

February 2018

PanOral Consent Form

Kuvomemeleza kutenga nawo mbali pa kafukufuku

Title of the research project: Agro-ecological Intensification and Production among smallholder farmers in Malawi

Hello! My name is _____ and I am working for Africa RISING. Researchers from Michigan State University are trying to learn about the lives of farmers in Malawi. We are asking farmers, like you, if they would like to participate in a face-to-face interview about how you farm, and it will last about an hour. You must be at least 18 years old to participate.

We are not selling anything or offering any services to you right now. We are only gathering information, but hope that by understanding the lives of farmers in Malawi, Michigan State University and other organizations may provide better services in the future.

Your participation is completely voluntary. Choosing to participate will not increase your opportunities to get services; and choosing not to participate will not decrease your opportunities to receive services. If you choose to participate, I will ask you a number of questions about your household, your farm, and your opinions about farming. You can choose not to answer any question you wish. Your answers will be completely confidential and only the research staff will see your answers. When we do our reports, your answers will be grouped with other farmers' answers to give an overall picture of the lives of farmers in this area. No one in your community will know what your answers are unless you tell them.

There's no cost or compensation offered to participate.

If you have any questions about the study you may contact Dr. Regis Chikowo at IITA by phone at 0994-859-401, or Mr. Emmanuel Jambo by phone at 0999-911-530.

Do you have any questions about this study or your participation?

Do you agree to participate in this interview?

Yes, No

[If no:] Thank you for your time today. [Indicate the respondent's indication that they do not agree to participate in the survey. Notify your supervisor at the end of the day.]

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Enumerator name:		Date of visit:									
District: 1=Dedza; 2=Ntcheu		EPA:									
Village:		House GPS coordinates		S			.				
				E			.				
Sample group: 1=Int.; 2=LC; 3=DC		Household code:									
Entered by:		Checked by:									
Household Information											
Enumerator (say to respondent): First, I will ask you some questions about you and your household.											
HH01. What is the <i>name</i> of the Primary Respondent?											

HH02. What is your <i>age</i>? (Write age <i>in years</i>)											
HH03. What is your <i>gender</i>? (1=Male; 2=Female)											
HH04. Are you the head of this household? (1=Yes; 2=No)											
If Yes, skip to HH08											
HH05. What is your relationship to the head of this household (The head of this household is my _____)? 2=Spouse; 3=Son/Daughter; 4 = Father/Mother; 5 = Brother/Sister											
6=grandparent											
99 = Other (specify)											
HH06. What is the <i>name</i> of the household head?											
HH07 What is the <i>gender</i> of the household head? ? (1=Male; 2=Female)											
HH08 Over the past 12 months, how many months has the household head <i>resided elsewhere</i>?											

Household level demographic questions

HH09 How many children aged 0-9 years are in this household?											
HH10 How many children aged 10-15 are in this household?											
HH10b How many people aged 16-69 are in this household?											
HH11 How many people aged 70 years or above are in this household?											

Village Codes

1=Mkuwazi	7=Dauka	11=Wilson	17=Gonthi
2=Mbidzi	8=Katsese	12=Pitala	18=Kampanje
3=Msamala	9=Chawa	13=Kakhome	19=Hauya
4=Kalumo	(Simenti, Chinthu, Zilionge, Mbalame)	14=Chikawola	20=Kahowela
5=Amosi (Hiwa)	10=Kabango	15=Sitolo (Chidika)	21=Malinda
6=Nzililongwe	(Kaupsa, Kaputeni, Kasakula, Malata, Chilenga, Matewera)	16=Sukasuka	22=Njolomole

EPA Codes

1=Linthipe	3=Kandeu	5=Mtakataka
2=Golomoti	4=Nsipe	

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Subsidized fertilizer acquisition

FA01 Did you receive or purchase any subsidized fertilizer for use in the 2017/18 season? (1=Yes; 2=No) If no, skip to FA06 (NEXT TABLE)					
Enumerator – Ask questions row-by row	FA02 Did you purchase or receive _____ for crops grown in the past (2017/18) growing season? (1=Yes; 2=No) If no, skip to next fertilizer type	FA03 What was the source of subsidized _____? (Codes below)	FA04 How much subsidized _____ did you receive or purchase? (See codes below)		FA05 How much did you pay per unit of subsidized _____? (MWK per unit in FA04b)
			a Quantity	b Unit	
Type of fertilizer					
a. 23:21:0+4S (NPK)					
b. Urea					
c. CAN					
d. D Compound					
e. DAP					
f. Other (specify):					

