## FarmPlotIntrvw\_CWP\_UGA\_National\_Survey\_v4 January 2023

A. 1 Read this introduction to the respondent:

We are researching energy and farming throughout Uganda to provide information to the government and private sector that can help plan investments for productive uses of energy, most of all irrigation.

This research is conducted by two organizations working together: the Ugandan Ministry of Energy (MEMD) & Columbia University (USA). Other Ugandan Ministries, including Water and Environment (MWE), Agriculture (MAAIF), and Local Government (MOLG), as well as other ministries, departments and agencies, are also aware of our work.

If you choose to participate, the information that you provide can help support and plan development throughout Uganda. The information we gather that is shared with the public will not include any personal information.

Feel free to ask any questions you have. Can we begin the survey? (Yes/No)

This section refers to farming in general

**B.1** Enumerator name? \_\_\_\_\_\_ Can be initials.

What district is this farm in?

What parish is this farm in? \_\_\_\_\_

**B.2** Select ALL of these machines used by this farmer in the last year at or near the farm or home.

Do not include devices used away from the farm or home, such as elsewhere in the village, in a trading center, or for transport.

[] Boda boda / motorcycle (for transporting agricultural products)

[] Chainsaw

- [] Device / machine for drying / roasting
- Device / machine for sorting / washing

[] Electricity generator -- fuel powered

[] Farm equipment (tiller, tractor, rice harvester, etc.)

[] Grater / Peeler / Chipper

- [] Grinder/Miller for Maize or other crop
- [] Presser / Grinder for paste or oil
- [] Refrigerator / cooler (for storage of produce, meat, poultry, dairy)
- [] Thresher/Dehusker/Huller for Maize or other crop
- [] Truck or trailer for transporting crops
- [] Water pump (fuel or electric powered)
- [] Spray pump manual

[] Spray pump – mechanical or electric

[] Boat with motor (do not include boats without motors)

[] Other energy consuming device

[] Don't know

[] None

**B.2a** Describe the other type of machine (other than irrigation)?

**B.3** Select ALL of these machines / energy consuming devices used by farmers nearby (within 250m) in the last year ator near the farm or home.

Do not include devices used away from the farm or home, such as elsewhere in the village, in a trading center, or for transport.

(same list as **B.2**)

**B.3a** Describe the other type of machine (other than irrigation)?

\_\_\_\_\_

In this section, you will be asked to consider outputs from your farm /household and rank the three most important.

**Y.1a** Name the most important output (crops, livestock or animal products) for your household

This should be the MOST important. ("most important" is based on the contribution to your livelihood)

[] Don't know / cannot determine

[] None

[] Crop: Any tree fruits (exclude banana/plantain)

[] Crop: Any tree nuts

- [] Crop: Avocado
- [] Crop: Banana / Plantain
- [] Crop: Beans
- [] Crop: Broccoli
- [] Crop: Cabbage
- [] Crop: Cacao
- [] Crop: Cassava
- [] Crop: Celery
- [] Crop: Chickpea
- [] Crop: Coffee
- [] Crop: Cotton

[] Crop: Cowpea / Pigeon pea / Greengram

[] Crop: Cucumber

[] Crop: Eggplant / Entula [] Crop: Flowers [] Crop: Ginger [] Crop: Green Peas [] Crop: Ground nut [] Crop: Leafy Green (sukuma wiki, alayo, boo, gobe, malakwan, etc.) [] Crop: Maize [] Crop: Mango [] Crop: Millet [] Crop: Okra / Otigo / Tindora [] Crop: Onions [] Crop: Passion Fruit [] Crop: Peppers (green, sweet, etc.) [] Crop: Pineapple [] Crop: Potatoes (Irish, Sweet, Others) [] Crop: Pumpkin [] Crop: Rice [] Crop: Root vegetables (carrots, etc.) [] Crop: Sorghum [] Crop: Soybean / Soya [] Crop: Sugarcane [] Crop: Sunflower or Sim-sim / sesame [] Crop: Taro / "yams" (in Uganda) [] Crop: Tea [] Crop: Tef [] Crop: Tobacco [] Crop: Trees grown for wood (ex. eucalyptus) [] Crop: Tomatoes [] Crop: Vanilla [] Crop: Watermelon (or other melons) [] Crop: Wheat / Barley [] Crop: Other crop [] Livestock: Cattle / Cows / Oxen [] Livestock: Goats / Sheep [] Livestock: Pigs [] Livestock: Camels [] Livestock: Donkeys [] Livestock: Poultry (include chicken, ducks, turkeys, pigeons) [] Livestock: Fish (from aquaculture) [] Livestock: Rabbits [] Livestock: Other livestock [] Animal product: Milk [] Animal product: Eggs [] Animal product: Meat (beef, goat, sheep, pork, etc.) [] Animal product: Other animal product that you sell

Y.1a.o What is this other output?

**Y.1b** Indicate the machines used to produce or process this crop/livestock/animal product.

Can be for production, storage or processing.

[] water pumping for agriculture (irrigation, crops)

[] water pumping for livestock / animals

[] cold storage for animal products (meat, poultry, dairy, etc.)

[] agro-processing: grinding/milling into fl our/meal/powder

[] agro-processing: threshing/dehusking/hulling

[] agro-processing: grating /peeling/chipping

[] agro-processing: pressing paste/oil/sugarcane

[] agro-processing: drying/roasting

[] agro-processing: sorting/washing

[] feed preparation (incl. mixing/heating/pelleting)

[] other productive use of energy

[] don't know

[] none

Y.1d Where is this machine TYPICALLY used?

[] At or near the farm or home

[] Elsewhere in this village

[] Rural trading center

[] Town

[] Major city

[] Other location

[] Don't know

**Y.2a** Name the SECOND most important output (crops, livestock or animal products) for your household

This should be the SECOND most important. ("most important" is based on the contribution to your livelihood)

[] Don't know / cannot determine

[] None

....(rest of recurring output list, same as **Y.1a**)

Y.2a.o What is this other output?

