert as many folders as you will have areas in which you collect FFB data.

For example two areas in Quang Tri, called Huong Phung and Khe Sanh. These will each have a folder, one called HP the other KS

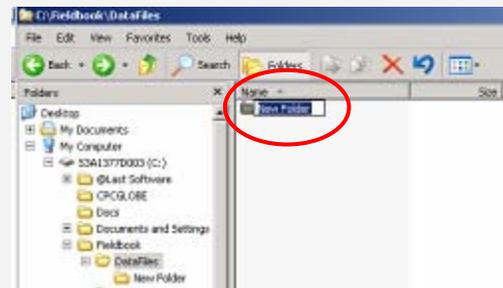
What becomes an area depends on the scale of implementation of the FFB. If you work in a district, each commune can become an area and have its designated folder. If you work

Try to limit the number of areas to a maximum of 4, this will make analysis easier, as each area has to be analyzed separately

2.17 In the folder Fieldbook make sure no file or folder is selected (indicated by the name appearing in a blue box). Go to File and press New, select folder and click.



2.18 A new folder appeared in your Fieldbook folder.



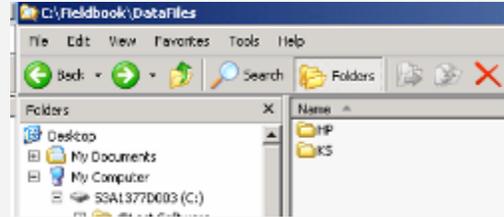
2.19 Type the new name for your folder in two letters, matching the area name, n

our example HP, and press Enter on your keyboard.

If that doesn't work right-click on the new folder and select Rename

- 2.20 Repeat the procedure for the other areas that you have or just copy the newly made area folders.

Our example looks like this:



- 2.21 Repeat the procedure of creating area folders in the folders ResultFiles and OutputResults.

Make sure that you type exactly the same names as in the folder DataFiles!

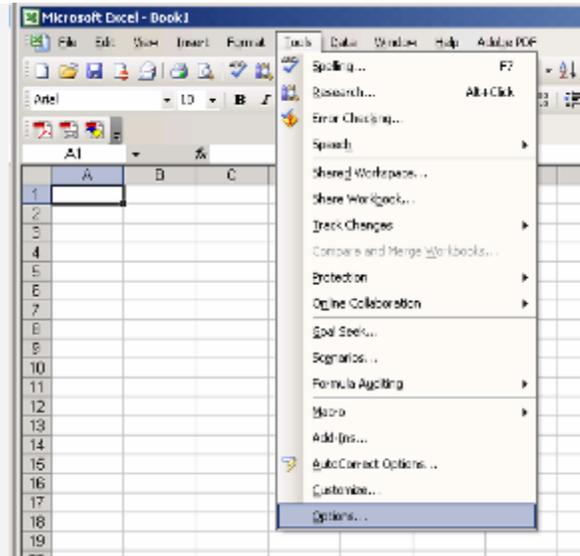
The FFB program uses Excel based macros that perform certain actions in the program. Some computer viruses are hidden in macros. Therefore, Excel has a security function to disable the operation of macros. Before we can run the software we have to check the security settings of Excel.



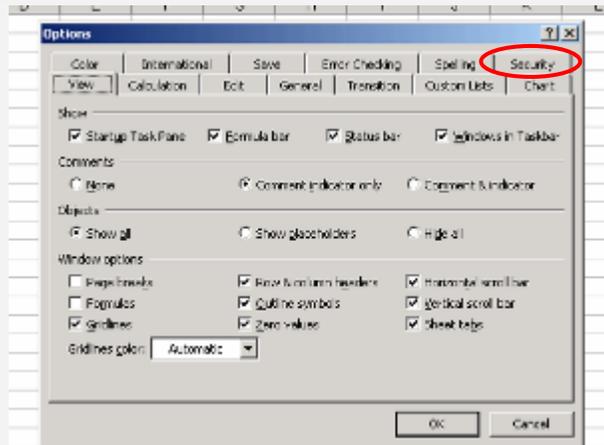
- 2.22 Open Excel by going to Start, Programs, Microsoft Office and click on Excel



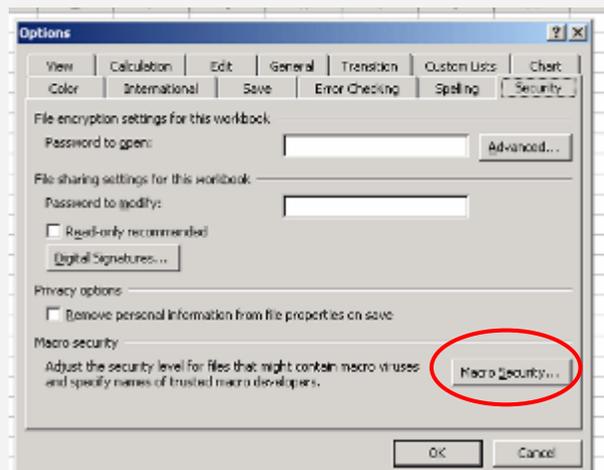
2.23 Now go to Tools, click, go to options and click again.