Commercially purchased fertilizer acquisition

FA06 Did you make any commercial fertilizer purchases for use in the 2017/18 season? (1=Yes; 2=No) If no, skip to HH12 (NEXT TABLE)					
Enumerator – Ask questions row-by row	FA07 Did you purchase _____ for crops grown in the past (2017/18) growing season? (1=Yes; 2=No) If no, skip to next fertilizer type	FA08 How much _____ did you purchase commercially?		FA09 How much did you pay per unit of _____? (MWK per unit in FA08b)	FA10. What was the distance from farm to point of purchase (km) for _____?
		a Quantity	b Units		
Type of fertilizer					
a. 23:21:0+4S (NPK)					
b. Urea					
c. CAN					
d. D Compound					
e. DAP					
f. Other (specify):					
FA11 How much did you pay in total to transport your commercially purchased fertilizer from the point of purchase to the household? (MWK)					

FA03. Codes: 1=FISP 2=Inputs for Assets 3=NGO or other aid organization 4=Farmer's group 5=Through another farmer 99=Other (specify)	Unit Codes: 1=kg 2=25 kg sacks 3=50 kg sacks 4=20L Bucket 5=5L pail 6=Ndiwo plate (about half a kg) 7=Nsima plate (about a kg) 8=18L Bucket 9=15L Bucket 10=10L pail 99=Other (specify)
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Field level questions – Enumerator – Tell the respondent we would now like to ask about their fields during the 2017/18 planting/harvest season. For these questions, a field is defined as a continuous area of land, and a plot is defined as a section of a field that is dedicated to a specific crop (or intercrops).

HH12 What is the total area rented out during the 2017/18 growing season?
HH13 How many fields did you plant during the 2017/18 growing season, including rented in fields?
HH14 What is the total acres cultivated during the 2017/18 growing season, including rented in fields?
HH15 Was any area left fallow during the 2017/18 growing season? (1=Yes; 2=No) IF NO, Skip to Map
HH16 Why was that land left fallow? 1=to improve the soil 3=shortage of labour 2=no material inputs 4=dispute over land tenure 99=other (specify)
HH17 What is the total area that was left fallow? (acres)

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Name of person giving the tour: _____

Enumerator: **DRAW MAP OF THE FARM** (to be done by the enumerator)

- 1) Draw each field the farmer owned or cultivated in 2017/18
- 2) Draw each field the farmer owns that was left fallow in 2017/18
- 3) Name each field
- 4) Within each **cultivated** field, identify individual **plots** (see definitions to the right→).
- 5) Number each field & plot.
- 6) List the crops planted for the 2017/18 season for each plot,
- 7) Record the area for each **field** & then each **plot** in acres – **Use the conversion table to write in decimal form.**
- 8) Identify the **PLOTS** the farmer indicates as having the highest (H) and lowest (L) fertility

Enumerator - For this map and throughout the survey, a:

FIELD is as a continuous area of land, and a

PLOT is a section within a field that is dedicated to a specific crop or intercrops

Conversion table:

- 1/2 = 0.50
- 1/3 = 0.33
- 1/4 = 0.25
- 1/5 = 0.20
- 1/6 = 0.17
- 1/7 = 0.14
- 1/8 = 0.13
- 1/9 = 0.11

- 2/3 = 0.67
- 2/4 = 0.50
- 2/5 = 0.40
- 2/6 = 0.33
- 2/7 = 0.29
- 2/8 = 0.25
- 2/9 = 0.22

- 3/4 = 0.75
- 3/5 = 0.60
- 3/6 = 0.50
- 3/7 = 0.43
- 3/8 = 0.38
- 3/9 = 0.33

- 4/5 = 0.80
- 4/6 = 0.67
- 4/7 = 0.57
- 4/8 = 0.50
- 4/9 = 0.44



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Dietary Diversity- Enumerator, for the following questions, 1=Yes and 2=No. Advise the respondent:

“I would like to ask about the types of food you or anyone else in the household ate YESTERDAY during the day and at night. When answering the questions, please do not include foods prepared and eaten outside the home.”

