GOVERNMENT OF MALAWI

NATIONAL STATISTICS OFFICE

THIRD INTEGRATED HOUSEHOLD SURVEY, 2010/11

ENUMERATOR MANUAL

FOR THE

AGRICULTURE QUESTIONNAIRE

AND

FISHERY QUESTIONNAIRE

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1. INTRODUCTION TO THE IHS3 AGRICULTURE QUESTIONNAIRES

As part of the Third Integrated Household Survey (**IHS3**), all sample households that are identified as being involved in crop production and/or livestock management will be given an Agriculture Questionnaire.

The Agriculture Questionnaire is administered after the Household Questionnaire to households that are identified as agricultural in the last module, Module X, of the Household Questionnaire. Module X is a filter to establish whether the enumerator should administer the agricultural or fishery questionnaire.

You will need to refer to the Household Roster (the list of all household members and their ID codes) throughout the Agriculture Questionnaire.

1A. GENERAL GUIDELINES

The general guidelines for completing the Agricultural Questionnaire are the same as those pertaining to the Household Questionnaire. They are presented below.

- Record monetary amounts in Kwacha with no decimal point. Do **NOT** include tambala. For any tambala amounts, round to the nearest Kwacha. Do **NOT** write a K before the value.

- For any amounts over MK 1,000, include a comma.

- We do **NOT** expect to see considerable number of "Don't Know (DK)" recorded across the questionnaire. It is your responsibility to probe and help the respondent to determine the answer, and only accept DK as a last resort. You **MUST** record "DK" in the questionnaire for "Don't Know".

- If a question is not asked, the cell **MUST** be blank. A blank cell indicates that the question was **NOT** asked. Otherwise, every asked question **MUST** have a response.

- You **MUST NEVER** enter "Not Applicable (N/A)" as a response. The skip patterns in the questionnaire guarantee that a question asked is always applicable.

- Whenever up to 2 answers could be solicited, the enumerator **MUST** probe the respondent for a second response. At the same time the enumerator should not force the respondent to have a second response if only one is applicable.

1B. DEFINITION AND EXAMPLES OF PLOTS

A **PLOT** is a continuous piece of land on which a unique crop or a mixture of crops is grown, under a uniform, consistent crop management system. It **MUST** be a continuous piece of land and **MUST NOT** be split by a path of more than one metre in width. Plot boundaries are defined according to the *crops grown* and the *operator*.
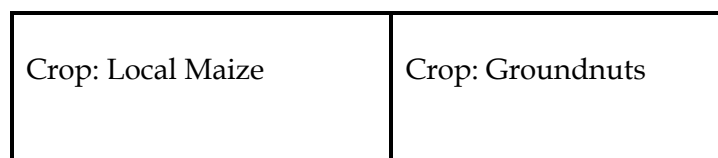
A **PARCEL**, on the other hand, is simply a piece of land that is continuous. A **PARCEL** can have **MULTIPLE** plots. Both *plots* and *parcels* can be called a garden or *Munda.*

While listing the plots on the plot roster, you **MUST** first establish the existence of parcels, and from there, ask the appropriate questions pertaining to (i) continuity, (ii) the crops grown, and (iii) the management system, i.e. the operator, to establish the existence of the "plots" in each parcel.
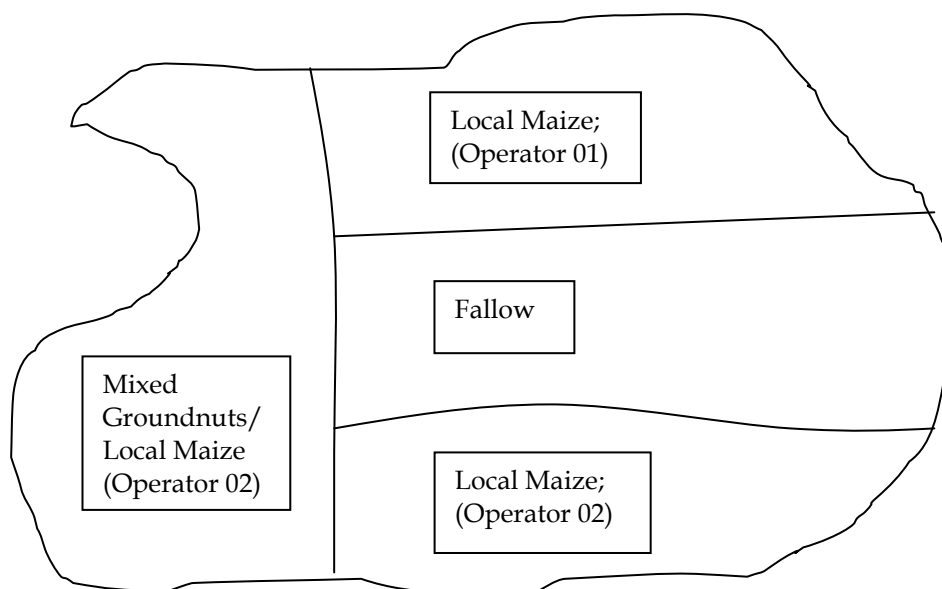
The correct identification of the plots in the plot roster, where each plot is listed on a separate row, **REQUIRES** you to be sure that the farmer is listing plots, and NOT a parcel with multiple plots.

Below are some examples that are useful for establishing the existence of plots vs. parcels.

Example # 1: This parcel is made of two plots:

Crop: Local Maize	Crop: Groundnuts

Example # 2: One garden/parcel of land that is divided into four plots

More examples on which a framework for plot identification can be based:

Example # 3: The 1st garden has an area of 3.0 acres, and is planted only with local maize. The garden is divided into two equal portions by a river that is 2 meters in width. Both sides of the garden are managed by Abraham.

Explanation: The 1st garden is managed by a single operator – hence, the management system is uniform and consistent throughout this piece of land. The garden is also pure-stand, planted only with local maize. Hence, the same cropping arrangement is seen throughout. So far, these features would qualify the garden as a single plot. However, the garden is divided by a river that is 2 meters wide, which implies that it is not continuous, and that it is made up of 2 plots.

Example # 4: The 2nd garden has an area of 1.0 acre, and is divided by a path 0.5 meters in width. It is mixed-stand, intercropped with hybrid maize and beans in its entirety, and managed only by Elizabeth.

Explanation: The 2nd garden is managed by a single operator – hence, the management system is uniform and consistent throughout this piece of land. The garden is mixed stand, with hybrid maize intercropped with beans. The same cropping arrangement is seen throughout the garden which can also be considered continuous, as it is divided by a path that is only 0.5 meters in width, i.e. less than 1 meter. Hence, there is only 1 plot in this case.

Example # 5: The 3rd garden has an area of 1,000 square meters, and is an undivided piece of land, managed by Abraham. Approximately ½ of the garden is mixed-stand, intercropped with hybrid maize and beans with pumpkin planted along the edges. The remaining portion of the garden is cultivated with oriental/burley tobacco.

Explanation: The 3rd garden is managed by a single operator – hence, the management system is uniform and consistent throughout this piece of land. It is also continuous. So far, these features would qualify the garden as a single plot. However, the cropping arrangement is not consistent throughout; ½ is cropped with hybrid maize, beans and pumpkins, whereas the other half is cultivated with oriental/burley tobacco. Since there are two unique mixture of crops planted in different halves of the garden, we can conclude that it is made up of 2 plots.

Scenario # 4: The 4th garden has an area of 1 hectare, and is pure-stand, planted only with groundnuts. Approximately ¼ of the garden is managed by Moses, while the rest is managed by Abraham.

Explanation: The 4th garden can be assumed to be continuous, and the same cropping arrangement (pure-stand groundnuts) is witnessed throughout. So far, these features would qualify the garden as a single plot. However, there are two different operators on two different portions of the garden. Hence, the management system is not uniform and consistent throughout, implying that the garden is made up of 2 plots.

Farmer Estimation of Plot Area

We ask the farmer to estimate the area of all plots. The respondent can choose the appropriate area unit to report the area of the plot. You **MUST** encourage them to estimate the area in acres, hectares, or square meters, if possible.

- Plot area can be recorded with two decimal places. If the farmer reports 1 acre, enter:

AREA		UNIT

__ __ __ 1 . 0 0	1

- Many smallholders are likely to report areas in acres and/or fractions of acres, and probably not more detailed than ¾, ½ or ¼ of an acre. You **MUST** convert the fractions to decimals as follows: ¾=0.75, ½= 0.50, ¼=0.25, and fill in the areas with two decimals. You <u>MUST</u> make sure that the decimals are correctly entered in order to avoid data entry errors.

Note the following conversions:

1 acre ≅ 4000 m² ≅ 0.4 hectares
1 hectare =10,000 m² ≅ 2.5 acres

- If any local area measurement unit is used, it **MUST** be converted into acres and recorded in this column. The following guidelines can be used:

  - An acre is a measure on the ground of approximately 70 yd x 70 yd or half a standard football field;
  - By casually walking round a square of 50 steps by 50 steps, one covers an area of approximately ¼ or 0.25 acres;
  - An area measuring 22 yd x 22 yd covers 0.1 acres; and
  - An area measuring 16 yd x 16 yd covers 0.05 acres.

The farmer-reported estimates of plot areas will be complemented by GPS-based measurement of plot areas. This is covered in detail now.

1C. NETWORK ROSTER INSTRUCTIONS

The "network roster" is a list of all the individuals (non-household members), companies or organizations that the respondent has done business with over a given period of time.

The network roster is built up gradually by the enumerator throughout the interview, as the respondents answer questions on the sources/points of contact associated with their business dealings.

You <u>MUST NOT</u> attempt to complete the network roster all at once at the end of the interview, but rather do it gradually during the course of the interview.

Throughout the entire Agriculture Questionnaire, for each question that asks of "who" outside the household, you **MUST** record their network roster ID code. For example, "From whom did you obtain the input coupons?" , "Who was the first source of the input that you purchased without coupons/vouchers or purchased on credit...", "... from whom did you receive most of the input for free?" , "From whom did your household purchased most [LIVESTOCK]..."

When the respondent lists a person for the first time as someone with whom they have done farm-related business, you **MUST** add their name to the network roster, and assign them a *Network Roster ID Code* (N1, N2, N3, etc...). You **MUST** then enter for appropriate question in the Agriculture Questionnaire the *network roster ID code* pertaining to the individual of interest.

The next time the respondent mentions the **SAME** person or institution, you **MUST** use the unique the *network roster ID code* (N1, N2, N3, etc...) that has already been assigned to that entity.

Each **UNIQUE** person/institution **MUST** be listed on the network roster **SEPARATELY**.

Do **NOT** list the same entity more than once in the roster, *even if* the same person/institution's *network roster ID code* may be used a number of times as answers to different questions across the Agriculture Questionnaire.

It is acceptable for the respondent not to be able to provide a name if he/she has difficulty remembering it. In this case, the enumerator has to understand that even if a name cannot be recorded in the network roster, the network individual/entity exists and that a general description should be noted to identify the network roster entry. Each time same individual/entity is associated with a transaction/phenomenon, his/her/its *unique network roster ID code* would be recorded.

For "Sales/Storage" Modules, if the households sell crops on a retail basis in different markets/ locations, the names that are entered into the network roster could be differentiated with respect to the market's location, for instance Zomba City Market, Namwera Turn-Off, etc...

Refer to **ANNEX 1** for examples of possible network roster entries, and how they could be classified in the network roster.

The network roster is on the second to last page of the agriculture questionnaire, just before the crop codes. Here are guidelines on how each network roster column **MUST** be filled.

Network Roster **Q1**. Enter the name of the individual, company or organization you are referring to. Do not write "relative", "neighbour" or any of the other codes from the box at the right. The answer to this question **MUST** be more specific. For instance, perhaps the respondent rents land from "James Banda" or sold their crops at the "Muzuzu Market Place" or received inputs from the "Karonga Sisal Growers Cooperative."