2.24 Click on the tab called Security



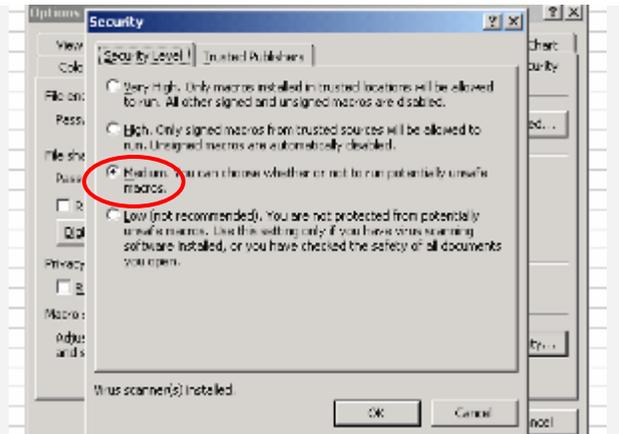
2.25 Click on the button called Macro Security



2.26 Set the security level on Medium by clicking on the checkbox

Click OK

And click OK again



Excels security settings are now able to accept the FFB software

The FFB software uses a language file that contains all the written data that is needed for the software as well as some quantitative data (such as N content in fertilizers etc). The program itself needs to know where this file is stored before it is used. The location of the language file can be entered in the main window of the program.



2.27 Go to the Fieldbook folder that you created on the hard disk. In our example the Fieldbook folder is located on the C:\

2.28 Double click on the Excel file `ffbas_V[XX]`

(XX indicates the version of the software. As this program is frequently improved, the number on the position of XX will change with each new version)

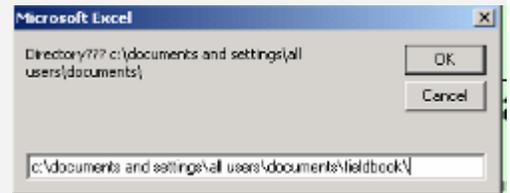
Excel will give you a Security Warning, press the second button called Enable Macros



2.29 You will now get a request to type in the location of the language file.

Type in the location of the language file and press OK.

If this window does not disappear after pressing OK, the location of the language file contains a typing



error, or the language file is in a different location than specified.



Make sure that the working directory is typed exactly as it is, including spaces and slashes

The FFB software is now ready for use. In the next chapter we will discuss General information input.

General information input

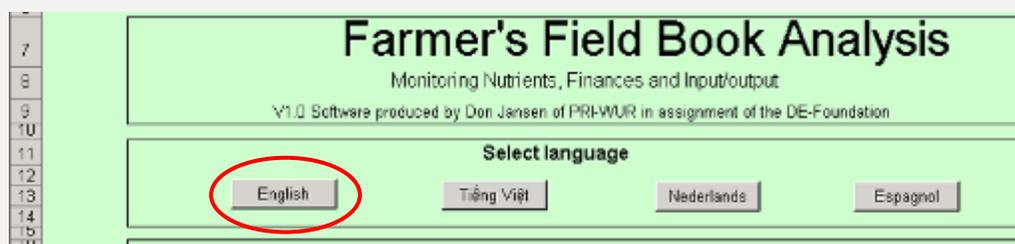
This chapter gives an overview of general information collection and how to use the FFB software to enter and store this data in the filing system.

When your participants have been selected and the FFB software is properly set up, we can start entering General information. Collection of General information has been done with a questionnaire (Annex 1). General information consist of two parts: 1. Field information and Household information. The Field information describes the properties of the field where FFB data is collected, part of this data is used in calculations in the analysis function. Household information provides some more background information and is typically not used to calculate, although experienced users can actually do this. For example by grouping participating farmers according to education level and statistically analyzing what the effect of education on income is.

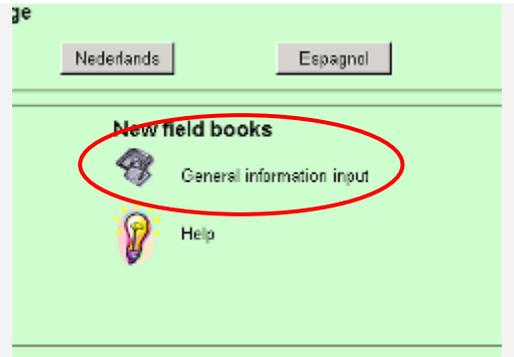
The FFB software has a function to enter and save this data. This data can be entered in one of four languages that the software currently recognizes: English, Vietnamese, Spanish and Dutch.



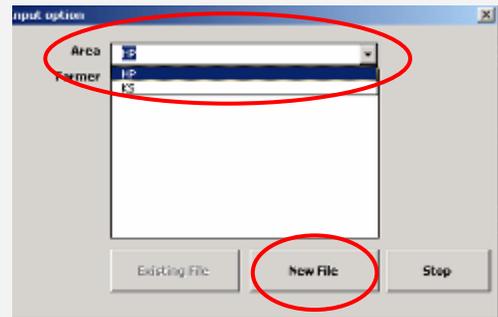
- 3.1 Select the language in which you prefer to work by clicking on one of the language buttons. FFB analyzed results can be displayed in any of the four languages, regardless of the language used for input of data.



3.2 Under the heading New field books, Go to General Information Input and click on the floppy disk icon.



3.3 Click on the drop down menu called Area and select the area of the first farmer whose General information you want to enter by clicking on it.



In our example it is a farmer from Huong Phung, therefore we select HP.

Now click on the button New File

3.4 Move the mouse to the first box called Name of field and fill in “Nr1”.

This function allows the user to discern between more than one field from the same farmer. If you have for example a split field where an alternative practice is tested against a normal practice this farmer should keep two field books. The practices can then be identified by the Name of field.

Make sure you do this for every surface area or distance you enter else calculations can not be executed

Also cells are only allowed to contain text OR numbers, never both at the same time!

The boxes Size in ha, Nr of coffee trees per ha, and Nr of coffee trees in field are mandatory to fill in

3.5 Proceed through the entire Field information window by filling in all the boxes. If there issues that are unknown or not available type “uk” and “na” respectively.

With this done, we can move on to enter the household information.