DD01 Are you responsible for household food preparation OR were you present and eating in household for the entirety of yesterday?	If NO, skip to HH21
DD02 Was yesterday a typical day for your household (“typical” means most members present, no special events - e.g., wedding, funeral, holiday)?	If NO, skip to HH21
DD03 Did you or anyone eat maize or maize-based foods (e.g., nsima, porridge, green maize, or maize flour)?	
DD04 Did you or anyone eat grains other than maize (e.g., millet, sorghum, rice, wheat, or finger millet), OR foods made from other grains (e.g., rolls, mandasi fritters, or banana cakes)?	
DD05 Did you or anyone eat roots or tubers (e.g., sweet potato, cassava, Irish potato) or food made from roots or tubers?	
DD06 Did you or anyone eat any vegetables (e.g., greens, tomato, pumpkin, okra, chinese cabbage, mipombe, mphonda, or indigenous vegetables)?	
DD07 Did you or anyone eat any fruits (e.g., mango, pawpaw, sweet apple, guava, banana, or indigenous fruit)?	
DD08 Did you or anyone eat meat (e.g., chicken, goat, beef, pork, lamb, rabbit, wild game, duck, pigeon, dove, mice, or flying ants)?	
DD09 Did you or anyone eat eggs?	
DD10 Did you or anyone eat any fresh or dried fish or shellfish?	
DD11 Did you or anyone eat foods made from beans, peas, lentils, or nuts (e.g., pigeonpea, groundnut, groundnut flour, cowpea, common bean, velvet bean, Bambara nuts, kabaifa, and nkhungudzu)?	
DD12 Did you or anyone eat any foods made with oil, fat or butter (e.g., mandasi, African cake, banana cake, fried eggs, or chips)?	
DD13 Did you or anyone consume dairy products (e.g., cheese, yogurt, milk or other milk products)?	
DD14 Did you or anyone eat any other foods (e.g., condiments, coffee, or tea)?	

Sources of agricultural advice and information; Land & labor costs

HH21 Have you ever received advice about crop selection? (1=Yes; 2=No) (If No, skip to HH24)	
HH22 Did you receive advice about crop selection for the 2017/18 season? (1=Yes; 2=No)	
HH23 What is the main source of advice you received about crop selection? (See codes below)	
HH24 Have you ever received advice about residue management? (1=Yes; 2=No) (If No, skip to HH28)	
HH25 Did you receive advice about residue management for the 2017/18 season? (1=Yes; 2=No)	
HH26 What is the main source of advice you received about residue management? (See codes below)	
HH27 What types of advice are you getting related to residue management? (See Codes)	a
	b
	c
	d
HH28 Have you ever received advice about fertilizer? (1=Yes; 2=No) (If No, skip to HH31)	
HH29 Did you receive advice about fertilizer for the 2017/18 season? (1=Yes; 2=No)	
HH30 What was the main source of advice about fertilizer? (See codes below)	
HH31 Have you ever received advice about land preparation or spacing? (1=Yes; 2=No) (If No, skip to HH34)	
HH32 Did you receive advice about land preparation or spacing for the 2017/18 season? (1=Yes; 2=No)	
HH33 What was the main source of advice about land preparation or spacing? (See codes below)	
HH34 During the past growing season, what was the wage rate if, you, the respondent were to provide ganyu labour for ridge making (land preparation)?	HH34a Amount:
	HH34b Unit: 1=MWK; 2=kg maize
	HH34c Per: 1=acre; 2=day; 3=rows/ridges; 4=plant
HH35 Over the past 12 months, how much would it cost to rent 1 acre of good quality land in this area for one season? (Indicate price in MWK per acre)	

HH23, HH26, HH30, HH33 Source Codes:	HH27: Advice codes	
1=family member	1=Stand residue in field	8=Remove residue for fire fuel
2=lead farmer	2=Lay residue in field	9=Remove residue for compost
3=other farmer	3=Mound residue in field	11=Graze residue by livestock/animals
4= extension agent	4=Mound residue off field	14= Bury residue before tillage
6= other NGO	5=Burn residue in field	15=Incorporate residue during tillage
7=private distributor	6=Burn residue off field	99=Other
8=groups	7=Remove residue for fodder	(Specify) _____
9=Television		
10=Radio		
11=Newspaper		
99=Other		
(Specify) _____		

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Asset holdings – Enumerator, these questions refer to the current time period (February 2018)