Network Roster **Q2**. Select one of the codes from the box to the right, labelled as "Codes for Question 2." These codes classify the entities in the network roster into different categories. Note that this question is in caps (CODE). You do not need to read it to the respondent, **IF** it is clear from their answer that this is, say, a neighbour or relative.

Network Roster **Q3**. Select one of the codes from the box to the right, labelled as "Codes for Question 3." These codes simply state where the individual or organization is located. The location should be assessed with respect to the date that the transaction took place.

If a farmer in a village of the Kasungu district sold maize to a certain buyer whose permanent office is in the Kasungu town, but who came with his truck to the village to collect the maize, then enter the location as 1, "WITHIN THE VILLAGE" for this network roster entry that would identify the buyer.

1D. AGRICULTURE QUESTIONNAIRE DIFFERENCES BETWEEN CROSS-SECTIONAL HOUSEHOLDS AND PANEL HOUSEHOLDS

The exact questions that a household fills out in the Agriculture Questionnaire depends on if the household is in a "Cross-Sectional Enumeration Area (EA)", or a "Panel Enumeration Area (EA)".

- All **16** randomly selected IHS3 households in a Cross-Sectional EA will be visited **ONLY ONCE** (although the visit may be broken into segments over several days so that your respondents do not become tired).

  During the visit to a cross-sectional household, the **Household Questionnaire** *(green cover)* will be administered, and (if the household is involved with agriculture or owns agricultural land) an **Agriculture Questionnaire** *(green cover)* will be given. For households involved in fishing and/or fish trading (as identified in Module X of the Household Questionnaire), a **Fishery Questionnaire** *(green cover)* will also be given.

- All **16** randomly selected IHS3 households in a Panel Enumeration Area (PEA) will be visited **TWICE**: the first visit will be in the first quarter (Months 1-3) of the twelve-month survey period, and the second visit will be 6 months after, in the third quarter (Months 7-9) of the survey period. The Panel EAs are further broken into **Groups A and B**.

  o The **Panel Group A EAs** will be administered the **Full Household Questionnaire** *(blue cover)* in the first visit, which will be followed by, if applicable, the **Agriculture Questionnaire**, and the **Fishery Questionnaire** *(blue cover)*.

    The same **Agriculture Questionnaire** *(blue cover)* is to be administered in the second visit and will be completed at this time.

  o The **Panel Group B EAs** will be administered the **Light Household Questionnaire** (ONLY Modules A, B and X; *yellow cover*) in the first visit, which will be followed by, if applicable, the **Agriculture Questionnaire**.

    This would leave the rest of the **Household Questionnaire**, and if applicable, the rest of the **Agriculture Questionnaire**, and the **Fishery Questionnaire** *(yellow cover)* to be administered in the second visit.

CROSS-SECTIONAL HOUSEHOLDS

The IHS3 **CROSS-SECTIONAL** households will be visited only **ONCE**. During the visit to these households you will administer **ALL** of the relevant IHS3 questionnaires. (You may have to break this visit into several parts so that the respondents do not become tired.)

The questions completed by the Cross-Sectional Households collect information on the **last completed rainy** and **last completed dry (dimba)** seasons as well as production and

disposition of tree/permanent crops, and livestock management/ownership in the last 12 months, and access to extension services.

PANEL HOUSEHOLDS

The Agriculture Questionnaire that will be administered to the **IHS3-PANEL** households will be administered in **TWO VISITS**, with roughly the same number of questions in each.

Visit 1 to the IHS3-Panel households will be in the *first quarter* of the field work, i.e. the *post-planting period* with respect to the **2009/2010 rainy season**. In this visit, the panel households will report information pertaining to land area, labour and non-labour input use, cultivation, and access to subsidized inputs in the 2009/2010 rainy season. In addition, they will be administered a short, "crop-level" module that collects data on the 2008/2009 rainy season pertaining to planted area, quantification and disposition of production (including quantity & value of sales, quantity lost in storage/used for other purposes/stolen, and amount purchased for maize varieties only, since the end of the harvest period).[1] Finally, they will be administered modules on livestock ownership/management and production of livestock products.

Visit 2 to the IHS3-panel households will be in the *third quarter* of the field work, i.e. the *post-harvest period* with respect to the **2009/2010 rainy season**. The panel households will report information on the production and post-harvest related matters (sales and storage) pertaining to the 2009/2010 rainy season, complete information on the **2010 dry (*dimba*) season**, production and disposition of tree/permanent crops in the last 12 months, as well as access to extension services.

The **two-visit** structure aims to ensure that the information sought for is recent and pertinent to agriculture calendar. This will reduce the recall period and improve the quality of the information collected.

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[1] As the three-four month window starting in March 2010 is the optimal time frame for accurately gauging the extent of storage losses and hence getting the most complete picture for the previous rainy season, administering a short-module on the 2008/09 rainy season production and storage losses to the panel households increases the size of the sample that could be used to obtain accurate production and storage loss estimates for that season. This would also allow us to track the trends (chronic vs. transient nature) in production losses among the panel households, as a similar module pertaining to the 2011/12 rainy season could be administered when these households are revisited in 2013. Collecting full data on the 2008/2009 rainy season among the panel households has been avoided as this would have constituted a significant increase in the work load for the panel households (in terms of the length of the questionnaire causing respondent and enumerator fatigue).

2. MODULES IN THE AGRICULTURE QUESTIONNAIRE

Below is the overview of the Agriculture Questionnaire.

Agriculture Questionnaire	Modules
Household Identification & Survey Staff Details	A
Overview of 2008/2009 Rainy Season	B
Rainy Season:	
Plot Roster & Plot Details	C & D
Input Coupon Use	E
Other Farm Inputs	F
Crops Cultivated & Production	G
Seed Use	H
Sales / Storage	I
Dry (Dimba) Season:	
Plot Roster & Plot Details	J & K
Other Farm Inputs	L
Crops Cultivated & Production	M
Seed Use	N
Sales/Storage	O
Tree /Permanent Crops (Last 12 Months):	
Production	P
Sales / Storage	Q
Livestock & Livestock Products	R & S
Access to Extension Services	T
Network Roster	Placed at the end; Completed throughout the interview.
Crop/Seed codes	On the last page of the questionnaire

AG-MODULE A: IDENTIFICATION

Refer to the instructions in the Enumerator Manual for the Household Questionnaire for filling out the identification page.

2A. RAINY SEASON MODULES

As noted earlier, the Reference Rainy Season is the **last completed rainy season** for Cross-Sectional Households and the **2009/2010 rainy season** for Panel Households.

AG-MODULE B: 2008/2009 RAINY SEASON

B A-0. This is a filter question - if the household is not a Panel Household then you skip **this** module.

Module B gathers information on the production and disposition of crops pertaining to the 2008/2009 rainy season for Panel Households. Each row is a separate/unique crop grown by the household. The module **MUST** be administered one row/crop at a time, **NOT** page by page.

You **MUST** first list all crops that the household grew in 2008/2009. Maize, tobacco, rice and groundnuts **MUST** be reported according to their variety. Refer to the crop codes on the last page of the questionnaire for a list of crop codes and the varieties of maize, tobacco, rice and groundnuts.

B01. Record the farmer's estimate of the area planted with each crop. Many smallholders are likely to give areas as acres and as fractions of acres, probably not more detailed than ¾, ½ , and ¼ of an acre. You **MUST** convert the fractions to decimals as follows: ¾=0.75, ½= 0.50 and ¼ =0.25, and fill in the areas with two decimals. You <u>MUST</u> make sure that the decimals are correctly registered in order to avoid data entry errors at a later stage. Note the following conversions:

> **1 acre ≅ 4000 m² ≅ 0.4 hectares**
> **1 hectare =10,000 m² ≅ 2.5 acres**

If any local area measurement unit is used, it should be converted into acres and recorded in this column. The following guidelines can be used:

- An acre is a measure on the ground of approximately 70 yd x 70 yd or half a standard football field;
- By casually walking round a square of 50 steps by 50 steps, one covers an area of approximately ¼ or 0.25 acres;
- An area measuring 22 yd x 22 yd covers 0.1 acres; and
- An area measuring 16 yd x 16 yd covers 0.05 acres.

Quantities are required in questions B07, B11–16, B20, B24, B25, B27–29). You <u>MUST</u> assist the respondent as much as possible to record quantities in terms of KGs.

- **Tobacco Varieties:** Please try <u>not</u> to use BALE as a unit of measurement for tobacco. The tobacco farmers will almost always be able to report their production and disposition in KGs.

B07. Ask how much of the crop was sold. For crops that can be sold shelled or unshelled, you **MUST** indicate if the amount refers to shelled or unshelled.

B11-B16. Ask for other uses of the harvested crop: given out as gifts or to reimburse land or labour, used for animal feed, used for crop by-products, saved for seed, or lost.

B11. Note that reimbursements for inputs borrowed or acquired on credit **MUST** be **excluded**, because we ask about that in the next question, B12.

B13. Note that the quantity of crop used as animal feed due to pest damage **MUST** be **excluded**, because we include that quantity in B16.

B14. Note that the quantity of crop used as input for own-produced by-products consumed at home **MUST** be **excluded**. This question is meant to capture only the quantity of crop that was utilized as an input for crop by-products that the household sold on the market.

B16. Note that the quantity of crop the farmer used as animal feed because it was damaged by pests **MUST** be **included** here.

AG-MODULE C: PLOT ROSTER – RAINY SEASON

C01. This is a filter question- if the household did not own or cultivate any land in the reference rainy season (determined in **C01**) then you skip **ALL** modules pertaining to the rainy season, until Module J (Page 45), which asks about the plots owned and/or cultivated during the reference dry (dimba) season.

TABLE A: You **MUST** list all the plots owned or operated by the household.

Note that there are **two elements** to this question: **cultivation** and **ownership** of agricultural plots. You **MUST** ask the respondent to list ALL plots owned by the household (regardless of whether they cultivated the plots) and also ask them to list plots that the household does not own but that were cultivated by the household, during the reference rainy season.

The plots owned by the household may be cultivated, left fallow, covered with a forest, or wholly/partly used for grazing livestock, or rented to someone else. Hence, if a survey household does not farm but does control agricultural land, Modules D and E **MUST** be administered.

Each row of the module on the questionnaire represents **one plot**. This module is to be administered to the household head, who may be assisted by others who are involved with farming in the survey household.

C02 - C03. According to the plot definition described in Section 1B of this manual, you **MUST** obtain a list of all plots owned or cultivated by household members before moving on to the questions about each plot.

The plots listed in **Table A** (page 7) can include those that are:

- Owned but rented out or given out for free,

- Rented-in/borrowed for free, and cultivated with various annual/temporary and/or tree/permanent crops,

- Cultivated pure-stand with annual/temporary crops, such as maize, rice, and groundnuts,

- Cultivated mixed-stand with two or more annual/temporary crops, such as maize intercropped with beans or groundnuts,

- Cultivated mixed stand with annual/temporary crops along with tree/permanent crops, such as maize intercropped with cassava and scattered mango or banana trees throughout the plot,

- Cultivated pure-stand with tree/permanent crops, such as cassava, and

- Cultivated as orchards or plantations of tree/permanent crops, such as tea, coffee, and tangerines.

Names of plots **MUST** be distinct *AND* include location. Try to solicit plot names that are used by the household. For instance "pigeon peas by path to primary school." If the household grows the same crop on two plots, you must have two different names. For example, "Mussa's maize plot nearby the river" and "James' maize plot off of Namwera turn-off."

C04 and C05. GPS Measurement of plot area and coordinates for the starting point.

During the IHS3, you will measure plot areas using a GPS device. Detailed directions on GPS use can be found in the **ANNEX 2**.

- The area measurement **MUST** be done **AFTER** the interview is completed.
- You **MUST** walk around the parcel with the holder/respondent to determine the parcel boundaries and the plots in the parcel.

- The area of a given plot should be revealed to the farmer, **only if** he/she is interested in knowing.

- For a plot that lies more than **2 hours of walking distance** from the dwelling, the enumerator **MUST** consult their supervisor concerning the decision about measuring the plot.

