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USAID/MALAWI MONITORING, EVALUATION AND LEARNING SUPPORT (MELS) PROJECT

Baseline Survey Report

For the FTF Agricultural Diversification Project

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ACRONYMS

AA	Administrative Assistant
AgDiv	Feed the Future Malawi Agricultural Diversification project
DEC	Development Experience Clearinghouse
DMQCS	Data Manager and Quality Control Specialist
CAPI	Computer Assisted Personal Interviewing system
CBO	Community Based Organization
CDM	Center for Development Management
DDS	Dietary Diversity Score
DQA	Data Quality Assessment
DQVA	Data Quality Assurance and Verification
EA	Enumeration Areas
ENV	Environment
EPA	Extension Planning Areas
FQCM	Field and Quality Control Manager
FTF	Feed the Future
GCC	Global Climate Change
GPS	Global Positioning System
HA	Hectares
IBTCI	International Business & Technical Consultants, Inc.
IDIQ	Indefinite Delivery Indefinite Quantity Contract
INVC	Integrating Nutrition into Value Chains
LOP	Life of Project
M&E	Monitoring and Evaluation
MELS	Monitoring, Evaluation and Learning Support
MPHC	Malawi Population and Housing Census
MSME	Micro, Small, Medium Enterprise
MT	Metric Ton
NSO	National Statistics Office
OFSP	Orange Fleshed Sweet Potato
PIR	Performance Improvement Review
PD	Project Director
PSU	Primary Sampling Unit
QC	Quality Control
QCS	Quality Control and Support
RFP	Request for Proposals
SEG	Sustainable Economic Growth
SOW	Scope of Work
SPSS	Statistical Package for Social Sciences
TBD	To Be Determined
TS	Information Technology Specialist
USAID	United States Agency for International Development
USG	United States Government
VC	Value Chain
WDDS	Women Dietary Diversity Score
WEAI	Women's Empowerment in Agriculture Index
ZOI	Zone of Influence

EXECUTIVE SUMMARY

This report provides main findings of the baseline survey of rural farmers in the activity intervention zone of the Feed the Future Malawi Agricultural Diversification Activity (AgDiv) and a detailed methodology how it was conducted. This report provides a summary of the planning and preparation work including sampling, the survey field work including nonresponse rates, the calculation methodology for each indicator and the calculated indicator values for 12 farm based outcome indicators for AgDiv.

The purpose of the survey was to collect outcome indicator data for the AgDiv Activity at the farm level. MELS did not gather output indicator data or data on organizations, businesses, etc. The baseline was gathered from farmers producing one or more of the three target value chain crops (groundnut, soy, Orange Fleshed Sweet Potato (OFSP)) in targeted EPAs in seven rural FTF districts: Lilongwe, Mchinji, Dedza, Ncheu, Balaka, Machinga and Mangochi.

Since AgDiv had not yet identified a set of year one beneficiaries that could form the sample frame for a beneficiary-based baseline survey, USAID, MELS and AgDiv agreed that MELS would conduct a population-based survey of farmers who grew the target value chain crops of groundnuts, soybeans and orange flesh sweet potato (OFSP) during the 2016-17 production year in AgDiv-targeted Extension Planning Areas. This required the MELS team to conduct a Listing Operation in randomly selected enumeration areas in the AgDiv targeted Extension Planning Areas (EPAs) to assemble a list of these farmers to serve as the second phase sample frame for drawing the sample of farmers (potential beneficiaries) for the baseline survey.

Base sample sizes were calculated for point estimates of indicator values with a 7.5% margin of error. MELS contract originally required that the sample size was computed with a 5% margin of error. But this resulted in a sample size that was larger than the resources allocated for the baseline, given the costs of the unanticipated listing operation. USAID decided that a less precise estimate using a 7.5% margin of error was acceptable for baseline purposes, because no fee payment would be made based on the baseline values.

AgDiv had a total of 26 focus EPAs in the seven districts where they intended to implement their interventions. From the list of 26 EPAs there were 1,369 EAs from the 2007 Population Census that overlapped with these EPAs. Since the sample size calculation required 1,779 farmers it was decided to round up to 1,800 farmers for the sample. This would require 30 farmers to be randomly selected per EA in each of the 60 selected EAs for a total of 1,800 farmers. From these 60 EAs the listing operation resulted in 22,826 occupied households that were identified. From these households a total of 12,691 farmers were found to be growing the targeted value chain crops. These 12,691 farmers were the sample frame from which the sample of 1,800 farmers was drawn.

The final sample ended up being 1,677 from the original 1,800 which was due to non-response rates mostly from farmers who were unavailable, moved away, etc. One of the EAs from the sample, Mbwadzulu EPA within Mangochi district, only had 23 farmers (verses the targeted 30) growing targeted value chains. There were additional 116 farmers during the second stage for whom data was not collected.

Bias In order to compensate for potential farmer recall bias, the decision was made for the survey team to physically measure approximately 30 plots from each district. The farmers whose plots

were measured were sampled using systematic sampling technique. The team utilized an area calculator that worked with GPS when the perimeter of the plot was paced by the enumerator. A total of 225 farmer plots were measured and compared to the size the farmer gave using their recall. The results found that farmers with larger plots tended to underestimate the size of their plots and farmers with smaller plots tended to overestimate their plots. Therefore, the team calculated and utilized a regression coefficient for each type of farmer (soy, groundnut and OFSP) to adjust the plot sizes that were obtained via farmer recall.

Once the indicators were calculated in SPSS, the results needed to be extrapolated for the population of AgDiv beneficiaries. The Agriculture Diversification Project had 34,533 beneficiaries. Their beneficiary data did not however have proportions of farmers who grew the three crops (OFSP, Soybeans and groundnuts) promoted by the AgDiv project. Therefore, the disaggregated proportions from the survey were used to extrapolate this for all of the AgDiv beneficiaries.

The computed values for the twelve outcome indicators were organized into seven indicator categories: gross margin data points (hectare, production, quantity sold, value of sales, input costs), yield per hectare, value of annual sales, nutrition (diet of minimum diversity – women, value chain consumption), women empowerment in agriculture (access to and decision on credit, group member, input on productive decisions), storage, and resilience to climate change.

The data analysis was conducted in SPSS using descriptive analysis techniques for scale and nominal-scale variables. For scale measured variables such as gross margin data points, yield, value of annual sales, the mean statistics was used to perform the computations. For nominal-scale variables such as number of farmers, value chain consumption, diet of minimum dietary diversity – women and the Women's Empowerment in Agriculture Index (WEAI) indicators, percentages or frequency count were used to perform the computations.

All data was adjusted and weights calculated for each indicator. The weighted data provided results adjusted for the population of value chain producers from which the sample was drawn. Unweighted data was provided for most tables as well.

Area Planted and Yields: Lilongwe and Mchinji had the largest areas dedicated to the three crops by a fairly large margin. Mchinji appeared to have the best yields across the three crops with the highest yield for groundnuts and soy and the fourth highest yield for OFSP. The highest yielding district for OFSP was Ntcheu. These results were very similar to what was reported by the Ministry of Agriculture for 2017 of 1.1 MT/Ha for soybean and 1 MT/Ha for groundnuts. For the 2016 season the FAO reported an average yield of .743459 MT/Ha for groundnuts and .884614 MT/Ha for soy while the Ministry of Agriculture reported .743459 for groundnuts and .889985 for soybeans. The FAO did not have data for the 2017 growing season.

Irrigation and PIC bags: There were only 57 farmers (unweighted) out of the sample of 1,677 that used some form of irrigation and only two farmers were using drip irrigation and this was for their OFSP crop. Many farmers were not utilizing PIC bags for storage. Only 4.1 % of farmers used PIC Bags for maize. The largest percentage was found in Balaka and Machinga (9.2% each). ZeroFly was another form of improved storage being promoted by AgDiv. The use of ZeroFly or PIC bags with soy and groundnuts was also very small with 3.2% using them for groundnuts and only 1.3% using them for soybeans.

Dietary Diversity: The district where women had the highest dietary diversity was Mchinji (69.35%)

and the district with the lowest was Machinga (44.47%).

WEAI: The results on the WEAI indicators overall were fairly good with 81.6% of the females achieving adequacy for group membership and 90.9% achieving adequacy on input into productive decisions. However only 39.8% of the women achieved adequacy on access to and decisions on credit. Balaka had the best results (62.4%) and Mchinji showed the poorest results with 32.5% for access and usage of credit.

I. INTRODUCTION

The purpose of the Monitoring, Evaluation and Learning Support (MELS) activity is to implement performance evaluations and assessment services under the Monitoring and Evaluation (M&E) Indefinite Delivery Indefinite Quantity Contract (IDIQ). MELS provides support to the Feed the Future (FTF) and Environment (Global Climate Change (GCC) and biodiversity) activities that are managed by USAID/Malawi's Sustainable Economic Growth (SEG) Office. The MELS activities aim to achieve the following four primary objectives:

Objective 1: Performance evaluations of FTF and ENV activities and of the Sustainable Livelihoods Project designed and implemented;

Objective 2: Assessments of Feed the Future Malawi Agricultural Diversification activity performance designed and implemented;

Objective 3: Studies and analyses on selected topical issues developed and conducted; and

Objective 4: Local capacity to undertake evaluations and assessments strengthened.

This report provides main findings of the baseline survey of rural farmers in the activity intervention zone of the Feed the Future Malawi Agricultural Diversification Activity (AgDiv) and a detailed methodology how it was conducted. This report provides a summary of the planning and preparation work including sampling, the survey field work including nonresponse rates, the calculation methodology for each indicator and the calculated indicator values for 12 outcome indicators for AgDiv. The tables for these indicators are provided in Annex II of this report including the values which are to be entered into FTFMS which are shaded in grey.

II. PURPOSE OF THE SURVEY

2.1 Background and Objectives

The Feed the Future Malawi Agricultural Diversification Activity (AgDiv) contributes to USAID/Malawi's Feed the Future goal of sustainably reducing poverty and under-nutrition in eight districts of Central and Southern Malawi. This activity fosters inclusive and sustainable growth in Malawi's agricultural sector, enhances resilience to climate change, empowers women, and improves the nutritional status of women and children, and at the same time, increases the competitiveness of marketable, nutrient-rich value chains through support for agricultural enterprises and increased access to markets and finance.

The Malawi Feed the Future Agricultural Diversification Activity is the flagship project for USAID in Malawi. This Activity was awarded to Palladium with specific targets to be achieved each year and at the end of the project. Palladium will be paid a fee based on their performance toward

achieving these targets. The purpose of this survey is to independently establish baseline values for the AgDiv farm-based outcome indicators. This will facilitate the revision of targets based on actual rather than estimated baseline values.

Since this survey collected outcome indicator data for the AgDiv Activity at the farm level, MELs did not gather output indicator data or data on organizations, businesses, etc. The baseline was gathered from farmers producing one or more of the three target value chain crops (groundnut, soy, Orange Fleshed Sweet Potato (OFSP)) in targeted EPAs in seven rural FTF districts: Lilongwe, Mchinji, Dedza, Ncheu, Balaka, Machinga and Mangochi. This baseline survey and subsequent annual surveys are focused on the indicators listed in section 2.2.

The baseline survey process was described in the MELs contract with a large number of steps and deliverables required at each step. Some of these deliverables were: survey protocol, data treatment and analysis plan, sampling plan, translation protocol, RFP for local data collection, detailed fieldwork implementation plan, data cleaning plan, data weighting protocol, enumerator and supervisor manuals and questionnaire programming plan. Since all of these deliverables described the steps in thorough detail, the purpose of this report was to provide a description of the process with timelines and dates and to describe the results for the collected indicators. These deliverables will be listed in an appendix and uploaded on to the DEC in order that they be accessible to the reader.

2.2 Farm Level Outcome Indicators

The farm level outcome indicators for this baseline survey are listed below as follows. Indicator titles reflect the exact universe that was measured. Numbers and indicators in parenthesis refer to the AgDiv indicators that the baseline data inform¹:

1. Number of hectares of groundnut, soy and orange-fleshed sweet potato (OFSP) under improved technologies or management practices (*1.4-6 Number of hectares of land under improved technologies or management practices with USG assistance*);
2. Yield per hectare of groundnut, soy and OFSP (*1.4-5 Yield of targeted value chains*);
3. Gross margin per hectare of groundnut, soy and OFSP (*1.4-4 Gross margins per hectare, per animal or per cage obtained with USG assistance*);
4. Number of groundnut, soy and OFSP farmers who have applied improved technologies or management practices (*1.4-3 Number of farmers and others who have applied new technologies or management practices with USG assistance*);
5. Value of groundnut, soy and OFSP smallholder sales (*1.2-1 Value of annual sales for the farmers receiving USG assistance (EG 3.2-19)*);
6. Number of farmers using climate information or implementing risk-reducing actions to improve resilience to climate change (*2.2-1 Number of people using climate information or implementing risk-reducing actions to improve resilience to climate change as supported by USG assistance*);
7. Number of groundnut, soy and OFSP producing households applying improved storage or preservation practices (*3.1-3 Number of soy, groundnut or OFSP-producing households applying improved storage or preservation practices*);
8. Percentage of female groundnut, soy and OFSP farmers consuming a diet of minimum

¹ Indicator titles and numbers are from Malawi Agricultural Diversification Activity, Activity Monitoring and Evaluation Plan, 30 May 2017.

diversity (3.1-2 Percentage of female direct beneficiaries of USG nutrition-sensitive agriculture activities consuming a diet of minimum diversity);

9. Percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Access to and decision on credit (4.2-1 Percentage of women achieving adequacy on WEAI: Access to and decisions on credit);
10. Percentage of female groundnut, soy and OFSP farmers consuming at least one product from the targeted value chains (indicator not in AgDiv Activity Monitoring and Evaluation Plan);
11. Percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Group Member (4.3-1 Percentage of women achieving adequacy on WEAI: Group member);
12. Percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Input on productive decisions (4.4-1 Percentage of women achieving adequacy on WEAI: Input on productive decisions).

2.3 Survey Methods

Since AgDiv had not yet identified a set of year one beneficiaries that could form the sample frame for a beneficiary-based baseline survey, USAID, MELs and AgDiv agreed that MELs would conduct a population-based survey of farmers who grew the target value chain crops of groundnuts, soybeans and orange flesh sweet potato (OFSP) during the 2016-17 production year in AgDiv-targeted Extension Planning Areas. This required the MELs team to conduct a Listing Operation in randomly selected enumeration areas in the AgDiv targeted Extension Planning Areas (EPAs) to assemble a list of these farmers to serve as the second phase sample frame for drawing the sample of farmers (potential beneficiaries) for the baseline survey.

The topline indicators (the value of annual sales, HAs under improved technologies and the proportion of farmers applying improved technologies) were used to derive the final sample size, along with the survey design parameters, which are shown in Table I. These were the indicators that required the largest sample size and therefore would determine the overall size of the sample for the survey. The Gross Margin indicator was not used for sample calculations because a sample size formula did not exist that accounted for its composite nature. The sample size calculations are provided below for the topline indicators calculated as means and proportions. Base sample sizes were calculated for point estimates of indicator values with a 7.5% margin of error. MELs contract originally required that the sample size was computed with a 5% margin of error. But this resulted in a sample size that was larger than the resources allocated for the baseline, given the costs of the unanticipated listing operation. USAID decided that a less precise estimate using a 7.5% margin of error was acceptable for baseline purposes, because no fee payment would be made based on the baseline values.² Adjustments were made to the base sample size to reflect:

- The design effect due to clustering (normally 2³ but because this was two stage clustered design MELs used 2.5); and
- The anticipated individual non-response (10%³ was recommended by the USAID Sampling Guide).

² USAID still requires use of the 5% margin of error for the annual results surveys.

Table 1a. Sample Size Calculation: Z Value=1.96; Margin of Error=7.5%; Design Effect=2.5³; Non-Response Rate=10%

on response rate of the

Mean⁴ as estimator:

Indicator	Std. Deviation	Mean Value	Base Sample Size	Corrected for Design Effect	Corrected for Non-Response
Value of Annual Sales(\$US)	82.61	94.97	517	1,292	1,421
Groundnut, soy and OFSP Ha Under Improved Technologies	.838	.861	647	1,617	1,779

Proportion⁵ as estimator:

Indicator	Proportion	Base Sample Size	Corrected for Design Effect	Corrected for Non-Response
Proportion of groundnut, soy and OFSP Who Applied Improved Technologies	.897	63	158	174

Based on our estimations, the indicator Hectares under Improved Technologies was driving the sample size with a base value of 647 farmers, which was corrected for design effect and non-response, yielded a final size of 1,779. For practical reasons, a final sample size of 1,800 was retained.

The survey utilized a two-stage cluster design. The steps of the Sample selection, including the Listing Operation are described briefly below:

1. AgDiv provided MELS with a list of focus Extension Planning Areas (EPAs) in each district where they were focusing their efforts. This list of EPAs was also shared with USAID.
2. USAID determined the enumeration areas (EAs) that fall within the AgDiv EPAs and the population in each Enumeration Area (EA) based on information from the 2008 Malawi Population and Housing Census (MPHC) and provided this to MELS in list and map form. When an EA fall only partially within an EPA, USAID made a visual determination of whether at least half of the EA was within the EPA, and included all EAs that met this criterion, excluding those that did not.
3. Utilizing the population data, MELS selected EAs to be included in the sample using systematic probability proportion to size methodology (systematic PPS sampling). A total

³ The source for the design effect estimation, and the estimated mean and standard deviation parameters used: "Sampling Guide for Beneficiary Based Surveys" USAID, Feb 2016.

⁴ $N_{Mean} = D * \left[\frac{Z_{\alpha}^2 \sigma^2}{M^2} \right]$ Where: N=sample size; D=design effect; Z_{α} =critical value of Z; σ =Std. deviation and M=mean value * the margin of error

⁵ $N_{Proportion} = \frac{D \left(\frac{Z_{\alpha}^2 * p * (1-p)}{M^2} \right)}$ Where: N=sample size; D=design effect; Z_{α} =critical value of Z; p=proportion M=margin of error

of 60 EAs were selected for the survey⁶. The sampling interval was 3485 households utilizing a random start to select the EAs.

4. Once the first stage EAs were selected, the survey contractor obtained copies of EA maps from the National Statistics Office (NSO) that were not already in their possession. These EA maps were utilized for the mapping and a listing operation. The survey firm provided teams of cartographers and listers to visit each selected EA and produce an updated list of farmers that produced at least one of the three targeted crops during the 2016-17 production season and an updated map showing the locations of each of the households. MELS collected GPS coordinates for the households to assist in locating them. The listing operation was to be performed by the local contractor Center for Development Management (CDM) who was also the survey contractor under the supervision of MELS. The operation occurred in the 2008 MPHIC Enumeration Areas (EAs) that overlapped with AgDiv targeted Extension Planning Areas (EPAs). Under the supervision of a listing coordinator, listers took the maps provided by the National Statistics Office (NSO) and divided into teams with cartographers to list the households in a given EA. This occurred after initial training held by MELS on August 23rd - 24th, 2017. The Listing Operation survey was carried between August 26th, 2017 and September 8th, 2017.
5. The total list of farmers who were growing target value chains (grew one of them during the 2016-17 growing season) were 12,691.
6. Using the results from this listing operation MELS randomly selected farmers to be surveyed for the baseline using fractional systematic sampling⁷ with an average of 30 households selected per EA. Given that the EAs were selected proportionately the end result was that the population sampled was proportional. This means that more EAs were selected in Lilongwe (it has the most farmers) and the fewest EAs were selected for Ntcheu which had the fewest.

To conduct the listing operation, the Center for Development Management (CDM) assigned each EA to several pairs of data gatherers (from two to four pairs per district) and one supervisor for a total of seven teams. Lilongwe was divided into two parts because it had more EAs that were spatially big in size and with more households. Ntcheu and Mangochi was allocated to one team and was assigned three pairs. Table 1b summarizes the team composition and their districts. The pair of data gatherers consisted of a lister and a cartographer. The lister was responsible for the listing form while the cartographer concentrated on the maps. These roles were not changed from the original plan by MELS. In addition, the cartographer was holding the GPS to make sure the listing was taking place at a correct location and that the map was being followed properly.

Table 1b. Fieldwork Team composition by District

District	Team No.	Total Team Members	No. of EAs
Lilongwe 1	1	5	8
Lilongwe 2	2	5	8
Mchinji	5	5	7
Balaka	7	7	9

⁶ 60 EAs were selected based on costs of data collection and available budget: since travel costs in rural areas of Malawi were high, the team decided to select fewer PSUs, but survey more farmers in each PSU.

⁷ Systematic sampling is better than random sampling when data does not exhibit patterns and there is a low risk of data manipulation.

District	Team No.	Total Team Members	No. of EAs
Machinga	3	5	7
Dedza	6	9	11
Ntcheu - Mangochi	4	7	10
Total	7	43	60

Each team was assigned a number for coding purpose, for example Mchinji was team five and their listing codes started with five. Each household had a unique code on the listing form. The codes were also marked on the doors in chalk. Based on the spatial arrangements of the houses, teams were developing plans for each EA. One pair was starting from one end and the other from the other end until they met at the location as planned. To achieve good accuracy, the team worked with agriculture extension workers and lead farmers. The lead farmers were accessed through agriculture extension workers in the EPAs. Lead farmers knew all households in their area since they were a part of the same community. The list of contacts of all extension workers in the EPAs involved were made available before the listing process. Each team was provided with the contacts before leaving for field work. The extension workers were contacted prior to listing to get organized. Below is a diagram illustrating the results of the listing operation showing the distribution of the sample frame (farmers) by district.

Figure 1. Number of farmers growing groundnuts, soybeans, and OFSP

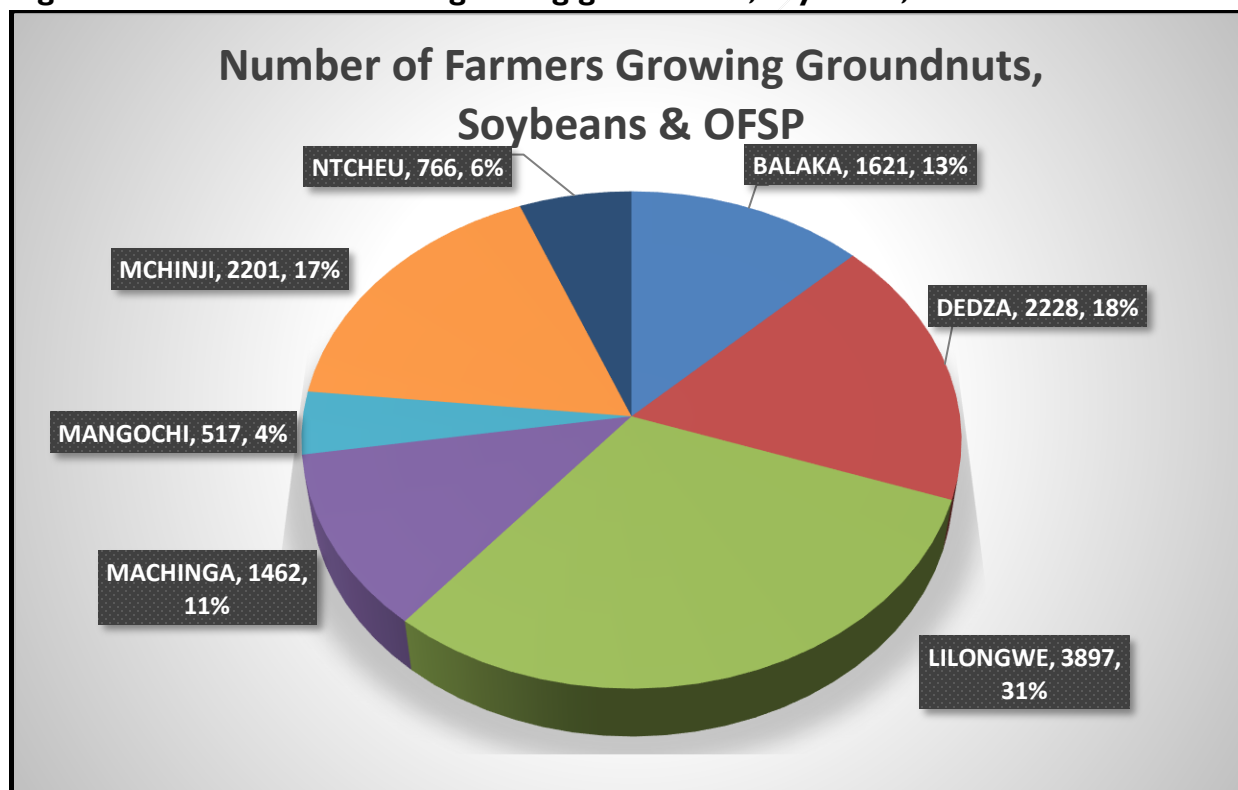
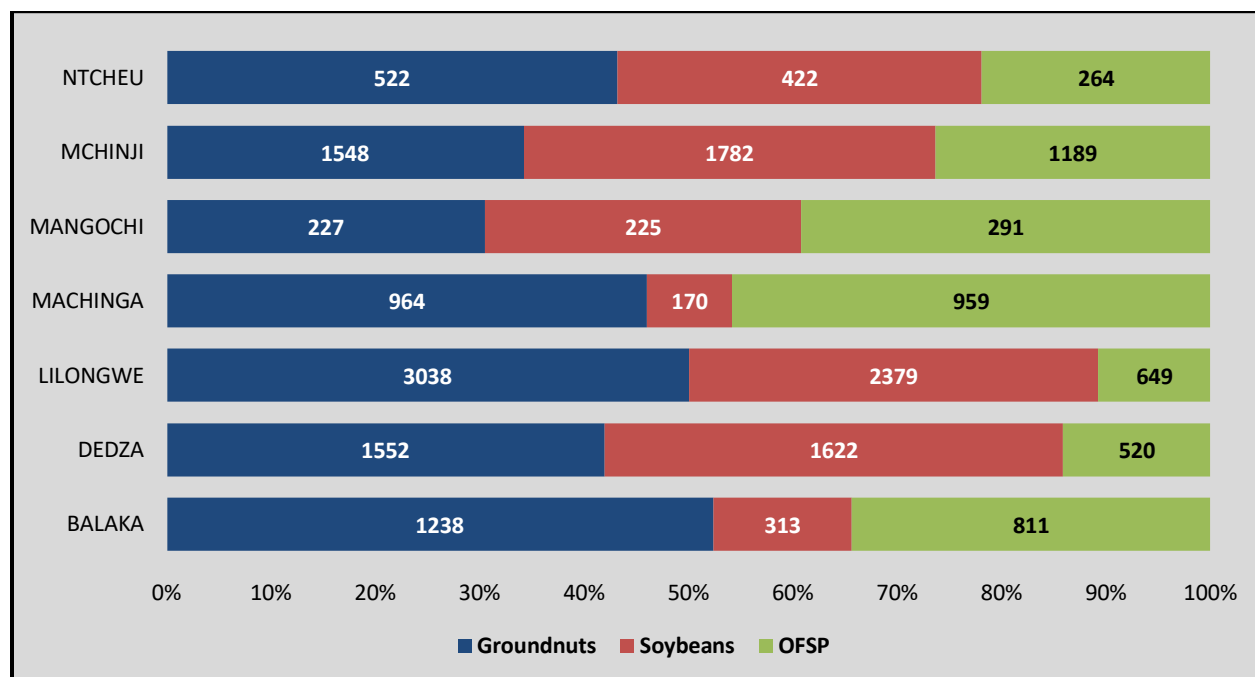


Figure 2. Disaggregation of farmers growing groundnuts, soybeans, and OFSP by area



AgDiv had a total of 26 focus EPAs in the seven districts where they intended to implement their interventions. From the list of 26 EPAS there were 1,369 EAs from the 2007 Population Census that overlapped with these EPAs. Since the sample size calculation required 1,779 farmers it was decided to round up to 1,800 farmers for the sample. This would require 30 farmers to be randomly selected per EA in each of the 60 selected EAs for a total of 1,800 farmers. From these 60 EAs the listing operation resulted in 22,826 occupied households that were identified. From these households a total of 12,691 farmers were found to be growing the targeted value chain crops. These 12,691 farmers were the sample frame from which the sample of 1,800 farmers was drawn.

2.4 Survey Modules contained in the Questionnaire

This section provides a brief overview of the modules contained in the baseline survey questionnaire. All modules were completed by enumerators during interviews. The complete instrument can be found in Annex I. The survey questionnaire was divided into eight modules as described below:

- **Module A: Household Identification Cover Sheet.** This module gathered information on the selected farmers regarding their farms' locations and crops grown, along with GPS coordinates and the households' family composition. In addition, the number of interviews and the final visit date were also collected.
- **Module B: Informed Consent.** Each surveyed farmer had to give a consent before the interview was conducted. The farmer was informed that participation in the survey was completely voluntary, and told about the objectives of the survey and the types of information that would be collected. The farmer was asked to give a verbal consent to

participate. If the consent was granted, the farmer was provided with a copy of the information about the survey and the contact information for the survey organization, which was implementing the survey under the supervision of MELS team (IBTCI).

- **Module C: Household Roster and Demographics.** In this module, a list of all household members was recorded, along with other data elements such as sex, relationships with the primary decision maker, age, education, literacy, and whether that household member participated in cultivating the targeted value chain crops. An identification number was assigned to each member of the household.
- **Module D: Enterprise Value.** This module gathered information on the surveyed farmer's participation in the target value chain crops, groundnuts, soybeans and/or OFSP, adoption of the improved technologies and management practices promoted by AgDiv, including storage of maize in PICS bags, and participation in a range of AgDiv activities. It was divided into four sub-modules: D0, D1, D2 and D3. Sub-module D0 identified the farmers being interviewed. Sub-modules D1 to D3 collected data on area planted, production, value of production and sales, and input costs, respectively for groundnuts, soybeans and OFSP. In addition, these sub-modules gathered information of the application of improved technologies and management practices, and on storage methods and preservation practices utilized.
- **Module E: Climate Disaster Mitigation.** Module E comprised of four sub-components and addressed activities linked to community or radio listening used in early warning systems, mini weather stations, climate information centers, and climate adaptation. The sub-module E1 asked questions on early warning systems while sub-module E2 and E3 collected information related to mini weather stations/agro-net and climate information sources, respectively. E4 collected data on climate adaptation practices to mitigate the impact of climate change. Questions were asked to the male or female selected farmers.
- **Module F: Water harvesting Systems.** This module gathered information on the utilization of farm ponds or check dams as a source of water to grow groundnuts or soybeans or OFSP. Questions were asked to the male and female selected farmers.
- **Module G: Women's Empowerment in Agriculture Index (WEAI).** This module collected information on the selected farmers, if the farmers were women, age 18 or older. It included four sub-modules: E0, E1 to E3. Sub-module E0 identified the woman farmer being interviewed. Sub-module E1 to E2 asked questions respectively on women access to and decision on credit, and on group membership. Sub-module E3 had two components: input into (A) productive decisions, and (B) personal decisions.
- **Module H: Females' Consumption of a Diet of Minimum Diversity.** This module collected information on the types of liquids and food eaten the previous day or night by the selected farmer, if the farmer was a woman.
- **Module I: GPS Direct Area Measurements of Randomly Selected Fields.** Module I gathered area planted data on randomly selected fields cultivated by the selected farmers, using GPS measurements.

Pretest

The pretest for the baseline mimicked the same process for the actual survey. The only difference was that the pretest EAs were not part of the actual baseline, but the sampling procedure was the same. The pretest was done in Lilongwe which was one of the districts in the AgDiv zones of influence.

Translation Process

The questionnaire translation followed the protocol, which described the methodology that was used to implement successfully the translation of the baseline survey questionnaire for the Feed the Future Agricultural Diversification Project.

The questionnaire was translated into Chichewa as people in all seven baseline survey districts involved spoke Chichewa in everyday communications. A team of two Chewa speaking experts translated the questionnaire. They were supported by an extension worker who understood local names of crops, technologies, management practices, and other issues included in the questionnaire. First, the questionnaire was translated by the agricultural expert and then a meeting was held with the Community Development Expert to cross-check the translation. Appropriate changes were incorporated. The CDM Leadership reviewed the questionnaire to check the quality of the translation. The MELS team conducted questionnaire pre-testing at Machinga and Ntcheu districts to test the questionnaire and translation, with support of two enumerators from CDM. Finally, the translated questionnaire was piloted, following enumerators training.

2.5 Survey Implementation – Planning and Startup

The decision was made to use electronic data collection with tablets to reduce non-sampling errors such as transcription error. Although time was saved in the utilization of tablets for data entry and transcription errors were eliminated, the introduction of tablets resulted in heavy up-front documentation requirements⁸ to detail how the questionnaire would be programmed into the tablets. The requirements of this document were not anticipated by the survey team.

Also, the tablet programming process was affected by some last-minute changes requested by AgDiv such as asking farmers about the utilization of PIC bags for maize, farmer participation in various events (Question D05) for irrigation kits and PIC bags and adding additional technologies to track for the technology indicators (e.g. D121 for groundnuts).

Once the tablet programming was complete the training was scheduled. Under the guidance of the MELS Team, comprised of IBTCI staff as technical supervisors and CDM staff members as facilitators, two intensive trainings sessions for the survey field supervisors and the survey enumerators were conducted.

A one-day training of supervisors was conducted on September 20th, 2017. The purpose of the training was to orient supervisors to the questionnaire and tablets and some of the unique requirements of the indicators. The training covered all topics described in the Supervisor Manual provided by the MELS team. A total of seven supervisors were trained. The MELS team attended the full training and was fully involved in supporting the discussion.

Following the supervisor training, the enumerator training was organized for four days, from September 21st to 24rd, 2017. The training covered all topics recommended by MELS in the Enumerators Manual. A total of 35 research assistants attended the training in full. The MELS

⁸ This prior documentation played a vital role in guiding questionnaire programming on tablets and ensuring that all necessary consistency checks were not missed in the programming.

team attended the full training and were fully involve in supporting the training.

A field pretest took place on Saturday, September 23rd, 2017 in Chitsime EPA, in EAs that were used for pretest during the listing. CDM opted to use the same EAs because it had established great working relationships with farmers. At the time of pretest, some challenges were noted with skip patterns and data ranges on the tablet. These issues were rectified during the review process, after the field pretest.

III. Survey Field Work

3.1 Contacting Local Authorities

The local firm CDM dealt with both the District Council as well as the traditional local leadership. For the District Council, the team worked with the Ministry of Agriculture and Water Development, whose extension workers helped to identify EAs, gave us permission to work with farmers and also helped to book meetings with village heads in advance. For traditional leadership, the team worked mainly with village headpersons, who facilitated mobilization of farmers and arranged escorts to individual farmers. Village heads also helped to explain reasons for sampled farmers who had migrated from their villages.

3.2 Field Work Methodology

3.2.1 District Level Approach. The 2008 census dataset by the National Statistics Office (NSO) was used to select the EAs for the baseline. This first level sampling procedure was implemented by MELs. A Total of 60 EAs were selected in the seven districts: 16 EAs in Lilongwe (Lilongwe was divided into two parts because it had more EAs that were spatially big in size and with more households), seven in Machinga, five in Mangochi, five in Ntcheu, eleven in Dedza, nine in Balaka and seven in Mchinji. The CDM team checked the EAs on the satellite imagery for feasibility and discussed its observations with the MELs team. It was concluded that there were no major impediments to the field work.

3.2.2 Fieldwork Organization. The baseline survey team was spread between the CDM central office at Lilongwe and the field. The central office team was composed of a project Director (PD), Field and Quality Control Manager (FQCM), Administrative Assistant (AA), Data Manager and Quality Control Specialist (DMQCS), Information Technology Specialist (TS), and a support team including a financial manager and drivers. The surveys were conducted by teams consisting of Field Supervisors, Enumerators and drivers. In total, 35 enumerators and 6 supervisors got involved. Quality Control and Support (QCS) teams from the central office travelled between the data collection field teams to provide logistical support and monitor data quality.

Each team travelled to the field with documents and supplies. They had enumerator manuals, the list of sampled farmers for each EA, detailed EA maps, consent forms, hard copy backups of the questionnaire, and hard copy pictures of selected technologies and crops to assist communication with farmers. Each team also carried power packs to charge devices while in the field, GPS units, tablet charges, extra batteries and additional airtime for communication.

Five interrelated activities were conducted by the supervisors to manage the acquired data after enumerators had completed the surveys of a set of assigned farmers:

1. Edit the data for completeness and consistency;
2. When done, mark the specific surveys as finalized;
3. Archive the data using the preselected archive tool on the tablets;
4. Back-up the data to a separate computer;
5. Transmit the finalized data to the MELS team.

Once surveys were edited, finalized, archived, and backed-up, the supervisor transmitted the finalized files to the MELS team as shown in the above list.

The survey supervisory team visited all districts at random to check on the quality of the collected data. The data transmitted to the CDM central office was checked every day to identify and remove data duplicates. A WhatsApp group was formed to regularly discuss issues encountered and share achievements, challenges within and between survey teams.

In addition to random checks from the field supervisors, the MELS team provided independent Data Quality Assurance and Verification (DQVA) support to the CDM field team. The team re-interviewed some farmers and verified direct measurement of some of the field sizes. There were essentially no issues found other than one farmer moving to Zambia.

3.2.3 Response Rates. The final sample ended up being 1,677 from the original 1,800 for various reasons. One of the EAs from the sample, Mbwadzulu EPA within Mangochi district, only had 23 farmers (verses the targeted 30) growing targeted value chains. There were additional 116 farmers during the second stage for whom data was not collected for various reasons. Some farmers were not home, and some were absent for extended periods of time. A small number of farmers (six) refused to be interviewed. Finally, there were a number of farmers that had incomplete data and for different reasons the interview could not be continued. The final sample was 1,677 with a response rate of 93.2 % from the total sample size of 1,800.

3.2.4 QC Process, Quality Assurance and Results. The MELS team accompanied the survey contractor providing additional QC on the enumerators. Overall, they observed over 20 enumerator interviews, plus all of the supervisors and physically verified 8 survey forms finding no errors or omissions. In addition, CDM implemented their own QC process as follows:

- Supervisors observed as many interviews as possible and any issues were corrected;
- Daily debriefs occurred for each team to discuss issues and answer questions;
- Supervisors checked all completed surveys on their team for completeness and accuracy;
- Field supervisors returned to a random sample of interviewed households for each enumerator to verify and validate results with them.

In total, the supervisors verified 84 interviews through returned visits and 126 interviews through observations. Additionally, the supervisors reviewed all completed interviews on tablets.

3.2.5 Data Cleaning. The data entry was performed with tablet computers utilizing the Computer Assisted Personal interviewing (CAPI) system. This helped reduce errors created in the field by rejecting inappropriate values. Cleaning of the data was a multistage process using checks and balances that were programmed into the tablets. For example, if a farmer indicated that he or she grew a crop but had a harvest of zero an explanation was required such as total crop loss due to disease etc. In addition, there was a batch editing process that checked ranges on numbers and missing data. Most of these issues were rectified in the field.

However, there were still issues with the data set that had to be addressed by the MELs team. Many variable names and question responses in SPSS were not coded in a consistent manner (ex. 4.2-1 vs. 4.2.1 vs. 421). Some of these inconsistencies were fixed but a few inconsistencies still remained in the data set. In addition, there were issues with some of the data fields not allowing for adequate decimals. This was particularly important for the OFSP plots which were often very small. All of these had to be corrected. Finally, there were a few variables that were expressed as scale variables (numbers) when they were actually nominal variables. A nominal variable is also called a category variable so that a response of 1,2,3 etc. placed the response into different categories.

3.2.6 Area Planted Recall Bias In order to compensate for potential farmer recall bias, the decision was made for the survey team to physically measure approximately 30 plots from each district. The farmers whose plots were measured were sampled using systematic sampling technique. The team calculated an interval based on the number of plots to be measured. A random number was generated for a starting point then the plots were selected using the interval. The team utilized an area calculator that worked with GPS when the perimeter of the plot was paced by the enumerator. A total of 225 farmer plots were measured and compared to the size the farmer gave using their recall. The results found that farmers with larger plots tended to underestimate the size of their plots and farmers with smaller plots tended to overestimate their plots. Therefore, the team calculated and utilized a regression coefficient for each type of farmer (soy, groundnut and OFSP) to adjust the plot sizes that were obtained via farmer recall. The calculation is explained in more detail in Annex 5.

For those farmers whose plots were directly measured, the team used the actual measurement so no adjustment was necessary.

3.3 Survey Challenges

- The introduction of tablets resulted in heavy up-front documentation requirements to detail how these would be programmed in a questionnaire programming guide. This new requirement was not anticipated by the survey team and delayed the implementation of the baseline survey.
- The survey team noted that for Districts along the Malawi-Zambia and Malawi-Mozambique border there were frequent movements of people between countries. Some listed farmers migrated permanently while others migrated temporarily for work, agriculture or businesses. Those resulted in a small number of empty dwellings for some selected farmers. This reduced the survey sample. One farmer was removed from the survey after incorrectly identifying Irish potatoes as OFSP (it was not common, though, only one such farmer was identified). It was also noted that two sampled farmers died before the beginning of the baseline survey.
- Some EAs in Dedza and Machinga were large and involved a lot of distance to cover to reach the selected farmers. This was, however, managed by limiting the number of interviews to be done by each research assistant to only four per day.
- The survey teams experienced long periods of power outages in the country during the surveys and particularly during the evening when supervisors were required to upload data to the central server. This resulted in delays transmitting the data and challenges with charging the tablets.

- Some of the survey tablets had battery problems and could not last the whole day. This was corrected by carrying more replacement batteries and power packs to overcome the problem.

3.4 Survey Limitations

Any field survey would contain some limitations. Many of the limitations listed below are inherent in all field work in Africa. Through the Q/C process and with follow up work the team attempted to minimize these limitations as much as possible.

- Farmer recall error⁹ – many of the results obtained from this survey were based on farmer recall. Therefore, the accuracy of some of the data was dependent upon the farmers' ability to recall accurately. Actual measurements were obtained for farm size and an adjustment coefficient was calculated and applied to the farm size data but there were other data points that might have suffered from the farmer recall error.
- The sample size was calculated using a 7.5% margin of error. This larger margin of error was used to reduce the cost of the survey given that an unanticipated listing operation was also conducted to produce a sample frame. Normally a survey will use a 5% margin of error; although 7.5% is often adequate, it is less precise.

3.5 Confidentiality

The survey contractor CDM had an ethics policy that covered confidentiality and informed consent. Each Enumerator was required to sign this ethics policy form to help insure confidentiality and ethical behavior. A copy of the form can be found in Annex 9.

IV. Survey Indicators

This section of the report explains the calculation methodology for each of the outcome indicators. Tabulated results from SPSS for all indicators including descriptive statistics can be found in Annex 2. It should be noted that calculations of standard FTF indicators followed the PIRS in the Handbook.

4.1 Calculation Methodology

4.1.1 Number of hectares of groundnut, soy and orange-fleshed sweet potato (OFSP) under improved technologies or management practices (1.4-6 Number of hectares of land under improved technologies or management practices with USG assistance).

This indicator was disaggregated by value chain (soy, groundnut and OFSP), decision makers (male, female or joint) as well as by technology category:

1. Disaggregation by technology type was made using the average number of hectares under each tech type per farmer across all three VC commodities;
2. Disaggregation by decision makers was made using the average number of hectares under at least one tech per sampled farmer across all three VC commodities;

⁹ http://siteresources.worldbank.org/INTFR/Resources/475459-1259791405401/Beegle_Carletto_Himelein.pdf;

Kathleen et al (2011) did a study using national wide data from Malawi, Kenya and Nigeria and found that there were usually data recall errors in agriculture surveys which were directly related to the time elapsed since harvest period.

3. Disaggregation by value chain was made using the average number of hectares under at least one tech by commodity.

Once the indicator values were calculated in SPSS the values had to be extrapolated to the AgDiv beneficiaries. At the end of FY17 AgDiv had 34,533 beneficiaries with 45.96% males and 54.04% females. They did not know the breakdown of farmers between the various value chains so MELs used the proportions determined from the baseline survey.

Depending on the type of indicator the extrapolation process was slightly different. For indicators the percentages were determined for the various disaggregates and this was multiplied by the number that Ag provided for that disaggregate. For indicators expressed as percentages there was no need to extrapolate.

For indicators expressed as point estimates an average was calculated for each disaggregate and this was multiplied by the number in the AgDiv database. Below is a step by step process for extrapolating results for area planted:

1. Calculate average area planted in hectares for each value chain for each disaggregate (male, female and joint).
2. Calculate the total area planted for the value chain in hectares
3. Determine the percentage of farmers growing that crop and calculate the number of farmers by multiplying the percentage of farmers by the total area planted.
4. Obtain the total hectares for each disaggregate by multiplying the number of farmers for each disaggregate by the average hectares grown for that value chain.

A similar extrapolation process was followed for all the other indicators that were point estimates.

The individual data cases at the farmer levels were summarized to investigate the patterns of adoption. There were no identifiable regular patterns of technology adoption for those farmers who allocated less than 100% of their land to a specific technology. It was observed that some farmers allocated different proportions of their land such as: 25%, 50% or 75% with no observable patterns. Areas under each tech type were summed and compared to farmers' corrected areas for each VC and then the total corrected areas were allocated to the calculated area under a tech type, if the sum was greater than the corrected area.

As a test, the team ran scripts to compare taking the max value against summing them up and comparing to the total available land area and observed very little differences in the results from these two methods. Furthermore, confidence interval calculations revealed that the sum of the available area method of calculating mean areas include the mean areas of the method taking the maximum area.

4.1.2 Number of groundnut, soy and OFSP farmers who have applied improved technologies or management practices (1.4-3 Number of farmers and others who have applied new technologies or management practices with USG assistance). This indicator worked in a similar way as the hectares under improved technologies only it tracked the number of farmers. One of the main differences was that the sex disaggregates did not include joint but were just male or female. After extrapolation, the totals for male and female farmers were calculated and this total could also be compared to the totals for farmers applying at least one technology. They must

equal each other. Also, the technology categories were slightly different and included other post-harvest related technologies such as marketing and processing. The technologies promoted were placed into the appropriate technology category and this total number was reported into FTFMS. The total number of farmers for the technology categories were not summed and were double counted per farmer similar to the hectares indicator. Note that the total number of farmers for any technology category could not exceed the total for the sex disaggregates.

4.1.3 Yield per hectare of groundnut, soy and OFSP (*1.4-5 Yield of targeted value chains*). The data for this indicator was gathered under the gross margin section of the survey. This indicator was reported by value chain and for each value chain the total area under cultivation in hectares was summed. Then the total production in metric tons was summed for each value chain. The yield was calculated by dividing total production in metric tons by total area in hectares.

According to the Stata reference manual, direct standardization was an estimation method that allowed rates comparisons such as ratios, proportions and means originating from different frequency distributions such as gender, age, ethnicity. In direct standardization, estimated rates were adjusted according to the frequency distribution of a standard population partitioned into categories called standard strata, the frequencies distributions were called standard weights. Without standardization, estimated rates such as yields were not comparable between different categories of farmers because of their underlying respective distributions. The SPSS special "ratio statistics" module was used to calculate yields. It provided a more robust algorithm to handle complex survey data allowing yield comparisons between different categories of decision makers: male, female and joint.

4.1.4 Gross margin per hectare of groundnut, soy and OFSP (*1.4-4 Gross margins per hectare, per animal or per cage obtained with USG assistance*). There were five data points for the gross margin indicator all of which were summed up for each of the targeted value chains. They were the total production in metric tons, total area in hectares, total sales in US dollars, total quantity sold in metric tons, and total input costs in US dollars. These were the numbers that were reported into FTFMS. Since some farmers sold their groundnuts in both shelled and unshelled form, the shelled volume was adjusted by a factor of 1.67¹⁰ in order to have consistent units so all groundnut quantities were tracked in the unshelled form. Also, a small number of farmers (49) remembered the quantity of groundnuts produced in the shelled form and not unshelled. These values also had to be converted into the unshelled form utilizing the same factor. The FTFMS system calculates gross margin with these five data points. First, the total sales in US dollars are divided by the total quantity sold in metric tons to find the average price received per ton. The average price received is then multiplied by the total production to get the total value of production in US dollars. This allows for production that is consumed at home, for example, to be valued in the gross margin calculation. The total input costs are subtracted from the total value of production to get total gross margins for the sample. Finally, the total gross margin is divided by the total area in hectares to get gross margin per hectare.

4.1.5 Value of groundnut, soy and OFSP smallholder sales (*1.2-1 Value of annual sales for the farmers receiving USG assistance (EG 3.2-19)*). This indicator was derived from the gross margin

¹⁰ The coefficient of 1.67 was calculated by taking the ratio of the average price of shelled groundnuts over the average price on unshelled groundnuts. Averages are calculated by combining data from high and low production zones.

calculation with its data gathered in the gross margin module. The total sales were converted into US dollars¹¹ and were summed up for each value chain. Since this was the baseline year the total sales were reported only. This baseline value would then be used to calculate the incremental sales in subsequent years for the AgDiv project.

The sale value of the shelled groundnuts was adjusted in equivalent unshelled. The information used to estimate the price differential between the shelled and the unshelled groundnuts price was provided by extension agents working for the MGO. They provided the following information:

- High production districts represented by Lilongwe: shelled = 400 Kwacha/Kg; unshelled = 280 Kwacha/Kg;
- Low production districts represented by Balaka: shelled = 650 Kwacha/Kg; unshelled = 350 Kwacha/Kg;
- The mean price ratio of shelled to unshelled 1.67 was estimated as the conversion factor of shelled into unshelled.

4.1.6 Number of farmers using climate information or implementing risk-reducing actions to improve resilience to climate change (2.2-1 Number of people using climate information or implementing risk-reducing actions to improve resilience to climate change as supported by USG assistance). Climate information is important in the identification, assessment, and management of climate risks to improve resilience. Climate information may include, but is not limited to:

- Data such as monitored weather or climate projections (e.g., anticipated temperature, precipitation and sea level rise under future scenarios), and
- The outputs of climate impact assessments, for example, the consequences of increased temperatures on crops, changes in streamflow due to precipitation shifts, or the number of people likely to be affected by future storm surges.

Using climate information may include, but is not limited to conducting vulnerability assessments, creating plans or strategies for adaptation or resilience based on projected climate impacts, or selecting risk-reducing or resilience-improving actions to implement.

Examples of risk-reducing actions to improve resilience to climate change may include, but are not limited to changing the exposure or sensitivity of crops, better soil management, changing grazing practices, applying new technologies like improved seeds or irrigation methods, diversifying into different income-generating activities, using crops that are less susceptible to drought, salt and variability, or any other practices or actions that aim to increase predictability or productivity of agriculture under anticipated climate variability and change.

This indicator tracked farmers either using climate change information or implementing risk reducing actions. If a farmer either used climate change information or implemented actions he was counted. Even if a farmer used one source of information or implemented one risk reducing action – he was counted. The individual farmers were then summed up and disaggregated by sex.