?

How to enter
General
information

The household
part

3.6 Click on the Household information tab after you have entered all the Field information



3.7 Household information input starts with the farmers name, country, region and village/community. Name of farmer, region and village are important because together with the Field name from the previous section they will form the name of file under which all the data of the farmer is saved. Region refers to the area that you entered in the filing system.

In our example this is Huong Phung, therefore we enter "HP" in the region box.

3.8 Proceed through the form and press the button Save As upon finishing

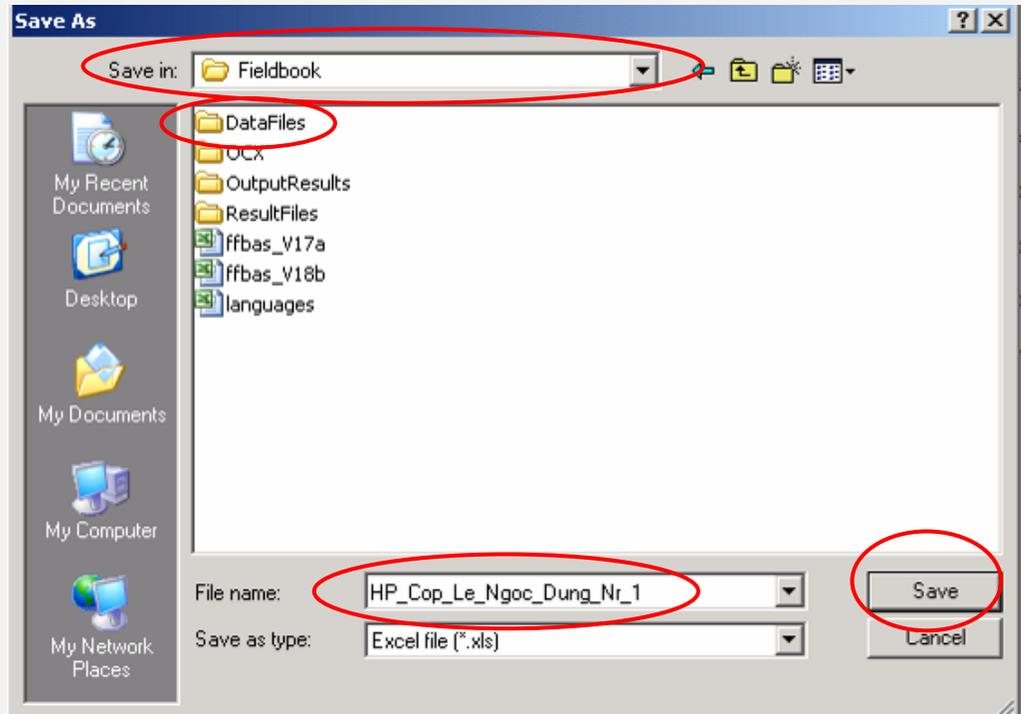


- 3.9 Use the Save in function to navigate to your Fieldbook file and double-click to open the folder DataFiles. Double click again to open the area folder that corresponds with the region of the farmer. This can be seen in the file name.

In our example the area folder is HP, because that is where our farmer is located.

Now click on the button Save

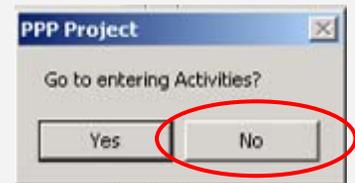
We can now see the file name that was automatically generated. This shows why entering the correct Farmer name (Le Ngoc Dung), Region (HP) and Field name (Nr_1) is important



- 3.10 Excel will now ask you if you want to go to Entering activities.

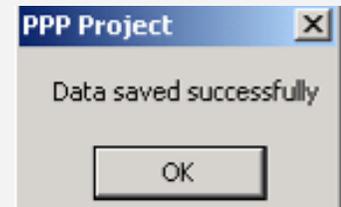
Pressing Yes will open the window for entering activities.

Pressing No will maintain the General information window



- 3.11 For now, we press no.

A window appears that states: Data saved successfully, press OK



3.12 The General information input window appears again with the information of the farmer you just entered.

In our example that is Le Ngoc Tu from Huong Phung

3.13 We can now proceed with a new farmer. Simply overwrite the data of the previous farmer for both Household and Field information

3.14 When finished with a new farmer press Save as and repeat step 3.8 to 3.13 until all the General information of your farmers has been entered.

All General information has now been entered. If household or field situations of farmers change we have to be able to edit existing General information files.



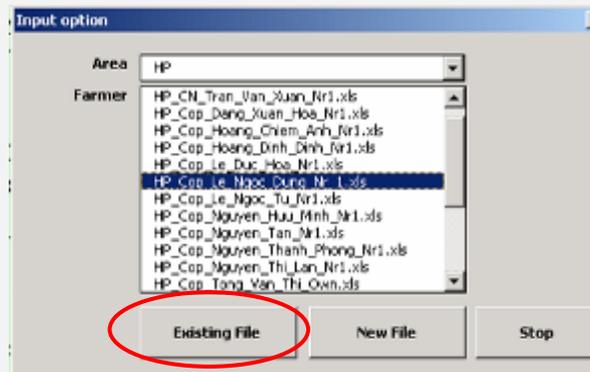
3.15 Click on the General information file symbol as in step 3.2

3.16 Select the area of the farmer that you want to edit as in step 3.3

3.17 Select the name of the farmer by clicking on it once.

In our example this is Le Ngoc Dung

and click on Existing file



3.18 Edit the changed data

In our example Le Ngoc Tu has a new child, so Number of children is changed to 4 and Number of family members is changed to 6.

and press Save (you can switch between Household and Field information by pressing the tabs)



The screenshot shows a data entry form with the following fields and values:

COMM. group	Kinh
Number of family members	6
Number of children	4
Who is active in coffee?	Man and wife

Below the form are two buttons: "Add Row" and "Delete Row". At the bottom of the form, there are four buttons: "New", "Save", "Save As", and "Close". The "Save" button is circled in red.