**Y.2b** Indicate the machines used to produce or process this crop/livestock/animal product.

Can be for production, storage or processing.

(same list as **Y.1b**)

**Y.2d** Where is this machine TYPICALLY used?

- [] At or near the farm or home
- [] Elsewhere in this village
- [] Rural trading center
- [] Town
- [] Major city
- [] Other location
- Don't know

**Y.3a** Name the THIRD most important output (crops, livestock or animal products) for your household

This should be the THIRD most important. ("most important" is based on the contribution to your livelihood)

[] Don't know / cannot determine [] None ...(rest of output list from **Y.1a**)

Y.3a.o What is this other output?

**Y.3b** Indicate the machines used to produce or process this crop/livestock/animal product.

Can be for production, storage or processing.

(same list as **Y.1b**)

Y.3d Where is this machine TYPICALLY used?

- [] At or near the farm or home
- [] Elsewhere in this village
- [] Rural trading center
- [] Town
- [] Major city
- [] Other location
- [] Don't know

**B.4** Did you farm at least one irrigated crop in the last 12 months? (Yes/No)

**B.5** How many total irrigated crops did you harvest in the last 12 months (include all plots of land that you farm)?

Try to survey 2 plots for this farmer. Prioritize irrigated plots, if possible.

**B.8** Note here (Y/N) if the farmer will take you to a farm plot to get a GPS reading. (Yes/No)

B.8a BRIEFLY describe why you did not walk to the irrigated plot

**B.9** In what other location (non farm plot) does this interview take place?

[] At/near home (within 100 m)[] Away from home (greater than 100 m)

**B.11** Record the GPS coordinates at this other (non farm plot) interview location.

latitude (x.y °) \_\_\_\_\_ longitude (x.y °) \_\_\_\_\_ altitude (m) \_\_\_\_\_ accuracy (m) \_\_\_\_\_

This section refers to farming of a single farm plot. Walk to the center of the plot if possible.

**C.1** Stand in the plot where at least one crop was grown in any of the past 12 months and record the GPS location.

Stay near the CENTER of the plot if possible.

 latitude (x.y °)
 longitude (x.y °)

 altitude (m)
 accuracy (m)

**C.2A** Estimate the length of the shortest side of this plot (in m) (If the plot is 20 m by 60 m, choose 20m. It is OK if the plot is not rectangular.)

**C.2B** Estimate the length of the longest side of this plot (in m) (If the plot is 20 m by 60 m, choose 60m. It is OK if the plot is not rectangular.)

**C.5** Did you farm at least one irrigated crop ON THIS PLOT in the last 12 months? (Yes/No)

C.6 Of only the past 12 months, select ALL months in which you irrigated THIS plot.

(only choose from the past 12 months based on date of interview; do not include future plans)

[ ] Dec-2021 [ ] Jan-2022 [ ] Feb-2022 [ ] Mar-2022 [ ] Apr-2022 [ ] May-2022 [ ] Jun-2022 [ ] Jun-2022 [ ] Jul-2022 [ ] Aug-2022 [ ] Sep-2022 [ ] Oct-2022 [ ] Nov-2022 [ ] Dec-2022

C.7: Is there ANY crop growing / standing in this plot now? (Yes/No)

**C.8** What non-crop landcover is in this plot now? (choose the option that seems best)

[] Bare earth (soil, sand, rocks) with little/no vegetation

[] Grass and/or weeds (can be mix)

[] Fallows

[] Shrubs and/or small trees (can be mix)

[] Trees (med to lg size, can be wood lot or woodland)

[] Crop waste / residue

[] Burnt / ashes (can be crops or non-crops)

[] Mix of multiple non-crop plants (ex. grass, weeds, shrubs, trees, fallows)

[] Other non-crop landcover

C.9 Describe the other non-crop landcover.

**C.10** Take a photo of / toward the plot, showing this most recent crop (if possible) and the entire plot (if possible)

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**D.1** Was there any crop planted in this plot within the last year? Answer only for the crop covering the majority of the plot

(Yes/No/Don't Know)

**D.2** What crop is/was cultivated MOST RECENTLY (including now) on this plot?

Answer for only the crop covering the majority of the plot

[] Don't know / cannot determine [] Any tree fruits (exclude banana/plantain) [] Any tree nuts [] Avocado [] Banana / Plantain [] Beans [] Broccoli [] Cabbage [] Cacao [] Cassava [] Celery [] Chickpea [] Coffee [] Cotton [] Cowpea / Pigeon pea / Greengram [] Cucumber [] Eggplant / Entula [] Flowers [] Ginger [] Green Peas [] Ground nut [] Leafy Green (sukuma wiki, alayo, boo, gobe, malakwan, etc.) [] Maize [] Mango [] Millet [] Okra / Otigo / Tindora [] Onions [] Passion Fruit [] Peppers (green, sweet, etc.) [] Pineapple [] Potatoes (Irish, Sweet, Others) [] Pumpkin [] Papaya/Pawpaw [] Rice [] Root vegetables (carrots, etc.) [] Sorghum [] Soybean / Soya [] Sugarcane [] Sunflower or Sim-sim / sesame [] Taro / "yams" (in Uganda) [] Tea [] Tef

- [] Tobacco
- [] Trees grown for wood (ex. eucalyptus)
- [] Tomatoes
- [] Vanilla
- [] Watermelon (or other melons)
- [] Wheat / Barley
- [] No crop / No evidence of crop
- [] Other crop

**D.3** Describe the other crop.

Answer for only the crop covering the majority of the plot \_\_\_\_\_\_

**D.3B** What percentage (1-100) of this plot is/was covered by this crop?

Answer for only the crop covering the majority of the plot\_\_\_\_\_

D.4 Approximately when did/will you START planting this crop? (Month & year)

Can be the PLANNED date. (yyyy-mm)

D.5 Approximately when did/will you FINISH harvesting this crop? (Month & year)

Can be the PLANNED date. (yyyy-mm)

**D.6** What is your PRIMARY intention for this crop? Select one.

- [] Sale (all of mostly)
- [] Home consumption (all or mostly)
- [] Equal sale & home consumption (\*equally\* balanced)
- [] Other intention for crop

**D.6a** Describe the other intention.

**D.7a** Where did you/will you sell this crop?

"DK" if respondent does not know \_\_\_\_\_

**D.7b** How far is this market (in km)? An estimate is fine.

**D.8** Was any irrigation used (or planned) in growing this crop?

Can be a mix of rainfall and irrigation.