4.1.7 Number of groundnut, soy and OFSP producing households applying improved storage or preservation practices (3.1-3 Number of soy, groundnut or OFSP-producing households

¹¹ Exchange Rate of Kwacha 718.16 = US\$1 was calculated from a time series as the mean Xrate during the growing season 2016-2017. The Average XRate was calculated between October 2016 - September 2017, which is the time period during which VC decisions were made .

applying improved storage or preservation practices). The indicator MELS calculated was the proportion of farmers applying improved storage or preservation practices, which was then converted to the total number through the extrapolation process. A farmer was counted if s/he applied any storage or preservation practice. Farmers who grew more than one value chain were not double counted.

4.1.8 Percentage of female groundnut, soy and OFSP farmers consuming a diet of minimum diversity (3.1-2 Percentage of female direct beneficiaries of USG nutrition-sensitive agriculture activities consuming a diet of minimum diversity). Female farmers were asked to list the foods that they consumed in the previous 24 hours. These foods were placed into the ten food groups and counted up for each female farmer. A woman was considered to have adequate dietary diversity if she had consumed five out of the ten food groups within a 24-hour period.

4.1.9 Percentage of female groundnut, soy and OFSP farmers consuming at least one product from the targeted value chains (indicator not in AgDiv Activity Monitoring and Evaluation Plan). Female farmers were asked on 24-hour recall if they had consumed either soy, groundnut or OFSP. If they responded yes to any one of them they were counted. This number was tracked and the percentage was the sum of all female farmers consuming at least one of the targeted value chains divided by the total number of female farmers.

4.1.10 Percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Access to and decision on credit (4.2-1 Percentage of women achieving adequacy on WEAI: Access to and decisions on credit). Female farmers were first asked if anyone in their household had access to a particular source of credit. There were five categories of credit. If they responded "yes" they were then asked if they made the decision to borrow. If they answered anything other than self alone for the person deciding to borrow they were then asked if they had any input into the decisions on what to do with the money. A woman achieved adequacy if first the household had access to credit and second she had input on the decision to borrow or had input on the decision on what to do with the proceeds for any of the listed sources of credit.

4.1.11 Percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Group Member (4.3-1 Percentage of women achieving adequacy on WEAI: Group member). There were eleven types of groups in the questionnaire. For each group the female farmer was first asked if the group existed in her community. If the answer was "yes" she was then asked if she was an active participant in that group. Adequacy was determined by looking across all of the eleven group categories. If any of the groups existed and the female farmer was an active member in at least one then she had achieved adequacy.

4.1.12 Percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Input on productive decisions (4.4-1 Percentage of women achieving adequacy on WEAI: Input on productive decisions). This indicator looked at female farmer decision making for both productive decisions and personal decisions. Key activity areas on productive decisions were: (a) food crop farming; (b) cash crop farming; (c) livestock raising; and/or (d) fishing or fishpond culture. Key activity areas on personnel decisions

were (a) getting ag inputs; (b) growing crops; (c) taking crops to the market; and/or (d) raising livestock.

The adequacy was met if in at least two decision making areas: (1) female farmers had at least some inputs on productive decisions; or (2) female farmers could exclusively make their own personnel decisions or felt they could if they wanted to.

4.1.13 Extrapolations. Once the indicators were calculated in SPSS the results needed to be extrapolated for the population of AgDiv beneficiaries. The Agriculture Diversification Project had 34,533 beneficiaries. Their beneficiary data showed sex disaggregations, but did not have proportions of farmers who grew the three crops (OFSP, Soybeans and groundnuts) promoted by the AgDiv project. Therefore, the disaggregated proportions from the survey were used to extrapolate this for all of the AgDiv beneficiaries. Below are tabulated results for the three promoted value chains extrapolated for all of the beneficiaries of AgDiv:

This first table shows the estimated sex and value chain distribution of AgDiv beneficiaries:

Table 2. Sex and value chain disaggregates from the survey¹²

	Percentage	Number
Total respondents in sample		1,677
<i>Percentage Males in survey sample</i>	45.96%	
<i>Percentage Females in Survey sample</i>	54.04%	
Number of Beneficiaries		34,533
<i>Number of the male beneficiaries</i>	15,871	
<i>Number of Female beneficiaries</i>	18,662	
Total respondents in sample		1,677
<i>Groundnut</i>	65.47%	
<i>Soybeans</i>	50.15%	
<i>OFSP</i>	36.02%	
Number of Beneficiaries		34,533
<i>Groundnut</i>	23,379	
<i>Soybeans</i>	20,444	
<i>OFSP</i>	4,493	

Once the sex and value chain disaggregates were established the results for all indicators were extrapolated.

¹² The same respondent could grow several value chains

Table 3. Number of Groundnuts Beneficiary Farmers

Decision Maker	Weighted Number of Farmers	Proportion of Farmers	Number of Beneficiary Farmers
Male	2,010	0.3036	7,097
Female	1,997	0.3016	7,051
Joint	2,614	0.3948	9,230
Total	6,621	1.0000	23,379

Table 4. Number of Soybeans Beneficiary Farmers

Decision Maker	Weighted Number of Farmers	Proportion of Farmers	Number of Beneficiary Farmers
Male	1,923	0.3320	6,787
Female	1,725	0.2978	6,089
Joint	2,144	0.3702	7,567
Total	5,792	1.0000	20,444

Table 5. Number of OFSP Beneficiary Farmers

Decision Maker	Weighted Number of Farmers	Proportion of Farmers	Number of Beneficiary Farmers
Male	1,271	0.4184	4,493
Female	782	0.2574	2,764
Joint	985	0.3242	3,482
Total	3,038	1.0000	10,740

4.2 Indicator Values

The computed values for the twelve outcome indicators which were the subject of the baseline survey, were shown for each indicator in this section. This was organized into seven indicator categories: gross margin data points (hectare, production, quantity sold, value of sales, input costs), yield per hectare, value of annual sales, nutrition (diet of minimum diversity – women, value chain consumption), women empowerment in agriculture (access to and decision on credit, group member, input on productive decisions), storage, and resilience to climate change.

The data analysis was conducted in SPSS using descriptive analysis techniques for scale and nominal-scale variables. For scale measured variables such as gross margin data points, yield, value of annual sales, the mean statistics was used to perform the computations. For nominal-scale variables such as number of farmers, value chain consumption, diet of minimum dietary diversity – women and the WEAI indicators, percentages or frequency count were used to perform the computations. The descriptive methods applied are discussed below:

- **Means:** for scale variables computed on a continuous basis, means were computed using the weighted sum of values as the numerator and the total weighted number of cases with data as the denominator.

- **Percentages/Counts:** For values measured in nominal scales such as Yes/No responses, and/or counts, percentages were calculated using the weighted number of cases that provided a given response as the numerator, and the total weighted number of cases with data as the denominator, then multiplied by 100. Single response variables added up to a maximum of 100 percent, while multiple response variables might total to more than 100 percent.

Annex 7 illustrates the cross-walk mapping of the questionnaire variables included into the calculation of each indicator and Annex 8 provides the SPSS Syntax files designed to implement the calculation methods. In addition, Annex 2 shows the AgDiv indicator values and statistical data. Section 4.3 below provides the extrapolated values for each indicator that should be entered into FTFMS.

All data was adjusted and weights calculated for each indicator. The weighted data provided results adjusted for the population of value chain producers from which the sample was drawn. Unweighted data was provided for most tables as well.

In Annex 2 the indicators are shown with their descriptive statistics described as follows:

- *Range* - provides the smallest and the largest result obtained in the survey for that data point;
- *Standard deviation* – this is the measurement of variation in the data; large values illustrate that values are not clustered around the mean but are scattered;
- *Standard error of the mean* – the standard error of the sample mean is an estimate of how far the sample mean is likely to be from the population mean.

4.3 Calculated Results and Extrapolation Results

Once the sex and value chain disaggregates were established the results for all indicators were extrapolated. What follows are the results for each indicator extrapolated for the AgDiv beneficiaries. **The fields that should be entered into the Feed the Future Monitoring System (FTFMS) were shaded in Grey.**

- **Indicator: number of hectares of groundnut, soy and orange-fleshed sweet potato (OFSP) under improved technologies or management practices** (1.4-6 Number of hectares of land under improved technologies or management practices with USG assistance).

The next indicator is the number of hectares under improved cultivation extrapolated by the various technology categories for the indicator. This is followed by sex and commodity disaggregates.

Table 6. Number of Hectares under Improved Cultivation by Technology

TECH TYPE	Average Area in HA	Extrapolated Hectares
1- CROP GENETICS	0.280	9,669.24
2- CULTURAL PRACTICES	0.440	15,194.52
3- DISEASE MANAGEMENT	0.350	12,086.55
4- SOIL FERTILITY	0.240	8,287.92
5- IRRIGATION	0.004	133.38

TECH TYPE	Average Area in HA	Extrapolated Hectares
6- WATER MANAGEMENT	0.300	10,359.90
7- CLIMATE MITIGATION	0.030	1,035.99
8- CLIMATE ADAPTATION	0.460	15,885.18
ONE OR MORE TECH TYPES	0.490	16,921.17

Table 7a. Number of Hectares under Improved Cultivation by Decision Maker

DECISION MAKER	Number of Farmers	Average Area in HA	Number of Beneficiaries (extrapolated)	Extrapolated Hectares
MALE	1,816	0.400	6,758	2,703.10
FEMALE	1,643	0.310	6,114	1,895.33
JOINT	5,821	0.570	21,661	12,346.92
Total	9,280	0.490	34,533	16,921.17

Table 7b. Number of Hectares under Improved Cultivation by Commodity

VALUE CHAIN	Number of Farmers	Average Area in HA	Number of Beneficiaries (extrapolated)	Extrapolated Hectares
Groundnuts	6,076	0.410	23,379	9,585.39
Soybeans	5,623	0.290	20,444	5,928.76
OFSP	2,578	0.150	4,493	673.95

- **Indicator:** number of groundnut, soy and OFSP farmers who have applied improved technologies or management practices (1.4-3 Number of farmers and others who have applied new technologies or management practices with USG assistance).

Table 8. Technology Type

Technology Type	Percentage of Farmers in the Sample	Number of Beneficiaries (extrapolated)
1- CROP GENETICS	65.10%	22,481
2- CULTURAL PRACTICES	92.30%	31,874
3- DISEASE MANAGEMENT	76.80%	26,521
4- SOIL FERTILITY	55.50%	19,166
5- IRRIGATION	2.60%	898
6- WATER MANAGEMENT	62.70%	21,652
7- CLIMATE MITIGATION	8.30%	2,866
8- CLIMATE ADAPTATION	96.40%	33,290

Technology Type	Percentage of Farmers in the Sample	Number of Beneficiaries (extrapolated)
9- MARKETING DISTRIBUTION	2.40%	829
10-POST HARVEST HANDLING & STORAGE	85.10%	29,388
11-PROCESSING & PRESERVATION	84.10%	29,042
APPLIED AT LEAST ONE TECH TYPE	99.40%	34,326

Table 9. Decision Maker

Decision Maker	Number of Farmers	Percentage of Farmers	Total Number of Farmers (Data Points)	Number Of Beneficiaries
Male	6,121	99.50%	15,871	15,792
Female	3,594	99.10%	18,662	18,494
Total	9,714	99.40%	34,533	34,326

- **Indicator: yield per hectare of groundnut, soy and OFSP** (1.4-5 Yield of targeted value chains).

From the gross margin data points of production and area planted the yield was calculated below in tables 10, 11, 12 for the three crops as follows:

Table 10. Weighted Yields for Groundnuts Production in MT / HA

Decision Maker	Decision Maker Weighted Mean Yield	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.032	.989	1.074	.832
Female	.636	.604	.668	.822
Joint	.936	.898	.973	1.235
Overall	.886	.863	.908	1.016

***The confidence intervals are constructed by assuming a Normal distribution for the ratios¹³

¹³ Yield is taken as the ratio of the production to area planted. It was calculated based on the individual farmers instead of taking aggregate ratios. The calculation in SPSS was based on the assumption of the normal distribution.

Table 11. Weighted Yields for Soybeans Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.165	1.117	1.213	.767
Female	.752	.705	.798	17.503
Joint	1.041	.979	1.103	2.032
Overall	1.013	.981	1.045	9.635

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

Table 12. Weighted Yields for OFSP Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.817	1.721	1.914	2.937
Female	1.619	1.468	1.771	65.994
Joint	1.954	1.775	2.133	18.594
Overall	1.824	1.740	1.908	35.316

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

- **Indicator: gross margin per hectare of groundnut, soy and OFSP** (1.4-4 Gross margins per hectare, per animal or per cage obtained with USG assistance).
- **Indicator: value of groundnut, soy and OFSP smallholder sales** (1.2-1 Value of annual sales for the farmers receiving USG assistance (EG 3.2-19)).

Below in the tables 13-15 are the extrapolated five data points for the gross margin calculation starting with area planted then production, sales quantity, sales value and input costs. Note that this was disaggregated by gender. This was done for groundnuts, soybeans and OFSP. As a part of the gross margin calculations the tables below contain the value of sales for each of the three promoted value chains.

Table 13. Gross Margin Calculations for Groundnuts

Gross Margin Data Points for Groundnuts				
Area Planted Groundnuts	Avg. area HA	% Farmers	# Farmers (extrapolated)	Total HA
Male	0.4260	30.36%	7,097	3,023.47
Female	0.3676	30.16%	7,052	2,592.14
Joint	0.4390	39.48%	9,230	4,051.96
Total	0.4135		23,379	9,667.57

Production Groundnuts	Avg. Production MT	% Farmers	# Farmers (extrapolated)	Total Production
Male	.4358	30.36%	7,097	3,093.02
Female	.2337	30.16%	7,052	1,647.94
Joint	.4098	39.48%	9,230	3,782.44
Total	.3646		23,379	8,523.40
Sales MT Groundnuts	Avg. Sales MT	% Farmers	# Farmers (extrapolated)	Total MT Sold
Male	0.2202	30.36%	7,097	1,563.10
Female	0.1013	30.16%	7,052	714.25
Joint	0.1838	39.48%	9,230	1,696.54
Total	0.1700		23,379	3,973.89
Sales \$ Groundnuts	Avg. Sales \$	% Farmers	# Farmers (extrapolated)	Total Sales \$
Male	55.05	30.36%	7,097	390,709.04
Female	24.57	30.16%	7,052	173,255.99
Joint	46.83	39.48%	9,230	432,239.33
Total	42.61		23,379	996,204.36
Input Costs Groundnuts	Avg. Input cost	% Farmers	# Farmers (extrapolated)	Total Input Cost \$
Male	24.98	30.36%	7,097	177,301.78
Female	16.55	30.16%	7,052	116,678.19
Joint	28.37	39.48%	9,230	261,887.88
Total	24.56		23,379	555,867.85

Table 14. Gross Margin Calculations for Soy

Gross Margin Data Points for Soy				
Area Planted soy	Avg. area HA	% Farmers	# Farmers (extrapolated)	Total HA
Male	0.3295	33.20%	6,787	2,236.47
Female	0.2536	29.78%	6,088	1,544.04
Joint	0.2913	37.02%	7,568	2,204.44
Total	0.2927		20,444	5,984.95
Production soy	Avg. Production MT	% Farmers	# Farmers (extrapolated)	Total Production
Male	.3840	33.20%	6,787	2,606.38
Female	.1901	29.78%	6,088	1,157.42
Joint	.3044	37.02%	7,568	2,303.57
Total	.2968		20,444	6,067.37
Sales MT Soy	Avg. Sales MT	% Farmers	# Farmers (extrapolated)	Total MT Sold
Male	.3089	33.20%	6,787	2,096.65
Female	.1682	29.78%	6,088	1,024.09
Joint	.2524	37.02%	7,568	1,910.06
Total	.2484		20,444	5,030.79
Sales \$ Soy	Avg. Sales \$	% Farmers	# Farmers (extrapolated)	Total Sales \$
Male	52.79	33.20%	6,787	358,309.93
Female	28.70	29.78%	6,088	174,739.78
Joint	42.87	37.02%	7,568	324,422.31
Total	42.34		20,444	857,472.02
Input Costs Soy	Avg. Input cost	% Farmers	# Farmers (extrapolated)	Total Input Cost \$
Male	9.38	33.20%	6,787	63,666.36
Female	4.94	29.78%	6,088	30,077.16
Joint	8.51	37.02%	7,568	64,400.14
Total	7.87		20,444	158,143.66

Table 15. Gross Margin Calculations for OFSP

Gross Margin Data Points for OFSP				
Area Planted OFSP	Avg. area HA	% Farmers	# Farmers (extrapolated)	Total HA
Male	0.1507	41.84%	4,493	677.12
Female	0.1247	25.74%	2,765	344.74
Joint	0.1671	32.42%	3,482	581.87
Total	0.1494		10,740	1,603.73
Production OFSP	Avg. Production MT	% Farmers	# Farmers (extrapolated)	Total Production
Male	.2750	41.84%	4,493	1,235.63
Female	.2028	25.74%	2,765	560.65
Joint	.3260	32.42%	3,482	1,135.18
Total	.2730		10,740	2,931.46
Sales MT OFSP	Avg. Sales MT	% Farmers	# Farmers (extrapolated)	Total MT Sold
Male	.1397	41.84%	4,493	627.7
Female	.0877	25.74%	2,765	242.45
Joint	.1902	32.42%	3,482	662.31
Total	.1427		10,740	1,532.45
Sales \$ OFSP	Avg. Sales \$	% Farmers	# Farmers (extrapolated)	Total Sales \$
Male	15.87	41.84%	4,493	71,306.99
Female	9.75	25.74%	2,765	26,954.09
Joint	17.95	32.42%	3,482	62,504.65
Total	14.97		10,740	160,765.75
Input Costs OFSP	Avg. Input cost	% Farmers	# Farmers (extrapolated)	Total Input Cost \$
Male	6.51	41.84%	4,493	29,250.7
Female	4.23	25.74%	2,765	11,693.93
Joint	9.63	32.42%	3,482	33,533.14
Total	7.01		10,740	74,477.77

The data shown in Tables 13-15 are the five data points used in the gross margin calculation. These data points should be entered into the FTFMS system. The gross margin formula (dollars per hectare) for the three value chains from the survey is shown below:

$$\frac{[(VS/QS) * TP] - IC}{UP}$$

UP

Where VS represents the value of sales in metric tons , QS is the quantity sold in metric tons, TP is the total production in metric tons , IC are input costs in dollars and UP is the unit of production, which is hectares. The gross margin per hectare of production (dollars per hectare

of production) for the three value chains was calculated below as follows:

Groundnuts	165.04
Soybeans	146.37
Orange fleshed sweet potato	145.32

Note that these gross margins were quite low. During the implementation of Integrating Nutrition into Value Chains (INVC) in Malawi there were several annual surveys and spot surveys measuring gross margin from these three value chain crops. The results from the 204 survey showed gross margins for soy at \$170/ha and for groundnuts is was more than double at \$318.92/ha. INVC did not collect data for OFSP in 2014. This was likely to do with the fact the INVC surveys were of beneficiaries and the AgDiv baseline line was of targeted beneficiaries. The INVC surveys were conducted during implementation when farmers were obtaining benefits directly from the project.

- **Indicator: number of farmers using climate information or implementing risk-reducing actions to improve resilience to climate change** (2.2-1 Number of people using climate information or implementing risk-reducing actions to improve resilience to climate change as supported by USG assistance).

Table 16 below shows the overall percentage of farmers who were found to implement risk reducing actions extrapolated to AgDiv beneficiaries using the sex proportions from the survey. Note that the results included a high percentage of farmers, meaning almost all of the farmers used some form of risk reducing strategy to adapt to climate change. AgDiv should tighten the definition for this indicator to focus on a narrower set of behaviors that represent what the project is promoting.

Table 16. Number of Farmers Using Climate Change Information or Implementing Risk Reducing Actions

	Sample Percentage	Estimated number of beneficiaries
Overall percentage of Yes Responses	96.08%	
<i>Males</i>	96.98%	15,391
<i>Females</i>	95.31%	17,786
Total		33,178

- **Number of groundnut, soy and OFSP producing households applying improved storage or preservation practices** (3.1-3 Number of soy, groundnut or OFSP-producing households applying improved storage or preservation practices).

Note in Table 17 that many soy and groundnut farmers utilized improved storage practices but very few were using PIC bags. Also note that OFSP farmers did not utilize many improved storage practices. This put farmers at risk for large post-harvest losses, a chronic problem in SubSaharan Africa.

Table 17. Number of Farmers Applying Improved Storage Practices

Number of farmers applying improved storage practices		
	Sample Percentage	Estimated number of beneficiaries
# Groundnut farmers		23,379
1. Storing in PICS Bags	3.20%	748
2. Storing in Shell	80.90%	18,913
3. Drying	90.40%	21,134
4. Roasting	88.70%	20,737
5. Processing into flour	94.10%	21,999
6. Processing into P. Butter	46.60%	10,895
7. Processing into Oil	1.50%	351
Applied at Least One Improved Method	97.70%	22,841
# Soy farmers		20,444
1. Storing in PICS Bags	1.30%	266
2. Drying	80.70%	16,498
3. Processing into flour	71.70%	14,658
4. Processing into Milk	2.00%	409
5. Processing into Oil		0
6. Processing into Cake		0
Applied at least one method	93.60%	19,135
# OFSP farmers		10,740
1. Storing in Pits with Ash	26.3%	2,825
2. Processing into flour	3.0%	322
3. Dried Chips	18.50%	1,987
Applied at Least One Improved Method	40.60%	4,360

- **Indicator: percentage of female groundnut, soy and OFSP farmers consuming a diet of minimum diversity** (3.1-2 Percentage of female direct beneficiaries of USG nutrition-sensitive agriculture activities consuming a diet of minimum diversity).

Just over half of the female farmers were achieving minimum dietary diversity as noted from Table 18 below. This left room for AgDiv to make an impact on the diet of its female beneficiaries:

Table 18. Female Farmers Achieving Dietary Diversity

Percentage of Female farmers who consumed five of the ten food groups for a diet of minimum diversity	
Overall percentage of Yes's	56.90%
Number of Female beneficiaries	10,618

- **Indicator: percentage of female groundnut, soy and OFSP farmers consuming at least one product from the targeted value chains** (indicator not in AgDiv Activity Monitoring and Evaluation Plan).

63.5% of the Female farmers consumed at least one of the targeted value chain commodities. Note from Table 19 below that the highest was groundnuts at 48%. Groundnuts had long been a

favorite crop for home consumption in Malawi.

Table 19. Percentage of Female Farmers consuming at least one product from the Target Value Chains

Percentage of Female farmers consuming at least one product from the target value chains	
Overall percentage of Yes's	63.50%
consumed groundnuts	48.00%
consumed soy	23.60%
consumed OFSP	23.50%

These next three tables show how the sex disaggregates from the survey for the three promoted value chains are distributed among the three crops.

What follows are the extrapolated results for the three WEAI indicators collected from this survey.

- **Indicator: percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Access to and decision on credit** (4.2-1 Percentage of women achieving adequacy on WEAI: Access to and decisions on credit);
- **Indicator: percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Group Member** (4.3-1 Percentage of women achieving adequacy on WEAI: Group member);
- **Indicator: percentage of female groundnut, soy and OFSP farmers achieving adequacy on Women's Empowerment in Agriculture Index Indicator: Input on productive decisions** (4.4-1 Percentage of women achieving adequacy on WEAI: Input on productive decisions).

The results in table 20 are for the three WEAI indicators tracked by AgDiv. Note that there was a high percentage of female beneficiaries who achieved adequacy for group membership and input on productive decisions (81.6% and 90% respectively) but only 39.5% achieved adequacy on credit decisions. This meant that fewer women had access to credit or had input into the use of credit. This might be an area where AgDiv could focus its interventions.

Table 20. Results from three WEAI Indicators

Female Farmers achieving Adequacy achieving access to and make decisions on credit	
Overall percentage of Yes's	39.50%
Number of Female beneficiaries	7,371
Female Farmers achieving Adequacy on group membership	
Overall percentage of Yes's	81.60%
Number of Female beneficiaries	15,228
Female Farmers achieving Adequacy on input into productive decisions	
Overall percentage of Yes's	90.00%
Number of Female beneficiaries	16,796

All of the extrapolated values highlighted in grey in the above tables should be entered into FTFMS by AgDiv. Annex 2 provides the values weighted calculated from the survey before extrapolation

to the AgDiv population of beneficiaries.

4.4 Analysis of Results

Further analysis of the survey results provided additional information for comparison. What follows are relative percentages for selected indicators to indicate where there was opportunity for improvement.

Area Planted and Yields

Below Table 21 shows the area planted in hectares for the three value chains broken down by district. Note that Lilongwe and Mchinji had the largest areas dedicated to the three crops by a fairly large margin.

Table 21. Area Planted (Hectares) by District
(this is the weighted sample data, not extrapolated)

Districts	Groundnuts	Soybeans	OFSP
Lilongwe	1259.35	689.51	118.38
Mchinji	605.44	653.63	122.68
Dedza	248.93	205.68	26.25
Ntcheu	102.14	67.07	25.78
Mangochi	92.51	33.98	36.13
Machinga	172.25	14.54	64.84
Balaka	257.20	31.30	59.70
Total	2,737.83	1,695.71	453.76

Table 22 below shows the yields broken down by district in metric tons per hectare. Mchinji appeared to have the best yields across the three crops with the highest yield for groundnuts and soy and the fourth highest yield for OFSP. The highest yielding district for OFSP was Ntcheu. These results were very similar to what was reported by the Ministry of Agriculture for 2017 of 1.1 MT/Ha for soybean and 1 MT/Ha for groundnuts.

For the 2016 season the FAO reported an average yield of .743459 MT/Ha for groundnuts and .884614 MT/Ha for soy while the Ministry of Agriculture reported .743459 for groundnuts and .889985 for soybeans. The FAO did not have data for the 2017 growing season.

Table 22. Yield (MT/Ha) by district

Districts	Groundnuts	Soybeans	OFSP
MT/HA			
Lilongwe	1.0270	0.858	2.309
Mchinji	1.1450	1.333	1.656
Dedza	0.7050	0.941	1.918
Ntcheu	0.5020	0.434	2.691
Mangochi	0.5040	0.731	1.463
Machinga	0.4510	0.300	1.832
Balaka	0.3700	0.227	1.039
Overall	0.8790	1.013	1.824

Irrigation and PIC bags

There were only 57 farmers (unweighted) out of the sample of 1,677 that used some form of irrigation and only two farmers were using drip irrigation and this was for their OFSP crop.

Many farmers were not utilizing PIC bags for storage. Only 4.1 % of farmers used PIC Bags for maize. The largest percentage was found in Balaka and Machinga (9.2% each). ZeroFly was another form of improved storage being promoted by AgDiv. The use of ZeroFly or PIC bags with soy and groundnuts was also very small with 3.2% using them for groundnuts and only 1.3% using them for soybeans.

Dietary Diversity

Below in Table 23 are the dietary diversity results for the survey. Note that the district where women had the highest dietary diversity was Mchinji (69.35%) and the district with the lowest was Machinga (44.47%). It would be interesting to explore why the diets in Machinga were so poor and why perhaps Mchinji was the highest.

Table 23. Women Dietary Diversity

Districts	Number of Women (unweighted sample)	Percentage (weighted)
Lilongwe	236	57.95%
Mchinji	117	69.35%
Dedza	173	54.43%
Ntcheu	82	51.90%
Mangochi	67	57.43%
Machinga	80	44.47%
Balaka	141	53.93%
Total		59.93%

WEAI

The results on the WEAI indicators overall were fairly good with 81.6% of the females achieving adequacy for group membership and 90.9% achieving adequacy on input into productive decisions. However only 39.8% of the women achieved adequacy on access to and decisions on credit. All of the tables below show the breakdown of results for the three WEAI indicators by district. Note that in the table 24 Balaka had the best results (62.4%) and Mchinji showed the poorest results with 32.5% for access and usage of credit.

Table 24. WEAI Access and Utilization of Credit

District	Count (unweighted sample)	Percentage (weighted)
Lilongwe	128	34.9%
Mchinji	43	32.5%
Dedza	126	41.5%
Ntcheu	77	54.4%
Mangochi	54	35.7%
Machinga	65	38.3%
Balaka	143	62.4%
Total		39.8%

Table 25. WEAI Adequacy For Membership and participation in Least One Group C

District	Count (unweighted sample)	Percentage (weighted)
Lilongwe	301	76.0%
Mchinji	145	87.7%
Dedza	247	86.9%
Ntcheu	115	82.3%
Mangochi	101	74.1%
Machinga	131	78.6%
Balaka	242	97.2%
Total		81.6%

Table 26. WEAI Adequacy in At Least Two Productive Decisions

District	Count (unweighted sample)	Percentage (weighted)
Lilongwe	347	94.1%
Mchinji	133	84.7%
Dedza	258	93.6%
Ntcheu	126	94.1%
Mangochi	107	85.9%
Machinga	158	86.3%
Balaka	238	92.4%
Total		90.9%

4.5 Conclusions

- The survey was completed for seven of the eight districts that is the AgDiv zone of influence. Estimates for all of the ten farm level indicators were calculated. This will provide the AgDiv activity with a benchmark against which they can measure their performance.
- The Listing Operation which was conducted at the beginning of the survey to list farmers growing target value chain crops, allowed the team to create a sample frame from which to draw the sample for the survey. This added extra time up front to prepare for the survey. Due to the addition of the listing operation the survey used a 7.5% margin of error which is on the high side. This was done to lower the cost of the survey to offset the costs of the Listing Operation.
- The team decided to conduct the survey with tablets verses paper questionnaires. This reduced non sampling errors but added a lot of documentation work up front to properly document how the questionnaire would be programmed into the tablets. Also there were some last minute changes made to the questionnaire at the request of AgDiv which resulted in more time.
- The CDM team did a very good job conducting the field work and the MELS team found very few issues with the quality of their work. When the data set was handed over the MELS team noticed that there was some additional data cleaning required to properly calculate the indicators.

- The results for the agricultural indicators are mostly in line with what was found during INVC. Groundnut gross margins were higher in the 2014 survey primarily due to more favorable prices. The technology indicators were quite broadly defined with a large number of different technologies promoted by AG and its partners. The result is that almost 100% of the farmers in the survey applied some type of improved technology. Also there were many hectares under improved cultivation. Also not that although many farmers applied improved storage practices only 3.2 % stored crops in PICS bags. Irrigation had a very similar result at 3.3% using irrigation with only 2 farmers using drip irrigation. These are two technologies that are promoted by AgDiv so this represents a good opportunity for improvement.
- The results for the WEAI indicators were fairly good with 90% of the women showing access to productive decisions and 82% achieving adequacy in group membership. The dietary diversity indicator shows much opportunity for improvement at 59% and Women's access to credit was low at only about 40%.

4.6 Recommendations

- During the next annual survey MELS recommends utilizing a 5% margin of error for the sample size calculation since a Listing Operation will be unnecessary.
- The next survey should include Blantyre District since this is in the projects Zone of Influence.
- AgDiv should redefine their technology indicators to specifically focus on those technologies that AgDiv is promoting. As they were collect the indicators do not tell AgDiv very much due to their broad inclusion of many technologies.
- AgDiv should also focus on the WEAI indicator "Access to Credit" as there is an opportunity to work with communities to improve women's access to credit and the decisions around credit.
- Since the agricultural indicator data is obtained was gathered via farmer recall. MELS measured a sample of farmers with GPS technology and calculated an adjustment factor to correct for over or under reporting on the size of the farm. It is recommended that MELS do this again for the next survey. It will be interesting to see how this baseline correction factor will compare with that from the next annual survey. It is also recommended that a sample of farmers be surveyed closer to harvest with farmer harvests physically measured to compare farmer recall with actual results.
- The enumerator manual produced for this survey contained a large number of screen shots from the tablet. This made the manual very unwieldy and it ended up not being utilized very much for the training. The enumerators were trained directly with the tablets and this was much more effective. The enumerator manual for the next survey should be much smaller and should contain references to utilization of the tablet without screen shots.

ANNEX I: SURVEY INSTRUMENT

MODULE A: HOUSEHOLD IDENTIFICATION COVER SHEET

HOUSEHOLD IDENTIFICATION		CODE	A09. INTERVIEWER VISITS				
A01. HOUSEHOLD IDENTIFICATION			DATE	1	2	3	FINAL VISIT
A02. CLUSTER NUMBER							DAY
A03. EPA NAME							MONTH
A04. VILLAGE							YEAR
A05. TA/TOWN							INT. NUMBER
A06. DISTRICT			RESULT*				RESULT
A07. REGION			NEXT VISIT DATE				TOTAL NUMBER OF VISITS
A08. GPS COORDINATES OF HOUSEHOLD			TIME				
NOTE: THE PRIMARY MALE AND PRIMARY FEMALE DECISIONMAKERS ARE THOSE WHO ARE AGE 18 OR OLDER, AND WHO <u>SELF-IDENTIFY</u> AS THE PRIMARY MALE AND/OR PRIMARY FEMALE MEMBERS RESPONSIBLE FOR THE DECISION MAKING, BOTH SOCIAL AND ECONOMIC, WITHIN THE HOUSEHOLD. IN HOUSEHOLDS WITH BOTH MALE AND FEMALE DECISIONMAKERS, THE PRIMARY MALE AND PRIMARY FEMALE DECISIONMAKERS ARE USUALLY HUSBAND AND WIFE; HOWEVER, THEY CAN ALSO BE OTHER HOUSEHOLD MEMBERS, AS LONG AS THEY ARE AGED 18 AND OVER.			*RESULT CODES (A09): 1 COMPLETED 2 NOT HOME 3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD 4 POSTPONED/UNAVAILABLE 5 REFUSED 6 DWELLING VACANT 7 NOT A DWELLING 8 DWELLING DESTROYED 9 DWELLING NOT FOUND 10 TOO ILL TO RESPOND/COGNITIVELY IMPAIRED 11 OTHER (SPECIFY) _____ 12 PARTIAL COMPLETE			A10. TOTAL PERSONS IN HOUSEHOLD A11. TOTAL NUMBER OF WOMEN 15-49 A12. TOTAL NUMBER OF CHILDREN AGE 0-5 A13. LINE NO. OF RESPONDENT TO MODULE C	
			A14. INTERVIEWER			A15. NATIVE LANGUAGE OF RESPONDENT	
			NAME _____				
			LANGUAGE CODES: 1 CHICHEWA 2 YAO 3 TUMBUKA 4 LOMWE 5 NGONI 6 SENA 7 OTHER (SPECIFY)				

MODULE B1: INFORMED CONSENT

INTRODUCE THE HOUSEHOLD TO THE SURVEY AND OBTAIN THE CONSENT OF A RESPONSIBLE ADULT IN THE HOUSEHOLD TO PARTICIPATE IN MODULE C OF THE QUESTIONNAIRE.

AT THE BEGINNING OF EACH SUBSEQUENT MODULE, YOU WILL BE PROMPTED TO OBTAIN INFORMED CONSENT FROM EACH ELIGIBLE RESPONDENT PRIOR TO INTERVIEWING HIM OR HER.

ASK TO SPEAK WITH A RESPONSIBLE ADULT IN THE HOUSEHOLD:

STATEMENT TO BE READ TO THE RESPONDENT:

Thank you for the opportunity to speak with you. We are a consulting firm based at Lilongwe and we are conducting a survey to learn about agricultural production and marketing of groundnuts, soybean and orange fleshed sweet potatoes from farmer households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, areas planted, improved production technologies, production and sales of crops, costs of crop inputs, food consumption, resilience to climate change and women in agriculture. The survey includes questions about the household generally, and questions about individual farmers within your household. The questions about the household and its characteristics will take about 30 minutes to complete. Selected members from your household will be asked additional questions. The interview in total will take approximately 2-3 hours to complete. Your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or skip any questions you do not want to answer. Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a data base, we will destroy all information such as your name that could link these responses to you.

Do you have any questions about the survey or what I have said? If in the future you have any questions regarding the survey or the interview, or concerns or complaints we welcome you to contact our company, by calling +265999 83 93 47. We will leave a copy of this statement and our organization's complete contact information with you so that you may contact us at any time.

Do you have any questions?

May I begin the interview now?

INTERVIEWER NAME: _____ DATE: _____

RESPONDENT AGREES TO BE INTERVIEWED....1

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED.....2 ~~END~~

"Thank you very much

↓
CONTINUE
WITH
HOUSEHOLD
ROSTER (MODULE C):

"First, I'd like to ask you about
the members of your household."

MODULE B2: INFORMED CONSENT AND CONTACT INFORMATION

TO LEAVE WITH THE HOUSEHOLD

Thank you for the opportunity to speak with you. We are a consulting firm based at Lilongwe and we are conducting a survey to learn about agricultural production and marketing of groundnuts, soybean and orange fleshed sweet potatoes from farmer households in this area. Your household has been selected to participate in an interview that includes questions on topics such as your family background, areas planted, improved production technologies, production and sales of crops, costs of crop inputs, food consumption, resilience to climate change and women in agriculture. The survey includes questions about the household generally, and questions about farmers within your household. The questions about the household and its characteristics will take about 30 minutes to complete. Selected members from your household will be asked additional questions. The interview in total will take approximately 2-3 hours to complete. Your participation is entirely voluntary. If you agree to participate, you can choose to stop at any time or skip any questions you do not want to answer. Your answers will be completely confidential; we will not share information that identifies you with anyone. After entering the questionnaire into a data base, we will destroy all information such as your name that could link these responses to you.

If in the future you have any questions regarding the survey or the interview, or concerns or complaints, we welcome you to contact our company, by calling +265999 83 93 47. This form is for you so that you will have a record of your participation in the study, and the contact information for the survey organization.

NAME OF SURVEY IMPLEMENTING ORGANIZATION:

NAME OF SURVEY DIRECTOR:

Bright Sibale

PHONE NUMBER:

+265999 83 93 47

MAILING ADDRESS:

Center for Development Management

P.O. Box 31810

Lilongwe, Malawi

EMAIL ADDRESS:

bbsibale@gmail.com

MODULE C: HOUSEHOLD ROSTER AND DEMOGRAPHICS

Household identification (*in data file, each module must be matched with the HH ID*)

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C01a. Who would you say is the primary male decision maker in this household? This person should be 18 years old or older. YES, PRIMARY MALE DECISIONMAKER EXISTS IN HOUSEHOLD 1 NO PRIMARY MALE DECISIONMAKER IN HOUSEHOLD 2 IF THERE IS A PRIMARY MALE DECISIONMAKER, ENTER HIS NAME ON LINE 01 OF THE ROSTER. C02 AND C03 ARE PRE-FILLED FOR THIS LINE NUMBER.											
C01b. Who would you say is the primary female decision maker in this household? This person should be 18 years old or older. YES, PRIMARY FEMALE DECISIONMAKER EXISTS IN HOUSEHOLD 1 NO PRIMARY FEMALE DECISIONMAKER IN HOUSEHOLD 2 IF THERE IS A PRIMARY FEMALE DECISIONMAKER, ENTER HER NAME ON LINE 02 OF THE ROSTER. SEX (C02) IS PRE-FILLED FOR THIS LINE NUMBER. ENTER THE RELATIONSHIP (C03) OF THE FEMALE DECISIONMAKER TO THE PERSON LISTED ON LINE 01; IF NO ONE IS LISTED ON LINE 01, ENTER CODE '01' FOR C03.											
L I N E N U M B E R	Now, please tell me the names of all of the other people who usually live here. LIST ALL HOUSEHOLD MEMBERS, THEIR SEX (C02), AND THEIR RELATIONSHIP TO THE PRIMARY DECISIONMAKER NAMED IN LINE 01 (C03), OR NAMED IN LINE 02 IF NO HH MEMBER LISTED ON LINE 01. IF THERE IS NO PRIMARY MALE OR FEMALE DECISIONMAKER IN THE HOUSEHOLD, START THE HOUSEHOLD LISTING ON LINE 03. THEN ASK: Are there any other people who live here, even if they are not at home now? These may include children in school or household members at work. Any other people like small children or infants that we have not listed? Are there any other people who may not be members of your family, such as domestic servants, lodgers, or friends who usually live here? IF YES, COMPLETE LISTING FOR QUESTIONS C02-C03. THEN, ASK QUESTIONS STARTING WITH C04 FOR EACH PERSON ONE AT A TIME.		What is [NAME's] sex? M = 1 F = 2	What is [NAME's] relationship to the primary male decision-maker? IF NO PRIMARY MALE DECISION-MAKER: What is [NAME's] relationship to the primary female decision-maker? SEE CODES BELOW IF NO ADULT DECISION-MAKER: ENTER CODE 16	What is [NAME's] age? IN YEARS IF 95 OR OLDER, ENTER '95'	Did [NAME] stay here last night? YES=1 NO=2	How long has it been since [NAME] has spent the night in this household? SEE CODES BELOW	Has [NAME] ever attended school? YES=1 NO=2	Is [NAME] currently attending school? YES=1 NO=2	What is the highest grade of education completed by [NAME]? SEE CODES BELOW	Can [NAME] read and write? SEE CODES BELOW
	C01		C02	C03	C04	C05	C06	C07	C08	C09	C10
	01	1	0 1	1→C07 2	1 2 3	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	1 2
	02	2	1→C07 2	1 2 3	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	1 2	1 2→C12
	03	1 2	1→C07 2	1 2 3	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	1 2	1 2→C12
	04	1 2	1→C07 2	1 2 3	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	1 2	1 2→C12
05	1 2	1→C07 2	1 2 3	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	
06	1 2	1→C07 2	1 2 3	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	1 2	1 2→C12	
C03 RESULT CODES: RELATIONSHIP TO PRIMARY MALE (OR FEMALE, IF NO MALE) DECISIONMAKER:				C06 RESULT CODES: TIME SINCE SPENT THE NIGHT		C11 RESULT CODES: EDUCATION LESS THAN P1 (OR NO SCHOOL) 01			A-LEVEL/HIGH SCHOOL 14 UNIVERSITY OR ABOVE 15		

SELF.....01	BROTHER/SISTER-IN-LAW.....11	CIRCLE 1 IF DAYS; ENTER #	PRIMARY LEVEL 1.....02	TECHNICAL/VOCATIONAL.....16
SPOUSE/PARTNER.....02	MOTHER/FATHER-IN-LAW.....12	OF DAYS IN BOX (1-6)	PRIMARY LEVEL 2.....03	ADULT LITERACY ONLY,
SON/DAUGHTER.....03	OTHER RELATIVE.....13		PRIMARY LEVEL 3.....04	NO FORMAL EDUCATION.....17
SON/DAUGHTER-IN-LAW.....04	SERVANT/MAID.....14	CIRCLE 2 IF WEEKS; ENTER	PRIMARY LEVEL 4.....05	KORANIC/RELIGIOUS ONLY
GRANDSON/	LABORER.....15	# OF WEEKS IN BOX (1-5)	PRIMARY LEVEL 5.....06	NO FORMAL EDUCATION).....18
GRANDDAUGHTER.....05	NO DECISIONMAKER		PRIMARY LEVEL 6.....07	DON'T KNOW/NOT APPLICABLE 91
MOTHER/FATHER.....06	AGE 18 OR OLDER	CIRCLE 3 IF MONTHS;	PRIMARY LEVEL 7.....08	
BROTHER/SISTER.....07	IN HOUSEHOLD.....16	ENTER # OF MONTHS IN	PRIMARY LEVEL 8.....09	C12 RESULT CODES: LITERACY
NEPHEW/NIECE.....08	STEPSON/	BOX MEMBER HAS BEEN	SECONDARY 1.....10	CANNOT READ & WRITE.....1
NEPHEW/NIECE OF SPOUSE.....09	STEPDAUGHTER.....17	AWAY.	SECONDARY 2.....11	CAN SIGN (WRITE) ONLY.....2
COUSIN.....10	OTHER RELATIONSHIP.....96		SECONDARY 3.....12	CAN READ ONLY.....3
			SECONDARY 4.....13	CAN READ & WRITE.....4

Household identification (in data file, each module must be matched with the HH ID)

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C01a. Who would you say is the primary male decision maker in this household? This person should be 18 years old or older. YES, PRIMARY MALE DECISIONMAKER EXISTS IN HOUSEHOLD 1 NO PRIMARY MALE DECISIONMAKER IN HOUSEHOLD 2 IF THERE IS A PRIMARY MALE DECISIONMAKER, ENTER HIS NAME ON LINE 01 OF THE ROSTER. C02 AND C03 ARE PRE-FILLED FOR THIS LINE NUMBER.										
C01b. Who would you say is the primary female decision maker in this household? This person should be 18 years old or older. YES, PRIMARY FEMALE DECISIONMAKER EXISTS IN HOUSEHOLD 1 NO PRIMARY FEMALE DECISIONMAKER IN HOUSEHOLD 2 IF THERE IS A PRIMARY FEMALE DECISIONMAKER, ENTER HER NAME ON LINE 02 OF THE ROSTER. SEX (C02) IS PRE-FILLED FOR THIS LINE NUMBER. ENTER THE RELATIONSHIP (C03) OF THE FEMALE DECISIONMAKER TO THE PERSON LISTED ON LINE 01; IF NO ONE IS LISTED ON LINE 01, ENTER CODE '01' FOR C03.										
LINE NUMBER	Now, please tell me the names of all of the other people who usually live here. LIST ALL HOUSEHOLD MEMBERS, THEIR SEX (C02), AND THEIR RELATIONSHIP TO THE PRIMARY DECISIONMAKER NAMED IN LINE 01 (C03), OR NAMED IN LINE 02 IF NO HH MEMBER LISTED ON LINE 01. IF THERE IS NO PRIMARY MALE OR FEMALE DECISIONMAKER IN THE HOUSEHOLD, START THE HOUSEHOLD LISTING ON LINE 03. THEN ASK: Are there any other people who live here, even if they are not at home now? These may include children in school or household members at work. Any other people like small children or infants that we have not listed? Are there any other people who may not be members of your family, such as domestic servants, lodgers, or friends who usually live here? IF YES, COMPLETE LISTING FOR QUESTIONS C02-C03. THEN, ASK QUESTIONS STARTING WITH C04 FOR EACH PERSON ONE AT A TIME.		What is [NAME's] relationship to the primary male decision-maker? IF NO PRIMARY MALE DECISION-MAKER: What is [NAME's] relationship to the primary female decision-maker? SEE CODES BELOW IF NO ADULT DECISION-MAKER: ENTER CODE 16	What is [NAME's] age? IN YEARS IF 95 OR OLDER, ENTER '95'	Did [NAME] stay here last night? YES=1 NO=2	How long has it been since [NAME] has spent the night in this household? SEE CODES BELOW	Has [NAME] ever attended school? YES=1 NO=2	Is [NAME] currently attending school? YES=1 NO=2	What is the highest grade of education completed by [NAME]? SEE CODES BELOW	Can [NAME] read and write? SEE CODES BELOW
	C01	C02	C03	C04	C05	C06	C07	C08	C09	C10
	01	1	0 1		1→C07 2	1 2 3	1 2→C12	1 2		
	02	2			1→C07 2	1 2 3	1 2→C12	1 2		
	03	1 2			1→C07 2	1 2 3	1 2→C12	1 2		
	04	1 2			1→C07 2	1 2 3	1 2→C12	1 2		
	05	1 2			1→C07 2	1 2 3	1 2→C12	1 2		
	06	1 2			1→C07 2	1 2 3	1 2→C12	1 2		

C03 RESULT CODES: RELATIONSHIP TO PRIMARY MALE (OR FEMALE, IF NO MALE) DECISIONMAKER:	C06 RESULT CODES: TIME SINCE SPENT THE NIGHT CIRCLE 1 IF DAYS; ENTER # OF DAYS IN BOX (1-6) CIRCLE 2 IF WEEKS; ENTER # OF WEEKS IN BOX (1-5) CIRCLE 3 IF MONTHS; ENTER # OF MONTHS IN BOX MEMBER HAS BEEN AWAY.	C11 RESULT CODES: EDUCATION LESS THAN P1 (OR NO SCHOOL) 01 PRIMARY LEVEL 1 02 PRIMARY LEVEL 2 03 PRIMARY LEVEL 3 04 PRIMARY LEVEL 4 05 PRIMARY LEVEL 5 06 PRIMARY LEVEL 6 07 PRIMARY LEVEL 7 08 PRIMARY LEVEL 8 09 SECONDARY 1 10 SECONDARY 2 11 SECONDARY 3 12 SECONDARY 4 13	A-LEVEL/HIGH SCHOOL 14 UNIVERSITY OR ABOVE 15 TECHNICAL/VOCATIONAL 16 ADULT LITERACY ONLY, NO FORMAL EDUCATION 17 KORANIC/RELIGIOUS ONLY NO FORMAL EDUCATION) 18 DONT KNOW/NOT APPLICABLE 91 C12 RESULT CODES: LITERACY CANNOT READ & WRITE 1 CAN SIGN (WRITE) ONLY 2 CAN READ ONLY 3 CAN READ & WRITE 4
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MODULE D: ENTERPRISE VALUE CHAIN

Enumerator: Module D must be administered separately to each selected farmer from the list provided to you by MELS before the survey. The random selection of the participating farmers was performed by MELS, after the listing operation was completed.

Please double check to ensure:

- You have noted the household ID and individual ID correctly for the person you are about to interview.
- You have gained informed consent for the individual in the household questionnaire, otherwise complete Module C for the respondent.
- You have sought to interview the individual in private or where other members of the household cannot overhear or contribute answers.