3.19 If you wish to proceed entering data, press Yes, else press No.

Data saved successfully, press OK

When all the General information has been entered and saved we can proceed to entering field activities in Data input. This is discussed in the next chapter.

Data input

This chapter describes the input of data on farming activities.

Data collection for the FFB is a very important step, where most mistakes are made. One should bear in mind that all data on input has to be presented in such a way that it can be used to calculate and analyze the effects of such inputs. Farmers sometimes have ways of describing inputs in ways that can not be used in the FFB.

A good example of this is amounts of pesticides used where the amount is given in number of bottles instead of liters or grams.

The staff collecting the Data sheets from the farmers should carefully check the sheets at the time of collection and discuss inconsistencies with the farmer.

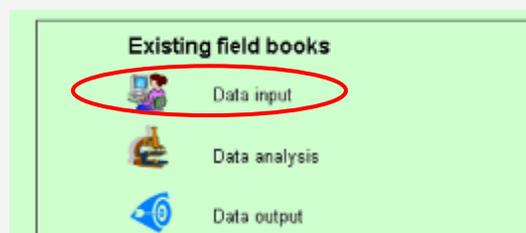
That being said, how can we use the FFB software to enter and save the Data on field activities?



- 4.1 Select the language in which you want to work by clicking on the appropriate button.

We will work in nEnglish

- 4.2 Go to Data input and click on the computer icon



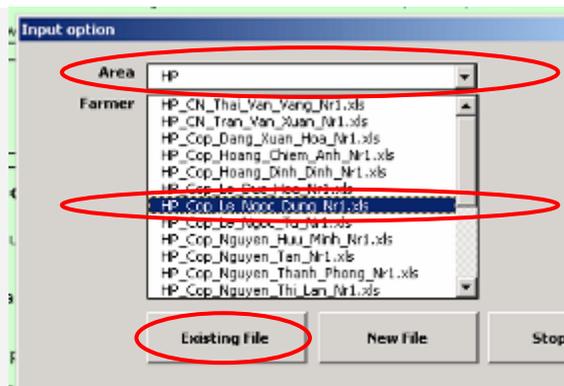
! If you want to exit any window before completing an operation press the Stop button at the bottom right! This will close files temporarily used by the FFB

? How to enter working days?

4.3 Select the area and the farmer that you want to work on and press Existing file like you did in step 3.17

In our example we select Le Ngoc Dung in Huong Phung

The Description of daily activities window now appears



Description of daily activities

Farmer's name	<input type="text" value="Le_Ngoc_Dung"/>	Material	<input type="text"/>
Day/Month/Year	<input type="text" value="10/03/2005"/>	Amount	<input type="text"/>
Day in week	<input type="text" value="th"/>	Unit	<input type="text"/>
Day since start	<input type="text" value="69"/>	Buying/selling price per unit	<input type="text"/> VND
Activity	<input type="text"/>	Equipment	<input type="text"/>
HH labour adult	<input type="text"/>	Equipment: day used	<input type="text"/>
HH labour child	<input type="text"/>	Equipment rental cost	<input type="text"/> VND
Hired labour adult	<input type="text"/>		
Cost hired labour adult	<input type="text"/> VND		
Hired labour child	<input type="text"/>		
Cost hired labour child	<input type="text"/> VND		

Buttons: New, Save, Save As, Close, Stop

4.4 Now check the Data collection sheet to see on which day the farmer worked. On page 1 we can see that Le Ngoc Dung worked on Monday the 14th of March, activity fertilizing. She used 50kg of Urea and 2 hired workers at a cost of 20,000VND per person per day.

! If two people worked unequal hours, eg 1 person worked 6 hours and the other 8 you can either type:

=2*7

Or:

=1*6+1*8

Or:

14

4.7 The cursor now moved to the HH labour adult box.

Type the number of persons and number of hours in the following way:

=2*8

That means 2 people worked both for 8 hours

Press enter and the cursor moves to the next box HH labour child

4.8 If you find child labour in the sheet enter it in the same way as you did the HH labour adult.

If no HH labour child was used just leave the box empty, press Enter and the cursor moves to the next box Hired labour adult

Repeat step 4.7 to enter the labour time for Hired labour. Pressing Enter will move the cursor to the Cost hired labour adult

Farmer's name: Le_Ngoc_Dung
 Day/Month/Year: 14/03/2005
 Day in week: mo
 Day since start: 73
 Activity: fertilizing
 HH labour adult: =2*8
 HH labour child:
 Hired labour adult:
 Cost hired labour adult: VND

Farmer's name: Le_Ngoc_Dung
 Day/Month/Year: 14/03/2005
 Day in week: mo
 Day since start: 73
 Activity: fertilizing
 HH labour adult: =2*8
 HH labour child:
 Hired labour adult: =2*8
 Cost hired labour adult: VND

! You can decide to type the total amount of labour cost directly in the Hired labour cost box, however to avoid calculation mistakes it is better to follow the way described here

4.9 According to the Data collection sheet filled in by Le Ngoc Dung, the cost for hired labour was 20,000VND/day/person.

Two persons were hired, therefore we have to type:

$$=2*20000$$

If the currency is not VND you can change in the small box with currencies.

Press Enter and the cursor moves to Hired labour child

? How to select and enter materials?