- For plots that cannot be measured due to distance, enter "TOO FAR" on the questionnaire. In these cases, we will only rely on the farmer's self-reported area estimate.

- For teams assigned to urban areas where households can be found with plots in distant locations: You are expected to capture these distant plots as much as possible by possibly grouping together measurements of areas of several plots that lie close to one another.

PLOT SKETCH MAP

After you complete the first page of Module C, draw a sketch map with the farmer's input on the location of all parcels and plots. The dwelling (the household's house) is at the centre of this map. Be sure:

- You do a sketch map for all households that have any plots listed in Table A,

- Label each plot using names recorded in C02,

- Include landmarks, such roads, churches, rivers, etc., and

- Note the approximate walking distance in minutes/hours from the dwelling.

AG-MODULE D: PLOT DETAILS RAINY SEASON

You **MUST** ask the questions in this module for **EACH PLOT** identified in the previous module, **one plot at a time** (i.e. not page by page). Before asking any questions on any of the household plots, you **MUST** first copy the ID codes of the plots identified in Module C.

If a household has more than one plot, you **MUST** start with the first plot and ask all possible questions. When finished, you **MUST** move to the next plot, and again go through the entire module.

D01. Identify who in the household made the decisions about the cropping activities on each plot. If possible, questions concerning an individual plot should be asked of this individual.

- Do **NOT** assume this person will be the household head.

D03. This question asks how the plot was acquired.

- Most smallholder farmers will have acquired their plots through customary procedures from local leaders or from the family of their spouse.

- In some areas, particularly around the urban centres, land may be purchased, either officially (with title) or unofficially.

- Customary land is granted by local leaders.

- Land can also be acquired by inheritance.

- Leasehold is a common method for estate owners to acquire their estate land. Leasehold means the land has been surveyed, has sketch map, has a title deed. The land is leased (rented) from the government on a long-term basis, i.e. for a 33-year term, a 99-year term, or similar long terms.

Note that this question is not interested in whether land has title deeds or not or whether money change hands or not. The real interest is how the present owners or controllers, **NOT** their parents or grandparents, got the access to that piece of land.

D04. The owner of the plot may be different than the person reported in D01 as making decisions on the plot.

- Do **NOT** assume this person will be the household head.

D05–D06. Emphasize to the farmer that these are hypothetical questions. They may be difficult for the respondent to answer. If the respondent is unable to answer, try also soliciting information on how much he/she would pay to sell/rent a plot identical to the plot of interest.

D06. This is not a straightforward question and it is not simple to arrive at an answer. Much land under cultivation in Malawi is under customary land. As such, there is no land market (the land cannot be sold). Probe and ask the respondent to compare with other known land transactions/sales in the area if any. You need to be tactful in tackling this type of question.

- If you are unable to get a response, enter "DK" for "don't know". This should be a last resort.

D08- D11 These questions ask about plots that the household has rented, by paying either cash or kind to someone else, during the reference rainy season.

D16- D19 These questions ask about plots that the household owns but rented to someone else during the reference rainy season.

D20. You must list the crop codes for the crops grown on this plot. Refer to the crop codes on the last page of the questionnaire.

- The first crop listed should be the major crop in the plot, whether defined in terms of yield or in terms of significance for the household. If the plot is intercropped, this crop will usually be the staple food crop, such as maize. BUT we do not want to list cassava, tea, coffee or fruits in this question, as we will get information in on these crops in a module in Module P (Tree/Permanent Crops).

- Note that you **MUST** distinguish between local, composite, hybrid and varieties of maize, or recycled hybrid as well as Mchewere and Mawere.

- List **ALL** crops grown on the plot, including minor crops, with the exception of tree/permanent crops, such as cassava, tea, coffee or any fruits.

D21. Soil texture concerns the "heaviness" of the soil in the plot. Soil texture is useful for understanding potentially how productive the plot might be in producing crops.

- Sandy soil is "light", whereas clay soil is "heavy".

- Usually soil in dambos will be relatively heavy with considerable amounts of clay in it, whereas soil between dambos will be relatively light with much sand.

- Clay soils are good for making bricks. Sandy soils are too loose to make good bricks.

D25. Vetiver grass and trees may be established as permanent vegetative barriers in the bed of the gully to slow down runoff. They also trap sediment and organic matter, which enhances regeneration of vegetation and terrace formation within the gully.

D26. The respondent should estimate the slope of the plot.

- If water does not readily drain from the plot, it is flat. Steep and hilly plots will be somewhat difficult to cultivate because of the slope.

- Note that many important farming areas of the country will not have any steep or even moderately steep slopes. Examples include the relatively flat farming zones in Lilongwe, Kasungu, Mchinji, and Mzimba districts, as well as most farmed areas of Nsanje and Chikwawa districts. Many areas of the lakeshore and the Lake Chilwa plain are also relatively flat.

D28. A *treadle pump* is a low-cost, simple manual pump. It has two pistons placed side by side and a chain or rope which passes over a pulley that connects the two pistons together so that when one piston is pushed down, the other comes up. Each piston is connected to a treadle. A suction or intake pipe connects the pump to the water source. At the end of this pipe is a non-return valve that only allows water to enter the pipe and stops it from flowing back. This is the most common irrigation device and most of the parts of the country use on a household level.

Motorized pumps are water lifting devices that are propelled by either diesel, petrol or electricity. An example of a motor pump is the radial flow pump commonly known as centrifugal pump.

D29. *Watering can or bucket* irrigation is the simplest form of overhead irrigation, and is widely used by smallholder farmers. This method is best for small plots of land, such as vegetable gardens, that are close to various water sources.

Sprinkler irrigation is a way of applying irrigation that is similar to natural rainfall. It can be used on many crops, soils and geographic conditions.

Micro (drip) irrigation includes a number of technologies, where water is applied only to part of the field surface. It can save on water and improve crop yield. The costs of purchasing, operating and maintaining the equipment are high.

D32–D33. This refers to the most recent year the plot was fallow and the number of consecutive years the plot was left fallow.

- Example: Suppose a plot was left fallow for 2 years, from 2007 to 2008. It was planted in both 2006 and again in 2009. The answer to **D32** is "2008", and the answer to **D33** is "2".

D36. Manures are used to improve soil fertility and water holding capacity by adding nutrients and organic matter to the soil. There are different types of manure, such as compost, green and animal (*khola*) manure.

Compost manure can be made using different methods, such as conical or *changu, chimato,* pit and stack methods.

Green manure is composed of crops grown for the specific purpose of plowing them in and subsequently, increasing soil fertility through incorporation of nutrients and organic matter into the soil.

Animal manure also enhances soil fertility through incorporation of nutrients essential for plant growth, and improves soil structure as it allows for the land to hold more nutrients and water.

D39. In this question we are asking for the amount of inorganic fertilizer applied to each plot. There is space for to record two applications, if the farmer applied fertilizer twice.

If the farmer **DID NOT MIX** different types of inorganic fertilizers, it is quite straightforward to fill this out, as shown in the following two examples:

Example 1 (Without Mixing of Inorganic Fertilizers):

The first plot is intercropped with hybrid maize and beans, managed by Peace. She applied 140 ks of manure and combined it with two fertilizer applications; the first one in December and the second on in January. For the first application, she used a 50 KG bag of UREA, whereas for the second application, she used 30 KGs of DAP.

*In **D37**, you would record 140 for Quantity and 2 for Unit (KGs). In **D39**, under first application, you would record 4 (for UREA) for Type, 1 for Quantity, and 7 (for 50 KG-Bag) for Unit. For the Enumerator: Total KGs, you would record 50, and for the month of application, you would record 12 (for December). Under second application, you would record 2 (for DAP) for Type, 30 for Quantity, and 2 (for KG) for Unit. For the Enumerator: Total KGs, you would record 30, and for the Month of Application, you would record 1(for January).*

Example 2 (Without Mixing of Inorganic Fertilizers):

The second plot is cultivated by oriental tobacco, managed by Kondwani. Kondwani applied an ox cart of manure, and applied inorganic fertilizer twice, once in January and once in February. He used one 50 KG bag of Chitowe for each application.

*In **D37**, you would record 1 for Quantity and 12 for Unit (Ox Cart). In **D39**, under first application, you would record 1 (for Chitowe) for Type, 1 for Quantity, and 7 (for 50 KG-Bag) for Unit. For the Enumerator: Total KGs, you would record 50, and for the month of application, you would record 1 (for January). Under second application, you would record 1 (for Chitowe) for Type, 1 for Quantity, and 7 (for 50 KG-Bag) for Unit. For the Enumerator: Total KGs, you would record 50, and for the Month of Application, you would record 2(for February).*

The next two examples explain how to fill out D39 If the farmer **MIXED** inorganic fertilizers in a given application for a given plot.

NOTE: WHENEVER TWO OR MORE TYPES OF FERTILIZERS WERE MIXED IN A GIVEN APPLICATION FOR A GIVEN PLOT, YOU **MUST** MAKE NOTES TO YOURSELF ON THE QUESTIONNAIRE, IDENTIFYING FOR EACH OF THE RELEVANT CASES, THE TYPES AND QUANTITIES OF INORGANIC FERTILIZERS MIXED. THIS INFORMATION WILL BE REQUIRED LATER IN THE QUESTIONNAIRE, AS WE WILL ASK ABOUT THE SOURCES OF DIFFERENT BITS OF INORGANIC FERTILIZER USED BY THE FARMER.

Example 3 (With Mixing of Inorganic Fertilizers):

The third plot is cultivated by hybrid maize, managed by Kondwani. He applied only inorganic fertilizer on this plot, for one time, in January. For that application, he mixed 30 KGs Chitowe with 10 KGs of D-Compound.

*In **D36** you would record 2 since no manure/organic fertilizer was used on this plot. You will see a comment in **D39** that says " IF TWO TYPES OF FERTILIZER WERE MIXED IN A GIVEN APPLICATION, RECORD THE CODE FOR THE MAIN FERTILIZER IN THE COLUMN FOR "TYPE," BUT NOTE THE SUM OF BOTH TYPES OF FERTILIZER IN THE COLUMN FOR QUANTITY. "*

In this example, Chitowe and D-Compound were mixed, and Chitowe was the main fertilizer, since the share of Chitowe in the inorganic fertilizer mix was greater than that of D-Compound. Thus, in

D39, under the first application, you would record 1 (for Chitowe) for Type, 40 for Quantity (The Sum of 30 KGs of Chitowe and 10 KGs of D-Compound), and 2 (for KG) for Unit. For the Enumerator: Total KGs, you would record 40, and for the month of application, you would record 1 (for January). Under second application, you would not record anything since Kondwani applied inorganic fertilizer only once on this plot.

Example 4 (With Mixing of Inorganic Fertilizers):

The fourth plot is cultivated with maize, managed by Johnson. Johnson applied inorganic fertilizer only once in January, mixing half a 50 KG bag of UREA with half of a 50 kg bag of Chitowe. He kept the rest of the UREA and the Chitowe for another plot.

This example is the most difficult, since the UREA and Chitowe were mixed in equal amounts. In this case, you have to choose one of them to record as the main inorganic fertilizer. Thus, in D39, under the first application, you would record 1 (for Chitowe – we could have also chosen UREA) for Type, 50 for Quantity (The Sum of 25 KGs of Chitowe and 25 KGs of UREA), and 2 (for KG) for Unit. For the Enumerator: Total KGs, you would record 50, and for the month of application, you would record 1 (for January). Under second application, you would not record anything since Johnson applied inorganic fertilizer only once on this plot.

D40. Pesticides are chemicals used to protect crops from fungal diseases as well as external and soil-borne pests. Herbicides are chemicals used to control the spread of unwanted weeds and plants.

Some of the common pesticides are: Cypemethrins (Ripcord, Cymbush, Sherpa) for the control of insect pests; Chlorothalonil (Daconil) for the control of fungal diseases; and Primiphos methyl (Actelic) for the control of storage pests.

In **D41**, there is space to record up to two types of pesticide or herbicides used in the 2009/2010 rainy season.