SUB-MODULE D0: FARMER IDENTIFICATION

	Code		Code
D01. Household Identification		D03a. What is the Outcome of the first visit (individual)	
		D03b. What is the Outcome of the second visit (if needed)	
		D03c. What is the Outcome of the third visit (if needed)	
D02. What is the name of the respondent being interviewed? (Surname, First name):	LINE NUMBER FROM ROSTER IN MODULE C HOUSEHOLD ROSTER 	D04. What is the ability of the respondent to be interviewed alone?	
D03 Codes 1=Completed 2=Incomplete 3=Refused 4=Could not locate	D04 Codes 1=Alone 2=With adult females present 3=With adult males present 4=With mixed sex adults present 5=With children present 6=With adults mixed sex and children present		

D05: Have you or any members of your household participated in any of the following programs or activities? 1. Yes 2. No → D07	Activities: Circle Any Choice That Apply 1. Attended a PICS bag demonstration or a PICS bag training 2. Received a free PICS bag 3. Purchased a PICS bag 4. Attended training on inoculant for soy bean or groundnut 5. Received a free package of inoculant 6. Attended a training on drip irrigation 7. Received a free drip irrigation kit 8. Received training on how to cook soy, groundnut or OFSP products 9. Received a soy cow, soy goat or soy kit 10. Attended a training on aflatoxin control 11. Received support for OFSP vine multiplication 12. Received or purchases OFSP vines		
D06: How many people in your household participated in one or more of these activities? _____			
D07. Did you store your production of Maize in PICS bags after harvesting? 1. Yes 2. No			

Enumerator: First, I would like to ask you questions about areas planted, production, sales, input costs, consumption and adoption of improved technologies for groundnuts, soybeans and Orange Fleshed Sweet Potatoes (OFSP). I will start with groundnuts and move to soybeans and OFSP respectively. **All of my questions refer to the specific plots you cultivated, not to all of the plots cultivated by members of your household.**

SUB-MODULE D1: GROUNDNUTS VALUE CHAIN

D10 Did you grow groundnuts during the 2016-2017 growing season?	Yes 1 No 2 → D2 (Soybeans)
D10A Who was he primary decision maker for groundnuts activities?	Man 1 Female..... 2 Joint 3

D11 Areas, Production, Sales and Input Costs

Enumerator: “Now, I would like to ask you about the total area you planted in groundnuts and the quantity of groundnuts you harvested, during the 2016-2017 growing season”

D111 What was the total area you planted under groundnuts?		D112 Did you finish harvesting your groundnuts field(s)?	D113 What proportion of the groundnuts harvest did you finish?	D114 What is the total quantity of groundnuts you harvested? UNSHELLED		D115 What is the total quantity of groundnuts you harvested? SHELLED	
111a. Area	111b Unit Codes: 1 ... Acres 2 ... Hectares 3 ... Sq Meters 9 ... Others: Specify: _____	Yes 1 → D114 No 2	Codes: 1 1/4 2 1/2 3 3/4 9 ... Others. Specify 	114a Total Quantity	114b. Unit Codes: 1 Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5.... PAIL (SMALL) 6.... PAIL (LARGE) 7... OX-CART 8 BASKET 9 100 KG BAG 99... OTHER (SPECIFY)	115a Total Quantity	115b. Unit Codes: 1 Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5.... PAIL (SMALL) 6.... PAIL (LARGE) 7.... OX-CART 8 BASKET 9 100 KG BAG 99.. OTHER (SPECIFY)

Enumerator: “Now, I would like to ask you about the quantities of groundnuts sold and the value of the groundnuts sales during the 2016-2017 growing season”

ITEM	CODE [ITEM]	D116: Did you sell any [ITEM]?	D117 what is the quantity of [ITEM] sold?		D118: what is the value of [ITEM] sold?	D119: when did you sell your groundnuts?
			117a Quantity	117b Unit Codes: 1. Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5.... PAIL (SMALL) 6.... PAIL (LARGE) 7.... OX-CART 8 BASKET 9 100 KG BAG 99 ...OTHER (SPECIFY)	Value (Kwacha)	Month 1.... March 2 ...April 3 ...May 4 ...June 5.... July 6.... August 7.... September 8.... October 9 ...Didn't sell
Unshelled groundnuts	1161	Yes 1 No ... 2 → Next [ITEM]				
Shelled groundnuts	1162	Yes 1 No ... 2 → D120				

Enumerator: “Now I would like to ask you about the cost of the agricultural inputs you applied to your groundnuts field(s), during the 2016-2017 growing season”

INPUT	CODE [INPUT]	D1110: Did you pay for any [INPUT]?	D1111a: What quantity of [INPUT] did you purchase?	D1111b: What is the unit of quantity of [INPUT]?	D1112 what was the unit price for [INPUT]?	D1113 What proportion of [INPUT] did you apply to your groundnuts field(s)?
Fertilizer	1201	Yes 1 No ... 2 → Next [INPUT]		Code: 1 50kg bag 2 Kg 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Seeds	1202	Yes 1 No ... 2 → Next [INPUT]		Code: 1 50kg bag 2 Kg 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

Hired labor	1203	Yes 1 No ... 2 → Next [INPUT]		Code: 1 Man Days 9 Other - Specify		
Pesticides	1204	Yes 1 No ... 2 → Next [INPUT]		Code: 1 Mg 2 Milters 3 Liters 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Fuel	1205	Yes 1 No ... 2 → Next [INPUT]		1 Liters 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Transport cost	1206	Yes 1 No ... 2 → Next [INPUT]		1 Trips 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Inoculant(s)	1207	Yes 1 No ... 2 → Next Input		Code: 1 Packets of 100 grams 2 Grams 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

Herbicide	1208	Yes 1 No 2 → D12		Code: 1 Liters 2 Grams 3 Milliliters 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
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“Now, I would like to ask you questions about the improved technologies you applied during the 2016-2017 growing season for groundnuts, along with their relative shares with respect to the total area planted in groundnuts.

D12 Agronomic Practices

D121. TECHNOLOGY		D122. Did you apply any [TECHNOLOGY]?	D123. What proportion of your total area in groundnuts is planted under [TECHNOLOGY]? (Circle the choice that applies)
	Code		
Double up legume	1211	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Crop rotation	1212	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Sowing seeds with a hand jab or filling gaps after germination (jab planting)	1213	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Improve plant density (Double row planting)	1214	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Crop diversification or intercropping	1215	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

Early maturing varieties (Short duration varieties): Kakoma 9JL 24), CG 7, Nsinjira, baka	1216	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Use of soil microbes to assist groundnuts in fixing atmospheric nitrogen (Inoculants)	1217	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Stress tolerant varieties (JR24)	1218	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Buying or keeping early maturing seed? (how long)	1219	Yes 1 No 2 → D14	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

D14 Water Management

Enumerator: For Infiltration Pits and swales, area is measured by the size of the plot benefitting from them.

D141. TECHNOLOGY		D142. Did you apply any [TECHNOLOGY]?	D143. What proportion of your total area in groundnuts is planted under [TECHNOLOGY]? (Circle the choice that applies)
	Code		
Zero tillage: A way of growing crops or pasture from year to year without disturbing the soil through tillage.	1411	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Mulching: Covering of the exposed soil with crop residues or other organic materials to conserve moisture and control erosion.	1412	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Box ridges: These are small ridges connecting one crop ridge to the next and slightly lower than the main crop ridges.	1413	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Contour ridge: Ridges of earth that follow positions located at the same altitude and are planted with strips of grass or left fallow (also called contour vegetative strip or contour earth bund).	1414	Yes 1 No 2 → Next TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Infiltration pits: The reconstruction of crop ridges to be aligned along the contour vegetative row.	1415	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Swales: Infiltration trenches are dug to capture flow of water from a hillside area or concentrated flow from open channels or gullies.	1416	Yes 1 No 2 → Next [TECHNOLOGY]	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Contour vegetation rows: Ditches usually dug out on the outer contours of a particular landscape for the purpose of holding and	1417	Yes 1 No 2 → D15	1 All Area 2 1/4 3 1/2 4 3/4

sinking the water.			9 ... Others. Specify
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D15 Irrigation

D151. Did you irrigate your groundnuts, fields?	D152. What type of irrigation system did you use? (Circle the choice that applies)	D153. What proportion of your total area in groundnuts was irrigated? (Circle the choice that applies)
Yes 1 No ... 2 → D16	1 ... Drip Irrigation 2... Seepage well 3... Water wheels 4... Flexi pumps 5... Solar pumps 6... Residual moisture 7... Treadle pump 8... Watering canes 9... Others specify	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify:

Enumerator: “Now, I would like to ask you about the Post-Harvest Handling (PHH) , storage and preservation practices you used for the groundnuts you produced during the 2016-2017 growing season”

D16 PHH, Storage and Preservation Practices

D161. PRACTICES		D162. Did you apply any [PRACTICES]?
	Code	
Use of mechanized tools (cleaners and shellers, dryers or sorters/graders)	1611	Yes 1 No 2
Moisture meters	1612	Yes 1 No 2
Use of Warehouse Receipt System (WRS)	1613	Yes 1 No 2
Improved storage bags – PICS, ZeroFly	1614	Yes 1 No 2

Storing in shell	1615	Yes 1 No 2
Drying	1616	Yes 1 No 2
Roasting	1617	Yes 1 No 2
Processing into flour	1618	Yes 1 No 2
Processing into peanut butter	1619	Yes 1 No 2
Processing into oil	16110	Yes 1 No 2

SUB-MODULE D2: SOYBEANS VALUE CHAIN

D20 Did you grow soybeans during the 2016-2017 growing season?	Yes 1 No 2 → D3 (OFSP)
D20A Who was he primary decision maker for soybeans activities?	Man 1 Female.....2 Joint 3

D2I Areas, Production, Sales and Input Costs

Enumerator: "Now, I would like to ask you about the total area you planted in soybeans and the quantity of soybeans you harvested, during the 2016-2017 growing season"

D211 What was the total area you planted under soybeans?	D212 Did you finish harvesting your soybeans field(s)?	D213 What proportion of the soybeans harvest did you finish?	D214 What is the total quantity of soybeans you harvested?
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211a. Area	211b Unit Codes: 1 ... Acres 2 ... Hectares 3 ... Sq. meters 9 ... Others: Specify: _____	Yes 1 → D214 No 2	Codes: 1 1/4 2 1/2 3 3/4 9 ... Others. Specify: 	214a Quantity	214b. Unit Codes: 1 ... Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5.... PAIL (SMALL) 6.... PAIL (LARGE) 7... OX-CART 8 BASKET 9 100 KG BAG 99.. OTHER (SPECIFY)

Enumerator: “Now, I would like to ask you about the quantities of soybeans sold and the value of the soybeans sales during the 2016-2017 growing season”

D215: Did you sell any soybeans?	D216 what is the quantity of soybeans] sold?		D217: what is the value of the soybeans sold?	D218: when did you sell your soybeans?
	216a Quantity	216b Unit Codes: 1 ... Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5.... PAIL (SMALL) 6.... PAIL (LARGE) 7... OX-CART 8 ... BASKET 9 100 KG BAG 99... OTHER SPECIFY) _____	Value (Kwacha)	Month Codes 1.... March 2 ...April 3 May 4 ...June 5.... July 6.... August 7.... September 8.... October 9 ...Didn't sell
Yes 1 No ... 2 → D219				

Enumerator: “Now I would like to ask you about the cost of the agricultural inputs you applied to your soybeans field(s), during the 2016-2017 growing season”

INPUT	CODE [INPUT]	D219: Did you pay for any [INPUT]?	D2110a: What quantity of [INPUT] did you purchase?	D2110b: What is the unit of quantity of [INPUT]?	D2111: what was the unit price for	D2112: What proportion of [INPUT] did you apply to your soybeans field(s)?
Fertilizer	2191	Yes 1 No ... 2 → Next [INPUT]		Code: 1 50kg bag 2 Kg 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Seeds	2192	Yes 1 No ... 2 → Next [INPUT]		Code: 1 50kg bag 2 Kg 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Hired labor	2193	Yes 1 No ... 2 → Next [INPUT]		Code: 1 Man Days 9 Other - Specify		
Pesticides	2194	Yes 1 No ... 2 → Next [INPUT]		Code: 1 Mg 2 Milers 3 Liters 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Fuel	2195	Yes 1 No ... 2 → Next [INPUT]		1 Liters 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

Transport cost	2196	Yes 1 No 2 → Next [INPUT		1 Trips 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify	
Inoculant(s)	2197	Yes 1 No 2 → Next Input		Code: 1 Packets of 100 grams 2 Grams 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify	
Herbicide	2198	Yes 1 No 2 → D22		Code: 1 Liters 2 Grams 3 Milters 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify	

"Now, I would like to ask you questions about the improved technologies you applied during the 2016-2017 growing season for soybeans, along with their relative shares with respect to the total area planted in soybeans.

D22 Agronomic Practices

D221. TECHNOLOGY		D222. Did you apply any [TECHNOLOGY]? 	D223. What proportion of your total area in soybeans is planted under [TECHNOLOGY]? (Circle the choice that applies)
	Code		
Double up legume	2211	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Crop rotation	2212	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Sowing seeds with a hand jab or filling gaps after germination (jab planting)	2213	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4

			9 ... Others. Specify
Improve plant density (Double row planting)	2214	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Crop diversification or intercropping	2215	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Early maturing varieties (Short duration varieties): Tikolore, Makwacha	2216	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Intercropping two grain legumes with different growth habits (legume and any another crop).	2217	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Use of soil microbes to assist soybeans in fixing atmospheric nitrogen (Inoculants)	2218	Yes 1 No 2 → D23	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

D23 Water Management

Enumerator: For Infiltration Pits and swales, area is measured by the size of the plot benefitting from them.

D231. TECHNOLOGY		D232. Did you apply any [TECHNOLOGY]?	D233. What proportion of your total area in soybeans is planted under [TECHNOLOGY]? (Circle the choice that applies)
	Code		
Mulching: Covering of the exposed soil with crop residues or other organic materials to conserve moisture and control erosion.	2311	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Box ridges: These are small ridges connecting one crop ridge to the next and slightly lower than the main crop ridges.	2312	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Contour ridge: Ridges of earth that follow positions located at the same altitude and are planted with strips of grass or left fallow (also called contour vegetative strip or contour earth bund).	2313	Yes 1 No 2 → Next TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Infiltration pits: The reconstruction of crop ridges to be aligned along the contour vegetative row.	2314	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Swales: Infiltration trenches are dug to capture flow of water from a hillside area or concentrated flow from open channels or gullies.	2315	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Contour vegetation rows: Ditches usually dug out on the outer contours of a particular landscape for the purpose of holding and sinking the water.	2316	Yes 1 No 2 → D24	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

D24 Irrigation

D241. Did you irrigate your soybeans, fields?	D242. What type of irrigation system did you use? (Circle the choice that applies)	D243. What proportion of your total area in soybeans was irrigated]? (Circle the choice that applies)
Yes 1 No ... 2 → D25	1 ... Drip Irrigation 2... Seepage well 3... Water wheels 4... Flexi pumps 5... Solar pumps 6... Residual moisture 7... Treadle pump 8... Watering canes 9... Others specify	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify:

Enumerator: “Now, I would like to ask you about the Post-Harvest Handling (PHH) and storage methods you used for the soybeans you produced during the 2016-2017 growing season”

D25 PHH, Storage and Preservation Practices

D251. PRACTICES		D252. Did you apply any [PRACTICES]?
	Code	
Use of mechanized tools (cleaners and shellers, dryers or sorters/graders)	2511	Yes 1 No 2
Moister meters	2512	Yes 1 No 2
Use of Warehouse Receipt System (WRS)	2513	Yes 1 No 2
Improved storage bags – PICS, ZeroFly	2514	Yes 1 No 2
Drying	2515	Yes 1 No 2
Processing into flour	2516	Yes 1 No 2
Processing into milk	2517	Yes 1 No 2

Processing into oil	2518	Yes 1 No 2
Processing into cake	2519	Yes 1 No 2

SUB-MODULE D3: ORANGE FLESH SWEET POTATOES VALUE CHAIN

D30 Did you grow OFSP during the 2016-2017 growing season?	Yes 1 No 2 → MODULE E
D30A Who was the primary decision maker for OFSP activities?	Man 1 Female..... 2 Joint 3

D3I Areas, Production, Sales and Input Costs

Enumerator: “Now, I would like to ask you about the total area you planted in OFSP and the quantity of OFSP you harvested, during the 2016-2017 growing season”

D311 What was the total area you planted under OFSP?		D312 Did you finish harvesting your OFSP field(s)?	D313 What proportion of the OFSP harvest did you finish??	D314 What is the total quantity of OFSP you harvested?	
311a. Area	311b Unit Codes: 1 ... Acres 2 ... Hectares 3 ... Sq. Meters 9 ... Others: Specify: _____	Yes 1 → D314 No 2	Codes: 1 1/4 2 1/2 3 3/4 9 ... Others. Specify	314a Quantity	314b. Unit Codes: 1 Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5 PAIL (SMALL) 6..... PAIL (LARGE) 7.....OX-CART 8 BASKET 9 100 KG BAG 99 ...OTHER (SPECIFY)

Enumerator: “Now, I would like to ask you about the quantities of OFSP sold and the value of the OFSP sales during the 2016-2017 growing season”

D315: Did you sell any OFSP?	D316 what is the quantity of OFSP] sold?		D317: what is the value of the OFSP sold?	D318: when did you sell your soybeans?
	316a Quantity	316b Unit Codes: 1 Kg 2 MT 3.... 50 KG BAG 4 90 KG BAG 5.... PAIL (SMALL) 6 PAIL (LARGE) 7... OX-CART 8 BASKET 9 100 KG BAG 99 ... OTHER (SPECIFY)_____	317a Value (Kwacha)	Month Codes 1.... March 2 ...April 3 May 4 ...June 5.... July 6.... August 7.... September 8.... October 9 ...Didn't sell
Yes 1 No ... 2 → D319				

Enumerator: “Now I would like to ask you about the cost of the agricultural inputs you applied to your OFSP field(s), during the 2016-2017 growing season”

Fertilizer is not usually applied on the OFSP fields but might apply on vine multiplication on nursery

INPUT	CODE [INPUT]	D319: Did you pay for any [INPUT]?	D3110a: What quantity of [INPUT] did you purchase?	D3110b: What is the unit of quantity of [INPUT]?	D3111: what was the unit price for	D3112: What proportion of [INPUT] did you apply to your OFSP field(s)?
Fertilizer	3191	Yes 1 No ... 2 → Next [INPUT]		Code: 1 50kg bag 2 Kg 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Seeds	3192	Yes 1 No ... 2 → Next [INPUT]		Code: 1 50kg bag 2 Kg 9 Other - Specify		1 All [INPUTS] 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

Alternating OFSP with other crops on different growing seasons (crop rotation)	3211	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Growing more than one crop in a field for livelihoods diversification (Crop diversification)	3212	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Drought tolerant varieties: Chipika, Mathuthu, kaphulira, kadyaubwelere, Anaakwanire	3213	Yes 1 No 2 → D33	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

D33 Water Management

Enumerator: For Infiltration Pits and swales, area is measured by the size of the plot benefitting from them.

D331. TECHNOLOGY		D332. Did you apply any [TECHNOLOGY]?	D333. What proportion of your total area in OFSP is planted under [TECHNOLOGY]? (Circle the choice that applies)
	Code		
Mulching: Covering of the exposed soil with crop residues or other organic materials to conserve moisture and control erosion.	3311	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Box ridges: These are small ridges connecting one crop ridge to the next and slightly lower than the main crop ridges.	3312	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

Contour ridge: Ridges of earth that follow positions located at the same altitude and are planted with strips of grass or left fallow (also called contour vegetative strip or contour earth bund).	3313	Yes 1 No 2 → Next TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Infiltration pits: The reconstruction of crop ridges to be aligned along the contour vegetative row	3314	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Swales: Infiltration trenches are dug to capture flow of water from a hillside area or concentrated flow from open channels or gullies.	3315	Yes 1 No 2 → Next [TECHNOLOGY]	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify
Contour vegetation rows: Ditches usually dug out on the outer contours of a particular landscape for the purpose of holding and sinking the water.	3316	Yes 1 No 2 → D34	1 All 2 1/4 3 1/2 4 3/4 9 ... Others. Specify

D34 Irrigation

D341. Did you irrigate your OFSP, fields?	D342. What type of irrigation system did you use? (Circle the choice that applies)	D343. What proportion of your total area in OFSP was irrigated]? (Circle the choice that applies)
Yes.... 1 No ...2 → D35	Code: 1 ... Drip Irrigation 2... Seepage well 3... Water wheels 4... Flexi pumps 5... Solar pumps 6... Residual moisture 7... Treadle pump 8... Watering canes 9... Others specify	1 All Area 2 1/4 3 1/2 4 3/4 9 ... Others. Specify:

Enumerator: “Now, I would like to ask you about the storage methods and preservation practices you used for the OFSP you produced during the 2016-2017 growing season”

D35 PHH, Storage and Preservation Practices

D351. PRACTICES		D352. Did you apply any [PRACTICES]?
	Code	
Pits with ash	3511	Yes 1 No 2
Processing into flour	3512	Yes 1 No 2
Chips + drying	3513	Yes 1 No 2

MODULE E: CLIMATE DISASTER MITIGATION

Enumerator: Now I would like to ask you about Community or radio listening memberships for early warning systems, mini weather stations and climate information centers utilizations during the 2016-2017 growing season.

SUB-MODULE E1: EARLY WARNING SYSTEMS

E11. SYSTEM		E12. Did you participate as a member in any [[SYSTEM] of Early Warning?	E13 Did you use information from your participation to any [SYSTEM] to implement climate resilient actions?
	Code		
Community group	111	Yes 1 No 2 → Next [SYSTEM]	Yes 1 No 2
Radio listening group	112	Yes 1 No 2 → E2	Yes 1 No 2

SUB-MODULE E2: MINI WEATHER STATIONS/AGRO-NET

E21. STATION		E22. Are you aware of the existence of a weather [STATION] in your community?	E23 Did you use climate information from [STATION] to make farm management decisions?
	Code		
Mini weather stations / Village agro-net	211	Yes 1 No 2 → Next E3	Yes 1 No 2

SUB-MODULE E3: CLIMATE INFORMATION SOURCES

E31. SOURCE	E32. Did you visit climate information centers in your	E33 Did you receive climate information from any [SOURCE]?
-------------	--	--

	Code	community belonging to any [SOURCE]?	
Printed reading materials	311	Yes 1 No 2 → Next [SOURCE]	Yes 1 No 2
Group discussions	312	Yes 1 No 2 → Next [SOURCE]	Yes 1 No 2
Briefing services	313	Yes 1 No 2 → Next [SOURCE]	Yes 1 No 2
Public lectures	314	Yes 1 No 2 → Next [SOURCE]	Yes 1 No 2
Video shows	315	Yes 1 No 2 → Next [SOURCE]	Yes 1 No 2
Extension workers/disaster committee/lead farmer	316	Yes 1 No 2 → Next [SOURCE]	Yes 1 No 2
SMS station (mobile phones)	317	Yes 1 No 2 → Next E4	Yes 1 No 2

SUB-MODULE E4: CLIMATE ADAPTATION

E41. TECHNOLOGY		E42. Did you apply any [TECHNOLOGY]?
	Code	
Agroforestry (integration of trees and shrubs in the farming system)	411	Yes 1 No 2 → Next [TECHNOLOGY]
Management of tree regeneration and harvesting (Farmer Manage Natural Regeneration)	412	Yes 1 No 2 → Next [TECHNOLOGY]

Dry season planting of local indigenous tree branches/stems (Truncheons).	413	Yes 1 No 2 → Next [TECHNOLOGY]
Planting other crops or using special cultivars to mitigate the effects of climate change (Disaster Risk Reduction)	414	Yes 1 No 2 → Module F

MODULE F: WATER HARVESTING

Enumerator: Now, I would like to ask these questions in order to know if you use farm ponds or check dams for drought proofing your farm or recharging the water sources, to grow groundnuts or soybeans or OFSP.

F1. WATER		F2. Did you use any of these sources of [WATER] for crop production?
	Code	
Farm ponds	11	Yes 1 No 2 → Next [WATER]
Check dams/small dams	12	Yes 1 No 2 → MODULE G

MODULE G: WOMEN'S EMPOWERMENT IN AGRICULTURE INDEX

THIS QUESTIONNAIRE MUST BE ADMINISTERED TO THE RANDOMLY SELECTED FARMER IF THE RESPONDENT IS FEMALE. (AGE 18 OR OLDER).
YOU SHOULD COMPLETE THIS COVERSHEET FOR EACH ELIGIBLE RESPONDENT EVEN IF THE INDIVIDUAL IS NOT AVAILABLE TO BE INTERVIEWED.

PLEASE DOUBLE CHECK TO ENSURE:

- RESPONDENTS TO THIS MODULE ARE AGE 18 OR OLDER;
- YOU HAVE NOTED THE HOUSEHOLD ID AND INDIVIDUAL ID CORRECTLY FOR THE PERSON YOU ARE ABOUT TO INTERVIEW;
- YOU HAVE SOUGHT TO INTERVIEW THE INDIVIDUAL IN PRIVATE OR WHERE OTHER MEMBERS OF THE HOUSEHOLD CANNOT OVERHEAR OR CONTRIBUTE ANSWERS;
- YOU HAVE CHECKED THE INFORMED CONSENT REGISTER AND ENSURED THAT THE RESPONDENT TO MODULE E HAVE PREVIOUSLY PROVIDED INFORMED CONSENT; IF NOT, ADMINISTER THE INFORMED CONSENT PROCEDURE (MODULE B) TO THE RESPONDENT.

SUB-MODULE G0: INDIVIDUAL IDENTIFICATION

	CODE		CODE										
G0.01. HOUSEHOLD IDENTIFICATION:	<table border="1"> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>											G0.03. OUTCOME OF INTERVIEW	G0.03: COMPLETED 1 HOUSEHOLD MEMBER TOO ILL TO RESPOND/COGNITIVELY IMPAIRED 2 RESPONDENT NOT AT HOME/TEMPORARILY UNAVAILABLE 3 RESPONDENT NOT AT HOME/EXTENDED ABSENCE 4 REFUSED 5 COULD NOT LOCATE 6
G0.02. NAME OF RESPONDENT CURRENTLY BEING INTERVIEWED (LINE NUMBER FROM ROSTER IN SECTION C HOUSEHOLD ROSTER): SURNAME, FIRST NAME: _____	<table border="1"> <tr> <td></td><td></td> </tr> </table>			G0.04. ABILITY TO BE INTERVIEWED ALONE: (SELECT ALL THAT APPLY)	G0.04: ALONE A ADULT FEMALES PRESENT B ADULT MALES PRESENT C CHILDREN PRESENT D								

SUB-MODULE G1: ACCESS TO AND DECISION ON CREDIT

“Next I’d like to ask about your household’s experience with borrowing money or other items in the past 12 months.”

LENDING SOURCES		Has anyone in your household taken any loans or borrowed cash/in-kind from [SOURCE] in the past 12 months?	Who made the decision to borrow from [SOURCE]? CIRCLE ALL APPLICABLE	Who makes the decision about what to do with the money/ item borrowed from [SOURCE]? CIRCLE ALL APPLICABLE
LENDING SOURCE NAMES		G1.01	G1.02	G1.03
A	Non-governmental organization (NGO)	YES 1 NO 4 → NEXT [SOURCE] REFUSED 9 → NEXT [SOURCE]	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9
B	Informal lender	YES 1 NO 4 → NEXT [SOURCE] REFUSED 9 → NEXT [SOURCE]	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9
C	Formal lender (bank/financial institution e.g. OIBM, FINCA, PRIDE, CUMO)	YES 1 NO 4 → NEXT [SOURCE] REFUSED 9 → NEXT [SOURCE]	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9
D	Friends or relatives	YES, CASH 1 YES 1 NO 4 → NEXT [SOURCE] REFUSED 9 → NEXT [SOURCE]	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9
E	Group based micro-finance or lending including merry-go-rounds, VSLAs (Village Savings and Loan Associations), ROSCAs (Rotating Savings and Credit Associations), SACCOs (Savings and Credit Co-Operatives)	YES 1 NO 4 → G2 REFUSED 9 → G2	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9	SELF 1 PARTNER/SPOUSE 2 OTHER HH MEMBER 3 OTHER NON-HH MEMBER 4 NOT APPLICABLE 5 REFUSED 9

SUB-MODULE G2: GROUP MEMBERSHIP

“The next few questions are about different groups or organizations that may exist in your community.”

GROUP MEMBERSHIP		Is there a [GROUP] in your community?	Are you an active member of this [GROUP]?
GROUP CATEGORIES		G2.01	G2.02
A	Agricultural/livestock/fisheries producer's group (including marketing groups)	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2
B	Water users' group	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2
C	Forest users' group	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2
D	Credit or microfinance group (including merry-go-rounds, VSLAs (Village Savings and Loan Associations), ROSCAs (Rotating, Savings and Credit Associations), SACCOs (Savings and Credit Co-Operatives)	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2
E	Mutual help or insurance group (including support groups)	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2
F	Trade and business association	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2
G	Civic groups (improving community) or charitable group (helping others)	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2

GROUP MEMBERSHIP		Is there a [GROUP] in your community?	Are you an active member of this [GROUP]?
GROUP CATEGORIES		G2.01	G2.02
H	Local government	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2

GROUP MEMBERSHIP		Is there a [GROUP] in your community?	Are you an active member of this [GROUP]?
GROUP CATEGORIES		G2.01	G2.02
I	Religious group	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2 REFUSED 9
J	Other women's group ONLY INCLUDE A GROUP HERE IF IT DOES NOT FIT INTO ONE OF THE OTHER CATEGORIES	YES 1 NO 2 → NEXT [GROUP] DON'T KNOW 8	YES 1 NO 2 REFUSED 9
K	Any other group or organization (SPECIFY) _____	YES 1 NO 2 → G3(A) DON'T KNOW 8	YES 1 NO 2 REFUSED 9

SUB-MODULE G3(A): DECISION-MAKING - INPUT IN PRODUCTIVE DECISIONS

“Now I’d like to ask about your inputs on productive decisions.”

ACTIVITY		Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons)?	How much input did you have in making decisions about [ACTIVITY]?
ACTIVITY CODE	ACTIVITY DESCRIPTION	G3.01A	G3.02A
A	Food crop farming: These are crops that are grown primarily for household food consumption	YES 1 NO 2 → NEXT [ACTIVITY]	NO INPUT OR INPUT INTO VERY FEW DECISIONS 01 INPUT INTO SOME DECISIONS.....02 INPUT INTO MOST OR ALL DECISIONS ..03 NO DECISION MADE.....93 REFUSED 99
B	Cash crop farming: These are crops that are grown primarily for sale in the market	YES 1 NO 2 → NEXT [ACTIVITY]	NO INPUT OR INPUT INTO VERY FEW DECISIONS 01 INPUT INTO SOME DECISIONS.....02 INPUT INTO MOST OR ALL DECISIONS ..03 NO DECISION MADE.....93 REFUSED 99
C	Livestock raising	YES 1 NO 2 → NEXT [ACTIVITY]	NO INPUT OR INPUT INTO VERY FEW DECISIONS 01 INPUT INTO SOME DECISIONS.....02 INPUT INTO MOST OR ALL DECISIONS ..03 NO DECISION MADE.....93 REFUSED 99
D	Fishing or fishpond culture	YES 1 NO 2 → G3(B)	NO INPUT OR INPUT INTO VERY FEW DECISIONS 01 INPUT INTO SOME DECISIONS.....02 INPUT INTO MOST OR ALL DECISIONS ..03 NO DECISION MADE.....93 REFUSED 99

SUB-MODULE G3(B): DECISION MAKING – PERSONAL DECISIONS

“Now I have some questions about making decisions about various aspects of household life.”

ACTIVITY		When decisions are made regarding [ACTIVITY], who is it that normally takes the decision? CIRCLE ALL APPLICABLE	FILTER: CHECK G5.01	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?
	ACTIVITY	G3.01B	G3.02B	G3.03B
A	Getting inputs for agricultural production	SELF.....1 SPOUSE/PARTNER.....2 OTHER HH MEMBER.....3 OTHER NON-HH MEMBER.....4 NOT APPLICABLE.....5 → NEXT [ACTIVITY] REFUSED.....9 → NEXT [ACTIVITY]	CHECK G3.01B: “SELF” (1) IS THE ONLY RESPONSE 1 → GO TO NEXT ACTIVITY “SELF” (1) IS NOT THE ONLY RESPONSE 2 → GO TO G3.03B	NOT AT ALL 1 SMALL EXTENT 2 MEDIUM EXTENT.....3 TO A HIGH EXTENT 4 REFUSED 9
B	The types of crops to grow	SELF.....1 SPOUSE/PARTNER.....2 OTHER HH MEMBER.....3 OTHER NON-HH MEMBER.....4 NOT APPLICABLE.....5 → NEXT [ACTIVITY] REFUSED.....9 → NEXT [ACTIVITY]	CHECK G3.01B: “SELF” (“1”) IS THE ONLY RESPONSE 1 → GO TO NEXT ACTIVITY “SELF” (“1”) IS NOT THE ONLY RESPONSE 2 → GO TO G3.03B	NOT AT ALL 1 SMALL EXTENT 2 MEDIUM EXTENT.....3 TO A HIGH EXTENT 4 REFUSED 9
C	Taking crops to the market (or not)	SELF.....1 SPOUSE/PARTNER.....2 OTHER HH MEMBER.....3 OTHER NON-HH MEMBER.....4 NOT APPLICABLE.....5 → NEXT [ACTIVITY] REFUSED.....9 → NEXT [ACTIVITY]	CHECK G3.01B: “SELF” (“1”) IS THE ONLY RESPONSE 1 → GO TO NEXT ACTIVITY “SELF” (“1”) IS NOT THE ONLY RESPONSE 2 → GO TO G3.03B	NOT AT ALL 1 SMALL EXTENT 2 MEDIUM EXTENT.....3 TO A HIGH EXTENT 4 REFUSED 9
D	Livestock raising	SELF.....1 SPOUSE/PARTNER.....2 OTHER HH MEMBER.....3 OTHER NON-HH MEMBER.....4 NOT APPLICABLE.....5 → MODULE H REFUSED.....9 → MODULE H	CHECK G3.01B: “SELF” (“1”) IS THE ONLY RESPONSE 1 → GO TO MODULE H “SELF” (“1”) IS NOT THE ONLY RESPONSE 2 → GO TO G3.03B	

ACTIVITY		When decisions are made regarding [ACTIVITY], who is it that normally takes the decision? CIRCLE ALL APPLICABLE	FILTER: CHECK G5.01	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?
	ACTIVITY	G3.01B	G3.02B	G3.03B
E	Utilization of income from sales			

MODULE H: FEMALE CONSUMPTION OF A DIET OF MINIMUM DIVERSITY

Enumerator: Ask questions to the respondent who was interviewed in Module E (Sub Modules G1 to G4)

“Now I would like to ask you about liquids or foods that you ate yesterday during the previous day or night. I am interested in whether you had the item even if it was combined with other foods. For example, if you ate a millet porridge made with a mixed vegetable sauce, you should reply yes to any food I ask about that was an ingredient in the porridge or sauce. Please do not include any food used in a small amount for seasoning or condiments (like chilies, spices, herbs, or fish powder), I will ask you about those foods products separately.”

“Yesterday during the day or night did you drink or eat any [ASK QUESTIONS H14 to H30]?”

NO.	QUESTION	SELECTED WOMAN
H14	Bread, savory biscuits, porridge, crackers, pasta, noodles, rice, or other foods made from grains such as corn, wheat, millet, sorghum, bulgur, barley?	YES 1 NO 2 DON'T KNOW 8
H15A	Orange-fleshed sweet potatoes or foods made from orange-fleshed sweet potatoes such as porridge, flitters, stew, cake, chips, bread or juice?	YES 1 NO 2 DON'T KNOW 8
H15B	Any other dark yellow or orange fleshed roots, tubers, or vegetables such as pumpkin, carrots, or squash?	YES 1 NO 2 DON'T KNOW 8
H16	White potatoes, white yams, cassava, plantains or any other foods made from roots?	YES 1 NO 2 DON'T KNOW 8
H17A	Any dark green leafy vegetables such as spinach, kale, okra, pumpkin leaves, amaranth leaves or moringa leaves?	YES 1 NO 2 DON'T KNOW 8
H17B	Any other vegetables such as green beans, tomatoes, mushrooms, cabbage, cauliflower, broccoli etc.?	YES 1 NO 2 DON'T KNOW 8
H18A	Ripe mangoes, ripe papayas, apricots, cantaloupe melons, pulp from African locust bean, or other fruits that are dark yellow or orange inside?	YES 1 NO 2 DON'T KNOW 8
H18B	Any other fruits like bananas, apples, avocados, pineapples, berries, baobab fruit, etc.?	YES 1 NO 2 DON'T KNOW 8
H19A	Any liver, kidney, heart, or other organ meats from domesticated animals such as beef, pork, lamb, goat, chicken, duck, or pigeon?	YES 1 NO 2

NO.	QUESTION	SELECTED WOMAN
		DON'T KNOW 8
H19B	Any meat from domesticated animals, such as beef, pork, lamb, goat, chicken, duck, or pigeon?	YES 1 NO 2 DON'T KNOW 8
H20A	Any liver, kidney, heart, or other organ meats from wild animals such as warthogs, buck, kudu, impala, antelopes, crocodile, cats, monkeys, alligators, or mice?	YES 1 NO 2 DON'T KNOW 8
H20B	Any flesh from wild animals, such as warthogs, buck, kudu, impala, antelopes, crocodile, cats, monkeys, alligators, or mice?	YES 1 NO 2 DON'T KNOW 8
H21	Eggs? (chicken, turkey, fowl, duck)	YES 1 NO 2 DON'T KNOW 8
H22	Fresh or dried fish, shellfish, crabs, or seafood?	YES 1 NO 2 DON'T KNOW 8
H23A	Any food made from groundnut or groundnut products such as groundnut flour, peanut butter, roasted groundnuts, boiled groundnut snack, sauces, groundnut biscuits?	YES 1 NO 2 DON'T KNOW 8
H23B	Any foods made from soy or soy products such as soya bean flour, soy milk, soy mash relish, soy flitters, soy porridge, soy African cake, soy doughnuts, soy balls or soy soup?	YES 1 NO 2 DON'T KNOW 8
H23D	Any other foods made from beans, peas, lentils, or other legumes?	YES 1 NO 2 DON'T KNOW 8
H24A	Any foods made from sesame or sesame flour?	YES 1 NO 2 DON'T KNOW 8
H24B	Any foods made from other nuts or seeds? EXCLUDE FOODS MADE FROM SESAME SEEDS WHICH BELONG IN ABOVE CATEGORIES.	YES 1 NO 2 DON'T KNOW 8
H25	Milk, soured milk, cheese, yogurt, or other milk products?	YES 1 NO 2 DON'T KNOW 8

NO.	QUESTION	SELECTED WOMAN
H26	Any oil, fats, or butter, or foods made with any of these? INCLUDE GROUNDNUT OIL AND SESAME OIL.	YES 1 NO 2 DON'T KNOW 8
H27	Any sugary foods such as chocolates, sweets, candies, pastries, doughnuts, cakes, sweet biscuits, or sugar cane?	YES 1 NO 2 DON'T KNOW 8
H28	Condiments for flavor, such as chilies, spices, herbs, fish powder, curry, or bicarbonate soda/ash used for cooking?	YES 1 NO 2 DON'T KNOW 8
H29	Edible insects, mopane worms, grasshoppers or flying ants?	YES 1 NO 2 DON'T KNOW 8
H30	Foods made with red palm oil, red palm nut, or red palm nut pulp sauce?	YES 1 NO 2 DON'T KNOW 8

MODULE I: GPS AREA MEASUREMENT OF VALUE CHAIN FIELDS

NO	Question	Response	Skip Pattern
I00.	Enumerator (Don't ask): Is this household sampled for GPS measurement of plots	I ... Yes I ... No	If I00 = No, End interview
I01.	Enter the actual (GPS) size of the land under groundnut		If D10 = No, skip to I02
I02.	Enter the actual (GPS) size of the land under soybean		If D20 = No, skip to I03
I03	Enter the actual (GPS) size of the land under OFSP		If D30 = No, End interview

ANNEX 2: OUTCOME INDICATOR STATISTICS

Table 21. Gross Margin Data Points: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Quantity / Value	Max Value	Standard Deviation	Standard Error of Mean
Average Weighted GPS Corrected Area Planted by Crop and by Decision Maker (HA)					
Groundnuts					
Male	2010	0.4260	3.8036	0.2154	0.0048
Female	1997	0.3676	2.8013	0.1783	0.0040
Joint	2614	0.4390	3.2124	0.2575	0.0050
Total	6621	0.4135	3.8258	0.2254	0.0028
Soybeans					
Male	1923	0.3295	2.4782	0.1943	0.0044
Female	1725	0.2536	2.5257	0.1483	0.0036
Joint	2144	0.2913	1.6320	0.1521	0.0033
Total	5792	0.2927	2.5257	0.1690	0.0022
OFSP					
Male	1271	0.1507	0.6994	0.1050	0.0029
Female	782	0.1247	0.8755	0.1265	0.0045
Joint	985	0.1671	0.8658	0.1485	0.0047
Total	3038	0.1494	0.8758	0.1270	0.0023
Average Weighted Production by Crop and by Decision Maker (MT)					
Groundnuts					
Male	2010	.4358	2.8060	.4729	.0105
Female	1997	.2337	2.1326	.2955	.0066
Joint	2614	.4098	5.6120	.5181	.0101
Total	6621	.3646	5.6120	.4557	.0056
Soybeans					
Male	1923	.3840	2.6641	.4908	.0112
Female	1725	.1901	2.9625	.2580	.0062
Joint	2144	.3044	4.5838	.4872	.0105

Total	5792	.2968	4.5838	.4399	.0058
OFSP					
Male	1271	.2750	2.1924	.3070	.0086
Female	782	.2028	2.0000	.2429	.0087
Joint	985	.3260	4.3848	.5803	.0185
Total	3038	.2730	4.3848	.4073	.0074

Decision Maker	Weighted Number of Farmers	Average Quantity / Value	Max Value	Standard Deviation	Standard Error of Mean
Average Weighted Quantities Sold by Crop and by Decision Maker (MT)					
Groundnuts					
Male	2010	.2175	2.2729	.3175	.0071
Female	1997	.0996	1.5994	.1752	.0039
Joint	2614	.1814	2.3863	.2385	.0047
Total	6621	.1677	2.3863	.2540	.0031
Soybeans					
Male	1709	.3089	2.5465	.4051	.0098
Female	1379	.1682	2.9582	.2363	.0064
Joint	1813	.2524	3.7300	.4020	.0094
Total	4901	.2484	3.7300	.3685	.0053
OFSP					
Male	1271	.1397	2.1924	.2911	.0082
Female	782	.0877	.7614	.1641	.0059
Joint	985	.1902	4.3848	.5493	.0175
Total	3038	.1427	4.3848	.3763	.0068
Average Weighted Value of Sales by Crop and by Decision Maker (\$US)					
Groundnuts					
Male	2010	67.930	499.96	92.670	2.000
Female	1997	31.930	306.48	56.740	1.000
Joint	2614	58.470	498.41	83.180	2.000
Total	6621	53.340	499.96	80.740	1.000
Soybeans					
Male	1709	52.790	445.49	70.980	1.720
Female	1379	28.700	494.12	40.290	1.090
Joint	1813	42.870	375.75	52.400	1.230
Total	4901	42.340	494.92	57.610	0.820
OFSP					
Male	1271	15.870	250.64	36.670	1.030
Female	782	9.750	156.65	22.720	0.810
Joint	985	17.950	417.73	53.380	1.700
Total	3038	14.970	417.73	40.350	0.730
Average Weighted Values of Purchased Agricultural Inputs by Crop and by Decision Maker (\$US)					
Groundnuts					
Male	838	24.98	626.08	68.298	2.359
Female	528	16.55	270.17	32.773	1.426
Joint	1019	28.37	644.77	76.871	2.408
Total	2385	24.56	644.88	66.475	1.361

Decision Maker	Weighted Number of Farmers	Average Quantity / Value	Max Value	Standard Deviation	Standard Error of Mean
Soybeans					
Male	1335	9.38	87.56	11.300	0.310
Female	1002	4.94	53.44	6.960	0.220
Joint	1449	8.51	72.15	12.290	0.320
Total	3786	7.87	87.56	10.900	0.180
OFSP					
Male	585	6.51	64.39	10.200	0.420
Female	325	4.23	29.40	5.290	0.290
Joint	456	9.63	76.70	12.140	0.570
Total	1366	7.01	76.70	10.220	0.280

Table 22. Average Weighted Yield by Crop and by Decision Maker: 2016-2017 Growing Season

Decision Maker	Weighted Mean Yield (MT/HA)	95% Confidence Interval for Mean Yield		Std. Deviation
Groundnuts				
Male	1.018	.976	1.060	.828
Female	.633	.601	.665	.821
Joint	.931	.894	.969	1.228
Total	.879	.856	.901	1.011
Soybeans				
Male	1.165	1.117	1.213	.767
Female	.752	.705	.798	17.503
Joint	1.041	.979	1.103	2.032
Total	1.013	.981	1.045	9.635
OFSP				
Male	1.817	1.721	1.914	2.937
Female	1.619	1.468	1.771	65.994
Joint	1.954	1.775	2.133	18.594
Total	1.824	1.740	1.908	35.316

Table 23. Average Weighted Value of Annual Sales by Crop and by Decision Maker: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Value in \$US	Range	Standard Deviation	Standard Error of Mean
Groundnuts					
Male	2010	55.05	484.57	76.32	2.00
Female	1997	24.57	278.49	43.18	1.00
Joint	2614	46.83	498.41	64.68	1.00
Total	6621	42.61	498.41	64.29	1.00
Soybeans					
Male	1709	52.79	445.49	70.98	1.72
Female	1379	28.70	494.12	40.29	1.09
Joint	1813	42.87	375.75	52.40	1.23
Total	4901	42.34	494.92	57.61	0.82
OFSP					
Male	1271	15.87	250.64	36.67	1.03
Female	782	9.75	156.65	22.72	0.81
Joint	985	17.95	417.73	53.38	1.70
Total	3038	14.97	417.73	40.35	0.73

Table 24. Weighted Number of Farmers Who Applied Improved Technologies: 2016-2017 Growing Season

TECHNOLOGIES AND MANAGEMENT PRACTICES	Number of Farmers	Percentage of Farmers	Total Number of Farmers
BY TECHNOLOGY TYPE			
1- CROP GENETICS	6,363	65.10%	9,776
2- CULTURAL PRACTICES	9,024	92.30%	9,776
3- DISEASE MANAGEMENT	7,512	76.80%	9,776
4- SOIL FERTILITY	5,429	55.50%	9,776
5- IRRIGATION	258	2.60%	9,776
6- WATER MANAGEMENT	6,127	62.70%	9,776
7- CLIMATE MITIGATION	730	8.30%	8,789
8- CLIMATE ADAPTATION	9,420	96.40%	9,776
9- MARKETING DISTRIBUTION	209	2.40%	8,789
10-POST HARVEST HANDLING & STORAGE	8,323	85.10%	9,776
11-PROCESSING & PRESERVATION	8,220	84.10%	9,776
APPLIED AT LEAST ONE TECH TYPE	9,714	99.40%	9,776
BY SEX			
MALE	6,121	99.50%	6,151
FEMALE	3,594	99.10%	3,625
TOTAL	9,714	99.40%	9,776

TECHNOLOGIES AND MANAGEMENT PRACTICES	Number of Farmers	Percentage of Farmers	Total Number of Farmers
BY VALUE CHAIN			
GROUNDNUTS	6,595	99.60%	6,621
SOYBEANS	5,778	99.80%	5,792
OFSP	2,713	89.30%	3,038
OTHERS: NON-CROP SPECIFIC	7,012	71.70%	9,776

Table 25. Weighted Number of HA Under Improved Technologies: 2016-2017 Growing Season

TECHNOLOGIES AND MANAGEMENT PRACTICES	Number of Farmers	Percentage of Farmers	Total Number of Farmers	Standard Deviation
BY TECHNOLOGY TYPE				
1- CROP GENETICS	2,729	9,776	0.280	0.330
2- CULTURAL PRACTICES	4,277	9,776	0.440	0.360
3- DISEASE MANAGEMENT	3,445	9,776	0.350	0.350
4- SOIL FERTILITY	2,383	9,776	0.240	0.320
5- IRRIGATION	37	9,776	0.000	0.030
6- WATER MANAGEMENT	2,941	9,776	0.300	0.400
7- CLIMATE MITIGATION	288	8,789	0.030	0.120
8- CLIMATE ADAPTATION	4,452	9,776	0.460	0.360
ONE OR MORE TECH TYPES	4,531	9,776	0.490	0.360
BY DECISION MAKER				
MALE	722	1,934	0.400	0.290
FEMALE	516	1,802	0.310	0.220
JOINT	3,292	6,041	0.570	0.380
TOTAL	4,531	9,776	0.490	0.360
BY VALUE CHAIN				
GROUNDNUTS	2,490	6,076	0.410	0.228
SOYBEANS	1,654	5,623	0.290	0.171
OFSP	3,87	2,578	0.150	0.128
OTHERS: NON-CROP SPECIFIC	2,490	6,076	0.410	0.228

Table 26. Nutrition – Value Chain Consumption and Minimum Dietary Diversity Women (MDD – W): 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers
Weighted Percent of Female Farmers Consuming At least One Product from the Targeted Value Chain:						
Consumed Groundnuts or its Products	1,670	48.0%	1,808	52.0%	3,478	100.0%
Consumed Soybeans or its Products	821	23.6%	2,657	76.4%	3,478	100.0%
Consumed OFSP or its Products	817	23.5%	2,661	76.5%	3,478	100.0%
Consumed Any of the Value Chain	2,207	63.5%	1,271	36.5%	3,478	100.0%
Weighted Percentage of Female Farmers Who Consumed Five of the Ten Food Groups as a Diet of Minimum Diversity						
MDD - W	1,979	56.9%	1,496	43.1%	3,476	100%

Table 27. Weighted Number and Percent of Farmers Using Climate Information or Implementing Risk Reducing Actions by Sex: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers
Male	5965	96.97%	186	3.03%	6151	100.0%
Female	3455	95.32%	170	4.70%	3625	100.0%
Total	9420	96.36%	356	3.64%	9776	100.0%

Table 28. Weighted Number and Percent of Farmers Applying Improved Storage and Preservation Practices: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers
Groundnuts						
1. Storing in PICS Bags	214	3.20%	6,407	96.80%	6621	100.0%
2. Storing in Shell	5,357	80.90%	1,263	19.10%	6621	100.0%
3. Drying	5,988	90.40%	632	9.60%	6621	100.0%
4. Roasting	5,874	88.70%	747	11.30%	6621	100.0%
5. Processing into flour	6,230	94.10%	391	5.90%	6621	100.0%
6. Processing into Peanut Butter	3,087	46.60%	3,534	53.40%	6621	100.0%
7. Processing into Oil	96	1.50%	6,524	98.50%	6621	100.0%
Applied at Least One Improved Method	6,534	98.70%	86	1.30%	6621	100.0%
Soybeans						
1. Storing in PICS Bags	74	1.30%	5,718	98.70%	5792	100.0%
2. Drying	4,673	80.70%	1,120	19.30%	5792	100.0%
3. Processing into flour	4,152	71.70%	1,641	28.30%	5792	100.0%
4. Processing into Milk	114	2.00%	5,679	98.00%	5792	100.0%
5. Processing into Oil			5,792	100.00%	5792	100.0%
6. Processing into Cake			5,792	100.00%	5792	100.0%

	Yes		No		Total	
	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers
Applied at Least One Improved Method	5,422	93.60%	371	6.40%	5792	100.0%
OFSP						
1. Storing in Pits with Ash	799	26.3%	2,239	73.7%	3,038	100.0%
2. Processing into flour	91	3.0%	2,947	97.0%	3,038	100.0%
3. Dried Chips	562	18.50%	2,476	81.5%	3038	100.0%
Applied at Least One Improved Method	1,234	40.60%	1,804	59.4%	3038	100.0%
OVERALL						
1. Storing in PICS Bags	246	2.5%	9530	97.5%	9776	100.0%
2. Storing in Shell	5357	54.8%	4419	45.2%	9776	100.0%
3. Drying	7838	80.2%	1938	19.8%	9776	100.0%
4. Roasting	5874	60.1%	3902	39.9%	9776	100.0%
5 Processing into flour	7918	81.0%	1859	19.0%	9776	100.0%
6. Processing into P. Butter	3087	31.6%	6689	68.4%	9776	100.0%
7. Processing into Oil	96	1.0%	9680	99.0%	9776	100.0%
8. Processing into Milk	114	1.2%	9663	98.8%	9776	100.0%
9. Processing into Cake			9776	100.0%	9776	100.0%
10. Storing in Pits With Ash	799	8.2%	8977	91.8%	9776	100.0%
11. Dried Chips	562	5.8%	9214	94.2%	9776	100.0%
Applied at Least One Improved Method	8985	91.9%	791	8.1%	9776	100.0%

Table 29. Weighted Percentage of Female Farmers Achieving Adequacy in WEAI: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers
Access to and Decision on Credit						
A- NGOs LENDING SOURCES	268	7.7%	3,210	92.3%	3,478	100.0%
B- INFORMAL LENDING SOURCES	135	3.9%	3,343	96.1%	3,478	100.0%
C- FORMAL LENDING SOURCES	116	3.3%	3,362	96.7%	3,478	100.0%
D- FRIENDS/RELATIVE LENDING SOURCES	481	13.8%	2,997	86.2%	3,478	100.0%
E- MICRO FINANCE/CREDIT ASSOCIATIONS SOURCES	883	25.4%	2,596	74.6%	3,478	100.0%
ADEQUACY IN AT LEAST ONE LENDING SOURCE	1,373	39.5%	2,106	60.5%	3,478	100.0%
Group Member						
A- AGRICULTURE LIVESTOCK FISHERIES	592	17.0%	2,886	83.0%	3,478	100.0%
B- WATER USER GROUP	313	9.0%	3,165	91.0%	3,478	100.0%
C- FOREST USER GROUP	573	16.5%	2,906	83.5%	3,478	100.0%
D- CREDIT MICRO FINANCE GROUP	1,163	33.4%	2,315	66.6%	3,478	100.0%
E- MUTUAL HELP INSURANCE GROUP	427	12.3%	3,051	87.7%	3,478	100.0%
F- TRADE BUSINESS ASSOCIATION	118	3.4%	3,360	96.6%	3,478	100.0%

	Yes		No		Total	
	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers	Number of Farmers	Percent of Farmers
G- CIVIC GROUP	654	18.8%	2,824	81.2%	3,478	100.0%
H- LOCAL GOVERNMENT	177	5.1%	3,301	94.9%	3,478	100.0%
I- RELIGIOUS GROUP	2,258	64.9%	1,220	35.1%	3,478	100.0%
J- OTHER WOMEN GROUP	1,144	32.9%	2,334	67.1%	3,478	100.0%
K- OTHER GROUPS	98	2.8%	3,381	97.2%	3,478	100.0%
ADEQUACY IN AT LEAST ONE GROUP	2,838	81.6%	640	18.4%	3,478	100.0%
Productive Decisions						
A- FOOD CROP FARMING	3327	95.7%	151	4.3%	3478	100.0%
A- CASH CROP FARMING	2605	74.9%	874	25.1%	3478	100.0%
C- LIVESTOCK RAISING	1768	50.8%	1710	49.2%	3478	100.0%
D- FISHING OR FISHPOND CULTURE	30	.9%	3449	99.1%	3478	100.0%
E- GETTING INPUTS FOR AGRICULTURE PRODUCTION	761	21.9%	2717	78.10%	3478	100.0%
F- TYPES OF CROPS TO GROW	908	26.1%	2571	73.90%	3478	100.0%
G- TAKING CROPS TO THE MARKET	779	22.4%	2700	77.60%	3478	100.0%
H- LIVESTOCK RAISING (2)	591	17.0%	2887	83.00%	3478	100.0%
IN AT LEAST TWO DECISION MAKING AREAS	3119	90.9%	311	9.10%	3430	100.0%

ANNEX 3. LISTING RESULTS

Annex 3

Final Results from the Listing Operation

The table below shows the number of farmers for each value chain broken down by district.