4.10 If no child labour was used, press Enter twice moving to Material.

In our example Le Ngoc Dung used Urea 46%. Type the first letter of the material and Urea 46% appears, press Enter.

Urea 46% is entered and the cursor moves to the Amount box.

! Material refers to things that are used up.

This means for example after irrigating you can't retrieve the water applied, it has been used up.

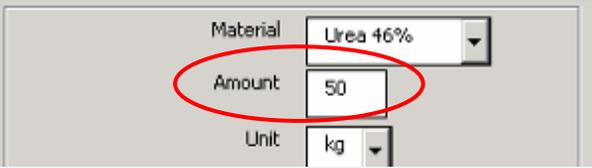
Or for fertilizer, after fertilizing you can't retrieve the fertilizer, it has been used up.

4.11 You can now enter the amount of material used. Take care only to enter numbers here, not units because Excel can not calculate with cells that contain numbers and letters.

In our example the amount of Urea 46% used is 50kg, so we type:

50

Press Enter and the cursor moves to the Unit box



The screenshot shows a form with three fields: 'Material' with a dropdown menu showing 'Urea 46%', 'Amount' with a text box containing '50', and 'Unit' with a dropdown menu showing 'kg'. A red circle is drawn around the 'Amount' field.

4.12 In the Unit box select the unit by typing its first letter and pressing Enter

In our example we select kg

Other units are: liter, m³, ton and number

The screenshot shows a form with three input fields. The first field is labeled 'Material' and contains the text 'Urea 46%'. The second field is labeled 'Amount' and contains the number '50'. The third field is labeled 'Unit' and contains the text 'kg'. A red circle is drawn around the 'Unit' field.

Units written by a farmer such as a bottle of pesticide should never be used, instead type the contents of the bottle in liter

Units like gram, mg and ml should all be converted in kg or l

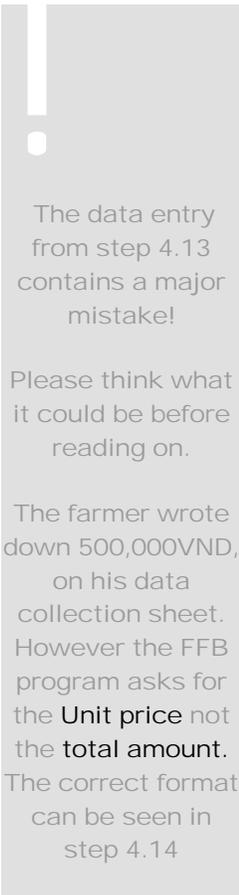
Compost, dung and coffee pulp are recorded in m³

Materials that can not be measured by volume or weight are quantified by number.

For example NUMBER of coffee trees planted



How to enter equipment and rental costs?



The data entry from step 4.13 contains a major mistake!

Please think what it could be before reading on.

The farmer wrote down 500,000VND, on his data collection sheet. However the FFB program asks for the **Unit price** not the **total amount**. The correct format can be seen in step 4.14

4.13 If the buying price for the material has not been mentioned before (e.g. under the activity Buying), then insert it now.

In our example Le Ngoc Dung paid 500,000VND for 100kg

Move to Equipment and enter equipment used.

In our example a car was used for 1 day at a cost of 100,000VND

4.14 Re-enter the data for the material cost. The amount stays the same, but the Buying/selling price has to be mentioned in cost per unit.

In our example that is 5000VND/kg

4.15 Now press Save and click OK when the message Data saved successfully appears.

The Data input screen for the farmer you've been working on remains on top. If the farmer did more than one activity you can continue to fill these in here. If not, press Stop and start with the next farmer, repeating step 4.3

to 4.15

In some cases the farmer uses more than one material or piece of equipment on one day. The data collection sheet depicted in step 4.4 shows that Le Ngoc Tu used two types of fertilizer on Tuesday. This we will now insert.



4.16 The screen from 4.14 is still in place. Change the data as needed.

4.17

4.18 We can now change the Day/Month/Year box.

In our example we have to change the day to the 15th of March

Remember, the red circle indicates the present day and the grey circle indicates the selected day.

4.19 Insert Activity, amounts and type of labour following step 4.6 to 4.9

4.20 In our example the material does not change, nor does the amount of 50kg

Buying cost for 50kg Urea is 5000VND/kg

A screenshot of a software input form. It contains the following fields: 'Material' with a dropdown menu showing 'Urea 46%', 'Amount' with a text box containing '50', 'Unit' with a dropdown menu showing 'kg', and 'Buying/selling price per unit' with a text box containing '5000' and a currency dropdown menu showing 'VND'.

4.21 Equipment rental cost only applied to Monday the 14th, not Tuesday, so boxes related to this should be emptied

4.22 Save and press OK

4.23 The data input screen is still visible. Enter any data on activities that the farmer did on this day, or proceed to a new day.

In our example Le Ngoc Dung applied 75kg of Kali on Tuesday as well. Now we don't change the date in the Day/Month/Year box but only the fertilizer amount and type and buying price

The boxes for labour and labour cost have to be emptied because the total amount of labour has already been entered in step 4.17.

Upon completion before pressing Save the input screen should look like this:

4.24

A screenshot of a software window titled 'Description of daily activities'. The window is divided into two main sections. The left section contains fields for: 'Farmer's name' (Le Ngoc Dung), 'Day/Month/Year' (15/03/2005), 'Day in week' (tu), 'Day since start' (74), 'Activity' (fertilizing), and several empty boxes for 'HH labour adult', 'HH labour child', 'Hired labour adult', 'Hired labour child', 'Cost hired labour adult', and 'Cost hired labour child'. The right section contains: 'Material' (Kali 58%), 'Amount' (75), 'Unit' (kg), 'Buying/selling price per unit' (3333.3 VND), 'Equipment' (empty), 'Equipment: day used' (empty), and 'Equipment rental cost' (empty VND). At the bottom of the window are buttons for 'New', 'Save', 'Save As', 'Close', and 'Stop'.