(Yes/No/Don't Know)

**D.8B** Which best describes how this crop was watered?

[] Mostly irrigated

[] Mostly rainfed

[] Equally rainfed and irrigated

**D.9** What is the PRIMARY water source used for irrigation?

[] Shallow well, hand-dug well

- [] Borehole (depth greater than 30 meters)
- [] Harvested water
- [] Surface Water (lake, dam, pond, stream, river, spring)
- [] Tap / Piped Water
- [] Trucked water
- [] Other water source (for irrigation not rainwater)

**D.10** Describe the other water source. (Only irrigation water sources.)

**D.11** How close is this water source to this plot? (Meters)

- [] On farm or immediately next to farm.
- [] Within 100 meters of farm
- [] 100 m to 250 m from farm
- [] 250 m to 500 m from farm
- [] More than 500m from farm

**D.12** How deep is this water? (in meters, estimate is fine)

**D.13** For this irrigation, what is PRIMARILY used to move water from the source to this plot? Choose the PRIMARY water "carrier".

- [] Hand-held containers (buckets, watering cans, jerricans)
- [] Pipes / Hoses
- [] Trenches / Canals (to farm plot)
- [] Motor vehicle (incl. jerricans by motorbike, car, truck)
- [] Other means of carrying or moving water

**D.14** Describe the other water conveyance.

D.15 What type of equipment is used to disperse the irrigated water?

[] Hand-held containers (buckets, watering cans, jerricans)

- [] Sprinklers (incl. center-pivot, linear, etc.)
- [] Drip irrigation equipment
- [] Drag-Hose / Open-pipe

[] Furrows / Canals (on / within farm plot)

[] Other water dispersal equipment

**D.16** Describe the other type of water distribution system.

**D.16B** Take a picture of the equipment or evidence of irrigation on or next to this farm plot.

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**D.17** What is the PRIMARY power source used for this irrigation? Choose the PRIMARY power source.

[] Manual power / manual labor (buckets, treadle pump, etc., include paid labor)

- [] Gravity flow (trenches, canals)
- [] Fuel (diesel, gasoline)

[] Solar

- [] Connection to grid power (Umeme)
- [] Connection to a mini-grid
- [] Animal power
- [] Other power source

**D.18** Describe the other source / type of power.

**D.19** Is this power source / type shared?

Do not count hired labor as "shared." Do NOT use "other" to describe borrowing, renting, etc. here. These are addressed in the NEXT question.

[] Owned by this farmer/HH and IS NOT shared with others

[] Owned by this farmer/HH and IS shared with others

[] Owned by others and shared to this farmer

- [] Don't know
- [] Other

D.190 Please explain, focusing on who owns and who shares.

Do NOT describe borrowing, renting, etc. here. These are addressed in the NEXT question.

**D.20** How is this power source accessed for irrigation of this plot? This is NOT asking if/how the farmer rents or lends this to others.

- [] Owned by this farmer/household (includes family labor)
- [] Ownership is shared / owned by multiple farmers
- [] Rented/Paid by hour, per use, etc.

[] Borrowed

[] Community owned/ Project

[] Other means of sharing

**D.21** Describe the other way that this power source is accessed.

**D.22** Is there any expense incurred on this power source for irrigation? (e.g. fuel for pump, pay for manual labor, etc. -- do NOT include rental of land)

(Yes/No/Don't Know)

**D.23** Estimate the total expense (USh) for this power source for this crop and season. Express in Ugandan Shillings (USh)

**E.1** Was there a previous crop planted in this plot within the last year? (before the one described above).

Answer for only the crop covering the majority of the plot.

(Yes/No/Don't Know)

E.2 What was this crop? Answer for only the crop covering the majority of the plot.

[] Don't know / cannot determine

[] Any tree fruits (exclude banana/plantain)

...(rest of crop list, same as **D.2**)

**E.3** Describe the other crop.\_\_\_\_\_

**E.3B** What percentage (1-100) of this plot was covered by this crop? Answer for only the crop covering the majority of the plot.

**E.4** Approximately when did you START planting this crop? (Month & year) (yyyy-mm)

**E.5** Approximately when did you FINISH harvesting this crop? (Month & year) (yyyy-mm)

**E.6** What is your PRIMARY intention for this crop? Select one.

[] Sale (all of mostly)

[] Home consumption (all or mostly)

[] Equal sale & home consumption (\*equally\* balanced)

[] Other intention for crop

E.6b Describe the other intention.

**E.7a** Where did you/will you sell this crop? "DK" if respondent does not know.

E.7b How far is this market (in km)? An estimate is fine.

**E.8B** Was any irrigation used for this crop? Can be a mix of rainfall & irrigation.

(Yes/No/Don't Know)

E.8B Which best describes how this crop was watered?

[] Mostly irrigated ] Mostly rainfed ] Equally rainfed and irrigated

**F.1** Was there any crop planted before (the crop just discussed) in this plot within the last year? Answer for only the crop covering the majority of the plot.