Number Of Farmers, Plots Grown for the Groundnuts, Soybeans and OFSP by District and EPA											
Districts	EPA	Number of Farmers Growing Groundnuts, Soybeans & OFSP	Number of Groundnut Plots Grown	Number of the Farmers Growing Groundnuts	Average Groundnuts Plots Per Farmer	Number of Soybean Plots Grown	Number of the Farmers Growing Soybeans	Average Soybeans Plots Per Farmer	Number of OFSP Plots Grown	Number of the Farmers Growing OFSP	Average OFSP Plots Per Farmer
BALAKA	BAZALE	490	349	345	1.01	177	176	1.01	292	290	1.01
	MPILISI	337	277	277	1.00	41	41	1.00	140	140	1.00
	PHALULA	354	267	267	1.00	33	33	1.00	183	183	1.00
	ULONGWE	440	349	349	1.00	63	63	1.00	198	198	1.00
	Total	1621	1242	1238	1.00	314	313	1.00	813	811	1.00
DEDZA	BEMBEKE	209	112	110	1.02	100	98	1.02	95	92	1.03
	CHAFUMBWA	724	671	620	1.08	573	558	1.03	202	201	1.00
	KANYAMA	356	186	183	1.02	283	277	1.02	48	48	1.00
	KAPHUKA	375	265	241	1.10	337	302	1.12	64	63	1.02
	LINTHIPE	564	423	398	1.06	407	387	1.05	117	116	1.01
	Total	2228	1657	1552	1.07	1700	1622	1.05	526	520	1.01
LILONGWE	CHITSIME	381	302	270	1.12	224	212	1.06	60	56	1.07
	MALINGUNDE	822	854	712	1.20	448	429	1.04	84	82	1.02
	MITUNDU	378	329	282	1.17	272	263	1.03	51	51	1.00
	MLOMBWA	953	752	724	1.04	665	655	1.02	201	200	1.01
	MPINGU	468	348	342	1.02	291	291	1.00	73	73	1.00
	NTHONDO	435	336	322	1.04	237	231	1.03	102	101	1.01
	THAWALE	460	412	386	1.07	307	298	1.03	86	86	1.00
	Total	3897	3333	3038	1.10	2444	2379	1.03	657	649	1.01
MACHINGA	CHIKWEWO	786	490	458	1.07	62	60	1.03	589	570	1.03
	NAMPEYA	201	109	108	1.01	13	13	1.00	148	145	1.02
	NYAMBI	475	409	398	1.03	97	97	1.00	246	244	1.01
	Total	1462	1008	964	1.05	172	170	1.01	983	959	1.03
MANGOCHI	KATULI	337	142	141	1.01	209	209	1.00	169	169	1.00
	MBWADZULU	180	86	86	1.00	17	16	1.06	123	122	1.01
	Total	517	228	227	1.00	226	225	1.00	292	291	1.00
MCHINJI	KALULU	524	400	397	1.01	423	419	1.01	357	356	1.00
	MKANDA	784	784	689	1.14	618	601	1.03	423	420	1.01
	MLONYENI	893	478	462	1.03	825	762	1.08	417	413	1.01
	Total	2201	1662	1548	1.07	1866	1782	1.05	1197	1189	1.01
NTCHEU	BILIRA	250	183	179	1.02	64	63	1.02	76	76	1.00
	NJOLOMOLE	516	343	343	1.00	359	359	1.00	189	188	1.01
	Total	766	526	522	1.01	423	422	1.00	265	264	1.00
TOTAL		12692	9656	9089	1.06	7145	6913	1.03	4733	4683	1.01

ANNEX 4. SURVEY SOW

Survey SOW

Detailed Scope of Work for MELS of Farm Level Outcome indicators Baseline Survey for the Agricultural Diversification Project

Background: The Feed the Future Malawi Ag Diversification Activity contributes to USAID/Malawi's Feed the Future goal of sustainably reducing poverty and under-nutrition in eight districts of Central and Southern Malawi. This activity fosters inclusive and sustainable growth in Malawi's agricultural sector, enhances resilience to climate change, empowers women, and improves the nutritional status of women and children, and at the same time, increases the competitiveness of marketable, nutrient-rich value chains through support for agricultural enterprises and increased access to markets and finance. Ag Diversification is a central component of USAID/Malawi's integrated, multi-sector approach to improving Malawians' quality of life.

The key objective of the Ag Diversification Activity is to reduce poverty and malnutrition. The Ag Diversification Activity believes that reaching this goal is a function of achieving the five outcomes below:

1. Inclusive growth of agricultural incomes and employment
2. Increasing resiliency of smallholder farming systems
3. Nutritional status of women and children improved
4. Women empowered, and
5. CDCS priorities for integration advanced

Purpose: To contract with the Monitoring Evaluation and Learning Support Project (MELS) to conduct a baseline survey. This baseline survey will be for the Feed the Future Agricultural Diversification activity in Malawi, operating in seven districts of Lilongwe, Mchinji, Balaka, Machinga, Mangochi, Dedza and Ntcheu. The survey will gather data for Farm level outcome indicators for the project listed below as follows:

1. Amount harvested (KG) and Areas planted (HA) for OFSP, Groundnut and Soybeans;
2. Total of all sales (Farm-gate and off-farm-gate) for beneficiary farmers producing OFSP, Groundnut and Soybeans;
3. Total production in metric tons for surveyed farmers for OFSP, Groundnut and Soybean, under different technologies: (1) Irrigation: family scale drip, large scale drip, (2) Agronomic Practices: Inoculant, double row planting, (3) Climate Adaptation: FMNR, seepage well, water harvesting, (4) Water Management: contour ridging, trenchons well, seepage well, and (5) Genetics: OFSP cultivars;
4. Total cost of production for surveyed farmers for OFSP, Groundnut and Soybeans, under different technologies: (1) Irrigation: family scale drip, large scale drip (2) Agronomic Practices: Inoculant, double row planting; (3) Climate Adaptation: FMNR, seepage well, water harvesting; (4) Water Management: contour ridging, trenchons well, seepage well; and (5) Genetics: OFSP cultivars;
5. Total hectares for surveyed farmers producing OFSP, Groundnut and Soybeans, under different technologies: (1) Irrigation: family scale drip, large scale drip, (2) Agronomic Practices: Inoculant, double row planting, (3) Climate Adaptation: FMNR, seepage well, water harvesting,

- (4) Water Management: contour ridging, trenchons well, seepage well, and (5) Genetics: OFSP cultivars;
6. Proportion of surveyed farmers and others who have applied improved technologies or management practices with USG assistance for the targeted commodities Technologies include: (1) Irrigation: family scale drip, large scale drip, (2) Agronomic Practices: Inoculant, double row planting, (3) Climate Adaptation: FMNR, seepage well, water harvesting, (4) Water Management: contour ridging, trenchons well, seepage well, and (5) Genetics: OFSP cultivars;
7. Number of hectares of land under improved technologies or management practices with USG assistance (for OFSP, Soybean and groundnuts) Technologies include: (1) Irrigation: family scale drip, large scale drip, (2) Agronomic Practices: Inoculant, double row planting, (3) Climate Adaptation: FMNR, seepage well, water harvesting, (4) Water Management: contour ridging, trenchons well, seepage well, and (5) Genetics: OFSP cultivars; Total number of females in the targeted Ag. Div EPAs who consumed a least one product of the targeted value chains during the previous night and day (OFSP, Soybeans and groundnuts) and the total number of females direct Ag. Div beneficiaries in the targeted EPAs. Products are: Groundnuts: Flour, Peanut butter, oil, Soybeans: Porridge, Balls, Milk, Doughnuts, African cake, oils, OFSP: Flitters, African cake, Porridge, Chips, Juice, bread;
8. Total Quantity of nutrient rich value chain commodities (OFSP, Soybeans and groundnuts) in metric tons set aside for home consumption by direct beneficiary producer households
9. Number of people using climate information or implementing risk reducing actions to improve resilience to climate change as supported by USG assistance. Specific activities are: (1) Drip irrigation kits, (2) agroforestry, (3) counter ridging, (4) crop diversification, (5) water catchment, (6) improved seeds, and (7) access to diversified income sources;
10. Percentage of female direct beneficiaries of USG nutrition sensitive agricultural activities consuming a diet of minimum diversity. Targeted products are (1) Staple foods: Rice, Maize, Potatoes, Cassava, Yams, Bread, etc., (2) Animal foods: Chicken, Meat, Fish, Edible insects, Milk, etc., (3) Vegetables: Pumpkin leaves, Amaranths, Back jack, cat whiskers, etc., (4) fruits: bananas, Pawpaw, Citrus, pineapple, etc., (5): Legumes and Nuts: Beans, Pigeon peas, groundnuts, soybeans, (6) fats/Oils: Avocado, vegetable oil, margarines, Butter.
11. Proportion of surveyed households applying improved storage and preservation practices for the six Malawian food groups. Improved Storage are: Grain and Legumes: PIC bags; OFSP: Pits with ash; Pallets}.
12. Percentage of Women achieving adequacy on Women's Empowerment in Agriculture Index (WEAI): Access to and decisions on credit: Sources of credit are: NGO's, Informal lenders, Formal lenders, Friends/Relatives, Group based microfinance or lending;
13. Proportion of smallholder farmers in the FTF-ZOI cultivating OFSP
14. Total OFSP production in the FTF-ZOI (MT) by gender and by technologies;
15. Total hectares under OFSP production in the FTF-ZOI by gender and by technologies.

These agricultural indicators reflect the productivity and income generated from the farm when the survey is conducted so that each year any improvements attributable to AgDiv interventions can be recorded. The MELS Project is to collect the baseline data for the key farm-level outcome indicators listed above. The survey contractor will work closely with the MELS project to gather data for these indicators which measure the performance of the Feed the Future Agricultural Diversification project. The survey contractor will be sure to gather appropriate disaggregate data for each of the indicators.

A-Survey Firm Qualifications

The successful bidder for this survey activity will have at least 10 years of experience conducting surveys preferably for the agricultural sector. The successful bidder will have prior experience conducting surveys for USAID projects preferably within the last 3 years. A familiarity with USAID/Feed the Future (FTF) indicators is a plus.

B- Survey Firm Tasks

The successful bidder for this survey activity will be tasked with implementing a population-based survey in the seven districts where AgDiv is going to be implementing activities. MELS will provide overall coordination and supervision of the survey implementation. We expect this survey to be done with paper but welcome approaches that are digital that clearly outline the appropriate steps. The successful bidder will work closely with the MELS M&E Team in the design, conduct, and analysis of the survey. A special emphasis should be put by the bidder on the team composition and member specialties and, a proven track record of the proposed team. }

To fulfill the Scope of Work, the Consultant team will:

1. Conduct a household listing activity of selected enumeration areas in the targeted EPAs of the seven districts
2. The MELS team will select the households to be visited for the survey (approximately 1,800 farmers in 115 EAs)
3. Translate survey instrument
4. Finalize and test a survey instrument translated into Chichewa
5. Conduct training with the survey instrument for enumerators
6. Conduct a baseline survey with survey teams in the field covering the seven districts for AgDiv of Lilongwe, Mchinji, Balaka, Machinga, Mangochi, Dedza and Ntcheu.
7. Manage the survey teams including implementing a quality control process to insure the integrity of data collected on the survey forms
8. Require double entry for the data entered by data entry clerks (if this step is necessary)
9. Clean the data to account for transcription and other errors
10. Produce a data set to the MELS team for further analysis and report writing. Produce a brief report of the results including the challenges encountered in the field.

C-Activity Phases

Payment will be made in phases as the consultant team conducts the following activities and deliverables:

Phase I Preparation Phase (early June)

1. MELS provides survey instrument designed to fill out table for AgDiv baseline
2. MELS provides the draft survey protocol
3. MELS provides instrument for listing operation
4. Contractor will translate instruments
5. Contractor provides complete list of team leaders and names of team members
6. Contractor provides the work plan for training, pretesting, listing and field work with expected durations

Deliverables for I

1. List of team members, their roles and their LOE (enumerators, controllers and team leaders)
2. Pretest and instrument pilot protocol
3. Translation protocol followed by translated instrument
4. Fieldwork Implementation plan and organization manual with timelines, teams, logistics

Phase II Listing Operation (early June)

1. MELS to provide enumeration area (EA) data (from 2008 census) and maps that match with the focus EPAs
2. MELS selects EAs for the listing operation
3. MELS with contractor conducts training on listing operation
4. Contractor utilizes maps to visit all of the selected EAs and list all farm households growing targeted crops
5. Contractor updates maps with new information
6. Contractor provides EA names, GPS coordinates, name of household head for each household in a dwelling, crop grown, and village for all households
7. Contractor provides completed list to MELS

Deliverables for II

1. List of team members (listers and cartographers)
2. Total number of household in the EAs
3. Updated maps of selected EAs
4. Household list for selected EAs

Phase III Training and Pretest Phase (mid-July)

1. MELS with contractor conducts enumerator training
2. Contractor tests survey instrument with enumerators
3. Finalized survey instrument
4. Final signed list of enumerators and team leaders
5. Finalized list of team members (supervisors, data expert, data entry clerks, enumerators)
6. Data Quality Assurance Plan

Deliverables for III

1. Finalized instrument
2. Finalized list of enumerator and team leaders
3. Data Quality Assurance Plan
4. Questionnaire programming plan (range checks, conversion factors, etc.)
5. Data Cleaning Plan including edit rules

Phase IV Field Work (July/August)

1. MELS to provide the list of households to be surveyed (selected from the listing operation, approximately 35 households per EA)
2. Produce data quality assurance plan (double entry, field data tables, etc.)
3. Conduct survey field work in the EPAs and EAs of the 7 districts, all farmers in a given Household are interviewed
4. Enter data electronically (if not gathered electronically) and clean the data by applying range and consistency check rules
5. Produce a preliminary data set in SPSS format, including a complete data structure definition
6. Provide short report on survey progress mid-way through the survey

Deliverables IV

1. Progress Report
2. Produce Data Assurance quality plan

3. Cleaned Dataset - Survey data file will be delivered to MELS in SPSS format with a complete definition of the file meta-structure including the complete set of variable and value labels.

Phase V Survey Report Deliverables (early September)

1. Original copies of the filled out questionnaires administered for the seven districts.
2. Cleaned copy of the finalized metadata and individual files in SPSS format
3. Finalized Survey report highlighting the major findings and challenges encountered

MELS will provide for the following:

1. Training for Listing Operation
2. Training support for the survey enumerators
3. QC during instrument testing
4. Draft Survey Protocol
5. List of EPAs and EAs for the Listing operation
6. List of households to be surveyed (from the listing operation)
7. QC and field verification (in addition to contractor own Q/C) during field work
8. We will perform all data analysis on the completed clean dataset

The project will run for approximately 85 days including travel days and reporting. The team will be led by a principal investigator, who will provide leadership and direction to the survey team. The short (2-3 pages) survey report will be authored by the principle investigator.

Table 1. Summary Table of Activities to Take Place Under the Baseline Assessment

Name of Deliverable	Tentative Submission Date
<i>Inception Visit Report with timeline</i>	February 21, 2017
<i>Survey Protocol (Draft/Final)</i>	April 15, 2017
<i>Data Treatment and Analysis Plan (Draft/Final)</i>	April 15, 2017
<i>Sampling Plan (Draft/Final)</i>	May 15, 2017
Name of Deliverable	Tentative Submission Date
<i>English Version of Draft Survey Instrument (draft, pretest, pilot, final fielded)</i>	April 15, 2017
<i>Translation Protocol (draft/final)</i>	June 15, 2017
<i>Pretest and Pilot Protocols</i>	July 1, 2017
<i>Supervisor/Field Editor and Enumerator Manuals</i>	July 1, 2017
<i>Fieldwork Organization Manual</i>	July 1, 2017
<i>Questionnaire Programming Plan and Timeline (if applicable)</i>	June 15, 2017
<i>RFP for Local Data Collection Partner</i>	April 15, 2017
<i>Detailed Fieldwork Implementation Plan</i>	June 15, 2017
<i>Data Cleaning Plan</i>	June 15, 2017
<i>Data Weighting Protocol</i>	July 1, 2017
<i>Outline of Beneficiary-Based Survey Report</i>	May 1, 2017
<i>Draft Report on Beneficiary-Based Findings</i>	October 15, 2017
<i>Final Report on Beneficiary-Based Findings</i>	TBD

Survey Proposals

The successful bidder will provide MELS with the following information in their proposal:

1. Detailed timeline and description of all the steps for the listing operation and the baseline survey in a Fieldwork Implementation Plan
2. Detailed costs for all of the fieldwork with separate totals for the listing operation and baseline survey
3. Complete list of team members and roles for both Listing and Baseline survey
4. Data Quality Assurance Plan
5. Pretest and Pilot test protocols for survey instrument
6. Fieldwork organization Manual
7. Data Cleaning Plan

ANNEX 5. CORRECTION FACTOR FOR AREA PLANTED

Correction of Farmers' Estimates of Areas Planted for Groundnuts, Soybeans & OFSP

It is widely accepted that farmers' estimates of cropping intensities are often over reported for farmers with smaller plots and underreported by farmers with larger plots. During the baseline survey, GPS estimates of cropped areas are measured for a selected sub-sample of farmers' fields, along with farmers' area estimations. The sub-sample used for the GPS measurement is shown below.

District	Number of Selected EAs	Number of Farmers per EA for direct measurement	Number of Farmers for direct measurement
LILONGWE RURAL	16	2	32
MCHINJI	7	5	35
MANGOCHI	5	6	30
MACHINGA	7	5	35
DEDZA	11	3	33
BALAKA	10	3	30
NTCHEAU	5	6	30
TOTAL ALL DISTRICTS	60	30	225

To ascertain that area estimates by the sampled farmers are not over reported (those are mostly small farmers) during the baseline survey, a regression equation was specified between farmers' estimates and the GPS measurements of cultivated areas for each of the targeted crops. Farmers' estimates were taken as the independent variables (explanatory or covariate) and GPS measurements were the dependent variables (explained or outcome). The decision rule set-up is to apply a correction factor measured by the regression coefficients to farmers' reported area planted if the estimated coefficients are significantly different from zero.

The following model has been specified:

$$Y = \beta_0 + \beta_1 X$$

Where:

Y = Adjusted Farmer plot size; β_0 = Constant of Regression ;
 β_1 = Change in Farmers' Estimates (Ha) per unit change in GPS Measurements (Ha);
 X = Farmer Estimated Area.

Farmers' estimates of cultivated areas are measured in Hectare and GPS measurements in Square Meter, then converted to Hectare.

The regression results are shown below for each targeted crop.

Groundnuts

Descriptive Statistics

	Mean	Std. Deviation	N
D111a What was the total area you planted under groundnuts?	.2948	.21780	115
GPS Groundnuts Area Planted in Hectare	.2785	.2618	115

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.518 ^a	.269	.262	.1871

a. Predictors: (Constant), GPS Groundnuts Area Planted in Hectare

ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	1.453	1	1.453	41.507	.000 ^b
Residual	3.955	113	.035		
Total	5.408	114			

a. Dependent Variable: D111a What was the total area you planted under groundnuts?

b. Predictors: (Constant), GPS Groundnuts Area Planted in Hectare

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.175	.026		6.841	.000	.124	.225
1 GPS Groundnuts Area Planted in Hectare	.431	.067	.518	6.443	.000	.299	.564

a. Dependent Variable: D111a What was the total area you planted under groundnuts?

The regression for $B = .431$ Ha and is highly significant at 95%. This means that farmers' estimates are over reported. Each unit change in GPS measurements increases farmers' estimates by .431 Ha.

Soybeans

Descriptive Statistics

	Mean	Std. Deviation	N
D211a What was the total area you planted under soybeans?	.2614	.2080	84
GPS Soybeans Area Planted in Ha	.2346	.1887	84

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.747 ^a	.558	.553	.1391

a. Predictors: (Constant), GPS Soybeans Area Planted in Ha

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	2.003	1	2.003	103.509	.000 ^b
Residual	1.587	82	.019		
Total	3.590	83			

a. Dependent Variable: D211a What was the total area you planted under soybeans?

b. Predictors: (Constant), GPS Soybeans Area Planted in Ha

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.068	.024		2.811	.006	.020	.117
1 GPS Soybeans Area Planted in Ha	.823	.081	.747	10.174	.000	.662	.984

a. Dependent Variable: D211a What was the total area you planted under soybeans?

The regression for B = .823 Ha and is highly significant at 95%, meaning that farmers estimates are over reported. Each unit change in GPS measurements increases farmers' estimates by .823 Ha.

OFSP

Descriptive Statistics

	Mean	Std. Deviation	N
D311a What was the total area you planted under OFSP?	.1631	.1611	59
GPS OFSP Area Planted in Ha	.1336	.1694	59

ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	.600	1	.600	37.808	.000 ^b
Residual	.905	57	.016		
Total	1.505	58			

a. Dependent Variable: D311a What was the total area you planted under OFSP?

b. Predictors: (Constant), GPS OFSP Area Planted in Ha

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B	
	B	Std. Error	Beta			Lower Bound	Upper Bound
(Constant)	.083	.021		3.956	.000	.041	.125
1 GPS OFSP Area Planted in Ha	.601	.098	.631	6.149	.000	.405	.796

a. Dependent Variable: D311a What was the total area you planted under OFSP?

The regression coefficient for B = .601 Ha and is highly significant at 95%, meaning that farmers estimates are over reported. Each unit change in GPS measurements increases farmers' estimates by .601 Ha.

ANNEX 6. SAMPLE WEIGHTS

Sample Design for MELS (Value Chain Farmers Growing the Groundnuts, Soybeans and OFSP)

The stratified two-stage probability sample design was used for the selection of sample (Farmers growing the groundnuts, soybeans and OFSP).

The **first stage** was the selection of Enumeration Areas as Primary Sampling Units (PSUs) and was selected with probability proportional to measure of size (PPS); the measure of size being the total number of households enumerated during the 2008 Population and Housing Census.

The **second stage** of sampling was the actual number of farmers who were listed and systematically selected within each selected enumeration area. This formed the Secondary Sampling Units (SSUs).

To identify agricultural and non-agriculture holdings, a complete listing of dwelling units was carried out in the listing form in all the selected enumeration areas. To qualify as a value chain farmer for the MELS survey, a household had to grow at least one or a combination of the following; groundnuts, soybeans or OFSP during the 2016-17 production year. This list of farmers growing one or more of the target value chains constituted a frame of the value chain farmers (second stage sampling frame). A pre-determined sample of 30 farmers were selected at random for each selected enumeration area for total sample of 1,800 farmers.

SAMPLING WEIGHTS

Being a multistage design, it follows naturally that the sample selected at each stage represents the respective population. The fundamental assumption was that farmers selected at each stage were similar to those not selected, in respect to all characteristics of interest.

Sampling weights are the inverse of **sampling** fractions. When different **sampling** fractions have been applied to particular sub-groups within the population studied, **sampling weights** are used to reinstate the original importance of each group within the population.

The sampling weight were calculated with the design weight corrected for nonresponse for each of the selected clusters. Response rates were calculated at the cluster level as ratios of the number of interviewed units over the number of eligible units, where units could be household or individual (woman, child, or male decision-maker or female decision-maker).

The adjustment of sample weights for non-response

Some households may provide no data at all while other households may provide only partial data, that is, data on some but not all questions in the survey. If there are any systematic differences between the respondents and non-respondents, then estimates based solely on the respondents will be biased. It is important to keep survey non-response as low as possible, in order to reduce the possibility that the survey estimates could be biased in some way by failing to include (or including a disproportionately small percentage of) a particular portion of the population.

There are three components to the weighting:

(i) From EA to Stratum Level

First stage weights account for the varying probability of EA selection. That is, they are proportional

to the inverse of the measure of population size.

First stage weight for i-th EA in h-th stratum is

$$W_{1hi} = \frac{\sum_{i=1}^{N_h} M_{hi}}{n_h M_{hi}}$$

Where W_{1hi} = First stage weight for ith EA in hth stratum.

n_h = The number of EAs selected in hth stratum.

M_{hi} = The size (Households as per 2008 Agric Census Sampling Frame) of the ith EA in h-th stratum

N_h = stratum total of households

(ii) From Farmer Level to EA Level

This is a simple weight obtained by dividing the total number of listed Value Chain Farmers in the EA by the number of selected Value Chain farmers in that EA.

Second stage weight for i-th EA in h-th stratum is

$$W_{2hi} = \frac{M_{hi}^L}{m_{hi}}$$

Where W_{2hi} = Second stage weight for ith EA in hth stratum.

M_{hi}^L = Total number of the listed Value chain farmers i-th EA in h-th stratum is

m_{hi} = The number of selected households for the i-th EA in h-th stratum

(iii) A Non-Response Adjustment

If there is no nonresponse at the cluster level, at the household level, or at the individual level, the design weight is enough for all analysis, for both household indicators and individual indicators. However, nonresponse is inevitable in all surveys, and different units have different response behaviors.

For the MELS no substitution was allowed for non-response and questionnaires had to be returned for all farmers, responding or not. The non-response rate was measured at the EA level. The adjustment was equal to the selected farmers (respondents + non respondents) divided by the actual interviewed farmers (responded farmers).

The non-response adjustment for the i-th EA in h-th stratum

$$R_{hi} = 1 + \frac{m_{(nr)hr}}{m_{(r)hr}}$$

$m_{(nr)hr}$ = the number of farmers who did not respond in i-th EA of h-th stratum.

$m_{(r)hr}$ = the number of farmers who responded in i – th EA of h – th stratum.

Thus, the **final weights** for the i-th EA in h-th stratum are

$$W_{hi} = W_{1hi} \times W_{2hi} \times R_{hi}$$

ANNEX 7. TECHNOLOGY MAPPING

TECHNOLOGY	VARIABLE NAME
Crop genetics: e.g. improved/certified seed that could be higher-yielding, higher in nutritional content (e.g. through bio-fortification, such as vitamin A-rich sweet potatoes or rice, or high-protein maize), and/or more resilient to climate impacts; improved germplasm.	Groundnuts D122_6 (gnut) Early maturing varieties D122_8 (gnut) Stress tolerant varieties Soybeans D222_6 (Soy) Early maturing varieties OFSP D322_3 (OFSP) Drought tolerant varieties
Cultural practices: e.g. seedling production and transplantation; cultivation practices such as planting density, mulching.	Groundnuts D122_4 (gnut) planting, D122_3 (gnut) Jab Planting, D122_1 (gnut) Double up legume D122_2 (gnut) D122_5 (gnut) crop diversification, , D142_2: (gnut) Mulching, D142_3: Box ridges, D142_4: Contour Ridge, D142_5: Infiltration pits, D132_6: Swales, D142_7: Contour Vegetation Rows Soybeans Crop Rotation D222_1 double up, D222_2 , crop rotation, D222_4 , double row, D222_3, hand jab, D232_1 , mulching, D232_2: Box ridges, D232_3 : Contour ridge, D232_4: Infiltration pits, D232_5 Swales, D232_6 Contour Vegetation Rows OFSP D322-1 (OFSP) crop rotation, D322_2 (OFSP) intercropping, ,D332_1 : Mulching, D332_2 :Box ridges, D332_3: Contour ridge, D332_4 Infiltration pits, D332_5: Swales,D332_ : Contour vegetation rows
Disease management: e.g. improved fungicides, appropriate application of fungicides.	Groundnuts D122_2 Soybeans D222_2 OFSP D322_1
Soil-related fertility and conservation: e.g. Integrated Soil Fertility Management; soil management practices that increase biotic activity and soil organic matter levels, such as soil amendments to increase fertilizer-use efficiency (e.g. mulching); fertilizers; erosion control.	Groundnuts D142_1 (gnut) zero tillage, D142_2 :Mulching, D142_3: Box ridges, D142_4 Contour ridge D142_5: Infiltration pits, D122_7 Innoculant gnut, Soybeans D232_1:Mulching, D232_2 :box ridge,D232_3 contour ridge,D232_4: infiltration pits) D222_8 inoculant soy OFSP D332_1 (OFSP)mulching,D332_2: Box ridges, D332_3: contour ridges,D332_4: infiltration pits)

TECHNOLOGY	VARIABLE NAME
Irrigation: e.g. drip, surface, sprinkler irrigation; irrigation schemes.	Groundnuts D152 Soybeans D242 OFSP D342
Water management, non-irrigation-based: e.g. water harvesting; mulching.	Mulching Groundnuts: D142_2, Soybeans D232_1, OFSP D332_1 Box ridges Groundnuts: D142_3, Soybeans D232_3, OFSP D332_2 Contour ridge Groundnuts: D142_4, Soybeans: D232_3, OFSP D332_3 Infiltration pits Groundnuts: D142_5, Soybeans D232_4, OFSP D332_4 Swales Groundnuts D142_6, Soybeans D232_5, OFSP D332_5 Contour vegetation rows Groundnuts D142_7, Soybeans D232_6, OFSP D332_6 FI-1, FI-2: (farm ponds or check dams)
Climate Mitigation: technologies selected because they minimize emission intensities relative to other alternatives. Examples include low-or no-till practices, efficient nitrogen fertilizer use.	D112_7 gnut Inoculant D222_8 soy inoculant D142_1 gnut zero till

TECHNOLOGY	VARIABLE NAME
Climate Adaptation: technologies promoted with the explicit objective of adapting to current climate change concerns. Examples include drought and flood resistant varieties, conservation agriculture.	D122_6 gnut early maturing D122_8 gnut stress tolerant D222_6 soy early maturing seed D322_3 OFSP drought tolerant varieties Module E42_1, E42_2, E42_3, E42_4, (almost all technologies promoted by AgDiv too many listed here) D122_4 (gnut) Double row planting, D122_3 (gnut) Jab Planting, D222_1 D122_1 (gnut) Double up legume , D142_2: (gnut) Mulching, D122_2 (gnut) D122_5 (gnut) crop diversification, Crop Rotation D222_1 (soy) double up, D222_2 (soy) crop rotation, D222_4 (soy) double row, D222_3,(soy) hand jab, D2321_1 (soy) mulching, D322-1 (OFSP) alternating crop rotations , D322_2 (OFSP) intercropping, D142_2, D232_1, D332_1 Mulching, D232_1-6 D142_3, D232_3, D332_2 Box ridges, D332_1-6 D142_4, D232_3, D332_3 Contour ridge D142_5, D232_4, D332_4 Infiltration pits D142_6, D232_5, D332_5 Swales D142_7, , D232_6, D332_6 Contour vegetation rows (similar for all 3 crops) D122_2, D222_2, D322_1 (Crop rotation all three crops) D152, D242, D342 (irrigation all three crops)
Marketing and Distribution – Warehouse Receipts (WRS), market information, improved commodity sales	D252_3, D162_3 (warehouse receipts gnut, soy)
Post-Harvest Handling and Storage: PIC bags, sorting grading, temperature control	D162_1, D252_1 (cleaners shellers etc.) D162_2, D252_2 (moisture meters) D162_4, D252_4 (storage bags (PIC, zerofly) D162_5, (storing in shell) D162_6, D252_5 (drying) D352_1 (pits w/ash)
Processing: Packaging, preservation	D162_7, , D351_2 (Roasting) D162_8, D252_6, D352_2 (processing into flour) D162_9, (Processing into peanut butter) D162_10, D252_8 (processing in to oil) D252_7 (processing into soy milk) D252_9 (processing into soy cake) D352_3 (OFSP chips + drying)

New Indicator

Climate Information (Indicator 2.2-1): people using climate information to improve resilience to climate change. (Contingency plans, early warning systems, mini weather stations, other information methods)	Module EI-3 (EI2_1 (community groups), EI2_2 radio groups), E22_1 (mini weather stations), E32_1-7 (printed materials, group discussions, briefing services, public lectures, video shows, SMS stations, disaster committee meetings))
Climate Risk Reducing Actions (Indicator 2.2-1): people implementing risk reducing actions to improve resilience to climate change. (Agroforestry, Truncheons, Seepage wells, other practices)	Module E42_1, E42_2, E42_3, E42_4, (almost all technologies promoted by AgDiv too many listed here) D122_4 (gnut) Double row planting, D122_3 (gnut) Jab Planting, D222_1 D122_1 (gnut) Double up legume , D142_2: (gnut) Mulching, D122_2 (gnut) D122_5 (gnut) crop diversification, Crop Rotation D222_1 (soy) double up, D222_2 (soy) crop rotation, D222_4 (soy) double row, D222_3,(soy) hand jab, D2321_1 (soy) mulching, D322-1 (OFSP) alternating crop rotations , D322_2 (OFSP) intercropping, D142_2, D232_1, D332_1 Mulching, D232_1-6 D142_3, D232_3, D332_2 Box ridges, D332_1-6 D142_4, D232_3, D332_3 Contour ridge D142_5, D232_4, D332_4 Infiltration pits D142_6, D232_5, D332_5 Swales D142_7, , D232_6, D332_6 Contour vegetation rows (similar for all 3 crops) D122_6 (gnut) Early maturing varieties D122_8 (gnut) Stress tolerant varieties D222_6 (Soy) Early maturing varieties D322_3 (OFSP) Drought tolerant varieties D122_2, D222_2, D322_1 (Crop rotation all three crops) D152, D242, D342 (irrigation all three crops)

ANNEX 8. SPSS SYNTAX FILES

Syntax files in the order of completion

```
* ===== WEAI: GROUP MEMBER ===== .
*      4.3.1 Percentage of Targeted Female Farmers Achieving Adequacy on WEAI: Group Member
*      -----
*      =====
*      =====
```

```
GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC _6Nov Weight Final.sav'.
```

```
* ---- COUNT THE NUMBER OF GROUP CATEGORIES ---- .
```

```
* 1- AGRICULTURE LIVESTOCK FISHERIES.
```

```
IF (G003 EQ 1) OUTPUT1 = 2 .
```

```
VARIABLE LABELS OUTPUT1 'A- AGRICULTURE LIVESTOCK FISHERIES' .
```

```
IF (G201_01 = 1 & G202_01 = 1) OUTPUT1 = 1.
```

```
* 2- WATER USER GROUP .
```

```
IF (G003 EQ 1) OUTPUT2 EQ 2 .
```

```
VARIABLE LABELS OUTPUT2 'B- WATER USER GROUP' .
```

```
IF (G201_02 = 1 & G202_02 = 1) OUTPUT2=1.
```

```
* 3- FOREST USER GROUP .
```

```
IF (G003 EQ 1) OUTPUT3 EQ 2 .
```

```
VARIABLE LABELS OUTPUT3 'C- FOREST USER GROUP' .
```

```
IF (G201_03 = 1 & G202_03 = 1) OUTPUT3=1.
```

```
* 4- CREDIT/MICRO FINANCE GROUP.
```

```
IF (G003 EQ 1) OUTPUT4 EQ 2 .
```

```
VARIABLE LABELS OUTPUT4 'D- CREDIT/MICRO FINANCE GROUP' .
```

```
IF (G201_04 = 1 & G202_04 = 1) OUTPUT4=1.
```

```
* 5- MUTUAL HELP/INSURANCE GROUP .
```

```
IF (G003 EQ 1) OUTPUT5 EQ 2 .
```

```
VARIABLE LABELS OUTPUT5 'E- MUTUAL HELP/INSURANCE GROUP' .
```

```
IF (G201_05 = 1 & G202_05 = 1) OUTPUT5=1.
```

```
* 6- TRADE/BUSINESS ASSOCIATION .
```

```
IF (G003 EQ 1) OUTPUT6 EQ 2 .
```

```
VARIABLE LABELS OUTPUT6 'F- TRADE/BUSINESS ASSOCIATION' .
```

```
IF (G201_06 = 1 & G202_06 = 1) OUTPUT6=1.
```

```
* 7- CIVIC GROUP .
```

```
IF (G003 EQ 1) OUTPUT7 EQ 2 .
```

```
VARIABLE LABELS OUTPUT7 'G- CIVIC GROUP' .
```

```
IF (G201_07 = 1 & G202_07 = 1) OUTPUT7=1.
```

```
* 8- LOCAL GOVERNMENT .
```

```

IF (G003 EQ 1 ) OUTPUT8 EQ 2 .
VARIABLE LABELS OUTPUT8 'H- LOCAL GOVERNMENT ..' .
IF (G201_08 = 1 & G202_08 = 1) OUTPUT8=1.

* 9- RELIGIOUS GROUP .
IF (G003 EQ 1 ) OUTPUT9 EQ 2 .
VARIABLE LABELS OUTPUT9 'I- RELIGIOUS GROUP ' .
IF (G201_09 = 1 & G202_09 = 1) OUTPUT9=1.

* 10- OTHER WOMEN GROUP .
IF (G003 EQ 1 ) OUTPUT10 EQ 2 .
VARIABLE LABELS OUTPUT10 'J- OTHER WOMEN GROUP ' .
IF (G201_10 = 1 & G202_10 = 1) OUTPUT10=1.

* 11- OTHER GROUPS .
IF (G003 EQ 1 ) OUTPUT11 EQ 2 .
VARIABLE LABELS OUTPUT11 'K- OTHER GROUPS ' .
IF (G201_11 = 1 & G202_11 = 1) OUTPUT11=1.

* COUNT THE NUMBER OF FEMALE FARMERS ACTIVE IN AT LEAST ONE GROUP .
IF (G003 EQ 1) OUTCOME = 2 .
IF (OUTPUT1 EQ 1 | OUTPUT2 EQ 1 | OUTPUT3 EQ 1 | OUTPUT4 EQ 1 | OUTPUT5 EQ 1 |
    OUTPUT6 EQ 1 | OUTPUT7 EQ 1 | OUTPUT8 EQ 1 | OUTPUT9 EQ 1 | OUTPUT10 EQ 1 |
    OUTPUT11 EQ 1)
    OUTCOME = 1 .
VARIABLE LABELS OUTCOME 'ADEQUACY ON AT LEAST ONE GROUP' .
VALUE LABELS OUTPUT1 TO OUTPUT11 OUTCOME 1 'HAVE ADEQUACY' 2 'LACK
ADEQUACY' .

*
=====
===== .

* GENERATE TABLE .

WEIGHT BY SAM_WT .
CTABLES
/FORMAT empty=blank
/VLABELS VARIABLES = OUTPUT1 TO OUTPUT11 OUTCOME DISPLAY=LABEL
/TABLE ( OUTPUT1 + OUTPUT2 + OUTPUT3 + OUTPUT4 + OUTPUT5 + OUTPUT6 +
    OUTPUT7 + OUTPUT8 + OUTPUT9 + OUTPUT10 + OUTPUT11 + OUTCOME)
    [COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= OUTPUT1 OUTPUT2 OUTPUT3 OUTPUT4 OUTPUT5 OUTPUT6
    OUTPUT7 OUTPUT8 OUTPUT9 OUTPUT10 OUTPUT11 OUTCOME
    MISSING=INCLUDE TOTAL=YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
    TITLE= 'TABLE D11: Weighted Number and Percent of Female Farmers Achieving Adequacy on WEAI -
    Group Member: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```
* ===== END OF SYNTAX FILE
===== .
```

```
* ===== WEAI: DECISIONS ON CREDIT ===== .
* 4.2.1 Percentage of Targeted Female Farmers Achieving Adequacy on WEAI: Access to and
Decisions on Credit
```

```
=====
===== .
```

```
* WEAI: PERCENT OF WOMEN ACHIEVING ADEQUACY ON WOMEN'S
EMPOWERMENT IN AGRICULTURE INDEX INDICATOR: ACCESS TO AND DECISIONS ON
CREDIT .
```

```
* ----- .
* ESTIMATION LOGIC: A FEMALE FARMER ACHIEVES ADEQUACY IF SHE ANSWERED 1 TO G101
AND 1 TO G102.
* IF SHE HAS ANSWERED 1 TO G101 and DID NOT ANSWER 1 TO G102 BUT HAS ANSWERED
1 TO G103 SHE HAS ACHIEVED ADEQUACY IN THAT LENDING SOURCES.
*
=====
===== .
```

```
GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC _6Nov Weight Final.sav'.
```

```
* --- CATEGORIZATION OF THE CREDIT SOURCES.
```

```
* A- NON-GOVERNMENTAL ORGANIZATIONS.
IF (G003 EQ 1 ) OUTPUT1 EQ 2 .
IF ( G101_1 = 1 & ((G102_1A = 1) | ((G102_1A NE 1) & (G103_1A = 1))) )
    OUTPUT1 = 1.
VARIABLE LABELS OUTPUT1 'A- NGO LENDING SOURCES' .
```

```
* B- INFORMAL LENDER .
IF (G003 EQ 1 ) OUTPUT2 EQ 2 .
IF ( G101_2 = 1 & ((G102_2A = 1) | ((G102_2A NE 1) & (G103_2A = 1))) )
    OUTPUT2=1.
VARIABLE LABELS OUTPUT2 'B- INFORMAL LENDING SOURCES' .
```

```
* C- FORMAL LENDER .
IF (G003 EQ 1 ) OUTPUT3 EQ 2 .
IF ( G101_3 = 1 & ((G102_3A = 1) | ((G102_3A NE 1) & (G103_3A = 1))) )
    OUTPUT3=1.
VARIABLE LABELS OUTPUT3 'C- FORMAL LENDING SOURCES' .
```

```
* D- FREINDS OR RELATIVES .
IF (G003 EQ 1 ) OUTPUT4 EQ 2 .
IF ( G101_4 = 1 & ((G102_4A = 1) | ((G102_4A NE 1) & (G103_4A = 1))) )
    OUTPUT4=1.
VARIABLE LABELS OUTPUT4 'D- FREINDS OR RELATIVES LENDING SOURCES' .
```

```
* E- MICRO FINANCE AND CREDIT ASSOCIATIONS .
IF (G003 EQ 1 ) OUTPUT5 EQ 2 .
```

```

IF (G101_5 = 1 & ((G102_5A = 1) | ((G102_5A NE 1) & (G103_5A = 1))) )
    OUTPUT5=1.
VARIABLE LABELS OUTPUT5 'E- MICRO FINANCE AND CREDIT ASSOCIATIONS SOURCES ' .

```

```

* COUNT THE NUMBER OF FEMALE FARMERS WITH ADEQUACY IN ACCESS TO AND
DECISIONS ON CREDIT .
IF (G003 EQ 1) OUTCOME = 2 .
IF (OUTPUT1 EQ 1 | OUTPUT2 EQ 1 | OUTPUT3 EQ 1 | OUTPUT4 EQ 1 | OUTPUT5 EQ 1)
    OUTCOME = 1 .
VARIABLE LABELS OUTCOME 'ADEQUACY' .
VALUE LABELS OUTPUT1 OUTPUT2 OUTPUT3 OUTPUT4 OUTPUT5 OUTCOME 1 'HAVE
ADEQUACY' 2 'LACK ADEQUACY' .

```

*

```

=====
=====

```

* --- INDICATOR TABULATION .

```

WEIGHT BY SAM_WT .
CTABLES
/FORMAT empty=blank
/VLABELS VARIABLES = OUTPUT1 OUTPUT2 OUTPUT3 OUTPUT4 OUTPUT5 OUTCOME
DISPLAY=LABEL
/TABLE ( OUTPUT1 + OUTPUT2 + OUTPUT3 + OUTPUT4 + OUTPUT5 + OUTCOME)
    [COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= OUTPUT1 OUTPUT2 OUTPUT3 OUTPUT4 OUTPUT5 OUTCOME
MISSING=INCLUDE TOTAL=YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'TABLE G1: Weighted Percentage of Female Farmers With Adequacy on Access to and Decisions
on Credit the Previous 12 Months ' .
WEIGHT OFF .
* ===== END OF SYNTAX FILE
===== .

```

* ===== WEAI: INPUT ON PRODUCTIVE DECISIONS

===== .

* 4.4.1 Percentage of Targeted Female Farmers Achieving Adequacy on WEAI: Input on Productive Decisions

```

=====
===== .

```

* KEY ACTIVITY AREAS ON PRODUCTIVE DECISIONS ARE: A- FOOD CROP FARMING; B- CASH CROP FARMING; C- LIVESTOCK RAISING;
D- FISHING OR FISHPOND CULTURE

KEY ACTIVITY AREAS ON PERSONNEL DECISIONS ARE A- GETTING AG INPUTS; B- GROWING CROPS; C-TAKE CROPS TO THE MARKET;

D:RAISING LIVESTOCK;

PRIMAL DECISION RULES: ADEQUACY IS MET IF IN AT LEAST 2 DECISION MAKING AREAS :

(1) FEMALE FARMERS HAVE AT LEAST SOME INPUTS ON PRODUCTIVE DECISIONS
[G3(A)]; OR

(2) FEMALE FARMERS CAN EXCLUSIVELY MAKE THEIR OWNS PERSONNEL
DECISIONS OR FEEL THE COULD IF
THEY WANTED TO [G3(B)]

APPROACH:

MAP THE FOUR AREAS OF PRODUCTIVE DECISIONS ALONG WITH THE FOUR AREAS
OF PERSONAL DECISION

CUT-OFF RULES:

(1) PARTICIPATE AND PROVIDE AT LEAST SOME INPUTS ON PRODUCTIVE
DECISIONS

(2) CAN MAKE HER OWN PERSONNEL DECISIONS EXCLUSIVELY, IF NOT, OR NOT
EXCLUSIVELY

(3) FEEL SHE COULD MAKE HER OWN DECISIONS IF SHE WANTED TO .

* NOTE: FEMALE FARMERS MUST MEET THE ABOVE CRITERIA IN AT LEAST TWO DECISION
MAKING AREAS .

*

=====

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC_6Nov Weight Final.sav'.

* ---- a- Productive Decisions Under G3(A) ---- .

/* PARTICIPATE AND PROVIDE INPUTS */.

* 1- FOOD CROP FARMING .

IF (G003 EQ 1) INP1 = 2.

VARIABLE LABELS INP1 'A- FOOD CROP FARMING' .

IF (G301A_1 EQ 1 AND (G302A_1 EQ 2 OR G302A_1 EQ 3)) INP1 = 1 .

IF(INP1 EQ 1) INP1I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 1 */.

* 2- CASH CROP FARMING .

IF (G003 EQ 1) INP2 = 2.

VARIABLE LABELS INP2 'A- CASH CROP FARMING' .

IF (G301A_2 EQ 1 AND (G302A_2 EQ 2 OR G302A_2 EQ 3)) INP2 = 1 .

IF(INP2 EQ 1) INP2I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 2 */.

* 3- LIVESTOCK RAISING .

IF (G003 EQ 1) INP3 = 2 .

VARIABLE LABELS INP3 'C- LIVESTOCK RAISING' .

IF (G301A_3 EQ 1 AND (G302A_3 EQ 2 OR G302A_3 EQ 3)) INP3 = 1 .

IF(INP3 EQ 1) INP3I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 3 */.

* 4- FISHING OR FISHPOND CULTURE.

IF (G003 EQ 1) INP4 = 2 .

VARIABLE LABELS INP4 'D- FISHING OR FISHPOND CULTURE' .

IF (G301A_4 EQ 1 AND (G302A_4 EQ 2 OR G302A_4 EQ 3)) INP4 = 1 .