Asset	AH01 Does this household own a _____? 1=Yes; 2=No If no, SKIP to next Asset	AH02 How many _____ does this household own? (Number)	AH03 About how much would you receive if you were to sell one of your _____ in this area? (MWK)
1. Sprayer			
2. Treadle pump			
3. Ox cart			
4. Plough			
5. Cell phone			
6. Bicycle			
7. Radio			
8. Television			
9. Sofa set			
10. Improved wood/coal stove			
11. Kerosene or gas stove			
12. Motorbike			
14. Solar panel			

Livestock holdings – Enumerator, these questions refer to the current time period (February 2018)

Livestock	LS01 Does this household own a _____? 1=Yes 2=No If no, SKIP to next Livestock	LS02 How many _____ does this household own? (Number)	LS03 How are these animals kept/fed/confined during the _____? (What is your animal production practice)? 1=Free range/communal grazing 2=Kept in Dambo 3=Herded outside 4=Both free range and herded outside 5=Fully confined		LS04 About how much would you receive if you were to sell ONE _____ in this area? (MWK)
			a Wet season	b Dry season	
1. Bulls/Oxen					
2. Cows					
3. Calves					
4. Goats					
5. Sheep					
6. Chickens					
7. Ducks or Geese					
8. Guinea fowl					
9. Donkeys					
10. Pigs					
11. Doves/pigeons					
12. Rabbits					
13. Guinea pigs					
14. Other (Specify _____)					

Other income sources

Indicate the estimated household income between February 2017 and January 2018 (include in-kind receipts to the household)
(Enumerators: fill out EITHER columns b & c OR column d)

Income source	OI01 Code	OI02a Did the household earn income from _____? 1=Yes; 2=No If No, Skip to next income source	OI02b Number of months income received	OI02c Average monthly income during these months (MWK)	OI02d Annual income (MWK)
Agricultural labour on another farm (ganyu)	1				
Non-agricultural labour	2				
Remittances (including domestic/foreign migrants)	3				
Informal business (e.g. selling firewood)	4				
Formal business (e.g. tailor)	5				
Selling animal products (eggs/milk/meat/animals)	6				
Donations/gifts	7				
Other non-farm income (specify)	99				

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Enumerator – The following pages of questions are to be filled out in the plots identified as high fertility with the farmer.

HIGH fertility plot-specific questions

Field _____ Plot _____

GPS informations

FGPS – Record the GPS coordinates from the center of the plot	S			.					
	E			.					
FGPS00 – Record the area of the ENTIRE PLOT as measured using GPS (Square meters)									

Field history

Enumerator – Please indicate to the farmer, the next 5 questions are referring to the 2016/17 agricultural season	
FH01 What was done with the crop residue after the harvest in 2016? (See codes) -----→Only ask FH02 & FH03 if FH01 is 1,2,3 or 5	
FH02 What happened to the residue remaining in the field between the 2016 harvest and land preparation for the following planting season? (See codes) (Only ask if FH02=14 or FH02=15)	
FH03 When did you finish incorporating/burying residue from the 2016 harvest?	a. Month
	a2. Week
FH04 When was land preparation finished for the 2016/17 season (2017 harvest)?	a. Month
	a2. Week
	b. Year
FH05 When was planting finished in for the 2016/17 season (2017 harvest)?	a. Month
	a2. Week
	b. Year

Enumerator – Please indicate to the farmer, the next 5 questions are referring to the 2017/18 agricultural season	
FH06 What was done with the crop residue after the harvest in 2017? (See codes) -----→Only ask FH07 & FH08 if FH06 is 1,2,3 or 5	
FH07 What happened to the residue remaining in the field between the 2017 harvest and land preparation for the following planting season? (See codes) (Only ask if FH07=14 or FH07=15)	
FH08 When did you finish incorporating/burying residue from the 2017 harvest?	a. Month
	a2. Week
FH10 During which month was planting finished in for the 2017/18 season (2018 harvest)?	a. Month
	a2. Week
	b. Year
FH11- How many seeds from the main crop are sown per planting station in this plot?	