Normally, the FFB software will give a warning if you don't enter e.g. labour time for an activity. In this case this will not happen, because labour time has already been entered when we worked on the Urea application that was done on the same day

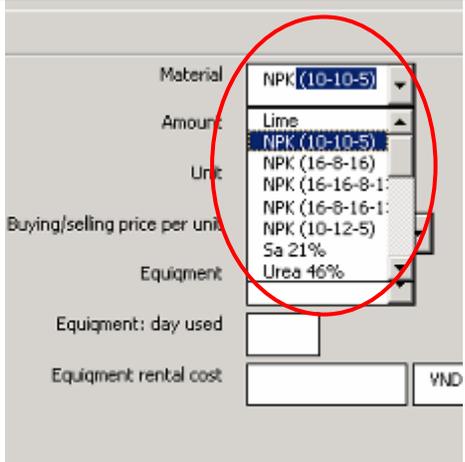
After cropping season of data collection it is time to analyze results. The FFB software has a dedicated module for this task. Operation of this module is dealt with in Volume 2.

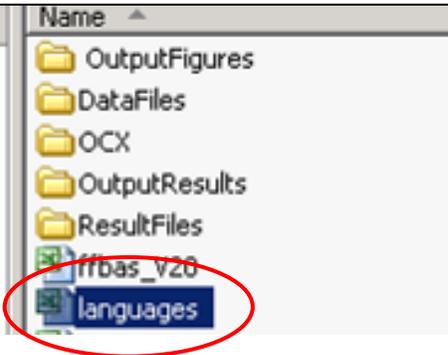
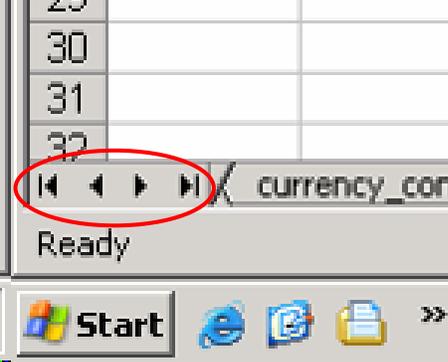
Language file editing

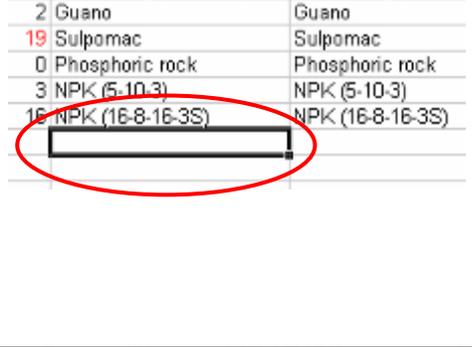
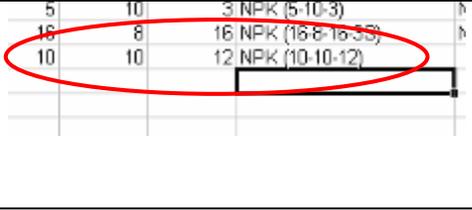
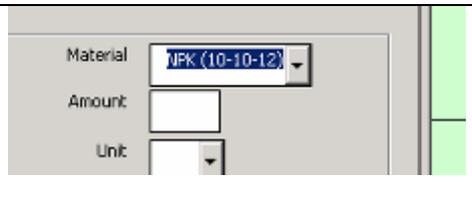
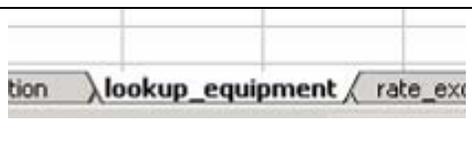
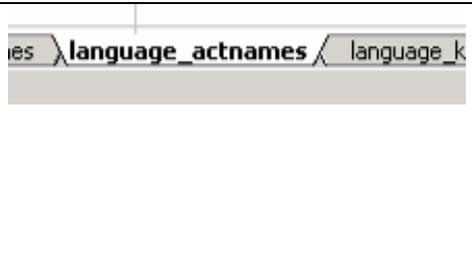
This section deals with language file editing. This is done when a data sheet filled in by a farmer contains an activity, material or piece of equipment that is not listed in the FFB database

The FFB software uses a so-called language file. In this file all materials, activities and pieces of equipment that a farmer is expected to use in his field are mentioned. Also, the language file contains “instructions” of what the software should calculate when it comes across a certain material during analysis of results. For example, the language file contains the instruction for the software to calculate the amount of N in NPK 10:5:10 as 10% of the amount applied.

Farming can be an innovative process in which farmers constantly seek improvements by applying new or different pesticides, fertilizers and by applying new activities. Adding such new issues allows the FFB software to include them in the calculation of FFB results.