IF(INP4 EQ 1) INP4I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 4 */.

* ---- b- Personal Decisions Under G3(B) ---- .

* DECIDE EXCLUSIVELY OR IF NOT OR NOT EXCLUSIVELY,

* FEELS SHE COULD IF SHE WANTED TO .

* 5- GETTING INPUTS FOR AGRICULTURE PRODUCTION.

IF (G003 EQ 1) INP5 = 2 .

VARIABLE LABELS INP5 'E- GETTING INPUTS FOR AGRICULTURE PRODUCTION' .

IF ((G301B_1A EQ 1 AND G301B_1B NE 2 AND G301B_1C NE 3
AND G301B_1D NE 4 AND G301B_1E NE 5 AND G301B_1X NE 6)
OR ((G301B_1B EQ 2 OR G301B_1C EQ 3 OR G301B_1D EQ 4)
AND (G303B_1 EQ 2 OR G303B_1 EQ 3 OR G303B_1 EQ 4)))
INP5 = 1 .

IF(INP5 EQ 1) INP5I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 5 */.

* 6- TYPES OF CROPS TO GROW.

IF (G003 EQ 1) INP6 = 2 .

VARIABLE LABELS INP6 'F- TYPES OF CROPS TO GROW' .

IF ((G301B_2A EQ 1 AND G301B_2B NE 2 AND G301B_2C NE 3
AND G301B_2D NE 4 AND G301B_2E NE 5 AND G301B_2X NE 6)
OR ((G301B_2B EQ 2 OR G301B_2C EQ 3 OR G301B_2D EQ 4)
AND (G303B_2 EQ 2 OR G303B_2 EQ 3 OR G303B_2 EQ 4)))
INP6 = 1 .

IF(INP6 EQ 1) INP6I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 6 */.

* 7- TAKING CROPS TO THE MARKET.

IF (G003 EQ 1) INP7 = 2 .

VARIABLE LABELS INP7 'G- TAKING CROPS TO THE MARKET' .

IF ((G301B_3A EQ 1 AND G301B_3B NE 2 AND G301B_3C NE 3
AND G301B_3D NE 4 AND G301B_3E NE 5 AND G301B_3X NE 6)
OR ((G301B_3B EQ 2 OR G301B_3C EQ 3 OR G301B_3D EQ 4)
AND (G303B_3 EQ 2 OR G303B_3 EQ 3 OR G303B_3 EQ 4)))
INP7 = 1 .

IF(INP7 EQ 1) INP7I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 7 */.

* 8- LIVESTOCK RAISING (2).

IF (G003 EQ 1) INP8 = 2 .

VARIABLE LABELS INP8 'H- LIVESTOCK RAISING (2)' .

IF ((G301B_4A EQ 1 AND G301B_4B NE 2 AND G301B_4C NE 3
AND G301B_4D NE 4 AND G301B_4E NE 5 AND G301B_4X NE 6)
OR ((G301B_4B EQ 2 OR G301B_4C EQ 3 OR G301B_4D EQ 4)
AND (G303B_4 EQ 2 OR G303B_4 EQ 3 OR G303B_4 EQ 4)))
INP8 = 1 .

IF(INP8 EQ 1) INP8I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 8 */.

* MECANISM TO DETERMINE IF FARMER MEET THE CRETERIA IN AT LEAST TWO DECISION AREAS .

IF (G003 EQ 1) MEET = SUM(INP1I, INP2I, INP3I, INP4I, INP5I, INP6I, INP7I, INP8I) .

IF(MEET GE 2 AND G003 EQ 1) ADEQ = 1.

IF(MEET LT 2 AND G003 EQ 1) ADEQ = 2.

VARIABLE LABELS ADEQ 'MEET ADEQUACY IN AT LEAST TWO DECISION AREAS' .

VALUE LABELS INP1 INP2 INP3 INP4 INP5 INP6 INP7 INP8 ADEQ 1 'YES' 2 'NO' .

EXECUTE.

* GENERATE THE INDICATOR TABLE BY DECISION MAKING AREAS .

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES= INP1 INP2 INP3 INP4 INP5 INP6 INP7 INP8 ADEQ DISPLAY=LABEL

/TABLE (INP1 + INP2 + INP3 + INP4 + INP5 + INP6 + INP7 + INP8 + ADEQ)

[COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS"]

/CLABELS ROWLABELS=OPPOSITE

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= INP1 INP2 INP3 INP4 INP5 INP6 INP7 INP8 ADEQ MISSING=EXCLUDE

TOTAL = YES EMPTY= INCLUDE

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

title= 'TABLE D11: Weighted Percentage of Female Farmers who Achieved Adequacy on WEAI - Input in Productive Decisions: Previous 12 Months ' .

WEIGHT OFF .

* ===== END OF SYNTAX FILE

===== .

* =====PERCENTAGE OF FEMALE FARMERS CONSUMING TARGET VALUE CHAINS

=====

Percentage of Targeted Female Farmers Direct Beneficiaries consuming at least one product from targeted value chains (groundnuts, soy, orange fleshed sweet potato)

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC _6Nov Weight Final.sav'.

* ---- REGROUP THE VC FOOD GROUPS IN MODULE H INTO THE PRODUCT SPACE ---- .

IF (H23A EQ 1) gnutcons EQ 1.

VARIABLE LABELS gnutcons 'Consumed Groundnut or its Products '.

IF (H23B EQ 1) soyacons EQ 1.

VARIABLE LABELS soyacons 'Consumed Soybean or its Products '.

IF (H15A EQ 1) ofspcons EQ 1.

VARIABLE LABELS ofspcons 'Consumed OFSP or its Products '.

* COUNT FEMALE FARMERS CONSUMING AT LEAST ONE OF THE VC .

IF (H15A EQ 1 | H23A EQ 1 | H23B EQ 1) anyvaluechain EQ 1.

VARIABLE LABELS anyvaluechain 'Consumed Any of the Value Chain '.

VALUE LABELS gnutcons soyacons ofspcons anyvaluechain 1 'Yes' 2 'No'.

IF (missing(gnutcons)) gnutcons EQ 2.

IF (missing(soyacons)) soyacons EQ 2.

IF (missing(ofspcons)) ofspcons EQ 2.

IF (missing(anyvaluechain)) anyvaluechain EQ 2.

* TABULATE CONSUMPTION OF THE VALUE CHAIN .

WEIGHT BY SAM_WT .

CTABLES

/FORMAT empty=blank

/VLABELS VARIABLES = gnutcons soyacons ofspcons anyvaluechain DISPLAY=LABEL

```

/TABLE ( gnutcons + soyacons + ofspcons + anyvaluechain)
      [COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= gnutcons soyacons ofspcons anyvaluechain MISSING=INCLUDE
TOTAL=YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
      TITLE= 'TABLE D11: Weighted Percentage of Female Farmers Consuming at Least One Product From
the Targeted Value Chain: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* ===== END OF SYNTAX
===== .

```

```

* ===== DIETARY DIVERSITY ===== .

```

```

*      3.1-2 Percentage of Femal Direct Beneficiaries of USG Nutrition Sensitive Agricultural Activities
consuming a diet of minimum diversity
=====
===== .

```

```

*PERCENTAGE OF FEMALE FARMERS DIRECT BENEFICIARIES OF USG NUTRITION SENSITIVE
AGRICULTURE ACTIVITIES CONSUMING A DIET OF MINIMUM DIVERSITY .

```

```

* -----
-----

```

```

* ===REGROUP THE FOOD GROUPS IN MODULE H INTO THE 10 FG IN THE MINIMUM DIETARY
DIVERSITY INDICATOR ==.

```

```

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC _6Nov Weight Final.sav'.

```

```

* GROUP 1: GRAINS, ROOTS, TUBER .
IF(H14 EQ 1 OR H16 EQ 1) G1 = 1 .
IF(H14 EQ 2 AND H16 EQ 2) G1 = 2 .
IF(H14 EQ 8 AND H16 EQ 8) G1 = 8.
VARIABLE LABELS G1 '1. GRAINS, ROOTS, TUBER' .
VALUE LABELS G1 1 'Yes' 2 'No' 8 'Do Not know' .
IF(G1 EQ 1) G1I = 1 /* COUNTER OF THE NUMBER OF YES FOR GROUP 1 */.

```

```

* GROUP 2: LEGUMES, BEANS .
IF(H23B EQ 1 OR H23D EQ 1 ) G2 = 1.
IF(H23B EQ 2 AND H23D EQ 2 ) G2 = 2.
IF(H23B EQ 8 AND H23D EQ 8 ) G2 = 8.
VARIABLE LABELS G2 '2. LEGUMES, BEANS' .
VALUE LABELS G2 1 'Yes' 2 'No' 8 'Do Not know' .
IF(G2 EQ 1) G2I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 2 */.

```

```

* Group 3: NUTS, SEEDS .
IF(H23A EQ 1 OR H24A EQ 1 OR H24B EQ 1) G3 = 1.
IF(H23A EQ 2 AND H24A EQ 2 AND H24B EQ 2) G3 = 2.
IF(H23A EQ 8 AND H24A EQ 8 AND H24B EQ 8) G3 = 8.
VARIABLE LABELS G3 '3. NUTS, SEEDS' .
VALUE LABELS G3 1 'Yes' 2 'No' 8 'Do Not know' .
IF(G3 EQ 1) G3I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 3 */.

```

* Group 4: DAIRY PRODUCTS .

IF(H25 EQ 1) G4 = 1.

IF(H25 EQ 2) G4 = 2.

IF(H25 EQ 8) G4 = 8.

VARIABLE LABELS G4 '4. DAIRY PRODUCTS' .

VALUE LABELS G4 1 'Yes' 2 'No' 8 'Do Not know' .

IF(G4 EQ 1) G4I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 4 */.

* Group 5: EGGS .

IF(H21 EQ 1) G5 = 1.

IF(H21 EQ 2) G5 = 2.

IF(H21 EQ 8) G5 = 8.

VARIABLE LABELS G5 '5. EGGS' .

VALUE LABELS G5 1 'Yes' 2 'No' 8 'Do Not know' .

IF(G5 EQ 1) G5I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 5 */.

* ' Group 6: FLESH FOODS' .

IF(H19A EQ 1 OR H19B EQ 1 OR H20A EQ 1 OR H20B EQ 1 OR H22 EQ 1 OR H29 EQ 1) G6 = 1.

IF(H19A EQ 2 AND H19B EQ 2 AND H20A EQ 2 AND H20B EQ 2 AND H22 EQ 2 AND H29 EQ 2)
G6 = 2.

IF(H19A EQ 8 AND H19B EQ 8 AND H20A EQ 8 AND H20B EQ 8 AND H22 EQ 8 AND H29 EQ 8)
G6 = 8.

VARIABLE LABELS G6 '6. FLESH FOODS' .

VALUE LABELS G6 1 'Yes' 2 'No' 8 'Do Not know' .

IF(G6 EQ 1) G6I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 6 */.

* Group 7: VITAMIN A-RICH DARK GREEN LEAFY VEGETABLES .

IF(H17A EQ 1) G7 = 1.

IF(H17A EQ 2) G7 = 2.

IF(H17A EQ 8) G7 = 8.

VARIABLE LABELS G7 '7. VITAMIN A-RICH DARK GREEN LEAFY VEGETABLES' .

VALUE LABELS G7 1 'Yes' 2 'No' 8 'Do Not know' .

IF(G7 EQ 1) G7I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 7 */.

* GROUP 8: OTHER VITAMIN A-RICH VEGETABLES AND FRUITS.

IF(H18A EQ 1 OR H30 EQ 1 OR H15A EQ 1 OR H15B EQ 1) G8 = 1.

IF(H18A EQ 2 AND H30 EQ 2 AND H15A EQ 2 AND H15B EQ 2) G8 = 2.

IF(H18A EQ 8 AND H30 EQ 8 AND H15A EQ 8 AND H15B EQ 8) G8 = 8.

VARIABLE LABELS G8 '8. OTHER VITAMIN A-RICH VEGETABLES AND FRUITS' .

VALUE LABELS G8 1 'Yes' 2 'No' 8 'Do Not know' .

IF(G8 EQ 1) G8I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 8 */.

* Group 9: OTHER FRUITS .

IF(H18B EQ 1) G9 = 1.

IF(H18B EQ 2) G9 = 2.

IF(H18B EQ 8) G9 = 8.

VARIABLE LABELS G9 '9. OTHER FRUITS' .

VALUE LABELS G9 1 'Yes' 2 'No' 8 'Do Not know' .

IF(G9 EQ 1) G9I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 9 */.

* Group 10: OTHER VEGETABLES .

IF(H17B EQ 1) G10 = 1.

```

IF(H17B EQ 2) G10 = 2.
IF(H17B EQ 8) G10 = 8.
VARIABLE LABELS G10 '10. OTHER VEGETABLES' .
VALUE LABELS G10 1 'Yes' 2 'No' 8 'Do Not know' .
IF(G10 EQ 1) G10I = 1 /* COUNT THE NUMBER OF YES FOR GROUP 10 */.

```

```

* MECANISM TO CALCULATE IF FARMER CONSUMED 5 OF 10 FG (MDD) .
COMPUTE MDD = SUM(G11, G21, G31, G41, G51, G61, G71, G81, G91, G101) .
IF(MDD GE 5) SATISF = 1.
IF(MDD LT 5) SATISF = 2.
VARIABLE LABELS SATISF 'MET MDD' .
VALUE LABELS SATISF 1 'Yes' 2 'No' .
EXECUTE.

```

```

WEIGHT BY SAM_WT .
CTABLES
/format empty=blank
/VLABELS VARIABLES=SATISF DISPLAY=NONE
/TABLE BY SATISF
      [COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= SATISF MISSING=INCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
title= 'TABLE D11: Weighted Percentage of Female Farmers who Consumed a Diet of Minimum Diversity
(Five of the Ten Food groups): 2016-2017 Growing Season ' .
WEIGHT OFF .

```

* EXTRA TABLE .

```

WEIGHT BY SAM_WT .
CTABLES
/format empty=blank
/VLABELS VARIABLES=G1 G2 G3 G4 G5 G6 G7 G8 G9 G10 DISPLAY=LABEL
/TABLE (G1 + G2 + G3 + G4 + G5 + G6 + G7 + G8 + G9 + G10)
      [COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= G1 G2 G3 G4 G5 G6 G7 G8 G9 G10 MISSING=INCLUDE TOTAL = YES
EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
title= 'TABLE D11: Weighted Distribution of Female Farmers Who Consumed Each of the Ten Food
Groups: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

* ===== END SYNTAX ===== .

* ===== STORAGE PRACTICES ===== .

```

*      3.1-3 Number of Groundnut, Soybean and OFSP farmers applying improved storage or
preservation practices
=====
===== .

```

```

* =====
* Number of Groundnuts, Soybeans and Orange Fleshed Sweet Potatoes Farmers Applying Improved Storage or Preservation Practices
* =====
GET FILE='C:\Users\MSidibe\Documents\Survey Results\Final\USAID MELS_IBTC_6Nov Weight Final.sav'.

* -- COUNT THE NUMBER OF FARMERS APPLYING SPECIFIC IMPROVED STORAGE AND PRESERVATION PRACTICES --.

* GROUNDNUTS .
IF (D10 = 1) gpicbag EQ 2.
IF (D10 = 1) gshell EQ 2.
IF (D10 = 1) gdrying EQ 2.
IF (D10 = 1) groasting EQ 2.
IF (D10 = 1) gflour EQ 2.
IF (D10 = 1) pbutter EQ 2.
IF (D10 = 1) goil EQ 2.

IF (D1614 EQ 1 AND D10 = 1) gpicbag EQ 1.
VARIABLE LABELS gpicbag 'Storing in PICS Bags '.
IF (D1615 EQ 1 AND D10 = 1) gshell EQ 1.
VARIABLE LABELS gshell 'Storing in Shell '.
IF (D1616 EQ 1 AND D10 = 1) gdrying EQ 1.
VARIABLE LABELS gdrying 'Drying '.
IF (D1617 EQ 1 AND D10 = 1) groasting EQ 1.
VARIABLE LABELS groasting 'Roasting '.
IF (D1618 EQ 1 AND D10 = 1) gflour EQ 1.
VARIABLE LABELS gflour 'Processing into flour '.
IF (D1619 EQ 1 AND D10 = 1) pbutter EQ 1.
VARIABLE LABELS pbutter 'Processing into P. Butter '.
IF (D16110 EQ 1 AND D10 = 1) goil EQ 1.
VARIABLE LABELS goil 'Processing into Oil '.

* COUNT THE NUMBER OF FARMERS APPLYING AT LEAST ONE METHOD .
IF (D10 = 1) anymethodg EQ 2.
IF (D1614 EQ 1 | D1615 EQ 1 | D1616 EQ 1 | D1617 EQ 1 | D1618 EQ 1 | D1619 EQ 1 | D16110 EQ 1) anymethodg EQ 1.
VARIABLE LABELS anymethodg 'Applied at least One Improved Method'.
VALUE LABELS gpicbag gshell gdrying groasting gflour pbutter goil anymethodg 1 'Yes' 2 'No'.

* TABULATE GROUNDNUTS STORAGE AND PRESERVATION PRACTICES .
WEIGHT BY SAM_WT .
CTABLES
/FORMAT empty=blank
/VLABELS VARIABLES = gpicbag gshell gdrying groasting gflour pbutter goil anymethodg DISPLAY=LABEL
/TABLE (gpicbag + gshell + gdrying + groasting + gflour + pbutter + goil + anymethodg)
[COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= gpicbag gshell gdrying groasting gflour pbutter goil anymethodg MISSING=INCLUDE TOTAL=YES
EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'TABLE D11: Weighted Number and Percent of Groundnuts Farmers Applying Improved Storage or Preservation Practices: 2016-2017 Growing Season ' .
WEIGHT OFF .
* =====

* SOYBEANS .
IF (D20 = 1) spicbag EQ 2.
IF (D20 = 1) sdrying EQ 2.
IF (D20 = 1) sflour EQ 2.
IF (D20 = 1) smilk EQ 2.
IF (D20 = 1) soil EQ 2.
IF (D20 = 1) scape EQ 2.

```

```

IF (D2524 EQ 1 AND D20 = 1) spicbag EQ 1.
VARIABLE LABELS spicbag 'Storing in PICS Bags '.
IF (D2525 EQ 1 AND D20 = 1 ) sdrying EQ 1.
VARIABLE LABELS sdrying 'Drying '.
IF (D2526 EQ 1 AND D20 = 1) sfloor EQ 1.
VARIABLE LABELS sfloor 'Processing into flour '.
IF (D2527 EQ 1 AND D20 = 1) smilk EQ 1.
VARIABLE LABELS smilk 'Processing into Milk '.
IF (D2528 EQ 1 AND D20 = 1) soil EQ 1.
VARIABLE LABELS soil 'Processing into Oil '.
IF (D2529 EQ 1 AND D20 = 1) scape EQ 1.
VARIABLE LABELS scape 'Processing into Cake '.

```

```

* COUNT THE NUMBER OF FARMERS APPLYING AT LEAST ONE METHOD .
IF ( D20 = 1) anymethods EQ 2 .
IF (D2524 EQ 1 | D2525 EQ 1 | D2526 EQ 1 | D2527 EQ 1 | D2528 EQ 1 | D2529 EQ 1 ) anymethods EQ 1 .
VARIABLE LABELS anymethods 'Applied at least One Improved Method' .
VALUE LABELS spicbag sdrying sfloor smilk soil scape anymethods 1 'Yes' 2 'No'.

```

```

* TABULATE SOYBEANS STORAGE AND PRESERVATION PRACTICES .
WEIGHT BY SAM_WT .
CTABLES
/FORMAT empty=blank
/VLABELS VARIABLES = spicbag sdrying sfloor smilk soil scape anymethods DISPLAY=LABEL
/TABLE (spicbag + sdrying + sfloor + smilk + soil + scape + anymethods)
[COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= spicbag sdrying sfloor smilk soil scape anymethods MISSING=INCLUDE TOTAL=YES EMPTY=
EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'TABLE D11: Weighted Number and Percent of Soybeans Farmers Applying Improved Storage or Preservation Practices:
2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* ----- .

```

```

* OFSP .
IF (D30 = 1) opits EQ 2.
IF (D30 = 1) oflour EQ 2.
IF (D30 = 1) ochips EQ 2.

```

```

IF (D3521 EQ 1 AND D30 = 1) opits EQ 1.
VARIABLE LABELS opits 'Storing in Pits With Ash '.
IF (D3522 EQ 1 AND D30 = 1) oflour EQ 1.
VARIABLE LABELS oflour 'Processing into flour '.
IF (D3523 EQ 1 AND D30 = 1 ) ochips EQ 1.
VARIABLE LABELS ochips 'Dried Chips '.

```

```

* COUNT THE NUMBER OF FARMERS APPLYING AT LEAST ONE METHOD .
IF (D30 = 1) anymethodo EQ 2 .
IF (D3521 EQ 1 | D3522 EQ 1 | D3523 EQ 1 ) anymethodo EQ 1 .
VARIABLE LABELS anymethodo 'Applied at least One Improved Method' .
VALUE LABELS opits oflour ochips anymethodo 1 'Yes' 2 'No'.

```

```

* TABULATE OFSP STORAGE AND PRESERVATION PRACTICES .
WEIGHT BY SAM_WT .
CTABLES
/FORMAT empty=blank
/VLABELS VARIABLES = opits oflour ochips anymethodo DISPLAY=LABEL
/TABLE ( opits + oflour + ochips + anymethodo)
[COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]

```

```

/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= opits oflour ochips anymethod MISSING=INCLUDE TOTAL=YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'TABLE D11: Weighted Number and Percent of OFSP Farmers Applying Improved Storage or Preservation Practices:
2016-2017 Growing Season ' .
WEIGHT OFF .
* ----- .

* OVERALL TABLE COMBINING ALL VC .
COMPUTE anyvc = 2.
IF ( D10 = 1 | D20 = 1 | D30 = 1 ) anyvc EQ 1 .
VARIABLE LABELS anyvc 'ALL VC COMBINED' .
VALUE LABELS anyvc 1 'YES' 2 'NO' .

IF (anyvc = 1) picbag EQ 2.
IF (anyvc = 1) shell EQ 2.
IF (anyvc = 1) drying EQ 2.
IF (anyvc = 1) roasting EQ 2.
IF (anyvc = 1) flour EQ 2.
IF (anyvc = 1) pbutter EQ 2.
IF (anyvc = 1) oil EQ 2.
IF (anyvc = 1) milk EQ 2.
IF (anyvc = 1) cake EQ 2.
IF (anyvc = 1) pits EQ 2.
IF (anyvc = 1) chips EQ 2.

IF (D1614 EQ 1 OR D2524 EQ 1 AND anyvc = 1) picbag EQ 1.
VARIABLE LABELS picbag '1. Storing in PICS Bags '.
IF (D1615 EQ 1 AND anyvc = 1) shell EQ 1.
VARIABLE LABELS shell '2. Storing in Shell '.
IF (D1616 EQ 1 OR D2525 = 1 AND anyvc = 1) drying EQ 1.
VARIABLE LABELS drying '3. Drying '.
IF (D1617 EQ 1 AND anyvc = 1) roasting EQ 1.
VARIABLE LABELS roasting '4. Rosting '.
IF (D1618 EQ 1 OR D2526 EQ 1 OR D3522 EQ 1 AND anyvc = 1) flour EQ 1.
VARIABLE LABELS flour '5 Processing into flour '.
IF (D1619 EQ 1 AND anyvc = 1) pbutter EQ 1.
VARIABLE LABELS pbutter '6. Processing into P. Butter '.
IF (D16110 EQ 1 OR D2528 EQ 1 AND anyvc = 1) oil EQ 1.
VARIABLE LABELS oil '7. Processing into Oil '.
IF (D2527 EQ 1 AND anyvc = 1) milk EQ 1.
VARIABLE LABELS milk '8. Processing into Milk '.
IF (D2529 EQ 1 AND anyvc = 1) cake EQ 1.
VARIABLE LABELS cake '9. Processing into Cake '.
IF (D3521 EQ 1 AND D30 = 1) pits EQ 1.
VARIABLE LABELS pits '10. Storing in Pits With Ash '.
IF (D3523 EQ 1 AND D30 = 1 ) chips EQ 1.
VARIABLE LABELS chips '11. Dried Chips '.

* COUNT THE NUMBER OF FARMERS APPLYING AT LEAST ONE METHOD .
IF (anyvc = 1) anymethod EQ 2 .
IF (D1614 EQ 1 | D1615 EQ 1 | D1616 EQ 1 | D1617 EQ 1 | D1618 EQ 1 | D1619 EQ 1 | D16110 EQ 1 |
D2524 EQ 1 | D2525 EQ 1 | D2526 EQ 1 | D2527 EQ 1 | D2528 EQ 1 | D2529 EQ 1 |
D3521 EQ 1 | D3522 EQ 1 | D3523 EQ 1 ) anymethod EQ 1 .
VARIABLE LABELS anymethod 'Applied at Least One Improved Method' .
VALUE LABELS picbag shell drying roasting flour pbutter oil milk cake pits chips anymethod 1 'Yes' 2 'No'.

WEIGHT BY SAM_WT .
CTABLES
/FORMAT empty=blank
/VLABELS VARIABLES = picbag shell drying roasting flour pbutter oil milk cake pits chips anymethod DISPLAY=LABEL
/TABLE (picbag + shell + drying + roasting + flour + pbutter + oil + milk + cake + pits + chips + anymethod)

```

```

[COUNT "Number of Farmers" ROWPCT.COUNT "% FARMERS" ]
/CLABELS ROWLABELS=OPPOSITE
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= picbag shell drying roasting flour pbutter oil milk cake pits chips anymethod
MISSING=INCLUDE TOTAL=YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'Weighted Number and Percent of Farmers Applying At Least One Improved Storage or Preservation Practice in
Groundnuts, Soybeans or OFSP: 2016-2017 Growing Season ' .
WEIGHT OFF.

```

* ===== END SYNTAX ===== .

* ===== CLIMATE CHANGE ===== .

* 2.2-1 Number of People using climate change information or implementing risk reducing actions
to improve resilience to climate change

=====

* NUMBER OF PEOPLE USING CLIMATE INFORMATION OR IMPLEMENTING RISK
REDUCING ACTIONS TO IMPROVE RESILIENCE TO CLIMATE CHANGE .

* ----- .

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC _6Nov Weight Final.sav'.

IF (D10 = 1 OR D20 = 1 OR D30 = 1) RESILIENCE = 2 .

VARIABLE LABELS RESILIENCE 'RESILIENCE TO CLIMATE CHANGE' .

```

IF (RESILIENCE = 2 AND (D122_6 = 1 OR D122_8 = 1 OR D2226 = 1 OR D3223 = 1
OR D122_1 = 1 OR D122_2 = 1 OR D122_3 = 1 OR D122_4 = 1 OR D122_5 = 1 OR D142_2 = 1
OR D142_3 = 1 OR D142_4 = 1 OR D142_5 = 1 OR D142_6 = 1 OR D142_7 = 1
OR D2221 = 1 OR D2222 = 1 OR D2223 = 1 OR D2224 = 1 OR D2225 = 1 OR D2321 = 1
OR D2322 = 1 OR D2323 = 1 OR D2324 = 1 OR D2325 = 1 OR D2326 = 1
OR D3221 = 1 OR D3222 = 1 OR D332_1 = 1 OR D332_2 = 1 OR D332_3 = 1 OR D332_4 = 1
OR D332_5 = 1 OR D332_6 = 1
OR D151 = 1 OR D241 = 1 OR D341 = 1
OR E13_1 = 1 OR E13_2 = 1 OR E23 = 1 OR E33_1 = 1 OR E33_2 = 1 OR E33_3 = 1 OR E33_4 = 1
OR E33_5 = 1 OR E33_6 = 1
OR E33_7 = 1 OR E42_1 = 1 OR E42_2 = 1 OR E42_3 = 1 OR E42_4 = 1 ) ) RESILIENCE = 1.
VALUE LABELS RESILIENCE 1 'YES' 2 'NO' .
EXECUTE.

```

WEIGHT BY SAM_WT .

CTABLES

/VLABELS VARIABLES=RESILIENCE A01B

DISPLAY=NONE

/TABLE A01B BY RESILIENCE [COUNT "Number of Farmers" ROWPCT.COUNT "% of Farmers"]

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= RESILIENCE A01B MISSING=INCLUDE ORDER=A EMPTY=include
TOTAL = YES

/TITLES caption= 'Source: USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE = 'TABLE R1: Weighted Number and Percent of Farmers Using Climate Information or
Implementing Risk Reducing Actions by Sex: 2016-2017 Growing Season' .

WEIGHT OFF .

* ===== END SYNTAX ===== .

* ===== FARMERS APPLYING IMPROVED TECHNOLOGY =====

===== .

* 1.4.2 Number of Farmers and others who have applied improved technologies or management practices with USG assistance

=====

===== .

* NUMBER OF FARMERS WHO APPLIED IMPROVED TECHNOLOGIES AND MANAGEMENT PRACTICES .

* NOTE: NON-CROP SPECIFIC TECHNOLOGIES AND MANAGEMENT PRACTICES ON WATER MANAGEMENT AND CLIMATE ADAPTATION ARE CAPTURED UNDER 'OTHERS: NON-CROP SPECIFIC'

* ===== .

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC_6Nov Weight Final.sav'.

* ----- GROUNDNUTS ----- .

IF (D10 EQ 1) VC1 = 1 .

VARIABLE LABELS VC1 'GROUNDNUTS' .

IF (D20 EQ 1) VC2 = 2 .

VARIABLE LABELS VC2 'SOYBEANS' .

IF (D30 EQ 1) VC3 = 3 .

VARIABLE LABELS VC3 'OFSP' .

* 1 CROP GENETICS (CG).

IF (VC1 = 1) CG11 = 0.

IF (D122_6 EQ 1) CG11 = 1.

VARIABLE LABELS CG11 'Early Maturing Varieties' .

IF (VC1 = 1) CG21 = 0 .

IF (D122_8 EQ 1) CG21 = 1.

VARIABLE LABELS CG21 'Stress Tolerant Varieties' .

IF (CG11 EQ 1 | CG21 EQ 1) ACG1 = 1.

VARIABLE LABELS ACG1 'APPLIED CROP GENETICS' .

IF (VC1 EQ 1) ANYCG11 = 2.

IF (ACG1 EQ 1) ANYCG11 = 1 .

VARIABLE LABELS ANYCG11 'ANY CROP GENETICS' .

* 2 CULTURAL PRACTICES (CP).

IF (VC1 = 1) CP11 = 0.

IF (D122_1 EQ 1) CP11 = 1.

VARIABLE LABELS CP11 'Double Up Legumes' .

IF (VC1 = 1) CP21 = 0.

IF (D122_2 EQ 1) CP21 = 1.

VARIABLE LABELS CP21 'Crop Rotation' .

IF (VC1 = 1) CP31 = 0.

IF (D122_3 EQ 1) CP31 = 1.

VARIABLE LABELS CP31 'Jab Planting' .

IF (VC1 = 1) CP41 = 0.

IF (D122_4 EQ 1) CP41 = 1.

VARIABLE LABELS CP41 'Double Row Planting' .

IF (VC1 = 1) CP51 = 0.

IF (D122_5 EQ 1) CP51 = 1.

VARIABLE LABELS CP51 'Crop Diversification' .

IF (VC1 = 1) CP61 = 0.

IF (D142_2 EQ 1) CP61 = 1.

VARIABLE LABELS CP61 'Mulching' .

IF (VC1 = 1) CP71 = 0.

IF (D142_3 EQ 1) CP71 = 1.

VARIABLE LABELS CP71 'Box Ridges' .

IF (VC1 = 1) CP81 = 0.

```

IF (D142_4 EQ 1) CP8I = 1.
VARIABLE LABELS CP8I 'Contour Ridges' .
IF (VC1 = 1) CP9I = 0.
IF (D142_5 EQ 1) CP9I = 1.
VARIABLE LABELS CP9I 'Infiltration Pits' .
IF (VC1 = 1) CP10I = 0.
IF (D142_6 EQ 1) CP10I = 1.
VARIABLE LABELS CP10I 'Swales' .
IF (VC1 = 1) CP11I = 0.
IF (D142_7 EQ 1) CP11I = 1.
VARIABLE LABELS CP11I 'Contour Vegetation Row' .

IF (CP1I EQ 1 | CP2I EQ 1 | CP3I EQ 1 | CP4I EQ 1 | CP5I EQ 1 | CP6I EQ 1 | CP7I EQ 1 | CP8I EQ 1
    | CP9I EQ 1 | CP10I EQ 1 | CP11I EQ 1) ACPI = 1.
VARIABLE LABELS ACPI 'APPLIED CULTURAL PRACTICES' .
IF (VC1 EQ 1) ANYCP2I = 2.
IF (ACPI EQ 1) ANYCP2I = 1 .
VARIABLE LABELS ANYCP2I 'ANY CULTURAL PRACTICES' .

* 3 DISEASE MANAGEMENT (DM).
IF (VC1 = 1) DM3I = 0.
IF (D122_2 EQ 1) DM3I = 1.
VARIABLE LABELS DM3I 'Crop Rotation' .

IF (DM3I EQ 1) ADM1 = 1 .
VARIABLE LABELS ADM1 'APPLIED DISEASE MANAGEMENT' .
IF (VC1 EQ 1) ANYDM3I = 2.
IF (ADM1 EQ 1) ANYDM3I = 1 .
VARIABLE LABELS ANYDM3I 'ANY DISEASE MANAGEMENT' .

* 4 SOIL FERTILITY (SF) .
IF (VC1 = 1) SF1I = 0.
IF (D142_1 EQ 1) SF1I = 1.
VARIABLE LABELS SF1I 'Zero Tillage' .
IF (VC1 = 1) SF2I = 0.
IF (D142_2 EQ 1) SF2I = 1.
VARIABLE LABELS SF2I 'Mulching' .
IF (VC1 = 1) SF3I = 0.
IF (D142_3 EQ 1) SF3I = 1.
VARIABLE LABELS SF3I 'Box Ridges' .
IF (VC1 = 1) SF4I = 0.
IF (D142_4 EQ 1) SF4I = 1.
VARIABLE LABELS SF4I 'Contour Ridges' .
IF (VC1 = 1) SF5I = 0.
IF (D142_5 EQ 1) SF5I = 1.
VARIABLE LABELS SF5I 'Infiltration Pits' .
IF (VC1 = 1) SF6I = 0.
IF (D122_7 EQ 1) SF6I = 1.
VARIABLE LABELS SF6I 'Inoculant' .

IF (SF1I EQ 1 | SF2I EQ 1 | SF3I EQ 1 | SF4I EQ 1 | SF5I EQ 1 | SF6I EQ 1) ASF1 = 1.
VARIABLE LABELS ASF1 'APPLIED SOIL FERTILITY' .
IF (VC1 EQ 1) ANYSF4I = 2.
IF (ASF1 EQ 1) ANYSF4I = 1 .
VARIABLE LABELS ANYSF4I 'ANY SF' .

* 5 IRRIGATION (IRR) .
IF (VC1 = 1) IRR1I = 0.
IF (D151 EQ 1) IRR1I = 1.
VARIABLE LABELS IRR1I 'Irrigation' .

IF (IRR1I EQ 1) AIRR1 = 1 .
VARIABLE LABELS AIRR1 'APPLIED IRRIGATION' .
IF (VC1 EQ 1) ANYIRR5I = 2.

```

IF (AIRRI EQ 1) ANYIRR5I = 1.
VARIABLE LABELS ANYIRR5I 'ANY IRRIGATION'.

* 6 WATER MANAGEMENT (WM).

IF (VCI = 1) WM1I = 0.
IF (D142_2 EQ 1) WM1I = 1.
VARIABLE LABELS WM1I 'Mulching'.
IF (VCI = 1) WM2I = 0.
IF (D142_3 EQ 1) WM2I = 1.
VARIABLE LABELS WM2I 'Box Ridging'.
IF (VCI = 1) WM3I = 0.
IF (D142_4 EQ 1) WM3I = 1.
VARIABLE LABELS WM3I 'Contour Ridging'.
IF (VCI = 1) WM4I = 0.
IF (D142_5 EQ 1) WM4I = 1.
VARIABLE LABELS WM4I 'Infiltration Pits'.
IF (VCI = 1) WM5I = 0.
IF (D142_6 EQ 1) WM5I = 1.
VARIABLE LABELS WM5I 'Swales'.
IF (VCI = 1) WM6I = 0.
IF (D142_7 EQ 1) WM6I = 1.
VARIABLE LABELS WM6I 'Contour Vegetation Rows'.

IF (WM1I EQ 1 | WM2I EQ 1 | WM3I EQ 1 | WM4I EQ 1 | WM5I EQ 1 | WM6I EQ 1) AWM1 = 1.
VARIABLE LABELS AWM1 'APPLIED WATER MANAGEMENT'.
IF (VCI EQ 1) ANYWM6I = 2.
IF (AWM1 EQ 1) ANYWM6I = 1.
VARIABLE LABELS ANYWM6I 'ANY WATER MANAGEMENT'.

* 7 CLIMATE MITIGATION.

IF (VCI = 1) CM1I = 0.
IF (D122_7 EQ 1) CM1I = 1.
VARIABLE LABELS CM1I 'Inoculant'.
IF (VCI = 1) CM2I = 0.
IF (D142_1 EQ 1) CM2I = 1.
VARIABLE LABELS CM2I 'Zero Tillage'.

IF (CM1I EQ 1 | CM2I EQ 1) ACM1 = 1.
VARIABLE LABELS ACM1 'APPLIED CLIMATE MITIGATION'.
IF (VCI EQ 1) ANYCM7I = 2.
IF (ACM1 EQ 1) ANYCM7I = 1.
VARIABLE LABELS ANYCM7I 'ANY CLIMATE MITIGATION'.

* 8 CLIMATE ADAPTATION.

IF (VCI = 1) CA1I = 0.
IF (D122_6 EQ 1) CA1I = 1.
VARIABLE LABELS CA1I 'Early Maturing'.
IF (VCI = 1) CA2I = 0.
IF (D122_8 EQ 1) CA2I = 1.
VARIABLE LABELS CA2I 'Stress Tolerant'.
IF (VCI = 1) CA3I = 0.
IF (D122_1 EQ 1) CA3I = 1.
VARIABLE LABELS CA3I 'Double Up Legumes'.
IF (VCI = 1) CA4I = 0.
IF (D122_2 EQ 1) CA4I = 1.
VARIABLE LABELS CA4I 'Crop Rotation'.
IF (VCI = 1) CA5I = 0.
IF (D122_3 EQ 1) CA5I = 1.
VARIABLE LABELS CA5I 'Jab Planting'.
IF (VCI = 1) CA6I = 0.
IF (D122_4 EQ 1) CA6I = 1.
VARIABLE LABELS CA6I 'Double Row Planting'.
IF (VCI = 1) CA7I = 0.

```

IF (D122_5 EQ 1) CA7I = 1.
VARIABLE LABELS CA7I 'Crop Diversification'.
IF (VCI = 1) CA8I = 0.
IF (D142_2 EQ 1) CA8I = 1.
VARIABLE LABELS CA8I 'Mulching'.
IF (VCI = 1) CA9I = 0.
IF (D142_3 EQ 1) CA9I = 1.
VARIABLE LABELS CA9I 'Box Ridges'.
IF (VCI = 1) CA10I = 0.
IF (D142_4 EQ 1) CA10I = 1.
VARIABLE LABELS CA10I 'Contour Ridges'.
IF (VCI = 1) CA11I = 0.
IF (D142_5 EQ 1) CA11I = 1.
VARIABLE LABELS CA11I 'Infiltration Pits'.
IF (VCI = 1) CA12I = 0.
IF (D142_6 EQ 1) CA12I = 1.
VARIABLE LABELS CA12I 'Swales'.
IF (VCI = 1) CA13I = 0.
IF (D142_7 EQ 1) CA13I = 1.
VARIABLE LABELS CA13I 'Contour Vegetation Row'.
IF (VCI = 1) CA14I = 0.
IF (D151 EQ 1) CA14I = 1.
VARIABLE LABELS CA14I 'Irrigation'.

IF (CA1I EQ 1 | CA2I EQ 1 | CA3I EQ 1 | CA4I EQ 1 | CA5I EQ 1 | CA6I EQ 1 | CA7I EQ 1 | CA8I EQ 1
    | CA9I EQ 1 | CA10I EQ 1 | CA11I EQ 1 | CA12I EQ 1 | CA13I EQ 1 | CA14I EQ 1) ACAI = 1.
VARIABLE LABELS ACAI 'APPLIED CLIMATE ADAPTATION'.
IF (VCI EQ 1) ANYCA8I = 2.
IF (ACAI EQ 1) ANYCA8I = 1.
VARIABLE LABELS ANYCA8I 'ANY CLIMATE ADAPTATION'.

* 9 MARKETING DISTRIBUTION (MD).
IF (VCI = 1) MD1I = 0.
IF (D1613 EQ 1) MD1I = 1.
VARIABLE LABELS MD1I 'Marketing Distribution'.

IF (MD1I EQ 1) AMDI = 1.
VARIABLE LABELS AMDI 'APPLIED MARKETING DISTRIBUTION'.
IF (VCI EQ 1) ANYMD9I = 2.
IF (AMDI EQ 1) ANYMD9I = 1.
VARIABLE LABELS ANYMD9I 'ANY MARKETING DISTRIBUTION'.

* 10 POST HARVEST HANDLING STORAGE (PHS).
IF (VCI = 1) PHS1I = 0.
IF (D1611 EQ 1) PHS1I = 1.
VARIABLE LABELS PHS1I 'Mechanized Tools'.
IF (VCI = 1) PHS2I = 0.
IF (D1612 EQ 1) PHS2I = 1.
VARIABLE LABELS PHS2I 'Moisture Meter'.
IF (VCI = 1) PHS3I = 0.
IF (D1614 EQ 1) PHS3I = 1.
VARIABLE LABELS PHS3I 'Storage Bags(PIC, Zerofly)'.
IF (VCI = 1) PHS4I = 0.
IF (D1615 EQ 1) PHS4I = 1.
VARIABLE LABELS PHS4I 'Store in Shell'.
IF (VCI = 1) PHS5I = 0.
IF (D1616 EQ 1) PHS5I = 1.
VARIABLE LABELS PHS5I 'Drying'.

IF (PHS1I EQ 1 | PHS2I EQ 1 | PHS3I EQ 1 | PHS4I EQ 1 | PHS5I EQ 1) APHSI = 1.
VARIABLE LABELS APHSI 'APPLIED PHS'.
IF (VCI EQ 1) ANYPHS10I = 2.
IF (APHSI EQ 1) ANYPHS10I = 1.
VARIABLE LABELS ANYPHS10I 'ANY PHS'.

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* 1 PROCESSING PRESERVING (PP).
IF(VCI = 1) PP11 = 0.
IF (D1617 EQ 1) PP11 = 1.
VARIABLE LABELS PP11 'Roasting' .
IF(VCI = 1) PP21 = 0.
IF (D1618 EQ 1) PP21 = 1.
VARIABLE LABELS PP21 'Processing into Flour' .
IF(VCI = 1) PP31 = 0.
IF (D1619 EQ 1) PP31 = 1.
VARIABLE LABELS PP31 'Processing into P. Butter' .
IF(VCI = 1) PP41 = 0.
IF (D16110 EQ 1) PP41 = 1.
VARIABLE LABELS PP41 'Processing into Oil' .

IF (PP11 EQ 1 | PP21 EQ 1 | PP31 EQ 1 | PP41 EQ 1 ) APP1 = 1.
VARIABLE LABELS APP1 'APPLIED PROCESSING PRESERVING' .
IF (VCI EQ 1) ANYPP111 = 2.
IF (APP1 EQ 1) ANYPP111 = 1 .
VARIABLE LABELS ANYPP111 'ANY PP' .

* APPLIED ANY TECHNOLOGY .
IF(VCI = 1) ANYTECH1 = 2.
IF (ANYCG11 = 1 | ANYCP21 = 1 | ANYDM31 = 1 | ANYSF41 = 1 | ANYIRR51 = 1 | ANYWM61 = 1 |
    ANYCM71 = 1 | ANYCA81 = 1 | ANYMD91 = 1 | ANYPHS101 = 1 | ANYPP111 = 1) ANYTECH1 = 1.
VARIABLE LABELS ANYTECH1 'APPLIED ONE OR MORE TECHNOLOGIES' .
IF (VCI = 1) ANYG = 2 .
IF (ANYTECH1 = 1) ANYG = 1.
VARIABLE LABELS ANYG 'ONE OR MORE GROUNDNUTS TECHNOLOGIES' .
* ===== .

* ----- SOYBEANS ----- .
* 1 CROP GENETICS (CG).
IF(VC2 = 2) CG12 = 0.
IF (D2226 EQ 1) CG12 = 1.
VARIABLE LABELS CG12 'Early Maturing Varieties' .

IF (CG12 EQ 1) ACG2 = 1 .
VARIABLE LABELS ACG2 'APPLIED CROP GENETICS' .
IF (VC2 EQ 2) ANYCG12 = 2 .
IF (ACG2 EQ 1) ANYCG12 = 1 .
VARIABLE LABELS ANYCG12 'ANY CROP GENETICS' .

* 2 CULTURAL PRACTICES (CP).
IF(VC2 = 2) CP12 = 0.
IF (D2221 EQ 1) CP12 = 1.
VARIABLE LABELS CP12 'Double Up Legumes' .
IF(VC2 = 2) CP22 = 0.
IF (D2222 EQ 1) CP22 = 1.
VARIABLE LABELS CP22 'Crop Rotation' .
IF(VC2 = 2) CP32 = 0.
IF (D2223 EQ 1) CP32 = 1.
VARIABLE LABELS CP32 'Jab Planting' .
IF(VC2 = 2) CP42 = 0.
IF (D2224 EQ 1) CP42 = 1.
VARIABLE LABELS CP42 'Double Row Planting' .
IF(VC2 = 2) CP52 = 0.
IF (D2225 EQ 1) CP52 = 1.
VARIABLE LABELS CP52 'Crop Diversification' .
IF(VC2 = 2) CP62 = 0.
IF (D2321 EQ 1) CP62 = 1.
VARIABLE LABELS CP62 'Mulching' .
IF(VC2 = 2) CP72 = 0.
IF (D2322 EQ 1) CP72 = 1.

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VARIABLE LABELS CP72 'Box Ridges' .
 IF (VC2 = 2) CP82 = 0.
 IF (D2323 EQ 1) CP82 = 1.
 VARIABLE LABELS CP82 'Contour Ridges' .
 IF (VC2 = 2) CP92 = 0.
 IF (D2324 EQ 1) CP92 = 1.
 VARIABLE LABELS CP92 'Infiltration Pits' .
 IF (VC2 = 2) CPI02 = 0.
 IF (D2325 EQ 1) CPI02 = 1.
 VARIABLE LABELS CPI02 'Swales' .
 IF (VC2 = 2) CPI12 = 0.
 IF (D2326 EQ 1) CPI12 = 1.
 VARIABLE LABELS CPI12 'Contour Vegetation Row' .

 IF (CPI2 EQ 1 | CP22 EQ 1 | CP32 EQ 1 | CP42 EQ 1 | CP52 EQ 1 | CP62 EQ 1 | CP72 EQ 1 | CP82 EQ 1
 | CP92 EQ 1 | CPI02 EQ 1 | CPI12 EQ 1) ACP2 = 1.
 VARIABLE LABELS ACP2 'APPLIED CULTURAL PRACTICES' .
 IF (VC2 EQ 2) ANYCP22 = 2 .
 IF (ACP2 EQ 1) ANYCP22 = 1 .
 VARIABLE LABELS ANYCP22 'ANY CULTURAL PRACTICES' .

 * 3 DISEASE MANAGEMENT (DM).
 IF (VC2 = 2) DM12 = 0.
 IF (D2222 EQ 1) DM12 = 1.
 VARIABLE LABELS DM12 'Crop Rotation' .

 IF (DM12 EQ 1) ADM2 = 1 .
 VARIABLE LABELS ADM2 'APPLIED DISEASE MANAGEMENT' .
 IF (VC2 EQ 2) ANYDM32 = 2 .
 IF (ADM2 EQ 1) ANYDM32 = 1 .
 VARIABLE LABELS ANYDM32 'ANY DISEASE MANAGEMENT' .

 * 4 SOIL FERTILITY (SF).
 IF (VC2 = 2) SF12 = 0.
 IF (D2321 EQ 1) SF12 = 1.
 VARIABLE LABELS SF12 'Mulching' .
 IF (VC2 = 2) SF22 = 0.
 IF (D2322 EQ 1) SF22 = 1.
 VARIABLE LABELS SF22 'Box Ridges' .
 IF (VC2 = 2) SF32 = 0.
 IF (D2323 EQ 1) SF32 = 1.
 VARIABLE LABELS SF32 'Contour Ridges' .
 IF (VC2 = 2) SF42 = 0.
 IF (D2324 EQ 1) SF42 = 1.
 VARIABLE LABELS SF42 'Infiltration Pits' .
 IF (VC2 = 2) SF52 = 0.
 IF (D2228 EQ 1) SF52 = 1.
 VARIABLE LABELS SF52 'Inoculant' .

 IF (SF12 EQ 1 | SF22 EQ 1 | SF32 EQ 1 | SF42 EQ 1 | SF52 EQ 1) ASF2 = 1.
 VARIABLE LABELS ASF2 'APPLIED SOIL FERTILITY' .
 IF (VC2 EQ 2) ANYSF42 = 2 .
 IF (ASF2 EQ 1) ANYSF42 = 1 .
 VARIABLE LABELS ANYSF42 'ANY SF' .

 * 5 IRRIGATION (IRR).
 IF (VC2 = 2) IRR12 = 0.
 IF (D241 EQ 1) IRR12 = 1.
 VARIABLE LABELS IRR12 'Irrigation' .

 IF (IRR12 EQ 1) AIRR2 = 1 .
 VARIABLE LABELS AIRR2 'APPLY IRRIGATION' .
 IF (VC2 EQ 2) ANYIRR52 = 2 .
 IF (AIRR2 EQ 1) ANYIRR52 = 1 .

VARIABLE LABELS ANYIRR52 ' ANY IRR' .

* 6 WATER MANAGEMENT (WM).

IF(VC2 = 2) WM12 = 0.

IF (D2321 EQ 1) WM12 = 1.

VARIABLE LABELS WM12 'Mulching' .

IF(VC2 = 2) WM22 = 0.

IF (D2322 EQ 1) WM22 = 1.

VARIABLE LABELS WM22 'Box Ridges' .

IF(VC2 = 2) WM32 = 0.

IF (D2323 EQ 1) WM32 = 1.

VARIABLE LABELS WM32 'Contour Ridges' .

IF(VC2 = 2) WM42 = 0.

IF (D2324 EQ 1) WM42 = 1.

VARIABLE LABELS WM42 'Infiltration Pits' .