FH01 & FH06 Codes 1=Standing in field 2=Laying in field 3=Mounds in field 4=Mounds off field 5=Burned in field 6=Burned off field 7=Removed for fodder 8=Removed for fire fuel 9=Removed for compost 10=Other (specify) _____	FH02 & FH07 Codes: 11=Grazed by livestock/animals 12=Burned 13=Collected for fuel, compost, etc. 14= Buried residues before tillage 15=incorporate residues during tillage 99=Other (Specify) _____
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Field _____ Plot _____ Fertility HIGH

Agricultural Labor (Household and Hired) for the HIGH FERTILITY PLOT

	<i>How many hh members younger than 16 provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many days did hh members younger than 16 provide labor for _____?</i>	<i>How many household MEN 16 - 70 years provide labor for _____? If none, enter "0" and skip to LAB05</i>	<i>How many household MEN 16 - 70 years provide labor for _____?</i>	<i>How many household WOMEN 16 - 70 years provide labor for _____? If none, enter "0" and skip to LAB07</i>	<i>How many household WOMEN 16 - 70 years provide labor for _____?</i>	<i>How many household members over 70 years provide labor for _____? If none, enter "0" and skip to LAB09</i>	<i>How many household members over 70 years provide labor for _____?</i>	<i>How many MEN were hired to provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many days did hired MEN provide labor for _____?</i>	<i>How many WOMEN were hired to provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many days did hired WOMEN provide labor for _____?</i>
LAB Activity	LAB01	LAB02	LAB03	LAB04	LAB05	LAB06	LAB07	LAB08	LAB09	LAB10	LAB11	LAB12
1=Land preparation												
2=Planting												
3=Basal (NPK) application												
4=Top dress (urea) application												
5=Weeding												
6=Banking (second weeding)												

Enumerator – Use this space to ask, “Which household members provided labor for _____?” This is to assist with answering the questions above

<i>Land preparation</i>	<i>Planting</i>	<i>Basal application</i>	<i>Top dress application</i>	<i>Weeding</i>	<i>Banking (second weeding)</i>

LOCATION AND SAMPLE NUMBER WITHIN HIGH FERTILITY PLOT

	1	2	3	4	5	6	7	8
RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE
D1. RIDGE WEED RANKING <i>(INCLUDE WITCH WEED)</i>								
D2. RIDGE WITCH WEED RANKING <i>(WITCH WEED ONLY)</i>								
FURROW	FURROW	FURROW	FURROW	FURROW	FURROW	FURROW	FURROW	FURROW
D3. FURROW WEED RANKING <i>(INCLUDE WITCH WEED)</i>								
D4. FURROW WITCH WEED RANKING <i>(WITCH WEED ONLY)</i>								

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HIGH FERTILITY PLOT		atLEAF CHLOROPHYLL READINGS (4 PLANTS PER LOCATION & 3 READING REPS PER PLANT ON SAME LEAF AREA)															
		1		2		3		4		5		6		7		8	
		GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD
1	D5. PLANT 1 REP 1																
	D6. PLANT 1 REP 2	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D7. PLANT 1 REP 3																
2	D8. PLANT 2 REP1																
	D9. PLANT 2 REP 3	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D10. PLANT 2 REP 3																
3	D11. PLANT 3 REP 1																
	D12. PLANT 3 PER 2	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D13. PLANT 3 REP 3																
4	D14. PLANT 4 REP 1																
	D15. PLANT 4 REP 2	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D16. PLANT 4 REP 3																

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Enumerator – The following pages of questions are to be filled out in the plots identified as low fertility with the farmer.

LOW fertility plot-specific questions

Field _____ Plot _____

GPS informations

FGPS – Record the GPS coordinates from the center of the plot	S			.					
	E			.					
FGPS00 – Record the area of the ENTIRE PLOT as measured using GPS (Square meters)									

Field history

Enumerator – Please indicate to the farmer, the next 5 questions are referring to the 2016/17 agricultural season	
FH01 What was done with the crop residue after the harvest in 2016? (See codes) ----->Only ask FH02 & FH03 if FH01 is 1,2,3 or 5	
FH02 What happened to the residue remaining in the field between the 2016 harvest and land preparation for the following planting season? (See codes) (Only ask if FH02=14 or FH02=15)	
FH03 When did you finish incorporating/burying residue from the 2016 harvest?	a. Month
	a2. Week
FH04 When was land preparation finished for the 2016/17 season (2017 harvest)?	a. Month
	a2. Week
	b. Year
FH05 When was planting finished in for the 2016/17 season (2017 harvest)?	a. Month
	a2. Week
	b. Year