5.1	<p>Suppose we have a farmer who applied NPK (10-10-12).</p> <p>The Material box gives several types of NPK, but not NPK (10-10-12).</p> <p>This means we have to insert NPK (10-10-12) manually in the language file.</p> <p>Close the data input window, without saving, by pressing Stop. And also close the FFB software.</p>	
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5.2	Using windows explorer navigate to your Fieldbook folder and open the languages file by double clicking it.																																																																																																																																																																																																																	
5.3	Using the triangular buttons on the bottom left of the screen, navigate the tabs until you reach the one called fert-material																																																																																																																																																																																																																	
5.4	Open this tab by clicking on it.																																																																																																																																																																																																																	
5.5	You now see all the fertilizer materials listed in the FFB database with the corresponding percentages of nutrients (N, P and K) they contain.																																																																																																																																																																																																																	
<table border="1"> <thead> <tr> <th></th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> <th>G</th> </tr> <tr> <th></th> <th>%N</th> <th>%P2O5</th> <th>%K2O</th> <th>English</th> <th>Tiếng việt</th> <th>Nederlands</th> <th>Espangol</th> </tr> </thead> <tbody> <tr><td>2</td><td>0</td><td>0</td><td>0</td><td>Lime</td><td>Vôi</td><td>Lime</td><td>Cal</td></tr> <tr><td>3</td><td>10</td><td>10</td><td>5</td><td>NPK (10-10-5)</td><td>NPK (10-10-5)</td><td>NPK (10-10-5)</td><td>NPK (10-10-5)</td></tr> <tr><td>4</td><td>16</td><td>8</td><td>16</td><td>NPK (16-8-16)</td><td>NPK (16-8-16)</td><td>NPK (16-8-16)</td><td>NPK (16-8-16)</td></tr> <tr><td>5</td><td>16</td><td>16</td><td>8</td><td>NPK (16-16-8-13S)</td><td>NPK (16-16-8-13S)</td><td>NPK (16-16-8-13S)</td><td>NPK (16-16-8-13S)</td></tr> <tr><td>6</td><td>16</td><td>8</td><td>16</td><td>NPK (16-8-16-13S)</td><td>NPK (16-8-16-13S)</td><td>NPK (16-8-16-13S)</td><td>NPK (16-8-16-13S)</td></tr> <tr><td>7</td><td>10</td><td>12</td><td>5</td><td>NPK (10-12-5)</td><td>NPK (10-12-5)</td><td>NPK (10-12-5)</td><td>NPK (10-12-5)</td></tr> <tr><td>8</td><td>21</td><td>0</td><td>0</td><td>Sa 21%</td><td>Sa 21%</td><td>Sa 21%</td><td>Sa 21%</td></tr> <tr><td>9</td><td>46</td><td>0</td><td>0</td><td>Urea 46%</td><td>Urea 46%</td><td>Urea 46%</td><td>Urea 46%</td></tr> <tr><td>10</td><td>100</td><td>0</td><td>0</td><td>Nitrogen</td><td>Nitrogen</td><td>Nitrogen</td><td>Nitrogen</td></tr> <tr><td>11</td><td>500</td><td>63</td><td>415</td><td>Compost</td><td>Phân hữu cơ</td><td>Compost</td><td>Compost</td></tr> <tr><td>12</td><td>0</td><td>16.5</td><td>0</td><td>PhosPhate 16,5%</td><td>PhosPhate 16,5%</td><td>PhosPhate 16,5%</td><td>PhosPhate 16,5%</td></tr> <tr><td>13</td><td>0</td><td>100</td><td>0</td><td>P2O5</td><td>P2O5</td><td>P2O5</td><td>P2O5</td></tr> <tr><td>14</td><td>0</td><td>0</td><td>58</td><td>Kali 58%</td><td>Kali 58%</td><td>Kali 58%</td><td>Kali 58%</td></tr> <tr><td>15</td><td>230.4</td><td>18</td><td>248.4</td><td>coffee pulp (turned)</td><td>Vỏ cà phê (turned)</td><td>coffee pulp (bewerkt)</td><td>pulpa de café (revuelta)</td></tr> <tr><td>16</td><td>166.8</td><td>25.8</td><td>164.4</td><td>coffee pulp</td><td>Vỏ cà phê</td><td>coffee pulp</td><td>pulpa de café</td></tr> <tr><td>17</td><td></td><td></td><td></td><td>Yogen 4</td><td>Yogen 4</td><td>Yogen 4</td><td>Yogen 4</td></tr> <tr><td>18</td><td>20</td><td>10</td><td>10</td><td>Thien Nong (20-10-10)</td><td>Thien Nong (20-10-10)</td><td>Thien Nong (20-10-10)</td><td>Thien Nong (20-10-10)</td></tr> <tr><td>19</td><td>10</td><td>10</td><td>2</td><td>Guano</td><td>Guano</td><td>Guano</td><td>Guano de Isla</td></tr> <tr><td>20</td><td>0</td><td>0</td><td>19</td><td>Sulpomac</td><td>Sulpomac</td><td>Sulpomac</td><td>Sulpomac</td></tr> <tr><td>21</td><td>0</td><td>30</td><td>0</td><td>Phosphoric rock</td><td>Phosphoric rock</td><td>Rotsfosfaat</td><td>Roca Fosforico</td></tr> <tr><td>22</td><td>5</td><td>10</td><td>3</td><td>NPK (5-10-3)</td><td>NPK (5-10-3)</td><td>NPK (5-10-3)</td><td>NPK (5-10-3)</td></tr> <tr><td>23</td><td>16</td><td>8</td><td>16</td><td>NPK (16-8-16-3S)</td><td>NPK (16-8-16-3S)</td><td>NPK (16-8-16-3S)</td><td>NPK (16-8-16-3S)</td></tr> <tr><td>24</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>25</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </tbody> </table>				A	B	C	D	E	F	G		%N	%P2O5	%K2O	English	Tiếng việt	Nederlands	Espangol	2	0	0	0	Lime	Vôi	Lime	Cal	3	10	10	5	NPK (10-10-5)	NPK (10-10-5)	NPK (10-10-5)	NPK (10-10-5)	4	16	8	16	NPK (16-8-16)	NPK (16-8-16)	NPK (16-8-16)	NPK (16-8-16)	5	16	16	8	NPK (16-16-8-13S)	NPK (16-16-8-13S)	NPK (16-16-8-13S)	NPK (16-16-8-13S)	6	16	8	16	NPK (16-8-16-13S)	NPK (16-8-16-13S)	NPK (16-8-16-13S)	NPK (16-8-16-13S)	7	10	12	5	NPK (10-12-5)	NPK (10-12-5)	NPK (10-12-5)	NPK (10-12-5)	8	21	0	0	Sa 21%	Sa 21%	Sa 21%	Sa 21%	9	46	0	0	Urea 46%	Urea 46%	Urea 46%	Urea 46%	10	100	0	0	Nitrogen	Nitrogen	Nitrogen	Nitrogen	11	500	63	415	Compost	Phân hữu cơ	Compost	Compost	12	0	16.5	0	PhosPhate 16,5%	PhosPhate 16,5%	PhosPhate 16,5%	PhosPhate 16,5%	13	0	100	0	P2O5	P2O5	P2O5	P2O5	14	0	0	58	Kali 58%	Kali 58%	Kali 58%	Kali 58%	15	230.4	18	248.4	coffee pulp (turned)	Vỏ cà phê (turned)	coffee pulp (bewerkt)	pulpa de café (revuelta)	16	166.8	25.8	164.4	coffee pulp	Vỏ cà phê	coffee pulp	pulpa de café	17				Yogen 4	Yogen 4	Yogen 4	Yogen 4	18	20	10	10	Thien Nong (20-10-10)	Thien Nong (20-10-10)	Thien Nong (20-10-10)	Thien Nong (20-10-10)	19	10	10	2	Guano	Guano	Guano	Guano de Isla	20	0	0	19	Sulpomac	Sulpomac	Sulpomac	Sulpomac	21	0	30	0	Phosphoric rock	Phosphoric rock	Rotsfosfaat	Roca Fosforico	22	5	10	3	NPK (5-10-3)	NPK (5-10-3)	NPK (5-10-3)	NPK (5-10-3)	23	16	8	16	NPK (16-8-16-3S)	NPK (16-8-16-3S)	NPK (16-8-16-3S)	NPK (16-8-16-3S)	24								25							
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<p>5.6</p>	<p>Now move the input box to the first empty cell in the column of material names.</p> <p>Repeat this for the other 3 languages (if you do not know the name of the material just copy the name you typed and add the suffix _VN, _EN, _ES and _NE</p>	
<p>5.7</p>	<p>And type in the name of the material you want to add.</p> <p>Then add the contents of the nutrients N, P and K in the material.</p>	
<p>5.8</p>	<p>Save and close the language file.</p>	
<p>5.9</p>	<p>When you now return to the FFB input, you will see you can add the material NPK (10-10-12).</p>	
<p>5.10</p>	<p>Equipment can be added in a similar fashion under the “lookup_equipments” tab</p>	
<p>5.11</p>	<p>Activities are slightly more complicated as they might use materials which have to be linked to the activity you are entering.</p> <p>First go to the tab “language_actnames”</p>	
<p>5.12</p>	<p>Enter the name of the activity you want to add in the first empty cell in column H.</p> <p>For example we add the activity Harvesting fruit trees</p>	
<p>5.13</p>	<p>The FFB software should now be instructed that with this activity a material can be produced which has a monetary value (i.e. fruit is the material and it can be</p>	