(Yes/No/Don't Know)

**F.2** What was this crop? Answer for only the crop covering the majority of the plot.

[] Don't know / cannot determine

[] Any tree fruits (exclude banana/plantain)

...(rest of crop list from **D.2**)

**F.3** Describe the other crop.\_\_\_\_\_

**F.3b** What percentage (1-100) of this plot was covered by this crop? Answer for only the crop covering the majority of the plot.

**F.4** Approximately when did you START planting this crop? (Month & year) Can be the PLANNED date. (yyyy-mm)

**F.5** Approximately when did you FINISH harvesting this crop? (Month & year) Can be the PLANNED date. (yyyy-mm)

**F.6** What is your PRIMARY intention for this crop? Select one.

[] Sale (all of mostly)

[] Home consumption (all or mostly)

[] Equal sale & home consumption (\*equally\* balanced)

[] Other intention for crop

**F.7** Describe the other intention.

**F.7a** Where did you/will you sell this crop? "DK" if respondent does not know.

**F.7b** How far is this market (in km)? An estimate is fine.

**F.8** Was any irrigation used for this crop? Can be a mix of rainfall and irrigation. (Yes/No/Don't Know)

F.8b Which best describes how this crop was watered?

[ ] Mostly irrigated[ ] Mostly rainfed[ ] Equally rainfed and irrigated

F.9 During the past 5 years, how many total years have you irrigated THIS plot?
"1" = only this year;
"2" = any 2 years out of the past 5 years,
"5" = all 5 of the past 5 years.

**B.13** Note here (Y/N) if the farmer will take you to a SECOND farm plot to get a GPS reading. Prioritize irrigated plots, if possible. (Yes/No/Don't Know)

Move on to the next section (farming practices of farmers nearby)

**G.1** Stand in this SECOND plot where at least one crop was grown in any of the past 12 months and record the GPS location. Stay near the CENTER of the plot if possible.

 latitude (x.y °)
 longitude (x.y °)

 altitude (m)
 accuracy (m)

**G.2a** Estimate the length of the shortest side of this SECOND plot (in m) (If the plot is 20 m by 60 m, choose 20m.)

**G.2b** Estimate the length of the longest side of this plot (in m) (If the plot is 20 m by 60 m, choose 60m. It is OK if the plot is not rectangular.)

**G.5** Did you farm at least one irrigated crop ON THIS PLOT in the last 12 months? (Yes/No)

**G.6** Of only the past 12 months, select ALL months in which you irrigated THIS plot. (only choose from the past 12 months based on date of interview)

Dec-2021

Jan-2022 Feb-2022 (rest of months list)

G.7: Is there ANY crop growing / standing in this plot now? (Yes/No)

G.8 What non-crop landcover is in this plot now? (choose the option that seems best)

[] Bare earth (soil, sand, rocks) with little/no vegetation

- [] Grass and/or weeds (can be mix)
- [] Fallows
- [] Shrubs and/or small trees (can be mix)
- [] Trees (med to lg size, can be wood lot or woodland)
- [] Crop waste / residue
- [] Burnt / ashes (can be crops or non-crops)
- [] Mix of multiple non-crop plants (ex. grass, weeds, shrubs, trees, fallows)
- [] Other non-crop landcover

**G.10** Take a photo of / toward the plot, showing this most recent crop (if possible) and the entire plot (if possible)

Click here to upload file. (< 5MB)

**H.1** Was there a previous crop planted in this plot within the last year? (before the one described above)

Answer for only the crop covering the majority of the plot.

(Yes/No/Don't Know)

**H.2** What crop is/was cultivated MOST RECENTLY (including now) on this SECOND plot?

Answer for only the crop covering the majority of the plot.

[] Don't know / cannot determine

[] Any tree fruits (exclude banana/plantain)

...(rest of crop list from **D.2**)

H.3 Describe the other crop.

**H.3b** What percentage (1-100) of this plot was covered by this crop? Answer for only the crop covering the majority of the plot\_\_\_\_\_

**H.4** Approximately when did you START planting this crop? (Month & year). (yyyy-mm)

**H.5** Approximately when did you FINISH harvesting this crop? (Month & year) (yyyy-mm)

H.6 What is your PRIMARY intention for this crop? Select one.

[ ] Sale (all of mostly)[ ] Home consumption (all or mostly)

[] Equal sale & home consumption (\*equally\* balanced)

[] Other intention for crop

H.7 Describe the other intention.

**H.7a** Where did you/will you sell this crop? "DK" if respondent does not know.

H.7b How far is this market (in km)? An estimate is fine.

**H.8** During this growing season for this crop, was any irrigation used (or planned)? Can be a mix of rainfall and irrigation. (Yes/No/Don't Know)

H.8b Which best describes how this crop was watered?

- [] Mostly irrigated
- [] Mostly rainfed
- [] Equally rainfed and irrigated

**H.9** What is the PRIMARY water source used for irrigation? Choose the PRIMARY water source used FOR IRRIGATION.

- [] Shallow well, hand-dug well
- [] Borehole (depth greater than 30 meters)
- [] Harvested water
- [] Surface Water (lake, dam, pond, stream, river, spring)
- [] Tap / Piped Water
- [] Tank (any)
- [] Trucked water
- [] Other water source (for irrigation not rainwater)

H.10 Describe the other water source. Only irrigation water sources.

**H.11** How close is this water source to this plot? (Meters) Water source includes all surface water, groundwater and canal/trench.

[] On farm or immediately next to farm.

[] Within 100 meters of farm

[] 100 m to 250 m from farm

[] 250 m to 500 m from farm

[] More than 500m from farm

H.12 How deep is this water? (in meters, estimate is fine)

**H.13** For this irrigation, what is PRIMARILY used to move water from the source to this plot? Choose the PRIMARY water conveyance.

[] Hand-held containers (buckets, watering cans, jerricans) carried/bicycle

[] Pipes / Hoses

[] Trenches / Canals (to farm plot)

[] Motor vehicle (incl. jerricans by motorbike, car, truck)

[] Other means of carrying or moving water

H.14 Describe the other water conveyance

H.15 What type of equipment is used to distribute the water throughout the plot?