D42-D44. These questions collect information on the work that different household members put into the various activities over the course of the reference rainy season. An added layer of complexity is that we are collecting this information for each plot listed in this module.

D42. Land Preparation. Land preparation may happen over several months. It is therefore necessary to aid households in reporting information using a similar scale of time evaluation across the rainy season. Ask which household members helped to prepare the land, and then ask the questions of the number of weeks, how many days per week, and the hours they worked per day.

Example: In a household, there are Nelson, the household head (ID 01), Grace his wife (ID 02), and their son, Samuel (ID 03). The respondent (Nelson) said he and his son worked on the land preparation for Plot 1, the maize plot. Nelson reported that he worked the land for 8 weeks, 5 days a week, and he usually worked about 5 hours per day.

For Plot 1, you would record his information: ID Code: 01; Weeks: 8; Days/Week: 5; Hours/Day: 5.

Nelson stated that his son Samuel worked for 4 weeks, every day after school for about 2 hours, and another 2 hours on Saturday.

For Plot 1, for Samuel, you would record in the second set of columns: ID Code: 03; Weeks: 4; Days/Week: 6; Hours/Day: 2.

Note that for another plot of this household, the household members who worked on the plot, as well as the hours that they worked could be quite different. For instance, Grace has a plot of cucumbers, for which she prepares the land alone, we would record information concerning Fanny (ID 02) on a different row (for the cucumber plot) in **D42**.

D43: Unlike land preparation, weeding, planting, fertilizing and other non-harvest activities are intensive and wrap up more quickly. Thus, they may be easier to report. The format used for **D42** is also used for this question.

- Note that different household members may be involved in different aspects of the cultivation of each plot.

D44: Time spent harvesting can be influenced by a lot of factors like sex, garden size, method used for harvesting, hired labour etc. The format used for **D42** is also used for this question.

D46-D48. Hired labour, include people working for pay as well as pay in-kind such as paying a pail of maize grain after a day's work. Hired labour expenditures excludes the cost of meals given as part of exchange labour arrangement (*chipeleganyu*), which is captured in **D50 - D55**.

This question has columns to record (i) the number of days the household hired men, women and children, (ii) cash payments and/or (iii) payments by crop. Note that you are expected to code the <u>person-days</u> for men, for women and for children for all activities for which the household used hired labour on the plot.

Example: If the household hired 3 men for 6 days to do the harvest on this plot, you would write 18 (3 men x 6 days) under "Men: Number of Days", and then record the average daily wage (the rate in MKs for one day of one hired man's work) in the next column.

The second part of each of these questions asks for the amount of crop, if any, that the household gave in total for hired workers who worked on a given plot.

D50-D55. These questions refer to exchange labor (*chipeleganyu*) or work done for free as assistance.

Example: Suppose that the nephews come to help their uncle who is sick. They are 12 and 14 years old (They are **children** as their ages are less than 15 years). Each boy worked for 2 days on the weekend to help. In this case, you would record, in **C50, C52 or C54** , **4** (2 boys x 2 days) under "Children: Number of Days."

AG-MODULE E: COUPON USE RAINY SEASON

This section asks about each person in the household and each type of coupon they received for the reference rainy season. We are interested in **ALL** the coupons the household acquired in the reference rainy season, whether it is through official or unofficial means, including purchases or gifts. We also would like to know about the coupons the household had access to, even if they later sold or traded them.

The questions are asked for **each type of input coupon** acquired by **each household member**. On each row, you will write the name and ID code of the household member that obtained a unique type of input coupon in the reference completed rainy season.

To do so, first determine the household members that obtained any coupons in the reference rainy season. Once the list is compiled, establish for each member, the different types of coupons obtained, regardless of how they were obtained and/or used.

Example 1: Charles (household head) and his wife Mary received 3 UREA coupons and 1 Maize seed coupon. These were given to Charles by the village headman:

Name	Household Roster ID Code	Coupon Type
Charles	01	4
Charles	01	10

Example 2: Charles, his wife Mary, and their son James live together. They received 4 UREA coupons and 1 Maize seed coupon. Charles was given 1 UREA coupon by the village headman, and 2 by the MP. James got the rest of the coupons from the MP.

Name	Household Roster ID Code	Coupon Type
Charles	01	4
James	03	4
James	03	10

Note that **cotton chemical** applies to all insecticides/fumigants/herbicides pertaining to cotton production.

E02. The Network Roster is at the end of the Agriculture Questionnaire and links with multiple Modules throughout the questionnaire.

- See Network Roster instructions in Section 1C of this Manual.

E06. This is the number of coupons that a member of household redeemed to acquire the input at a subsidized rate, regardless what happened to the input later.

- Coupons that were sold cannot be considered as redeemed, so do not include them here.

- Coupons that were kept to be used in the future cannot be considered as redeemed, so do not include them here.

E08. This question asks for the total input recovered as a result of redeeming a given coupon.

- This does <u>NOT</u> have to be the quantity of the input that the farmer used on his/her plots. It is possible that the farmer did not use all of the input he/she received when the coupon was redeemed.

E09. This question asks if any of this type of input was exchanged with another farmer for another type of input, and if so, you record the amount given and the type and amount of the other input the farmer received in the trade in **E10.**

Example: If Clement redeemed a coupon for a 50 kg bag of UREA, and exchanged half of it for half of a 50 kg bag of Chitowe from his brother; Bernard, you would record:

- *For "Input Given:" 25 for Quantity 25, 2 (for KGs) for Unit.*

- *For "Input Received:" 1 (for Chitowe) for Type, 25 for Quantity and 2 (for KGs) for Unit.*

E11-E12. You record any input that was purchased with a coupon and that the farmer gave away for free.

E13. In addition to the instructions stated in the questionnaire, the answer to this question <u>**MUST**</u> also include the transport expenses for trips that were not successful in purchasing an input of interest since the subsidized input depot ran out of stocks.

- The transportation expenditures should include money spent on hired vehicles or ox-carts.

- If the household used its own vehicle to bring back the input purchased with a coupon, the transportation expenditures should include the fuel and other consumables used during that trip.

- The transportation expenditures should include the fares for any bicycle taxis used and the payments of labourers hired to transport.

- Put zero if the transport was free i.e. free rides from relatives and neighbours.

E15. Sum ALL costs that the farmer incurred in order to redeem the coupon for the subsidized input, including estimated value of in-payments but excluding transportation expenditures. Include tips if there were any.

E17. Starts the accounting of coupons obtained by household members to see how they were utilized. Were all coupons redeemed for inputs? Or were some stolen/given away for free/sold?

E18-E25. You are supposed to keep track of all unaccounted coupons. If the number of coupons obtained and redeemed tallies in E17 (i.e. all coupons received by a household member were redeemed for inputs), then the tracking is complete and you <u>MUST NOT</u> ask **E18-E25**. Bear in mind that the tracking can be completed at any point before reaching **E25**. So to avoid embarrassing yourself, please keep a track of all unaccounted coupons at all times!

E26. This question applies only if there are coupons that were neither redeemed not lost/stolen nor sold nor given out for free.

Example 1 for Module E, Coupon Use:

This interview concerns the household, whose members are EMMANUEL PARAPANDU (HHID 01), GRACE PARAPANDU (HHID 02), and LIGHT PARAPANDU (HHID 03).

Emmanuel obtained two input coupons during the 2009/2010 rainy season. One of the coupons was for Chitowe whereas the other one was for Maize Seed. The Chitowe coupon was obtained from the village headman for free in October, and the Maize Seed coupon was obtained from his neighbour Jonah in November for MK 1000. He resold the Maize Seed coupon for MK 1500 to his brother Alexander, and redeemed the Chitowe coupon for a 50 KG bag of Chitowe.

For Emanuel, we will use two rows of information.

On the <u>first row</u>, you write: Emmanuel, his ID code 01, and you put 1 under Coupon Type (for Chitowe).

E01 =1, the number of this type (Chitowe) coupons Emmanuel obtained.
E02= The code from the network roster for village headman , let's say it's N1.
E03= 2 for no, and skip to D05.
E05= 10 as the code for October.
E06= 1 since he redeemed 1 coupon of this type (Chitowe) for inputs.
E07 = 1 for the Chitowe purchased.
E08= 1 for Quantity and 7 (for 50 KG-bag) for Unit.

Then we continue finishing this row for all questions concerning the Chitowe coupon obtained by Emmanuel.

On the <u>second row</u>, we write: Emmanuel, his ID code 01, and we put 10 under Coupon Type (for Maize Seed).

E01= 1, the number of this type (Maize Seed) coupons Emmanuel obtained.
E02= The code from this household's network roster for neighbour Jonah, let's say it's N5.
E03= 1 for yes, since Emmanuel did pay for the coupon.
E04= 1,000, the amount of MK that Emmanuel paid for the coupon.
E05= 11, the code for NovemberED06= 0 because he did not redeem the coupon for inputs, then skip to E18.
E18 = 1 for yes, because he did sell a coupon of this type (Maize Seed).
E19= 1
E20= 1,500, for the price that he received from his brother Alexander for the coupon.
E21 = The code from this household's network roster for brother Alexander, let's say it's N3.

Since you have fully accounted for the maize seed coupon, you can put the appropriate answers 2, 2, and 9 for E22, E24, and E26, respectively.

AG-MODULE F: OTHER INPUTS RAINY SEASON

This module refers to all different types of inputs used on all rainy season plots, as reported in Module D. You **MUST** refer back to Module D to be able to administer this module correctly. The "Input Type Codes" are those recorded in Module D.

Note that in Module D, we were asking for organic fertilizer (manure), inorganic fertilizer and pesticide/herbicide use at the plot-level. In the case of inorganic fertilizer, the information is solicited also **by application**.

"Input Type Name" and "Input Type Code":

- To start, note that the first row, **row 101** is for <u>organic fertilizer (manure)</u>. There is no code to put for organic fertilizer, so the "input type code" cell has an "X" in it.

- The next 4 rows, **rows 102-105** are for <u>inorganic fertilizers</u>. You **MUST** refer back to D39, on page 13, and write the names and codes for any fertilizers listed in D39. You **MUST** be careful in the sense that if the farmer mixed two (or more) fertilizers, only the main ones were recorded in D39. Here, we want to record **ALL** types of inorganic fertilizers used by the farmer (up to a maximum of 4, the number of rows we have available), hence your notes on any mixing of inorganic fertilizers in a given application on a given plot would be of great value.

- The next 4 rows, **rows 106-109** are for <u>herbicides and pesticides</u>. You **MUST** refer look back to D41, on page 14, and write the names codes for any herbicides or pesticides listed in D41. In D41, we were only able to list 2 types of herbicides or pesticides used on a given plot. Ask the farmer if he used any others, and record up to a maximum of 4 types, on **rows 106-109**.

- Each input listed should have its own Input Type Code. No two rows **MUST** have the same code!

Example 1:

We will take the example of Kondwani, used for Module D (Page 17 of this manual, Examples 2 and 3). As you may recall, he had two plots:

- On the first plot, he planted oriental/burley tobacco. He applied an oxcart of manure on this plot, and applied inorganic fertilizer twice, once in January and once in February. He used one 50 KG bag of Chitowe for each application.
- On the second plot, he cultivated hybrid maize. He made one application of inorganic fertilizer on this plot in January. He mixed 30 KGs Chitowe with 10 KGs of D-Compound. In addition, he used 10 kilograms of fumigant along with a litre of insecticide.

Remember that in Module F, we do not care about the plots the inputs were used on, just the types and quantities used on the whole in the reference rainy season.