IF(VC2 = 2) WM52 = 0.

IF (D2325 EQ 1) WM52 = 1.

VARIABLE LABELS WM52 'Swales' .

IF(VC2 = 2) WM62 = 0.

IF (D2326 EQ 1) WM62 = 1.

VARIABLE LABELS WM62 'Contour Vegetation Rows' .

IF (WM12 EQ 1 | WM22 EQ 1 | WM32 EQ 1 | WM42 EQ 1 | WM52 EQ 1 | WM62 EQ 1) AWM2 = 1.

VARIABLE LABELS AWM2 'APPLIED WATER MANAGEMENT' .

IF (VC2 EQ 2) ANYWM62 = 2 .

IF (AWM2 EQ 1) ANYWM62 = 1 .

VARIABLE LABELS ANYWM62 ' ANY WATER MANAGEMEN' .

* 7 CLIMATE MITIGATION .

IF(VC2 = 2) CM12 = 0.

IF (D2228 EQ 1) CM12 = 1.

VARIABLE LABELS CM12 'Inoculant' .

IF(CM12 EQ 1) ACM2 = 1 .

VARIABLE LABELS ACM2 'APPLIED CLIMATE MITIGATION' .

IF (VC2 EQ 2) ANYCM72 = 2 .

IF (ACM2 EQ 1) ANYCM72 = 1 .

VARIABLE LABELS ANYCM72 ' ANY CLIMATE MITIGATION' .

* 8 CLIMATE ADAPTATION .

IF(VC2 = 2) CA12 = 0.

IF (D2226 EQ 1) CA12 = 1.

VARIABLE LABELS CA12 'Early Maturing Varieties' .

IF(VC2 = 2) CA22 = 0.

IF (D2221 EQ 1) CA22 = 1.

VARIABLE LABELS CA22 'Double Up Legumes' .

IF(VC2 = 2) CA32 = 0.

IF (D2222 EQ 1) CA32 = 1.

VARIABLE LABELS CA32 'Crop Rotation' .

IF(VC2 = 2) CA42 = 0.

IF (D2223 EQ 1) CA42 = 1.

VARIABLE LABELS CA42 'Jab Planting' .

IF(VC2 = 2) CA52 = 0.

IF (D2224 EQ 1) CA52 = 1.

VARIABLE LABELS CA52 'Double Row Planting' .

IF(VC2 = 2) CA62 = 0.

IF (D2225 EQ 1) CA62 = 1.

VARIABLE LABELS CA62 ' Crop Diversification' .

IF(VC2 = 2) CA72 = 0.

IF (D2321 EQ 1) CA72 = 1.

VARIABLE LABELS CA72 'Mulching' .

IF(VC2 = 2) CA82 = 0.

IF (D2322 EQ 1) CA82 = 1.

VARIABLE LABELS CA82 'Box Ridges' .

IF (VC2 = 2) CA92 = 0.
 IF (D2323 EQ 1) CA92 = 1.
 VARIABLE LABELS CA92 'Contour Ridges'.
 IF (VC2 = 2) CA102 = 0.
 IF (D2324 EQ 1) CA102 = 1.
 VARIABLE LABELS CA102 'Infiltration Pits'.
 IF (VC2 = 2) CA112 = 0.
 IF (D2325 EQ 1) CA112 = 1.
 VARIABLE LABELS CA112 'Swales'.
 IF (VC2 = 2) CA122 = 0.
 IF (D2326 EQ 1) CA122 = 1.
 VARIABLE LABELS CA122 'Contour Vegetation Row'.
 IF (VC2 = 2) CA132 = 0.
 IF (D241 EQ 1) CA132 = 1.
 VARIABLE LABELS CA132 'Irrigation'.

IF (CA12 EQ 1 | CA22 EQ 1 | CA32 EQ 1 | CA42 EQ 1 | CA52 EQ 1 | CA62 EQ 1 | CA72 EQ 1 | CA82 EQ 1
 | CA92 EQ 1 | CA102 EQ 1 | CA112 EQ 1 | CA122 EQ 1 | CA132 EQ 1) ACA2 = 1.
 VARIABLE LABELS ACA2 'APPLIED CLIMATE ADAPTATION'.
 IF (VC2 EQ 2) ANYCA82 = 2.
 IF (ACA2 EQ 1) ANYCA82 = 1.
 VARIABLE LABELS ANYCA82 'ANY CLIMATE ADAPTATION'.

* 9 MARKETING DISTRIBUTION (MD).
 IF (VC2 EQ 2) MD12 = 0.
 IF (D2523 EQ 1) MD12 = 1.
 VARIABLE LABELS MD12 'Wharehouse R Systems'.

IF (MD12 EQ 1) AMD2 = 1.
 VARIABLE LABELS AMD2 'APPLIED MARKETING DISTRIBUTION'.
 IF (VC2 EQ 2) ANYMD92 = 2.
 IF (AMD2 EQ 1) ANYMD92 = 1.
 VARIABLE LABELS ANYMD92 'ANY MARKETING DISTRIBUTION'.

* 10 POST HARVEST HANDLING STORAGE (PHS).
 IF (VC2 = 2) PHS12 = 0.
 IF (D2521 EQ 1) PHS12 = 1.
 VARIABLE LABELS PHS12 'Mechanized Tools'.
 IF (VC2 = 2) PHS22 = 0.
 IF (D2522 EQ 1) PHS22 = 1.
 VARIABLE LABELS PHS22 'Moisture Meter'.
 IF (VC2 = 2) PHS32 = 0.
 IF (D2524 EQ 1) PHS32 = 1.
 VARIABLE LABELS PHS32 'Storage Bags(PIC, Zerofly'.
 IF (VC2 = 2) PHS42 = 0.
 IF (D2525 EQ 1) PHS42 = 1.
 VARIABLE LABELS PHS42 'Drying'.

IF (PHS12 EQ 1 | PHS22 EQ 1 | PHS32 EQ 1 | PHS42 EQ 1) APHS2 = 1.
 VARIABLE LABELS APHS2 'APPLIED PHS'.
 IF (VC2 EQ 2) ANYPHS102 = 2.
 IF (APHS2 EQ 1) ANYPHS102 = 1.
 VARIABLE LABELS ANYPHS102 'ANY PHS'.

* 11 PROCESSING PRESERVING (PP).
 IF (VC2 = 2) PP12 = 0.
 IF (D2526 EQ 1) PP12 = 1.
 VARIABLE LABELS PP12 'Processing into Flour'.
 IF (VC2 = 2) PP22 = 0.
 IF (D2527 EQ 1) PP22 = 1.
 VARIABLE LABELS PP22 'Processing into Milk'.
 IF (VC2 = 2) PP32 = 0.
 IF (D2528 EQ 1) PP32 = 1.
 VARIABLE LABELS PP32 'Processing into Oil'.

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IF (VC2 = 2) PP42 = 0.
IF (D2529 EQ 1) PP42 = 1.
VARIABLE LABELS PP42 'Processing into Cake'.

IF (PP12 EQ 1 | PP22 EQ 1 | PP32 EQ 1 | PP42 EQ 1) APP2 = 1.
VARIABLE LABELS APP2 'APPLIED PROCESSING PRESERVING'.
IF (VC2 EQ 2) ANYPPI12 = 2.
IF (APP2 EQ 1) ANYPPI12 = 1.
VARIABLE LABELS ANYPPI12 'ANY PP'.

* APPLIED ANY TECHNOLOGY.
IF (VC2 = 2) ANYTECH2 = 2.
IF (ANYCG12 = 1 | ANYCP22 = 1 | ANYDM32 = 1 | ANYSF42 = 1 | ANYIRR52 = 1 | ANYWM62 = 1 |
    ANYCM72 = 1 | ANYCA82 = 1 | ANYMD92 = 1 | ANYPHS102 = 1 | ANYPPI12 = 1) ANYTECH2 = 1.
VARIABLE LABELS ANYTECH2 'APPLIED ONE OR MORE TECHNOLOGIES'.
IF (VC2 = 2) ANYS = 2.
IF (ANYTECH2 = 1) ANYS = 1.
VARIABLE LABELS ANYS 'ONE OR MORE SOYBEANS TECHNOLOGIES'.
* =====.

* ----- OFSP -----.

* 1 CROP GENETICS (CG).
IF (VC3 EQ 3) CG13 = 0.
IF (D3223 EQ 1) CG13 = 1.
VARIABLE LABELS CG13 'Drought Tolerant'.

IF (CG13 EQ 1) ACG3 = 1.
VARIABLE LABELS ACG3 'APPLIED CROP GENETICS'.
IF (VC3 EQ 3) ANYCG13 = 2.
IF (ACG3 EQ 1) ANYCG13 = 1.
VARIABLE LABELS ANYCG13 'ANY CROP GENETICS'.

* 2 CULTURAL PRACTICES (CP).
IF (VC3 EQ 3) CP13 = 0.
IF (D3221 EQ 1) CP13 = 1.
VARIABLE LABELS CP13 'Crop Rotation'.
IF (VC3 EQ 3) CP23 = 0.
IF (D3222 EQ 1) CP23 = 1.
VARIABLE LABELS CP23 'Crop Diversification'.
IF (VC3 EQ 3) CP33 = 0.
IF (D332_1 EQ 1) CP33 = 1.
VARIABLE LABELS CP33 'Mulching'.
IF (VC3 EQ 4) CP43 = 0.
IF (D332_2 EQ 1) CP43 = 1.
VARIABLE LABELS CP43 'Box Ridges'.
IF (VC3 EQ 3) CP53 = 0.
IF (D332_3 EQ 1) CP53 = 1.
VARIABLE LABELS CP53 'Contour Ridges'.
IF (VC3 EQ 3) CP63 = 0.
IF (D332_4 EQ 1) CP63 = 1.
VARIABLE LABELS CP63 'Infiltration Pits'.
IF (VC3 EQ 3) CP73 = 0.
IF (D332_5 EQ 1) CP73 = 1.
VARIABLE LABELS CP73 'Swales'.
IF (VC3 EQ 3) CP83 = 0.
IF (D332_6 EQ 1) CP83 = 1.
VARIABLE LABELS CP83 'Contour Vegetation Row'.

IF (CP13 EQ 1 | CP23 EQ 1 | CP33 EQ 1 | CP43 EQ 1 | CP53 EQ 1 | CP63 EQ 1 | CP73 EQ 1 | CP83 EQ 1) ACP3 = 1.
VARIABLE LABELS ACP3 'APPLIED CULTURAL PRACTICES'.
IF (VC3 EQ 3) ANYCP23 = 2.
IF (ACP3 EQ 1) ANYCP23 = 1.
VARIABLE LABELS ANYCP23 'ANY CULTURAL PRACTICES'.

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* 3 DISEASE MANAGEMENT (DM).

IF (VC3 EQ 3) DM13 = 0 .

IF (D3221 EQ 1) DM13 = 1 .

VARIABLE LABELS DM13 'Crop Rotation' .

IF (DM13 EQ 1) ADM3 = 1 .

VARIABLE LABELS ADM3 'APPLIED DISEASE MANAGEMENT' .

IF (VC3 EQ 3) ANYDM33 = 2 .

IF (ADM3 EQ 1) ANYDM33 = 1 .

VARIABLE LABELS ANYDM33 ' ANY DISEASE MANAGEMENT' .

* 4 SOIL FERTILITY.

IF (VC3 EQ 3) SF13 = 0 .

IF (D332_1 EQ 1) SF13 = 1 .

VARIABLE LABELS SF13 'Mulching' .

IF (VC3 EQ 3) SF23 = 0 .

IF (D332_2 EQ 1) SF23 = 1 .

VARIABLE LABELS SF23 'Box Ridges' .

IF (VC3 EQ 3) SF33 = 0 .

IF (D332_3 EQ 1) SF33 = 1 .

VARIABLE LABELS SF33 'Contour Ridges' .

IF (VC3 EQ 3) SF43 = 0 .

IF (D332_4 EQ 1) SF43 = 1 .

VARIABLE LABELS SF43 'Infiltration Pits' .

IF (SF13 EQ 1 | SF23 EQ 1 | SF33 EQ 1 | SF43 EQ 1) ASF3 = 1 .

VARIABLE LABELS ASF3 'APPLIED SOIL FERTILITY' .

IF (VC3 EQ 3) ANYSF43 = 2 .

IF (ASF3 EQ 1) ANYSF43 = 1 .

VARIABLE LABELS ANYSF43 ' ANY SOIL FERTILITY' .

* 5 IRRIGATION.

IF (VC3 EQ 3) IRR13 = 0 .

IF (D341 EQ 1) IRR13 = 1 .

VARIABLE LABELS IRR13 'Irrigation' .

IF (IRR13 EQ 1) AIRR3 = 1 .

VARIABLE LABELS AIRR3 'APPLIED IRRIGATION' .

IF (VC3 EQ 3) ANYIRR53 = 2 .

IF (AIRR3 EQ 1) ANYIRR53 = 1 .

VARIABLE LABELS ANYIRR53 ' ANY IRRIGATION' .

* 6 WATER MANAGEMENT.

IF (VC3 EQ 3) WM13 = 0 .

IF (D332_1 EQ 1) WM13 = 1 .

VARIABLE LABELS WM13 'Mulching' .

IF (VC3 EQ 3) WM23 = 0 .

IF (D332_2 EQ 1) WM23 = 1 .

VARIABLE LABELS WM23 'Box Ridges' .

IF (VC3 EQ 3) WM33 = 0 .

IF (D332_3 EQ 1) WM33 = 1 .

VARIABLE LABELS WM33 'Contour Ridges' .

IF (VC3 EQ 3) WM43 = 0 .

IF (D332_4 EQ 1) WM43 = 1 .

VARIABLE LABELS WM43 'Infiltration Pits' .

IF (VC3 EQ 3) WM53 = 0 .

IF (D332_5 EQ 1) WM53 = 1 .

VARIABLE LABELS WM53 'Swales' .

IF (VC3 EQ 3) WM63 = 0 .

IF (D332_6 EQ 1) WM63 = 1 .

VARIABLE LABELS WM63 'Contour Vegetation Rows' .

IF (WM13 EQ 1 | WM23 EQ 1 | WM33 EQ 1 | WM43 EQ 1 | WM53 EQ 1 | WM63 EQ 1) AWM3 = 1 .

VARIABLE LABELS AWM3 'APPLIED WATER MANAGEMENT' .
 IF (VC3 EQ 3) ANYWM63 = 2 .
 IF (AWM3 EQ 1) ANYWM63 = 1 .
 VARIABLE LABELS ANYWM63 'ANY WATER MANAGEMENT' .

* 7 CLIMATE MITIGATION .
 IF (VC3 EQ 3) ANYCM73 = 2.
 VARIABLE LABELS ANYCM73 'ANY CLIMATE MITIGATION' .

* 8 CLIMATE ADAPTATION .
 IF (VC3 EQ 3) CA13 = 0 .
 IF (D3223 EQ 1) CA13 = 1.
 VARIABLE LABELS CA13 'Drought Tolerant Varieties' .
 IF (VC3 EQ 3) CA23 = 0 .
 IF (D3221 EQ 1) CA23 = 1.
 VARIABLE LABELS CA23 'Crop Rotation' .
 IF (VC3 EQ 3) CA33 = 0 .
 IF (D3222 EQ 1) CA33 = 1.
 VARIABLE LABELS CA33 'Crop Diversification' .
 IF (VC3 EQ 3) CA43 = 0 .
 IF (D332_1 EQ 1) CA43 = 1.
 VARIABLE LABELS CA43 'Mulching' .
 IF (VC3 EQ 3) CA53 = 0 .
 IF (D332_2 EQ 1) CA53 = 1.
 VARIABLE LABELS CA53 'Box Ridges' .
 IF (VC3 EQ 3) CA63 = 0 .
 IF (D332_3 EQ 1) CA63 = 1.
 VARIABLE LABELS CA63 'Contour Ridges' .
 IF (VC3 EQ 3) CA73 = 0 .
 IF (D332_4 EQ 1) CA73 = 1.
 VARIABLE LABELS CA73 'Infiltration Pits' .
 IF (VC3 EQ 3) CA83 = 0 .
 IF (D332_5 EQ 1) CA83 = 1.
 VARIABLE LABELS CA83 'Swales' .
 IF (VC3 EQ 3) CA93 = 0 .
 IF (D332_6 EQ 1) CA93 = 1.
 VARIABLE LABELS CA93 'Contour Vegetation Rows' .
 IF (VC3 EQ 3) CA103 = 0 .
 IF (D341 EQ 1) CA103 = 1.
 VARIABLE LABELS CA103 'Irrigation' .

 IF (CA13 EQ 1 | CA23 EQ 1 | CA33 EQ 1 | CA43 EQ 1 | CA53 EQ 1 | CA63 EQ 1 | CA73 EQ 1 | CA83 EQ 1
 | CA93 EQ 1 | CA103) ACA3 = 1.
 VARIABLE LABELS ACA3 'APPLIED CLIMATE ADAPTATION' .
 IF (VC3 EQ 3) ANYCA83 = 2 .
 IF (ACA3 EQ 1) ANYCA83 = 1 .
 VARIABLE LABELS ANYCA83 'ANY CLIMATE ADAPTATION' .

* 9 MARKETING DISTRIBUTION (MD) .
 IF (VC3 EQ 3) ANYMD93 = 2.
 VARIABLE LABELS ANYMD93 'ANY MARKETING DISTRIBUTION' .

* 10 POST HARVEST HANDLING STORAGE (PHS).
 IF (VC3 EQ 3) PHS13 = 0 .
 IF (D3521 EQ 1) PHS13 = 1.
 VARIABLE LABELS PHS13 'Pits With Ash' .

 IF (PHS13 EQ 1) APHS3 = 1 .
 VARIABLE LABELS APHS3 'APPLIED PHS' .
 IF (VC3 EQ 3) ANYPHS103 = 2 .
 IF (APHS3 EQ 1) ANYPHS103 = 1 .
 VARIABLE LABELS ANYPHS103 'ANY POST HARVEST HANDLING STORAGE' .

* 11 PROCESSING PRESERVING (PP).

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IF (VC3 EQ 3) PP13 = 0 .
IF (D3522 EQ 1) PP13 = 1.
VARIABLE LABELS PP13 'Processing into Flour' .
IF (VC3 EQ 3) PP23 = 0 .
IF (D3523 EQ 1) PP23 = 1.
VARIABLE LABELS PP23 'Processing into Chips' .

IF (PP13 EQ 1 | PP23 EQ 1 ) APP3 = 1.
VARIABLE LABELS APP3 'APPLIED PROCESSING PRESERVING' .
IF (VC3 EQ 3) ANYPPI13 = 2 .
IF (APP3 EQ 1) ANYPPI13 = 1 .
VARIABLE LABELS ANYPPI13 'ANY PROCESSING PRESERVING' .

* APPLIED ANY TEHNOLOGY .
IF(VC3 = 3) ANYTECH3 = 2 .
IF (ANYCG13 = 1 | ANYCP23 = 1 | ANYDM33 = 1 | ANYSF43 = 1 | ANYIRR53 = 1 | ANYWM63 = 1 | ANYCM73 = 1 |
    ANYCA83 = 1 | ANYMD93 = 1 | ANYPHS103 = 1 | ANYPPI13 = 1) ANYTECH3 = 1.
VARIABLE LABELS ANYTECH3 'APPLIED ONE OR MORE OFSP TECHNOLOGIES' .
IF (VC3 = 3) ANYO = 2 .
IF (ANYTECH3 = 1) ANYO = 1.
VARIABLE LABELS ANYO 'ONE OR MORE OFSP TECHNOLOGIES' .
* ===== .

* OTHERS ---- NON CROP SPECIFIC TECHNOLOGIES ---- .

* 6 OTHER WATER MANAGEMENT.
* Water Harvesting .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) WM14 = 0.
IF (F2_1 EQ 1) WM14 = 1.
VARIABLE LABELS WM14 'Farm Ponds' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) WM24 = 0.
IF (F2_2 EQ 1) WM24 = 1.
VARIABLE LABELS WM24 'Check Dams' .

IF(F2_1 = 1 | F2_2 = 1) AWM4 = 1.
VARIABLE LABELS AWM4 'APPLIED OTHER WATER MANAGEMENT' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) ANYWM64 = 2.
IF (AWM4 EQ 1) ANYWM64 = 1 .
VARIABLE LABELS ANYWM64 'ANY OTHER WATER MANAGEMENT' .

* 8 OTHER CLIMATE ADAPTATION .
* Early Warning Systems .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA14 = 0.
IF (E13_1 EQ 1) CA14 = 1.
VARIABLE LABELS CA14 'Community Group' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA24 = 0..
IF ( E13_2 EQ 1) CA24 = 1.
VARIABLE LABELS CA24 'Radio Listening Group' .
* Weather Station Agro-Net .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA34 = 0.
IF (E23 EQ 1) CA34 = 1.
VARIABLE LABELS CA34 'Mini Weather Station - Agro_Net' .
* Climate Information Sources .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA44 = 0.
IF (E33_1 EQ 1) CA44 = 1.
VARIABLE LABELS CA44 'Printed Materiels' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA54 = 0.
IF ( E33_2 EQ 1) CA54 = 1.
VARIABLE LABELS CA54 'Group Discussions' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA64 = 0.
IF (E33_3 EQ 1) CA64 = 1.
VARIABLE LABELS CA64 'Briefing Services' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA74 = 0.
IF (E33_4 EQ 1) CA74 = 1.

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VARIABLE LABELS CA74 'Public Lectures' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA84 = 0.
 IF (E33_5 EQ 1) CA84 = 1.
 VARIABLE LABELS CA84 'Video Shows' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA94 = 0.
 IF (E33_6 EQ 1) CA94 = 1.
 VARIABLE LABELS CA94 'Extention/Committee/Lead Farmers' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA104 = 0.
 IF (E33_7 EQ 1) CA104 = 1.
 VARIABLE LABELS CA104 'SMS Station' .
 * Agroforestry .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA114 = 0.
 IF (E42_1 EQ 1) CA114 = 1.
 VARIABLE LABELS CA114 'Agroforestry' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA124 = 0.
 IF (E42_2 EQ 1) CA124 = 1.
 VARIABLE LABELS CA124 'Natural Regeneration' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA134 = 0.
 IF (E42_3 EQ 1) CA134 = 1.
 VARIABLE LABELS CA134 'Truncheons' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) CA144 = 0.
 IF (E42_4 EQ 1) CA144 = 1.
 VARIABLE LABELS CA144 'Risk Reduction' .

 IF (CA14 EQ 1 | CA24 EQ 1 | CA34 EQ 1 | CA44 EQ 1 | CA54 EQ 1 | CA64 EQ 1 | CA74 EQ 1 | CA84 EQ 1 |
 CA94 EQ 1 | CA104 EQ 1 | CA114 EQ 1 | CA124 EQ 1 | CA134 EQ 1 | CA144 EQ 1) ACA4 = 1.
 VARIABLE LABELS ACA4 'APPLIED OTHER CLIMATE ADAPTATION' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) ANYCA84 = 2 .
 IF (ACA4 EQ 1) ANYCA84 = 1 .
 VARIABLE LABELS ANYCA84 'ANY OTHER CLIMATE ADAPTATION' .

 * APPLIED ANY OTHER NON CROP SPECIFIC TECHNOLOGIES .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) ANYTECH4 = 2 .
 IF (ANYWM64 = 1 | ANYCA84 = 1) ANYTECH4 = 1.
 VARIABLE LABELS ANYTECH4 'APPLIED ANY NON CROP SPECIFIC TECHNOLOGIES' .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) ANY_NON_CROP = 2 .
 IF (ANYTECH4 = 1) ANY_NON_CROP = 1.
 VARIABLE LABELS ANY_NON_CROP 'ONE OR MORE NON CROP TECHNOLOGIES' .

 * CONSOLIDATION OF NUMBERS OF FARMERS ACROSS VC BY TECH TYPES .
 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTACG = 2 .
 IF(ACG1 = 1 | ACG2 = 1 | ACG3 = 1) TOTACG = 1 .
 VARIABLE LABELS TOTACG 'CROP GENETICS' .
 VALUE LABELS TOTACG 1 'YES' 2 'NO' .

 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTACP = 2 .
 IF(ACPI = 1 | ACP2 = 1 | ACP3 = 1) TOTACP = 1.
 VARIABLE LABELS TOTACP 'CULTURAL PRACTICES' .
 VALUE LABELS TOTACP 1 'YES' 2 'NO' .

 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTADM = 2 .
 IF(ADM1 = 1 | ADM2 = 1 | ADM3 = 1) TOTADM = 1 .
 VARIABLE LABELS TOTADM 'DISEASE MANAGEMENT' .
 VALUE LABELS TOTADM 1 'YES' 2 'NO' .

 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTASF = 2 .
 IF(ASF1 = 1 | ASF2 = 1 | ASF3 = 1) TOTASF = 1.
 VARIABLE LABELS TOTASF 'SOIL FERTILITY' .
 VALUE LABELS TOTASF 1 'YES' 2 'NO' .

 IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAIRR = 2 .
 IF(AIRR1 = 1 | AIRR2 = 1 | AIRR3 = 1) TOTAIRR = 1 .
 VARIABLE LABELS TOTAIRR 'IRRIGATION' .

VALUE LABELS TOTAI RR 1 'YES' 2 'NO' .

IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAWM = 2 .
IF(AWM1 = 1 | AWM2 = 1 | AWM3 = 1 | AWM4 = 1) TOTAWM = 1 .
VARIABLE LABELS TOTAWM 'WATER MANAGEMENT' .
VALUE LABELS TOTAWM 1 'YES' 2 'NO' .

IF(VC1 = 1 | VC2 = 2) TOTACM = 2 .
IF(ACM1 = 1 | ACM2 = 1) TOTACM = 1 .
VARIABLE LABELS TOTACM 'CLIMATE MITIGATION' .
VALUE LABELS TOTACM 1 'YES' 2 'NO' .

IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTACA = 2 .
IF(ACA1 = 1 | ACA2 = 1 | ACA3 = 1 | ACA4 = 1) TOTACA = 1 .
VARIABLE LABELS TOTACA 'CLIMATE ADAPTATION' .
VALUE LABELS TOTACA 1 'YES' 2 'NO' .

IF(VC1 = 1 | VC2 = 2) TOTAMD = 2 .
IF(AMD1 = 1 | AMD2 = 1) TOTAMD = 1 .
VARIABLE LABELS TOTAMD 'MARKETING DISTRIBUTION' .
VALUE LABELS TOTAMD 1 'YES' 2 'NO' .

IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAPHS = 2 .
IF(APHS1 = 1 | APHS2 = 1 | APHS3 = 1) TOTAPHS = 1 .
VARIABLE LABELS TOTAPHS 'POST HARVEST HANDLING STORAGE' .
VALUE LABELS TOTAPHS 1 'YES' 2 'NO' .

IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAPP = 2 .
IF(APP1 = 1 | APP2 = 1 | APP3 = 1) TOTAPP = 1 .
VARIABLE LABELS TOTAPP 'PROCESSING PRESERVATION' .
VALUE LABELS TOTAPP 1 'YES' 2 'NO' .

* CONSOLIDATION OF NUMBERS OF FARMERS ACROSS VC BY ONE OR MORE TECH TYPES .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAL_ANY = 2 .
IF(ANYTECH1 = 1 | ANYTECH2 = 1 | ANYTECH3 = 1 | ANYTECH4 = 1) TOTAL_ANY = 1 .
VARIABLE LABELS TOTAL_ANY 'ONE OR MORE TECH TYPES' .
VALUE LABELS TOTAL_ANY 1 'YES' 2 'NO' .

* SAVE RELEVANT VARIABLES .
VARIABLE LABELS TOTAL_ANY 1 'YES' 2 'NO' .
SAVE OUTFILE='C:\Users\MSidibe\Documents\Survey Results\Final\Temp\TECH_FARMERS.sav'
/KEEP A01B SAM_WT VC1 VC2 VC3 D10 D20 D30
TOTACG TOTACP TOTADM TOTASF TOTAI RR TOTAWM TOTACM TOTACA
TOTAMD TOTAPHS TOTAPP TOTAL_ANY ANYTECH1 ANYTECH2 ANYTECH3 ANYTECH4 ANYG ANYS
ANYO
ANY_NON_CROP .

* TABULATION BY TECH TYPES .
GET FILE='C:\Users\MSidibe\Documents\Survey Results\Final\Temp\TECH_FARMERS.sav' .
SELECT IF(NOT MISSING (VC1) OR NOT MISSING (VC2) OR NOT MISSING (VC3)) .

WEIGHT BY SAM_WT .
CTABLES
/format empty=blank
/VLABELS VARIABLES = TOTACG TOTACP TOTADM TOTASF TOTAI RR TOTAWM TOTACM TOTACA
TOTAMD TOTAPHS TOTAPP DISPLAY=LABEL
/TABLE (TOTACG + TOTACP + TOTADM + TOTASF + TOTAI RR + TOTAWM + TOTACM + TOTACA + TOTAMD
+ TOTAPHS + TOTAPP)
[COUNT "NUMBER OF FARMERS" ROWPCT.COUNT "% OF FARMERS"]
/CLABELS ROWLABELS=OPPOSITE
/CATEGORIES VARIABLES= TOTACG TOTACP TOTADM TOTASF TOTAI RR TOTAWM TOTACM TOTACA TOTAMD
TOTAPHS TOTAPP
MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/SLABELS VISIBLE=YES

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
 TITLE= 'TABLE D71: Weighted Number and Percent of Farmers Who Applied Improved Technologies By Technology Type: 2016-2017 Growing Season '
 WEIGHT OFF .

* TABULATION BY ONE OR MORE TECH TYPES.

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES = TOTAL_ANY DISPLAY=LABEL

/TABLE TOTAL_ANY [COUNT "NUMBER OF FARMERS" ROWPCT.COUNT "% OF FARMERS"]

/CLABELS ROWLABELS=OPPOSITE

/CATEGORIES VARIABLES= TOTAL_ANY MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/SLABELS VISIBLE=YES

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE= 'TABLE D72: Weighted Number and Percent of Farmers Who Applied One or More Technologies: 2016-2017 Growing Season '
 WEIGHT OFF .

* TABULATION BY SEX.

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES = A01B TOTAL_ANY DISPLAY=NONE

/TABLE A01B BY TOTAL_ANY [COUNT "NUMBER OF FARMERS" ROWPCT.COUNT "% OF FARMERS"]

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= A01B TOTAL_ANY MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE= 'TABLE D71: Weighted Number and Percent of Farmers Who Applied Improved Technologies By Sex: 2016-2017 Growing Season '
 WEIGHT OFF .

* TABULATION BY VC.

VALUE LABELS ANYTECH1 I 'YES' 2 'NO'.

VALUE LABELS ANYTECH2 I 'YES' 2 'NO'.

VALUE LABELS ANYTECH3 I 'YES' 2 'NO'.

VALUE LABELS ANYTECH4 I 'YES' 2 'NO'.

VARIABLE LABELS ANYTECH1 'GROUNDNUTS'.

VARIABLE LABELS ANYTECH2 'SOYBEANS'.

VARIABLE LABELS ANYTECH3 'OFSP'.

VARIABLE LABELS ANYTECH4 'OTHERS: NON-CROP SPECIFIC'.

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES = ANYTECH1 ANYTECH2 ANYTECH3 ANYTECH4 DISPLAY=LABEL

/TABLE (ANYTECH1 + ANYTECH2 + ANYTECH3 + ANYTECH4) [COUNT "NUMBER OF FARMERS" ROWPCT.COUNT "% OF FARMERS"]

/CLABELS ROWLABELS=OPPOSITE

/CATEGORIES VARIABLES= ANYTECH1 ANYTECH2 ANYTECH3 ANYTECH4

MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/SLABELS VISIBLE=YES

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE= 'TABLE D71: Weighted Number and Percent of Farmers Who Applied Improved Technologies By Value Chain: 2016-2017 Growing Season '
 WEIGHT OFF .

* ONE OR MORE TYPE: PERCENTAGE.

VALUE LABELS ANYG I 'YES' 2 'NO'.

VALUE LABELS ANYS I 'YES' 2 'NO'.

VALUE LABELS ANYO I 'YES' 2 'NO'.

VALUE LABELS ANY_NON_CROP I 'YES' 2 'NO'.

VARIABLE LABELS ANYG 'ANY GROUNDNUTS'.

VARIABLE LABELS ANYS 'ANY SOYBEANS'.

```

VARIABLE LABELS ANYO 'ANY OFSP' .
VARIABLE LABELS ANY_NON_CROP 'ANY NON CROP SPECIFIC' .

WEIGHT BY SAM_WT .
CTABLES
/format empty=blank
/VLABELS VARIABLES= ANYG ANYS ANYO ANY_NON_CROP DISPLAY=LABEL
/TABLE (ANYG + ANYS + ANYO + ANY_NON_CROP)
      [COUNT "NUMBER OF FARMERS" ROWPCT.COUNT "% OF FARMERS" ]
/SLABELS VISIBLE=YES
/CLABELS ROWLABELS=OPPOSITE
/CATEGORIES VARIABLES= ANYG ANYS ANYO ANY_NON_CROP MISSING=EXCLUDE TOTAL = YES EMPTY=
EXCLUDE
/TITLES caption= 'Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017'
title= 'TABLE D73: Weighted Number of Farmers Who Applied One or More Improved Technologies By Value Chain: 2016-2017
Growing Season ' .
WEIGHT OFF .
* ===== END SYNTAX ===== .

* ===== HECTARES UNDER IMPROVED TECHNOLOGY =====
===== .
*      1.4-5 Number of Hectares of Land under improved technologies or management practices
with USG assistance
=====
===== .

*      HECTARES UNDER IMPROVED TECHNOLOGIES AND MANAGEMENT PRACTICES.
*      ----- .
* METHOD:
1- Disaggregate by Technology Type using the average number of HAs under each tech type per farmer across all three VC
commodities;
2- Disaggregate by Decision Maker using the average number of HA under at least one tech per sampled farmer across all three
VC Commodities;
3- Disaggregate by Value Chain using the average number of HA under at least one tech by commodity
Extrapolation will use average HA under each Tech Type and multiply it by the 2017 number of farmers beneficiaries reported by
AgDiv (34,533),
disaggregated by tech types, male, female and Joint, and by value chain from the weighted survey data.

* The individual data cases at the farmer levels were summarized to investigate the patterns of adoptions. There are no identifiable
regular patterns of technology adoption for those farmers who allocate less than 100% of their land to a specific technology.
* It was observed that some farmers allocate different proportions of their land such as: 25%, 50% or 75% with no observable
patterns.
* We therefore recommend the method of summing areas under each Tech Type and comparing the summed areas to farmers'
corrected areas
for each VC and then allocate the total corrected areas to the calculated area under a tech type, if the sum is greater than the
corrected area.

* As a test, the Team has run scripts to compare taking the max value against summing them up and comparing to the total
available
land area and observed very little differences in the results from these two methods. Furthermore, Confidence Interval
calculations revealed
that the sum of the available area method of calculating mean areas include the mean areas of the the method taking the
maximum area.
* ===== .

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC_6Nov Weight Final.sav'.

* ----- GROUNDNUTS ----- .
IF (D10 EQ 1) VCI = 1 .
VARIABLE LABELS VCI 'VALUE CHAIN GROUNDNUTS' .

```

```

* 1 CROP GENETICS (CG).
IF(VCI = 1) CG11 = 0.
IF(D122_6 EQ 1) CG11 = AREAG * D123_6.
VARIABLE LABELS CG11 ' AREA Early Maturing' .
IF(VCI = 1) CG21 = 0.
IF(D122_8 EQ 1) CG21 = AREAG * D123_8.
VARIABLE LABELS CG21 ' AREA Stress Tolerant' .

IF (VCI EQ 1) ACG1 = SUM (CG11, CG21) .
VARIABLE LABELS ACG1 'TOTAL AREA CROP GENETICS' .
IF(ACG1 GT AREAG) ACG1 = AREAG .
IF (D122_6 EQ 1 | D122_8 EQ 1) ANYCG11 = ACG1.
IF (VCI EQ 1) ANY11 = 2.
IF (D122_6 EQ 1 | D122_8 EQ 1) ANY11 = 1.

* 2 CULTURAL PRACTICES (CP).
IF(VCI = 1) CP11 = 0.
IF(D122_1 EQ 1) CP11 = AREAG * D123_1.
VARIABLE LABELS CP11 ' AREA Double Up Legumes' .
IF(VCI = 1) CP21 = 0.
IF(D122_2 EQ 1) CP21 = AREAG * D123_2.
VARIABLE LABELS CP21 ' AREA Crop Rotation' .
IF(VCI = 1) CP31 = 0.
IF(D122_3 EQ 1) CP31 = AREAG * D123_3.
VARIABLE LABELS CP31 ' AREA Jab Planting' .
IF(VCI = 1) CP41 = 0.
IF(D122_4 EQ 1) CP41 = AREAG * D123_4.
VARIABLE LABELS CP41 ' AREA Double Row Planting' .
IF(VCI = 1) CP51 = 0.
IF(D122_5 EQ 1) CP51 = AREAG * D123_5.
VARIABLE LABELS CP51 ' Crop Diversification' .
IF(VCI = 1) CP61 = 0.
IF(D142_2 EQ 1) CP61 = AREAG * D143_2.
VARIABLE LABELS CP61 ' AREA Mulching' .
IF(VCI = 1) CP71 = 0.
IF(D142_3 EQ 1) CP71 = AREAG * D143_3.
VARIABLE LABELS CP71 ' AREA Box Ridges' .
IF(VCI = 1) CP81 = 0.
IF(D142_4 EQ 1) CP81 = AREAG * D143_4.
VARIABLE LABELS CP81 ' AREA Contour Ridges' .
IF(VCI = 1) CP91 = 0.
IF(D142_5 EQ 1) CP91 = AREAG * D143_5.
VARIABLE LABELS CP91 ' AREA Infiltration Pits' .
IF(VCI = 1) CP101 = 0.
IF(D142_6 EQ 1) CP101 = AREAG * D143_6.
VARIABLE LABELS CP101 ' AREA Swales' .
IF(VCI = 1) CP111 = 0.
IF(D142_7 EQ 1) CP111 = AREAG * D143_7.
VARIABLE LABELS CP111 ' AREA Contour Vegetation Row' .

IF (VCI EQ 1) ACPI = SUM (CP11 TO CP111).
VARIABLE LABELS ACPI 'TOTAL AREA CULTURAL PRACTICES' .
IF(ACPI GT AREAG) ACPI = AREAG.
IF (D122_1 EQ 1 | D122_2 EQ 1 | D122_3 EQ 1 | D122_4 EQ 1 | D122_5 EQ 1 | D142_2 EQ 1
| D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D142_6 EQ 1 | D142_7 EQ 1) ANYCP21 = ACPI.
IF (VCI EQ 1) ANY21 = 2.
IF (D122_1 EQ 1 | D122_2 EQ 1 | D122_3 EQ 1 | D122_4 EQ 1 | D122_5 EQ 1 | D142_2 EQ 1
| D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D142_6 EQ 1 | D142_7 EQ 1) ANY21 = 1.

* 3 DISEASE MANAGEMENT (DM).
IF(VCI = 1) DM11 = 0.
IF(D122_2 EQ 1) DM11 = AREAG * D123_2.
VARIABLE LABELS DM11 'TOTAL AREA CROP ROTATION' .

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IF (VCI EQ 1) ADM1 = DM11 .
VARIABLE LABELS ADM1 'TOTAL AREA DISEASE MANAGEMENT' .
IF (D122_2 EQ 1) ANYDM31 = ADM1 .
IF (VCI EQ 1) ANY31 = 2.
IF (D122_2 EQ 1) ANY31 = 1 .

* 4 SOIL FERTILITY (SF) .
IF(VCI = 1) SF11 = 0.
IF (D142_1 EQ 1) SF11 = AREAG * D143_1.
VARIABLE LABELS SF11 ' Zero Tillage' .
IF(VCI = 1) SF21 = 0.
IF (D142_2 EQ 1) SF21 = AREAG * D143_2.
VARIABLE LABELS SF21 ' AREA Mulching' .
IF(VCI = 1) SF31 = 0.
IF (D142_3 EQ 1) SF31 = AREAG * D143_3.
VARIABLE LABELS SF31 ' AREA Box Ridges' .
IF(VCI = 1) SF41 = 0.
IF (D142_4 EQ 1) SF41 = AREAG * D143_4.
VARIABLE LABELS SF41 ' AREA Contour Ridges' .
IF(VCI = 1) SF51 = 0.
IF (D142_5 EQ 1) SF51 = AREAG * D143_5.
VARIABLE LABELS SF51 ' AREA Infiltration Pits' .
IF(VCI = 1) SF61 = 0.
IF (D122_7 EQ 1) SF61 = AREAG * D123_7.
VARIABLE LABELS SF61 ' AREA Inoculant' .

IF (VCI EQ 1) ASF1 = SUM(SF11 TO SF61).
VARIABLE LABELS ASF1 'TOTAL AREA Soil Fertility' .
IF(ASF1 GT AREAG) ASF1 = AREAG.
IF (D142_1 EQ 1 | D142_2 EQ 1 | D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D122_7 EQ 1) ANYSF41 = ASF1.
IF (VCI EQ 1) ANY41 = 2.
IF (D142_1 EQ 1 | D142_2 EQ 1 | D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D122_7 EQ 1) ANY41 = 1.

* 5 IRRIGATION (IRR) .
IF(VCI = 1) IRR11 = 0.
IF (D151 EQ 1) IRR11 = AREAG * D153.
VARIABLE LABELS IRR11 ' AREA Irrigation' .

IF(VCI EQ 1) AIRR1 = IRR11 .
VARIABLE LABELS AIRR1 'TOTAL AREA IRRIGATION' .
IF (D151 EQ 1) ANYIRR51 = AIRR1.
IF (VCI EQ 1) ANY51 = 2.
IF (D151 EQ 1) ANY51 = 1.

* 6 WATER MANAGEMENT (WM) .
IF(VCI = 1) WM11 = 0.
IF (D142_2 EQ 1) WM11 = AREAG * D143_2.
VARIABLE LABELS WM11 ' AREA Mulching' .
IF(VCI = 1) WM21 = 0.
IF (D142_3 EQ 1) WM21 = AREAG * D143_3.
VARIABLE LABELS WM21 ' AREA Box Ridging' .
IF(VCI = 1) WM31 = 0.
IF (D142_4 EQ 1) WM31 = AREAG * D143_4.
VARIABLE LABELS WM31 ' AREA Contour Ridging' .
IF(VCI = 1) WM41 = 0.
IF (D142_5 EQ 1) WM41 = AREAG * D143_5.
VARIABLE LABELS WM41 ' AREA Infiltration Pits' .
IF(VCI = 1) WM51 = 0.
IF (D142_6 EQ 1) WM51 = AREAG * D143_6.
VARIABLE LABELS WM51 ' AREA Swales' .
IF(VCI = 1) WM61 = 0.
IF (D142_7 EQ 1) WM61 = AREAG * D143_7.
VARIABLE LABELS WM61 ' AREA Contour Vegetation Rows' .

```

```

IF (VCI EQ 1) AWM1 = SUM (WM11 TO WM61) .
IF(AWM1 GT AREAG) AWM1 = AREAG.
VARIABLE LABELS AWM1 'TOTAL AREA WATER MANAGEMENT'.
IF (D142_2 EQ 1 | D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D142_6 EQ 1 | D142_7 EQ 1) ANYWM61 = AWM1.
IF (VCI EQ 1) ANY61 = 2.
IF (D142_2 EQ 1 | D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D142_6 EQ 1 | D142_7 EQ 1) ANY61 = 1.

```

* 7 CLIMATE MITIGATION .

```

IF(VCI = 1) CM11 = 0.
IF (D122_7 EQ 1) CM11 = AREAG * D123_7.
VARIABLE LABELS CM11 ' AREA Inoculant' .
IF(VCI = 1) CM21 = 0.
IF (D142_1 EQ 1) CM21 = AREAG * D143_1.
VARIABLE LABELS CM21 ' Zero Tillage' .

IF(VCI EQ 1) ACM1 = SUM(CM11, CM21) .
VARIABLE LABELS ACM1 'TOTAL AREA CLIMATE MITIGATION' .
IF(ACM1 GT AREAG) ACM1 = AREAG.
IF (D122_7 EQ 1 | D142_1 EQ 1) ANYCM71 = ACM1.
IF (VCI EQ 1) ANY71 = 2.
IF (D122_7 EQ 1 | D142_1 EQ 1) ANY71 = 1.