- [] Hand-held containers (buckets, watering cans, jerricans)
- [] Sprinklers (incl. center-pivot, linear, etc.)
- [] Drip irrigation equipment

[] Drag-Hose / Open-pipe

- [] Furrows / Canals (on / within farm plot)
- [] Other water dispersal equipment

H.16 Describe the other type of water distribution system.

**H.16b** Take a picture of the equipment or evidence of irrigation on or next to this farm plot.

Click here to upload file. (< 5MB)

**H.17** What is the PRIMARY power source used for this irrigation? Choose the PRIMARY power source.

[] Manual power / manual labor (buckets, treadle pump, etc., include paid labor)

- [] Gravity flow (trenches, canals)
- [] Fuel (diesel, gasoline)

[] Solar

[] Connection to grid power (Umeme)

[] Connection to a mini-grid

[] Animal power

[] Other power source

H.18 Describe the other source / type of power. \_\_\_\_\_-

**H.19** Is this power source / type shared?

Do not count hired labor as "shared." Do NOT use "other" to describe borrowing, renting, etc. here. These are addressed in the NEXT question.

[] Owned by this farmer/HH and IS NOT shared with others

[] Owned by this farmer/HH and IS shared with others

[] Owned by others and shared to this farmer

[] Don't know

[] Other

**H.190** Please explain, focusing on who owns and who shares. Do NOT describe borrowing, renting etc. here. These are addressed in the NEXT question.

**H.20** How is this power source accessed for irrigation of this plot? This is NOT asking if/how the farmer rents or lends this to others.

[] Owned by this farmer/household (includes family labor)

[] Ownership is shared / owned by multiple farmers

[] Rented/Paid by hour, per use, etc.

[] Borrowed

- [] Community owned/Project
- [] Hired labor (exclude unpaid labor)
- [] Other means of sharing

H.21 Describe the other way that this power source is accessed.

**H.22** Is there any expense incurred on this power source for irrigation? (e.g. fuel for pump, pay for manual labor, etc. -- do NOT include rental of land)

(Yes/No/Don't Know)

**H.23** Estimate the total expense for this power source for this crop and season. Express in Ugandan Shillings (USh)

**I.1** Was there any crop planted before (the crop just discussed) in this plot within the last year? Answer for only the crop covering the majority of the plot.

(Yes/No/Don't Know)

**I.2** What crop was this? Answer for only the crop covering the majority of the plot.

[] Don't know / cannot determine
[] Any tree fruits (exclude banana/plantain)
...(rest of crop list from **D.2**)

**I.3** Describe the other crop.

**I.3b** What percentage (1-100) of this plot was covered by this crop? Answer for only the crop covering the majority of the plot.

\_\_\_\_\_

**I.4** Approximately when did you START planting this crop? (Month & year) (yyyy-mm)

**I.5** Approximately when did you FINISH harvesting this crop? (Month & year). (yyyy-mm)

I.6 What was your PRIMARY intention for this crop? Select one.

[] Sale (all of mostly)

[] Home consumption (all or mostly)

[] Equal sale & home consumption (\*equally\* balanced)

[] Other intention for crop

I.7 Describe the other intention.

**I.7a** Where did you/will you sell this crop? "DK" if respondent does not know.

**I.7b** How far is this market (in km)? An estimate is fine.

**I.8** Was any irrigation used for this crop? Can be a mix of rainfall and irrigation. (Yes/No/Don't Know)

I.8b Which best describes how this crop was watered?

[] Mostly irrigated [] Mostly rainfed [] Equally rainfed and irrigated

**J.1** Was there any crop planted before (the crop just discussed) in this plot within the last year? Answer for only the crop covering the majority of the plot.

(Yes/No/Don't Know)

**J.2** What was this crop?

Answer for only the crop covering the majority of the plot.

[] Don't know / cannot determine
[] Any tree fruits (exclude banana/plantain) ... (rest of crop list from **D.2**)

**J.3** Describe the other crop.

**J.3B** What percentage (1-100) of this plot was covered by this crop? Answer for only the crop covering the majority of the plot.

**J.4** Approximately when did you START planting this crop? (Month & year) (yyyy-mm)

**J.5** Approximately when did you FINISH harvesting this crop? (Month & year) (yyyy-mm)

**J.6** What was your PRIMARY intention for this crop? Select one.

[] Sale (all of mostly)

- [] Home consumption (all or mostly)
- [] Equal sale & home consumption (\*equally\* balanced)
- [] Other intention for crop

J.7 Describe the other intention.

<b>J.7a</b> Where did you/will you sell this crop?	
"DK" if respondent does not know.	

J.7b How far is this market (in km)? An estimate is fine.

**J.8** Was any irrigation used for this crop? Can be a mix of rainfall and irrigation. (Yes/No/Don't Know)

J.8B Which best describes how this crop was watered?

[ ] Mostly irrigated [ ] Mostly rainfed [ ] Equally rainfed and irrigated

**J.9** During the past 5 years, how many total years have you irrigated THIS plot?

"1" = only this year;

"2" = any 2 years out of the past 5 years,

"5" = all 5 of the past 5 years.

X.2 What crops have been cultivated nearby (within 250 m) in the past 12 months?

[] Don't know / cannot determine
[] Any tree fruits (exclude banana/plantain)
...(rest of crop list from **D.2**)

**X.3** Describe the other crop(s).

X.4 Did any farmers nearby (within 250 m) use any irrigation over the past 12 months?