Kondwani used manure, two types of fertilizer, Chitowe and D-Compound, a fumigant and insecticide on his plots. This is how we would record the input type names and input type codes:

		INPUT TYPE NAME	INPUT TYPE CODE	1.	
				QUANTITY	UNIT
ORGANIC FERTILIZER	101	ORGANIC FERTILIZER	✕		
INORGANIC FERTILIZER TYPE # 1	102	*Chitowe*	*1*		
INORGANIC FERTILIZER TYPE # 2	103	*D-Compound*	*5*		
INORGANIC FERTILIZER TYPE # 3	104				
INORGANIC FERTILIZER TYPE # 4	105				
PESTICIDES/HERBICIDES TYPE # 1	106	*Fumigant*	*9*		
PESTICIDES/HERBICIDES TYPE # 2	107	*Insecticide*	*7*		
PESTICIDES/HERBICIDES TYPE # 3	108				
PESTICIDES/HERBICIDES TYPE # 4	109				

Note that even though D-compound was not recorded in D39 (as it was part of a mixture and we could only report the main component - Chitowe), we list it here.

F01: Now that we have listed all the types of inputs, we are ready to proceed to F01 to list the quantities. For Manure, Kondwani used 1 ox cart. For Chitowe, Kondwani used 50kg+50 kg+30 kg= 130 kg. For D-Compound, he used 10 KGs. He also applied 10 KGs of fumigant and 1 litre of insecticide.

		INPUT TYPE NAME	INPUT TYPE CODE	1.	
				QUANTITY	UNIT
ORGANIC FERTILIZER	101	ORGANIC FERTILIZER	✕	*1*	*12*
INORGANIC FERTILIZER TYPE # 1	102	*Chitowe*	*1*	*130*	*2*
INORGANIC FERTILIZER TYPE # 2	103	*D-Compound*	*5*	*10*	*2*
INORGANIC FERTILIZER TYPE # 3	104				
INORGANIC FERTILIZER TYPE # 4	105				
PESTICIDES/HERBICIDES TYPE # 1	106	*Fumigant*	*9*	*10*	*2*
PESTICIDES/HERBICIDES TYPE # 2	107	*Insecticide*	*7*	*1*	*8*
PESTICIDES/HERBICIDES TYPE # 3	108				
PESTICIDES/HERBICIDES TYPE # 4	109				

You **MUST** check that the total quantity of manure, inorganic fertilizer and herbicides/ pesticides use, as reported in D37, D39 and D41 correspond to the totals reported here, i.e. row 101, the sum of rows 102-105, and the sum of rows 106-109.

Look at the total for all plots and inorganic fertilizer applications in Kondwani's example: The total in D39 was 140 kgs, which is the total reported here for inorganic fertilizers; the sum of chitowe (130 kgs) and D-Compound (10 kgs).

Example 2:

James has 3 plots. On plot #1, he used 1 50kg bag of UREA, 1 50Kg bag of CAN, and 2 litres of herbicide. On plot #2, he used 1 50kg bag of CAN. On plot #3, he used 1 litre of insecticide.

In **F01**, you must list:

- o   UREA, Type Code 4, 50 kgs
- o   CAN, Type Code 3, 100 kgs
- o   HERBICIDE, Type Code 8, 2 litres, and
- o   INSECTICIDE, Type Code 7, 1 litre.

F02 Remember to ask the respondent if the calculation you make as in the example above correspond to the quantity of each type of input used during the last completed rainy season. If they do not correspond adjust F01 and D37, D39 and D41 accordingly.

Now, you must proceed through the rest of the questions in this module **one row at a time**: first ask for row 101 - organic fertilizer (manure), then for row 102 - the first row of inorganic fertilizers, and so on.

F06 – F36. These questions refer to input purchases without coupons, either using cash or by credit.

- • Note that inputs can come from different commercial outlets and using different financing arrangements.

- • Acquisition of input on credit **MUST** cash loans obtained by the household to purchase agricultural inputs. Here, our interest only pertains to in-kind input loans that the household will have to pay back in the near future with cash or other in-kind means (crop, labour services, etc.).

AG-MODULE G: CROPS BY PLOT RAINY SEASON

This module collects information about **each crop** planted in the reference rainy season on **each plot**.

- • For **each plot**, list all crops reported in D20, including those that were not the main crop. Do not list cassava, tea, coffee and fruits, which should not be listed in D20 (they will be dealt with in Module P).

Note that there are different varieties for maize, tobacco, rice and groundnuts. For example, the varieties of groundnuts include: CHALIMBANA CG7, MANIPINTA, MAWANGA and OTHER GROUNDNUT.

The crop codes, including the codes for varieties, are listed on the last page of the questionnaire. **ANNEX 3** provides descriptions of the main varieties of rice, groundnuts and tobacco.

Example: Willie's household grows local maize and pumpkin on a plot near the river (Plot 1), and grows local maize only on a plot near the road (Plot 2). In this case, you **MUST** list three rows in Module G:

- Plot 1 Local Maize
- Plot 1 Pumpkin
- Plot 2 Local Maize

After the listing each crop planted on each plot cultivated by the household, ask all questions starting with G01, one row at a time, for each crop on a given plot. DO NOT ask G01 until you have listed all plots and crops.

G04 – Consult below the recommended seed quantities per acre, so that you will see if the figures provided by the farmer are reasonable.

- **Maize Seed:** Seed for hybrid maize should be bought every season. Recommended maize seed rate per acre: 10 KGs.

- **Tobacco:** Tobacco seeds often come in 2 gram packages and tobacco farmers are advised by the extension workers to use 2 grams of seed per acre.

  o Farmers often plant tobacco seeds by using bottle caps. You **MUST** use the information on the recommended seed rate to recover as much information as possible in standard units (Grams or KGs) as opposed to accepting answers such as "3 Bottle Caps" for seed use.

  o We are interested in the quantity of tobacco seeds planted, as opposed to the weight of the tobacco seedlings. If seedlings were received from a relative, the enumerator should try and solicit data on the amount of seed that would have generated the seedlings received.

- **Sweet Potatoes & Irish Potatoes:** Farmers often use "cuttings" instead of seeds for sweet potatoes and Irish potatoes. In these cases, the "other (specify)" category should be used: write down "PIECE" as the unit category and the number of pieces/cuttings used for cultivation.

  o It is common concerning sizeable plots for a farmer to use 50kg bags as his/her container to carry the cuttings to the field. In these cases, ask how many 50kg bags of cuttings there were, and how many half, three-quarters, one-quarter bags there were. And then estimate the quantity with the farmer in KGs.

- If the crop was <u>self-germinating</u> (residual crop from previous crop) and it is not possible to capture the quantity of seeds planted, you must comment beneath the page on the seed module that the crop was self-germinating.

AG-MODULE H: SEEDS RAINY SEASON

This module collects information about all different types of seeds used by the household during the reference rainy season. To be able to determine the different seed types used, refer to the crops identified in Module G, question G01.

CHECK: The number of different seed varieties on which information is collected in Module H has to be equal to the number of unique crops grown by the household as reported in Module G. Make sure that the set of seeds listed in Module H covers all of the unique crops reported in Module G, and excludes any crop that was not listed as cultivated.

Example: Frank's household has 3 plots. In Module D & G, the household reports growing on:

- Plot 1: Local maize and pigeon peas
- Plot 2: Local maize, pigeon peas and sweet potatoes
- Plot 3: Hybrid maize

    In Module G, we would collect 6 rows of information. In Module H, we would collect 4 rows of information, for each different type of seed planted by the household: local maize (as listed in plots 1 and 2), pigeon peas (as listed in plots 1 and 2), sweet potatoes (as listed in plot 2) and hybrid maize (as listed in plots 3).

Please also note the different sources of the seeds recorded e.g. seeds purchased commercially, free seeds and left-over seeds. Left-over seeds can be considered as seeds used but they were acquired in the previous rainy season.

AG-MODULE I: SALES/STORAGE –RAINY SEASON

This module collects information on sales and alternative uses, other than home consumption, of all crops harvested in the reference rainy season.

First, by referring to Module G, list one crop per row, all crops that were harvested in the reference rainy season. Then, ask about each crop, going through the entire module one row/crop at a time, before asking questions on the next crop..

Do **NOT** list crops reported in Module G for which there was no harvest.

I01. The first question asked about each crop is whether any of the crop was sold. If yes, answer **I02- I30**. If no, go to **I31-I37** to ask about alternative uses pertaining to the harvested crop. Review carefully in the questionnaire on "exclusion" and "inclusion" principles pertaining questions **I31-I37**.

Note that information on crop sales for Panel Households is solicited for up to three commercial buyers/outlets.

2B. DRY (DIMBA) SEASON MODULES

We have just completed describing Modules C through I for the reference rainy season. Modules J through O repeat the same questions, but refer to the reference dry (dimba) season. Except for some additional comments for Modules J and K, we will simply list the corresponding rainy season module for reference pertaining to the dry (dimba) season modules.

As noted earlier, the Reference Dry (Dimba) Season is the **last completed dry (dimba) season** for Cross-Sectional Households and the **2010 dry (*dimba*) season** for Panel Households.

AG-MODULE J: PLOT ROSTER - DRY (DIMBA) SEASON

Question A-1. Asked of only Cross Sectional Households, this question determines the last completed dry (dimba) season for the household. **Completion** of a season means that the crops have **ALL** been harvested from that season.

TABLE A: You **MUST** list all the plots owned or operated by the household. If the respondent already reported plots in Module C for the rainy season, you should mention those plots, then ask if there were any other (additional) plots that the household owned or operated during the last dry (dimba) season. These additional plots will now get unique Ids (D1-D3).

Refer to the description of Module C for further information.

AG-MODULE K: PLOT DETAILS - DRY (DIMBA) SEASON

Refer to the instructions of the Module D of the Agriculture Questionnaire for questions **K01–K42**.

K43-K45. These questions collect information on the work that different household members put into the various activities over the course of the reference rainy season. An added layer of complexity is that we are collecting this information for each plot listed in this module.

K43. Land Preparation. Land preparation may happen over several months. It is therefore necessary to aid households in reporting information using a similar scale of time evaluation across the rainy season. Ask which household members helped to prepare the land, and then ask the questions of the number of weeks, how many days per week, and the hours they worked per day.

Example: In a household, there are Nelson, the household head (ID 01), Grace his wife (ID 02), and their son, Samuel (ID 03). The respondent (Nelson) said he and his son worked on the land preparation for Plot 1, the maize plot. Nelson reported that he worked the land for 8 weeks, 5 days a week, and he usually worked about 5 hours per day.

For Plot 1, you would record his information: ID Code: 01; Weeks: 8; Days/Week: 5; Hours/Day: 5.

Nelson stated that his son Samuel worked for 4 weeks, every day after school for about 2 hours, and another 2 hours on Saturday.

For Plot 1, for Samuel, you would record in the second set of columns: ID Code: 03; Weeks: 4; Days/Week: 6; Hours/Day: 2.

Note that for another plot of this household, the household members who worked on the plot, as well as the hours that they worked could be quite different. For instance, Grace has a plot of cucumbers, for which she prepares the land alone, we would record information concerning Fanny (ID 02) on a different row (for the cucumber plot) in **K43**.

K44: Unlike land preparation, weeding, planting, fertilizing and other non-harvest activities are intensive and wrap up more quickly. Thus, they may be easier to report. The format used for **K43** is also used for this question.

- Note that different household members may be involved in different aspects of the cultivation of each plot.

K45: Time spent harvesting can be influenced by a lot of factors like sex, garden size, method used for harvesting, hired labour etc. The format used for **K43** is also used for this question.

K46. Hired labour, include people working for pay as well as pay in-kind such as paying a pail of maize grain after a day's work. Hired labour expenditures excludes the cost of meals given as part of exchange labour arrangement (*chipeleganyu*), which is captured in **K47–K48**.

This question has columns to record (i) the number of days the household hired men, women and children, (ii) cash payments and/or (iii) payments by crop. Note that you are expected to code the <u>person-days</u> for men, for women and for children for all activities for which the household used hired labour on the plot.

Example: If the household hired 3 men for 6 days to do the harvest on this plot, you would write 18 (3 men x 6 days) under "Men: Number of Days", and then record the average daily wage (the rate in MKs for one day of one hired man's work) in the next column.

The second part of each of these questions asks for the amount of crop, if any, that the household gave in total for hired workers who worked on a given plot.

K47–K48. These questions refer to exchange labor (*chipeleganyu*) or work done for free as assistance.