```

* 8 CLIMATE ADAPTATION .

```

IF(VCI = 1) CA11 = 0.
IF (D122_6 EQ 1) CA11 = AREAG * D123_6.
VARIABLE LABELS CA11 ' AREA Early Maturing' .
IF(VCI = 1) CA21 = 0.
IF (D122_8 EQ 1) CA21 = AREAG * D123_8.
VARIABLE LABELS CA21 ' AREA Stress Tolerant' .
IF(VCI = 1) CA31 = 0.
IF (D122_1 EQ 1) CA31 = AREAG * D123_1.
VARIABLE LABELS CA31 ' AREA Double Up Legumes' .
IF(VCI = 1) CA41 = 0.
IF (D122_2 EQ 1) CA41 = AREAG * D123_2.
VARIABLE LABELS CA41 ' AREA Crop Rotation' .
IF(VCI = 1) CA51 = 0.
IF (D122_3 EQ 1) CA51 = AREAG * D123_3.
VARIABLE LABELS CA51 ' AREA Jab Planting' .
IF(VCI = 1) CA61 = 0.
IF (D122_4 EQ 1) CA61 = AREAG * D123_4.
VARIABLE LABELS CA61 ' AREA Double Row Planting' .
IF(VCI = 1) CA71 = 0.
IF (D122_5 EQ 1) CA71 = AREAG * D123_5.
VARIABLE LABELS CA71 ' Crop Diversification' .
IF(VCI = 1) CA81 = 0.
IF (D142_2 EQ 1) CA81 = AREAG * D143_2.
VARIABLE LABELS CA81 ' AREA Mulching' .
IF(VCI = 1) CA91 = 0.
IF (D142_3 EQ 1) CA91 = AREAG * D143_3.
VARIABLE LABELS CA91 ' AREA Box Ridges' .
IF(VCI = 1) CA101 = 0.
IF (D142_4 EQ 1) CA101 = AREAG * D143_4.
VARIABLE LABELS CA101 ' AREA Contour Ridges' .
IF(VCI = 1) CA111 = 0.
IF (D142_5 EQ 1) CA111 = AREAG * D143_5.
VARIABLE LABELS CA111 ' AREA Infiltration Pits' .
IF(VCI = 1) CA121 = 0.
IF (D142_6 EQ 1) CA121 = AREAG * D143_6.
VARIABLE LABELS CA121 ' AREA Swales' .
IF(VCI = 1) CA131 = 0.
IF (D142_7 EQ 1) CA131 = AREAG * D143_7.
VARIABLE LABELS CA131 ' AREA Contour Vegetation Row' .
IF(VCI = 1) CA141 = 0.
IF (D151 EQ 1) CA141 = AREAG * D153.

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VARIABLE LABELS CA141 ' AREA Irrigation' .

IF(VC1 EQ 1) ACA1 = SUM(CA11 TO CA141) .

IF(ACA1 GT AREAG) ACA1 = AREAG.

VARIABLE LABELS ACA1 'TOTAL AREA CLIMATE ADAPTATION' .

IF (D122_6 EQ 1 | D122_8 EQ 1 | D122_1 EQ 1 | D122_2 EQ 1 | D122_3 EQ 1 | D122_4 EQ 1 | D122_5 EQ 1 | D142_2 EQ 1
| D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D142_6 EQ 1 | D142_7 EQ 1 | D151 EQ 1) ANYCA81 = ACA1.

IF (VC1 EQ 1) ANY81 = 2.

IF (D122_6 EQ 1 | D122_8 EQ 1 | D122_1 EQ 1 | D122_2 EQ 1 | D122_3 EQ 1 | D122_4 EQ 1 | D122_5 EQ 1 | D142_2 EQ 1
| D142_3 EQ 1 | D142_4 EQ 1 | D142_5 EQ 1 | D142_6 EQ 1 | D142_7 EQ 1 | D151 EQ 1) ANY81 = 1.

* 9 APPLIED ANY TECHNOLOGY .

IF(VC1 = 1) ANYTECH1 = 0.

IF (VC1 = 1) ANYTECH1 = SUM (ANYCG11, ANYCP21, ANYDM31, ANYSF41, ANYIRR51, ANYWM61, ANYCM71,
ANYCA81) .

IF (ANYTECH1 GT AREAG) ANYTECH1 = AREAG .

VARIABLE LABELS ANYTECH1 'Applied Any Technology' .

IF (VC1 = 1) ANYG = 2 .

IF (ANY11 = 1 | ANY21 = 1 | ANY31 = 1 | ANY41 = 1 | ANY51 = 1 | ANY61 = 1 | ANY71 = 1 | ANY81 = 1) ANYG = 1.

* ===== .

* ----- SOYBEANS ----- .

IF (D20 EQ 1) VC2 = 2 .

VARIABLE LABELS VC2 'VALUE CHAIN' .

* 1 CROP GENETICS (CG).

IF(VC2 = 2) CG12 = 0.

IF (D2226 EQ 1) CG12 = AREAS * D2236.

VARIABLE LABELS CG12 ' AREA Early Maturing Varieties' .

IF (VC2 EQ 2) ACG2 = CG12 .

VARIABLE LABELS ACG2 'TOTAL AREA CROP GENETICS' .

IF (D2226 EQ 1) ANYCG12 = ACG2.

IF (VC2 EQ 2) ANY12 = 2.

IF (D2226 EQ 1) ANY12 = 1.

* 2 CULTURAL PRACTICES (CP).

IF(VC2 = 2) CP12 = 0.

IF (D2221 EQ 1) CP12 = AREAS * D2231.

VARIABLE LABELS CP12 ' AREA Double Up Legumes' .

IF(VC2 = 2) CP22 = 0.

IF (D2222 EQ 1) CP22 = AREAS * D2232.

VARIABLE LABELS CP22 ' AREA Crop Rotation' .

IF(VC2 = 2) CP32 = 0.

IF (D2223 EQ 1) CP32 = AREAS * D2233.

VARIABLE LABELS CP32 ' AREA Jab Planting' .

IF(VC2 = 2) CP42 = 0.

IF (D2224 EQ 1) CP42 = AREAS * D2234.

VARIABLE LABELS CP42 ' AREA Double Row Planting' .

IF(VC2 = 2) CP52 = 0.

IF (D2225 EQ 1) CP52 = AREAS * D2235.

VARIABLE LABELS CP52 ' Crop Diversification' .

IF(VC2 = 2) CP62 = 0.

IF (D2321 EQ 1) CP62 = AREAS * D2331.

VARIABLE LABELS CP62 ' AREA Mulching' .

IF(VC2 = 2) CP72 = 0.

IF (D2322 EQ 1) CP72 = AREAS * D2332.

VARIABLE LABELS CP72 ' AREA Box Ridges' .

IF(VC2 = 2) CP82 = 0.

IF (D2323 EQ 1) CP82 = AREAS * D2333.

VARIABLE LABELS CP82 ' AREA Contour Ridges' .

IF(VC2 = 2) CP92 = 0.

IF (D2324 EQ 1) CP92 = AREAS * D2334.
 VARIABLE LABELS CP92 ' AREA Infiltration Pits' .
 IF (VC2 = 2) CPI02 = 0.
 IF (D2325 EQ 1) CPI02 = AREAS * D2335.
 VARIABLE LABELS CPI02 ' AREA Swales' .
 IF (VC2 = 2) CPI12 = 0.
 IF (D2326 EQ 1) CPI12 = AREAS * D2336.
 VARIABLE LABELS CPI12 ' AREA Contour Vegetation Row' .

 IF (VC2 EQ 2) ACP2 = SUM (CPI12 TO CPI12).
 IF (ACP2 GT AREAS) ACP2 = AREAS.
 VARIABLE LABELS ACP2 'TOTAL AREA CULTURAL PRACTICES' .
 IF (D2221 EQ 1 | D2222 EQ 1 | D2223 EQ 1 | D2224 EQ 1 | D2225 EQ 1 | D2321 EQ 1
 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2325 EQ 1 | D2326 EQ 1) ANYCP22 = ACP2.
 IF (VC2 EQ 2) ANY22 = 2.
 IF (D2221 EQ 1 | D2222 EQ 1 | D2223 EQ 1 | D2224 EQ 1 | D2225 EQ 1 | D2321 EQ 1
 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2325 EQ 1 | D2326 EQ 1) ANY22 = 1.

 * 3 DISEASE MANAGEMENT (DM).
 IF (VC2 = 2) DMI2 = 0.
 IF (D2222 EQ 1) DMI2 = AREAS * D2232.
 VARIABLE LABELS DMI2 ' AREA Crop Rotation' .

 IF (VC2 EQ 2) ADM2 = DMI2 .
 VARIABLE LABELS ADM2 'TOTAL AREA Disease Management' .
 IF (D2222 EQ 1) ANYDM32 = ADM2.
 IF (VC2 EQ 2) ANY32 = 2.
 IF (D2222 EQ 1) ANY32 = 1.

 * 4 SOIL FERTILITY (SF).
 IF (VC2 = 2) SF12 = 0.
 IF (D2321 EQ 1) SF12 = AREAS * D2331.
 VARIABLE LABELS SF12 ' AREA Mulching' .
 IF (VC2 = 2) SF22 = 0.
 IF (D2322 EQ 1) SF22 = AREAS * D2332.
 VARIABLE LABELS SF22 ' AREA Box Ridges' .
 IF (VC2 = 2) SF32 = 0.
 IF (D2323 EQ 1) SF32 = AREAS * D2333.
 VARIABLE LABELS SF32 ' AREA Contour Ridges' .
 IF (VC2 = 2) SF42 = 0.
 IF (D2324 EQ 1) SF42 = AREAS * D2334.
 VARIABLE LABELS SF42 ' AREA Infiltration Pits' .
 IF (VC2 = 2) SF52 = 0.
 IF (D2228 EQ 1) SF52 = AREAS * D2238.
 VARIABLE LABELS SF52 ' AREA Inoculant' .

 IF (VC2 EQ 2) ASF2 = SUM (SF12 TO SF52).
 VARIABLE LABELS ASF2 'TOTAL AREA Soil Fertility' .
 IF (ASF2 GT AREAS) ASF2 = AREAS.
 IF (D2321 EQ 1 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2228 EQ 1) ANYSF42 = ASF2.
 IF (VC2 EQ 2) ANY42 = 2.
 IF (D2321 EQ 1 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2228 EQ 1) ANY42 = 1.

 * 5 IRRIGATION (IRR).
 IF (VC2 = 2) IRR12 = 0.
 IF (D241 EQ 1) IRR12 = AREAS * D243.
 VARIABLE LABELS IRR12 ' AREA Irrigation' .

 IF (VC2 EQ 2) AIRR2 = IRR12 .
 IF (D241 EQ 1) ANYIRR52 = AIRR2.
 IF (VC2 EQ 2) ANY52 = 2.
 IF (D241 EQ 1) ANY52 = 1.

 * 6 WATER MANAGEMENT (WM).

IF (VC2 = 2) WM12 = 0.
 IF (D2321 EQ 1) WM12 = AREAS * D2331.
 VARIABLE LABELS WM12 ' AREA Mulching' .
 IF (VC2 = 2) WM22 = 0.
 IF (D2322 EQ 1) WM22 = AREAS * D2332.
 VARIABLE LABELS WM22 ' AREA Box Ridges' .
 IF (VC2 = 2) WM32 = 0.
 IF (D2323 EQ 1) WM32 = AREAS * D2333.
 VARIABLE LABELS WM32 ' AREA Contour Ridges' .
 IF (VC2 = 2) WM42 = 0.
 IF (D2324 EQ 1) WM42 = AREAS * D2334.
 VARIABLE LABELS WM42 ' AREA Infiltration Pits' .
 IF (VC2 = 2) WM52 = 0.
 IF (D2325 EQ 1) WM52 = AREAS * D2335.
 VARIABLE LABELS WM52 ' AREA Swales' .
 IF (VC2 = 2) WM62 = 0.
 IF (D2326 EQ 1) WM62 = AREAS * D2336.
 VARIABLE LABELS WM62 ' AREA Contour Vegetation Rows' .

 IF (VC2 EQ 2) AWM2 = SUM (WM12 TO WM62) .
 VARIABLE LABELS AWM2 'TOTAL AREA WATER MANAGEMENT' .
 IF (AWM2 GT AREA0) AWM2 = AREAS.
 IF (D2321 EQ 1 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2325 EQ 1 | D2326 EQ 1) ANYWM62 = AWM2.
 IF (VC2 EQ 2) ANY62 = 2.
 IF (D2321 EQ 1 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2325 EQ 1 | D2326 EQ 1) ANY62 = 1.

 * 7 CLIMATE MITIGATION .
 IF (VC2 = 2) CM12 = 0.
 IF (D2228 EQ 1) CM12 = AREAS * D2238.
 VARIABLE LABELS CM12 ' AREA Inoculant' .

 IF (VC2 EQ 2) ACM2 = CM12 .
 VARIABLE LABELS ACM2 'TOTAL AREA CLIMATE MITIGATION' .
 IF (D2228 EQ 1) ANYCM72 = ACM2.
 IF (VC2 EQ 2) ANY72 = 2.
 IF (D2228 EQ 1) ANY72 = 1.

 * 8 CLIMATE ADAPTATION .
 IF (VC2 = 2) CA12 = 0.
 IF (D2226 EQ 1) CA12 = AREAS * D2236.
 VARIABLE LABELS CA12 ' AREA Early Maturing Varieties' .
 IF (VC2 = 2) CA22 = 0.
 IF (D2221 EQ 1) CA22 = AREAS * D2231.
 VARIABLE LABELS CA22 ' AREA Double Up Legumes' .
 IF (VC2 = 2) CA32 = 0.
 IF (D2222 EQ 1) CA32 = AREAS * D2232.
 VARIABLE LABELS CA32 ' AREA Crop Rotation' .
 IF (VC2 = 2) CA42 = 0.
 IF (D2223 EQ 1) CA42 = AREAS * D2233.
 VARIABLE LABELS CA42 ' AREA Jab Planting' .
 IF (VC2 = 2) CA52 = 0.
 IF (D2224 EQ 1) CA52 = AREAS * D2234.
 VARIABLE LABELS CA52 ' AREA Double Row Planting' .
 IF (VC2 = 2) CA62 = 0.
 IF (D2225 EQ 1) CA62 = AREAS * D2235.
 VARIABLE LABELS CA62 ' Crop Diversification' .
 IF (VC2 = 2) CA72 = 0.
 IF (D2321 EQ 1) CA72 = AREAS * D2331.
 VARIABLE LABELS CA72 ' AREA Mulching' .
 IF (VC2 = 2) CA82 = 0.
 IF (D2322 EQ 1) CA82 = AREAS * D2332.
 VARIABLE LABELS CA82 ' AREA Box Ridges' .
 IF (VC2 = 2) CA92 = 0.
 IF (D2323 EQ 1) CA92 = AREAS * D2333.

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VARIABLE LABELS CA92 ' AREA Contour Ridges' .
IF(VC2 = 2) CA102 = 0.
IF (D2324 EQ 1) CA102 = AREAS * D2334.
VARIABLE LABELS CA102 ' AREA Infiltration Pits' .
IF(VC2 = 2) CA112 = 0.
IF (D2325 EQ 1) CA112 = AREAS * D2335.
VARIABLE LABELS CA112 ' AREA Swales' .
IF(VC2 = 2) CA122 = 0.
IF (D2326 EQ 1) CA122 = AREAS * D2336.
VARIABLE LABELS CA122 ' AREA Contour Vegetation Row' .
IF(VC2 = 2) CA132 = 0.
IF (D241 EQ 1) CA132 = AREAS * D243.
VARIABLE LABELS CA132 ' AREA Irrigation' .

IF(VC2 EQ 2) ACA2 = SUM(CA12 TO CA132) .
VARIABLE LABELS ACA2 'TOTAL AREA CLIMATE ADAPTATION' .
IF(ACA2 GT AREAS) ACA2 = AREAS.
IF (D2226 EQ 1 | D2221 EQ 1 | D2222 EQ 1 | D2223 EQ 1 | D2224 EQ 1 | D2225 EQ 1
| D2321 EQ 1 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2325 EQ 1 | D2326 EQ 1 | D241 EQ 1) ANYCA82 = ACA2.
IF (VC2 EQ 2) ANY82 = 2.
IF (D2226 EQ 1 | D2221 EQ 1 | D2222 EQ 1 | D2223 EQ 1 | D2224 EQ 1 | D2225 EQ 1
| D2321 EQ 1 | D2322 EQ 1 | D2323 EQ 1 | D2324 EQ 1 | D2325 EQ 1 | D2326 EQ 1 | D241 EQ 1) ANY82 = 1.

* APPLIED ANY TEHNOLOGY .
IF(VC2 = 2) ANYTECH2 = 0.
IF (VC2 = 2 ) ANYTECH2 = SUM (ANYCG12, ANYCP22, ANYDM32, ANYSF42, ANYIRR52, ANYW62, ANYCM72,
ANYCA82).
VARIABLE LABELS ANYTECH2 'Applied Any Technology' .
IF (ANYTECH2 GT AREAS) ANYTECH2 = AREAS .
IF (VC2 = 2) ANYS = 2 .
IF (ANY12 = 1 | ANY22 = 1 | ANY32 = 1 | ANY42 = 1 | ANY52 = 1 | ANY62 = 1 | ANY72 = 1 | ANY82 = 1) ANYS = 1.
* =====.

* ----- OFSP ----- .

IF (D30 EQ 1) VC3 = 3 .
VARIABLE LABELS VC3 'VALUE CHAIN' .

* 1 CROP GENETICS (CG).
IF (VC3 EQ 3) CG13 = 0 .
IF (D3223 EQ 1) CG13 = AREAO * D3233.
VARIABLE LABELS CG13 ' AREA Drought Tolerant' .

IF (VC3 EQ 3) ACG3 = CG13 .
VARIABLE LABELS ACG3 'TOTAL AREA CROP GENETICS' .
IF (D3223 EQ 1) ANYCG13 = ACG3.
IF (VC3 = 3) ANY13 = 2 .
IF (D3223 EQ 1) ANY13 = 1.

* 2 CULTURAL PRACTICES (CP).
IF (VC3 EQ 3) CP13 = 0 .
IF (D3221 EQ 1) CP13 = AREAO * D3231.
VARIABLE LABELS CP13 ' AREA Crop Rotation' .
IF (VC3 EQ 3) CP23 = 0 .
IF (D3222 EQ 1) CP23 = AREAO * D3232.
VARIABLE LABELS CP23 ' AREA Crop Diversification' .
IF (VC3 EQ 3) CP33 = 0 .
IF (D332_1 EQ 1) CP33 = AREAO * D333_1.
VARIABLE LABELS CP33 ' AREA Mulching' .
IF (VC3 EQ 4) CP43 = 0 .
IF (D332_2 EQ 1) CP43 = AREAO * D333_2.
VARIABLE LABELS CP43 ' AREA Box Ridges' .
IF (VC3 EQ 3) CP53 = 0 .
IF (D332_3 EQ 1) CP53 = AREAO * D333_3.

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VARIABLE LABELS CP53 ' AREA Contour Ridges' .
IF (VC3 EQ 3) CP63 = 0 .
IF (D332_4 EQ 1) CP63 = AREA0 * D333_4.
VARIABLE LABELS CP63 ' AREA Infiltration Pits' .
IF (VC3 EQ 3) CP73 = 0 .
IF (D332_5 EQ 1) CP73 = AREA0 * D333_5.
VARIABLE LABELS CP73 ' AREA Swales' .
IF (VC3 EQ 3) CP83 = 0 .
IF (D332_6 EQ 1) CP83 = AREA0 * D333_6.
VARIABLE LABELS CP83 ' AREA Contour Vegetation Row' .

IF (VC3 EQ 3) ACP3 = SUM (CP13 TO CP83).
VARIABLE LABELS ACP3 'TOTAL AREA CULTURAL PRACTICES' .
IF(ACP3 GT AREA0) ACP3 = AREA0.
IF (D3221 EQ 1 | D3222 EQ 1 | D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1 | D332_4 EQ 1
    | D332_5 EQ 1 | D332_6 EQ 1) ANYCP23 = ACP3.
IF (VC3 = 3) ANY23 = 2 .
IF (D3221 EQ 1 | D3222 EQ 1 | D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1 | D332_4 EQ 1
    | D332_5 EQ 1 | D332_6 EQ 1) ANY23 = 1.

* 3 DISEASE MANAGEMENT (DM).
IF (VC3 EQ 3) DM13 = 0 .
IF (D3221 EQ 1) DM13 = AREA0 * D3231.
VARIABLE LABELS DM13 ' AREA Crop Rotation' .

IF (VC3 EQ 3) ADM3 = DM13 .
VARIABLE LABELS ADM3 'TOTAL AREA Disease Management' .
IF (D3221 EQ 1 ) ANYDM33 = ADM3.
IF (VC3 = 3) ANY33 = 2 .
IF (D3221 EQ 1 ) ANY33 = 1.

* 4 SOIL FERTILITY.
IF (VC3 EQ 3) SF13 = 0 .
IF (D332_1 EQ 1) SF13 = AREA0 * D333_1.
VARIABLE LABELS SF13 ' AREA Mulching' .
IF (VC3 EQ 3) SF23 = 0 .
IF (D332_2 EQ 1) SF23 = AREA0 * D333_2.
VARIABLE LABELS SF23 ' AREA Box Ridges' .
IF (VC3 EQ 3) SF33 = 0 .
IF (D332_3 EQ 1) SF33 = AREA0 * D333_3.
VARIABLE LABELS SF33 ' AREA Contour Ridges' .
IF (VC3 EQ 3) SF43 = 0 .
IF (D332_4 EQ 1) SF43 = AREA0 * D333_4.
VARIABLE LABELS SF43 ' AREA Infiltration Pits' .

IF (VC3 EQ 3) ASF3 = SUM (SF13 TO SF43).
VARIABLE LABELS ASF3 'TOTAL AREA Soil Fertility' .
IF(ASF3 GT AREA0) ASF3 = AREA0.
IF (D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1 | D332_4 EQ 1) ANYSF43 = ASF3.
IF (VC3 = 3) ANY43 = 2 .
IF (D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1 | D332_4 EQ 1) ANY43 = 1.

* 5 IRRIGATION.
IF (VC3 EQ 3) IRR13 = 0 .
IF (D341 EQ 1) IRR13 = AREA0 * D343.
VARIABLE LABELS IRR13 ' AREA Irrigation' .

IF(VC3 EQ 3) AIRR3 = IRR13 .
VARIABLE LABELS AIRR3 'TOTAL AREA IRRIGATION' .
IF (D341 EQ 1) ANYIRR53 = AIRR3.
IF (VC3 = 3) ANY53 = 2 .
IF (D341 EQ 1) ANY53 = 1.

* 6 WATER MANAGEMENT.

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IF (VC3 EQ 3) WM13 = 0 .
IF (D332_1 EQ 1) WM13 = AREA0 * D333_1.
VARIABLE LABELS WM13 ' AREA Mulching' .
IF (VC3 EQ 3) WM23 = 0 .
IF (D332_2 EQ 1) WM23 = AREA0 * D333_2.
VARIABLE LABELS WM23 ' AREA Box Ridges' .
IF (VC3 EQ 3) WM33 = 0 .
IF (D332_3 EQ 1) WM33 = AREA0 * D333_3.
VARIABLE LABELS WM33 ' AREA Contour Ridges' .
IF (VC3 EQ 3) WM43 = 0 .
IF (D332_4 EQ 1) WM43 = AREA0 * D333_4.
VARIABLE LABELS WM43 ' AREA Infiltration Pits' .
IF (VC3 EQ 3) WM53 = 0 .
IF (D332_5 EQ 1) WM53 = AREA0 * D333_5.
VARIABLE LABELS WM53 ' AREA Swales' .
IF (VC3 EQ 3) WM63 = 0 .
IF (D332_6 EQ 1) WM63 = AREA0 * D333_6.
VARIABLE LABELS WM63 ' AREA Contour Vegetation Rows' .

IF (VC3 EQ 3) AWM3 = SUM (WM13 TO WM63) .
VARIABLE LABELS AWM3 'TOTAL AREA WATER MANAGEMENT' .
IF(AWM3 GT AREA0) AWM3 = AREA0.
IF (D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1 | D332_4 EQ 1 | D332_5 EQ 1 | D332_6 EQ 1) ANYWM63 = AWM3.
IF (VC3 = 3) ANY63 = 2 .
IF (D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1 | D332_4 EQ 1 | D332_5 EQ 1 | D332_6 EQ 1) ANY63 = 1.

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* 7 CLIMATE MITIGATION .

* 8 CLIMATE ADAPTATION .

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IF (VC3 EQ 3) CA13 = 0 .
IF (D3223 EQ 1) CA13 = AREAS * D3233.
VARIABLE LABELS CA13 ' AREA Drought Tolerant Varieties' .
IF (VC3 EQ 3) CA23 = 0 .
IF (D3221 EQ 1) CA23 = AREA0 * D3231.
VARIABLE LABELS CA23 ' AREA Crop Rotation' .
IF (VC3 EQ 3) CA33 = 0 .
IF (D3222 EQ 1) CA33 = AREA0 * D3232.
VARIABLE LABELS CA33 ' AREA Crop Diversification' .
IF (VC3 EQ 3) CA43 = 0 .
IF (D332_1 EQ 1) CA43 = AREA0 * D333_1.
VARIABLE LABELS CA43 ' AREA Mulching' .
IF (VC3 EQ 3) CA53 = 0 .
IF (D332_2 EQ 1) CA53 = AREA0 * D333_2.
VARIABLE LABELS CA53 ' AREA Box Ridges' .
IF (VC3 EQ 3) CA63 = 0 .
IF (D332_3 EQ 1) CA63 = AREA0 * D333_3.
VARIABLE LABELS CA63 ' AREA Contour Ridges' .
IF (VC3 EQ 3) CA73 = 0 .
IF (D332_4 EQ 1) CA73 = AREA0 * D333_4.
VARIABLE LABELS CA73 ' AREA Infiltration Pits' .
IF (VC3 EQ 3) CA83 = 0 .
IF (D332_5 EQ 1) CA83 = AREA0 * D333_5.
VARIABLE LABELS CA83 ' AREA Swales' .
IF (VC3 EQ 3) CA93 = 0 .
IF (D332_6 EQ 1) CA93 = AREA0 * D333_6.
VARIABLE LABELS CA93 ' AREA Contour Vegetation Rows' .
IF (VC3 EQ 3) CA103 = 0 .
IF (D341 EQ 1) CA103 = AREA0 * D343.
VARIABLE LABELS CA103 ' AREA Irrigation' .

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IF(VC3 EQ 3) ACA3 = SUM(CA13 TO CA103) .
VARIABLE LABELS ACA3 'TOTAL AREA CLIMATE ADAPTATION' .
IF(ACA3 GT AREA0) ACA3 = AREA0.
IF (D3223 EQ 1 | D3221 EQ 1 | D3222 EQ 1 | D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1

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| D332_4 EQ 1 | D332_5 EQ 1 | D332_6 EQ 1 | D341 EQ 1 ) ANYCA83 = ACA3.
IF (VC3 = 3) ANY83 = 2 .
IF (D3223 EQ 1 | D3221 EQ 1 | D3222 EQ 1 | D332_1 EQ 1 | D332_2 EQ 1 | D332_3 EQ 1
| D332_4 EQ 1 | D332_5 EQ 1 | D332_6 EQ 1 | D341 EQ 1 ) ANY83 = 1.

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* APPLIED ANY TEHNOLOGY .

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IF(VC3 = 3) ANYTECH3 = 0 .
IF (VC3 = 3 ) ANYTECH3 = SUM (ANYCG13, ANYCP23, ANYDM33, ANYSF43, ANYIRR53, ANYWM63, ANYCA83).
VARIABLE LABELS ANYTECH3 'Applied Any Technology' .
IF (ANYTECH3 GT AREAO) ANYTECH3 = AREAO .
IF (VC3 = 3) ANYO = 2 .
IF (ANY13 = 1 | ANY23 = 1 | ANY33 = 1 | ANY43 = 1 | ANY53 = 1 | ANY63 = 1 | ANY83 = 1) ANYO = 1.

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* CONSOLIDATION OF TOTAL AREAS ACROSS VC BY TECH TYPES .

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IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTACG = SUM(ACG1, ACG2, ACG3) .
VARIABLE LABELS TOTACG 'TOTAL AREA CROP GENETICS' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTACP = SUM(ACP1, ACP2, ACP3) .
VARIABLE LABELS TOTACP 'TOTAL AREA CULTURAL PRACTICES' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTADM = SUM(ADM1, ADM2, ADM3) .
VARIABLE LABELS TOTADM 'TOTAL AREA DISEASE MANAGEMENT' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTASF = SUM(ASF1, ASF2, ASF3) .
VARIABLE LABELS TOTASF 'TOTAL AREA SOIL FERTILITY' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAIRR = SUM(AIRR1, AIRR2, AIRR3) .
VARIABLE LABELS TOTAIRR 'TOTAL AREA IRRIGATION' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAWM = SUM(AWM1, AWM2, AWM3) .
VARIABLE LABELS TOTAWM 'TOTAL AREA WATER MANAGEMENT' .
IF(VC1 = 1 | VC2 = 2) TOTACM = SUM(ACM1, ACM2) .
VARIABLE LABELS TOTACM 'TOTAL AREA CLIMATE MITIGATION' .
IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTACA = SUM(ACA1, ACA2, ACA3) .
VARIABLE LABELS TOTACA 'TOTAL AREA CLIMATE ADAPTATION' .

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* CONSOLIDATION OF TOTAL AREAS ACROSS VC BY ONE OR MORE TECH TYPES .

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IF(VC1 = 1) TOTAL_ANY1 = 0.
IF(VC1 = 1 AND ANYTECH1 GT AREAG) ANYTECH1 = AREAG.

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IF(VC2 = 2) TOTAL_ANY2 = 0.
IF(VC2 = 2 AND ANYTECH2 GT AREAS) ANYTECH2 = AREAS.

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IF(VC3 = 3) TOTAL_ANY3 = 0.
IF(VC3 = 3 AND ANYTECH3 GT AREAO) ANYTECH3 = AREAO.

```

```

IF(VC1 = 1 | VC2 = 2 | VC3 = 3) TOTAL_ANY = SUM (ANYTECH1, ANYTECH2, ANYTECH3) .
VARIABLE LABELS TOTAL_ANY 'AREA UNDER ONE OR MORE TECH TYPES' .
*IF(VC1 = 1 | VC2 = 2 | VC3 = 3 AND MISSING (TOTAL_ANY)) TOTAL_ANY = 0.

```

* RECODE DECISION MAKERS .

```

IF(VC1 = 1 | VC2 = 2 | VC3 = 3) DM = 3 .

```

```

IF(D10A = 1 & D20A = 1 & D30A = 1) DM = 1.
IF(D10A = 2 & D20A = 2 & D30A = 2) DM = 2.
IF(D10A = 3 & D20A = 3 & D30A = 3) DM = 3.

```

```

IF (D10A =1 AND D20A = 1 AND (D30A NE 1 | MISSING (D30A) ) ) DM= 3.
IF (D10A =1 AND D30A = 1 AND (D20A NE 1 | MISSING (D20A) ) ) DM= 3.
IF (D10A =2 AND D20A = 2 AND (D30A NE 2 | MISSING (D30A) ) ) DM= 3.
IF (D10A =2 AND D30A = 2 AND (D20A NE 2 | MISSING (D20A) ) ) DM= 3.
IF (D10A =3 AND D20A = 3 AND (D30A NE 3 | MISSING (D30A) ) ) DM= 3.
IF (D10A =3 AND D30A = 3 AND (D20A NE 3 | MISSING (D20A) ) ) DM= 3.

```

```

IF (D20A =1 AND D30A = 1 AND (D10A NE 1 | MISSING (D10A) ) ) DM= 3.
IF (D20A =2 AND D30A = 2 AND (D10A NE 2 | MISSING (D10A) ) ) DM= 3.
IF (D20A =3 AND D30A = 3 AND (D10A NE 3 | MISSING (D10A) ) ) DM= 3.

```

```

IF (D10A =1 AND MISSING(D20A) AND MISSING(D30A)) DM= 1.

```

```

IF (MISSING(D10A) AND D20A = 1 AND MISSING(D30A)) DM= 1.
IF (MISSING(D10A) AND MISSING(D20A) AND D30A =1) DM= 1.
IF (D10A =2 AND MISSING(D20A) AND MISSING(D30A)) DM= 2.
IF (MISSING(D10A) AND D20A = 2 AND MISSING(D30A)) DM= 2.
IF (MISSING(D10A) AND MISSING(D20A) AND D30A =2) DM= 2.
IF (D10A =3 AND MISSING(D20A) AND MISSING(D30A)) DM= 3.

```

* SAVE RELEVANT VARIABLES .

```

SAVE OUTFILE='C:\Users\Documents\Survey Results\Final\Temp\TECH_AREA.sav'
/KEEP SAM_WT VC1 VC2 VC3 D10A D20A D30A DM
TOTACG TOTACP TOTACG TOTADM TOTASF TOTAIIR TOTAWM TOTACM TOTACA
TOTAL_ANY ANYTECH1 ANYTECH2 ANYTECH3 ANYG ANYS ANYO .

```

* TABULATION BY TECH TYPES .

```

GET FILE='C:\Users\Documents\Survey Results\Final\Temp\TECH_AREA.sav' .
SELECT IF(NOT MISSING (DM) ).

```

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES = TOTACG TOTACP TOTADM TOTASF TOTAIIR TOTAWM TOTACM TOTACA DISPLAY=LABEL

/TABLE (TOTACG + TOTACP + TOTADM + TOTASF + TOTAIIR + TOTAWM + TOTACM + TOTACA)

[SUM VALIDN MEAN "Average Area in HA" STDDEV]

/SLABELS VISIBLE=YES

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE= 'TABLE D71: Weighted Area Under Improved Technologies By Technology Type: 2016-2017 Growing Season ' .

WEIGHT OFF .

* TABULATION BY ONE OR MORE TECH TYPES.

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES = TOTAL_ANY DISPLAY=LABEL

/TABLE TOTAL_ANY

[SUM TOTALN MEAN "Average Area in HA" STDDEV]

/SLABELS VISIBLE=YES

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE= 'TABLE D72: Weighted Area Under One or More Technologies: 2016-2017 Growing Season ' .

WEIGHT OFF .

* TABULATION BY DECISION MAKER.

VARIABLE LABELS DM 'DECISION MAKERS' .

VALUE LABELS DM 1 'MALE' 2 'FEMALE' 3 'JOINT'.

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES = DM TOTAL_ANY DISPLAY=LABEL

/TABLE DM BY TOTAL_ANY [SUM TOTALN MEAN "Average Area in HA" RANGE STDDEV]

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= DM MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'

TITLE= 'TABLE D71: Weighted Area Under Improved Technologies By Technology Type: 2016-2017 Growing Season ' .

WEIGHT OFF .

* TABULATION BY VC.

VARIABLE LABELS ANYTECH1 'GROUNDNUTS' .

VARIABLE LABELS ANYTECH2 'SOYBEANS' .

VARIABLE LABELS ANYTECH3 'OFSP' .

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

```

/VLABELS VARIABLES = ANYTECH1 ANYTECH2 ANYTECH3 DISPLAY=LABEL
/TABLE (ANYTECH1 + ANYTECH2 + ANYTECH3) [SUM VALIDN MEAN "Average Area in HA" STDDEV ]
/SLABELS VISIBLE=YES
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'TABLE D71: Weighted Area Under Improved Technologies By Technology Type: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* ONE OR MORE TYPE: PERCENTAGE.
VALUE LABELS ANYG 1 'YES' 2 'NO' .
VALUE LABELS ANYS 1 'YES' 2 'NO' .
VALUE LABELS ANYO 1 'YES' 2 'NO' .
VARIABLE LABELS ANYG 'ANY GROUNDNUTS' .
VARIABLE LABELS ANYS 'ANY SOYBEANS' .
VARIABLE LABELS ANYO 'ANY OFSP' .

```

```

WEIGHT BY SAM_WT .
CTABLES
/format empty=blank
/VLABELS VARIABLES= ANYG ANYS ANYO DISPLAY=LABEL
/TABLE (ANYG + ANYS + ANYO)
[COUNT "NUMBER OF FARMERS" ROWPCT.COUNT ]
/SLABELS VISIBLE=YES
/CLABELS ROWLABELS=OPPOSITE
/CATEGORIES VARIABLES= ANYG ANYS ANYO MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017'
title= 'TABLE D73: Weighted Number of Farmers who Applied One or More Improved Technologies: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

* ===== END SYNTAX ===== .

* ===== GROSS MARGIN, YIELD AND SALES ===== .

```

* 1.4-3 Gross Margin per hectare obtained with USG Assistance
* 1.4-4 Yield of targeted value chains
* 1.1-1 Value of annual sales for farmers receiving USG assistance
=====

```

```

===== .
* 1- GROSS MARGIN PER HA, PER CAGE OBTAINED WITH USG ASSISTANCE .
* 2- YIELD PER HA OF SELECTED PRODUCTS
* 3- VALUE OF SMALLHOLDER SALES GENERATED WITH USG ASSISTANCE.
* ----- .

```

* THIS SYNTAX FILE CALCULATES THE FIVE DATA POINTS NECESSARY TO ESTIMATE FARMERS GROSS MARGIN PER UNIT OF LAND, FARM CROP YIELDS AND VALUE OF SALES - THE DIFFERENT SECTIONS FOR EACH DATA POINT ARE IDENTIFIED BELOW .

* TABLES ARE DISAGGREGATED BY VC: GROUNDNUTS, SOYBEANS, OFSP AND BY DECISION MAKERS: MALE, FEMALE AND JOINT .

* ----- .

GET FILE='C:\Users\Documents\Survey Results\Final\USAID MELS_IBTC_6Nov Weight Final.sav'.

* ===== CONVERT GPS MEASUREMENTS INTO HA ===== .

* Variables I01, I02 and I03 contain the survey GPS area measurements in Square Meters, this section makes the conversions to HA .

* ----- .

* NOTE: For Groundnuts, an extreme Value of GPS measurement of 92024SM has been excluded as an outlier

* thus, allowing us to have a significant regression model .

* All GPS measurements for Soybeans and OFSP are included - No area Restrictions are applied on them .

MISSING VALUES I01 (92024) .

IF(D10 = 1) GNAPHA = I01 / 10000 .

VARIABLE LABELS GNAPHA ' GNUT GPS AREA HA' .

```

IF(D20 = 1) SBAPHA = I02 / 10000 .
VARIABLE LABELS SBAPHA 'SOYA GPS AREA HA' .
IF(D30 = 1) OFSPAPHA = I03 / 10000 .
VARIABLE LABELS OFSPAPHA 'OFSP GPS AREA HA' .

```

* RUN REGRESSIONS EQUATIONS OF GPS MEASUREMENTS AS A FUNCTION OF FARMER ESTIMATES = .

* GROUNDNUTS .

```

REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/STATISTICS COEFF OUTS CI(95) R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT GNAPHA
/METHOD=ENTER D111A.

```

* SOYBEANS.

```

REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/STATISTICS COEFF OUTS CI(95) R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/NOORIGIN
/DEPENDENT SBAPHA
/METHOD=ENTER D211A.

```

* OFSP.

```

REGRESSION
/DESCRIPTIVES MEAN STDDEV CORR SIG N
/MISSING LISTWISE
/STATISTICS COEFF OUTS CI(95) R ANOVA
/CRITERIA=PIN(.05) POUT(.10)
/ORIGIN
/DEPENDENT OFSPAPHA
/METHOD=ENTER D311A.

```

* CORRECTION OF FARMER ESTIMATES USING THE ESTIMATED REGRESSION COEFFICIENTS .

* GROUNDNUTS CORRECTED AREA (AREAG) .

```

IF(D10 = 1) AREAG = 0 .
RECODE AREAG (0 = SYSMIS) .
VARIABLE LABELS AREAG 'GROUNDNUTS AREA CORRECTED' .
* SET TEMPI TO: 0 IF NO GPS MEASURES, 1 IF GPS MEASURES EXIST .
IF(D10 = 1) TEMPI = 0.
IF(GNAPHA GE 0.001) TEMPI = 1 .

```

* COLLECT MANUALLY REGRESSION COEFFS FROM REGRESSION RESULTS ABOVE INTO C AND B BELOW .

```

COMPUTE C = .239 .
COMPUTE B = .537 .
COMPUTE YHAT = (C + B * D111A) .
IF(TEMPI EQ 1) AREAG = GNAPHA .
IF(TEMPI EQ 0) AREAG = YHAT .
EXECUTE.

```

* SOYBEANS. The same process for Groundnuts applies here also .

```

IF(D20 = 1) AREAS = 0 .
VARIABLE LABELS AREAS 'SOYBEANS AREA CORRECTED' .
RECODE AREAS (0 = SYSMIS).

```

```

iF(D20 = 1) TEMP2 = 0.
iF(SBAPHA GE 0.001) TEMP2 = 1 .

```

```

COMPUTE C = .128 .

```

```

COMPUTE B = .594 .
COMPUTE YHAT = (C + B * D211A) .
IF(TEMP2 EQ 1) AREAS = SBAPHA .
IF(TEMP2 EQ 0) AREAS = YHAT .
EXECUTE.

```

* OFSP - Run Regression Without a CONSTANT since it is not Significant-The same process applies here .

```

IF(D30 = 1) AREAO = 0 .
VARIABLE LABELS AREAO 'OFSP AREA CORRECTED' .
RECODE AREAO (0 = SYSMIS).

```

```

IF(D30 = 1) TEMP3 = 0.
IF(SBAPHA GE 0.001) TEMP3 = 1 .
COMPUTE B = .866 .
COMPUTE YHAT = B * D311A .
IF(TEMP3 EQ 1) AREAO = OFSPAPHA .
IF(TEMP3 EQ 0) AREAO = YHAT .
EXECUTE.

```

* ===== AREA PLANTED TABULATIONS =====.

* Groundnuts Average Area Planted.

```

WEIGHT BY SAM_WT .
CTABLES
/format empty=blank
/VLABELS VARIABLES=D10A AREAG DISPLAY=NONE
/TABLE D10A BY AREAG [VALIDN "Number of Farmers" MEAN "Average Area in HA" RANGE STDDEV SEMEAN]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D10A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017'
TITLE= 'TABLE D11: Weighted Average Area Planted Under Groundnuts: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

* Soybeans Average Area Planted.

```

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES=D20A AREAS DISPLAY=NONE
/TABLE D20A BY AREAS [VALIDN "Number of Farmers" MEAN "Average Area in HA" RANGE STDDEV SEMEAN]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D20A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017'
title= 'TABLE D12: Weighted Average Area Planted Under Soybeans: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

* OFSP Average Area Planted.

```

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES=D30A AREAO DISPLAY=NONE
/TABLE D30A BY AREAO [VALIDN "Number of Farmers" MEAN "Average Area in HA" RANGE STDDEV SEMEAN]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D30A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017'
title= 'TABLE D13: Weighted Average Area Planted Under OFSP: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

* ===== VALUE CHAIN PRODUCTIONS =====.

* NOTE: All units of production are expressed in Kg for all crops by CDM, through Batch Processing - They are converted into MT below.

* The shelled production is expressed in equivalent unshelled.

* A small minority of farmers answered the question in terms of shelled production (48) of which 5 farmers only harvested shelled.

*

*Groundnuts Production (MT) .
 IF(D10 = 1) gprodu = D114A / 1000.
 IF(D10 = 1) gprods = D115A / 1000.
 IF (SYSMISS(gprodu) AND D10 = 1) gprodu = 0. /* To allow adding quantities if one of them is missing */
 IF (SYSMISS(gprods) AND D10 = 1) gprods = 0.
 * NOTE: SHELLED GROUNDNUT PRODUCTION IS CONVERTED IN EQUIVALENTS UNSHELLED.
 IF(D10 = 1) gprod = gprodu + (gprods * 1.67) .
 Variable LABELS gprod "Groundnuts Production in MT".
 MISSING VALUES gprod (0).

WEIGHT BY SAM_WT.
 CTABLES
 /format empty=blank
 /VLABELS VARIABLES= D10A gprod DISPLAY=NONE
 /TABLE D10A BY gprod [VALIDN "Number of Farmers" MEAN "Average Production (MT)" F7.4
 RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
 /SLABELS VISIBLE=YES
 /CATEGORIES VARIABLES= D10A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
 /TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
 title= 'TABLE D21: Weighted Average Production of Groundnuts: 2016-2017 Growing Season ' .
 WEIGHT OFF .

*Soybeans Production (MT) .
 IF(D20 = 1) sprod = D214A / 1000 .
 Variable LABELS sprod "Soybeans Production in MT".
 WEIGHT BY SAM_WT.
 CTABLES
 /format empty=blank
 /VLABELS VARIABLES= D20A sprod DISPLAY=NONE
 /TABLE D20A BY sprod [VALIDN "Number of Farmers" MEAN "Average Production (MT)" F7.4
 RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
 /SLABELS VISIBLE=YES
 /CATEGORIES VARIABLES= D20A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
 /TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
 title= 'TABLE D22: Weighted Average Production of Soybeans: 2016-2017 Growing Season ' .
 WEIGHT OFF .

*OFSP Production (MT) .
 IF(D30 = 1) oprod = 0 .
 IF(D30 = 1) oprod = D314A / 1000 .
 Variable LABELS oprod "OFSP Production in MT".
 WEIGHT BY SAM_WT.
 CTABLES
 /format empty=blank
 /VLABELS VARIABLES= D30A oprod DISPLAY=NONE
 /TABLE D30A BY oprod [VALIDN "Number of Farmers" MEAN "Average Production (MT)" F7.4
 RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
 /SLABELS VISIBLE=YES
 /CATEGORIES VARIABLES= D30A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
 /TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
 title= 'TABLE D23: Weighted Average Production of OFSP: 2016-2017 Growing Season ' .
 WEIGHT OFF .

* ===== QUANTITIES SOLD ===== .
 * NOTE: All units of quantities sold are expressed in Kg for all crops by CDM, through Batch Processing - Values are converted into MT below .
 * The shelled quantities of Groundnuts sold are converted into equivalent unshelled using a coefficient of 1.6 .

* Groundnuts Sales Quantity (MT) .
 IF (SYSMISS(D1171) AND D10 = 1) D1171 = 0.
 IF (SYSMISS(D1172) AND D10 = 1) D1172 = 0.
 * : SALES OF SHELLED GROUNDNUTS HAVE BEEN CONVERTED INTO EQUIVALENT UNSHELLED .
 IF (D10 = 1) gsell = D1171 + (D1172 * 1.67) .
 IF(D10 = 1) gnut_sold = gsell / 1000 .

Variable LABELS gnut_sold "Quantities Groundnuts Sold in MT".

WEIGHT BY SAM_WT.

CTABLES

/format empty=blank

/VLABELS VARIABLES= D10A gnut_sold DISPLAY=NONE

/TABLE D10A BY gnut_sold [VALIDN "Number of Farmers" MEAN "Average Quantities Sold (MT)" F7.4
RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= D10A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'

title= 'TABLE D31: Weighted Average Quantities of Groundnuts Sold: 2016-2017 Growing Season ' .

WEIGHT OFF .

* Soybeans Sales Quantity (MT) .

IF (D215 = 1) ssell = D216A .

IF(D20 = 1) soy_sold = 0 .

IF(D20 = 1) soy_sold = ssell / 1000 .

Variable LABELS soy_sold "Quantities Soybeans Sold in MT".

WEIGHT BY SAM_WT .

CTABLES

/format empty=blank

/VLABELS VARIABLES= D20A soy_sold DISPLAY=NONE

/TABLE D20A BY soy_sold [VALIDN "Number of Farmers" MEAN "Average Quantities Sold (MT)" F7.4
RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= D20A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'

title= 'TABLE D32: Weighted Average Quantities of Soybeans Sold: 2016-2017 Growing Season ' .

WEIGHT OFF .

* OFSP Sales Quantity (MT) .

IF (D30 = 1 AND D315 = 1) osell = D316 .

IF(D30 = 1) ofsp_sold = 0 .

IF(D30 = 1 AND D315 = 1) ofsp_sold = osell / 1000 .

Variable LABELS ofsp_sold "Quantities Soybeans Sold in MT".

WEIGHT BY SAM_WT.

CTABLES

/format empty=blank

/VLABELS VARIABLES= D30A ofsp_sold DISPLAY=NONE

/TABLE D30A BY ofsp_sold [VALIDN "Number of Farmers" MEAN "Average Quantities Sold (MT)" F7.4
RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]

/SLABELS VISIBLE=YES

/CATEGORIES VARIABLES= D30A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE

/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'

title= 'TABLE D33: Weighted Average Quantities of OFSP Sold: 2016-2017 Growing Season ' .

WEIGHT OFF .

* ===== VALUE OF SALES DATA POINT ===== .

* NOTE: Exchange Rate of Kwacha 718.16 = US\$1 is calculated from a time series as the mean Xrate during the growing season 2016-2017 .

* The Average XRate is calculated between October 2016 - September 2017, which is the time period during which VC decisions are made .

* The sale value of the shelled groundnuts is adjusted in equivalent unshelled. The information used to estimate the price differential

between the shelled and the unshelled groundnuts price is provided by Extension Agents working for the MGO. They provided the following information:

High production Districts represented by Lilongwe: Shelled = 400 Kwacha/Kg; Unshelled = 280 Kwacha/Kg

Low production Districts represented by Balaka: Shelled = 650 Kwacha/Kg; Unshelled = 350 Kwacha/Kg

The Mean Price Ratio of Shelled to Unshelled 1.67 is estimated as the conversion factor of Shelled into Unshelled.

* Groundnuts Sales Values .

```

IF (SYSMISS(D1182) AND D10 = 1) D1182 = 0.
IF (SYSMISS(D1181) AND D10 = 1) D1181 = 0.
IF(D10 = 1) gval = D1181 + D1182 .
IF(D10 = 1) gvaldollar = gval / 718.16 .
Variable LABELS gvaldollar "Values of Groundnuts Sold".

```

```

WEIGHT SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D10A gvaldollar DISPLAY=NONE
/TABLE D10A BY gvaldollar [VALIDN "Number of Farmers" MEAN "Average Value of Sales ($US)" F7.4
RANGE F7.4 STDDEV F7.2 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D10A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
title= 'TABLE D41: Weighted Average Values of the Groundnuts Sold: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* Soybeans Sales Values .
IF(D20 = 1) sval = D217 .
IF(D20 = 1) svaldollar = sval / 718.16 .
Variable LABELS svaldollar "Values of Soybeans Sold in $US".

```

```

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D20A svaldollar DISPLAY=NONE
/TABLE D20A BY svaldollar [VALIDN "Number of Farmers" MEAN "Average Value of Sales ($US)" F7.4
RANGE F7.4 STDDEV F7.2 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D20A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
title= 'TABLE D42: Weighted Average Values of the Soybeans Sold: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* OFSP Sales Values .
IF(D30 = 1 AND D315 = 1) oval = D317 .
IF(D30 = 1) ovaldollar = 0 .
IF(D30 = 1 AND D315 = 1) ovaldollar = oval / 718.16 .
Variable LABELS ovaldollar "Values of OFSP Sold ($US)".
WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D30A ovaldollar DISPLAY=NONE
/TABLE D30A BY ovaldollar [VALIDN "Number of Farmers" MEAN "Average Value of Sales ($US)" F7.4
RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D30A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
title= 'TABLE D43: Weighted Average Values of the OFSP Sold: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* ===== RECURRENT INPUT COSTS ===== .
* NOTE: Exchange Rate of Kwacha 718.16 = US$1 is calculated as the mean Xrate during the growing season 2016-2017 .
* The Average XRate is calculated between October 2016 - September 2017 .

```

```

* GROUNDNUTS
* Fertilizer .
IF (NOT missing(D1112_1) & D10 = 1 & D1110_1 EQ 1) gfertc = (D1111A_1 * D1112_1 * D1113_1) / 718.16 .
Variable LABELS gfertc "Values of fertilizer".
*Seeds .
IF (NOT missing(D1112_2) & D10 = 1 & D1110_2 EQ 1) gseedc = (D1111A_2 * D1112_2 * D1113_2) / 718.16.
Variable LABELS gseedc "Values of Seeds".
* Labor .

```

```

IF (NOT missing(D1112_3) & D10 = 1 & D1110_3 EQ 1) glaborc = (D1111A_3 * D1112_3 * D1113_3) / 718.16 .
Variable LABELS glaborc "Values of Hired Labor".
* Pesticides .
IF (NOT missing(D1112_4) & D10 = 1 & D1110_4 EQ 1) gpestc = (D1111A_4 * D1112_4 * D1113_4) / 718.16.
Variable LABELS gpestc "Values of Pesticides".
* Fuel .
IF (NOT missing(D1112_5) & D10 = 1 & D1110_5 EQ 1) gfuelc = (D1111A_5 * D1112_5 * D1113_5) / 718.16.
Variable LABELS gfuelc "Values of Fuel".
* Transport .
IF (NOT missing(D1112_6) & D10 = 1 & D1110_6 EQ 1) gtransc = (D1111A_6 * D1112_6 * D1113_6) / 718.16.
Variable LABELS gtransc "Values of Transport".
* Inoculant .
IF (NOT missing(D1112_7) & D10 = 1 & D1110_7 EQ 1) ginouc = (D1111A_7 * D1112_7 * D1113_7) / 718.16 .
Variable LABELS ginouc "Values of Inoculant".
* Herbicide .
IF (NOT missing(D1112_8) & D10 = 1 & D1110_8 EQ 1) gherbc = (D1111A_8 * D1112_8 * D1113_8) / 718.16.
Variable LABELS gherbc "Values of Herbicide".

* COST FOR ALL GROUNDNUTS INPUTS .
IF(D10 = 1) GTCOST = SUM(gfertc, gseedc, glaborc, gpestc, gfuelc, gtransc, ginouc, gherbc) .
VARIABLE LABELS GTCOST 'TOTAL GROUNDNUTS COST' .

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D10A GTCOST DISPLAY=NONE
/TABLE D10A BY GTCOST
      [VALIDN "Number of Farmers" MEAN "Recurrent Inputs Cost ($US)" F7.4
      RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D10A LABEL= "Overall" MISSING=EXCLUDE TOTAL=YES EMPTY=INCLUDE
/TITLES caption= 'Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017'
      title= 'TABLE D51: Weighted Average Values of Grountnuts Inputs Purchased: 2016-2017 Growing Season ' .
WEIGHT OFF .

* SOYBEANS
* Fertilizer .
IF (NOT missing(D2111_1) & D20 = 1 & D219_1 EQ 1) sfertc = (D2110A_1 * D2111_1 * D2112_1) / 718.16 .
Variable LABELS sfertc "Values of Soy fertilizer".
* Seeds .
IF (NOT missing(D2111_2) & D20 = 1 & D219_2 EQ 1) sseedc = (D2110A_2 * D2111_2 * D2112_2) / 718.16 .
Variable LABELS sseedc "Values of Soy Seeds".
* Labor .
IF (NOT missing(D2111_3) & D20 = 1 & D219_3 EQ 1) slaborc = (D2110A_3 * D2111_3 * D2112_3) / 718.16 .
Variable LABELS slaborc "Values of Soy Seeds".
* Pesticides .
IF (NOT missing(D2111_4) & D20 = 1 & D219_4 EQ 1) spestc = (D2110A_4 * D2111_4 * D2112_4) / 718.16 .
Variable LABELS spestc "Values of Soy Pesticides".
* Fuel .
IF (NOT missing(D2111_5) & D20 = 1 & D219_5 EQ 1) sfuelc = (D2110A_5 * D2111_5 * D2112_5) / 718.16 .
Variable LABELS sfuelc "Values of Soy Fuel".
* Transport .
IF (NOT missing(D2111_6) & D20 = 1 & D219_6 EQ 1) stransc = (D2110A_6 * D2111_6 * D2112_6) / 718.16 .
Variable LABELS stransc "Values of Soy Transport".
* Inoculant .
IF (NOT missing(D2111_7) & D20 = 1 & D219_7 EQ 1) sinouc = (D2110A_7 * D2111_7 * D2112_7) / 718.16 .
Variable LABELS sinouc "Values of Soy Inoculant".
* Herbicide .
IF (NOT missing(D2111_8) & D20 = 1 & D219_8 EQ 1) sherbc = (D2110A_8 * D2111_8 * D2112_8) / 718.16 .
Variable LABELS sherbc "Values of Soy Herbicide".

* COST FOR ALL SOYBEANS INPUTS .
IF(D20 = 1) STCOST = SUM(sfertc, sseedc, slaborc, spestc, sfuelc, stransc, sinouc, sherbc) .
VARIABLE LABELS STCOST 'TOTAL SOYBEANS COST' .