(Yes/No/Don't Know)

**X.5** How many farmers nearby (within 250 m) used any irrigation over the past 12 months?

**X.6** What water sources did they use for irrigation?

[] Shallow well, hand-dug well

- [] Borehole (depth greater than 30 meters)
- [] Harvested water
- [] Surface Water (lake, dam, pond, stream, river, spring)
- [] Tap / Piped Water
- [] Trucked water
- [] Other water source (for irrigation not rainwater)

X.7 Describe the other water source(s). Only irrigation water sources.

**X.8** What source(s) / type(s) of power do they use for this irrigation?

[] Manual power / manual labor (buckets, treadle pump, etc., include paid labor)

- [] Gravity flow (trenches, canals)
- [] Fuel (diesel, gasoline)

[] Solar

[] Connection to grid power (Umeme)

[] Connection to a mini-grid

- [] Animal power
- [] Other power source

**X.9** Describe the other source / type of power.

**X.10** Are these power sources typically shared or hired? (Yes/No/Don't Know)

X.11 How do the farmers access these power sources for irrigation?

- [] Owned by this farmer/household (includes family labor)
- [] Ownership is shared / owned by multiple farmers
- [] Rented/Paid by hour, per use, etc.

[] Borrowed

[] Community owned/Project

[] Hired labor (exclude unpaid labor)

[] Other means of sharing

**X.12** Describe the other way of sharing of the source/type of power.

This second section refers to the farmer's practices and aspirations generally (not only one farm plot).

M.1 Do you own any livestock? (Yes/No/Don't Know)

M.2 Select ALL livestock you own.

[] Cattle / Cows / Oxen
[] Goats / Sheep
[] Pigs
[] Camels
[] Donkeys
[] Poultry (include chicken, ducks, turkeys, pigeons)
[] Fish (from aquaculture)
[] Rabbits

[] Other livestock

M.3 Describe the other livestock \_\_\_\_\_

M.6a How many Cattle / Cows / Oxen do you own? An estimate is okay.

[] Fewer than 10 [] 10 to 50

[] More than 50

[] Don't know

M.6b How many Goats / Sheep do you own? An estimate is okay.

[ ] Fewer than 10 [ ] 10 to 50 [ ] More than 50 [ ] Don't know

M.6c How many Pigs do you own? An estimate is okay.

[] Fewer than 10 [] 10 to 50 [] More than 50 [] Don't know M.6d How many Camels do you own? An estimate is okay.

[] Fewer than 10 [] 10 to 50 [] More than 50 [] Don't know

M.6e How many Donkeys do you own? An estimate is okay.

[ ] Fewer than 10 [ ] 10 to 50 [ ] More than 50 [ ] Don't know

M.6f How many Poultry (all types) do you own? An estimate is okay.

[ ] Fewer than 10 [ ] 10 to 50 [ ] More than 50 [ ] Don't know

M.6g How many fish ponds (for aquaculture) do you own? An estimate is okay.

[ ] Fewer than 10 [ ] 10 to 50 [ ] More than 50 [ ] Don't know

**M.6h** How many Rabbits do you own? An estimate is okay.

[] Fewer than 10 [] 10 to 50 [] More than 50 [] Don't know

**M.6i** How many of the Other Livestock mentioned above do you own? An estimate is okay.

[] Fewer than 10

[] 10 to 50

[] More than 50

[] Don't know

**M.8** What water source do you use most for livestock? Choose the option that best describes the water source you use the most.

[] Shallow well, hand-dug well

[] Borehole (depth greater than 30 meters)

[] Harvested water

[] Surface Water (lake, dam, pond, stream, river, spring)

[] Tap / Piped Water

[] Trucked water

[] Other water source (for irrigation - not rainwater)

M.8a Describe the other livestock water source \_\_\_\_\_

M.9 How do your livestock access water? Choose the method you use most.

[] Animals walk to source

[] Electric Pump

[] Solar Pump

[] Fuel Pump

[] Manual Labor (bucket, watering cans)

[] Gravity Flow (including trenches, canals)

[] Not needed (water is on farm, piped, trucked)

[] Other

M.9a Describe the other means of bringing water to livestock

**M.10** How far is your main water source FOR LIVESTOCK? Choose for the source you use the most

[] On farm or immediately next to farm.

[] Within 100 meters of farm

[ ] 100 m to 250 m from farm

[] 250 m to 500 m from farm

[] More than 500m from farm

M.11 Select all machines that you use at your home or farm FOR LIVESTOCK

[] Chaff/feed cutter

[] Incubator

[] Feed grinder

[] Spray pump

[] Milking machine

[] Cold storage / cooler

[] Other equipment used for livestock

[] None / no equipment for livestock

M.12 Describe the other machines you use at your home or farm FOR LIVESTOCK

M.13 Select all inputs that you provide for your livestock.

- []Fodder
- [] Grain/bran
- [] Bedding
- [] Medicine / pesticide
- [] Other input for livestock
- [] None / no livestock inputs

M.14 Describe BRIEFLY the other inputs you provide for your livestock.

**M.15** Select all livestock products that you sell. Be sure to include all livestock not yet sold but that the farmer has any intention of selling. Do not include livestock products you consume.

[ ] Cattle / Cows / Oxen [ ] Goats / Sheep [ ] Pigs
[] Camels
<ul><li>[ ] Donkeys</li><li>[ ] Poultry (include chicken, ducks, turkeys, pigeons)</li></ul>
[] Fish (from aquaculture)
[] Rabbits
[] Milk
<ul><li>[] Eggs</li><li>[] Meat (beef, goat, sheep, pork, etc.)</li></ul>
[] Other livestock product that you sell
[] None / no livestock products

**M.16** Describe BRIEFLY the other livestock product that you sell.

M.4 Do farmers nearby (within 250 m) own any livestock? (Yes/No/Don't Know)

M.5 Select ALL livestock owned by farmers nearby (within 250 m)

- [] Cattle / Cows / Oxen
- [] Goats / Sheep
- [] Pigs
- [] Camels
- [] Donkeys
- [] Poultry (include chicken, ducks, turkeys, pigeons)
- [] Fish (from aquaculture)
- [] Rabbits
- [] Other livestock

**N.0** Confirm whether or not this farmer has EVER irrigated. Can consider MORE THAN the past 12 months

[] This farmer HAS irrigated

[] This farmer HAS NOT EVER irrigated

**N.1** What are the reasons that you do not irrigate? Select ALL that apply.

[] Existing water source is too far or difficult to access

[] Existing water not adequate/unreliable/too low in some seasons

[] The cost to dig/drill a well or borehole is too high

[] Too much manual labor required / labor costs too high to manually irrigate

[] Difficult to move power, pumping, distribution equipment

[] Initial cost of pump too high

[] Recurrent costs of fuel/electricity for pumping too high

[] There is not enough reliable demand / market for irrigated crops.