Example: Suppose that the nephews come to help their uncle who is sick. They are 12 and 14 years old (They are **children** as their ages are less than 15 years). Each boy worked for 2 days on the weekend to help. In this case, you would record, in **K47**, **4** (2 boys x 2 days) under "Children: Number of Days."

AG-MODULE L: OTHER INPUTS - DIMBA SEASON

Refer to the instructions of the Module F of the Agriculture Questionnaire.

AG-MODULE M: CROPS - DIMBA SEASON

Refer to the instructions of the Module G of the Agriculture Questionnaire.

AG-MODULE N: SEEDS - DIMBA SEASON

Refer to the instructions of the Module H of the Agriculture Questionnaire.

AG-MODULE O: SALES/STORAGE - DIMBA SEASON

Refer to the instructions of the Module I of the Agriculture Questionnaire.

AG-MODULE P: TREE / PERMANENT CROP PRODUCTION – LAST 12 MONTHS

For modules up to now, we have been collecting information by season. This module asks about permanent crops and tree crops in the last 12 months. Note that:

- Permanent crops include cassava. Other tree/permanent crops that should be listed here are coffee, tea, macadamia nuts, and fruits.

- Fruits in the wild are **NOT** to be listed here. Module P is only concerned with tree/permanent crops that are cultivated by the household. Fruits in the wild are irrelevant because there are **NOT** owned by one household.

This module is to be administered to the household head and others in the surveyed household who are concerned with managing the household's tree/permanent crops.

A - This is a filter question for the entire module. If no member of the household cultivated any tree/permanent crop during the last 12 months, this module and the next one are skipped.

Note that it is possible for respondent to grow the tree crops on areas that have not been identified as plots in the rainy or dry (dimba) season modules (such as areas around the house or elsewhere). In these cases, assign unique plot IDs to the new areas, starting with P1, P2, and so on, to be recorded specifically in this module.

Note that "cultivated" is being used in a "broader sense" to mean ownership and/or caring for a tree/permanent crop. For example, a household may own mango trees that are not systematically cared for. On the other hand, the same household may own a tea plantation that requires close attention throughout the production period. Both scenarios will need to be captured in this module.

P01. Trees are planted in a plantation when an area of land is specifically dedicated to the cultivation of the tree – this is commonly known as an orchard. Trees in a plantation will usually be planted in a regular pattern with uniform spacing between the trees. Typically, tea and coffee are grown in a plantation pattern. Fruit trees when grown in an orchard are also usually grown in plantation.

You can consider cassava as grown in a plantation even if other plots are interplanted with it – a plantation means a regular arrangement of plants as opposed to scattered plants.

P03. This question applies to both tree crops grown in a plantation pattern or grown scattered in a field.

P04-P05. Questions are intending for crops that are actually "planted" by the farmer. Crops like bananas and sugarcane have tendency to sprout shoots which are not necessary planted by the farmer. This should not be captured here! In any case, the production will include self-germinating crop but here the intention is to capture the effort by the farmer to replenish his/her field with trees/permanent crops in the last 12 months.

AG-MODULE Q: TREE / PERMANENT CROP SALES/ STORAGE – LAST 12 MONTHS

This module collects information on sales and alternative uses, other than home consumption, of all tree/permanent crops harvested in the last 12 months.

In the first two columns, list the name and crop code for all tree/permanent crops which were reported as harvested in Module P in question **P09**. Please note that all the questions are similar to those of Module I save for I33 which is not included in this module.

Refer to the description of Module I for more information.

AG-MODULE R: LIVESTOCK

This module collects detailed information on the ownership and alternative uses of livestock in the past 12 months. Each row of the module represents one type of livestock, including poultry. This module is to be administered to the household head and others in the survey household who are concerned with managing the household's livestock.

R01. This is a filter question for the entire module. If no member of the household raised or owned any livestock during the past twelve months, the rest of this module is skipped.

If the household does not own any of a specific type of livestock at present, but did own such livestock at some point in the past twelve months, the answer to this question should be yes, and the rest of the questions concerning that specific type of livestock should be asked.

R02. If the household does not own any of a specific type of livestock at present, but did own such livestock at some point in the past 12 months, answer zero.

R04. The price should reflect the average current sales prices for the livestock in local markets, adjusted for the quality of the livestock owned by the household, e.g., age, size, nutritional status, etc...

R08-R16. This series of questions is asked to better understand how the stock of animals owned by the household varied over the past 12 months.

R17. The value reported here should correspond to the total sales of a given type of livestock. It is **NOT** the average sales price received.

If the household traded the livestock for crops or other in-kind payments, the cash value of the in-kind payments should be calculated, and added here as part of the total amount received for sale of the livestock.

R22. If any livestock suffered from any disease, R22 asks for the disease and the number of livestock lost to that disease, for up to two diseases per type of livestock. In **ANNEX 4** of this manual is a list of the disease names with the corresponding local names for the disease, as well as a table in **ANNEX 5** showing the diseases that can affect each type of livestock.

R28-R31. The respondent is to provide you with the total costs of animal husbandry for all different types of livestock owned over the past 12 months. These costs include the costs of special feed, animal medicines, salaries and in-kind benefits provided to herders, and so on.

R31. Remember that the household questionnaire Module M has already dealt with the cost of building and structure maintenance on the farm. Housing equipment and utensils costs relate to "indoor" items that are used for accommodating and feeding the animals, such as battery cages and feeding troughs.

AG-MODULE S: LIVESTOCK PRODUCTS

This module collects detailed information on the production and sales of livestock products over the past 12 months. Each row of the module on the questionnaire represents one type of livestock product, including milk, eggs, meat, honey, animal skins and manure.

S03. This question asks about the average production during the months of production in the last 12 months. It is not about the total production in the last 12 months. This question is tricky in a Malawian set up where the average is not commonly used by so many smallholder farmers. However, the accuracy of the information will depend on you as an enumerator.

Note that hides are outer coverings of animals such as cattle, sheep and goats, while skins are outer coverings of animals such as rabbits and pigs.

AG-MODULE T: ACCESS TO EXTENSION SERVICES

This module collects detailed information on access to extension service past twelve months.

T01 – T04. Each row represents an extension service topic. T01 should be asked first for all topics before T02-T04.

T05 – T11. Each row represents a source for extension service topics.

3. FISHERY QUESTIONNAIRE

Households that have engaged any fishing or fish trading in the last 12 months are identified in the Module X (X16) of the Household Questionnaire, and MUST be administered the Fishery Questionnaire.

You need the completed Household Roster (Module B) to be able to complete the Fishery Questionnaire.

The content of the Fishery questionnaires is as follows:

Content	Modules
Survey information	A
Fisheries calendar	B
High season	
Labour	C
Input	D
Output	E
Trading	F
Low season	
Labour	G
Input	H
Output	I
Trading	J

The questionnaire asks about fishing during the high season and during the low season.

MODULE B: FISHERIES CALENDAR

This section asks the respondent about the fishing activity that takes place in his community during the calendar year. Note that the question asks about the community as a whole, not about the individual respondent. For example, if the March is typically considered as part of the high season, but the respondent didn't fish during this March because of illness, the respondent should still indicate "H" for high season in the blank below the month of March.

Mark each month of the calendar for a typical year with "H" for high season, "L" for low season and "NF" if little or no fishing typically takes place.

If the respondent says there are no distinct high or low months, record H (High) for all months in which any fishing takes place.

Below the calendar there is a question for the enumerator and should not be read to the respondent. This question asks about the level of comprehension of the respondent. You should mark yes if the respondent was able to tell you which months are typically high season versus low season months. If the respondent did not understand, or if all months are basically the same, you should mark no in this section.

MODULE C: FISHERIES LABOUR (LAST HIGH SEASON)

List every member of the household who was engaged in fishing-related activities (fishing, fish processing, or fish trading) during any of the High months reported in Module B. Do

not include those members that worked only during the low season, information on these members will be included in a later section of the questionnaire.

C01 – C02. These questions are similar to those in the labour section of the household questionnaire for estimating the amount of time a household member spends engaged in fishing. You should use common sense and estimation techniques to ensure that the respondent correctly understands the question. For example, if the respondent indicated the high fishing season is 5 months long, it cannot be that a household member works 50 weeks during the high season. By using these estimation checks, you can collect better data by ensuring the respondent understands well.

C03 – C04. The definitions of fish processing and fish trading are written in the questionnaire and should be explained to the respondent before this question is answered. The most important distinction between these two categories is that fish processing refers to fish caught directly by household members and fishing trading refers to fish caught by people outside the household but sold by household members. Note that households can engage in both of these activities if, for example, a household members has a place in the market and sells both the household's own catch and fish caught by a neighbour.

MODULE D: FISHERIES INPUT (LAST HIGH SEASON)

D01 – D06. This section asks a series of questions about a number of different types of fishing techniques practiced here in Malawi. Note that different areas may have local names for these techniques and the interviewer should make sure to properly identify the techniques practiced by the respondent.

The following table may help in the question for D05, fishing gear:
Table D1. FISHING GEAR USED IN MALAWI

Gear ID 1 &2: **Beach Seines**. These include Mosquito net, Chambo seine, Kambuzi seine, and Matemba seine. Similar in construction except for headline length and mesh size.

Gear ID3: **Long-lines** *Mbedza*: Passive gear consists of a strong length of cord with mono-filament traces and hooks attached at intervals. The hooks are baited with pieces of fish. The long-line is then weighted to the bottom and is generally set overnight and lifted following morning. Long-line hooks are generally larger than those on handlines.

Handlines *Mbedza*-Consist of mono-filament nylon with hooks attached and at the bottom of the line a weight is attached. The hooks are baited with earthworms or Usipa depending on fish being targeted.

Gear ID 4: **Gill nets**-rectangular gear usually surface set or bottom set and used normally as passive gear. Set in the morning and retrieved the following morning. But at times this net may be used as active gear in open-water operated like *chilimira* net; slowly dragged behind two boats; set in shallow water and fish chased into it by pounding the water-*chiombera.*

Gear ID 5: **Fish Traps** *Mono*. Generally funnel-valve made of bamboo set in shallow river or lake areas to catch *chambo* and predators like *Mlamba* overnight. The fish trap may be used with a weir or fence, which serves to guide the fish into the trap.

Gear ID 6: **Cast Net** *Chavi* .Conical shape with footrope weighted with small stones. Generally used by two people, one paddles the other casts while standing in front of the canoe indicating to the paddler in which direction he wishes to be propelled. Immediately prior to the net being cast, the paddling ceases. As soon as the thrown net sinks to the bottom, the canoe is propelled forward so that the cast net is retrieved almost vertically.

Other fishing gear used in Malawi:

Chilimila Net. Open water seine net conical in shape operated from two canoes and one plank boat with a total crew of nine. When a shoal of fish is located the dugout canoes lay the net. Then it is towed in the opposite direction to the movement of the fish. After some time the net is finally hauled into the plank boat and if necessary fishing starts all over again. Fishing using Chilimila nets is common around submerged moulds known as *Chilundu(Virundu* plural).

Nkacha Net. Rectangular gear with a length of 120m to 500m and mesh size from ¼"to 1"(6mm to 25mm),operated using two plank boats and several crew members. For effective operation the foot-rope of net is weighted to the bottom. The net is cast by one of the two boats in a circular manner till the casting boat meets the other "stationary" boat. A diver goes down and ties foot-rope together effectively forming a bag within which fish is trapped.

Scoop Net. Nets with bamboo as handle and netting of smaller mesh size attached to a ring. Used at night generally but during the rainy season taking advantage of muddy conditions the net is used during the day. Canoe is used as a platform and net operated by dipping it in the water on the downstream bringing it out of the water from the opposite side of the platform. It is more convenient to have two people one paddling the other scooping.