```

```

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D20A STCOST DISPLAY=NONE
/TABLE D20A BY STCOST
      [VALIDN "Number of Farmers" MEAN "Recurrent Inputs Cost ($US)" F7.4
      RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D20A LABEL= "Overall" MISSING=EXCLUDE TOTAL=YES EMPTY=INCLUDE
/TITLES caption= 'Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017'
      title= 'TABLE D52: Weighted Average Values of Soybeans Inputs Purchased: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

* OFSP .
* Fertilizer .
IF (NOT missing(D31111) & D30 = 1 & D3191 EQ 1) ofertc = (D31101 * D31111 * D31121) / 718.16 .
Variable LABELS ofertc "Values of OFSP fertilizer".
*Seeds .
IF (NOT missing(D31112) & D30 = 1 & D3192 EQ 1) oseedc = (D31102 * D31112 * D31122) / 718.16 .
Variable LABELS oseedc "Values of OFSP Vines".
* Labor .
IF (NOT missing(D31113) & D30 = 1 & D3193 EQ 1) olaborc = (D31103 * D31113 * D31123) / 718.16 .
Variable LABELS olaborc "Values of OFSP Labor".
* Pesticides .
IF (NOT missing(D31114) & D30 = 1 & D3194 EQ 1) opestc = (D31104 * D31114 * D31124) / 718.16 .
Variable LABELS opestc "Values of OFSP Pesticides".
* Fuel .
IF (NOT missing(D31115) & D30 = 1 & D3195 EQ 1) ofuelc = (D31105 * D31115 * D31125) / 718.16 .
Variable LABELS ofuelc "Values of OFSP Fuel".
* Herbicide .
IF (NOT missing(D31116) & D30 = 1 & D3196 EQ 1) oherbc = (D31106 * D31116 * D31126) / 718.16 .
Variable LABELS oherbc "Values of OFSP Herbicide".

* COST FOR ALL OFSP INPUTS .
IF(D30 = 1) OTCOST = SUM(ofertc, oseedc, olaborc, opestc, ofuelc, oherbc) .
VARIABLE LABELS OTCOST 'TOTAL OFSP COST' .

```

```

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D30A OTCOST DISPLAY=NONE
/TABLE D30A BY OTCOST
      [VALIDN "Number of Farmers" MEAN "Recurrent Inputs Cost ($US)" F7.4
      RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D30A LABEL= "Overall" MISSING=EXCLUDE TOTAL=YES EMPTY=INCLUDE
/TITLES caption= 'Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017'
      title= 'TABLE D53: Weighted Average Values of OFSP Inputs Purchased: 2016-2017 Growing Season ' .
WEIGHT OFF .

```

```

*=====
*
*----- YIELDS CALCULATIONS -----
ACCORDING TO THE STATA REFERENCE MANUAL, DIRECT STANDARDIZATION IS AN ESTIMATION METHOD THAT
ALLOWS
RATES COMPARISONS SUCH AS RATIOS, PROPORTIONS AND MEANS ORIGINATING FROM DIFFERENT FREQUENCY
DISTRIBUTIONS
SUCH AS GENDER, AGE, ETHNICITY.
* IN DIRECT STANDARDIZATION, ESTIMATED RATES ARE ADJUSTED ACCORDING TO THE FREQUENCY
DISTRIBUTION
OF A STANDARD POPULATION PARTITIONED INTO CATEGORIES CALLED STANDARD STRATA,
THE FREQUENCIES DISTRIBUTIONS ARE CALLED STANDARD WEIGHTS.
*WITHOUT STANDARDIZATION, ESTIMATED RATES SUCH AS YIELDS ARE NOT COMPARABLE BETWEEN DIFFERENT
CATEGORIES

```

OF FARMERS BECAUSE OF THEIR UNDERLYING RESPECTIVE DISTRIBUTIONS.

*THE SPSS SPECIAL "RATIO STATISTICS" MODULE IS USED TO CALCULATE YIELDS. IT PROVIDES A MORE ROBUST ALGORITHM TO HANDLE COMPLEX SURVEY DATA ALLOWING YIELD COMPARISONS BETWEEN DIFFERENT CATEGORIES OF DECISION MAKERS: MALE, FEMALE AND JOINT.

*

* GROUNDNUTS .
WEIGHT BY SAM_WT.
RATIO STATISTICS gprod WITH AREAG BY D10A (ASCENDING)
/MISSING=EXCLUDE
/PRINT= WGTMEAN CIN(95) STDDEV .

* SOYBEANS .
RATIO STATISTICS spro with AREAS BY D20A (ASCENDING)
/MISSING=EXCLUDE
/PRINT= WGTMEAN CIN(95) STDDEV .

* OFSP .
RATIO STATISTICS oprod WITH AREAO BY D30A (ASCENDING)
/MISSING=EXCLUDE
/PRINT= WGTMEAN CIN(95) STDDEV .
WEIGHT OFF.

* ===== VALUE OF ANNUAL SALES INDICATOR
===== .

* NOTE: Exchange Rate of Kwacha 718.16 = US\$1 is calculated from a time series as the mean Xrate during the growing season 2016-2017 .

* The Average XRate is calculated between October 2016 - September 2017, which is the time period during which VC decisions are made .

* Groundnuts Sales Values .
IF (SYSMISS(D1182) AND D10=1) D1182 = 0.
IF (SYSMISS(D1181) AND D10=1) D1181 = 0.
IF(D10 = 1) gval = D1181 + D1182 .
IF(D10 = 1) gvaldollar = gval / 718.16 .
Variable LABELS gvaldollar "Values of Groundnuts Sold".

WEIGHT SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D10A gvaldollar DISPLAY=NONE
/TABLE D10A BY gvaldollar [VALIDN "Number of Farmers" MEAN "Average Value of Sales (\$US)" F7.4
RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]
/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D10A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
title= 'TABLE D41: Weighted Average Values of the Groundnuts Sold: 2016-2017 Growing Season ' .
WEIGHT OFF .

* Soybeans Sales Values .
IF(D20 = 1) sval = D217 .
IF(D20 = 1) svaldollar = sval / 718.16 .
Variable LABELS svaldollar "Values of Soybeans Sold in \$US".

WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D20A svaldollar DISPLAY=NONE
/TABLE D20A BY svaldollar [VALIDN "Number of Farmers" MEAN "Average Value of Sales (\$US)" F7.4
RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]

```

/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D20A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
      title= 'TABLE D42: Weighted Average Values of the Soybeans Sold: 2016-2017 Growing Season ' .
WEIGHT OFF .

* OFSP Sales Values .
IF(D30 = 1 AND D315 = 1) oval = D317 .
IF(D30 = 1) ovaldollar = 0 .
IF(D30 = 1 AND D315 = 1) ovaldollar = oval / 718.16 .
Variable LABELS ovaldollar "Values of OFSP Sold ($US)".
WEIGHT BY SAM_WT.
CTABLES
/format empty=blank
/VLABELS VARIABLES= D30A ovaldollar DISPLAY=NONE
  /TABLE D30A BY ovaldollar [VALIDN "Number of Farmers" MEAN "Average Value of Sales ($US)" F7.4
    RANGE F7.4 STDDEV F7.4 SEMEAN F7.4]

/SLABELS VISIBLE=YES
/CATEGORIES VARIABLES= D30A MISSING=EXCLUDE TOTAL = YES EMPTY= EXCLUDE
/TITLES caption= 'Source: Baseline Survey USAID-Malawi/SEG Office/MELS, CDM: October 2017'
      title= 'TABLE D43: Weighted Average Values of the OFSP Sold: 2016-2017 Growing Season ' .
WEIGHT OFF .

*===== END OF SYNTAX FILE
===== .

```

ANNEX 9. CENTRE FOR DEVELOPMENT MANAGEMENT (CDM) ETHICS POLICY

CENTRE FOR DEVELOPMENT MANAGEMENT FIELD LEVEL ETHICS AND NORMS POLICY

Policy Name	Field Ethics and Norms Policy
Date of First Issue	25 th August 2017
Applies to	All experts and field level support officers
Drafted by	Bright Sibale
Version	08/2017/1

I promise to follow the following ethics and norms while performing the official duties in CDM research field activities

1. Informed consent

I will ask for informed consent from all my respondents. The IC will be based on approved standards for a particular study/research project.

2. Confidentiality/privacy

I will make sure that all the data I get from my respondents are strictly confidential. Where possible I will not collect identification information that can link information to their sources.

3. Voluntary participation

I will make use that participation in the study is voluntary, I will not force or corrupt or coerce people to give me information or

4. Respecting respondents

I will respect respondents, regardless of their social or economic, gender or other status.

5. Proper personality (language, dress code, make-ups, cleanliness, beer drinking)

I will present myself with the most appropriate personality so that I represent CDM and their clients to the best of my capability.

6. Protection of children and marginalized groups

I commit to protect children and other vulnerable groups to the best of my capability. In surveys where I am interviewing children, I will sign a specific child protection policy.

7. Time keeping

I will keep time as agreed with the team. I will be a team player and will not do things that delays or annoys other team members. I will help others do their work better.

8. High quality work

I commit to producing high quality professional work, transparency and without cheating. I will do this for the good of Malawi, CDM, their clients and myself. I will put in as much rigor as I can ably do.

9. Trustworthy, committed and deliver

I will be accountable, trustworthy, committed and results oriented. I promise to deliver.

10. Communication

I promise to communicate, to ask, to report any issues that I have.

11. Respect to leaders

I will respect my leadership in the tasks I have been assigned. I will help them be good leaders.

I agree that if I violate any of the above ethics, CDM is free to withdraw me from field work, withhold my payment or cancel my contract altogether.

Name of Expert	
Signature	
Date	

ANNEX 10: ADDITIONAL BASELINE TABLES¹⁴

MELS Ag Div Farmers Who Applied Improved Technologies

TABLE D10: Weighted Number of Farmers Who Applied Improved Technologies by Tech Type: 2016-2017 Growing Season

	Number of Farmers	Percentage of Farmers	Total # of Farmers
1- CROP GENETICS	6,363	65.10%	9,776
2- CULTURAL PRACTICES	9,024	92.30%	9,776
3- DISEASE MANAGEMENT	7,512	76.80%	9,776
4- SOIL FERTILITY	5,429	55.50%	9,776
5- IRRIGATION	258	2.60%	9,776
6- WATER MANAGEMENT	6,127	62.70%	9,776
7- CLIMATE MITIGATION	730	8.30%	8,789
8- CLIMATE ADAPTATION	9,420	96.40%	9,776
9- MARKETING DISTRIBUTION	209	2.40%	8,789
10-POST HARVEST HANDLING & STORAGE	8,323	85.10%	9,776
11-PROCESSING & PRESERVATION	8,220	84.10%	9,776
APPLIED AT LEAST ONE TECH TYPE	9,714	99.40%	9,776

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D10 bis: Unweighted Number of Farmers Who Applied Improved Technologies by Tech Type: 2016-2017 Growing Season

	Number of Farmers	Percentage of Farmers	Total # of Farmers
1- CROP GENETICS	1,096	65.40%	1,677
2- CULTURAL PRACTICES	1,538	91.70%	1,677
3- DISEASE MANAGEMENT	1,289	76.90%	1,677
4- SOIL FERTILITY	969	57.80%	1,677
5- IRRIGATION	58	3.50%	1,677
6- WATER MANAGEMENT	1,056	63.00%	1,677
7- CLIMATE MITIGATION	116	8.10%	1,432
8- CLIMATE ADAPTATION	1,615	96.30%	1,677
9- MARKETING DISTRIBUTION	27	1.90%	1,432
10-POST HARVEST HANDLING STORAGE	1,392	83.00%	1,677
11-PROCESSING PRESERVATION	1,379	82.20%	1,677
APPLIED AT LEAST ONE TECHNOLOGIES	1,666	99.30%	1,677

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

¹⁴ Range = maximum minus minimum value

TABLE D11: Weighted Number of Farmers Who Applied Improved Technologies by Sex 2016-2017 Growing Season

	Number of Farmers	Percentage of Farmers	Total Number of Farmers
Male	6,121	99.50%	6,151
Female	3,594	99.10%	3,625
Total	9,714	99.40%	9,776

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D11 bis: Unweighted Number of Farmers Who Applied Improved Technologies by Sex 2016-2017 Growing Season

	Number of Farmers	Percentage of Farmers	Total Number of Farmers
Male	1,004	99.40%	1010
Female	662	99.30%	667
Total	1,666	99.30%	1677

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D12: Weighted Number of Farmers Who Applied Improved Technologies by Crop 2016-2017 Growing Season

	Number of Farmers	Percentage of Farmers	Total Number of Farmers
Groundnuts	6,595	99.60%	6,621
Soybeans	5,778	99.80%	5,792
OFSP	2,713	89.30%	3,038
Others: Non-Crop Specific	7,012	71.70%	9,776

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D12 bis: Unweighted Number of Farmers Who Applied Improved Technologies by Crop 2016-2017 Growing Season

	Number of Farmers	Percentage of Farmers	Total Number of Farmers
Groundnuts	1,095	99.70%	1098
Soybeans	838	99.60%	841
OFSP	548	90.70%	604
Others: Non-Crop Specific	1,258	75.00%	1677

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

MELS AgDiv Five Data Points – Value of Sales –Yields Final – BY AREA

TABLE D11: Average Weighted Area Planted Under Groundnuts: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Area in HA	Range	Standard Deviation	Standard Error of Mean	Extrapolated Area Planted HA
Male	2010	0.4260	3.8036	0.2154	0.0048	3,023
Female	1997	0.3676	2.8013	0.1783	0.0040	2,592
Joint	2614	0.4390	3.2124	0.2575	0.0050	4,052
Total	6621	0.4135	3.8258	0.2254	0.0028	9,667

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D11 bis: Average Unweighted Area Planted Under Groundnuts: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Area in HA	Range	Standard Deviation	Standard Error of Mean
Male	299	0.4085	3.8036	0.2492	0.0144
Female	360	0.3608	2.8013	0.2101	0.0111
Joint	439	0.4293	3.2124	0.2890	0.0138
Total	1098	0.4012	3.8258	0.2560	0.0077

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D12: Average Weighted Area Planted Under Soybeans: 2016-2017 Growing Season

Decision Maker	Number of Farmers	Average Area in HA	Range	Standard Deviation	Standard Error of Mean	Extrapolated Area Planted HA
Male	1923	0.3295	2.4782	0.1943	0.0044	2,236
Female	1725	0.2536	2.5257	0.1483	0.0036	1,544
Joint	2144	0.2913	1.6320	0.1521	0.0033	2,204
Total	5792	0.2927	2.5257	0.1690	0.0022	5,984

TABLE D12 bis: Average Unweighted Area Planted Under Soybeans: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Area in HA	Range	Standard Deviation	Standard Error of Mean
Male	255	0.3112	2.4782	0.2065	0.0129
Female	267	0.2465	2.5257	0.1723	0.0105
Joint	319	0.2811	1.6320	0.1570	0.0088
Total	841	0.2792	2.5257	0.1797	0.0062

TABLE D13: Average Weighted Area Planted Under OFSP: 2016-2017 Growing Season

Decision Maker	Number of Farmers	Average Area in HA	Range	Standard Deviation	Standard Error of Mean	Extrapolated Area Planted HA
Male	1271	0.1507	0.6994	0.1050	0.0029	677
Female	782	0.1247	0.8755	0.1265	0.0045	345
Joint	985	0.1671	0.8658	0.1485	0.0047	582
Total	3038	0.1494	0.8758	0.1270	0.0023	1,605

TABLE D13 bis: Average Unweighted Area Planted Under OFSP: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Area in HA	Range	Standard Deviation	Standard Error of Mean
Male	230	0.1428	0.6994	0.0992	0.0065
Female	170	0.1215	0.8755	0.1194	0.0092
Joint	204	0.1523	0.8658	0.1268	0.0089
Total	604	0.1400	0.8758	0.1153	0.0047

MELS AgDiv Five Data Points–Value of Sales–Yields Final–BY PRODUCTION

TABLE D21: Average Weighted Production of Groundnuts: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Production (MT)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Production MT
Male	2010	.4358	2.8060	.4729	.0105	3,093
Female	1997	.2337	2.1326	.2955	.0066	1,648
Joint	2614	.4098	5.6120	.5181	.0101	3,782
Total	6621	.3646	5.6120	.4557	.0056	8,524

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

TABLE D21 bis: Average Unweighted Production of Groundnuts: 2016-2017 Growing Season

	Unweighted Number of Farmers	Average Production (MT)	Range	Standard Deviation	Standard Error of Mean
Male	299	.3769	2.8060	.4580	.0265
Female	360	.1919	2.1326	.2744	.0145
Joint	439	.3616	5.6120	.5321	.0254
Total	1098	.3101	5.6120	.4489	.0135

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

TABLE D22: Average Weighted Production of Soybeans: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Production (MT)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Production MT
Male	1923	.3840	2.6641	.4908	.0112	2,606
Female	1725	.1901	2.9625	.2580	.0062	1,157
Joint	2144	.3044	4.5838	.4872	.0105	2,304
Total	5792	.2968	4.5838	.4399	.0058	6,068

TABLE D22 bis: Average Unweighted Production of Soybeans: 2016-2017 Growing Season

	Unweighted Number of Farmers	Average Production (MT)	Range	Standard Deviation	Standard Error of Mean
Male	255	.3234	2.6641	.4034	.0253
Female	267	.1635	2.9625	.2584	.0158
Joint	319	.2593	4.5838	.3823	.0214
Total	841	.2483	4.5838	.3602	.0124

TABLE D23: Average Weighted Production of OFSP: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Production (MT)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Production MT
Male	1271	.2750	2.1924	.3070	.0086	1,236
Female	782	.2028	2.0000	.2429	.0087	561
Joint	985	.3260	4.3848	.5803	.0185	1,135
Total	3038	.2730	4.3848	.4073	.0074	2,932

TABLE D23 bis: Average Unweighted Production of OFSP: 2016-2017 Growing Season

	Unweighted Number of Farmers	Average Production (MT)	Range	Standard Deviation	Standard Error of Mean
Male	230	.2483	2.1924	.2660	.0175
Female	170	.1787	2.0000	.2387	.0183
Joint	204	.2799	4.3848	.4308	.0302
Total	604	.2394	4.3848	.3270	.0133

MELS AgDiv Five Data Points – Value of Sales – Yields Final – BY SALES-QUANTITY

**TABLE D31: Average Weighted Quantities of Groundnuts Sold: 2016-2017
Growing Season**

Decision Maker	Weighted Number of Farmers	Average Quantities Sold (MT)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Quantity Sold MT
Male	2010	.2175	2.2729	.3175	.0071	1,544
Female	1997	.0996	1.5994	.1752	.0039	702
Joint	2614	.1814	2.3863	.2385	.0047	1,674
Total	6621	.1677	2.3863	.2540	.0031	3,921

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

**TABLE D31 bis: Average Unweighted Quantities of Groundnuts Sold: 2016-2017
Growing Season**

	Unweighted Number of Farmers	Average Quantities Sold (MT)	Range	Standard Deviation	Standard Error of Mean
Male	299	.1816	2.2729	.2959	.0171
Female	360	.0746	1.5994	.1528	.0081
Joint	439	.1513	2.3863	.2313	.0110
Total	1098	.1344	2.3863	.2338	.0071

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

TABLE D32: Average Weighted Quantities of Soybeans Sold: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Quantities Sold (MT)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Quantity Sold MT
Male	1709	.3089	2.5465	.4051	.0098	2,097
Female	1379	.1682	2.9582	.2363	.0064	1,024
Joint	1813	.2524	3.7300	.4020	.0094	1,910
Total	4901	.2484	3.7300	.3685	.0053	5,078

TABLE D32 bis: Average Unweighted Quantities of Soybeans Sold: 2016-2017 Growing Season

	Unweighted Number of Farmers	Average Quantities Sold (MT)	Range	Standard Deviation	Standard Error of Mean
Male	216	.2875	2.5465	.3449	.0235
Female	196	.1560	2.9582	.2641	.0189
Joint	260	.2200	3.7300	.3017	.0187
Total	672	.2230	3.7300	.3101	.0120

TABLE D33: Average Weighted Quantities of OFSP Sold: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Quantities Sold (MT)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Quantity Sold MT
Male	1271	.1397	2.1924	.2911	.0082	628
Female	782	.0877	.7614	.1641	.0059	242
Joint	985	.1902	4.3848	.5493	.0175	662
Total	3038	.1427	4.3848	.3763	.0068	1,533

TABLE D33 bis: Average Unweighted Quantities of OFSP Sold: 2016-2017 Growing Season

	Unweighted Number of Farmers	Average Quantities Sold (MT)	Range	Standard Deviation	Standard Error of Mean
Male	230	.1201	2.1924	.2360	.0156
Female	170	.0670	.7614	.1380	.0106
Joint	204	.1358	4.3848	.3623	.0254
Total	604	.1105	4.3848	.2673	.0109

MELS AgDiv Five Data Points – Value of Sales – Yields Final – BY SALES-VALUE

**TABLE D41: Average Weighted Values of the Groundnuts Sold: 2016-2017
Growing Season**

Decision Maker	Weighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Value of Sales \$US
Male	2010	67.93	499.96	92.67	2.00	482,122.89
Female	1997	31.93	306.48	56.74	1.00	225,155.23
Joint	2614	58.47	498.41	83.18	2.00	539,676.14
Total	6621	53.34	499.96	80.74	1.00	1,247,027.38

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

**TABLE D41 bis: Average Unweighted Values of the Groundnuts Sold: 2016-2017
Growing Season**

Decision Maker	Unweighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	299	45.12	484.57	71.37	4.00
Female	360	18.18	278.49	37.53	2.00
Joint	439	37.96	498.41	59.96	3.00
Total	1098	33.42	498.41	58.33	2.00

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

TABLE D42: Average Weighted Values of the Soybeans Sold: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Value of Sales \$US
Male	1709	52.79	445.49	70.98	1.72	\$358,309.93
Female	1379	28.70	494.12	40.29	1.09	\$174,739.77
Joint	1813	42.87	375.75	52.40	1.23	\$324,422.31
Total	4901	42.34	494.92	57.61	0.82	\$865,579.31

TABLE D42 bis: Average Unweighted Values of the Soybeans Sold: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	216	48.85	445.49	60.55	4.12
Female	196	26.26	494.12	44.62	3.19
Joint	260	37.56	375.75	42.80	2.65
Total	672	37.89	494.92	50.38	1.94

TABLE D43: Average Weighted Values of the OFSP Sold: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Value of Sales \$US
Male	1271	15.87	250.64	36.67	1.03	71,307.00
Female	782	9.75	156.65	22.72	0.81	26,954.09
Joint	985	17.95	417.73	53.38	1.70	62,504.65
Total	3038	14.97	417.73	40.35	0.73	160,775.86

TABLE D43 bis: Average Unweighted Values of the OFSP Sold: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	230	13.69	250.64	29.40	1.94
Female	170	7.49	156.65	18.51	1.42
Joint	204	13.18	417.73	37.24	2.61
Total	604	11.77	417.73	29.97	1.22

MELS AgDiv Five Data Points – Value of Sales – Yields Final – BY INPUT COST

TABLE D51: Average Weighted Values of Groundnuts Inputs Purchased: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Recurrent Inputs Cost (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Input Costs \$US
Male	838	24.98	626.08	68.30	2.36	177,301.78
Female	528	16.55	270.17	32.77	1.43	116,678.19
Joint	1019	28.37	644.77	76.87	2.41	261,887.88
Total	2385	24.56	644.88	66.47	1.36	574,261.01

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

TABLE D51 bis: Average Unweighted Values of Groundnuts Inputs Purchased: 2016-2017 Growing Season

	Unweighted Number of Farmers	Recurrent Inputs Cost (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	112	22.87	626.08	64.83	6.13
Female	87	15.13	270.17	32.04	3.43
Joint	154	26.47	644.77	69.94	5.64
Total	353	22.53	644.88	61.01	3.25

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

TABLE D52: Average Weighted Values of Soybeans Inputs Purchased: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Recurrent Inputs Cost (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Input Costs \$US
Male	1335	9.38	87.56	11.30	.31	63,666.36
Female	1002	4.94	53.44	6.96	.22	30,077.16
Joint	1449	8.51	72.15	12.29	.32	64,400.14
Total	3786	7.87	87.56	10.90	.18	160,890.63

TABLE D52 bis: Average Unweighted Values of Soybeans Inputs Purchased: 2016-2017 Growing Season

	Unweighted Number of Farmers	Recurrent Inputs Cost (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	179	8.71	87.56	11.25	0.84
Female	146	4.88	53.44	7.40	0.61
Joint	207	7.93	72.15	11.90	.83
Total	532	7.36	87.56	10.71	.46

TABLE D53: Average Weighted Values of OFSP Inputs Purchased: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Recurrent Inputs Cost (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Input Costs \$US
Male	585	6.51	64.39	10.20	.42	29,250.70
Female	325	4.23	29.40	5.29	.29	11,693.93
Joint	456	9.63	76.70	12.14	.57	33,533.14
Total	1366	7.01	76.70	10.22	.28	75,286.49

TABLE D53 bis: Average Unweighted Values of OFSP Inputs Purchased: 2016-2017 Growing Season

	Unweighted Number of Farmers	Recurrent Inputs Cost (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	112	6.95	64.39	11.24	1.06
Female	72	4.41	29.40	5.90	.69
Joint	92	8.96	76.70	12.64	1.32
Total	276	6.96	76.70	10.76	.65

MELS AgDiv Five Data Points – Value of Sales – Yields Final – BY INPUT YIELDS

Weighted Yields for Groundnuts Production in MT / HA

Decision Maker	Decision Maker Weighted Mean Yield	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.018	.976	1.060	.828
Female	.633	.601	.665	.821
Joint	.931	.894	.969	1.228
Overall	.879	.856	.901	1.011

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

Unweighted Yields for Groundnuts Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	.923	.806	1.039	.841
Female	.532	.456	.608	.843
Joint	.842	.742	.943	1.033
Overall	.773	.714	.832	.930

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

Weighted Yields for Soybeans Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.165	1.117	1.213	.767
Female	.752	.705	.798	17.503
Joint	1.041	.979	1.103	2.032
Overall	1.013	.981	1.045	9.635

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

Unweighted Yields for Soybeans Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.039	.915	1.164	.752
Female	.665	.537	.793	18.122
Joint	.923	.787	1.058	1.712
Overall	.890	.813	.967	10.268

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

Weighted Yields for OFSP Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.817	1.721	1.914	2.937
Female	1.619	1.468	1.771	65.994
Joint	1.954	1.775	2.133	18.594
Overall	1.824	1.740	1.908	35.316

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

Unweighted Yields for OFSP Production in MT / HA

Decision Maker	Decision Maker Weighted Mean	95% Confidence Interval for Mean Yield		Std. Deviation
		Lower Bound	Upper Bound	
Male	1.739	1.524	1.953	3.195
Female	1.471	1.153	1.788	63.727
Joint	1.838	1.489	2.186	19.255
Overall	1.710	1.538	1.882	35.655

***The confidence intervals are constructed by assuming a Normal distribution for the ratios.

MELS AgDiv Five Data Points – Value of Sales – Yields Final – BY INPUT VALUE OF SALES

**TABLE D41: Average Weighted Values of the Groundnuts Sold: 2016-2017
Growing Season**

Decision Maker	Weighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Value of Sales \$US
Male	2010	55.05	484.57	76.32	2.00	390,709.04
Female	1997	24.57	278.49	43.18	1.00	173,255.99
Joint	2614	46.83	498.41	64.68	1.00	432,239.33
Total	6621	42.61	498.41	64.29	1.00	996,172.42

Source: Baseline Survey USAID FTF-Malawi/SEG Office/MELS, CDM: October 2017

**TABLE D41 bis: Average Unweighted Values of the Groundnuts Sold: 2016-2017
Growing Season**

Decision Maker	Unweighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	299	45.12	484.57	71.37	4.00
Female	360	18.18	278.49	37.53	2.00
Joint	439	37.96	498.41	59.96	3.00
Total	1098	33.42	498.41	58.33	2.00

TABLE D42: Average Weighted Values of the Soybeans Sold: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Value of Sales \$US
Male	1709	52.79	445.49	70.98	1.72	\$358,309.93
Female	1379	28.70	494.12	40.29	1.09	\$174,739.77
Joint	1813	42.87	375.75	52.40	1.23	\$324,422.31
Total	4901	42.34	494.92	57.61	0.82	\$865,579.31

TABLE D42 bis: Average Unweighted Values of the Soybeans Sold: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	216	48.85	445.49	60.55	4.12
Female	196	26.26	494.12	44.62	3.19
Joint	260	37.56	375.75	42.80	2.65
Total	672	37.89	494.92	50.38	1.94

TABLE D43: Average Weighted Values of the OFSP Sold: 2016-2017 Growing Season

Decision Maker	Weighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean	Extrapolated Value of Sales \$US
Male	1271	15.87	250.64	36.67	1.03	71,307.00
Female	782	9.75	156.65	22.72	0.81	26,954.09
Joint	985	17.95	417.73	53.38	1.70	62,504.65
Total	3038	14.97	417.73	40.35	0.73	160,775.86

TABLE D43 bis: Average Unweighted Values of the OFSP Sold: 2016-2017 Growing Season

Decision Maker	Unweighted Number of Farmers	Average Value of Sales (\$US)	Range	Standard Deviation	Standard Error of Mean
Male	121	26.03	249.93	36.41	3.31
Female	67	19.00	155.81	25.59	3.13
Joint	102	26.36	417.50	49.36	4.89
Total	290	24.52	417.50	39.50	2.32

MELS AgDiv Five Data Points – Value of Sales – Yields Final – BY BENEFICIARIES

Ag Div 2017 Target: **34,533**
 % of Groundnuts: **67.70%** (Weighted)

Number of Groundnuts Beneficiary Farmers

Decision Maker	Proportion of Farmers	Number of Beneficiary Farmers
Male	0.3036	7,097
Female	0.3016	7,052
Joint	0.3948	9,230
Total	1.0000	23,379

Share of Soybeans: **59.20%**

Number of Soybeans Beneficiary Farmers

Decision Maker	Proportion of Farmers	Number of Beneficiary Farmers
Male	0.3320	6,787
Female	0.2978	6,088
Joint	0.3702	7,568
Total	1.0000	20,444

Share of OFSP **31.10%**

Number of OFSP Beneficiary Farmers

Decision Maker	Proportion of Farmers	Number of Beneficiary Farmers
Male	0.4184	4,493
Female	0.2574	2,765
Joint	0.3242	3,482
Total	1.0000	10,740

MELS AgDiv HA Improved Tech Final

TABLE D7I: Weighted Area Under Improved Technologies By Technology Type: 2016-2017 Growing Season

TECH TYPE	Total Number of HA	Number of Farmers	Average Area in HA	Standard Deviation
1- CROP GENETICS	2729.10	9776	0.280	0.330
2- CULTURAL PRACTICES	4277.02	9776	0.440	0.360
3- DISEASE MANAGEMENT	3445.61	9776	0.350	0.350
4- SOIL FERTILITY	2383.62	9776	0.240	0.320
5- IRRIGATION	37.67	9776	0.000	0.030
6- WATER MANAGEMENT	2941.76	9776	0.300	0.400
7- CLIMATE MITIGATION	288.42	8789	0.030	0.120
8- CLIMATE ADAPTATION	4452.84	9776	0.460	0.360
ONE OR MORE TECH TYPES	4531.05	9776	0.490	0.360

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D7I bis: Unweighted Area Under Improved Technologies By Technology Type: 2016-2017 Growing Season

TECH TYPE	Total Number of HA	Number of Farmers	Average Area in HA	Standard Deviation
1- CROP GENETICS	433.92	1677	0.260	0.320
2- CULTURAL PRACTICES	663.45	1677	0.400	0.370
3- DISEASE MANAGEMENT	535.72	1677	0.320	0.350
4- SOIL FERTILITY	390.54	1677	0.230	0.310
5- IRRIGATION	8.36	1677	0.000	0.040
6- WATER MANAGEMENT	457.22	1677	0.270	0.370
7- CLIMATE MITIGATION	42.49	1432	0.030	0.110
8- CLIMATE ADAPTATION	693.34	1677	0.410	0.370
ONE OR MORE TECH TYPES	706.30	1677	0.450	0.370

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D72: Weighted Area Under Improved Technologies By Decision Maker: 2016-2017 Growing Season

DECISION MAKER	Total Number of HA	Number of Farmers	Average Area in HA	Standard Deviation
MALE	722.23	1934	0.400	0.290
FEMALE	516.71	1802	0.310	0.220
JOINT	3292.12	6041	0.570	0.380
Total	4531.05	9776	0.490	0.360

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

NB: The Variable Decision Maker counts 316 Missing Values

TABLE D72 bis: Unweighted Area Under Improved Technologies By Decision Maker: 2016-2017 Growing Season

DECISION MAKER	Total Number of HA	Number of Farmers	Average Area in HA	Standard Deviation
MALE	101.580	323	0.330	0.251
FEMALE	93.600	349	0.290	0.229
JOINT	511.110	1005	0.530	0.404
Total	706.300	1677	0.450	0.365

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D73: Weighted Area Under Improved Technologies By Value Chain: 2016-2017 Growing Season

VALUE CHAIN	Total Number of HA	Number of Farmers	Average Area in HA	Standard Deviation
Groundnuts	2490.30	6076	0.410	0.228
Soybeans	1653.82	5623	0.290	0.171
OFSP	386.93	2578	0.150	0.128

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D73 bis: Unweighted Area Under Improved Technologies By Value Chain: 2016-2017 Growing Season

VALUE CHAIN	Total Number of HA	Number of Farmers	Average Area in HA	Standard Deviation
Groundnuts	405.290	1015	0.400	0.261
Soybeans	227.560	813	0.280	0.182
OFSP	73.450	524	0.140	0.115

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

MELS AgDiv Resilience to Climate Change Final

TABLE R1: Weighted Number and Percent of Farmers Using Climate Information or Implementing Risk Reducing Actions by Sex: 2016-2017 Growing Season

	YES		NO		Total		Extrapolated HA
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	
Male	5965	96.973%	186	3.0%	6151	100.0%	15,390.94
Female	3455	95.316%	170	4.7%	3625	100.0%	17,787.52
Total	9420	96.358%	356	3.6%	9776	100.0%	33,275.31

Source: USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE R2: Unweighted Number and Percent of Farmers Using Climate Information or Implementing Risk Reducing Actions by Sex: 2016-2017 Growing Season

	YES		NO		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
Male	978	96.832%	32	3.168%	1010	100.0%
Female	637	95.502%	30	4.498%	667	100.0%
Total	1615	96.303%	62	3.697%	1677	100.0%

Source: USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

Number of Farmers

AgDiv 2017 Target

34,533

Sex	Percent (%)	Number of Farmers
Male	45.96%	15,871
Female	54.04%	18,662
Total	100.00%	34,533

MELS AgDiv Storage-Preservation Final

TABLE D16_1: Average Weighted Number and Percent of Groundnuts Farmers Applying Improved Storage and Preservation Practices for 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. Storing in PICS Bags	214	3.20%	6,407	96.80%	6621	100.0%
2. Storing in Shell	5,357	80.90%	1,263	19.10%	6621	100.0%
3. Drying	5,988	90.40%	632	9.60%	6621	100.0%
4. Roasting	5,874	88.70%	747	11.30%	6621	100.0%
5. Processing into flour	6,230	94.10%	391	5.90%	6621	100.0%
6. Processing into P. Butter	3,087	46.60%	3,534	53.40%	6621	100.0%
7. Processing into Oil	96	1.50%	6,524	98.50%	6621	100.0%
Applied at Least One Improved Method	6,534	98.70%	86	1.30%	6621	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D16_1 bis: Average Unweighted Number and Percent of Groundnuts Farmers Applying Improved Storage and Preservation Practices for 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. Storing in PICS Bags	39	3.6%	1,059	96.4%	1098	100.0%
2. Storing in Shell	870	79.2%	228	20.8%	1098	100.0%
3. Drying	1,016	92.5%	82	7.5%	1098	100.0%
4. Roasting	978	89.1%	120	10.9%	1098	100.0%
5. Processing into flour	1,034	94.2%	64	5.8%	1098	100.0%
6. Processing into P. Butter	521	47.4%	577	52.6%	1098	100.0%
7. Processing into Oil	13	1.2%	1,085	98.8%	1098	100.0%
Applied at Least One Improved Method	1,085	98.8%	13	1.2%	1098	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE DI6_2: Average Weighted Number and Percent of Soybeans Farmers Applying Improved Storage and Preservation Practices for 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. Storing in PICS Bags	74	1.30%	5,718	98.70%	5792	100.0%
2. Drying	4,673	80.70%	1,120	19.30%	5792	100.0%
3. Processing into flour	4,152	71.70%	1,641	28.30%	5792	100.0%
4. Processing into Milk	114	2.00%	5,679	98.00%	5792	100.0%
5. Processing into Oil			5,792	100.00%	5792	100.0%
6. Processing into Cake			5,792	100.00%	5792	100.0%
Applied at Least One Improved Method	5,422	93.60%	371	6.40%	5792	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE DI6_2 bis: Average Unweighted Number and Percent of Soybeans Farmers Applying Improved Storage and Preservation Practices for 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. Storing in PICS Bags	13	1.5%	828	98.5%	841	100.0%
2. Drying	690	82.0%	151	18.0%	841	100.0%
3. Processing into flour	625	74.3%	216	25.7%	841	100.0%
4. Processing into Milk	22	2.6%	819	97.4%	841	100.0%
5. Processing into Oil			841	100.0%	841	100.0%
6. Processing into Cake			841	100.0%	841	100.0%
Applied at Least One Improved Method	793	94.3%	48	5.7%	841	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE DI6_3: Average Weighted Number and Percent of OFSP Farmers Applying Improved Storage and Preservation Practices for 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. Storing in Pits With Ash	799	26.3%	2,239	73.7%	3,038	100.0%
2. Processing into flour	91	3.0%	2,947	97.0%	3,038	100.0%
3. Dried Chips	562	18.50%	2,476	81.5%	3038	100.0%
Applied at Least One Improved Method	1,234	40.60%	1,804	59.4%	3038	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE DI6_3 bis: Average Unweighted Number and Percent of OFSP Farmers Applying Improved Storage and Preservation Practices for 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. Storing in Pits With Ash	151	25.0%	453	75.0%	604	100.0%
2. Processing into flour	15	2.5%	589	97.5%	604	100.0%
3. Dried Chips	129	21.4%	475	78.6%	604	100.0%
Applied at Least One Improved Method	247	40.9%	357	59.1%	604	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D11: Overall Weighted Number and Percent of Farmers Applying Improved Storage or Preservation Practices: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS
1. Storing in PICS Bags	246	2.5%	9530	97.5%	9776	100.0%
2. Storing in Shell	5357	54.8%	4419	45.2%	9776	100.0%
3. Drying	7838	80.2%	1938	19.8%	9776	100.0%
4. Roasting	5874	60.1%	3902	39.9%	9776	100.0%
5. Processing into flour	7918	81.0%	1859	19.0%	9776	100.0%
6. Processing into P. Butter	3087	31.6%	6689	68.4%	9776	100.0%
7. Processing into Oil	96	1.0%	9680	99.0%	9776	100.0%
8. Processing into Milk	114	1.2%	9663	98.8%	9776	100.0%
9. Processing into Cake			9776	100.0%	9776	100.0%
10. Storing in Pits With Ash	799	8.2%	8977	91.8%	9776	100.0%
11. Dried Chips	562	5.8%	9214	94.2%	9776	100.0%
Applied at Least One Improved Method	8985	91.9%	791	8.1%	9776	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE D11: Overall Unweighted Number and Percent of Farmers Applying Improved Storage or Preservation Practices: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS
1. Storing in PICS Bags	45	2.7%	1632	97.3%	1677	100.0%
2. Storing in Shell	870	51.9%	807	48.1%	1677	100.0%
3. Drying	1302	77.6%	375	22.4%	1677	100.0%
4. Roasting	978	58.3%	699	41.7%	1677	100.0%
5. Processing into flour	1304	77.8%	373	22.2%	1677	100.0%
6. Processing into P. Butter	521	31.1%	1156	68.9%	1677	100.0%
7. Processing into Oil	13	.8%	1664	99.2%	1677	100.0%
8. Processing into Milk	22	1.3%	1655	98.7%	1677	100.0%
9. Processing into Cake			1677	100.0%	1677	100.0%
10. Storing in Pits With Ash	151	9.0%	1526	91.0%	1677	100.0%
11. Dried Chips	129	7.7%	1548	92.3%	1677	100.0%
Applied at Least One Improved Method	1502	89.6%	175	10.4%	1677	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

MELS AgDiv Table Minimum Dietary Diversity Final

Minimum Dietary Diversity - Women

TABLE H11: Weighted Percentage of Female Farmers who Consumed Five of the Ten Food groups As a Diet of Minimum Diversity: 2016-2017 Growing Season

Yes		No		Total	
Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1979	56.9%	1496	43.1%	3476	100%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE H11 bis: Unweighted Percentage of Female Farmers who Consumed Five of the Ten Food groups As a Diet of Minimum Diversity: 2016-2017 Growing Season

Yes		No		Total	
Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
358	55.5%	287	44.5%	645	100%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE H21: Weighted Distribution of Female Farmers Who Consumed The Ten Food Groups: 2016-2017 Growing Season

	Yes		No		Do Not know		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. GRAINS, ROOTS, TUBER	3439	98.9%	39	1.1%			3478	100%
2. LEGUMES, BEANS	1432	41.3%	2036	58.7%			3468	100%
3. NUTS, SEEDS	1718	50.0%	1717	50.0%			3435	100%
4. DAIRY PRODUCTS	328	9.4%	3144	90.4%	6	.2%	3478	100%
5. EGGS	419	12.0%	3050	87.7%	9	.3%	3478	100%
6. FLESH FOODS	1887	54.5%	1578	45.5%			3465	100%
7. VITAMIN A-RICH DARK GREEN LEAFY VEGETABLES	2706	77.8%	772	22.2%			3478	100%
8. OTHER VITAMIN A-RICH VEGETABLES AND FRUITS	1961	57.5%	1449	42.5%			3409	100%
9. OTHER FRUITS	558	16.1%	2920	83.9%			3478	100%
10. OTHER VEGETABLES	2886	83.0%	592	17.0%			3478	100%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE H2I Bis: Unweighted Distribution of Female Farmers Who Consumed The Ten Food Groups: 2016-2017 Growing Season

	Yes		No		Do Not know		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
1. GRAINS, ROOTS, TUBER	637	98.6%	9	1.4%			646	100%
2. LEGUMES, BEANS	272	42.2%	372	57.8%			644	100%
3. NUTS, SEEDS	283	44.6%	352	55.4%			635	100%
4. DAIRY PRODUCTS	53	8.2%	592	91.6%	1	.2%	646	100%
5. EGGS	82	12.7%	561	86.8%	3	.5%	646	100%
6. FLESH FOODS	359	55.8%	284	44.2%			643	100%
7. VITAMIN A-RICH DARK GREEN LEAFY VEGETABLES	471	72.9%	175	27.1%			646	100%
8. OTHER VITAMIN A-RICH VEGETABLES AND FRUITS	364	57.1%	273	42.9%			637	100%
9. OTHER FRUITS	102	15.8%	544	84.2%			646	100%
10. OTHER VEGETABLES	529	81.9%	117	18.1%			646	100%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

MELS AgDiv Table VC Consumption Final

CONSUMPTION OF TARGETED VALUE CHAIN

TABLE H3I: Weighted Percentage of Female Farmers Consuming At least One Product From the Targeted Value Chain: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS
Consumed Groundnut or its Products	1670	48.0%	1808	52.0%	3478	100.0%
Consumed Soybean or its Products	821	23.6%	2657	76.4%	3478	100.0%
Consumed OFSP or its Products	817	23.5%	2661	76.5%	3478	100.0%
Consumed Any of the Value Chain	2207	63.5%	1271	36.5%	3478	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE H3I: Unweighted Percentage of Female Farmers Consuming at Least One Product From the Targeted Value Chain: 2016-2017 Growing Season

	Yes		No		Total	
	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS
Consumed Groundnut or its Products	274	42.4%	372	57.6%	646	100.0%
Consumed Soybean or its Products	133	20.6%	513	79.4%	646	100.0%
Consumed OFSP or its Products	154	23.8%	492	76.2%	646	100.0%
Consumed Any of the Value Chain	385	59.6%	261	40.4%	646	100.0%

MELS AgDiv Table WEAI All Three Final - CREDIT

Percent of Targeted Female Farmers Achieving Adequacy in WEAI - Access to And Decisions on Credit

TABLE G1: Weighted Percentage of Female Farmers Who Have Access to and Make Decision on Credit: 2016-2017 Growing Season

	YES		NO		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
A- NGOs LENDING SOURCES	268	7.7%	3,210	92.3%	3,478	100.0%
B- INFORMAL LENDING SOURCES	135	3.9%	3,343	96.1%	3,478	100.0%
C- FORMAL LENDING SOURCES	116	3.3%	3,362	96.7%	3,478	100.0%
D- FRIENDS/RELATIVE LENDING SOURCES	481	13.8%	2,997	86.2%	3,478	100.0%
E- MICRO FINANCE/CREDIT ASSOCIATIONS SOURCES	883	25.4%	2,596	74.6%	3,478	100.0%
ADEQUACY IN AT LEAST ONE LENDING SOURCE	1,373	39.5%	2,106	60.5%	3,478	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE G1 bis: Unweighted Percentage of Female Farmers Who Have Access to and Make Decision on Credit: 2016-2017 Growing Season

	YES		NO		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
A- NGOs LENDING SOURCES	59	9.1%	587	90.9%	646	100.0%
B- INFORMAL LENDER SOURCES	26	4.0%	620	96.0%	646	100.0%
C- FORMAL LENDER SOURCES	22	3.4%	624	96.6%	646	100.0%
D- FRIENDS/RELATIVES LENDING SOURCES	104	16.1%	542	83.9%	646	100.0%
E- MICRO FINANCE/CREDIT ASSOCIATIONS SOURCES	183	28.3%	463	71.7%	646	100.0%
ADEQUACY IN AT LEAST ONE LENDING SOURCE	284	44.0%	362	56.0%	646	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

MELS AgDiv Table WEAI All Three Final – GROUP MEMBER

Percent of Targeted Female Farmers Achieving Adequacy in WEAI - Group Member

TABLE G2: Weighted Percentage of Female Farmers Who Have Adequacy in Group Membership: 2016-2017 Growing Season

	YES		NO		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
A- AGRICULTURE LIVESTOCK FISHERIES	592	17.0%	2,886	83.0%	3,478	100.0%
B- WATER USER GROUP	313	9.0%	3,165	91.0%	3,478	100.0%
C- FOREST USER GROUP	573	16.5%	2,906	83.5%	3,478	100.0%
D- CREDIT MICRO FINANCE GROUP	1,163	33.4%	2,315	66.6%	3,478	100.0%
E- MUTUAL HELP INSURANCE GROUP	427	12.3%	3,051	87.7%	3,478	100.0%
F- TRADE BUSINESS ASSOCIATION	118	3.4%	3,360	96.6%	3,478	100.0%
G- CIVIC GROUP	654	18.8%	2,824	81.2%	3,478	100.0%
H- LOCAL GOVERNMENT	177	5.1%	3,301	94.9%	3,478	100.0%
I- RELIGIOUS GROUP	2,258	64.9%	1,220	35.1%	3,478	100.0%
J- OTHER WOMEN GROUP	1,144	32.9%	2,334	67.1%	3,478	100.0%
K- OTHER GROUPS	98	2.8%	3,381	97.2%	3,478	100.0%
ADEQUACY IN AT LEAST ONE GROUP	2,838	81.6%	640	18.4%	3,478	100.0%

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

TABLE G2 bis: Unweighted Percentage of Female Farmers Who Have Adequacy in Group Membership: 2016-2017 Growing Season

	YES		NO		Total	
	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers	Number of Farmers	% of Farmers
A- AGRICULTURE LIVESTOCK FISHERIES	115	17.8%	531	82.2%	646	100.0%
B- WATER USER GROUP	64	9.9%	582	90.1%	646	100.0%
C- FOREST USER GROUP	132	20.4%	514	79.6%	646	100.0%
D- CREDIT MICRO FINANCE GROUP	243	37.6%	403	62.4%	646	100.0%
E- MUTUAL HELP INSURANCE GROUP	93	14.4%	553	85.6%	646	100.0%
F- TRADE BUSINESS ASSOCIATION	22	3.4%	624	96.6%	646	100.0%
G- CIVIC GROUP	136	21.1%	510	78.9%	646	100.0%
H- LOCAL GOVERNMENT	31	4.8%	615	95.2%	646	100.0%
I- RELIGIOUS GROUP	419	64.9%	227	35.1%	646	100.0%
J- OTHER WOMEN GROUP	226	35.0%	420	65.0%	646	100.0%
K- OTHER GROUPS	19	2.9%	627	97.1%	646	100.0%
ADEQUACY IN AT LEAST ONE GROUP	540	83.6%	106	16.4%	646	100.0%

Source: Survey USAID-Malawi/SEG Office/MELS, CDM: September 2017

MELS AgDiv Table WEAI All Three Final – **DECISION-MAKING**

Percent of Targeted Female Farmers Achieving Adequacy in WEAI - Inputs in Productive Decisions

TABLE G3: Weighted Percentage of Female Farmers who Achieved Adequacy in WEAI - Input in Productive Decisions: Previous Twelve Months

	YES		NO		Total	
	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS
A- FOOD CROP FARMING	3327	95.7%	151	4.3%	3478	100.0%
A- CASH CROP FARMING	2605	74.9%	874	25.1%	3478	100.0%
C- LIVESTOCK RAISING	1768	50.8%	1710	49.2%	3478	100.0%
D- FISHING OR FISHPOND CULTURE	30	.9%	3449	99.1%	3478	100.0%
E- GETTING INPUTS FOR AGRICULTURE PRODUCTION	761	21.9%	2717	78.10%	3478	100.0%
F- TYPES OF CROPS TO GROW	908	26.1%	2571	73.90%	3478	100.0%
G- TAKING CROPS TO THE MARKET	779	22.4%	2700	77.60%	3478	100.0%
H- LIVESTOCK RAISING (2)	591	17.0%	2887	83.00%	3478	100.0%
ADEQUACY IN AT LEAST TWO DECISION MAKING AREAS	3119	90.9%	311	9.10%	3430	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017

TABLE G3 bis: Unweighted Percentage of Female Farmers who Achieved Adequacy in WEAI - Input in Productive Decisions: Previous Twelve Months

	YES		NO		Total	
	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS	Number of Farmers	% FARMERS
A- FOOD CROP FARMING	622	96.3%	24	3.7%	646	100.0%
A- CASH CROP FARMING	477	73.8%	169	26.2%	646	100.0%
C- LIVESTOCK RAISING	348	53.9%	298	46.1%	646	100.0%
D- FISHING OR FISHPOND CULTURE	9	1.4%	637	98.6%	646	100.0%
E- GETTING INPUTS FOR AGRICULTURE PRODUCTION	165	25.5%	481	74.50%	646	100.0%
F- TYPES OF CROPS TO GROW	188	29.1%	458	70.90%	646	100.0%
G- TAKING CROPS TO THE MARKET	163	25.2%	483	74.80%	646	100.0%
H- LIVESTOCK RAISING (2)	126	19.5%	520	80.50%	646	100.0%
ADEQUACY IN AT LEAST TWO DECISION MAKING AREAS	582	91.1%	57	8.90%	639	100.0%

Source: Survey USAID FTF-Malawi/SEG Office/MELS, CDM: September 2017