sold in the market).

For this we have to enter the numbers -1 column F; 0 in column E, 1 in column D; 0 in column B and C. Also add the nr of the activity in column A and G, in this case 26.

	A	B	C	D	E	F	G	H	
1		isfert	isspra	isharv	isbuyi	isusemat	listactnum	activities	
2	nr	fertilizing	spraying	harvesting	buying	uses mate	listactnum	english	Tiê
3	0	0	0	0	0	1	0	total	Tôn
4	1	0	0	0	0	0	1	pruning	Tao
5	2	0	0	0	0	-1	2	weeding	Lân
6	3	0	1	0	0	1	3	spraying	Phu
7	4	1	0	0	0	1	4	fertilizing	Bờr
8	5	0	0	1	0	1	5	harvesting	Thu
9	6	0	0	0	0	0	6	general field management	Quá
10	7	0	0	0	1	-1	7	buying	Mu:
11	8	0	0	0	0	-1	8	transport	Vậ
12	9	0	0	0	0	0	9	burying leaves	Lấp
13	10	0	0	0	0	-1	10	others	Khá
14	11	0	0	0	0	1	11	(re)planting	Trồ
15	12	0	0	0	0	0	12	stumping	Cu:
16	13	0	0	0	0	0	13	cutting trees	Chậ
17	14	0	0	0	0	0	14	clearing around field	Phá
18	15	0	0	0	0	0	15	not working	Khế
19	16	0	0	0	0	0	16	pruning shade trees	Tao
20	17	0	0	0	0	0	17	cutting wind break	Chậ
21	18	0	0	0	0	0	18	construction of drainage	Câr
22	19	0	0	0	0	0	19	removal of suckers	Loa
23	20	0	0	0	0	-1	20	phytosanitary control	Kiế
24	21	0	0	0	0	-1	21	maintenance of shade trees	Duy
25	22	0	0	0	0	-1	22	monitoring	Kiế
26	23	0	0	0	0	-1	23	erosion control	Kiế
27	24	0	0	0	0	-1	24	land preparation	chu
28	25	0	0	0	0	-1	25	grafting	ghê
29	26	0	0	1	0	-1	26	Harvesting fruittrees	
30									
31									

5.14 Save and close the language file, the FFB software can now recognize the activity harvesting fruit trees and knows that it can produce a material.