Psyailo. Encircling fence used mainly in the Lower Shire River. It is an elaborate gear which consists of a team of 6 to 8 labourers and the owner. It is a number of sections of reed fencing 1.5 to 1.8m high joined together and set in shallow water to form a large, square enclosure, left open at one end to allow fish to enter.
Usually fixed in position in a pre-selected area in the afternoon and set upright using the poles spaced around 2m apart stuck in the mud forming a large square. The sides are approximately 35m around on which the fence is tied. Once set, the area is left until nightfall when the crew return and drive the fish into the psyailo by beating the water with sticks. Then fence is closed and fish is removed when day breaks.

Kandwindwi. New gear named by fishers themselves .It is found in southeast arm of Lake Malawi. It is essentially a miniature trawl net trawled as it were behind two dugout canoes.

Chomanga. Passive gear used in densely vegetated areas where it is difficult to find enough space for longline. A large hook of size 1-3/0 is attached to a length of a line onto which a large float is attached. The float should be buoyant enough not to be submerged by the hooked fish. Chomanga are normally set over night and baited with small dead fish.

D14. This question is similar to labour questions found in the agriculture section in that it estimates the total number of weeks worked by different people hired by the household.

Note that this question D14 is a stand alone question – it does not relate to the boat questions just before (Questions D7-D13). The 5 rows in Question D14 are to record up to a maximum of 5 different groups that worked differing amounts of weeks in the last HIGH fishing season.

Example 1: If the household employs 3 men throughout the entire high season to work on the boat (and assuming our hypothetical high season is five months), then the first line of D14 would have "3" in the column for "number of adults" and the second column would have "20" (the number of weeks in 5 months).

In addition to these three men, the household also hires 4 men and one boy of 13 (that we classify as a child) for one week at the beginning of the high season to repair the fishing nets. Since the time frame this group of 4 men and one boy worked is different from the 3 people hired throughout the high season, we use the next row to record their time. The 4 men should be included on the next line, with "4" in the first column and "1" (one week) in the second column, followed by the boy, with a "1"in the third column and a "1" (1 week) in the 4th column.

The responses for D14 should look like this:

HIRED LABOUR			
14. How many fishing men and/or children did you <u>hire</u> during the last HIGH fishing season?			
NUMBER OF ADULTS	NUMBER OF WEEKS/ADULTS	NUMBER OF CHILDREN	NUMBER OF WEEKS/CHILD
3	*20*		
4	*1*	*1*	*1*

D16. This question asks about weekly wages. If the respondent gives a daily wage, it is necessary to either ask the respondent for the total weekly value, or to ask the respondent how many days are typically worked and multiply. Only the weekly value should be reported in the questionnaire.

D18. This question is similar to D16 discussed above, but related to in-kind payments. It is important to remember that values should be reported by week per person. If the respondent is not able to split the amount into what was paid to each individual, ask for the total amount per week and divide by the number of workers (as listed in D14).

D23. This question is different from most in the questionnaire in that it requires a written response rather than using a pre-coded answer. The response should have enough information that it is helpful to the research team but at the same time is not too long. Many sources of cost have already been covered in previous questions so it is important to exclude them. An example of a possible response in this section could be if the respondent must pay a fee to a local leader in order to have permission to fish in this area and could be recorded as "FEE TO LOCAL LEADER" in the space provided for text. Be brief and concise.

MODULE E: FISHERIES OUTPUT (LAST HIGH SEASON)

E02. This question lists a number of different types of locally caught fish. Note that some fish might have different local names and it is important that the respondent knows exactly what type of fish about which is being asked. Note that the "aggregated" category is appropriate if the household caught many different types of fish together at the same time.

E07, E10. This question provides a consistency check between the values recorded in questions E05 and E06 and between E03 and E09, respectively. If these values are not consistent, it is necessary to discuss the inconsistency with the respondent and change one or both of the values to that they are consistent. If it is necessary to make changes, note the change in the text space provided.

E13. Similarly to the questions described above, this is a consistency check question. It checks that the values recorded in E06 are the sum of the values in E08 and E11. If it is necessary to make changes, note the change in the text space provided.

Table E1: Major fish species by location:

Water Body	Examples of Major Fish Species Found	
Lake Malawi	Mbuna	Kampango
	Chambo	Ncheni
	Utaka	Usipa
	Chisawasawa	Ndunduma
Lake Malombe	Chambo	Kambuzi
Lake Chilwa	Matemba	Makumba
Lake Chiuta	Makumba	
Upper Shire Valley	Chambo	Kambuzi
Lower Shire	Mphande	Mlamba
Other Major Rivers	Mpasa	Sanjika

MODULE F: FISH TRADING (LAST HIGH SEASON)

F06. This question refers back to module B. If the respondent had only high season fishing activities, or is not able to well distinguish between high and low season activities, then it is not necessary to attempt to collect further information about these activities.

MODULE G: FISHERIES LABOUR (LAST LOW SEASON)

This section is identical to Module C and should only be asked for low season activities.

MODULE H: FISHERIES INPUT (LAST LOW SEASON)

This section is identical to Module D and should only be asked for low season activities.

MODULE I: FISHERIES OUTPUT (LAST LOW SEASON)

This section is identical to Module E and should only be asked for low season activities.

MODULE J: FISH TRADING (LAST LOW SEASON)

This section is identical to Module F and should only be asked for low season activities.

5. ANNEXES

ANNEX 1: **EXAMPLES OF POSSIBLE NETWORK ROSTER ENTRIES**

Entry for the "Name" Column	Classification	Entry for the "Code" Column
Action Aid	NGO	28
Africa Leaf Tobacco	Private Company	16
Agora	Private Company	16
Agricultural Development & Marketing Corporation (ADMARC)	Parastatal Organization	25
Agricultural Development District Office	Government Agency	18
Agricultural Extension Research Trust (AERT)	Trust	29
Agriculture Trading Company (ATC)	Private Company	16
Alliance One Tobacco Company	Private Company	16
Blessings Kamanga	Relative	1
Blue Financial Services	Private Microfinance Institution	16
Brian Chingwalu	Neighbor	2
British American Tobacco	Private Company	16
Builders World	Private Company	16
Chibuku Products Company	Private Company	16
Chingale Restaurant	Private Company	16
Chinkoma (Kasungu) Auction Floor	Auction in Main Market	15
Cold Storage Company	Private Company	16
DSPV Chemical and Equipment Suppliers	Private Company	16
Farmers World	Private Company	16
Farmers' Forum for Trade and Social Justice	NGO	28
FINCA	Private Microfinance Institution	21
First Merchant Bank	Commercial Bank	23
George Mkweza (Wholesale Crop Produce Trader)	Private Trader in Local Market OR Private Trader in Main Market	11 OR 14
Green Finance	Private Microfinance Institution	21
INDEbank	Commercial Bank	23
Jenda Market	Local Market or Main Market	10 OR 13
Jenda Road Block	Roadside	8
Johnson Mkumba	Village Headman	4
Kingdom Pest Control	Private Company	16
Kulima Gold	Private Company	16
Lilongwe Auction Floor	Auction in Main Market	15
Limbe Leaf Tobacco Company	Private Company	16

EXAMPLES OF POSSIBLE NETWORK ROSTER ENTRIES (CONT'D)

Entry for the "Name" Column	Classification	Entry for the "Code" Column
Lizulu Bus-Stage/Roadside Market	Roadside	8
Lizulu Market	Local Market or Main Market	10 OR 13
Lusungu Chinsinga (MP)	Political Leader	6
Machinga Auction Floor	Auction in Main Market	15
Majoxs Mills	Private Company	16
Malawi Rural Development Fund (MARDEF)	Government Financed Lender	24
Malawi Rural Finance Company (MRFC)	Government Financed Lender	24
Malawi Savings Bank	Commercial Bank	23
Mbulumbuzi Bus-Stage Market	Roadside	8
Mbulumbuzi Market	Local Market or Main Market	10 OR 13
Mrs. Kanyalika at NSO Headquarters	Private Trader in Local Market OR Private Trader in Main Market	11 OR 14
Mulli Brothers (Wholesale Crop Produce Trader)	Private Company	16
Mzuzu Auction Floor	Auction in Main Market	15
Mzuzu Coffee Planters Cooperative Union	Agricultural Cooperative	26
National Association of Smallholder Farmers of Malawi (NASFAM)	Farmer-Based Club/Association	27
National Bank of Malawi (NBM)	Commercial Bank	23
New Building Society (NBS)	Commercial Bank	23
Noel Chapula	Money Lender/Katapila	20
On the Road to Lilongwe, After Chingali Turn Off	Roadside	8
One Village One Product (OVOP)	Farmer-Based Club/Association	27
Optichem Limited	Private Company	16
Premium Tobacco Limited	Private Company	16
SACCOs (Various)	Savings & Credit Cooperative	22
Seedco	Private Company	16
Small Farmers Fertilizer Revolving Fund of Malawi (SFFRFM)	Parastatal Organization	25
Songani Market	Local Market or Main Market	10 OR 13
Standard Bank	Commercial Bank	23
Sungakhosi Investment Company	Private Company	16
Thom Bawalawala	VDC Member	3
Tobacco Association of Malawi (TAMA)	Farmer-Based Club/Association	27
World Vision International	NGO	28
Zizwe Finance	Private Microfinance Institution	21
Zomba City Market	Local Market or Main Market	10 OR 13

ANNEX 2: AREA MEASUREMENT USING A GPS

When the plots are identified and a sketch map is drawn, the plots are to be measured using a GPS, named Garmin eTrex Legend HCx. For each plot to be measured, you **MUST** use the sketch map for orientation. You **MUST** mark your starting point with a stick and walk clockwise along the perimeter (outline) of each plot with the GPS activated for area measurement. When you return to the starting point and tell the GPS to stop the area measurement, the GPS will display the area measurement directly in **ACRES**. You should then record the results in the questionnaire with TWO decimals.

A GPS uses the information from satellites to find the geographical position on the earth surface by longitude and latitude. It might even find the altitude, but we will not use this function. The position is found by a continuous measurement of the time a satellite signal takes to reach your GPS from a satellite in the sky. With clear signals from at least 4 satellites, the GPS is able to calculate the geographical position with a sufficient accuracy. The better sight to a large part of the sky a GPS has, the more signals and clearer signals are received. Shadows of buildings and even large trees should be avoided while using the GPS in the field. You should also make sure to stretch your hand holding the GPS forward when you do area measurement to avoid that your own body shadows for the satellite.

Batteries and Buttons:

The GPS uses 2 AA batteries. Each enumerator will get 2 sets of batteries. You **MUST** take the batteries out of the GPS when it is not in use. Make sure to put in the batteries in opposite direction, just as marked at the bottom of the battery compartment. You open the battery compartment by using the small triangle as handle and turn it anti-clockwise ¼ round (= 90°) and carefully removing the rubber-lid. You close it by turning the handle clockwise ¼ round.

The GPS has five buttons, including one double button. We are mostly going to use only four of them. The GPS has two buttons on the right side, the **START** button, marked with a light bulb and the **BACKWARDS** button, marked with a cross in a box.

The GPS has two buttons on the left side, one of these is the **DOUBLE** button, marked with arrowheads pointing up and down. The other is the **MENU** button, marked with a notepad. On the front side of the unit, there is the round, rubber **POINTING** button. The **POINTING** button can be pressed in or moved around to left, right, up and down. All other buttons are only to be pressed in.

Instructions for Using the GPS for Finding the Geographical Coordinates of a Plot:

Proceed to the starting point, which should be the starting corner of the plot you will measure.

Switch on the GPS by pushing and holding the **START** (marked with a bulb) button for up to 2-3 seconds or until you hear a beep or see a picture on the screen.

The GPS will then seek to acquire satellite signals and this may take up to 3 minutes. Following the acquisition of the satellite signals, the screen will display a sketch map with a triangle showing your location.

Open the menu by pressing the **MENU** (marked with a notepad) button twice. One push will give a simple menu and a second push will give the full menu.

Use the **POINTING** button to move between the various menu-icons to the **MARK**-icon and push the **POINTING** button in to open the *Mark Waypoint* page. There, you will be able to read your location in south and east coordinates.