[] Lack of knowledge regarding irrigation

[] Land used for other purposes (e.g., grazing)

[] Animals/pests/disease can destroy crops

[] Nearby irrigation scheme(s) not functional

[] I am not interested in irrigating (or irrigating more) / I am satisfied with current farming practices

[] No constraints to irrigation

[] Other constraint to irrigation.

N.2 Describe the other constraint / reason that you do not irrigate.

**N.7** If you would irrigate, what would be the most likely water source? Select ONE from water source list.

[] Shallow well, hand-dug well

[] Borehole (depth greater than 30 meters)

[] Harvested water

[] Surface Water (lake, dam, pond, stream, river, spring)

[] Tap / Piped Water

[] Trucked water

[] Other water source (for irrigation - not rainwater)

N.8 Describe the other type of water source.

**N.3** If you could add one irrigated crop, what would it be (highest priority)? Select ONE from crops list.

[] Don't know / cannot determine

[] Any tree fruits (exclude banana/plantain) ...(rest of crop list from **D.2**)

N.4 Describe the other type of irrigated crop.

**N.5** If you could add a second irrigated crop, what would it be (second highest priority)? Select ONE from crops list.

[] Don't know / cannot determine
[] Any tree fruits (exclude banana/plantain) ...(rest of crop list from **D.2**)

**N.6** Describe the other type of irrigated crop.

**N.10** What are the reasons (if any) that you do not irrigate as much or as well as you would like? Select ALL that apply.

[] Existing water source is too far or difficult to access

[] Existing water not adequate/unreliable/seasonal/difficult to access

[] The cost to dig/drill a well or borehole is too high

[] Too much manual labor required / labor costs too high to manually irrigate

[] Difficult to move power, pumping, distribution equipment

[] Initial cost of pump too high

[] Recurrent costs of fuel/electricity for pumping too high

[] There is not enough reliable demand / market for irrigated crops.

[] Lack of knowledge regarding irrigation

[] Land used for other purposes (e.g., grazing)

[] Animals/pests/disease can destroy crops

[] Nearby irrigation scheme(s) not functional

[] I am not interested in irrigating (or irrigating more) / I am satisfied with current farming practices

[] No constraints to irrigation

[] Other constraint to irrigation.

N.11 Describe the other constraint / reason.

**N.16** If you would irrigate more/better, what would be the most likely water source? Select ONE from water source list.

[] Shallow well, hand-dug well

[] Borehole (depth greater than 30 meters)

[] Harvested water

[] Surface Water (lake, dam, pond, stream, river, spring)

[] Tap / Piped Water

[] Trucked water

[] Other water source (for irrigation - not rainwater)

N.17 Describe the other type of water source.

**N.12** If you could irrigate more/better, what would be the highest priority crop? Select ONE from crops list. Can be a crop you already grow.

[] Don't know / cannot determine
[] Any tree fruits (exclude banana/plantain)
...(rest of crop list from **D.2**)

N.13 Describe the other type of irrigated crop.

**N.14** If you could irrigate more/better, what would be the second highest priority crop? Select ONE from crops list. Can be a crop you already grow.

[] Don't know / cannot determine
[] Any tree fruits (exclude banana/plantain) ...(rest of crop list from **D.2**)

N.15 Describe the other type of irrigated crop.

**O.1** Other than irrigation, if you could add another income generating activity related to farming / agriculture for thisfarm, what would it be? Select one from list.

[] Agro-processing (grinding, milling, pressing, threshing, etc.)

- [] Aquaculture / fish pond
- [] Beekeeping
- [] Add (or increase production of ) a cash crop (non-irrigated)
- [] Charcoal making
- [] Floriculture / Flower cultivation
- [] Add (or increase) livestock
- [] Woodlot / Agroforestry
- [] Brick making
- [] Shop keeping/ open shop (any kind incl. general supplies, hair salon,
- clothing/tailoring, etc.)
- [] Other income generating activity
- [] None / Don't Know

**O.2** Describe the other income generating activity.

We're going to read a list of projects that could be done in your area. Please listen to them all & answer which three would be most important to help you earn more income.

**O.3** What is the MOST important project that would help you boost income from your farm/household? Select one from list.

[] Increasing access to agro-processing

[] Developing water sources for irrigation

[] Helping farmers get access to water pumps for irrigation

[] Helping farmers get access to pipes or canals for irrigation

[] Developing water supplies for livestock

[] Cold storage for animal products (meat, poultry, eggs, milk, fish)

[] Fencing/protection for animals or crops

[] Improve roads or transport network or transport services in the area

[] Increase access to electricity for homes and businesses

[] Reduce outages or blackouts in electricity

[] Other income generating enabler related to water, energy and agriculture

**O.3a** Describe the other income generation "enabler".

**O.4** What is the SECOND most important project that would help you boost income from your farm/household? Select one from list.

(...same list as **0.3**)

**O.4a** Describe the other income generation "enabler".

**O.5** What is the THIRD most important project that would help you boost income from your farm/household? Select one from list.