Enumerator – Please indicate to the farmer, the next 5 questions are referring to the 2017/18 agricultural season	
FH06 What was done with the crop residue after the harvest in 2017? (See codes) ----->Only ask FH07 & FH08 if FH06 is 1,2,3 or 5	
FH07 What happened to the residue remaining in the field between the 2017 harvest and land preparation for the following planting season? (See codes) (Only ask if FH07=14 or FH07=15)	
FH08 When did you finish incorporating/burying residue from the 2017 harvest?	a. Month
	a2. Week
FH10 During which month was planting finished in for the 2017/18 season (2018 harvest)?	a. Month
	a2. Week
	b. Year
FH11- How many seeds from the main crop are sown per planting station in this plot?	

FH01 & FH06 Codes 1=Standing in field 2=Laying in field 3=Mounds in field 4=Mounds off field 5=Burned in field 6=Burned off field 7=Removed for fodder 8=Removed for fire fuel 9=Removed for compost 10=Other (specify) _____	FH02 & FH07 Codes: 11=Grazed by livestock/animals 12=Burned 13=Collected for fuel, compost, etc. 14= Buried residues before tillage 15=incorporate residues during tillage 99=Other (Specify) _____
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Field _____ Plot _____ Fertility LOW

Agricultural Labor (Household and Hired) for the LOW FERTILITY PLOT

	<i>How many hh members younger than 16 provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many days did hh members younger than 16 provide labor for _____?</i>	<i>How many household MEN 16 - 70 years provide labor for _____? If none, enter "0" and skip to LAB05</i>	<i>How many days did household MEN 16 - 70 years provide labor for _____?</i>	<i>How many household WOMEN 16 - 70 years provide labor for _____? If none, enter "0" and skip to LAB07</i>	<i>How many days did household WOMEN 16 - 70 years provide labor for _____?</i>	<i>How many household members over 70 years provide labor for _____? If none, enter "0" and skip to LAB09</i>	<i>How many days did household members over 70 years provide labor for _____?</i>	<i>How many MEN were hired to provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many days did hired MEN provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many WOMEN were hired to provide labor for _____? If none, enter "0" and skip to LAB03</i>	<i>How many days did hired WOMEN provide labor for _____?</i>
LAB Activity	LAB01	LAB02	LAB03	LAB04	LAB05	LAB06	LAB07	LAB08	LAB09	LAB10	LAB11	LAB12
1=Land preparation												
2=Planting												
3=Basal (NPK) application												
4=Top dress (urea) application												
5=Weeding												
6=Banking (second weeding)												

Enumerator – Use this space to ask, “Which household members provided labor for _____?” This is to assist with answering the questions above

<i>Land preparation</i>	<i>Planting</i>	<i>Basal application</i>	<i>Top dress application</i>	<i>Weeding</i>	<i>Banking (second weeding)</i>

LOCATION AND SAMPLE NUMBER WITHIN LOW FERTILITY PLOT

	1	2	3	4	5	6	7	8
RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE	RIDGE
D1. RIDGE WEED RANKING <i>(INCLUDE WITCH WEED)</i>								
D2. RIDGE WITCH WEED RANKING <i>(WITCH WEED ONLY)</i>								
FURROW	FURROW	FURROW	FURROW	FURROW	FURROW	FURROW	FURROW	FURROW
D3. FURROW WEED RANKING <i>(INCLUDE WITCH WEED)</i>								
D4. FURROW WITCH WEED RANKING <i>(WITCH WEED ONLY)</i>								

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LOW FERTILITY PLOT		atLEAF CHLOROPHYLL READINGS (4 PLANTS PER LOCATION & 3 READING REPS PER PLANT ON SAME LEAF AREA)															
		1		2		3		4		5		6		7		8	
		GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD	GROW STAGE	SPAD
1	D5. PLANT 1 REP 1																
	D6. PLANT 1 REP 2	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D7. PLANT 1 REP 3																
2	D8. PLANT 2 REP1																
	D9. PLANT 2 REP 3	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D10. PLANT 2 REP 3																
3	D11. PLANT 3 REP 1																
	D12. PLANT 3 PER 2	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D13. PLANT 3 REP 3																
4	D14. PLANT 4 REP 1																
	D15. PLANT 4 REP 2	# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES		# LEAVES	
	D16. PLANT 4 REP 3																