Record the south coordinate and east coordinate on the appropriate plot roster. Write down all digits given at the screen. The south coordinate will start with an S and comprise degrees, minutes and seconds, all together 7 digits. The east coordinate will start with E 0 and again be followed by 7 digits. Write down these 7 digits.

Press the **MENU** button twice to arrive back at the main menu and ready to do other tasks.

Instructions for Using the GPS for Measuring the Area of a Plot:

You may measure the area just after taking the location.

Go to the starting point which should be a corner of the plot you will measure and mark the starting point by fixing a stick in the ground.

Switch on the GPS by pushing and holding the **START** key (marked with a bulb) for up to 2-3 seconds or until you hear a beep or see a screen picture.

The GPS will then seek to acquire satellite signals and this may take up to 3 minutes. Following the acquisition of the satellite signals, the screen will display a sketch map with a triangle showing your location.

Open the menu by pressing the **MENU** (marked with a notepad) button twice. One push will give a simple menu and a second push will give the full menu.

Use the **POINTING** button to move between the various menu-icons to the **TRACKS**-icon and push the **POINTING** button in to open the *Track Log Page.*

With the Track log page open, press the **MENU** button to get the *Track Menu*. Use the **POINTING** button to move to *Area Calculation* and push the **POINTING** button in to open the *Area Calculation Page*.

You will now see a sketch map on the screen and at the bottom of the screen you will see the text: Start Calculation (this means start area calculation). This **DOES NOT** mean the GPS has started the area calculation, but only that the GPS is **READY** to start the area calculation.

You start the area calculation by pressing the **POINTING** button. Subsequently, the text at the bottom of the screen will read *Stop*. This **DOES NOT** mean the area calculation has stopped, but only that the GPS is **READY** to stop the area calculation. In fact, the GPS has just started the area calculation.

You are to start the area measurement by ***walking slowly clockwise*** around the perimeter of the plot. You should hold the GPS flat in your hand and stretch the hand slightly forward. You **MUST** walk on the edge of the field (NOT a meter outside the field). At every corner,

you **MUST** stop for 5 seconds (counting slowly 1001, 1002, 1003, 1004, and 1005) and then continue walking. You **MUST** walk all the way around the plot or parcel until you have returned to the location of the marking stick, with the GPS facing the direction in which it started the area calculation.

Check that the text below the screen still reads *Stop*. If the text does read **Start Calculation**, it means that you failed to push the **POINTING** button properly when you started. If you read Save **Calculated Track**, it means that you pushed in the **POINTING** button while you were walking. In both cases you will need to repeat the measurement by starting over again.

If the screen reads *Stop,* you may stop the measurement by pushing in the **POINTING** button and the screen will now display the area at the second line from the bottom. It is NOW time to write down the area measure on the appropriate plot roster. **RECORD THE AREA IN ACRES AS IT APPEARS AT THE BOTTOM OF THE GPS.**

At the very bottom the text will read **Save Calculated Area**, and you will be able to save the area measurement by pushing the **POINTING** button. By using the **POINTING** button, you should go to (highlight) OK and push in the **Pointing** button. You will now get the sketch map on the screen with the text *Start* at the bottom of the screen, which will enable to start the next area measurement.

You **MUST** measure the area of each plot with the GPS at least twice to get a consistent value and confirm that the rotation around the plot has been completed properly.

If you lose the right position with the GPS system/menu, you are always able to back track to the main menu by pressing the **MENU** button twice. Once there, you can use the **POINTING** button to select the **TRACKS**-icon, and repeat area measurement-related steps specified above.

You switch off the GPS by pressing the START button for at least 2-3 seconds or until the screen light disappears.

Instructions for other GPS functions needed from time to time:

You may also want to use the GPS for other purposes as well, such as for the following tasks:

1. Having a look of the track you have recorded and area measured.

2. Cleaning the stored tracks. The GPS storage will only be able to store 50 tracks and areas and hence you will need to clean the storage when you have finished an EA.

3. Making sure to set the screen to low light in order to save batteries.

Having a look at you track

Go to the main menu by pressing the **MENU** button twice. Move to the **TRACKS**-icon and push in the **POINTING** button.

You will then open the *Tracks Log Page*. Use the **POINTING** button to move to the saved track you want to open and push in the **POINTING** button. Information for the selected track will be shown on the screen.

Use the **POINTING** button to move to the *Map Field* and push in the **POINTING** button. The map of your track will be shown at the screen and you can verify that you walked correctly.

Move back to the main menu by pressing the **MENU** button twice.

Cleaning the storage of tracks

Go to the main menu by pressing the **MENU** button twice. Move to the **TRACKS**-icon and push in the **POINTING** button.

You will then open the *Tracks Log Page*. Use the **MENU** button to open the *Track Log Menu*. Use the **POINTING** button to move to the *Delete All Saved Fields*. Press the **POINTING** button to erase all tracks that you have saved, including the area measurements.

Move back to the main menu by pressing the **MENU** button twice.

Set screen light to low in order to save battery

Switch on the GPS by pressing the **START** button. While the GPS is locating the satellites, press the **START** button once more and a light meter will appear. Press the **START** button again for the light to get brighter and the light meter to go one step up. Press the **START** button several times until the light meter goes down to the lowest level. Leave the GPS alone for one minute and the light meter will disappear. The light is now at the lowest level to save battery capacity.

ANNEX 3: VARIETIES OF MAIZE, RICE, GROUNDNUT AND TOBACCO

Common Hybrid Maize Varieties				Common Composite/Open Pollinated Maize Varieties	
DK8071	MRI 724	PAN6363	SC 407	MASIKA	ZM 521
DK8051	MRI 734	PHB 30H83	SC 501	KAFUMBA	ZM 421
DK8041	NSCM 51	THANZI	SC 513	MCHOTSANJALA	ZM 309
DK8031	NSCM 31	SC 709	SC 715	KAKHOMERA	ZM 523
MH18	PAN 6195	SC 627	SC 713	CHITIBU	
MH27	PAN 6479	SC 621	SC 717	MATINDIRI	
MH28	PAN 6193	SC 403		ZM 621	

Improved Rice Varieties:

Faya is the only recommended variety for the rainfed scheme. It is favoured by the local community since it is scented. Its long growing season (150-155 days) makes it unsuitable for a double crop under the irrigated scheme.

Pussa is a recommended variety for irrigated schemes. Two crops can be grown in a year, as it takes 112 days to mature in the rainy season and 140 days in the dry (dimba) season. Like Faya, it has a strong scent.

TCG 10 is a recommended variety for irrigated schemes. It matures in 130 days in the rainy season and 150 days in the dry (dimba) season. It can be double cropped only when sown early enough. It is moderately scented, and expands when cooked.

ITA is a recommended variety for irrigated schemes. It matures in 130 days in the rainy season and 150 days in the dry (dimba) season.

IET4094 (Senga) is a recommended variety for irrigated schemes. It matures in 116 days in the rainy season and 143 days in the dry (dimba) season.

Improved Groundnut Varieties:

Chalimbana is a confectionery nut recommended for all plateau areas of the country, within the altitude range of 1,000 to 1,500 meters above sea level. It has large seeds, with wedge-shaped ends and tan seed coat. It matures in 140-150 days.

CG7 is a confectionery nut with medium-sized seeds that are uniform and red. It is recommended for production in all groundnut growing areas of the country, and matures in 130-150 days.

JL24 is a confectionery nut recommended for production in all low-lying areas, within an altitude range of 200-500m above sea level, such as the Shire Valley. It matures in 90-120 days, and has no seed dormancy (i.e. should be harvested as soon as it matures). The seeds are small and pale tan in colour.

Mani-Pintar is recommended for areas within the altitude range of 500-750 m above sea level, such as Upper Shire Valley, Balaka and Salima. It matures in 130-140 days after sowing. The seeds are variegated red and white in colour.

Mawanga is recommended for production in same areas as Mani-Pintar. It matures in 130-140 days, and the seeds are variegated red and tan in colour.

Tobacco Varieties:

Northern Division Dark Fire-Cured Tobacco (NDDF) is traditionally cured in pisemouli or brick barns with smoky hot fires made in open or partly-covered fire pits. The final product is dark brown in colour. The recommended areas are Lilongwe, Dowa, Ntchisi, Dedza, South Mzimba, Rumphi and Chitipa Plain.

Southern Division Fire-Cured Tobacco (SDF) is lightly-fired and lighter in colour than NDDF. It has milder flavor and aroma. The recommended areas are Blantyre, Chiradzulu, Phalombe, Mulanje West, Zomba South and Namwera Area.

Sun-Air Cured Tobacco is dried with the help of sun and air circulating through the leaf in open-side sheds with adequate thatch to prevent leaking. The recommended areas are Mchinji, Kasungu, Bwanje Valley, Nsipe, Katema, and Chilipa.

Oriental Tobacco is also known as Turkish or Aromatic Tobacco. The plants are small with short internodes and small leaves, resulting in a large number of leaves per plant. It is also sun-air cured, grown mostly in Mzimba.

Flue-Cured Tobacco is mainly an estate crop, recommended for medium to high altitude areas. It is cured in brick barns, in which hot air conducted through metal pipes (clues) heats up the barn. The cured leaf is yellow, orange or mahogany in colour.

ANNEX 4: LIVESTOCK DISEASES CHICHEWA TRANSLATIONS

LIVESTOCK DISEASE	CHICHEWA NAME/DESCRIPTION
AFRICAN SWINE FEVER (ASF)	Chigodola cha nkhumba
ANTHRAX	-
BLACK QUARTER	Matenda owumisa miyendo ya mbuyo ndiku isandulitsa Black
BRUCELOSIS	-
EAST COAST FEVER	Chigodola cha ng'ombe; ng'ombe imakhala ili chigonele komaso imakha misozi
FOOT & MOUTH DISEASE	Chigodola cha zilonda za mkamwa ndi ma hoovu (mag'ina)
GUMBORO	Chigodola cha nkhuku maka zowete mkhola zili zambiri; zizindikilo zake ndi kutsekula,kunjnjemera ndi zina zotero
HELMINTHIOSIS	Nyongolosi za ziweto
LUMPY SKIN DISEASE	Matenda aziphutu ziphutu pakhungu la ng'ombe
MAREKS	-
NEW CASTLE DISEASE**	Chitopa cha nkhuku; zimafa zambiri nthawi imodzi komaso khosi limapingasa
RABIES	Chiwewe
SMALL POX	Matenda azizolo za nkhuku makamaka mutu ndi m'maso
MANGE	Matenda a zipere za ng'ombe
ANAEMIA	Chikasu
BABESIOSIS (RED WATER)	Mkozo wa magazi
TRYPANOSOMIASIS (NAGANA)	Kaodzela
TETANUS	Matenda a ng'ombe owumisa ziwalo
FOOT ROT	Kuoola kwa mapazi makamaka kwa nkhosa
AMAPLASMOSIS	Malungo a ng'ombe
HEART WATER	Matenda opangisa nthovu kukamwa ndipo chiweto chimapanga ngati misala

** Chitopa is also called chidelu and chigodola (in the northern region)

ANNEX 5: LIVESTOCK DISEASE APPLICABILITY BY ANIMAL TYPE

LIVESTOCK DISEASE	CALF	STEER/ HEIFER	COW	BULL/ OX	GOAT	SHEEP	PIG	CHICKEN-LAYER	LOCAL-HEN	CHICKEN-BROILER	LOCAL-COCK
AFRICAN SWINE FEVER (ASF)							X				
ANTHRAX	X	X	X	X			X				
BLACK QUARTER	X	X	X	X							
BRUCELOSIS	X	X	X	X							
EAST COAST FEVER	X	X	X	X							
FOOT & MOUTH DISEASE	X	X	X	X	X	X	X				
GUMBORO								X	X	X	X
HELMINTHIOSIS	X	X	X	X	X	X	X	X	X	X	X
LUMPY SKIN DISEASE	X	X	X	X							
MAREKS								X	X	X	X
NEW CASTLE DISEASE								X	X	X	X
RABIES	X	X	X	X							
SMALL POX								X	X	X	X