(...same list as **0.3**)

**O.5a** Describe the other income generation "enabler".

We're going to read another list of projects that could be done in your area. Please listen to them all and answer which three would be most important to help you earn more income.

**O.6** What is the MOST important project that would help you boost income from your farm/household? Select one from list.

[] Reduce impact of price fluctuations for crops / livestock / animal products

[] Helping farmers access land titles

[] Improve markets for livestock

[] Increase access to loans or banking services

[] Lower price of electricity

[] Lower price of fuel

[] Increase training on crops

[] Increase training on irrigation

[] Increase training on livestock

[] Increase access to farm inputs

[] Increase access to farm labor

[] Improve network in the area

[] Other general income generating enabler

O.6a Describe the other income generation "enabler".

**0.7** What is the SECOND most important project that would help you boost income from your farm/household? Select one from list.

(same list as **0.6**)

**O.7a** Describe the other income generation "enabler".

**O.8** What is the THIRD most important project that would help you boost income from your farm/household? Select one from list.

(same list as **0.6**)

**O.8a** Describe the other income generation "enabler".

**O.9** Which machine would you want most that would help you earn more income as a farmer? Select one from list

[] Boda boda / motorcycle (for transporting agricultural products)

[] Chainsaw

[] Device / machine for drying / roasting

[] Device / machine for sorting / washing

[] Electricity generator -- fuel powered

[] Farm equipment (tiller, tractor, rice harvester, etc.)

[] Grater / Peeler / Chipper

[] Grinder/Miller for Maize or other crop

[] Presser / Grinder for paste/oil/sugarcane

[] Refrigerator / cooler (for storage of produce, meat, poultry, dairy)

[] Thresher/Dehusker/Huller for Maize or other crop

[] Truck or trailer for transporting agricultural/animal products

[] Water pump (fuel or electric powered)

[] Spray pump – manual

[] Spray pump – mechanical or electric

[] Boat with motor (do not include boats without motors)

[] Other energy consuming device

[] Don't know

[]None

**O.9a** Describe the other type of machine.

**O.10** Which machine would you want SECOND most that would help you earn more income as a farmer? Select one from list

(same list as **O.9**)

**O.10a** Describe the other type of energy consuming device.

**R.1** What is the name of the MAIN place where you bring any farm products for processing or sale to others who process?

Notes: Focus ONLY on crops that get processed. The place can be a non-market location, such as own farm, a home or informal shop in the same village. Processing can be manual (ex. coffee pulping).

**R.2** Distance to this location (in km) 999 for don't know

**R.3** Select the machines used/accessed at this location.

[] Processing (grinding, threshing) of maize/cassava/sorghum/millet/soya

[] Rice husking

[] Extraction oil/paste from seeds (sesame, ground nuts, sunflower) or pressing sugarcane

[] Coffee pulping, dehusking and other processing

[] Collection point with chilling for milk/dairy products

[] Collection point with chilling for non-dairy animal products (meat, fish, eggs or other non-dairy)

[] Other crops or farm products which require some productive energy use (processing, chilling). Do not include crops that do not require energy.

[]None

[] Don't know

**R.3a** Other processing service or machine accessed at this location.

**R.3x** Is there a SECOND place where you bring any farm products for processing or sale to others who process? (Yes/No)

**R.4** What is the name of the SECOND place where you bring any farm products for processing or sale to others who process?

Notes: Focus ONLY on crops that get processed. The place can be a non-market location, such as own farm, a home or informal shop in the same village. Processing can be manual (ex. coffee pulping).

**R.5** Distance to this location (in km) 999 for don't know \_\_\_\_\_

**R.6** Select the machines used/accessed at this location.

[] Processing (grinding, threshing) of maize/cassava/sorghum/millet/soya

[] Rice husking

[] Extraction oil/paste from seeds (sesame, ground nuts, sunflower) or pressing sugarcane

[] Coffee pulping, dehusking and other processing

[] Collection point with chilling for milk/dairy products

[] Collection point with chilling for non-dairy animal products (meat, fish, eggs or other non-dairy)

[] Other crops or farm products which require some productive energy use (processing, chilling). Do not include crops that do not require energy.

[] None

[] Don't know

**R.6a** Other processing service or machine accessed at this location.

**R.6x** Is there a SECOND place where you bring any farm products for processing or sale to others who process? (Yes/No)

**R.7** What is the name of the THIRD place where you bring any farm products for processing or sale to others who process?

Notes: Focus ONLY on crops that get processed. The place can be a non-market location, such as own farm, a home or informal shop in the same village. Processing can be manual (ex. coffee pulping).

**R.8** Distance to this location (in km) 999 for don't know

**R.9** Select the machines used/accessed at this location.

[] Processing (grinding, threshing) of maize/cassava/sorghum/millet/soya

[] Rice husking

[] Extraction oil/paste from seeds (sesame, ground nuts, sunflower) or pressing sugarcane

[] Coffee pulping, dehusking and other processing

[] Collection point with chilling for milk/dairy products

[] Collection point with chilling for non-dairy animal products (meat, fish, eggs or other non-dairy)

[] Other crops or farm products which require some productive energy use (processing, chilling). Do not include crops that do not require energy.

[] None

[] Don't know

**R.9a** Other processing service or machine accessed at this location.

**IA.1** Question for the FARMER: Is this an AREA (within 1 km circle from here) with many irrigating farmers? (Many means more than 10) (Recall that the project is most interested in farm plots larger than about 1/10th hectare)

(Yes/No)

**IA.2** Add a brief description of the amount/prevalence of irrigation in this AREA (1 km circle from here)

**IA.1** Question for the FARMER: Does the PARISH have many irrigating farmers? (Many means more than 20) (Recall that the project is most interested in farm plots larger than about 1/10th hectare)

(Yes/No)

IA.2 Add a brief description of the amount/prevalence of irrigation in the PARISH

If there are any final notes you (the enumerator) wish to share about this survey, please add them here